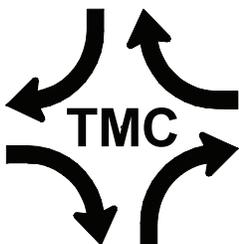


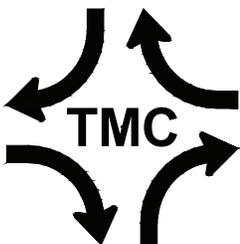
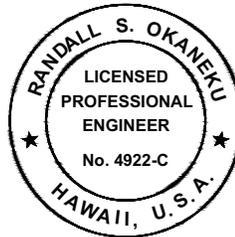
TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU
TAX MAP KEY: (3) 7-4-021:020

PREPARED FOR
FOREST CITY HAWAII KONA, LLC
AUGUST 9, 2010



PREPARED BY
THE TRAFFIC MANAGEMENT CONSULTANT

TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU
TAX MAP KEY: (3) 7-4-021:020



THE TRAFFIC MANAGEMENT CONSULTANT
RANDALL S. OKANEKU, P.E., PRINCIPAL * 1188 BISHOP STREET, SUITE 1907 * HONOLULU, HI 96813

Table of Contents

		<u>Page</u>
I.	Introduction.....	7
	A. Purpose of the Study.....	7
	B. Background.....	7
	C. Scope of the Study	2
	D. Project Description.....	2
	E. Environs	5
	F. Methodologies.....	5
	1. Capacity Analysis Methodology.....	5
	2. Trip Generation Methodology	9
II.	Existing Conditions.....	9
	A. Area Roadway System.....	9
	B. Existing Traffic Volumes and Operating Conditions	10
	1. Field Investigation	10
	2. Existing AM Peak Hour Traffic.....	11
	3. Existing PM Peak Hour Traffic	12
III.	Future Highway Improvements	15
	A. Queen Kaahumanu Highway Widening	15
	B. Kamanu Street Extension.....	15
	C. Ane Keohokalole Highway.....	15
	D. Kealakehe Parkway.....	17
IV.	Future Peak Hour Traffic	17
	A. Regional Development.....	17
	B. Future Development.....	17

Table of Contents (Cont'd.)

	<u>Page</u>
C. Year 2014 Peak Hour Traffic Analysis Without Project	24
1. Year 2014 Roadway Network.....	24
2. Year 2014 AM Peak Hour Traffic Analysis Without Project.....	25
3. Year 2014 PM Peak Hour Traffic Analysis Without Project	26
4. Year 2014 Proposed Traffic Improvements Without Project	28
D. Year 2019 Peak Hour Traffic Analysis Without Project	30
1. Year 2019 Roadway Network.....	30
2. Year 2019 AM Peak Hour Traffic Analysis Without Project.....	30
3. Year 2019 PM Peak Hour Traffic Analysis Without Project	33
4. Year 2019 Proposed Traffic Improvements Without Project	34
E. Year 2024 Peak Hour Traffic Analysis Without Project	36
1. Year 2024 AM Peak Hour Traffic Analysis Without Project.....	36
2. Year 2024 PM Peak Hour Traffic Analysis Without Project	37
3. Year 2024 Proposed Traffic Improvements Without Project	39
F. Year 2029 Peak Hour Traffic Analysis Without Project	41
1. Year 2029 AM Peak Hour Traffic Analysis Without Project.....	41
2. Year 2029 PM Peak Hour Traffic Analysis Without Project	42
3. Year 2029 Proposed Traffic Improvements Without Project	46
V. Traffic Impact Analysis	47
A. Trip Generation Characteristics	47
B. Year 2014 Peak Hour Traffic Impact Analysis With Project	49
1. Year 2014 Area Mitigation Traffic Improvements with Project	49
2. Year 2014 Local Mitigation Traffic Improvements With Project	49

Table of Contents (Cont'd.)

	<u>Page</u>
3. Year 2014 Peak Hour Traffic Assignment.....	49
4. Year 2014 AM Peak Hour Traffic Impact Analysis With Project.....	50
5. Year 2014 PM Peak Hour Traffic Analysis With Project.....	55
6. Year 2014 Area Mitigation Traffic Improvements With Project.....	56
C. Year 2019 Peak Hour Traffic Analysis With Project	56
1. Year 2019 Area Mitigation Traffic Improvements With Project.....	56
2. Year 2019 Local Mitigation Traffic Improvements With Project	56
3. Year 2019 Peak Hour Traffic Assignment.....	58
4. Year 2019 AM Peak Hour Traffic Analysis With Project	61
5. Year 2019 PM Peak Hour Traffic Analysis With Project.....	62
6. Year 2019 Proposed Area Mitigation Traffic Improvements With Project....	64
D. Year 2024 Peak Hour Traffic Analysis With Project	66
1. Year 2024 Area Mitigation Traffic Improvements With Project.....	66
2. Year 2024 Local Mitigation Traffic Improvements With Project	66
3. Year 2024 Peak Hour Traffic Assignment.....	66
4. Year 2024 AM Peak Hour Traffic Analysis With Project	67
5. Year 2024 PM Peak Hour Traffic Analysis With Project.....	72
6. Year 2024 Proposed Area Mitigation Traffic Improvements With Project....	74
E. Year 2029 Peak Hour Traffic Impact Analysis With Project	75
1. Year 2029 Traffic Improvements With Project	75
2. Year 2029 Local Mitigation Traffic Improvements With Project	75
3. Year 2029 Peak Hour Traffic Assignment.....	76
4. Year 2029 AM Peak Hour Traffic Analysis With Project	77

Table of Contents (Cont'd.)

	<u>Page</u>
5. Year 2029 PM Peak Hour Traffic Analysis With Project.....	81
6. Year 2029 Proposed Area Mitigation Traffic Improvements With Project....	83
VI. Conclusions.....	85

List of Figures

	<u>Page</u>
Figure 1. Location Map.....	3
Figure 2. Kamakana Villages at Keahuolu Conceptual Plan.....	6
Figure 3. Kamakana Villages at Keahuolu Phasing Plan	7
Figure 4. Existing AM Peak Hour Traffic	13
Figure 5. Existing PM Peak Hour Traffic.....	16
Figure 6. Future Roadway Network.....	18
Figure 7. Future Residential, Commercial and Light Industrial Projects With Entitlements	23
Figure 8. 2014 AM Peak Hour Traffic Without Project	27
Figure 9. 2014 PM Peak Hour Traffic Without Project.....	29
Figure 10. 2019 AM Peak Hour Traffic Without Project	32
Figure 11. 2019 PM Peak Hour Traffic Without Project.....	35
Figure 12. 2024 AM Peak Hour Traffic Without Project	38
Figure 13. 2024 PM Peak Hour Traffic Without Project.....	40
Figure 14. 2029 AM Peak Hour Traffic Without Project	43
Figure 15. 2029 PM Peak Hour Traffic Without Project.....	45
Figure 16. 2014 AM Peak Hour Traffic Assignment	51
Figure 17. 2014 PM Peak Hour Traffic Assignment	52
Figure 18. 2014 AM Peak Hour Traffic With Project	54
Figure 19. 2014 PM Peak Hour Traffic With Project.....	57
Figure 20. 2019 AM Peak Hour Traffic Assignment	59
Figure 21. 2019 PM Peak Hour Traffic Assignment	60
Figure 22. 2019 AM Peak Hour Traffic With Project	63
Figure 23. 2019 PM Peak Hour Traffic With Project.....	65

List of Figures (Cont'd.)

	<u>Page</u>
Figure 24. 2024 AM Peak Hour Traffic Assignment	68
Figure 25. 2024 PM Peak Hour Traffic Assignment	69
Figure 26. 2024 AM Peak Hour Traffic With Project	71
Figure 27. 2024 PM Peak Hour Traffic With Project	73
Figure 28. 2029 AM Peak Hour Traffic Assignment	78
Figure 29. 2029 PM Peak Hour Traffic Assignment	79
Figure 30. 2029 AM Peak Hour Traffic With Project	82
Figure 31. 2029 PM Peak Hour Traffic With Project	84

**REVISED TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU
KAILUA-KONA, NORTH KONA, HAWAII
TAX MAP KEY: (3) 7-4-021:020**

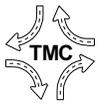
I. Introduction

A. Purpose of the Study

The purpose of this traffic study is to analyze the traffic impacts resulting from the development of the Kamakana Villages at Keahuolu in Kailua-Kona, North Kona, Hawai'i by the Hawai'i Housing Finance & Development Corporation (HHFDC). This report presents the findings and recommendations of the traffic impact analysis, and is intended to meet the requirements of Section 25-2-46 (d) of the Hawai'i County Code and comments from the State of Hawai'i Department of Transportation on Traffic Impact Analysis Report for the Proposed Kamakana Villages at Keahuolu, dated March 17, 2010, prepared by The Traffic Management Consultant. This Traffic Impact Analysis Report (TIAR) is certified as having been conducted in accordance with best practices of the engineering profession.

B. Background

HHFDC has entered into a development agreement with Forest City Hawai'i Kona, LLC to develop a mixed-use affordable housing project known as Kamakana Villages at Keahuolu. Formerly known as Keahuolu Affordable Housing Project, the Final Environmental Impact Statement – Keahuolu Affordable Housing Project was prepared by Belt Collins Hawai'i for HHFDC, and published in October, 2008. The Final Environmental Impact Statement (FEIS) evaluated three alternative conceptual plans (Concept Plans A, B and C), and included a traffic analysis of each concept plan. The Traffic Study for the Keahuolu Affordable Housing Master Plan was prepared by Fehr & Peers/Kaku Associates, dated January, 2008, and was incorporated into the FEIS. HHFDC and Forest City Hawai'i Kona LLC have selected a variation of Concept Plan C as the development plan for Kamakana Villages.



C. Scope of the Study

1. Evaluation of existing roadways and traffic conditions.
2. Development of trip generation characteristics of the proposed project.
3. Description of the project environs, relative to other proposed projects in the vicinity and relevant future and ongoing roadway improvements.
4. Evaluation of future roadway and traffic conditions without the proposed project.
5. Recommendations of traffic improvements, as necessary, that would mitigate the future highway deficiencies without the proposed project.
6. Identification and analysis of traffic impacts resulting from the development of the proposed project.
7. Recommendations of traffic improvements, as necessary, that would mitigate the traffic impacts identified in this traffic study.

D. Project Description

Kamakana Villages will consist of 2,330 single-family and multi-family dwelling units (DU), an elementary school, a charter/private school, and three separate commercial developments, totaling 197,000 square feet of gross floor area (SFGFA). The 272-acre property is identified as Tax Map Key: (3) 7-4-021:020. The project site is located on the northeast quadrant of Palani Road and the proposed Ane Keohokalole Highway. The vicinity of the proposed project is depicted on Figure 1.

More than half of the residential units at Kamakana Villages will be affordable housing units (e.g., offered for rent or sale at no more than 140 percent of the median income in the County of Hawai'i). Therefore, the development of Kamakana Villages will entail at least two times the number of affordable housing credits required under Chapter 11, Hawai'i County Code. As a result, under the Hawai'i County Code Section 25-2-46(h)(1), HHFDC/Forest City Hawai'i Kona, LLC shall not be required to perform any area mitigation traffic improvements (defined as "improvements which increase the capacity of an arterial or other major road, such as additional lanes, in the general region containing the project, or construction of a new arterial or collector road in the general area containing the project, or improvements to public transportation such as buses or park-and-ride facilities, sufficient to offset the traffic demand generated by the project.").

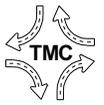


Figure 1. Location Map



The commercial developments will be located at three separate sites with retail spaces totaling 67,000 SFGFA, 32,000 SFGFA, and 98,000 SFGFA. Each development will likely be comprised of small self-standing one-, two, and three-story buildings with retail spaces on the ground floor, fronting the street; residential units on the second and third floors; and at-grade parking located behind the buildings. The commercial uses are described as neighborhood-oriented retail, such as, restaurants, dry cleaners, bakeries, coffee shops, boutiques, small grocery stores, dry goods stores, services, and office spaces.

Site access is proposed via three intersections on Ane Keohokalole Highway and three intersections on Palani Road. Full access is proposed at two of the three intersections on Ane Keohokalole Highway, while the third intersection will be restricted to right-turn-in and right-turn-out movements only. Full access is proposed at one of the three intersections on Palani Road, while the other two intersections will be restricted to right-turn-in and right-turn-out movements only.

The proposed project will be developed in six (6) phases, between the Years 2012 and 2028, beginning at the north side of the project site and progressing toward Palani Road. The development phases were consolidated into 5-year, 10-year, 15-year, and 20-year planning horizons. Table 1 summarizes the land use summary.

Table 1. Land Use Summary			
Analysis Year	Phase	Land Use	Units
2014	1	Single-Family Units	98 DU
		Condominium Units	182 DU
		Apartment Units	168 DU
		Retail	42,000 SFGFA
2019	2-3	Single-family Units	140 DU
		Condominium Units	338 DU
		Apartment Units	172 DU
		Retail	41,000 SFGFA
		School	550 Students



Table 1. Land Use Summary (Cont'd.)			
Analysis Year	Phase	Land Use	Units
2024	3-4	Single-family Units	193 DU
		Condominium Units	405 DU
		Apartment Units	20 DU
		Retail	16,000 SFGFA
		School	150 Students
2029	5-6	Single-family Units	230 DU
		Condominium Units	324 DU
		Apartment Units	60 DU
		Retail	98,000 SFGFA
Totals		Single-family Units	661 DU
		Condominium Units	1,249 DU
		Apartment Units	420 DU
		Retail	197,000 SFGFA
		Schools	700 Students

Figure 2 depicts the conceptual master plan. The Phasing Plan is depicted on Figure 3.

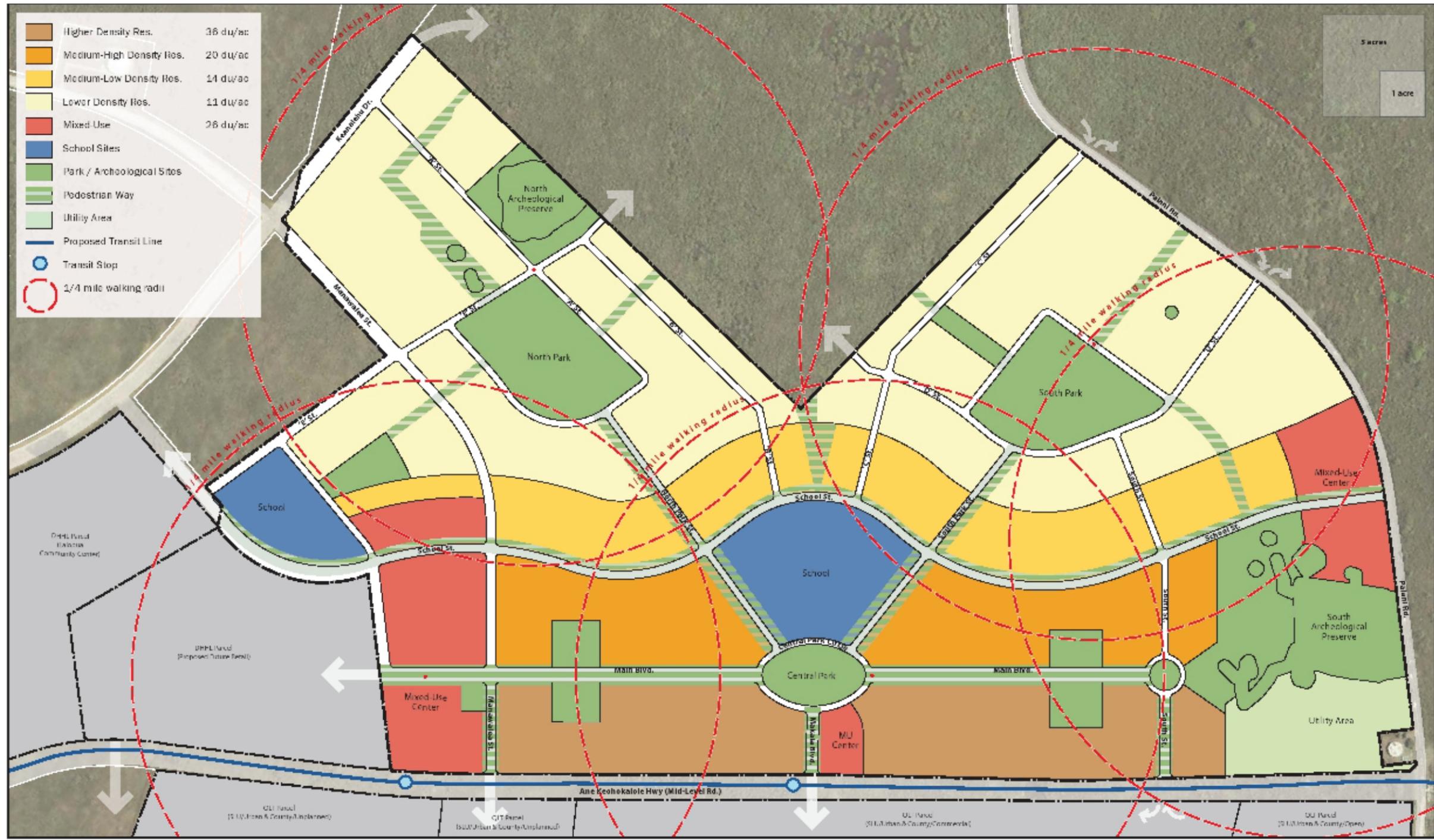
E. Environs

The Villages of La'i'opua is a residential development, which is located immediately north and east of the project site. Further to the north, the West Hawai'i Civic Center, which was under construction at this writing, will be located at the north terminus of Ane Keohokalole Highway. Kona International Airport is located about eight miles to the north of the project site. Kailua Village is located immediately to the south of the project site.

F. Methodologies

1. Capacity Analysis Methodology

The highway capacity analysis, performed for this study, is based upon procedures presented in the Highway Capacity Manual (HCM), published by the Transportation Research Board.



CONCEPT PLAN

KAMAKANA VILLAGES AT KEAHUOLU Kailua-Kona, Hawaii

November 9, 2009

Forest City Hawaii Kona, LLC
Honolulu, Hawaii

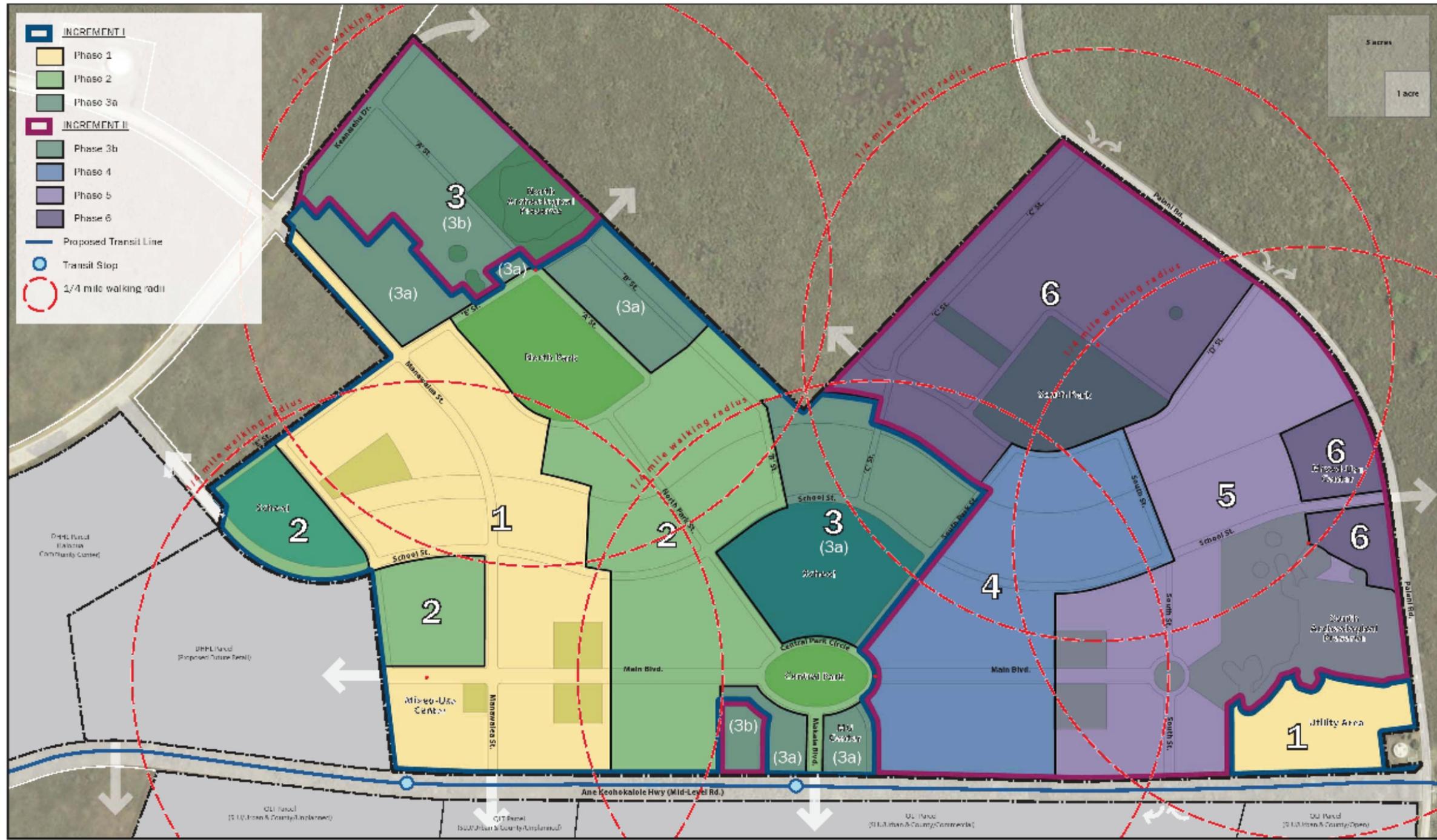
Group 70 International, Inc.
Honolulu, Hawaii

Hawaii Housing Finance and Development Corporation
Honolulu, Hawaii

Calthorpe Associates
Berkeley, California



Figure 2. Kamakana Villages at Keahuolu Conceptual Plan



PHASE and INCREMENT PLAN

KAMAKANA VILLAGES AT KEAHUOLU Kailua-Kona, Hawaii

March 11, 2010

Forest City Hawaii Kona, LLC
Honolulu, Hawaii

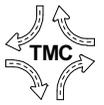
Group 70 International, Inc.
Honolulu, Hawaii

Hawaii Housing Finance and Development Corporation
Honolulu, Hawaii

Calthorpe Associates
Berkeley, California



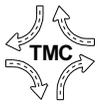
Figure 3. Kamakana Villages at Keahuolu Phasing Plan



HCM defines Level of Service (LOS) as "a quality measure describing operational conditions within a traffic stream". Several factors are included in determining LOS such as: speed, travel time, freedom to maneuver, traffic interruptions, driver comfort, and convenience. Intersection LOS is primarily based upon delay. LOS's "A", "B", and "C" are considered satisfactory Levels of Service. LOS "D" is considered to be a "minimum desirable" operating Level of Service. LOS "E" is an undesirable condition, and LOS "F" is an unacceptable condition. Where feasible, traffic improvements are proposed to mitigate LOS's "E" and "F" conditions without and with the proposed project. Table 2 summarizes the LOS criteria.

LOS	Signalized Intersections		Unsignalized Intersections	
	Delay d (sec/veh)	Description	Delay d (sec/veh)	Description
A	$d \leq 10$	Few stops, little or no delay	$d \leq 10$	Little or no delays
B	$10 < d \leq 20$	Good progression, short cycle lengths	$10 < d \leq 15$	Short delays
C	$20 < d \leq 35$	Cycle failures begin to occur, i.e., vehicles stop at more than one red phase	$15 < d \leq 25$	Average delays
D	$35 < d \leq 55$	Noticeable number of cycle failures, unfavorable progression	$25 < d \leq 35$	Long delays
E	$55 < d \leq 80$	Frequent cycle failures, poor progression, long delays	$35 < d \leq 50$	Very long delays
F	$d > 80$	Many cycle failures, high delays	$d > 50$	Extreme delays

"Volume-to-capacity" (v/c) ratio is a measure indicating the relative traffic demand to the roadway's capacity. HCM defines capacity as "the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic flow, and traffic control conditions." A v/c ratio of 0.50 indicates that the traffic demand is utilizing 50 percent of the roadway's capacity. Under signalized control, the v/c ratio refers to the maximum v/c ratio on any given traffic movement at an intersection. Worksheets for the capacity analysis, performed throughout this report, are compiled in the Appendix.



2. Trip Generation Methodology

The trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation, 8th Edition. ITE trip rates are developed by correlating the total vehicle trip generation data with various activity/land use characteristics, such as the vehicle trips per hour (vph) per dwelling unit (DU).

The trip generation characteristics for the proposed project are based upon ITE trip rates for the respective land uses envisioned for the proposed master-planned development, as well as surrounding developments. Where trip rates for certain types of land uses were not developed by ITE, trips rates for similar uses were used. The trip rates used in this analysis were derived from regression equations, developed by ITE.

The elementary school was also assumed to generate trips from within the proposed project during the AM peak hour of traffic, i.e., parents dropping off children before going to work. The PM peak hour trips generated by the elementary school were assumed to be externally generated. The AM and PM peak hour trips generated by the charter/private school also were assumed to be externally generated.

II. Existing Conditions

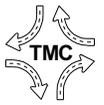
A. Area Roadway System

Queen Kaahumanu Highway is a two-way, two- to four-lane, high quality arterial highway between Kailua-Kona and Kawaihae. Queen Kaahumanu Highway is the primary arterial highway along the South Kohala and North Kona coasts. Queen Kaahumanu Highway is a four-lane divided highway between Henry Street and Kealakehe Parkway. The State Department of Transportation (DOT) is planning the second phase of the Queen Kaahumanu Highway widening, from two lanes to four lanes, between Kealakehe Parkway and the Kona International Airport Access Road.

Hina Lani Street is a two- to three-lane, two-way collector road between Queen Kaahumanu Highway and Mamalahoa Highway. Hina Lani Street is signalized at its intersections with Queen Kaahumanu Highway and Mamalahoa Highway.

Kealakehe Parkway is a two- to three-lane, two-way arterial highway between Honokohau Harbor and Keanalehu Drive. Kealakehe Parkway is signalized at its four-legged intersection with Queen Kaahumanu Highway.

The south leg of Kamanu Street is a two-lane, two-way roadway, which intersects Kealakehe Parkway at a stop-controlled Tee-intersection. The south leg of Kamanu Street terminates immediately to the north of Honokohau Street. The extension of the south leg of Kamanu Street to north leg of Kamanu Street, south of Maiau Street, is planned as part of the development of the West Hawaii Business Park.



Ane Keohokalole Highway is a two-lane, two-way roadway which extends from the future West Hawai'i Civic Center on Kealakehe Parkway to Puohulihuli Street. The County of Hawai'i will begin the construction phase of extending Ane Keohokalole Highway from Puohulihuli Street to Palani Road.

Keanalehu Street is a two-lane, two-way roadway between Kealakehe Parkway and Manawalea Street. Keanalehu Street is stop-controlled at its intersection with Kealakehe Parkway.

Makala Boulevard is a two-way, two- to four-lane collector road between Kuakini Highway and Makalapa Center. Makala Boulevard intersects Queen Kaahumanu Highway at a four-legged signalized intersection. The Queen Liliuokalani Trust Master Plan includes the extension of Makala Boulevard to Ane Keohokalole Highway.

Palani Road is a two-way, two- to four-lane roadway, between Kuakini Highway and Mamalahoa Highway. Palani Road is signalized at Henry Street, and at Queen Kaahumanu Highway. Palani Road also was recently signalized at its intersection with Kealakaa Street/Palihiolo Street.

Kamakaeha Avenue is a two-way, two-lane roadway between Palani Road and Makala Boulevard. Kamakaeha Avenue is stop-controlled at its Tee-intersection with Palani Road. The left-turn movement from mauka bound (eastbound) Palani Road onto Kamakaeha Avenue is prohibited.

Henry Street is a two-way, four-lane divided roadway between Palani Road and Kuakini Highway. Henry Street is signalized at Palani Road and at Queen Kaahumanu Highway.

Kealakaa Street is a two-lane, two-way roadway between Palani Road and Manawalea Street. Kealakaa Street has been realigned to intersect Palani Road opposite Palihiolo Street.

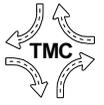
Uluaoa Street is a two-way, two-lane roadway between Palani Road and Kealakaa Street. Uluaoa Street is stop-controlled at its Tee-intersection with Palani Road. Uluaoa Street is part of a heavily used route between Mamalahoa Highway and the Kealakehe area, which includes Kealakaa Street and Manawalea Street.

B. Existing Traffic Volumes and Operating Conditions

1. Field Investigation

The field investigation was conducted on September 22-23, 2009, October 22, 2009, February 8-9, 2010, April 20-21, 2010, and May 17-18, 2010 during the morning peak period of traffic between the hours of 6:00 AM and 9:00 AM, and during the afternoon peak period of traffic between the hours of 3:00 PM and 6:00 PM. The following intersections were surveyed:

- a. Queen Kaahumanu Highway and Hina Lani Street



- b. Mamalahoa Highway and Hina Lani Street
- c. Queen Kaahumanu Highway and Kealakehe Parkway
- d. Kealakehe Parkway and Kamanu Street
- e. Kealakehe Parkway and Ane Keohokalole Highway
- f. Kealakehe Parkway and Keanalehu Street
- g. Queen Kaahumanu Highway and Makala Boulevard
- h. Queen Kaahumanu Highway and Palani Road
- i. Queen Kaahumanu Highway and Henry Street
- j. Palani Road and Kamakaeha Avenue
- k. Palani Road and Henry Street
- l. Palani Road and Kealakaa Street
- m. Palani Road and Uluaoa Street

2. Existing AM Peak Hour Traffic

The existing AM peak hour of traffic occurred from 7:15 AM to 8:15 AM. The AM peak hour traffic volumes on Queen Kaahumanu Highway ranged from 1,400 vehicles per hour (vph) to 2,000 vph, total for both directions. Mauka of Henry Street, Palani Road carried about 1,700 vph, total for both directions. Mamalahoa Highway carried about 1,400 vph, total for both directions.

Queen Kaahumanu Highway and Hina Lani Street operated at LOS "B" with a maximum v/c ratio of 0.74. The traffic movements at the intersections operated at LOS "C" or better, during the existing AM peak hour of traffic.

The intersection of Mamalahoa Highway and Hina Lani Street operated at LOS "B" with a maximum v/c ratio of 0.81. The left-turn movement from eastbound (mauka bound) Hina Lani Street onto Mamalahoa Highway operated at LOS "D". The other traffic movements at the intersection operated at satisfactory Levels of Service, i.e., LOS "C" or better.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway operated at LOS "C" with a maximum v/c ratio of 0.86, during the existing AM peak hour of traffic. The shared left-turn/through movement on westbound (makai bound) Kealakehe Parkway operated at LOS "E". The other traffic movements at the intersection operated at satisfactory Levels of Service.

Kamanu Street operated at LOS "D" at Kealakehe Parkway, during the existing AM peak hour of traffic. The intersection of Kealakehe Parkway and Ane



Keohokalole Highway operated at satisfactory Levels of Service. Kealakehe Parkway and Keanalehu Street operated at LOS "A", during the existing AM peak hour of traffic.

The Queen Kaahumanu Highway and Makala Boulevard intersection also operated at LOS "C" with a maximum v/c ratio of 0.58. The left-turn movements in both directions on Queen Kaahumanu Highway and on makai bound Makala Boulevard operated at LOS "D". The other traffic movements at the intersection operated at satisfactory Levels of Service, during the existing AM peak hour of traffic.

The intersection of Queen Kaahumanu Highway and Palani Road operated at LOS "C" with a maximum v/c ratio of 0.62, during the existing AM peak hour of traffic. The left-turn movement on all approaches to the intersection operated at LOS "D". The other traffic movements at the intersection operated at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Henry Street operated at LOS "C" with a maximum v/c ratio of 0.72. The left-turn movements on all approaches to the intersection operated at LOS "D". The mauka bound through movement on Henry Street also operated at LOS "D". The other traffic movements at the intersection operated at satisfactory Levels of Service, during the existing AM peak hour of traffic.

The Palani Road and Henry Street intersection operated at capacity (maximum v/c=1.00) and at LOS "C", during the existing AM peak hour of traffic. The dominant traffic movements were between Henry Street and the mauka leg of Palani Road. The left-turn movement from makai bound Palani Road onto Henry Street operated at LOS "D". The other traffic movements at the intersection operated at satisfactory Levels of Service.

Kamakaeha Avenue operated at LOS "B" at Palani Road during the existing AM peak hour of traffic. Kealakaa Street was stop-controlled at its intersection with Palani Road, during the field investigation. Palihilo Street was closed during the field investigation. Kealakaa Street operated at LOS "F" at Palani Road during the existing AM peak hour of traffic. The left-turn movement from northbound Palani Road onto Kealakaa Street resulted in periodic queuing on Palani Road. Uluaoa Street also operated at LOS "F" at Palani Road during the existing AM peak hour of traffic. Figure 4 depicts the existing AM peak hour traffic volumes.

3. Existing PM Peak Hour Traffic

The existing PM peak hour of traffic occurred between 3:30 PM and 4:30 PM. The PM peak hour traffic volumes on Queen Kaahumanu Highway ranged from 1,800 vph to 2,400 vph, total for both directions. Mauka of Henry Street, Palani Road carried about 1,700 vph, total for both directions. Mamalahoa Highway carried about 1,300 vph, total for both directions.

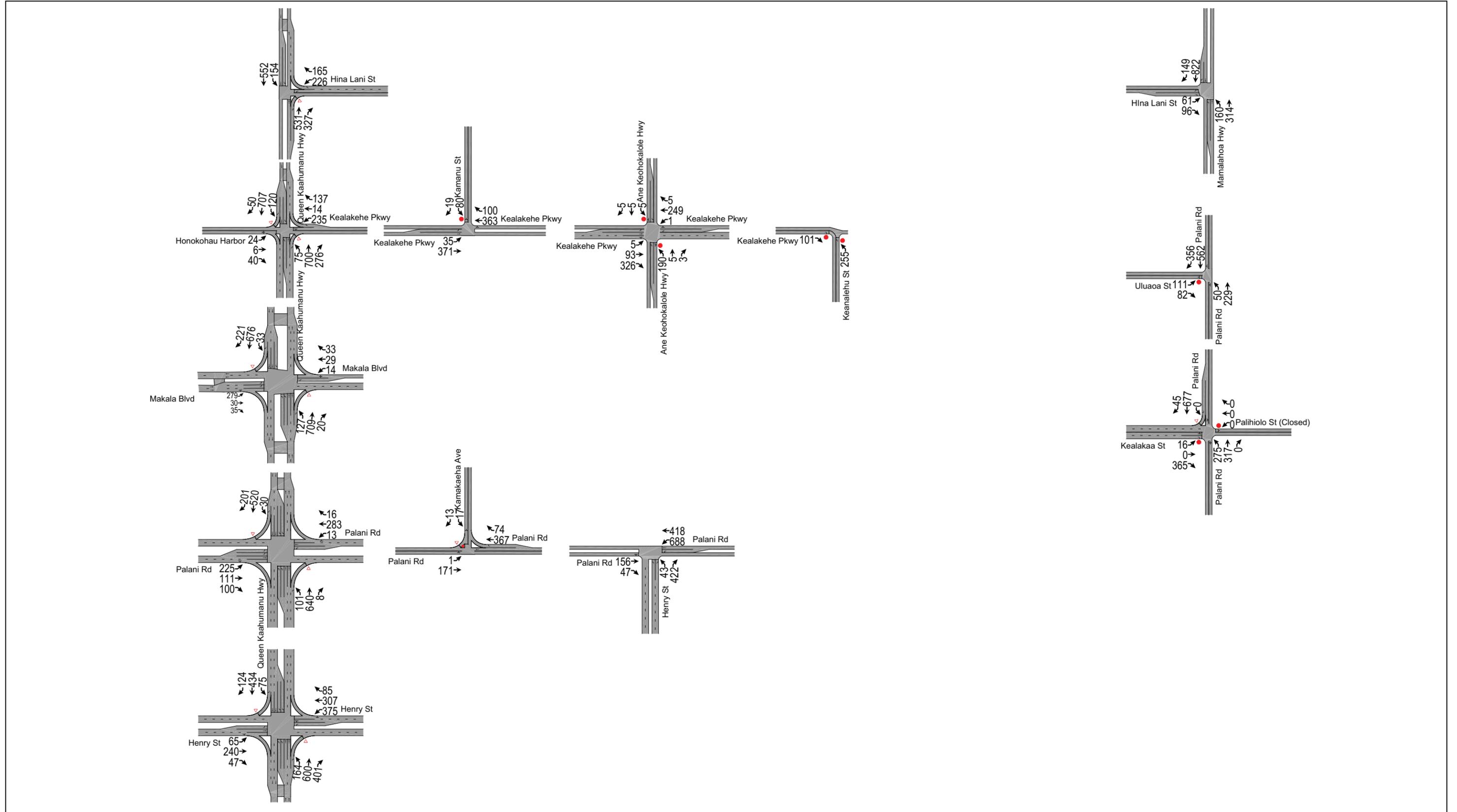


Figure 4. Existing AM Peak Hour Traffic



The intersection of Queen Kaahumanu Highway and Hina Lani Street operated at LOS "C" with a v/c ratio of 0.84. The left-turn movements on makai bound Hina Lani Street and southbound Queen Kaahumanu Highway operated at LOS "D".

Mamalaho Highway and Hina Lani Street operated at LOS "B" with a maximum v/c ratio of 0.78. The traffic movements at the intersection operated at satisfactory Levels of Service, during the existing PM peak hour of traffic.

The Queen Kaahumanu Highway and Kealakehe Parkway intersection operated at capacity (maximum v/c = 1.16) and at LOS "E", during the existing PM peak hour of traffic. The left-turn movement on northbound Queen Kaahumanu Highway and the shared left-turn/through movement on makai bound Kealakehe Parkway operated at LOS "F". The southbound through movement on Queen Kaahumanu Highway and the mauka bound approach of Kealakehe Parkway operated at LOS "E".

Kamanu Street operated at LOS "C" at Kealakehe Parkway, during the existing PM peak hour of traffic. The Kealakehe Parkway and Ane Keohokalole Highway intersection operated at satisfactory Levels of Service. The intersection of Kealakehe Parkway and Keanalehu Street operated at LOS "A".

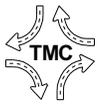
Queen Kaahumanu Highway and Makala Boulevard operated at LOS "D" with a maximum v/c ratio of 0.89, during the existing PM peak hour of traffic. The left-turn movements on northbound Queen Kaahumanu Highway and on makai bound Makala Boulevard operated at LOS "E". The shared through/right-turn movements in both directions on Makala Boulevard at Queen Kaahumanu Highway also operated at LOS "E".

The intersection of Queen Kaahumanu Highway and Palani Road operated at LOS "C" with a maximum v/c ratio of 0.84. The left-turn movements on northbound Queen Kaahumanu Highway and mauka bound Palani Road operated at LOS "E", during the existing PM peak hour of traffic.

During the existing PM peak hour of traffic, the intersection of Queen Kaahumanu Highway and Henry Street operated at LOS "D" with a maximum v/c ratio of 0.80. The left-turn movements in both directions on Queen Kaahumanu Highway operated at LOS "E". The shared left-turn/through movement on mauka bound Henry Street also operated at LOS "E".

The Palani Road and Henry Street intersection operated at LOS "C" with a maximum v/c ratio of 0.93. Mauka bound Palani Road operated at LOS "D", during the existing PM peak hour of traffic. The other traffic movements at the intersection operated at satisfactory Levels of Service.

Kamaka Avenue operated at LOS "C" at Palani Road during the existing PM peak hour of traffic. The left-turn movement from Kealakaa Street onto Palani Road operated at LOS "F" under unsignalized control. The left-turn movement from northbound Palani Road onto Kealakaa Street resulted in periodic queuing on Palani



Road. Uluaoa Street also operated at LOS "F" at Palani Road. The existing PM peak hour traffic volumes are depicted on Figure 5.

III. Future Highway Improvements

A. Queen Kaahumanu Highway Widening

The State of Hawai'i Department of Transportation (DOT) recently completed the first phase of the widening of Queen Kaahumanu Highway from a two-lane highway to a four-lane, divided highway from Henry Street to Kealakehe Parkway. DOT is continuing with the second phase of the Queen Kaahumanu Highway widening from Kealakehe Parkway to the Kona International Airport Access Road. According to DOT, the second phase of the Queen Kaahumanu Highway widening will be completed by the Year 2014.

B. Kamanu Street Extension

The extension of Kamanu Street is planned as part of the development of the future West Hawaii Business Park. For the purpose of this analysis, it was assumed that Kamanu Street would be extended during the initial development of the West Hawaii Business Park by the Year 2019. The completed Kamanu Street would provide access between Hina Lani Street and Kealakehe Parkway.

C. Ane Keohokalole Highway

The County of Hawai'i is in the construction bidding process of Phases 1 and 1A of Ane Keohokalole Highway, also known as the Mid-Level Road. The Final Environmental Assessment for the Ane Keohokalole Mid-Level Highway Project was prepared by Belt Collins Hawai'i and accepted in November, 2009. The County of Hawai'i will construct the first phase of Ane Keohokalole Highway using Federal Stimulus Funding. The first phase of Ane Keohokalole Highway will be constructed as a two-way, two- to four-lane roadway from its existing south terminus at Puohulihuli Street to Palani Road, opposite Henry Street. A 1,000± foot long, four-lane segment of Phase 1 of the Ane Keohokalole Highway is expected to be constructed between Palani Road and the future South Street. The two-lane segment of the extension of Ane Keohokalole Highway will provide for median left-turn lanes at future intersections with Manawalea Street and Makala Boulevard. Phase 1A of the Ane Keohokalole Highway project also will include the widening of Palani Road between Ane Keohokalole Highway/Henry Street and Kamakaeha Avenue to include exclusive left-turn lanes on mauka bound Palani Road at Ane Keohokalole Highway and at Kamakaeha Avenue.

Ane Keohokalole Highway will ultimately be constructed as a four-lane divided arterial roadway with a 120-foot right-of-way. For the purpose of this traffic impact analysis, it was assumed that a two-way, two-lane Ane Keohokalole Highway would be constructed from Puohulihuli Street to Palani Road by the Year 2014. Furthermore, it was assumed that Phase 2 of the two-lane Ane Keohokalole Highway would be constructed between Kealakehe Parkway and Hina Lani Street by the Year 2019.

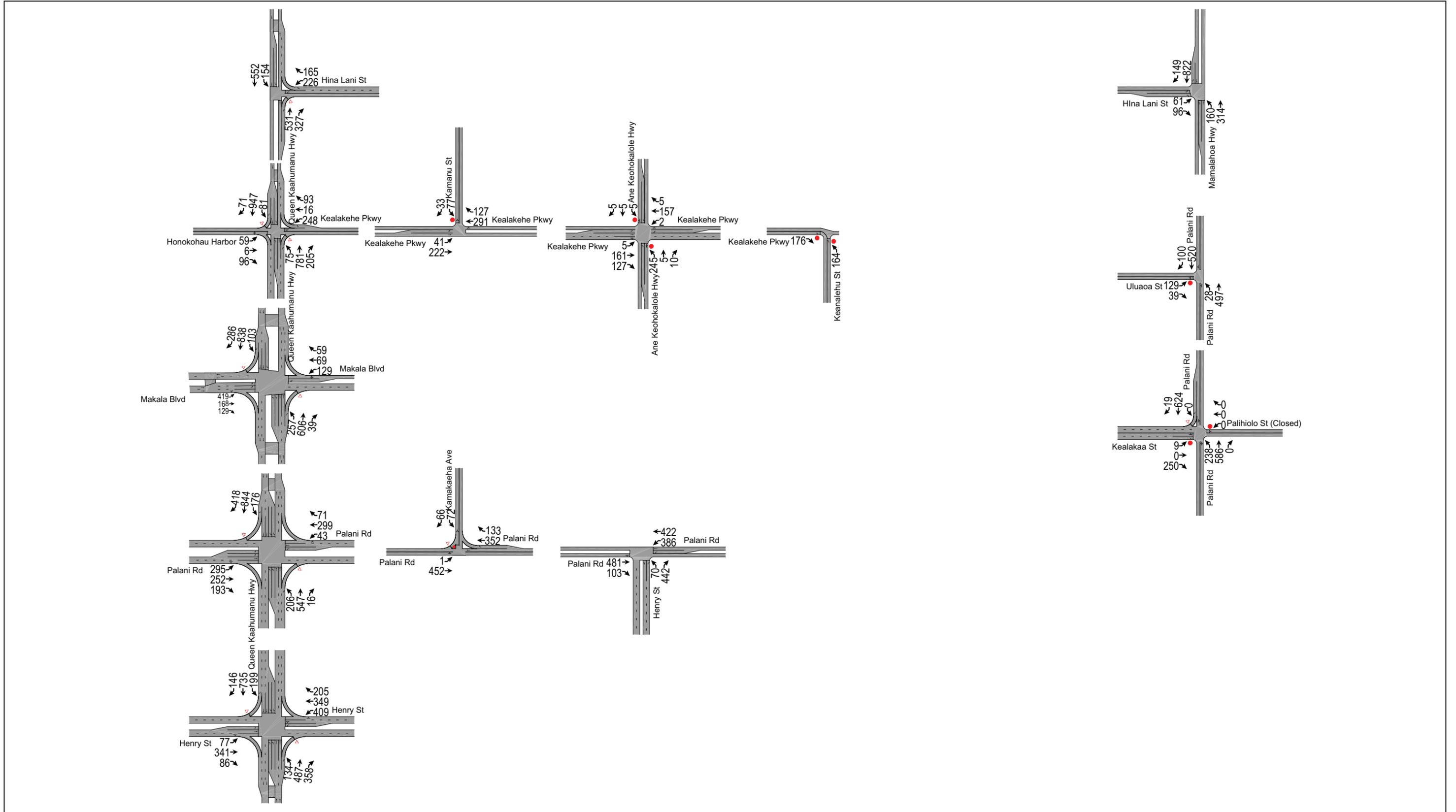
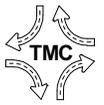


Figure 5. Existing PM Peak Hour Traffic



D. Kealakehe Parkway

The first phase of the Kealakehe Parkway has been completed, as part of the development of the State of Hawai'i Villages of La'i'opua. The mauka portion of Kealakehe Parkway provides access to the initial phases of the Villages of La'i'opua and Kealakehe High School. The east terminus of Kealakehe Parkway will be extended to provide access to the future Honokohau Village. The future extension of Kealakehe Parkway to Palani Road/Mamalaho Highway is not included in this traffic impact analysis. Figure 6 depicts the planned roadway network within the study area.

IV. Future Peak Hour Traffic

A. Regional Development

The traffic generated by the potential future developments in the region was added to the existing peak hour traffic demands to estimate future traffic conditions without the proposed Kamakana Villages project. In addition to the traffic generated by future developments, a background growth rate of 0.5 percent per year was uniformly applied to the existing traffic demands to account for infill development in the region.

The future development in the region between the Kona International Airport and Kailua Village was analyzed by Hallstrom & Associates. The demand for future commercial and light industrial development in Kona will be a direct function of an increasing West Hawaii population within a growing Big Island economy. More consumers, with rising incomes, will generate a need for new and expanding businesses. The additional regional and localized demand over coming decades can be estimated using State and County resident and visitor population forecasts, coupled with the projected number of households/persons within approved residential and mixed-use projects proposed for the study region. The demand for commercial and industrial building sites and finished floor space will flow to existing and approved Kona subdivisions. The demand figures were then allocated between the identified commercial and industrial projects in the area on an unweighted, pro rata basis during the envisioned Kamakana Villages construction period. Trip generation characteristics were quantified using these regional build-out assumptions.

B. Future Development

1. Villages of La'i'opua

The State of Hawai'i Department of Hawaiian Homelands (DHHL) is continuing its development of the Villages of La'i'opua in Kealakehe, North Kona, Hawai'i. For the purpose of this analysis, 500 additional single-family dwelling units are assumed to be developed within the time frame of this traffic study at a rate of about 25 dwelling units per year. The Villages of La'i'opua are included in this traffic impact analysis.

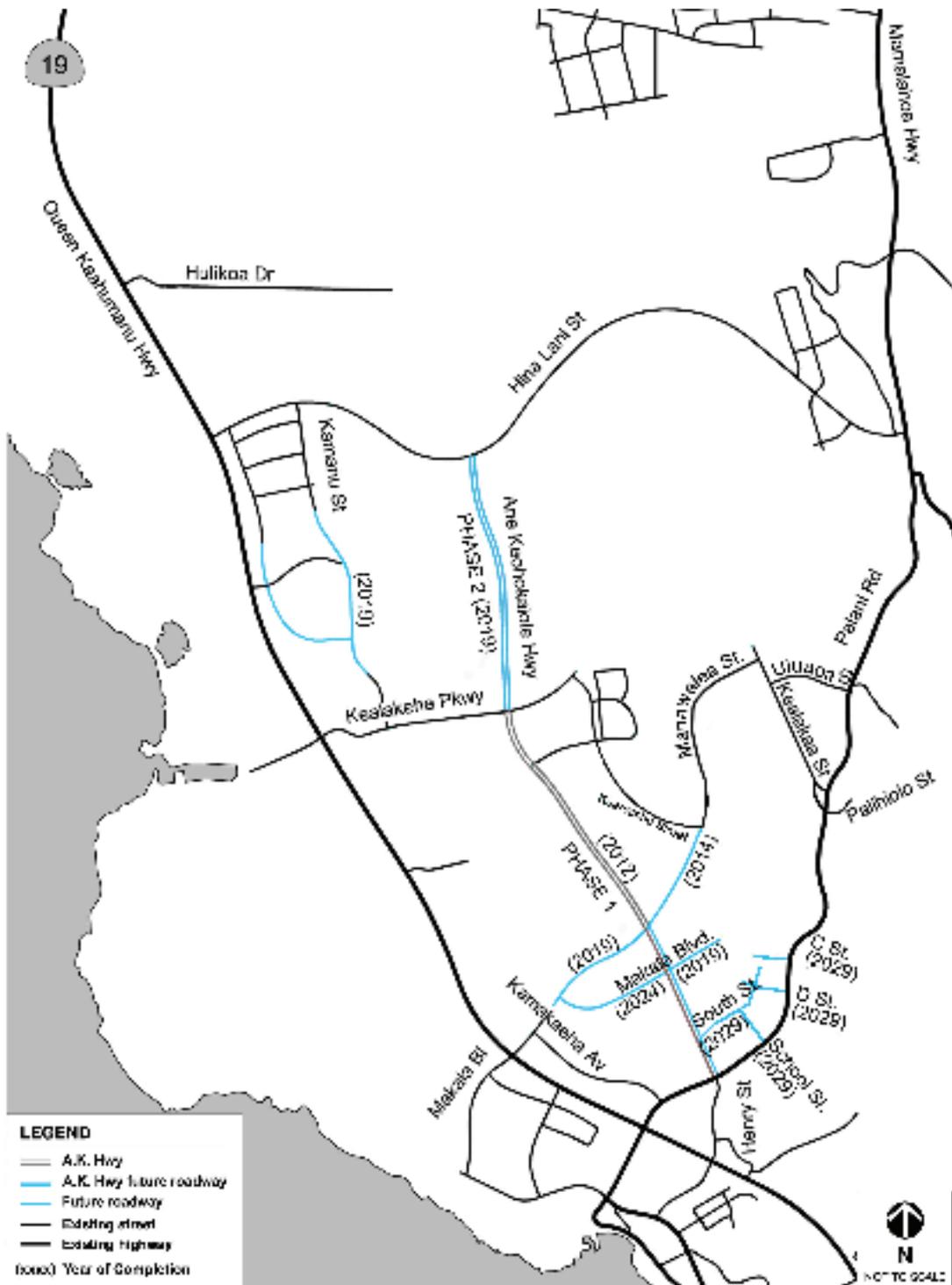


FIGURE 6. FUTURE ROADWAY NETWORK

Source: John & Barry, Inc. (2009). Traffic Impact Analysis Report for the Proposed Ane Kauhakaha Highway Extension.



The Villages of La'i`opua also will include a commercial center, which is planned on the north side of Kealakehe Parkway, mauka (east) of Kamanu Street. The regional marketing analysis estimated that about 62,500 SFGFA of commercial space would be developed within the time frame of this study. The La'i`opua commercial center is included in this traffic impact analysis.

2. Kaloko Industrial Park

Kaloko Industrial Park is being expanded in the mauka direction of the existing Phases I and II. The Traffic Impact Report for the Kaloko Industrial Park Phases III and IV, dated May, 2000, was prepared for TSA International, Ltd. by Wilson Okamoto & Associates (WOA). Approximately 102.3 acres are planned for mixed commercial and light industrial uses, which will be located mauka of the existing light industrial subdivision. The regional marketing analysis estimated that about 24,000 SFGFA of commercial space and 188,000 SFGFA of light industrial space would be developed by the Year 2019. The Kaloko Industrial Park is included in this traffic impact analysis.

3. West Hawai`i Business Park

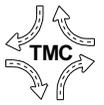
Lanihau Partners is planning the development of a mixed commercial/industrial 280-acre site on the mauka side of Queen Kaahumanu Highway, directly across from the Kaloko-Honokohau National Historic Park. The Traffic Management Consultant (TMC) prepared the Traffic Impact Analysis Report for the Proposed Kaloko-Honokohau Business Park, dated January 9, 2001. The Lanihau project has since been renamed West Hawai`i Business Park (WHBP). TMC prepared the Traffic Impact Analysis Report Update for the Proposed West Hawai`i Business Park, dated February 23, 2007.

The regional marketing analysis estimated that about 105,000 SFGFA of commercial space and 480,000 SFGFA of light industrial space would be developed in WHBP within the time frame of this study. The West Hawaii Business Park is included in this traffic impact analysis.

4. West Hawai`i Civic Center

The West Hawai`i Civic Center was under construction at this writing. The Traffic Impact Analysis Report – West Hawai`i Civic Center was prepared by M&E Pacific, Inc., dated November, 2006. The West Hawai`i Civic Center will be located on the northwest corner of the intersection of Kealakehe Parkway and Ane Keohokalole Highway. The West Hawai`i Civic Center will include: buildings for 22 County of Hawai`i agencies and the State of Hawai`i Department of Health, totaling about 85,000 SFGFA.

The M&E traffic study estimated that the West Hawai`i Civic Center will generate 221 vph, during the AM peak hour of traffic, and 285 vph, during the PM peak hour of traffic. The trip generation analysis and traffic assignment developed for the West



Hawai`i Civic Center project were adopted for use in this traffic impact analysis. The M&E study is considered to be conservative since it analyzed a 100,000 SFGFA Civic Center.

5. Queen Lili`uokalani Trust Lands (QLT)

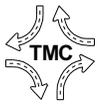
The Transportation Analysis Keahuolu Lands Development, prepared by Wilbur Smith Associates (WSA) in August, 1990, was attached in Liliuokalani Trust Keahuolu Lands Final Environmental Impact Statement, prepared by Belt Collins & Associates, dated October, 1990. The QLT property consisted of a 1,135-acre property in the Keahuolu ahupua`a, which is generally situated between the Old Kona Airport Park to the east, Palani Road to the west, the Kealakehe Landfill to the north, and the intersection of Queen Kaahumanu Highway and Palani Road to the south. The proposed QLT master plan included affordable housing, a regional shopping center, a business and financial center, and a civic center.

To date, the Makalapua Center, Kona Commons, and the Makalapua Business Center have been developed, totaling about 550,000 SFGFA. The Makalapua Center is located at the mauka end of Makala Boulevard and contains Macy's and Kmart. Kona Commons and Makalapua Business Center are located on both sides of the makai leg of Makala Boulevard, makai of Queen Kaahumanu Highway, and contains Target and Sports Authority. The affordable housing component of the QLT master plan has been transferred to the State of Hawai`i and is the subject of this traffic impact analysis. QLT is currently revising its master plan, which was not available for the preparation of this traffic impact analysis.

The regional marketing analysis estimated that about 33,000 SFGFA of commercial space and 247,000 SFGFA of light-industrial space will be developed on within the time frame of this study. The development of the QLT Lands is included in this traffic impact analysis. It was further assumed that the development of QLT Lands would include the extension an internal roadway from Makala Boulevard to the future Ane Keohokalole Highway opposite the planned extension of Manawalea Street by the Year 2019, and the extension of Makala Boulevard to Ane Keohokalole Highway by the Year 2024.

6. Lanihau Shopping Center - Phase II

The proposed Phase II of the Lanihau Shopping Center will be situated on both sides of Henry Street and makai of Queen Kaahumanu Highway. The development of the proposed shopping center has since been halted. The regional marketing analysis estimated about 237,500 SFGFA of commercial space in Phase II of the Lanihau Shopping Center will be developed within the time frame of this study. Lanihau Shopping Center Phase II is included in this traffic impact analysis.



7. Mohala Kona Village

The Mohala Kona Village is situated between the Mohala Commercial Village (Lowes Home Improvement Center) and Crossroad Shopping Center (Wal-Mart and Safeway) on Henry Street. The regional marketing analysis estimated that that about 50,000 SFGFA of commercial space will be developed within the time frame of this study. The Mohala Kona Village is included in this traffic impact analysis.

8. Kaloko Heights

Kaloko Heights is a proposed residential development located on Hina Lani Street, mauka of Kamanu Street. It is estimated that about 641 single-family dwelling units and 129 multi-family dwelling units will be developed within the time frame of this study. Kaloko Heights is included in this traffic impact analysis.

9. Kona 327 LLC

Kona 327 LLC also known as Kona View Estates is a 327-acre large lot subdivision, which is located on the mauka end of Hina Lani Street. It is estimated that 269 single-family dwelling units will be developed on large agricultural lots within the time frame of this study. Kona View Estates are included in this traffic impact analysis.

10. Kula Nei

The Shopoff Group is developing the Kula Nei project, which will be located on Hamo Street, which intersect Mamalahoa Highway, south of Kaiminani Drive. It is estimated that 270 single-family dwelling units would be developed within the time frame of this study. Kula Nei is included in this traffic impact analysis.

11. Honokohau Village

Honokohau Village is planned by Lanihau Partners, LLC, which will be located north of Kealakehe Parkway and mauka (east) of the future Ane Keohokalole Highway. It is estimated that a total of 920 single-family dwelling units would be developed within the time frame of this study. Honokohau Village is included in this traffic impact analysis.

12. Shores of Kohanaiki

Discovery Land Company is planning the development of the Shores of Kohanaiki, an oceanfront and golf course community on 450 acres of property, which would be located on the makai (west) side of Queen Kaahumanu Highway, about 0.75 mile north of Hina Lani Street. It is estimated that 500 single-family dwelling units would be developed within the time frame of this study. The Shores of Kohanaiki development is included in this traffic impact analysis.



13. Kohanaiki Business Park

Kohanaiki Business Park is located on the mauka (east) side of Queen Kaahmanu Highway, about 0.75 mile north of Hina Lani Street. The regional marketing analysis estimated that that about 18,000 SFGFA of commercial space and 142,000 SFGFA of light industrial space will be developed within the time frame of this study. Kohanaiki Business Park is included in this traffic impact analysis.

14. Palani Ranch

The Palani Ranch property is located on both sides of Mamalahoa Highway/Palani Road. It is estimated that 160 single-family dwelling units would be developed on the makai portion of the property within the time frame of this study. Palani Ranch is included in this traffic impact analysis.

15. Lokahi Makai

Lokahi Makai is a 126-acre residential subdivision, which is located to the south of Kaiminani Drive. It is estimated that 191 single-family dwelling units would be developed within the time frame of this study. Lokahi Makai is included in this traffic impact analysis.

16. `O`oma Beachside Village

`O`oma Beachside Village is a planned community, which will be located on makai (west) side of Queen Kaahumanu Highway, between the Natural Energy Laboratory of Hawaii facility and Kohanaiki Business Park. It is estimated that 420 single-family dwelling units and 530 multi-family dwelling units would be developed within the time frame of this study. `O`oma Beachside Village is included in this traffic impact analysis.

17. Palamanui

Hiluhilu Development, LLC is planning the development of a university community on 725 acres of land, located on the mauka (east) side of Queen Kaahumanu Highway, north of the Kona International Airport. It is estimated that 600 single-family dwelling units and 245 multi-family dwelling units would be developed within the time frame of this study. Palamanui is included in this traffic impact analysis.

18. Makalei Estates

Makalei Estates is located on the makai (west) side of Mamalahoa Highway, about 3 miles north of Kaiminani Drive. It is estimated that 77 single-family dwelling units would be developed within the time frame of this study. Makalei Estates are included in this traffic impact analysis. The locations of future projects planned within the region are depicted on Figure 7.

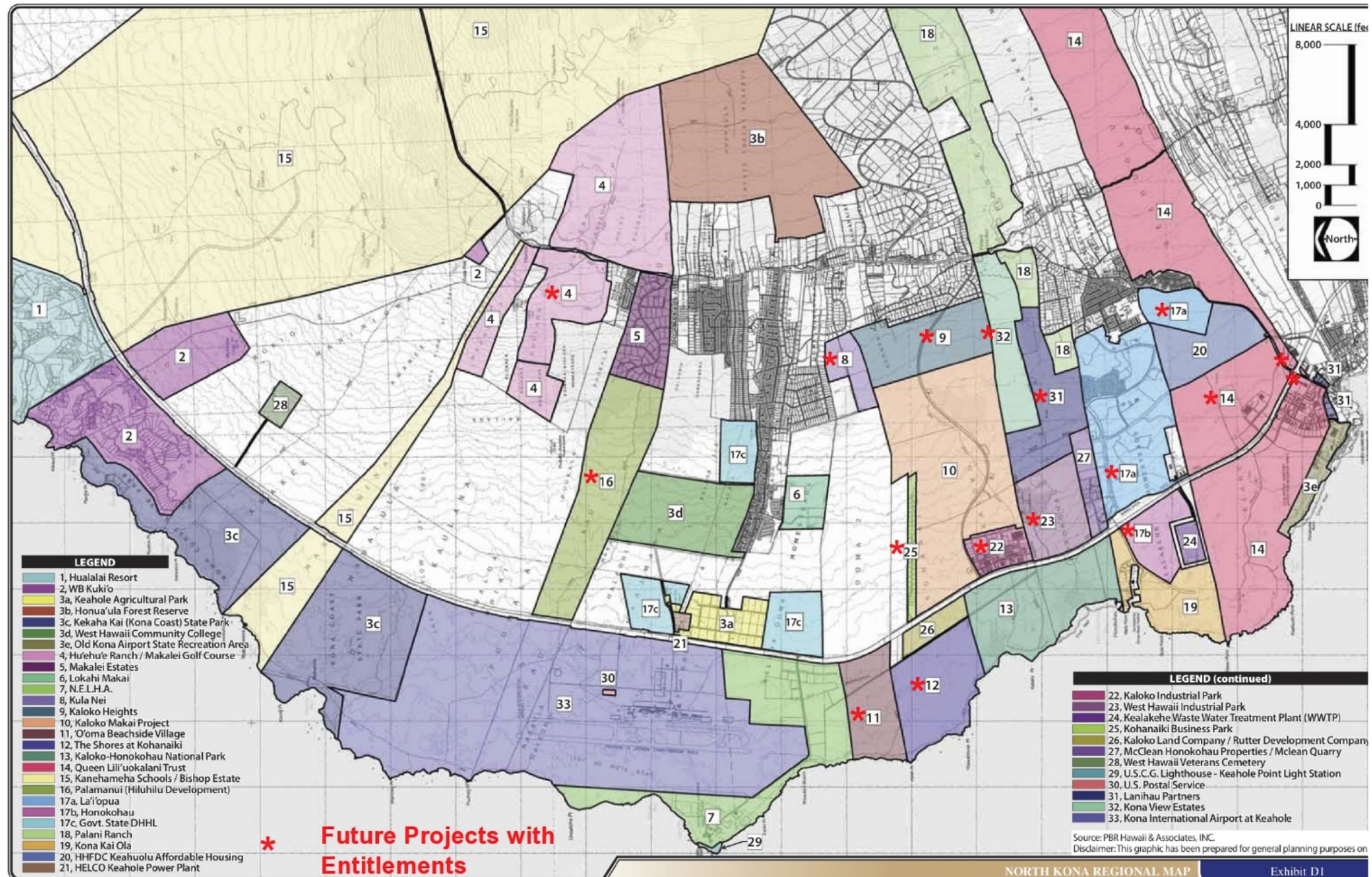
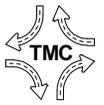


Figure 7. Future Residential, Commercial and Light Industrial Projects With Entitlements



19. Other Projects (Not Included in Analysis)

Other future projects, which include Hualalai Village, Kai Maluna, and the Betsill Bros. multi-family development at Hualalai, are located about 6 miles north of Kona International Airport, well outside the study area for this traffic impact analysis.

Projects to the south of Kailua Village include Kona Seacrest, KKO Oasis, Puaa, Hale Nanea, University of the Nations, and Hokulia, which are located outside the study area for this traffic impact analysis.

Ongoing projects, nearing completion, include Pualani Estates, Kukio Bay Beach Club, Nanea Golf Course, and Ali'i Cove. These projects are assumed to be accounted for under the existing traffic conditions. The development of the Rutter affordable housing project, which was to be located across Palani Road, has ceased, with no future plans for development.

C. Year 2014 Peak Hour Traffic Analysis Without Project

1. Year 2014 Roadway Network

The widening of Queen Kaahumanu Highway, from two lanes to four lanes between Kealakehe Parkway and the Kona International Airport Access Road, is expected to be completed by the Year 2014 by the State Department of Transportation.

The initial phase of the two-way, two- to four-lane Ane Keohokalole Highway from Puohulihuli Street to Palani Road, and the widening of Palani Road from Ane Keohokalole Highway/Henry Street to Kamakaeha Avenue are expected to be completed by the County of Hawai'i by the Year 2014. The baseline roadway conditions without the proposed project include the following improvements on Ane Keohokalole Highway/Henry Street, which are part of the Hawai'i County's initial phase of the Ane Keohokalole Highway project:

- Mauka bound Palani Road will be widened to provide an exclusive left-turn lane to Ane Keohokalole Highway.
- Mauka bound Palani Road will be widened to provide an exclusive right-turn lane to Henry Street.
- The southbound approach of Ane Keohokalole Highway at Palani Road will provide an exclusive left-turn lane, a through-only lane, and a shared through/right-turn lane.
- The north leg of Ane Keohokalole Highway at Palani Road will provide two lanes in each direction up to the future South Street.
- Henry Street will be restriped to provide a shared left-turn/through lane and a shared right-turn/through lane at Palani Road.



- The traffic signal phasing will be modified to provide protected-permissive left-turn phases on all approaches to the intersection of Palani Road and Ane Keohokalole Highway/Henry Street.
- A median lane will be provided for left-turn lanes on Ane Keohokalole Highway at the future extensions of Makala Boulevard and Manawalea Street.

2. Year 2014 AM Peak Hour Traffic Analysis Without Project

During the Year 2014 AM peak hour of traffic without the proposed project, the intersection of the planned four-lane Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.87, with the planned widening of Queen Kaahumanu Highway. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "D".

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.84. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

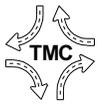
During the Year 2014 AM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "B" with a maximum v/c ratio of 0.72. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamanu Street is expected to operate at LOS "D", during the Year 2014 AM peak hour of traffic without the proposed project. The left-turn movement from northbound Ane Keohokalole Highway onto Kealakehe Parkway is expected to operate at LOS "F", under unsignalized control. The intersection of Kealakehe Parkway and Keanalehu Street is expected to operate at LOS "A".

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.57. The left-turn movements in all approaches to the intersections are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service, during the Year 2014 AM peak hour of traffic without the proposed project.

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.64, during the Year 2014 AM peak hour of traffic without the proposed project. The left-turn movements on northbound Queen Kaahumanu Highway and makai bound Palani Road are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.82. Henry Street is expected to operate at LOS "D" in both directions at Queen Kaahumanu Highway. The left-turn movements on northbound and southbound Queen Kaahumanu Highway are expected



to operate at LOS "D". The through movements in both directions on Henry Street and on southbound Queen Kaahumanu Highway also are expected to operate at LOS "D", during the Year 2014 AM peak hour of traffic without the proposed project.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.81, during the Year 2014 AM peak hour of traffic without the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamakaeha Avenue is expected to operate at LOS "B" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.94 under signalized control. Kealakaa Street is expected to operate at LOS "D". Uluaoa Street is expected to operate at LOS "F" at Palani Road under unsignalized control. Figure 8 depicts the Year 2014 AM peak hour traffic without the proposed project.

3. Year 2014 PM Peak Hour Traffic Analysis Without Project

Queen Kaahumanu Highway and Hina Lani Street are expected to operate at LOS "C" with a maximum v/c ratio of 0.91. The left-turn movements to and from Queen Kaahumanu at Hina Lani Street, and the through movement on northbound Queen Kaahumanu Highway are expected to operate at LOS "D".

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.83. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

During the Year 2014 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at a LOS "C" with a maximum v/c ratio of 0.80. The shared through/left-turn movement on makai bound Kealakehe Parkway and the left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "D".

Kamanu Street is expected to operate at LOS "C", during the Year 2014 PM peak hour of traffic without the proposed project. The left-turn movement from northbound Ane Keohokalole Highway onto Kealakehe Parkway is expected to operate at LOS "F", under unsignalized control. The intersection of Kealakehe Parkway and Keanalehu Street is expected to operate at LOS "A".

The intersection of Queen Kaahumanu Highway and Makala Boulevard is expected to operate at LOS "D" with a maximum v/c ratio of 0.83, during the Year 2014 PM peak hour of traffic without the proposed project. The left-turn movement on mauka bound Makala Boulevard and the shared through/right-turn movements on makai bound Makala Boulevard are expected to operate at LOS "E". The left-turn movement on northbound Queen Kaahumanu Highway also is expected to operate at LOS "E".

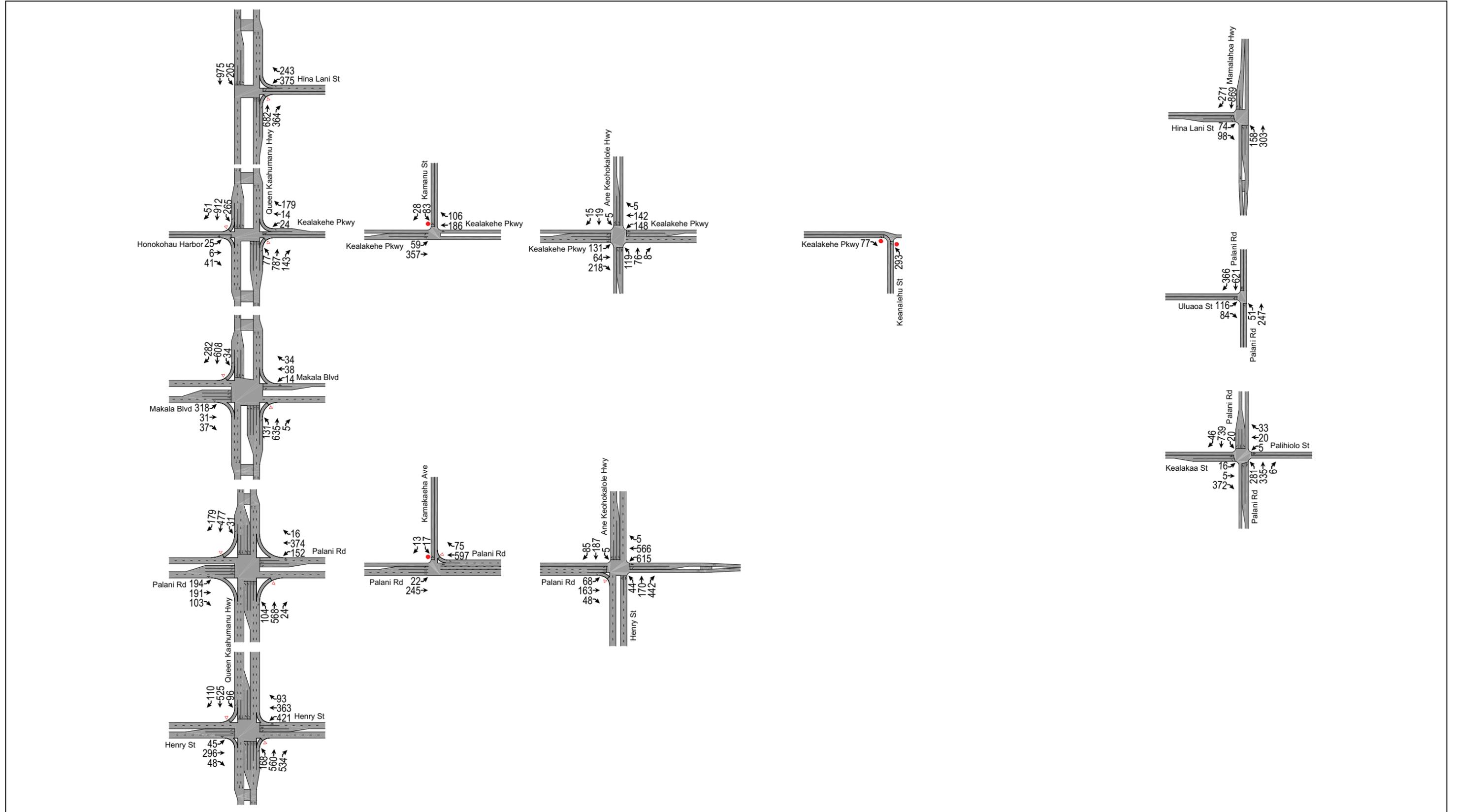
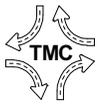


Figure 8. Year 2014 AM Peak Hour Traffic Without Project



During the Year 2014 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.98. The left-turn movement on makai bound Palani Road is expected to operate at LOS "F". The left-turn movement on northbound Queen Kaahumanu Highway and the through movement on southbound Queen Kaahumanu Highway are expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.88, during the Year 2014 PM peak hour of traffic without the proposed project. The left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "E". The through movement on mauka bound Henry Street also is expected to operate at LOS "E".

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.87, during the Year 2014 PM peak hour of traffic without the proposed project. The through movement on mauka bound Palani Road and the left-turn movement on makai bound Palani Road are expected to operate at LOS "D".

During the Year 2014 PM peak hour of traffic without the proposed project, Kamakaeha Avenue is expected to operate at "C" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.77 under signalized control. Uluaoa Street is expected to operate at LOS "F" at Palani Road under unsignalized control. The Year 2014 PM peak hour traffic without the proposed project is depicted on Figure 9.

4. Year 2014 Proposed Traffic Improvements Without Project

The following improvements are proposed to mitigate highway deficiencies, i.e., LOS "E" or "F", that are expected by the Year 2014 without the proposed project. The traffic improvements that are recommended for the Year 2014 without the proposed project also are depicted on Figures 8 and 9.

- a. Kealakehe Parkway and Ane Keohokalole Highway
 - Signalize intersection, when it becomes warranted.
- b. Makala Boulevard and Queen Kaahumanu Highway
 - Widen mauka bound Makala Boulevard at Queen Kaahumanu Highway to provide double left-turn lanes and two through lanes across the intersection.
 - Restripe makai bound Makala Boulevard at Queen Kaahumanu Highway to convert the existing shared left-turn/through/right-turn lane to a through/right-turn lane.

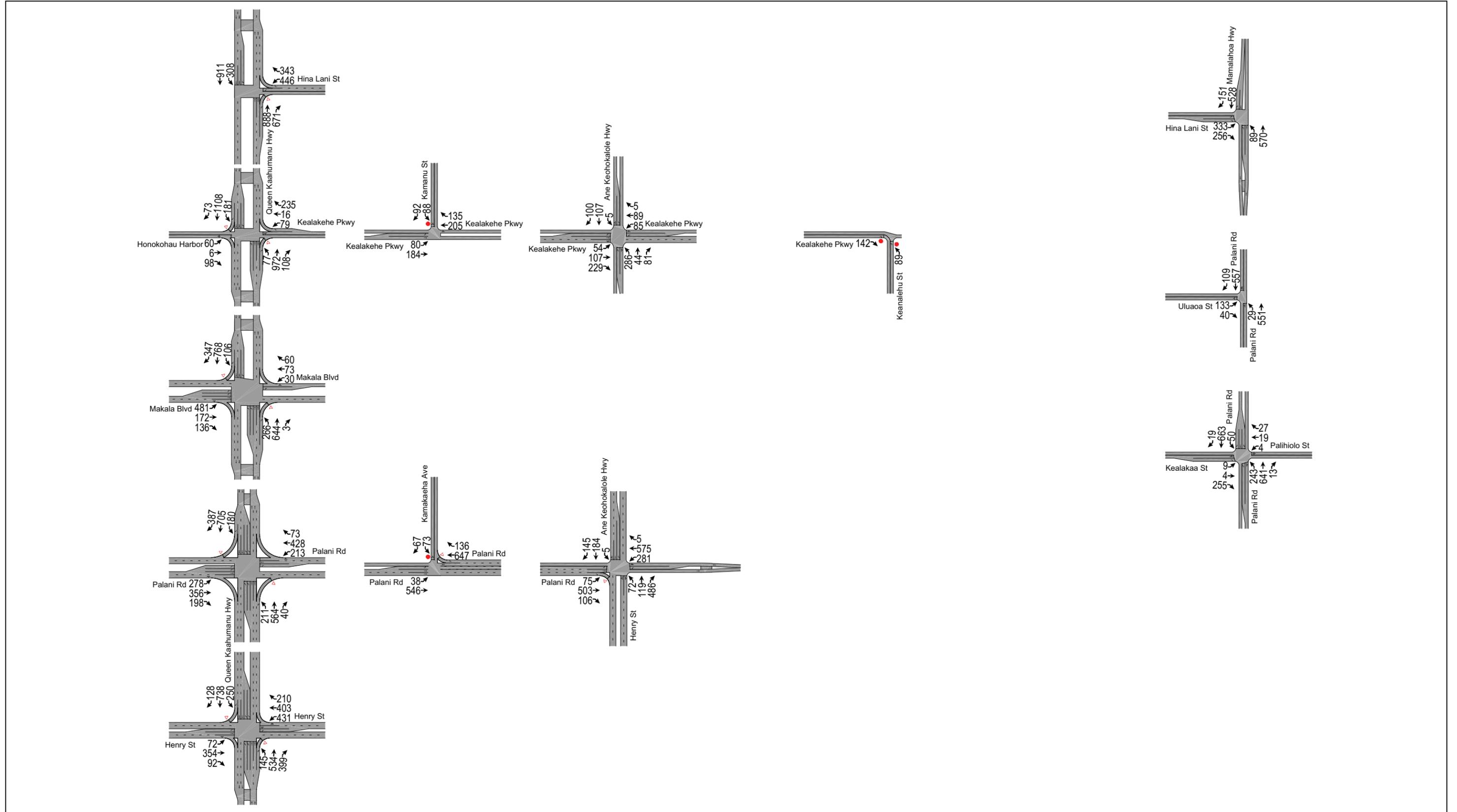


Figure 9. Year 2014 PM Peak Hour Traffic Without Project



- Modify the traffic signal phasing to provide an eight-phase operation with protected left-turn phases on all approaches.
- c. Palani Road and Uluaoa Street
- Signalize the intersection, when it becomes warranted.

D. Year 2019 Peak Hour Traffic Analysis Without Project

1. Year 2019 Roadway Network

The traffic improvements, which are proposed in the previous section, are assumed to be implemented by the Year 2019 without the proposed project.

The second phase of the two-way, two-lane Ane Keohokalole Highway from Kealakehe Parkway to Hina Lani Street is expected to be completed by the County of Hawai'i by the Year 2019.

For the purpose of this analysis, it was assumed that Makala Boulevard would be extended in the mauka direction to intersect Ane Keohokalole Highway as part the ongoing development of the Queen Lili'uokalani Trust Lands.

2. Year 2019 AM Peak Hour Traffic Analysis Without Project

During the Year 2019 AM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.78. The left-turn movement on southbound Queen Kaahumanu Highway is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.82. The left-turn movements on mauka bound Hina Lani Street and northbound Mamalahoa Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "B" with a maximum v/c ratio of 0.66. The shared left-turn/through movement on makai bound Kealakehe Parkway and the left-turn movement on northbound Queen Kaahumanu Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Kealakehe Parkway intersection at Kamanu Street, Ane Keohokalole Highway, and Keanalehu Street are expected to operate at satisfactory Levels of Service at Kealakehe Parkway, during the Year 2019 without the proposed project.



The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.79. The left-turn movements on all approaches to the intersection and the through movement on makai bound Makala Boulevard are expected to operate at LOS "D", during the Year 2019 AM peak hour of traffic without the proposed project. The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.83, during the Year 2019 AM peak hour of traffic without the proposed project. The left-turn movements on northbound Queen Kaahumanu Highway and makai bound Palani Road are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Henry Street intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.90. Both approaches of Henry Street at Queen Kaahumanu Highway are expected to operate at LOS "D". The left-turn and through movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "D", during the Year 2019 AM peak hour of traffic without the proposed project. The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.86, during the Year 2019 AM peak hour of traffic without the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.81, during the Year 2014 AM peak hour of traffic without the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamakaeha Avenue is expected to operate at LOS "B" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.93. Kealakaa Street is expected to operate at LOS "D". Uluaoa Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.84 at Palani Road under signalized control. Uluaoa Street is expected to operate at LOS "D". Figure 10 depicts the Year 2019 AM peak hour traffic without the proposed project.

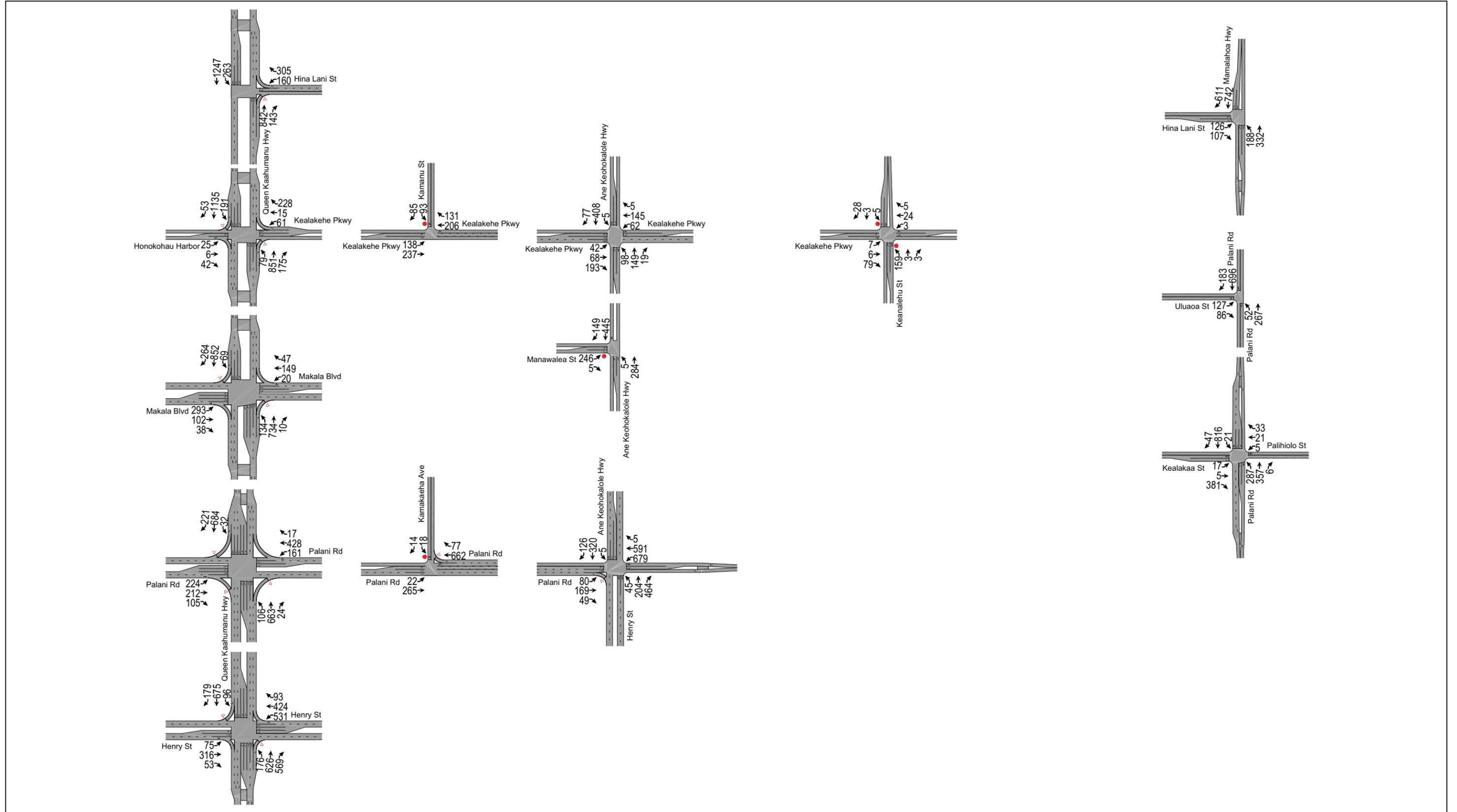
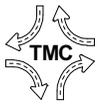


Figure 10. Year 2019 AM Peak Hour Traffic Without Project



3. Year 2019 PM Peak Hour Traffic Analysis Without Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.95, during the Year 2019 PM peak hour of traffic without the proposed project. The left-turn movements on southbound Queen Kaahumanu Highway and makai bound Hina Lani Street, and the through movement on northbound Queen Kaahumanu Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Mamalahoa Highway and Hina Lani Street intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.87. The left-turn movement on mauka bound Hina Lani Street is expected to operate at LOS "D".

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "D" with a maximum v/c ratio of 0.99, during the Year 2019 PM peak hour of traffic without the proposed project. The shared left-turn/through movement on makai bound Kealakehe Parkway is expected to operate at LOS "E".

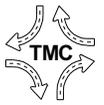
The Kamanu Street, Ane Keohokalole Highway, and Keanalehu Street intersections on Kealakehe Parkway are expected to operate at satisfactory Levels of Service, during the Year 2019 PM peak hour of traffic without the proposed project.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.99, during the Year 2019 PM peak hour of traffic without the proposed project. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E". The through movements on makai bound Makala Boulevard and on northbound Queen Kaahumanu Highway also are expected to operate at LOS "E".

During the Year 2019 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.94. The left-turn movements on all approaches of the intersection and the through movements on both approaches of Palani Road are expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.99. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E". The through movements on mauka bound Henry Street and southbound Queen Kaahumanu Highway also are expected to operate at LOS "E".

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.93. The left-turn movement on makai bound Palani Road and the through movement on mauka bound



Palani Road are expected to operate at LOS "D". Northbound Henry Street also is expected to operate at LOS "D".

During the Year 2019 PM peak hour without the proposed project, Kamakaeha Avenue is expected to operate at "C" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.79. Uluaoa Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.79 at Palani Road under signalized control. The Year 2019 PM peak hour traffic without the proposed project is depicted on Figure 11.

4. Year 2019 Proposed Traffic Improvements Without Project

The following improvements are proposed to mitigate highway deficiencies expected by the Year 2019 without the proposed project. The traffic improvements that are recommended for the Year 2019 without the proposed project also are depicted on Figure 10 and 11.

- a. Kealakehe Parkway and Queen Kaahumanu Highway
 - Widen makai bound Kealakehe Parkway to provide an exclusive left-turn lane.
 - Widen mauka bound Kealakehe Parkway to provide an exclusive left-turn lane.
 - Modify traffic signal operations to provide protected-permissive left-turn phases in both directions on Kealakehe Parkway.
- b. Kealakehe Parkway and Kamanu Street
 - Restripe Kealakehe Parkway to provide a median shelter lane.
- c. Makala Boulevard and Queen Kaahumanu Highway
 - Widen makai bound Makala Boulevard Queen Kaahumanu Highway to provide an additional through-only lane.
- d. Palani Road and Queen Kaahumanu Highway
 - Widen southbound Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the existing right lane on the south leg of southbound Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane.
- e. Henry Street and Queen Kaahumanu Highway
 - Widen makai bound Henry Street to provide double left-turn lanes in addition to a through-only lane and a shared through/right-turn lane.
 - Widen mauka bound Henry Street to provide double left-turn lanes in addition to a through-only lane and a shared through/right-turn lane.

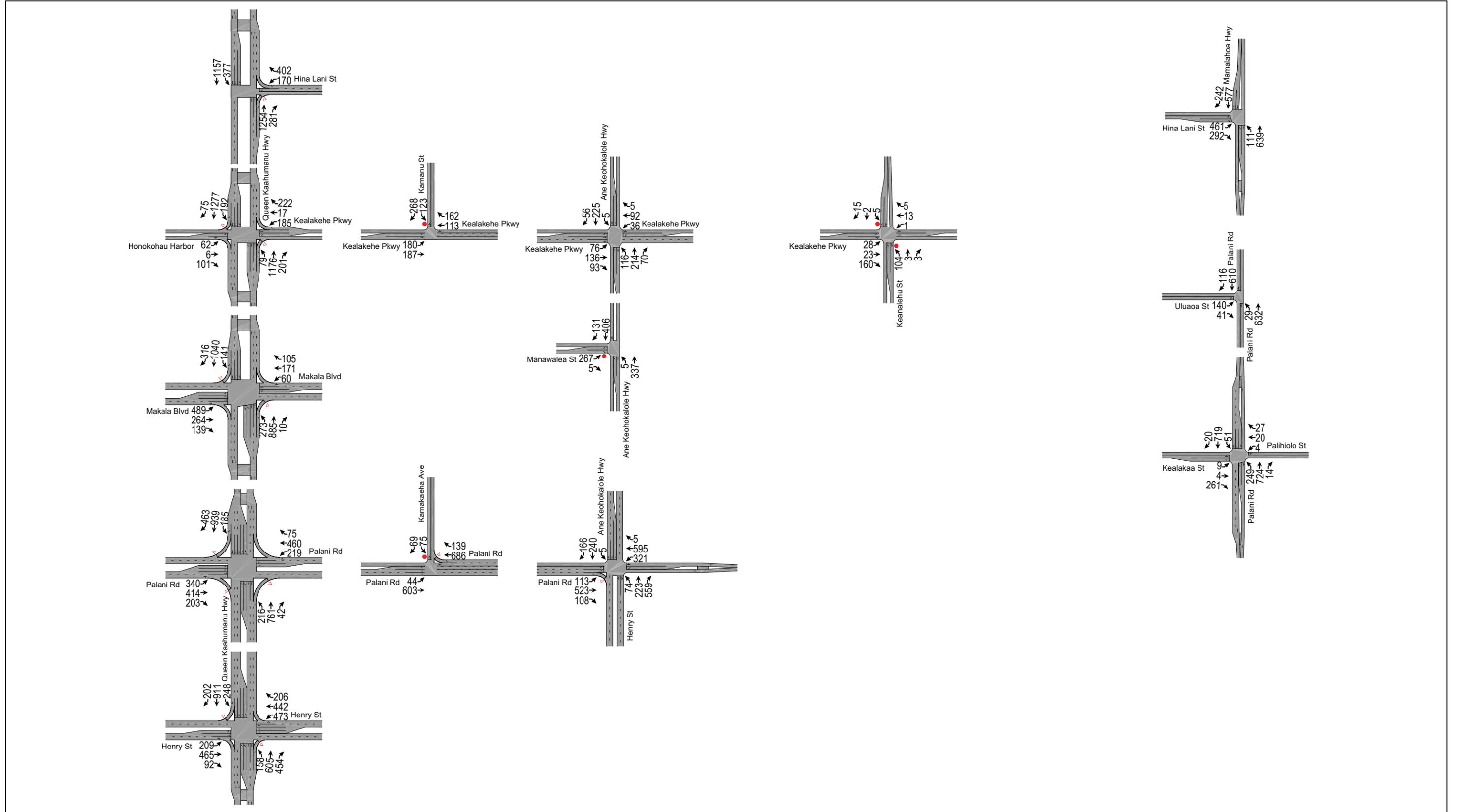
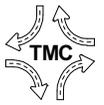


Figure 11. Year 2019 PM Peak Hour Traffic Without Project



- Modify the traffic signal phasing to provide an eight-phase operation with protected left-turn phases on all approaches.
- f. Makala Boulevard
- Extend Makala Boulevard to Ane Keohokalole Highway

E. Year 2024 Peak Hour Traffic Analysis Without Project

The traffic improvements, which are proposed in the previous section, are assumed to be implemented by the Year 2024 without the proposed project.

1. Year 2024 AM Peak Hour Traffic Analysis Without Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.87, during the Year 2024 AM peak hour of traffic without the proposed project. The left-turn movement from southbound Queen Kaahumanu Highway onto Hina Lani Street is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.88. The left-turn movements on mauka bound Hina Lani Street and northbound Mamalahoa Highway are expected to operate at LOS "D".

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.90. The left-turn movement on all approaches to the intersection are expected to operate at LOS "D". The through movement on makai bound Kealakehe Parkway also is expected to operate at LOS "D".

Kamanu Street is expected to operate at LOS "D" at Kealakehe Parkway, during the Year 2024 AM peak hour of traffic without the proposed project. Kealakehe Parkway intersections at Ane Keohokalole Highway and Keanalehu Street are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.81. The left-turn movements on all approaches to the intersection and the through movement on makai bound Makala Boulevard are expected to operate at LOS "D", during the Year 2024 AM peak hour of traffic without the proposed project.

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.75, during the Year 2024 AM peak hour of traffic without the proposed project. The left-turn movements on all approaches to the intersection and the through movement on makai bound Makala



Boulevard are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Henry Street intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.90. The makai bound left-turn movement and the mauka bound through movement on Henry Street at Queen Kaahumanu Highway are expected to operate at LOS "E". The left-turn movements in both directions on Queen Kaahumanu Highway also are expected to operate at LOS "E", during the Year 2024 AM peak hour of traffic without the proposed project.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.91, during the Year 2024 AM peak hour of traffic without the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamakaeha Avenue is expected to operate at "C" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.94. Kealakaa Street is expected to operate at LOS "D" at Palani Road. Uluaoa Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.89 at Palani Road. Figure 12 depicts the Year 2024 AM peak hour traffic without the proposed project.

2. Year 2024 PM Peak Hour Traffic Analysis Without Project

During the Year 2024 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.96. The left-turn movements on southbound Queen Kaahumanu Highway and makai bound Hina Lani Street are expected to operate at LOS "F".

The Mamalahoa Highway and Hina Lani Street intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.87. The left-turn movements on mauka bound Hina Lani Street and northbound Mamalahoa Highway, and the through movement of southbound Mamalahoa Highway are expected to operate at LOS "D".

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "D" with a maximum v/c ratio of 0.99, during the Year 2024 PM peak hour of traffic without the proposed project. The left-turn movements in both directions on Queen Kaahumanu Highway and on makai bound Kealakehe Parkway are expected to operate at LOS "F".

Kamanu Street is expected to operate at LOS "F" under unsignalized traffic control, during the Year 2024 PM peak hour of traffic without the proposed project. The Ane Keohokalole Highway and the Keanalehu Street intersections on Kealakehe Parkway are expected to operate at satisfactory Levels of Service, during the Year 2024 PM peak hour of traffic without the proposed project.

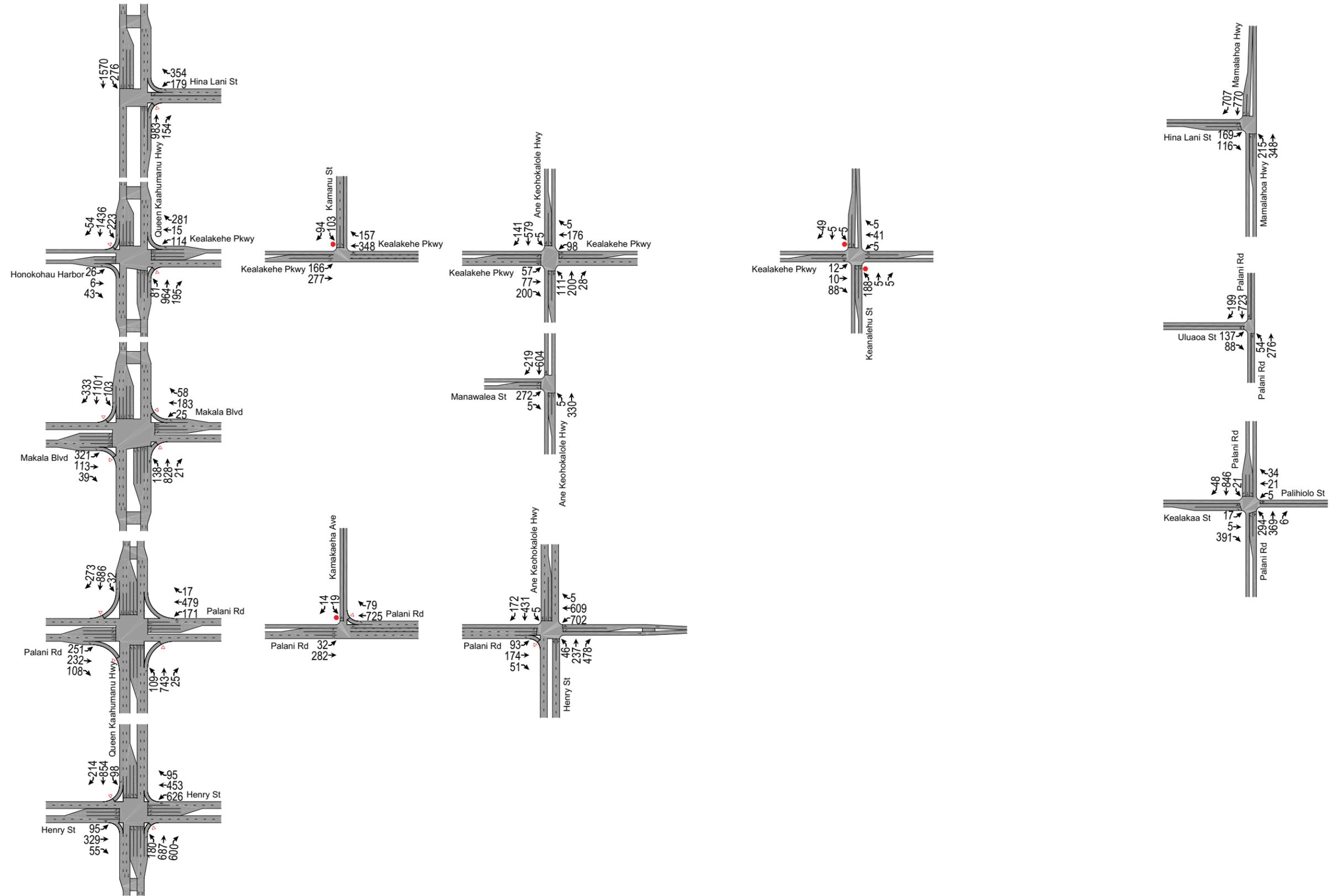


Figure 12. Year 2024 AM Peak Hour Traffic Without Project



The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 1.06, during the Year 2024 PM peak hour of traffic without the proposed project. The left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "F". The through movements on makai bound Makala also is expected to operate at LOS "F".

During the Year 2024 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.91. The left-turn movements on all approaches to the intersections are expected to operate at LOS "E". The through movement on makai bound Palani Road also is expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.89. The traffic movements at the intersection are expected to operate at LOS "D" or better. The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.96. The traffic movements at the intersection are expected to operate at LOS "D" or better.

During the Year 2024 PM peak hour without the proposed project, Kamakaeha Avenue is expected to operate at "C" at Palani Road. The Palani Road intersections at Kealakea Street/Palihiolo Street and at Uluaoa Street are expected to operate at satisfactory Levels of Service. The Year 2024 PM peak hour traffic without the proposed project is depicted on Figure 13.

3. Year 2024 Proposed Traffic Improvements Without Project

The following improvements are proposed to mitigate highway deficiencies expected by the Year 2024 without the proposed project:

- a. Queen Kaahumanu Highway and Hina Lani Street
 - Widen southbound Queen Kaahumanu Highway to provide an additional left-turn lane onto Hina Lani Street.
- b. Queen Kaahumanu Highway and Kealakehe Parkway
 - Widen southbound Queen Kaahumanu Highway to provide an additional left-turn lane onto Kealakehe Parkway.
 - Widen the east leg of Kealakehe Parkway from one lane to two lanes in the mauka bound direction.
 - Widen makai bound Kealakehe Parkway to provide an additional left-turn lane.
 - Widen mauka bound Kealakehe Parkway to provide an exclusive right-turn lane.

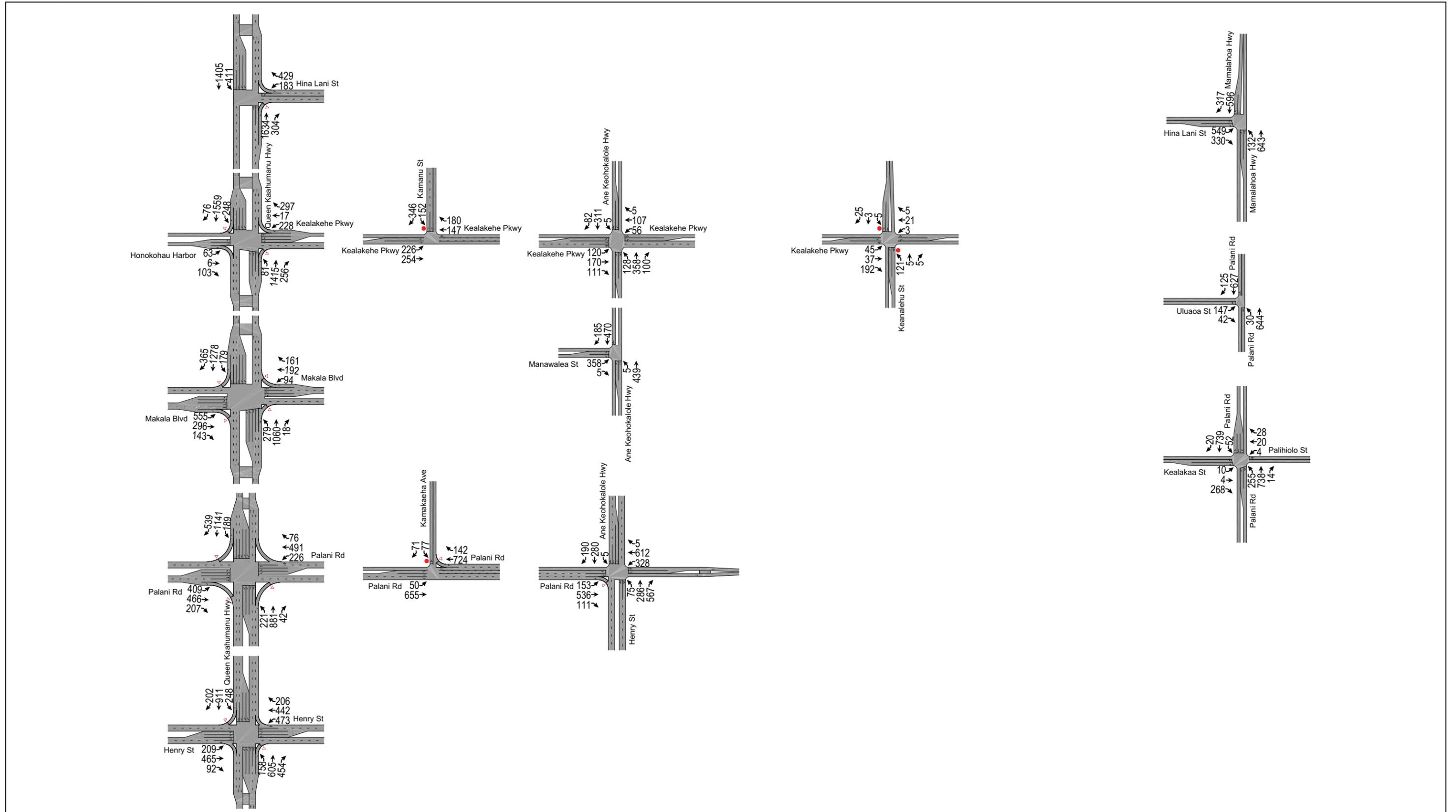
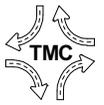


Figure 13. Year 2024 PM Peak Hour Traffic Without Project



- c. Kealakehe Parkway and Kamanu Street
 - Restripe Kamanu Street to provide separate left-turn and right-turn lanes at Kealakehe Parkway.
- d. Queen Kaahumanu Highway and Makala Boulevard
 - Restripe southbound Queen Kaahumanu Highway to provide an additional left-turn lane onto Makala Boulevard Parkway.
 - Convert the existing right-turn lane on northbound Queen Kaahumanu Highway to a shared through/right-turn lane.
 - Convert the right-turn acceleration lane on the north leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the northbound direction.
 - Widen the southbound approach on Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the right-turn acceleration lane on the south leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the southbound direction.
 - Widen mauka bound Makala Boulevard to provide an exclusive right-turn lane.
 - Widen makai bound Makala Boulevard to provide an exclusive right-turn lane.
- e. Queen Kaahumanu Highway and Palani Road
 - Widen mauka bound Palani Road to provide an exclusive right-turn lane.

F. Year 2029 Peak Hour Traffic Analysis Without Project

The traffic improvements, which are proposed in the previous section, are assumed to be implemented by the Year 2029 without the proposed project.

1. Year 2029 AM Peak Hour Traffic Analysis Without Project

During the Year 2029 AM peak hour of traffic without the proposed project, the Queen Kaahumanu Highway and Hina Lani Street intersection is expected to operate at LOS "B" with a maximum v/c ratio of 0.80. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "D".

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.87. The left-turn movements to and from Mamalahoa Highway are expected to operate at LOS "D".



The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.92. The individual traffic movements are expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic without the proposed project.

The intersection of Kealakehe Parkway and Ane Keohokalole Highway is expected to operate at LOS "C" with a maximum v/c ratio of 0.92. Westbound Kealakehe Parkway is expected to operate at LOS "D". The Kealakehe Parkway intersections at Kamanu Street and at Keanalehu Street are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.81. The traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic without the proposed project.

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.86, during the Year 2029 AM peak hour of traffic without the proposed project. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.98. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E". The through movements on mauka bound Henry Street and southbound Queen Kaahumanu Highway also are expected to operate at LOS "E", during the Year 2029 AM peak hour of traffic without the proposed project.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.97, during the Year 2029 AM peak hour of traffic without the proposed project. The through movements in both directions on Palani Road and the left-turn movement on makai bound Palani Road are expected to operate at LOS "D".

During the Year 2024 PM peak hour without the proposed project, Kamakaeha Avenue is expected to operate at "C" at Palani Road. Kealakaa Street is expected to operate at LOS "E" at Palani Road. Uluaoa Street are expected to operate at LOS "D" at Palani Road. Figure 14 depicts the Year 2029 AM peak hour traffic without the proposed project.

2. Year 2029 PM Peak Hour Traffic Analysis Without Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operated at LOS "C" with a maximum v/c ratio of 0.95, during the Year 2029 PM peak hour of traffic without the proposed project. The left-turn movements on southbound Queen Kaahumanu Highway and makai bound Hina Lani Street are expected to operate at LOS "E".

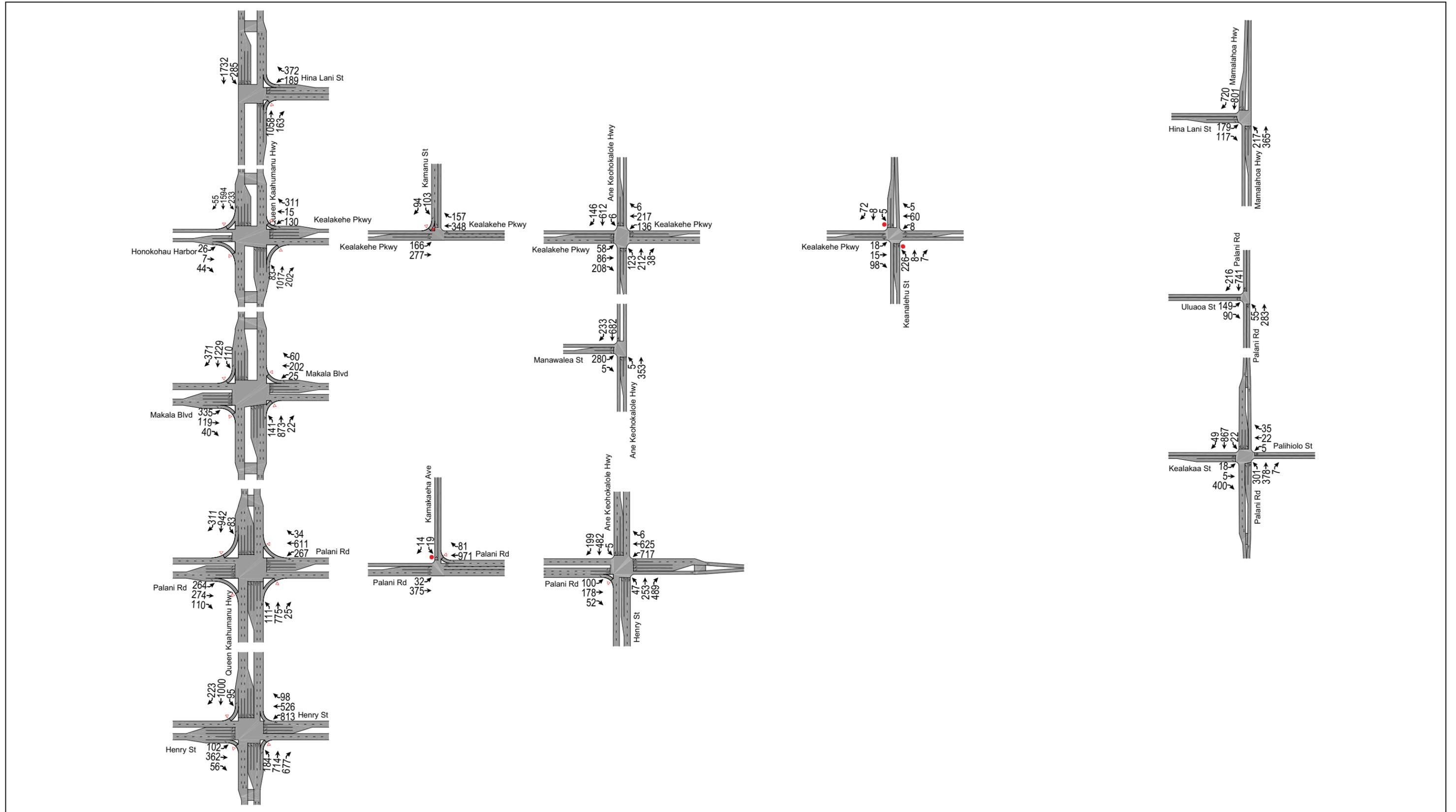
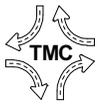


Figure 14. Year 2029 AM Peak Hour Traffic Without Project



The Mamalahoa Highway and Hina Lani Street intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.97. The individual traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C", with a maximum v/c of 0.91, during the Year 2029 PM peak hour of traffic without the proposed project. The left-turn movement in both directions on Queen Kaahumanu Highway are expected to operate at LOS "E". The mauka bound left-turn movement and the makai bound through movement on Kealakehe Parkway also are expected to operate at LOS "E".

The left-turn movement from Kamanu Street onto Kealakehe Parkway is expected to operate at LOS "D". The individual traffic movements at Kealakehe Parkway intersections at Ane Keohokalole Highway and at Keanalehu Street are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Makala Boulevard is expected to operate at LOS "D" with a maximum v/c ratio of 0.92, during the Year 2029 PM peak hour of traffic without the proposed project. The mauka bound left-turn movement and the makai bound through movement on Makala Boulevard are expected to operate at LOS "E". The left-turn movement on northbound Queen Kaahumanu Highway is also expected to operate at LOS "E".

During the Year 2029 PM peak hour of traffic without the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.95. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E". The through movement on makai bound Palani Road also is expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.99. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E". The through movement on mauka bound Henry Street also is expected to operate at LOS "E".

Palani Road and Henry Street/Ane Keohokalole Highway is expected to operate at LOS "D" with a maximum v/c ratio of 0.99. The makai bound left-turn movement and the mauka bound through movement on Palani Road are expected to operate at LOS "E". The other traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 PM peak hour of traffic without the proposed project.

Kamakaeha Avenue is expected to operate at LOS "C" at Palani Road. The Palani Road intersections at Kealakaa Street/Palihiolo Street and at Uluaoa Street are expected to operate at satisfactory Levels of Service. The Year 2029 PM peak hour traffic without the proposed project is depicted on Figure 15.

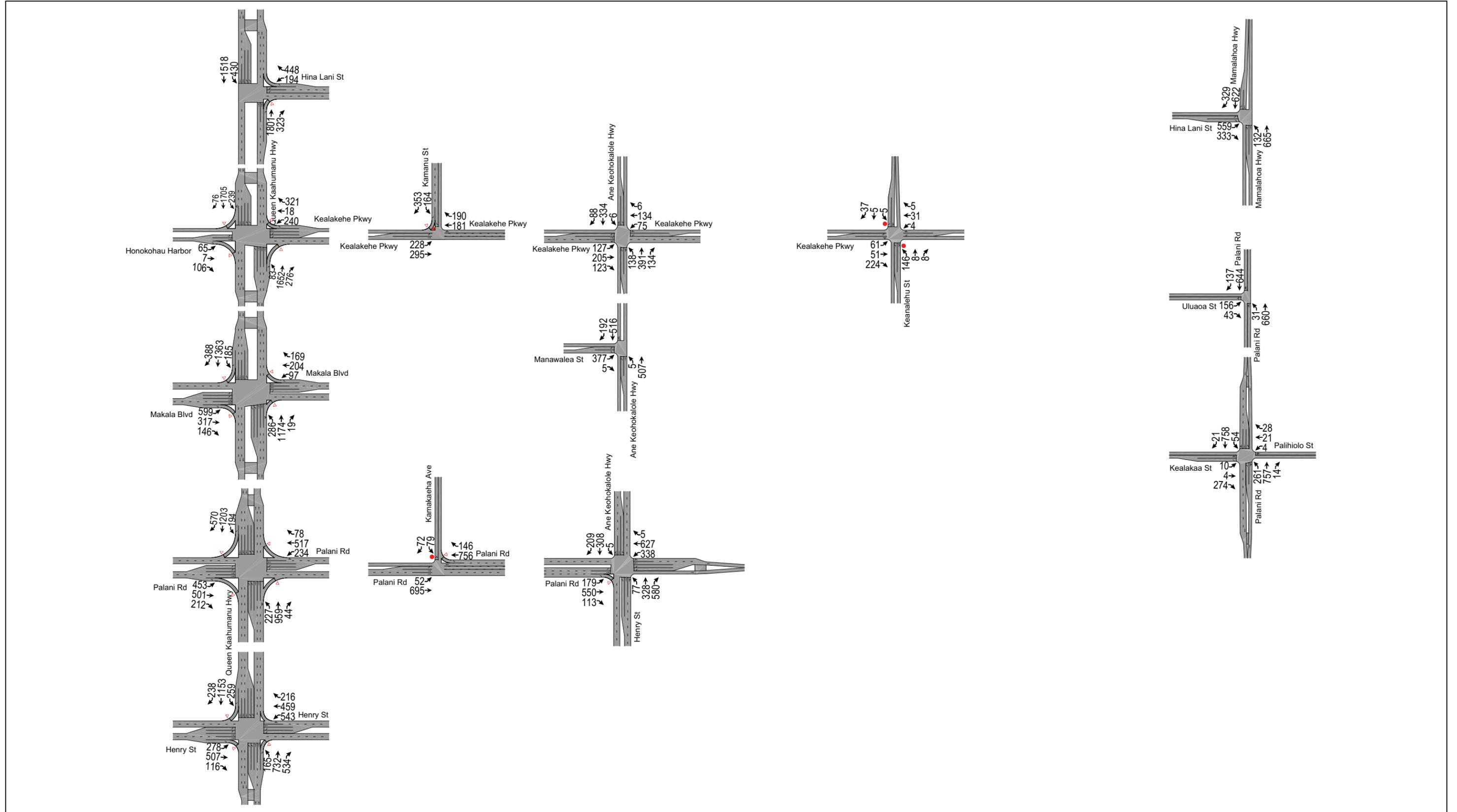
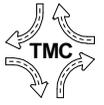


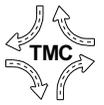
Figure 15. Year 2029 AM Peak Hour Traffic Without Project



3. Year 2029 Proposed Traffic Improvements Without Project

The following improvements are proposed to mitigate highway deficiencies expected by the Year 2029 without the proposed project:

- a. Queen Kaahumanu Highway and Hina Lani Street
 - Widen Hina Lani Street to provide an additional left-turn lane onto southbound Queen Kaahumanu Highway.
- b. Queen Kaahumanu Highway and Kealakehe Parkway
 - Widen the northbound approach on Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the right-turn acceleration lane on the north leg of Queen Kaahumanu Highway at Kealakehe Parkway to a merging lane from three lanes to two lanes in the northbound direction.
 - Convert the existing right-turn lane on southbound Queen Kaahumanu Highway at Kealakehe Parkway to a shared through/right-turn lane.
 - Convert the right-turn acceleration lane on the south leg of Queen Kaahumanu Highway at Kealakehe Parkway to a merging lane from three lanes to two lanes in the southbound direction.
- c. Queen Kaahumanu Highway and Makala Boulevard
 - Convert the existing exclusive right-turn lane on northbound Queen Kaahumanu Highway to provide a shared through lane/right-turn lane.
 - Convert the right-turn acceleration lane on the north leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the northbound direction.
 - Widen the southbound approach on Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the right-turn acceleration lane on the south leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the southbound direction.
- d. Queen Kaahumanu Highway and Palani Road
 - Convert the existing exclusive right-turn lane on northbound Queen Kaahumanu Highway to provide a shared through lane/right-turn lane.



- Convert the right-turn acceleration lane on the north leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the northbound direction.
- e. Queen Kaahumanu Highway and Henry Street
 - Widen the southbound approach on Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the right-turn acceleration lane on the south leg of Queen Kaahumanu Highway to a merging lane from three lanes to two lanes in the southbound direction.
 - Widen mauka bound Henry Street to provide an exclusive right-turn lane.
- f. Palani Road and Ane Keohokalole Highway/Henry Street
 - Widen makai bound Palani Road to provide an additional left-turn lane onto Henry Street.
 - Widen northbound Henry Street to provide an exclusive left-turn lane onto makai bound Palani Road.
 - Widen the makai bound approach on Palani Road to provide an additional through lane.

V. Traffic Impact Analysis

A. Trip Generation Characteristics

The trip generation characteristics for the proposed Kamakana Villages at Keahuolu were developed for the individual land uses. The proposed Kamakana Villages at Keahuolu is expected to generate a total of 1,809 vph during the AM peak hour of traffic – 652 vph entering the site and 1,157 vph exiting the site. During the PM peak hour of traffic, the proposed project is expected to generate a total of 2,880 vph – 1,616 vph entering the site and 1,264 vph exiting the site. The trip generation characteristics for the proposed project are summarized in Table 3.

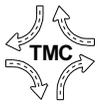
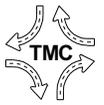


Table 3. Trip Generation Characteristics								
Year	Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
			Enter	Exit	Total	Enter	Exit	Total
2014	Single-Family Housing (210)	98 DU	19	59	78	65	38	103
	Residential Condominiums (230)	182 DU	14	69	83	66	32	98
	Apartments (220)	168 DU	17	69	86	72	38	110
	Shopping Center (820)	42,000 SFGFA	56	36	92	174	182	356
	Subtotals			106	233	339	377	290
2019	Single-Family Housing (210)	140 DU	24	74	98	79	47	126
	Residential Condominiums (230)	338 DU	19	91	110	90	44	134
	Apartments (220)	172 DU	17	67	84	62	33	95
	Shopping Center (820)	41,000 SFGFA	50	32	82	155	161	316
	School (520)	550 Students	136	111	247	40	42	82
	Subtotals			246	375	621	426	327
2024	Single-Family Housing (210)	193 DU	34	101	135	102	60	162
	Residential Condominiums (230)	405 DU	19	94	113	94	47	141
	Apartments (220)	20 DU	2	8	10	7	4	11
	Shopping Center (820)	16,000 SFGFA	16	11	27	54	56	110
	School (534)	150 Students	76	62	138	41	46	87
	Subtotals			147	276	423	298	213



Year	Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
			Enter	Exit	Total	Enter	Exit	Total
2029	Single-Family Housing (210)	230 DU	40	121	161	116	68	184
	Residential Condominiums (230)	324 DU	14	69	83	70	34	104
	Apartments (220)	60 DU	67	24	30	21	12	33
	Shopping Center (820)	98,000 SFGFA	93	59	152	308	320	628
	Subtotals		153	273	426	515	434	949
Project Totals			652	1,157	1,809	1,616	1,264	2,880

B. Year 2014 Peak Hour Traffic Impact Analysis With Project

1. Year 2014 Area Mitigation Traffic Improvements with Project

The planned highway improvements, described under Section IV.C.1, is expected to be constructed by the Year 2014. These committed highway improvements include: the widening of Queen Kaahumanu Highway, from two lanes to four lanes between Kealakehe Parkway and the Kona International Airport Access Road by the State DOT. The County of Hawai'i will construct the initial phase of Ane Keohokalole Highway from Puohulihuli Street to Palani Road; and the widen Palani Road from Ane Keohokalole Highway/Henry Street to Kamakaeha Avenue.

2. Year 2014 Local Mitigation Traffic Improvements With Project

Manawalea Street will be extended from Keanalehu Street, intersecting Ane Keohokalole Highway at a stop-controlled Tee-intersection with separate left-turn and right-turn lanes. The median lane on Ane Keohokalole Highway will be restriped to provide a median shelter lane to facilitate the left-turn movement from Manawalea Street. The project civil engineer's estimated cost of this local traffic mitigation improvement is \$70,000.

3. Year 2014 Peak Hour Traffic Assignment

The Year 2014 AM and PM peak hour site-generated traffic assignments were developed based upon existing traffic circulation patterns within the Kealakehe area and anticipated patterns resulting from future roadways and destinations within the



study area. Table 4 summarizes the trip distribution patterns for the Year 2014 peak hour traffic with the proposed project.

Table 4. Year 2014 Trip Distribution					
Residential Trip Distribution Within the Study Area		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Mohala Commercial Village		3%	3%	8%	8%
Villages of Lai`opua (commercial)		3%	3%	8%	8%
Kaloko Industrial Park		12%	5%	9%	17%
Kohanaiki Business Park		11%	5%	8%	16%
Kamakana Villages (commercial)		7%	8%	20%	22%
Subtotals		36%	26%	52%	71%
External Residential Trip Distribution					
Queen Kaahumanu Highway	NB	15%	17%	12%	7%
	SB	8%	17%	6%	7%
Palani Road/Mamalaho Highway	EB/NB	18%	9%	14%	4%
	WB/SB	22%	32%	17%	12%
Subtotals		64%	74%	48%	29%

The project-generated trips were assigned to the Year 2014 network with the implementation of the proposed mitigation recommended under Section IV.C.4. The Year 2014 AM and PM peak hour site-generated traffic assignments are depicted on Figures 16 and 17, respectively.

4. Year 2014 AM Peak Hour Traffic Impact Analysis With Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.90, during the Year 2014 AM peak hour of traffic with the proposed project. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

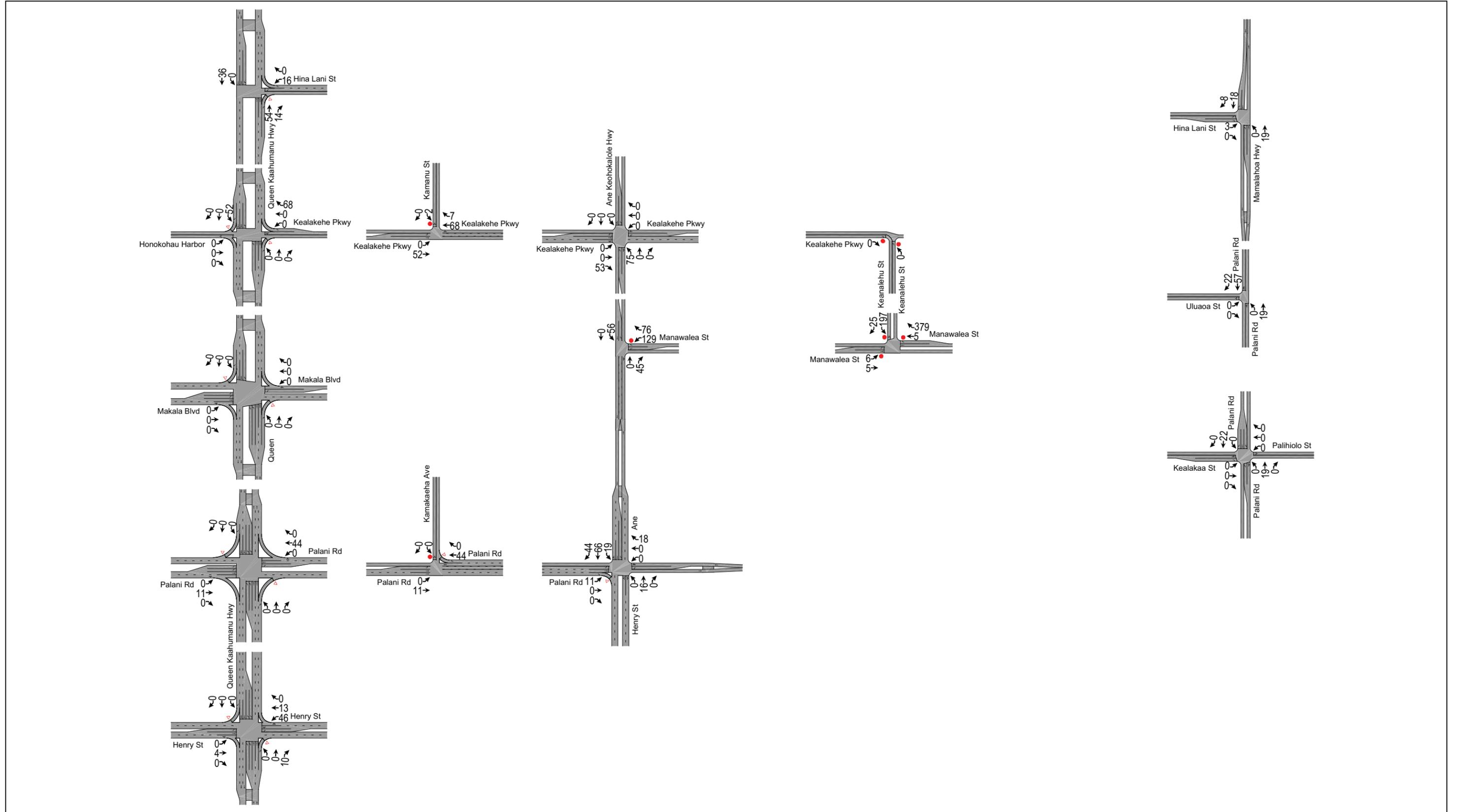


Figure 16. Year 2014 AM Peak Hour Site Traffic Assignment

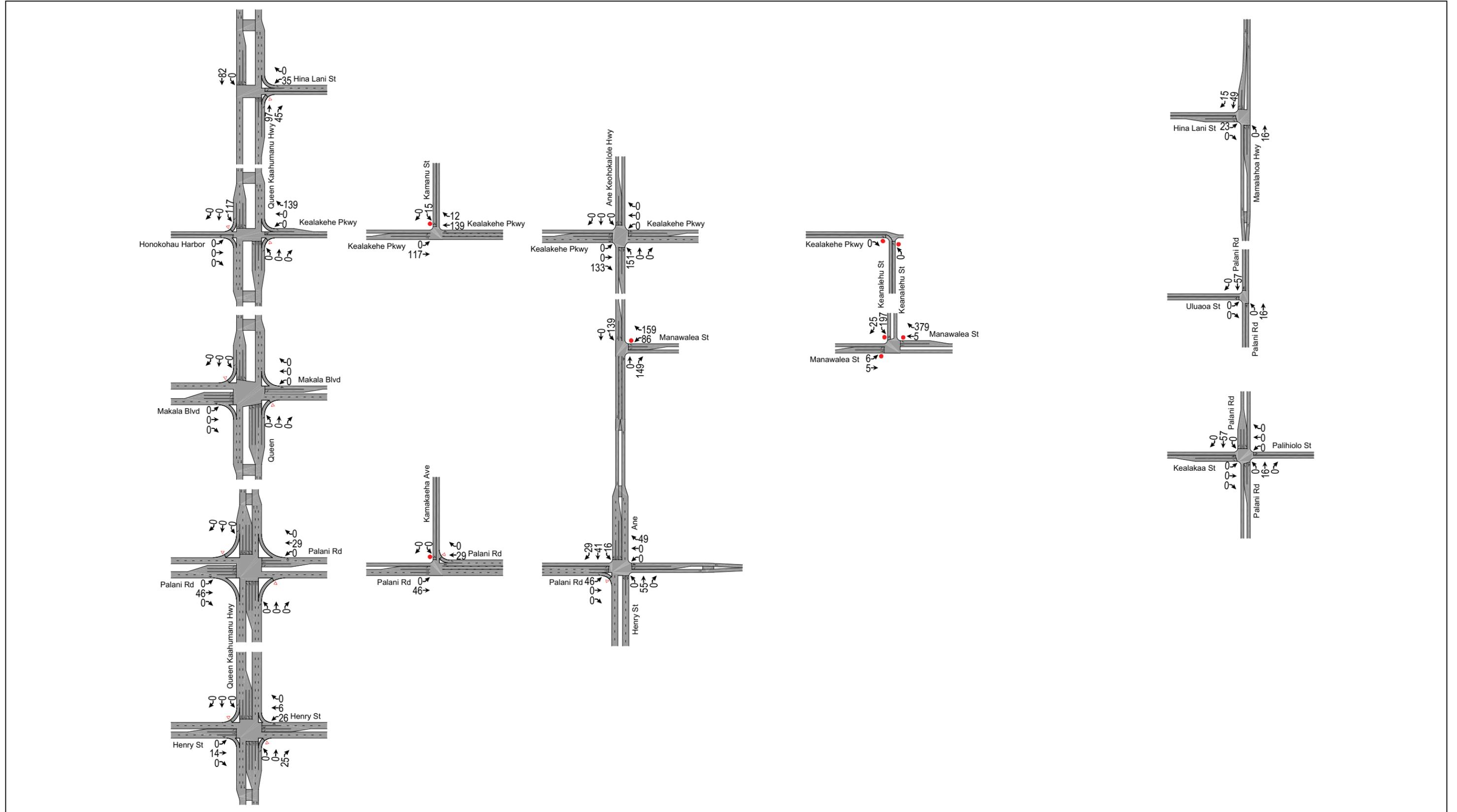
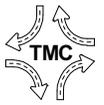


Figure 17. Year 2014 PM Peak Hour Site Traffic Assignment



The Mamalahoa Highway and Hina Lani Street intersection is expected to operate at LOS "B" with a maximum v/c ratio of 0.83. The left-turn movement from Hina Lani Street onto Mamalahoa Highway is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "B" with a maximum v/c ratio of 0.78, during the Year 2014 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamanu Street is expected to operate at LOS "D". The Ane Keohokalole Highway, and Keanalehu Street intersections on Kealakehe Parkway are expected to operate at satisfactory Levels of Service, during the Year 2014 AM peak hour of traffic with the proposed project.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.61. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

During the Year 2014 AM peak hour of traffic with the proposed project, the Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.64. The left-turn movements on northbound Queen Kaahumanu Highway and makai bound Palani Road are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.83. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.84, during the Year 2014 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Kamakaeha Avenue is expected to operate at LOS "B" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.96. Kealakaa Street is expected to operate at LOS "D". Uluaoa Street is expected to operate at LOS "D" at Palani Road, during the Year 2014 AM peak hour of traffic with the proposed project.

Manawalea Street is expected to operate at LOS "B" at Ane Keohokalole Highway, during the Year 2014 AM peak hour of traffic with the proposed project. Figure 18 depicts the Year 2014 AM peak hour traffic with the proposed project.

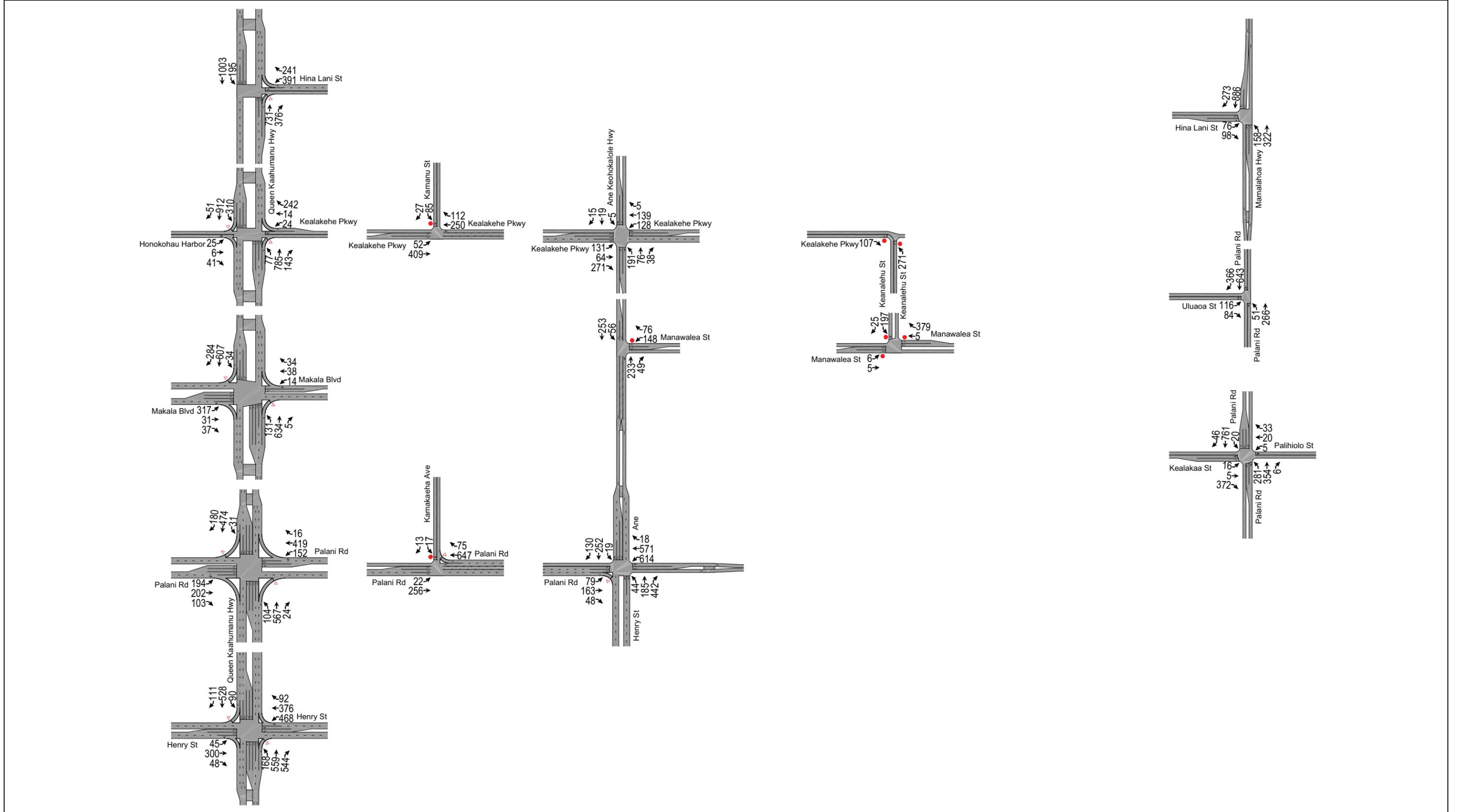


Figure 18. Year 2014 AM Peak Hour Traffic With Project



5. Year 2014 PM Peak Hour Traffic Analysis With Project

During the Year 2014 PM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.95. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "E".

Mamalaho Highway at Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.86. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.88. The left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "D". The shared left-turn/through movement on makai bound Kealakehe Parkway also is expected to operate at LOS "D".

During the Year 2014 PM peak hour of traffic with the proposed project, the Kamanu Street is expected to operate at LOS "F". Ane Keohokalole Highway and Keanalehu Street intersections on Kealakehe Parkway are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.82. The traffic movements at the intersection of Queen Kaahumanu Highway and Makala Boulevard are expected to operate at LOS "D" or better.

During the Year 2014 PM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.90. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.91. The traffic movements at the intersection of Queen Kaahumanu Highway and Henry Street are expected to operate at LOS "D" or better.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.89. During the Year 2014 PM peak hour of traffic with the proposed project, the left-turn movement on makai bound Palani Road and the through movements in both directions on Palani Road are expected to operate at LOS "D".

The traffic movements at the Palani Road intersections at Kamakaeha Avenue, Kealakaa Street/Palihiolo Street, and Uluaoa Street are expected to operate at satisfactory Levels of Services.



Manawalea Street is expected to operate at satisfactory Levels of Service, during the Year 2014 PM peak hour of traffic with the proposed project. The Year 2014 PM peak hour traffic with the proposed project is depicted on Figure 19.

6. Year 2014 Area Mitigation Traffic Improvements With Project

The LOS "E" conditions at the intersection of Queen Kaahumanu Highway and Hina Lani Street can be mitigated by providing an additional left-turn lane on Hina Lani Street. However, traffic demands on Hina Lani Street are expected to be reduced by the extension of Kamanu Street to provide an alternate route to/from Kealakehe Parkway. Kamanu Street will be constructed as part of the development of the West Hawaii Business Park.

C. Year 2019 Peak Hour Traffic Analysis With Project

1. Year 2019 Area Mitigation Traffic Improvements With Project

The traffic improvements, proposed in the previous section and Sections IV.D.1 and IV.D.4. (Year 2019 without the project), are assumed to be implemented by the Year 2019 with the proposed project.

2. Year 2019 Local Mitigation Traffic Improvements With Project

The following local mitigation traffic improvements are recommended at the intersection of Ane Keohokalole Highway and Makala Boulevard and at the intersection of Ane Keohokalole Highway and Manawalea Boulevard to provide access to the proposed project. The project civil engineer's total estimated cost of the following local traffic mitigation improvements is \$390,000.

a. Makala Boulevard and Ane Keohokalole Highway

- Construct the east leg of Makala Boulevard with exclusive left-turn and right-turn lanes, intersecting Ane Keohokalole Highway at a stop-controlled Tee-intersection.
- Restripe the median lane on Ane Keohokalole Highway to provide a median shelter lane to facilitate the left-turn movement from Makala Boulevard.

b. Manawalea Street and Ane Keohokalole Highway

- Signalize the intersection of Manawalea Street and Ane Keohokalole Highway, when it becomes warranted.

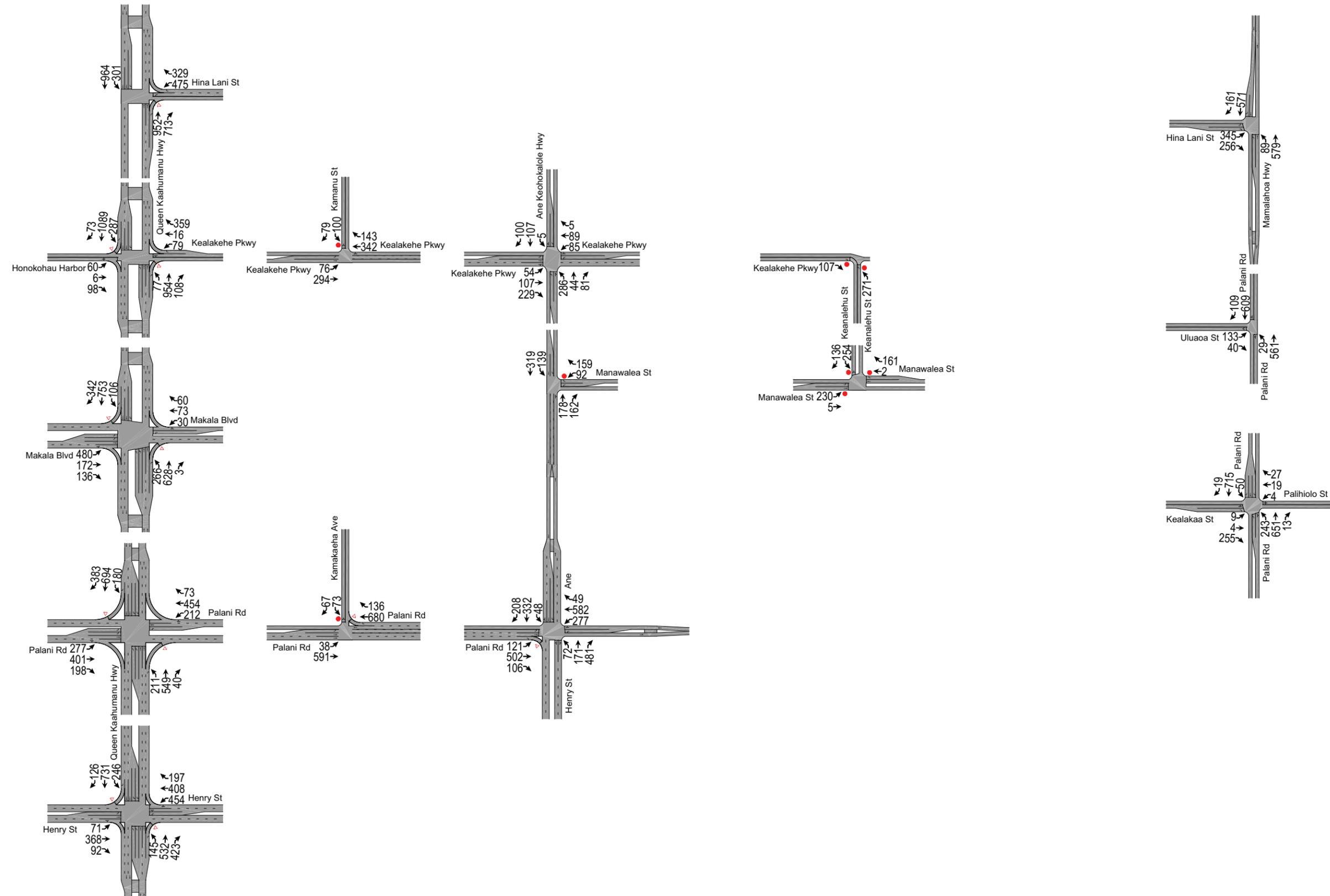
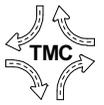


Figure 19. Year 2014 PM Peak Hour Traffic With Project



3. Year 2019 Peak Hour Traffic Assignment

The Year 2019 AM and PM peak hour site-generated traffic assignments were developed based upon existing traffic circulation patterns within the Kealakehe area and anticipated patterns resulting from future roadways and destinations within the study area. Table 5 summarizes the trip distribution patterns for the Year 2019 peak hour traffic with the proposed project.

Table 5. Year 2019 Trip Distribution					
Residential Trip Distribution Within the Study Area		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Lanihau Center - Phase II		2%	4%	8%	7%
Mohala Commercial Village		1%	2%	3%	3%
Queen Lili`uokalani Trust Lands		4%	3%	4%	6%
Villages of Lai`opua (commercial)		2%	3%	6%	5%
Kaloko Industrial Park		7%	5%	7%	11%
West Hawaii Business Park		9%	6%	8%	13%
Kohanaiki Business Park		6%	4%	5%	9%
Kamakana Villages (commercial)		4%	7%	15%	13%
Subtotals		35%	31%	56%	67%
Queen Kaahumanu Highway	NB	16%	16%	12%	8%
	SB	8%	15%	9%	9%
Palani Road/Mamalaho Highway	EB/NB	19%	8%	16%	5%
	WB/SB	23%	29%	7%	11%
Subtotals		65%	69%	44%	33%

The project-generated trips were assigned to the Year 2019 roadway network. The Year 2019 AM and PM peak hour site-generated traffic assignments are depicted on Figures 20 and 21, respectively.

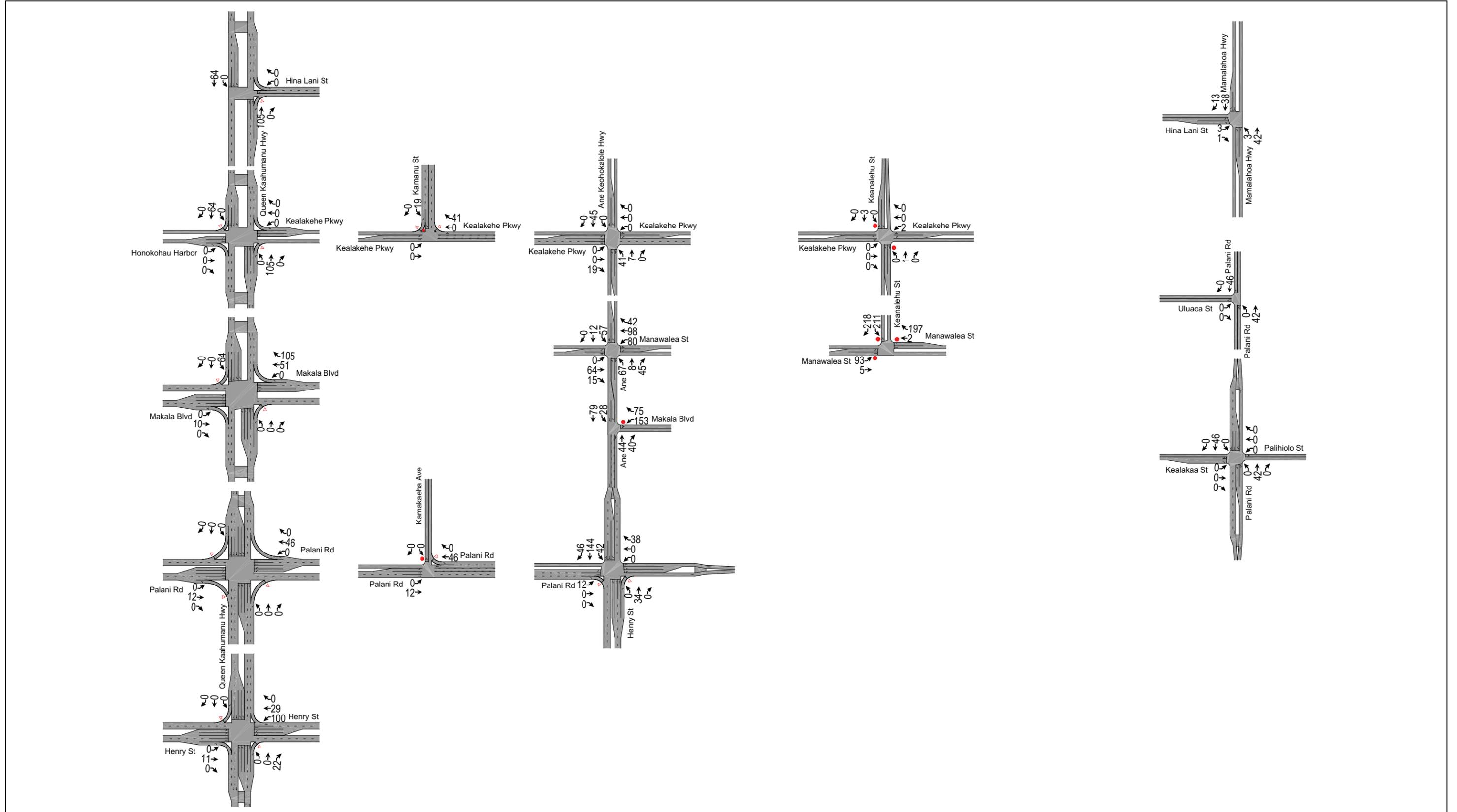


Figure 20. Year 2019 AM Peak Hour Traffic Assignment

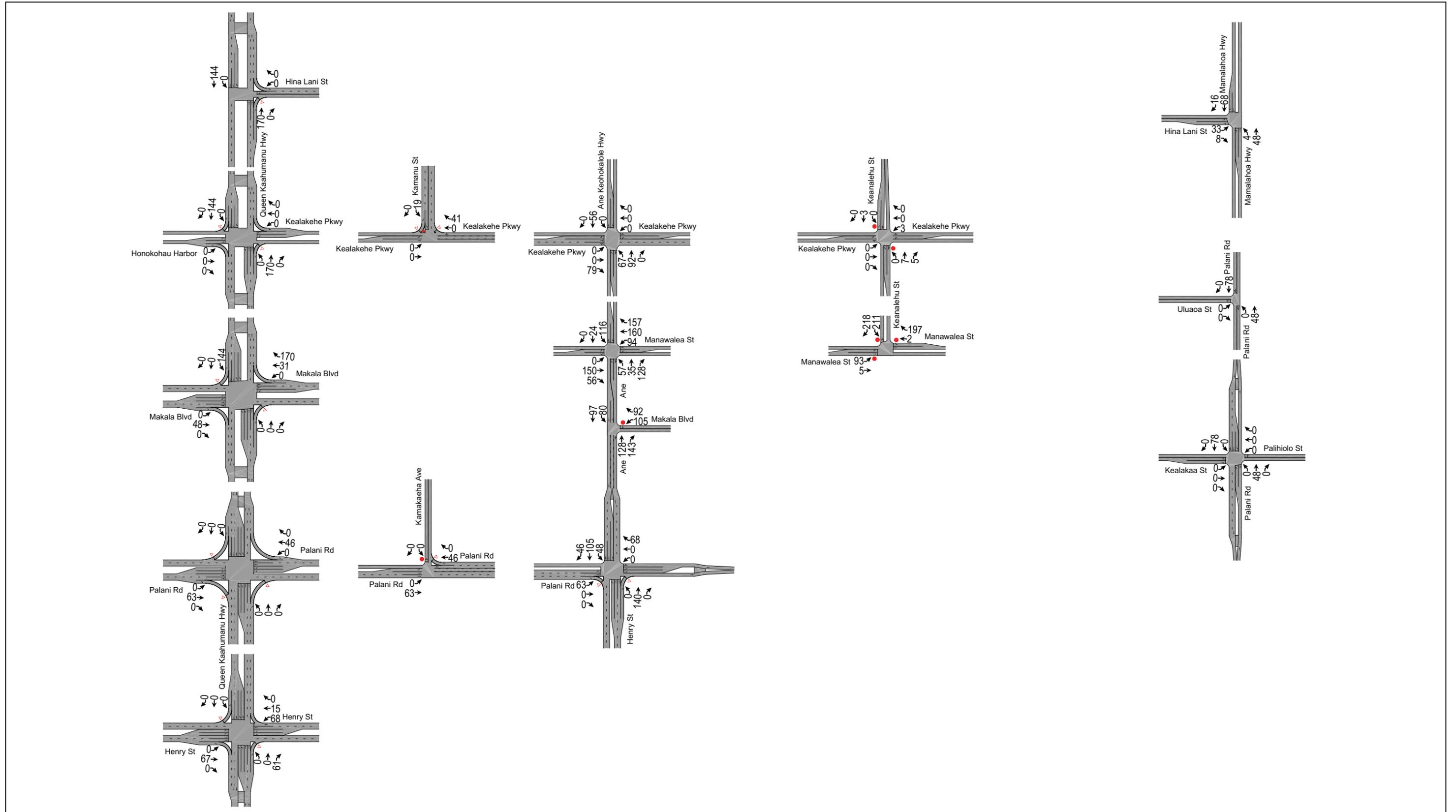


Figure 21. Year 2019 PM Peak Hour Traffic Assignment



4. Year 2019 AM Peak Hour Traffic Analysis With Project

During the Year 2019 AM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.85. The left-turn movement on southbound Queen Kaahumanu Highway is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.84. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.93, during the Year 2019 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The Kamanu Street, Ane Keohokalole Highway, and Keanalehu Street intersections on Kealakehe Parkway are expected to operate at satisfactory Levels of Service, during the Year 2019 AM peak hour of traffic with the proposed project.

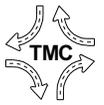
The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.81. The left-turn movements in both directions on Queen Kaahumanu Highway, and on makai bound Makala Boulevard are expected to operate at LOS "D".

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.82, during the Year 2019 AM peak hour of traffic with the proposed project. The left-turn movements in both directions on Palani Road, and on northbound Queen Kaahumanu Highway are expected to operate at LOS "D".

The Queen Kaahumanu Highway and Henry Street intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.88. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.92, during the Year 2019 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.94. Kealakaa Street and southbound Palani Road are expected to operate at LOS "D". The traffic movements at the Palani Road intersections at Kamakaeha Avenue and Uluaoa Street are expected to operate at satisfactory Levels of Services, during the Year 2019 AM peak hour of



traffic with the proposed project. Figure 22 depicts the Year 2019 AM peak hour traffic with the proposed project.

5. Year 2019 PM Peak Hour Traffic Analysis With Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.87, during the Year 2019 PM peak hour of traffic with the proposed project. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

Mamalaho Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.89. The left-turn movement from mauka bound Hina Lani Street and the through movement on southbound Mamalaho Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.89, during the Year 2019 PM peak hour of traffic with the proposed project. The left-turn movements in both directions on Queen Kaahumanu Highway and on makai bound Kealakehe Parkway are expected to operate at LOS "E".

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.91, during the Year 2019 PM peak hour of traffic with the proposed project. The left-turn movements in both directions on Makala Boulevard and on northbound Queen Kaahumanu Highway are expected to operate at LOS "E".

During the Year 2019 PM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D", with a maximum v/c ratio of 0.97. The left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "E". Both approaches of Palani Road also are expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.95. The left turn movement on makai bound Henry Street and the through movement on mauka bound Henry Street are expected to operate at LOS "E".

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 1.00. Both approaches on Palani Road and the northbound approach on Henry Street are expected to operate at LOS "E".

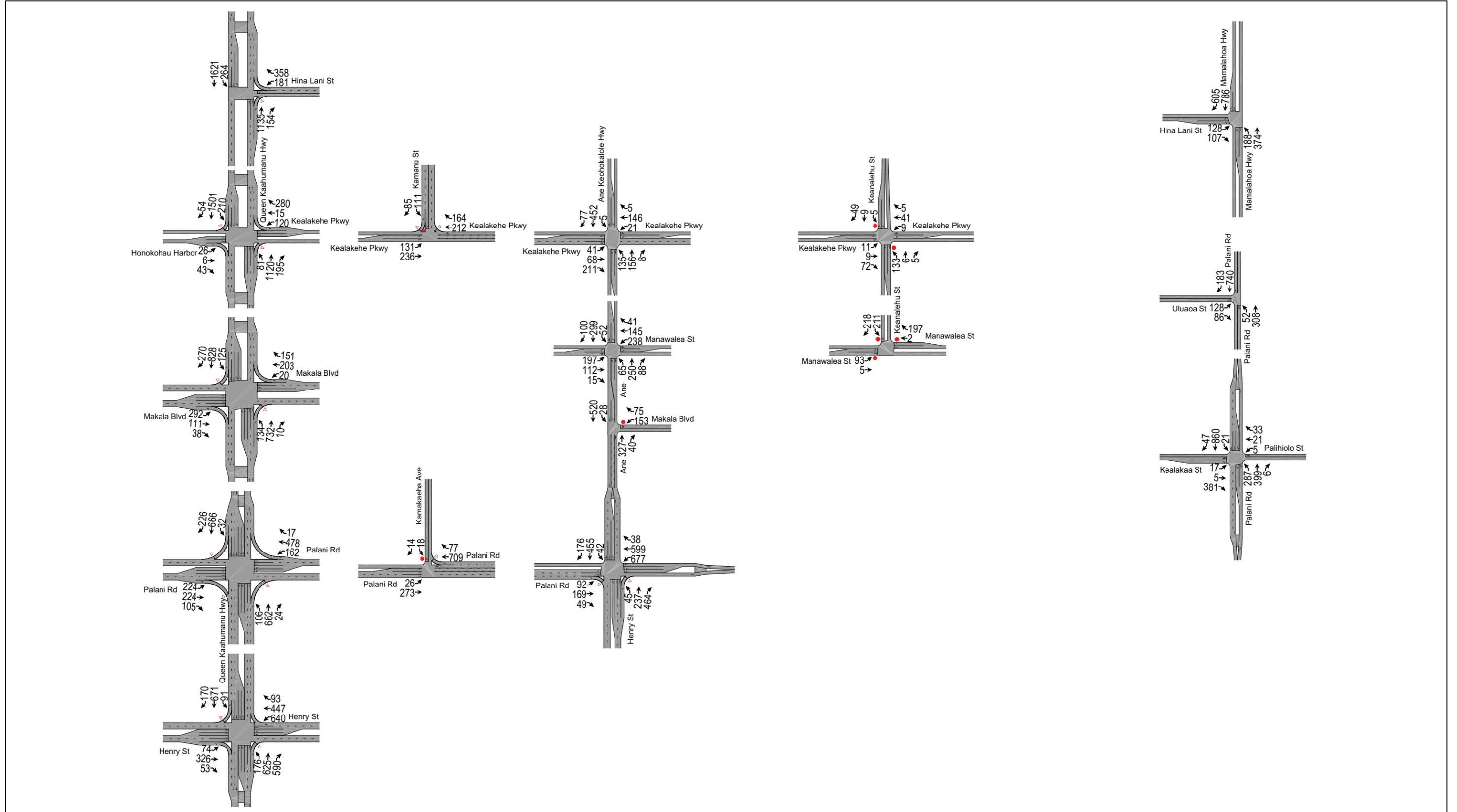
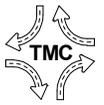


Figure 23. Year 2019 AM Peak Hour Traffic With Project



The traffic movements at the Palani Road intersections at Kamakaeha Avenue, Kealaka Street/Palihiolo Street, and Uluaoa Street are expected to operate at satisfactory Levels of Services, during the Year 2019 PM peak hour of traffic with the proposed project. The Year 2019 PM peak hour traffic with the proposed project is depicted on Figure 23.

6. Year 2019 Proposed Area Mitigation Traffic Improvements With Project

The following area mitigation traffic improvements are proposed to improve highway deficiencies that are expected by the Year 2019 traffic demands with the proposed project:

- a. Queen Kaahumanu Highway and Kealakehe Parkway
 - Widen mauka bound Kealakehe Parkway to provide an exclusive right-turn lane.
- b. Queen Kaahumanu Highway and Makala Boulevard
 - Widen mauka bound Makala Boulevard to provide an exclusive right-turn lane.
 - Widen makai bound Makala Boulevard to provide an exclusive right-turn lane.
 - Restripe southbound Queen Kaahumanu Highway to provide an additional left-turn lane.
- c. Queen Kaahumanu Highway and Palani Road
 - Widen mauka bound Palani Road to provide an exclusive right-turn lane.
 - Widen makai bound Palani Road to provide an exclusive right-turn lane.
 - Widen makai bound Palani Road to provide an additional left-turn lane.
 - Widen southbound Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the existing acceleration on the south leg of Queen Kaahumanu Highway to provide a merging lane in the southbound direction.
- d. Queen Kaahumanu Highway and Henry Street
 - Widen mauka bound Henry Street to provide an exclusive right-turn lane.

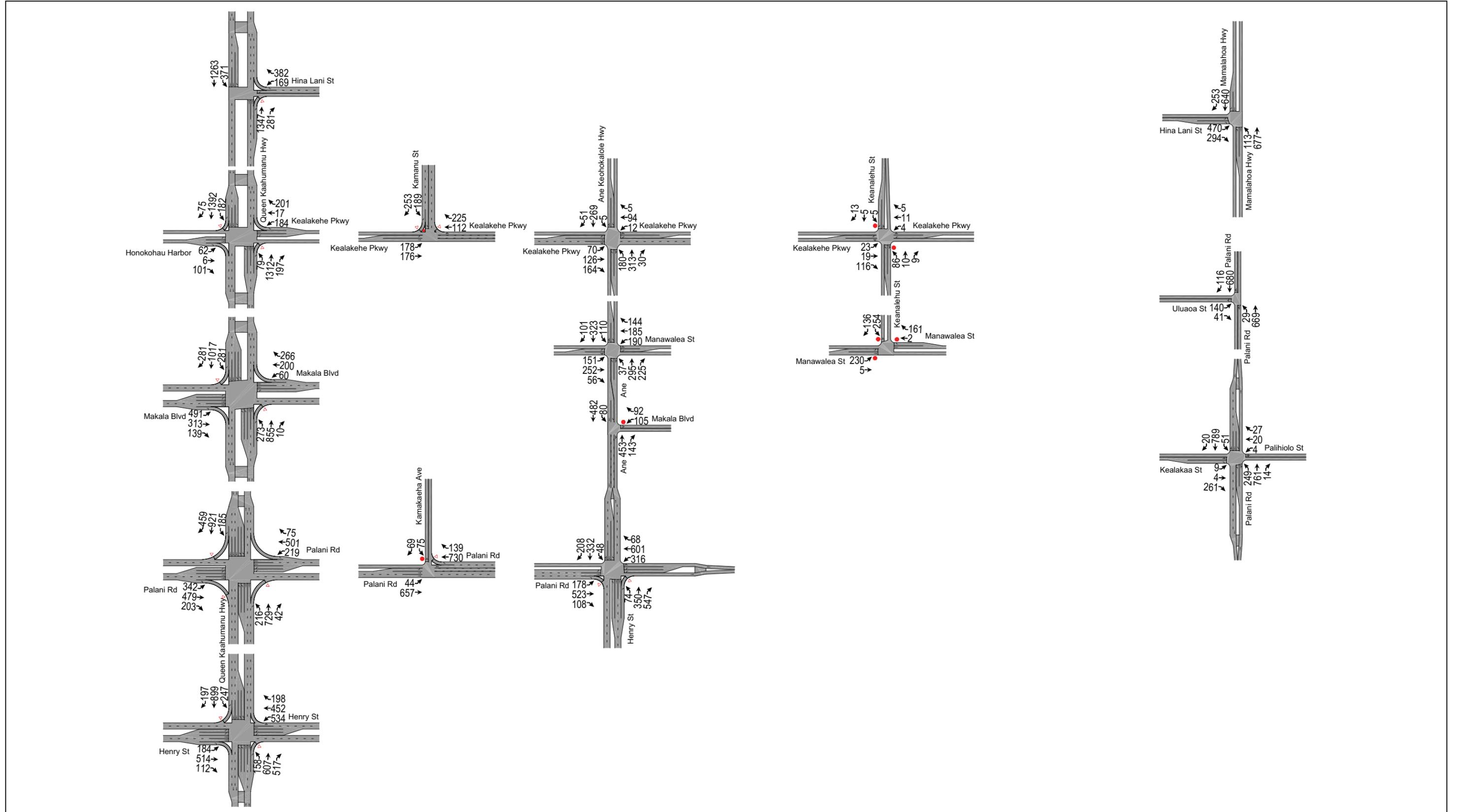


Figure 23. Year 2019 PM Peak Hour Traffic With Project



- e. Palani Road and Henry Street/Ane Keohokalole Highway
 - Widen makai bound Palani Road to provide an additional left-turn lane.
 - Widen northbound Henry Street to provide an exclusive left-turn lane.
 - Widen northbound Henry Street to provide an exclusive right-turn lane.

D. Year 2024 Peak Hour Traffic Analysis With Project

1. Year 2024 Area Mitigation Traffic Improvements With Project

The traffic improvements, recommend in the previous section and Section IV.E.3. (Year 2024 without the project), are assumed to be implemented by the Year 2024 with the proposed project.

2. Year 2024 Local Mitigation Traffic Improvements With Project

The following local mitigation traffic improvements are recommended at the intersection of Ane Keohokalole Highway and Makala Boulevard and at the intersection of Ane Keohokalole Highway and Manawalea Boulevard to provide access to the proposed project. The project civil engineer's total estimated cost of the following local traffic mitigation improvements is \$390,000.

- a. Makala Boulevard and Ane Keohokalole Highway
 - Signalize the intersection of Makala Boulevard and Ane Keohokalole Highway, when it becomes warranted.
- b. Manawalea Street and Ane Keohokalole Highway
 - Widen northbound Ane Keohokalole Highway to provide an exclusive right turn lane.

3. Year 2024 Peak Hour Traffic Assignment

The Year 2024 AM and PM peak hour site-generated traffic assignments were developed based upon existing traffic circulation patterns within the Kealakehe area, and anticipated patterns resulting from future roadways and destinations within the study area. Table 6 summarizes the trip distribution patterns for the Year 2024 peak hour traffic with the proposed project.



Table 6. Year 2024 Trip Distribution					
Residential Trip Distribution Within the Study Area		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Lanihau Center - Phase II		1%	2%	6%	4%
Mohala Commercial Village		1%	1%	2%	2%
Queen Lili`uokalani Trust Lands		5%	4%	5%	8%
Villages of Lai`opua (commercial)		2%	3%	7%	6%
Kaloko Industrial Park		4%	3%	4%	7%
West Hawaii Business Park		11%	8%	12%	19%
Kohanaiki Business Park		3%	3%	4%	5%
Kamakana Villages (commercial)		3%	5%	12%	9%
Subtotals		30%	29%	52%	60%
Queen Kaahumanu Highway	NB	17%	16%	13%	10%
	SB	8%	16%	10%	11%
Palani Road/Mamalaho Highway	EB/NB	20%	9%	17%	6%
	WB/SB	25%	30%	8%	13%
Subtotals		70%	71%	48%	40%

The project-generated trips were assigned to the Year 2024 roadway. The Year 2024 AM and PM peak hour site-generated traffic assignments are depicted on Figures 24 and 25, respectively.

4. Year 2024 AM Peak Hour Traffic Analysis With Project

During the Year 2024 AM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.89. The left-turn movements to and from southbound Queen Kaahumanu Highway are expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

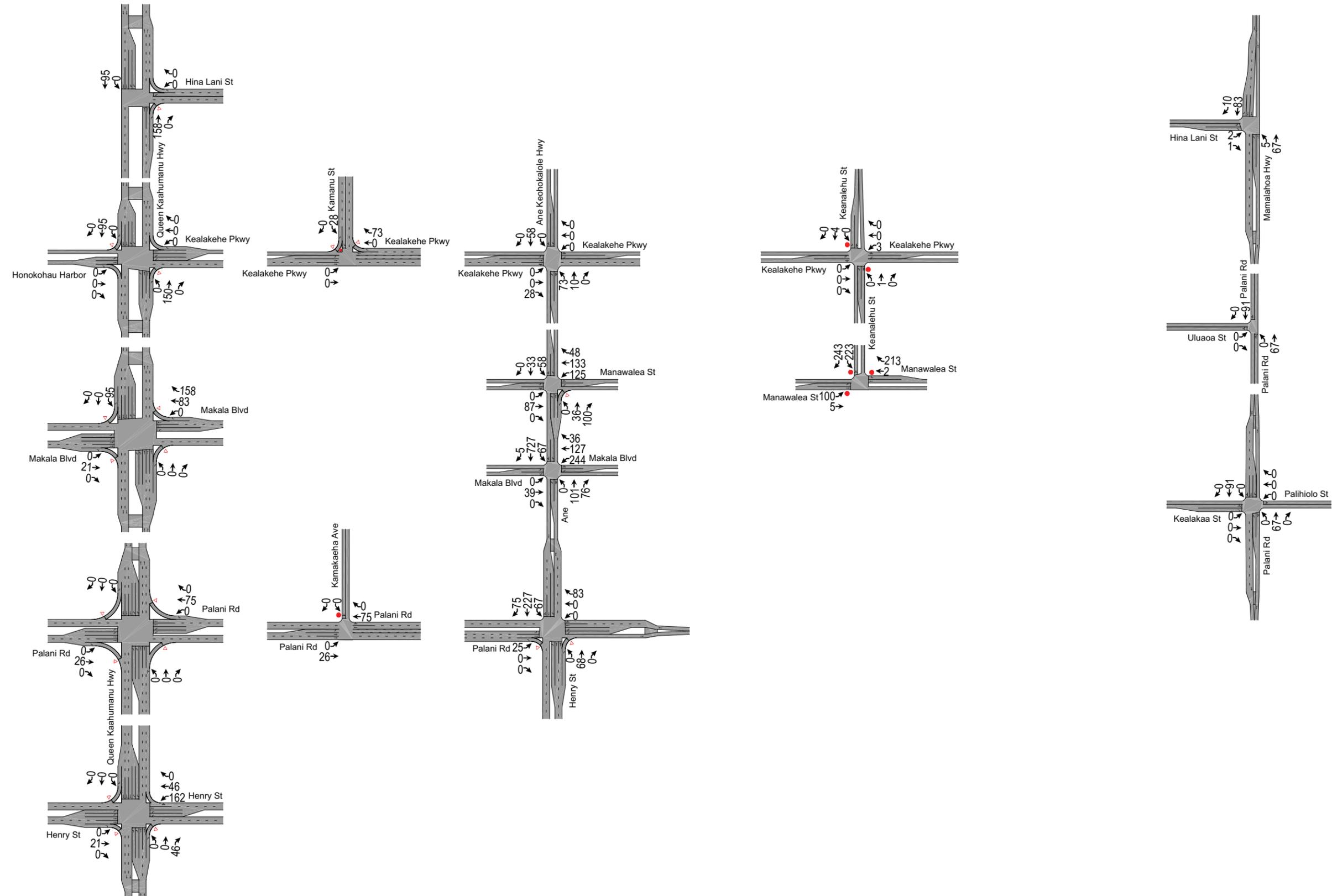


Figure 24. Year 2024 AM Peak Hour Traffic Assignment

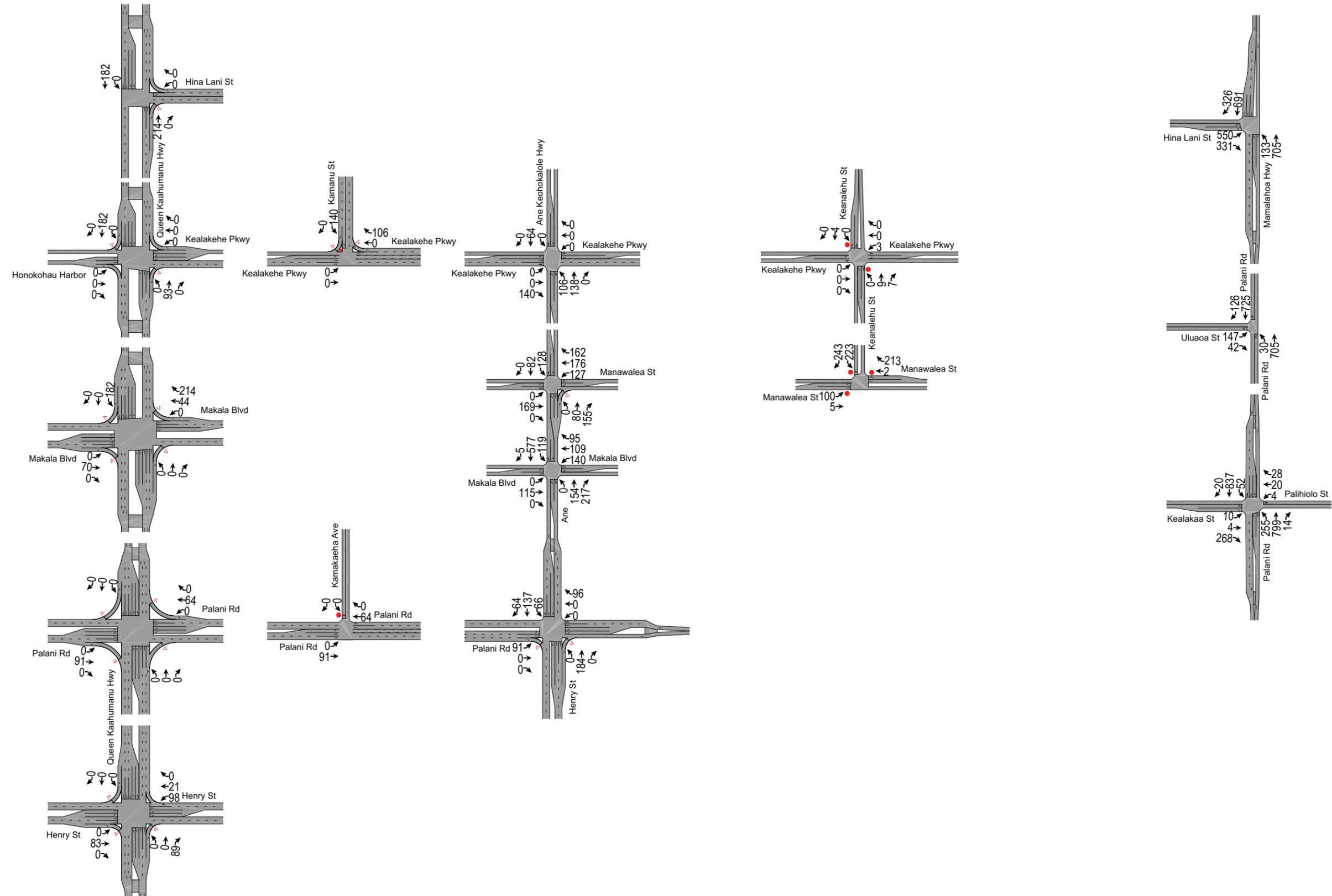


Figure 25. Year 2024 PM Peak Hour Traffic Assignment



The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.92. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.89, during the Year 2024 AM peak hour of traffic with the proposed project. The left-turn movements on all approaches to the intersection are expected to operate at LOS "E".

The left-turn movement from Kamanu Street onto Kealakehe Parkway is expected to operate at LOS "D", during the Year 2024 AM peak hour of traffic with the proposed project. The Kealakehe Parkway and Ane Keohokalole Highway intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.92. The left-turn movement on mauka bound Kealakehe Parkway, and the through movement on makai bound Kealakehe Parkway are expected to operate at LOS "D". The Keanalehu Street and Kealakehe Parkway intersection is expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.84. The traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2024 AM peak hour with the proposed project.

The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.84, during the Year 2024 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Queen Kaahumanu Highway and Henry Street intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.94. The left-turn movements in both directions on Queen Kaahumanu Highway, and the through movement on mauka bound Henry Street are expected to operate at LOS "E".

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "E" with a maximum v/c ratio of 0.99, during the Year 2024 AM peak hour of traffic with the proposed project.

Kamakaeha Avenue is expected to operate at LOS "C" at Palani Road, during the Year 2024 AM peak hour of traffic with the proposed project. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at LOS "D" with a v/c ratio of 0.99. Kealakaa Street is expected to operate at LOS "E". The traffic movements at the intersection of Palani Road and Uluaoa Street are expected to operate at LOS "D" or better. Figure 26 depicts the Year 2024 AM peak hour traffic with the proposed project.

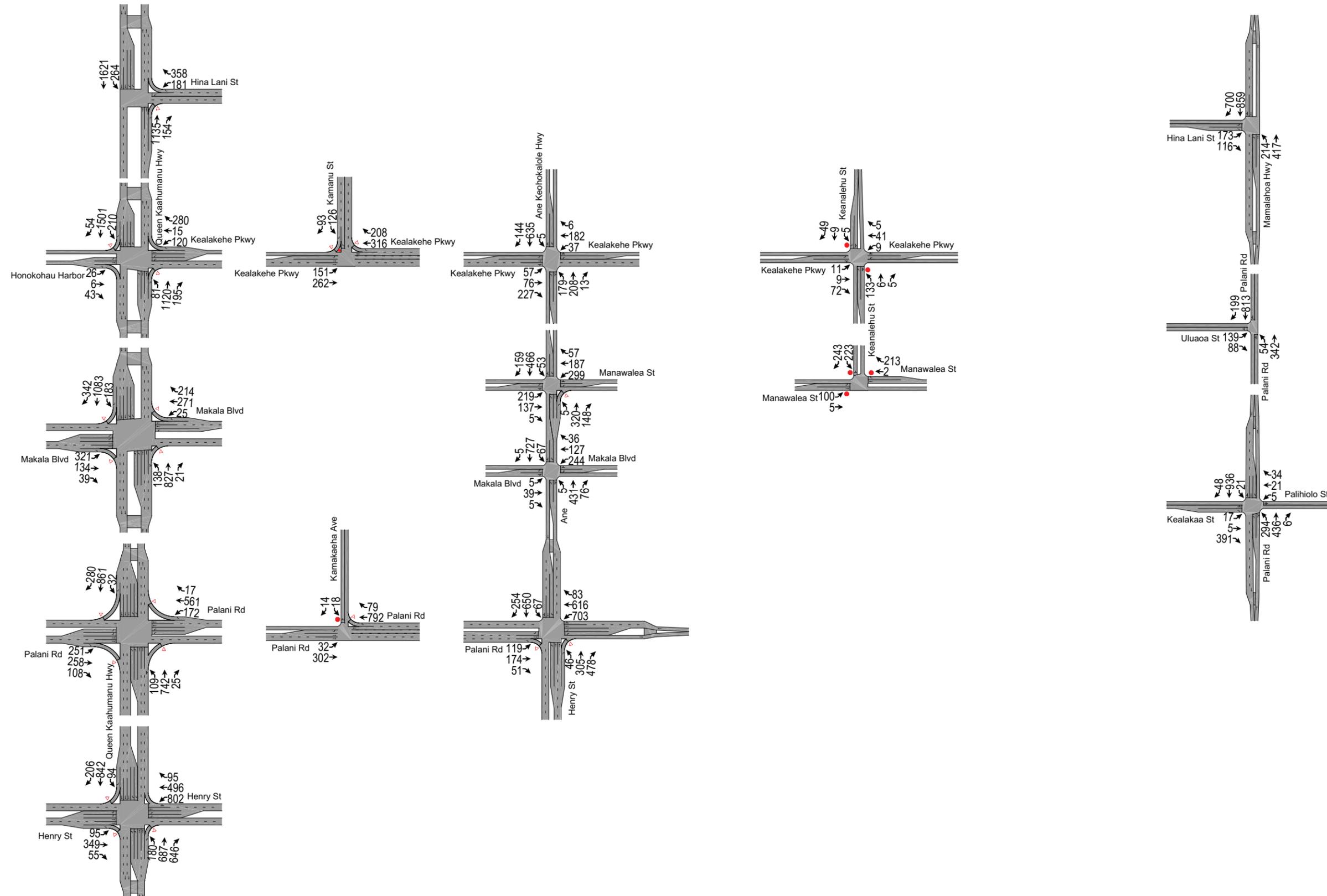
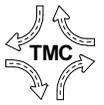


Figure 26. Year 2024 AM Peak Hour Traffic With Project



5. Year 2024 PM Peak Hour Traffic Analysis With Project

The intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.98, during the Year 2024 PM peak hour of traffic with the proposed project. The left-turn movements to and from Queen Kaahumanu Highway are expected to operate at LOS "F".

Mamalaho Highway and Hina Lani Street intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.99. The left-turn movement from mauka bound Hina Lani Street is expected to operate at LOS "E".

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "D" with a maximum v/c ratio of 0.99, during the Year 2024 PM peak hour of traffic with the proposed project. The left-turn movements in both directions on Queen Kaahumanu Highway and on makai bound Kealakehe Parkway are expected to operate at LOS "F".

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.99, during the Year 2024 PM peak hour of traffic with the proposed project. The through movement on makai bound Makala Boulevard, and the left-turn movement on northbound Queen Kaahumanu Highway are expected to operate at LOS "F".

During the Year 2024 PM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.97. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.96. The left turn movements on all approaches, and the through movement on mauka bound Henry Street are expected to operate at LOS "E".

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 1.00. The makai bound approach on Palani Road and the northbound approach on Henry Street are expected to operate at LOS "E".

The traffic movements at the Palani Road intersections at Kamakaeha Avenue, Kealakaa Street/Palihiolo Street, and Uluaoa Street are expected to operate at satisfactory Levels of Services, during the Year 2024 PM peak hour of traffic with the proposed project. The Year 2024 PM peak hour traffic with the proposed project is depicted on Figure 27.

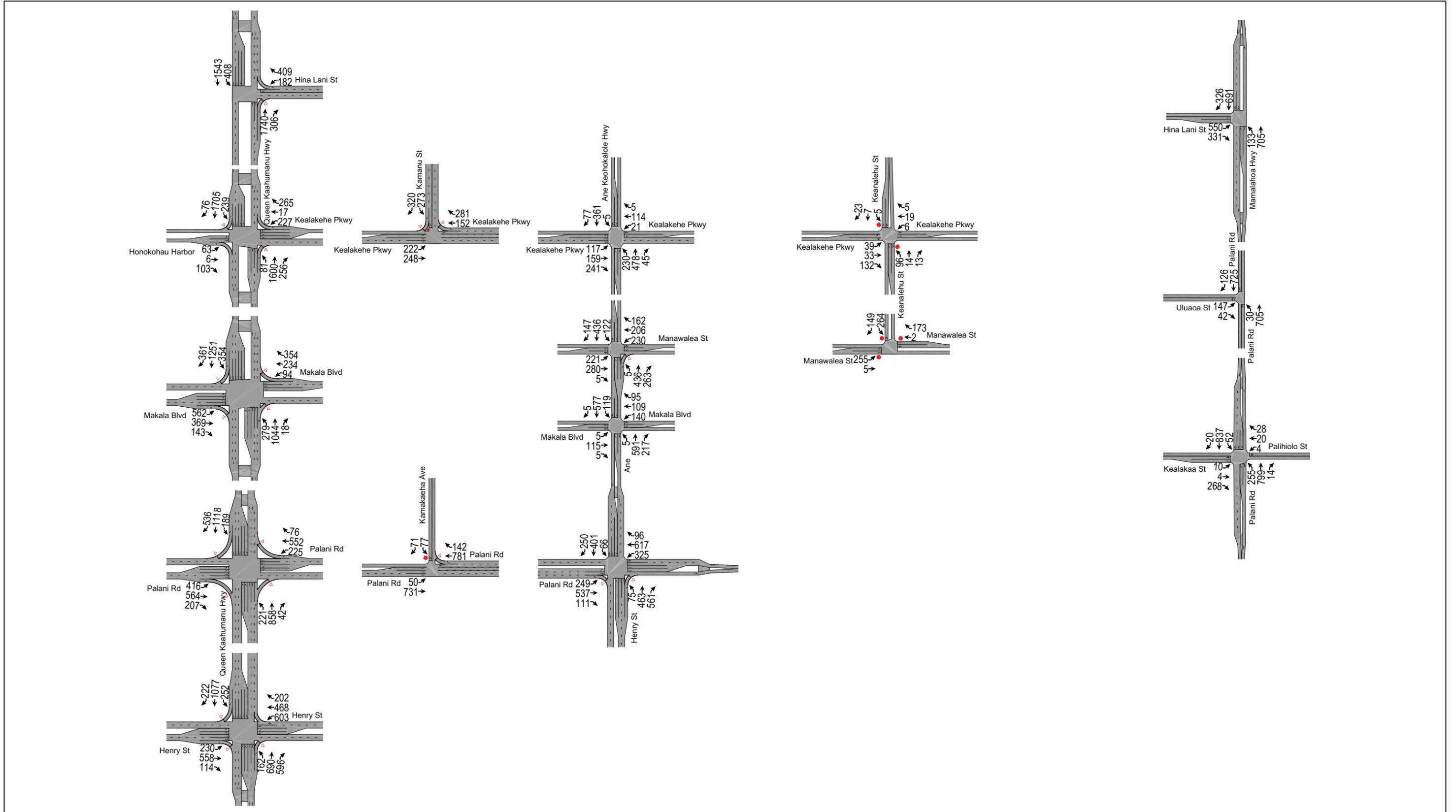
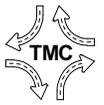


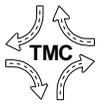
Figure 27. Year 2024 PM Peak Hour Traffic With Project



6. Year 2024 Proposed Area Mitigation Traffic Improvements With Project

The following area mitigation traffic improvements are proposed to improve highway deficiencies which are expected by the Year 2024 with the proposed project:

- a. Mamalahoa Highway and Hina Lani Street
 - Convert the existing right-turn lane on southbound Mamalahoa Highway to a shared through/right-turn lane.
 - Widen the south leg of Mamalahoa Highway to provide a merging lane from two lanes to one lane in the southbound direction.
- b. Queen Kaahumanu Highway and Kealakehe Parkway
 - Widen southbound Queen Kaahumanu Highway to provide an additional left-turn lane.
 - Widen makai bound Kealakehe Parkway to provide an additional left-turn lane.
- c. Queen Kaahumanu Highway and Makala Boulevard
 - Convert the existing right-turn lane on northbound Queen Kaahumanu Highway to a shared through/right-turn lane.
 - Convert the existing acceleration lane on the north leg of Queen Kaahumanu Highway from an acceleration lane to a merging lane from three lanes to two lanes in the northbound direction.
- d. Queen Kaahumanu Highway and Palani Road
 - Convert the existing right-turn lane on northbound Queen Kaahumanu Highway to a shared through/right-turn lane.
 - Convert the existing acceleration lane on the north leg of Queen Kaahumanu Highway from an acceleration lane to a merging lane from three lanes to two lanes in the northbound direction.
- e. Queen Kaahumanu Highway and Henry Street
 - Widen southbound Queen Kaahumanu Highway to provide an additional through lane.
 - Convert the existing acceleration lane on the south leg of Queen Kaahumanu Highway from an acceleration lane to a merging lane from three lanes to two lanes in the southbound direction.



- f. Palani Road and Henry Street/Ane Keohokalole Highway
 - Widen makai bound Palani Road to provide an additional through lane.
 - Widen the makai leg of Palani Road from one lane to two lanes in the makai bound direction.
- g. Palani Road and Kealakaa Street/Palihiolo Street
 - Convert the existing right-turn lane on makai bound Palani Road to a shared through/right-turn lane.
 - Widen the makai leg of Palani Road to provide a merging lane from two lanes to one lane in the makai bound direction.

E. Year 2029 Peak Hour Traffic Impact Analysis With Project

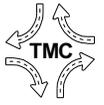
1. Year 2029 Traffic Improvements With Project

The proposed improvements recommended under Sections V.D.6 and IV.F.3 are assumed to be implemented by the Year 2029.

2. Year 2029 Local Mitigation Traffic Improvements With Project

The local mitigation traffic improvements are recommended to provide access to the proposed project. The project civil engineer's total estimated cost of the following local mitigation traffic improvements is \$1,370,000.

- a. Ane Keohokalole Highway and Makala Boulevard
 - Signalize the intersection when it becomes warranted.
- b. Ane Keohokalole Highway and South Street
 - Construct South Street to intersect Ane Keohokalole Highway at a stop-controlled Tee-intersection, which will be restricted to right-turn-in and right-turn-out movements only.
- c. Palani Road and School Street
 - Construct School Street with separate left-turn and right-turn lanes, which will intersect Palani Road at a Tee-intersection.
 - Signalize the intersection of School Street and Palani Road, when it becomes warranted.
 - Widen mauka bound Palani Road to provide an exclusive left-turn lane at School Street.



- Widen makai bound Palani Road to provide an exclusive right-turn lane at School Street.

d. Palani Road and D Street

- Construct D Street to intersect Palani Road at a stop-controlled Tee-intersection, which will be restricted to right-turn-in and right-turn-out movements only.
- Widen makai bound Palani Road to provide right-turn acceleration and deceleration lanes at D Street.

e. Palani Road and C Street

- Construct C Street to intersect Palani Road at a stop-controlled Tee-intersection, which will be restricted to right-turn-in and right-turn-out movements only.
- Widen makai bound Palani Road to provide right-turn acceleration and deceleration lanes at C Street.

3. Year 2029 Peak Hour Traffic Assignment

The Year 2029 AM and PM peak hour site-generated traffic assignments were developed based upon existing traffic circulation patterns within the Kealakehe area, anticipated patterns resulting from future roadways, and destinations within the study area. Table 7 summarizes the trip distribution patterns for the Year 2029 peak hour traffic with the proposed project.



Table 7. Year 2029 Trip Distribution					
Residential Trip Distribution Within the Study Area		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Lanihau Center - Phase II		1%	2%	5%	4%
Mohala Commercial Village		0%	1%	2%	1%
Queen Lili`uokalani Trust Lands		5%	3%	4%	8%
Villages of Lai`opua (commercial)		1%	2%	6%	5%
Kaloko Industrial Park		4%	2%	4%	6%
West Hawaii Business Park		10%	6%	10%	17%
Kohanaiki Business Park		3%	2%	3%	5%
Kamakana Villages (commercial)		4%	7%	17%	15%
Subtotals		29%	26%	50%	61%
Queen Kaahumanu Highway	NB	17%	17%	14%	10%
	SB	9%	17%	10%	11%
Palani Road/Mamalaho Highway	EB/NB	20%	9%	18%	6%
	WB/SB	25%	31%	8%	13%
Subtotals		71%	74%	50%	39%

The project-generated trips were assigned to the Year 2029 roadway network with the implementation of the proposed mitigation recommended under Sections V.C.6. and V.D.2. The Year 2029 AM and PM peak hour site-generated traffic assignments are depicted on Figures 28 and 29, respectively.

4. Year 2029 AM Peak Hour Traffic Analysis With Project

During the Year 2029 AM peak hour of traffic with the proposed project, the intersection of Queen Kaahumanu Highway and Hina Lani Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.4. The left-turn movement on southbound Queen Kaahumanu Highway at Hina Lani Street is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

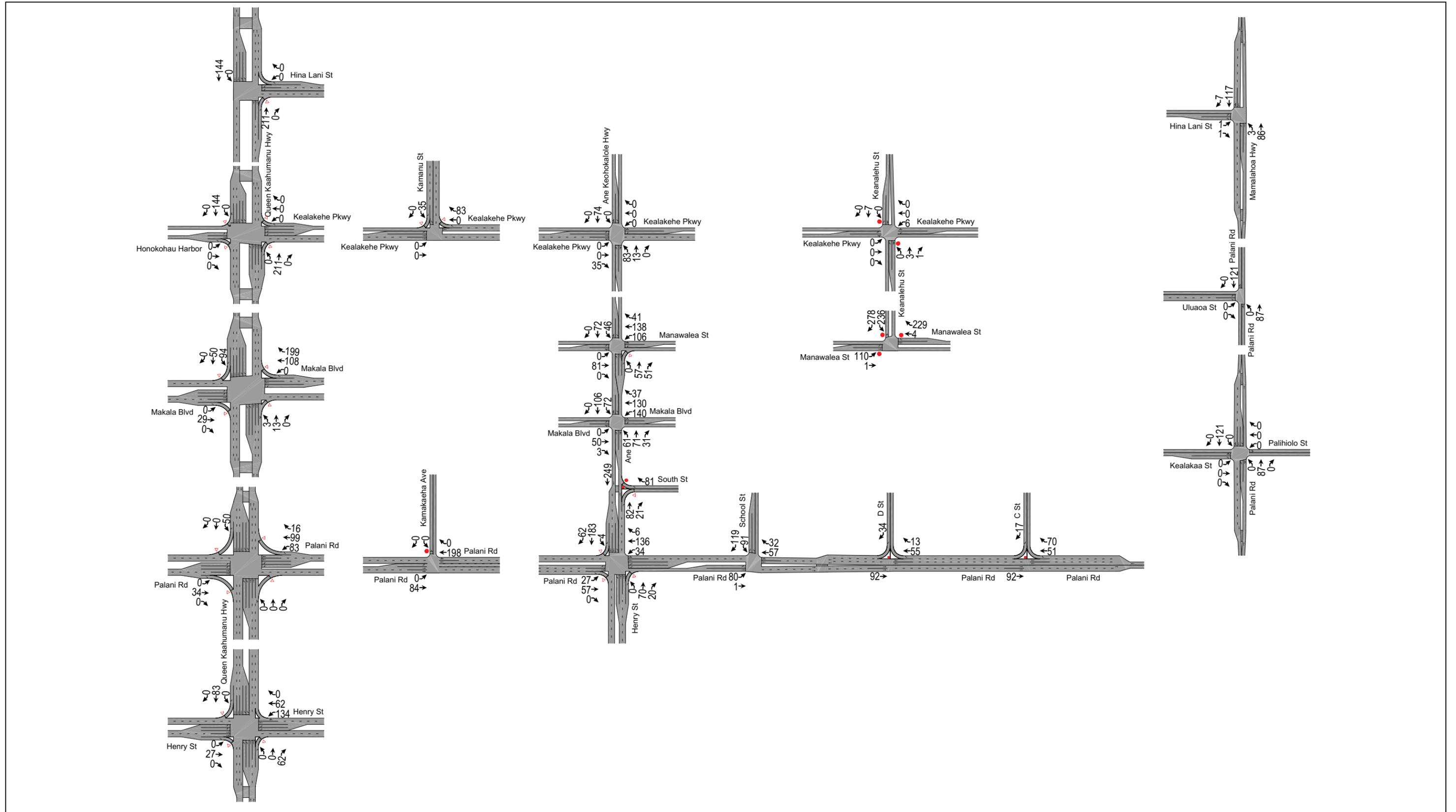


Figure 28. Year 2029 AM Peak Hour Traffic Assignment

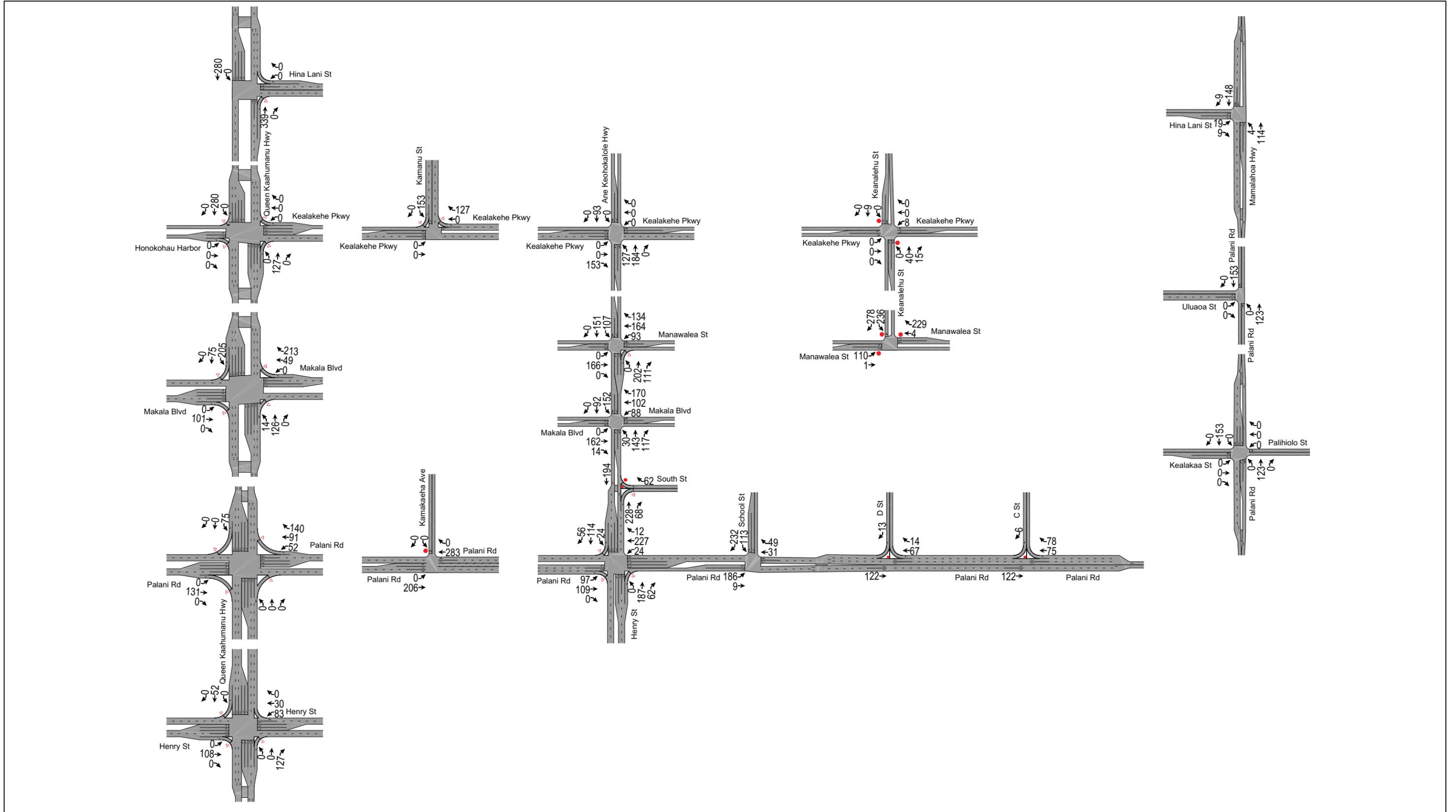


Figure 29. Year 2029 PM Peak Hour Traffic Assignment



The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.98. The individual traffic movements at the intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic with the proposed project.

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "B" with a maximum v/c ratio of 0.64. The traffic movements at the intersection are expected to operate at satisfactory Levels of Service.

The Kealakehe Parkway intersections at Kamanu Street and at Keanalehu Street are expected to operate at satisfactory Levels of Service. The intersection of Kealakehe Parkway and Ane Keohokalole Highway is expected to operate at LOS "C" with a maximum v/c ratio of 0.93. The traffic movements at the intersection of Kealakehe Parkway and Ane Keohokalole Highway is expected to operate at LOS "D" or better.

The Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.78, during the Year 2029 AM peak hour of traffic with the proposed project. The individual traffic movements at the intersection is expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic with the proposed project.

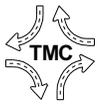
The Queen Kaahumanu Highway and Palani Road intersection is expected to operate at LOS "C" with a maximum v/c ratio of 0.86, during the Year 2029 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at LOS "D" or better.

The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.94. The traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic with the proposed project.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.97, during the Year 2029 AM peak hour of traffic with the proposed project. The traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 AM peak hour of traffic with the proposed project.

The intersection of Manawalea Street and Ane Keohokalole Highway is expected to operate at LOS "C" with a maximum v/c ratio of 0.90. The individual traffic movements at the intersection are expected to operate at LOS "D" or better.

The Ane Keohokalole Highway intersections at Makala Boulevard and at South Street are expected to operate at satisfactory Levels of Service. The Palani Road intersections at School Street, C Street, and D Street also are expected to operate at



satisfactory Levels of Service, during the Year 2029 AM peak hour of traffic with the proposed project.

The Palani Road intersections at Kamakaeha Avenue and at Kealakee Street/Palihiolo Street are expected to operate at satisfactory Levels of Service. The intersection of Palani Road and Uluaoa Street is expected to operate at LOS "D" with a maximum v/c ratio of 1.09. Uluaoa Street is expected to operate at LOS "F" at Palani Road. Figure 30 depicts the Year 2029 AM peak hour traffic with the proposed project.

5. Year 2029 PM Peak Hour Traffic Analysis With Project

The Queen Kaahumanu Highway intersection at Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 1.01. The traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 PM peak hour of traffic with the proposed project.

The intersection of Mamalahoa Highway and Hina Lani Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.93. The left-turn movement on mauka bound Hina Lani Street is expected to operate at LOS "D".

The intersection of Queen Kaahumanu Highway and Kealakehe Parkway is expected to operate at LOS "C" with a maximum v/c ratio of 0.87, during the Year 2029 PM peak hour of traffic with the proposed project. The traffic movements at this intersection are expected to operate at LOS "D" or better.

The left-turn movement from Kamanu Street onto Kealakehe Parkway is expected to operate at LOS "E" under unsignalized conditions. The Kealakehe Parkway intersections at Ane Keohokalole Highway and at Keanalehu Street are expected to operate at satisfactory Levels of Service.

During the Year 2029 PM peak hour of traffic with the proposed project, the Queen Kaahumanu Highway and Makala Boulevard intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.95. The left-turn movements on northbound Queen Kaahumanu Highway and in both directions on Makala Boulevard are expected to operate at LOS "E". The through movement on makai bound Makala Boulevard also is expected to operate at LOS "E", during the Year 2029 PM peak hour of traffic with the proposed project.

The intersection of Queen Kaahumanu Highway and Palani Road is expected to operate at LOS "D" with a maximum v/c ratio of 0.97. The left-turn movements in both directions on Palani Road and the through movement in the makai bound direction are expected to operate at LOS "E". The other traffic movements at this intersection are expected to operate at LOS "D" or better, during the Year 2029 PM peak hour of traffic with the proposed project.

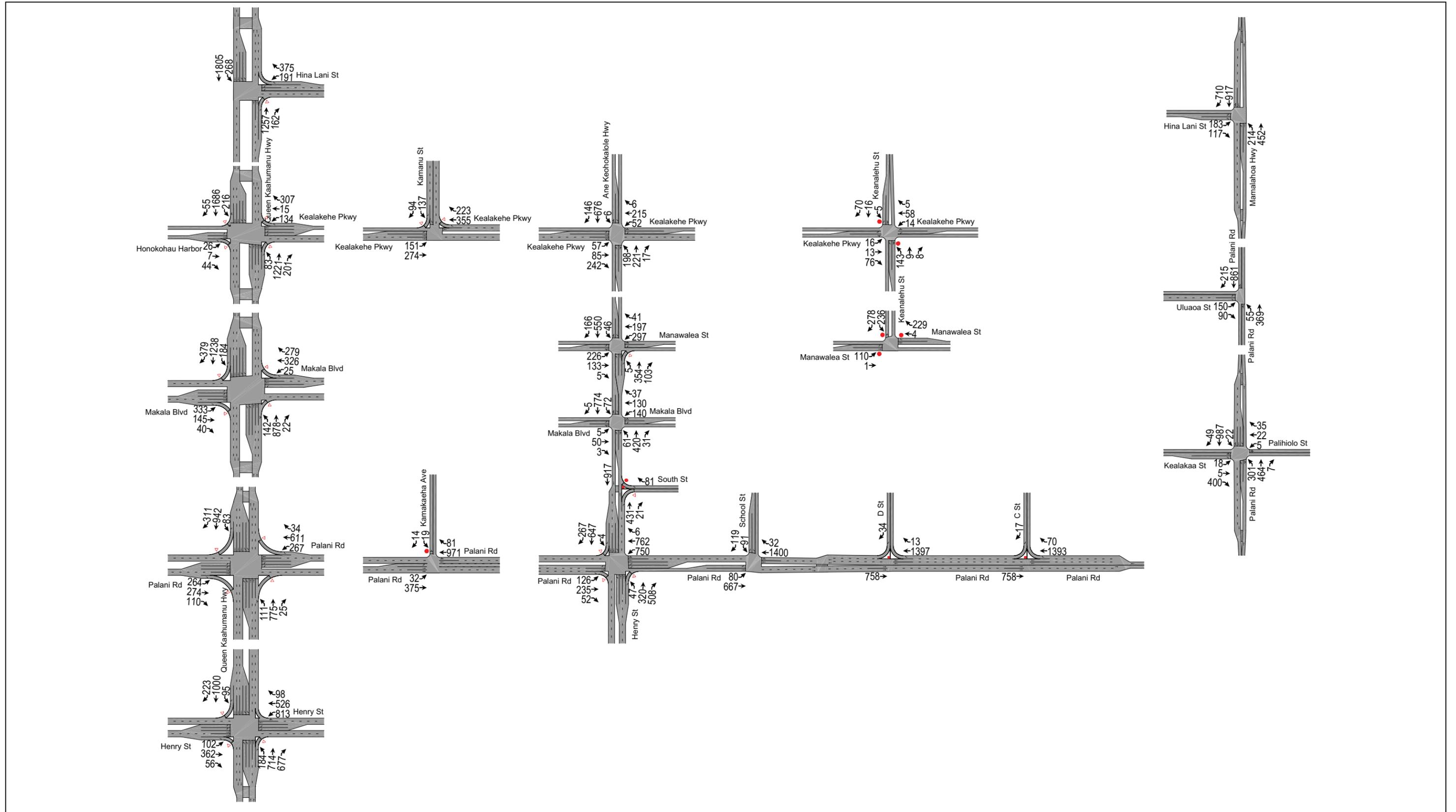
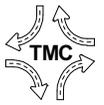


Figure 30. Year 2029 AM Peak Hour Traffic With Project



The intersection of Queen Kaahumanu Highway and Henry Street is expected to operate at LOS "D" with a maximum v/c ratio of 0.98. The left-turn movement on northbound Queen Kaahumanu Highway is expected to operate at LOS "F". The left-turn movements in both directions on Queen Kaahumanu Highway are expected to operate at LOS "E". The other traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 PM peak hour of traffic with the proposed project.

The Palani Road and Henry Street/Ane Keohokalole Highway intersection is expected to operate at LOS "D" with a maximum v/c ratio of 0.98, during the Year 2029 PM peak hour of traffic with the proposed project. The left-turn movements in both directions on Palani Road and the mauka bound through movement are expected to operate at LOS "E". The other traffic movements at the intersection are expected to operate at LOS "D" or better, during the Year 2029 PM peak hour of traffic with the proposed project.

The intersection of Manawalea Street and Ane Keohokalole Highway is expected to operate at LOS "D" with a maximum v/c ratio of 0.88. The individual traffic movements at the intersection are expected to operate at LOS "D" or better.

The Ane Keohokalole Highway intersections at Makala Boulevard and at South Street are expected to operate at satisfactory Levels of Service. The Palani Road intersections at C Street, and D Street also are expected to operate at satisfactory Levels of Service, during the Year 2029 PM peak hour of traffic with the proposed project. The intersection of Palani Road and School Street is expected to operate at LOS "B" with a maximum v/c ratio of 0.92. School Street is expected to operate at LOS "D" at Palani Road.

Kamakaeha Avenue is expected to operate at LOS "E" at Palani Road. The intersection of Palani Road and Kealakaa Street/Palihiolo Street is expected to operate at satisfactory Levels of Service. The intersection of Palani Road and Uluaoa Street is expected to operate at LOS "C" with a maximum v/c ratio of 0.83. Uluaoa Street is expected to operate at LOS "D" at Palani Road. The Year 2029 PM peak hour traffic with the proposed project is depicted on Figure 31.

6. Year 2029 Proposed Area Mitigation Traffic Improvements With Project

The following area mitigation traffic improvements are proposed to improve deficiencies that are expected by the Year 2029 traffic demands with the proposed project:

- a. Kealakehe Parkway and Kamanu Street
 - Signalize the intersection, when it becomes warranted.

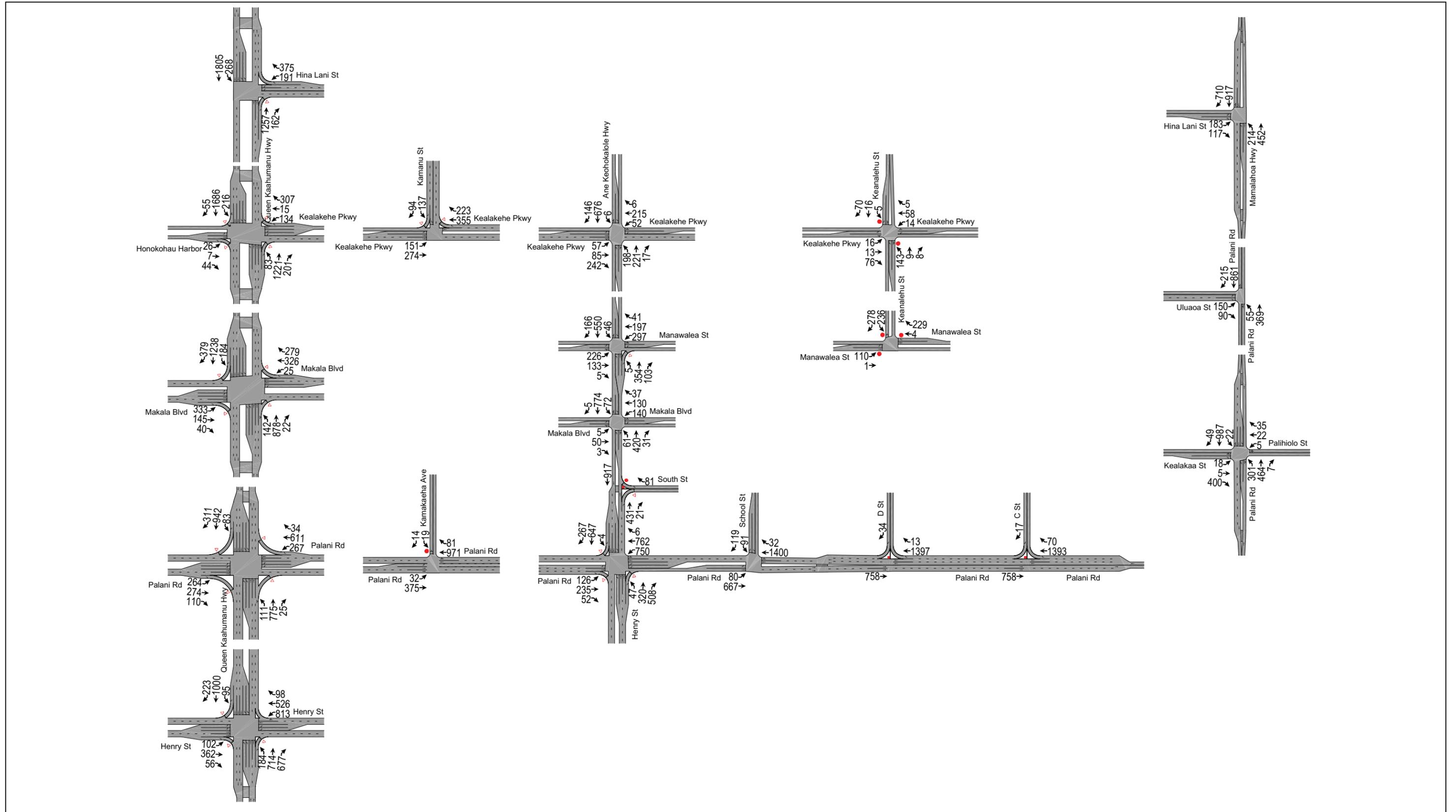
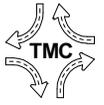


Figure 31. Year 2029 PM Peak Hour Traffic With Project



- b. Palani Road and Henry Street/Ane Keohokalole Highway
 - Widen southbound Ane Keohokalole Highway to provide an exclusive right-turn lane.
- c. Palani Road and Kamakaeha Avenue
 - Convert the existing right-turn lane on makai bound Palani Road to a shared through/right-turn lane.
 - Widen the makai leg of Palani Road from one lane to two lanes in the makai bound direction.
- d. Palani Road and Uluaoa Street
 - Restripe Uluaoa Street to provide separate left-turn and right-turn lanes at Palani Road.

VI. Conclusions

Kamakana Villages will provide pedestrian, bicycle, and bus facilities, as well as provide connectivity to the surrounding street network. Kamakana Villages will provide affordable housing, which will be located in proximity to schools, shopping centers, and employment centers.

Kamakana Villages will provide more than twice the number of affordable housing credits required under Chapter 11, Hawai'i County Code. Therefore, under the Hawai'i County Code Section 25-2-46(h)(1), HHFDC/Forest City Hawai'i Kona, LLC shall not be required to perform any area mitigation traffic improvements, as discussed herein.

Table 8 summarizes the capacity analysis prepared for this traffic impact analysis. The traffic mitigation improvements, summarized in Table 9, are expected to maintain minimum desirable Level of Service "D" or better conditions throughout the study area with the full build-out and occupancy of the proposed Kamakana Villages at Keahuolu through the Year 2029.

Table 8.1 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
Existing AM Peak Hour	Queen Kaahumanu Highway and Hina Lani Street	Existing	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	B	B	N/A	B	
			Delay	N/A	N/A	N/A	34.2	N/A	7.1	N/A	25.6	3.5	10.4	10.8	N/A	15.9	
			v/c	N/A	N/A	N/A	0.63	N/A	0.35	N/A	0.74	0.41	0.46	0.54	N/A	0.74	
	Mamalahoa Highway and Hina Lani Street	Existing	LOS	D	N/A	A	N/A	N/A	N/A	A	A	N/A	N/A	C	A	B	
			Delay	41.6	N/A	6.5	N/A	N/A	N/A	10.0	3.5	N/A	N/A	21.6	5.6	14.6	
			v/c	0.34	N/A	0.27	N/A	N/A	N/A	0.49	0.21	N/A	N/A	0.81	0.29	0.81	
	Queen Kaahumanu Highway and Kealakehe Parkway	Existing	LOS	B			E			A	B	C	A	B	C	A	C
			Delay	18.8			59.7			7.8	13.1	26.9	2.5	15.4	30	3.3	25.0
			v/c	0.21			0.83			0.29	0.38	0.79	0.40	0.56	0.86	0.06	0.86
	Queen Kaahumanu Highway and Makala Boulevard	Existing	LOS	C	B		D	C		D	B	A	D	C	A	C	
			Delay	30.5	17.8		37.3	26.0		36.1	17.7	7.1	37.4	21.7	4.3	20.9	
			v/c	0.47	0.20		0.19	0.40		0.36	0.56	0.04	0.19	0.58	0.33	0.58	
	Queen Kaahumanu Highway and Palani Road	Existing	LOS	D	A		D	C		D	C	B	D	C	A	C	
			Delay	36.1	9.8		37.2	28.5		37.1	21	10.4	35.1	25.1	5.6	22.5	
			v/c	0.55	0.16		0.13	0.57		0.38	0.58	0.02	0.14	0.62	0.46	0.62	
	Queen Kaahumanu Highway and Henry Street	Existing	LOS	D	D		D	C		D	C	A	D	C	A	C	
			Delay	37.2	40.8		39.9	32.3		49.5	32.6	6.6	47.8	33.8	7.6	31.0	
			v/c	0.32	0.72		0.68	0.66		0.58	0.64	0.6	0.37	0.58	0.29	0.72	
	Kealakehe Parkway and Kamanu Street	Existing	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D			A	
			Delay	8.7	0	N/A	N/A	0		N/A	N/A	N/A	34.2			4.2	
			v/c	0.04	0.28	N/A	N/A	0.33		N/A	N/A	N/A	0.54			0.54	
	Kealakehe Parkway and Ane Keohokalole Highway	Existing	LOS	A	A	A	A	A		C	B		B	B		A	
			Delay	7.8	0.0	0.0	8.3	0.0		23.8	12.1		11.4	13.0		5.5	
			v/c	0.0	0.04	0.23	0	0.16		0.52	0.02		0.01	0.02		0.52	
	Kealakehe Parkway and Keanalehu Street	Existing	LOS	N/A	N/A	A	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A	N/A	A	
			Delay	N/A	N/A	7.5	N/A	N/A	N/A	9.3	N/A	N/A	N/A	N/A	N/A	9.0	
			v/c	N/A	N/A	0.12	N/A	N/A	N/A	0.34	N/A	N/A	N/A	N/A	N/A	0.34	
Palani Road and Henry Street	Existing	LOS	N/A	C		D	A	N/A	C	N/A	B	N/A	N/A	N/A	C		
		Delay	N/A	26.8		47.9	8.0	N/A	23.6	N/A	10.8	N/A	N/A	N/A	26.0		
		v/c	N/A	0.59		1.00	0.49	N/A	0.17	N/A	0.73	N/A	N/A	N/A	1.00		
Palani Road and Kamakaeha Avenue	Existing	LOS	N/A	A	N/A	N/A	A	A	N/A	N/A	N/A	B			A		
		Delay	N/A	0.1	N/A	N/A	0	0	N/A	N/A	N/A	12.3			0.7		
		v/c	N/A	>0.01	N/A	N/A	0.22	0.05	N/A	N/A	N/A	0.07			0.22		
Palani Road and Kealakaa Street	Existing	LOS	F	N/A	F	N/A	N/A	N/A	A	A	N/A	N/A	A	A	F		
		Delay	92.6	N/A	175.7	N/A	N/A	N/A	4.5	7.5	N/A	N/A	0	0	50.6		
		v/c	0.33	N/A	1.29	N/A	N/A	N/A	0.32	0.32	N/A	N/A	>0.01	0.03	1.29		
Palani Road and Uluaoa Street	Existing	LOS	F	N/A	F	N/A	N/A	N/A	A	A	N/A	N/A	A		B		
		Delay	91.7	N/A	91.7	N/A	N/A	N/A	1.6	4.0	N/A	N/A	0.0		13.7		
		v/c	0.95	N/A	0.95	N/A	N/A	N/A	0.12	0.12	N/A	N/A	0.62		0.95		

Table 8.2 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
Existing PM Peak Hour	Queen Kaahumanu Highway and Hina Lani Street	Existing	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	C	B	N/A	C	
			Delay	N/A	N/A	N/A	51.2	N/A	6.3	N/A	36.2	4.1	31.8	17.5	N/A	23.4	
			v/c	N/A	N/A	N/A	0.83	N/A	0.49	N/A	0.84	0.57	0.77	0.69	N/A	0.84	
	Mamalahoa Highway and Hina Lani Street	Existing	LOS	C	N/A	A	N/A	N/A	N/A	A	A	N/A	N/A	C	A	B	
			Delay	32.9	N/A	6.3	N/A	N/A	N/A	7.0	8.7	N/A	N/A	25.0	5.4	16.3	
			v/c	0.63	N/A	0.39	N/A	N/A	N/A	0.23	0.47	N/A	N/A	0.78	.012	0.78	
	Queen Kaahumanu Highway and Kealakehe Parkway	Existing	LOS	E			F			C	F	D	B	C	E	A	E
			Delay	77.3			129.6			26.7	190.3	47.4	13.3	28.1	78.9	6.9	70.0
			v/c	0.73			1.02			0.17	1.16	0.80	0.22	0.49	1.00	0.10	1.16
	Queen Kaahumanu Highway and Makala Boulevard	Existing	LOS	D	E		E	E		E	C	A	D	D	A	D	
			Delay	37.9	55.1		67.1	63.0		64.0	28.1	8.3	54.7	41.6	4.9	40.0	
			v/c	0.60	0.86		0.71	0.78		0.81	0.50	0.07	0.57	0.89	0.45	0.89	
	Queen Kaahumanu Highway and Palani Road	Existing	LOS	E	B		D	D		E	C	A	D	C	A	C	
			Delay	55.7	17.9		53.2	41.3		68.2	26	9.4	47.9	34.5	9.7	33.3	
			v/c	0.76	0.44		0.37	0.71		0.80	0.49	0.03	0.54	0.84	0.54	0.84	
	Queen Kaahumanu Highway and Henry Street	Existing	LOS	D	E		D	D		E	D	A	E	D	A	D	
			Delay	46.4	55.5		53.7	41.4		67.3	39.9	7.2	65.2	46.8	6.7	42.1	
			v/c	0.29	0.80		0.79	0.75		0.68	0.54	0.60	0.67	0.79	0.34	0.80	
	Kealakehe Parkway and Kamanu Street	Existing	LOS	A	A	N/A	N/A	A		N/A	N/A		D			A	
			Delay	8.7	0	N/A	N/A	0		N/A	N/A		34.2			4.2	
			v/c	0.04	0.28	N/A	N/A	0.33		N/A	N/A		0.54			0.54	
	Kealakehe Parkway and Ane Keohokalole Highway	Existing	LOS	A	A	A	A	A		B	B		B	B		A	
			Delay	7.4	0.0	0.0	7.9	0.0		14.0	11.2		10.2	10.5		3.9	
			v/c	0.00	0.08	0.10	0.00	0.06		0.27	0.01		0.01	0.02		0.27	
	Kealakehe Parkway and Keanalehu Street	Existing	LOS	N/A	N/A	A	N/A	N/A	N/A	A	N/A		N/A	N/A		A	
			Delay	N/A	N/A	7.7	N/A	N/A	N/A	8.8	N/A		N/A	N/A		8.2	
			v/c	N/A	N/A	0.20	N/A	N/A	N/A	0.22	N/A		N/A	N/A		0.22	
Palani Road and Henry Street	Existing	LOS	N/A	D		C	A	N/A	C	N/A	B	N/A	N/A	N/A	C		
		Delay	N/A	45.7		33.4	6.5	N/A	26.6	N/A	11.7	N/A	N/A	N/A	26.3		
		v/c	N/A	0.93		0.86	0.37	N/A	0.3	N/A	0.76	N/A	N/A	N/A	0.93		
Palani Road and Kamakaeha Avenue	Existing	LOS	N/A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A		
		Delay	N/A	0.1	N/A	N/A	0	0	N/A	N/A	N/A	17.7	N/A	17.7	2.4		
		v/c	N/A	>0.01	N/A	N/A	0.21	0.09	N/A	N/A	N/A	0.35	N/A	0.35	0.35		
Palani Road and Kealakaa Street	Existing	LOS	F	N/A	C	N/A	N/A	N/A	A	A	N/A	N/A	A	A	A		
		Delay	99.0	N/A	20.0	N/A	N/A	N/A	4.6	6.3	N/A	N/A	0	0	6.5		
		v/c	0.24	N/A	0.52	N/A	N/A	N/A	0.28	0.28	N/A	N/A	>0.01	0.02	0.52		
Palani Road and Uluaoa Street	Existing	LOS	F	N/A	F	N/A	N/A	N/A	A	A	N/A	N/A	A		B		
		Delay	86.7	N/A	86.7	N/A	N/A	N/A	0.4	0.9	N/A	N/A	0.0		12.0		
		v/c	0.91	N/A	0.91	N/A	N/A	N/A	0.03	0.03	N/A	N/A	0.43		0.91		

Table 8.3 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2014 AM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	B	A	N/A	B	
			Delay	N/A	N/A	N/A	25.0	N/A	6.1	N/A	21.1	5.3	12.3	8.3	N/A	13.5	
			v/c	N/A	N/A	N/A	0.55	N/A	0.43	N/A	0.66	0.22	0.58	0.45	N/A	0.66	
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	D	A	N/A	N/A	C	A	B	
			Delay	39.6	N/A	11	N/A	N/A	N/A	42.4	3.6	N/A	N/A	25.2	7.1	19.7	
			v/c	0.36	N/A	0.32	N/A	N/A	N/A	0.84	0.21	N/A	N/A	0.86	0.48	0.86	
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C			C			A	C	C	A	C	A	A	B
			Delay	26.5			31.4			0.2	30.8	20.2	4.1	28.2	8.7	2.6	14.7
			v/c	0.47			0.27			0.12	0.37	0.71	0.3	0.72	0.5	0.05	0.72
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	C		D	C		D	C	B	D	C	A	C	
			Delay	38.3	28.9		38.4	28.9		38.3	22.5	12	41.9	25.5	5.2	24.6	
			v/c	0.52	0.37		0.16	0.4		0.33	0.57	0.01	0.19	0.57	0.42	0.57	
		Improved	LOS	C	B		C	C		D	B	B	C	C	A	C	
			Delay	23.5	11.3		32.4	28.2		37	19.1	11	32.3	21.6	5.3	20.3	
			v/c	0.47	0.08		0.25	0.49		0.52	0.59	0.01	0.25	0.61	0.44	0.61	
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	C	B		D	C		D	C	A	C	C	A	C	
			Delay	31.8	16		41	26.2		38.6	22.2	8.4	32.4	26.2	6.3	26.8	
			v/c	0.47	0.32		0.62	0.6		0.47	0.58	0.07	0.14	0.64	0.45	0.71	
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	C	D		D	D		D	C	B	D	D	A	C	
			Delay	30.9	40.2		50.4	37.4		52.0	30.8	10.0	53.5	36.2	7.5	33.0	
			v/c	0.20	0.78		0.82	0.80		0.66	0.61	0.74	0.56	0.72	0.27	0.82	
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D			A	
			Delay	8.2	0	N/A	N/A	0		N/A	N/A	N/A	25.1			4.2	
			v/c	0.06	0.27	N/A	N/A	0.21		N/A	N/A	N/A	0.46			0.46	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	A	A		A	A		F	D		D	C		C		
		Delay	7.5	0		8.3	0		94.1	33.0		30.8	20.7		18.0		
		v/c	0.10	0.15		0.13	0.09		0.84	0.42		0.04	0.14		0.84		
	Improved	LOS	B	A		B	B		B	B		A	B		B		
		Delay	15.5	4.1		19.2	12.7		10.6	11.8		9.4	13.4		11.2		
		v/c	0.4	0.28		0.52	0.29		0.27	0.15		0.01	0.12		0.52		
Kealakehe Parkway and Keanalehu Street	Baseline	LOS	N/A	N/A	A	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A	N/A	A	
		Delay	N/A	N/A	7.7	N/A	N/A	N/A	N/A	10.0	N/A	N/A	N/A	N/A	N/A	9.5	
		v/c	N/A	N/A	0.20	N/A	N/A	N/A	N/A	0.38	N/A	N/A	N/A	N/A	N/A	0.38	
Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	B	C	A	C	C		B			B	B		C		
		Delay	14.5	28.5	9.1	21.1	24.6		15.5			20	17.1		20.1		
		v/c	0.31	0.44	0.14	0.81	0.77		0.77			0.03	0.38		0.81		
Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	B	N/A	B	A		
		Delay	8.8	0	N/A	N/A	0	0	N/A	N/A	N/A	13.5	N/A	13.5	0.7		
		v/c	0.02	0.08	N/A	N/A	0.36	0.05	N/A	N/A	N/A	0.08	N/A	0.08	0.36		

Table 8.3 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2014 AM Peak Hour Without Project (Cont'd.)	Palani Road and Kealaka Street/ Palihiolo Street	Baseline	LOS	D		D	C			D	B		B	D	B	D
			Delay	45.9		45.9	24.5			52.4	13.4		10.9	52.9	13.5	42.2
			v/c	0.07		0.92	0.15			0.77	0.3		0.04	0.93	0.06	0.93
	Palani Road and Uluaoa Street	Baseline	LOS	F	N/A	F	N/A	N/A	N/A	A	A	N/A	N/A	A		C
			Delay	149.0	N/A	149.0	N/A	N/A	N/A	1.8	4.3	N/A	N/A	0.0		21.2
			v/c	1.13	N/A	1.13	N/A	N/A	N/A	0.13	0.13	N/A	N/A	0.67		1.13
		Improved	LOS	D	N/A	D	N/A	N/A	N/A	B	B	N/A	N/A	C		C
			Delay	42.1	N/A	42.1	N/A	N/A	N/A	16.9	16.9	N/A	N/A	23		24.5
			v/c	0.74	N/A	0.74	N/A	N/A	N/A	0.68	0.68	N/A	N/A	0.91		0.91

Table 8.4 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2014 PM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	B	N/A	C
			Delay	N/A	N/A	N/A	54.9	N/A	0.4	N/A	44.1	7.3	54.4	13.3	N/A	26.9
			v/c	N/A	N/A	N/A	0.91	N/A	0.26	N/A	0.88	0.71	0.82	0.49	N/A	0.91
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	C	N/A	A	N/A	N/A	N/A	B	B	N/A	N/A	C	A	B
			Delay	34.3	N/A	8.8	N/A	N/A	N/A	10.7	11.9	N/A	N/A	29.6	3.5	19.7
			v/c	0.75	N/A	0.41	N/A	N/A	N/A	0.34	0.55	N/A	N/A	0.83	0.21	0.86
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C			D		A	D	C	A	D	B	A	C
			Delay	25.6			51.4		0.2	41.5	22.2	3.8	41.3	16.2	3.1	20.6
			v/c	0.66			0.74		0.15	0.59	0.8	0.16	0.73	0.72	0.12	0.80
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D		D	E		E	C	B	D	D	A	D
			Delay	57.3	40.5		45.1	65.6		57.7	27.9	15.7	55	36.8	5.1	37.1
			v/c	0.83	0.77		0.18	0.79		0.76	0.52	0.01	0.58	0.82	0.52	0.83
		Improved	LOS	D	B		D	D		D	C	B	D	C	A	C
			Delay	47.1	16.4		48.6	54.7		53.8	24.9	14.3	47.5	31.6	4.7	31.2
			v/c	0.83	0.34		0.29	0.74		0.75	0.51	0.01	0.54	0.8	0.51	0.83
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	D		D	D		D	C	A	D	D	A	D
			Delay	40.3	38.9		51.7	43.9		51.2	30.8	8	45.1	43.4	5.8	37.5
			v/c	0.58	0.83		0.74	0.81		0.68	0.62	0.1	0.55	0.9	0.53	0.90
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D		D	D		D	D	A	D	D	A	D
			Delay	38.2	51.2		54	38		51.7	41.9	8.8	52	54.5	7.2	41.3
			v/c	0.32	0.85		0.86	0.82		0.62	0.73	0.69	0.7	0.92	0.34	0.92
Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C			A	
		Delay	9.1	0	N/A	N/A	0		N/A	N/A	N/A	21.6			4.2	
		v/c	0.08	0.13	N/A	N/A	0.37		N/A	N/A	N/A	0.46			0.46	

Table 8.4 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2014 PM Peak Hour Without Project (Cont'd.)	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	A	A		A	A		F	B		C	C		F	
			Delay	7.6	0		8.2	0		551.9	13.4		17.6	21.2		143.3	
			v/c	0.04	0.16		0.08	0.07		2.07	0.24		0.02	0.51		2.07	
		Improved	LOS	B	A		C	B		A	A		A	B		B	
			Delay	18.9	7.7		24.5	18.6		9.9	5		7.4	17.3		12.3	
			v/c	0.23	0.4		0.44	0.31		0.5	0.15		0.01	0.55		0.55	
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	N/A	N/A	A	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A	N/A	A
			Delay	N/A	N/A	7.2	N/A	N/A	N/A	N/A	8.0	N/A	N/A	N/A	N/A	N/A	7.5
			v/c	N/A	N/A	0.15	N/A	N/A	N/A	N/A	0.12	N/A	N/A	N/A	N/A	N/A	0.15
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	B	D	A	D	C		C		B	B		C		
			Delay	11.6	36.2	5.2	35.5	22.3		30.1		19.2	12.6		26.3		
			v/c	0.28	0.84	0.18	0.84	0.68		0.87		0.03	0.37		0.87		
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
			Delay	9.0	0	N/A	N/A	0	0	N/A	N/A	N/A	18.5	N/A	18.5	2.0	
			v/c	0.04	0.17	N/A	N/A	0.38	0.09	N/A	N/A	N/A	0.37	N/A	0.37	0.38	
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	B		B	B		A	B	A	B		
			Delay	24.5		11.1	17.4		10.5	11.5		4.6	19.8	4.1	13.9		
			v/c	0.07		0.47	0.21		0.55	0.54		0.12	0.77	0.04	0.77		
	Palani Road and Uluaoa Street	Baseline	LOS	F	N/A	F	N/A	N/A	N/A	A	A	N/A	N/A	A		C	
			Delay	141.0	N/A	141.0	N/A	N/A	N/A	0.5	1.0	N/A	N/A	0.0		18.4	
			v/c	1.08	N/A	1.08	N/A	N/A	N/A	0.04	0.04	N/A	N/A	0.46		1.08	
Improved		LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B		
		Delay	22.5	N/A	22.5	N/A	N/A	N/A	11.2	11.2	N/A	N/A	15.1		14.6		
v/c	0.54	N/A	0.54	N/A	N/A	N/A	0.59	0.59	N/A	N/A	0.74		0.74				

Table 8.5 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2019 AM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	E	A	N/A	B
			Delay	N/A	N/A	N/A	24.2	N/A	0.3	N/A	25	5	56.6	8.9	N/A	17.9
			v/c	N/A	N/A	N/A	0.48	N/A	0.19	N/A	0.78	0.25	0.9	0.59	N/A	0.90
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	C	N/A	A	N/A	N/A	N/A	B	A	N/A	N/A	C	A	B
			Delay	32.9	N/A	7.2	N/A	N/A	N/A	19.5	5.4	N/A	N/A	24.6	4	14.2
			v/c	0.49	N/A	0.28	N/A	N/A	N/A	0.66	0.24	N/A	N/A	0.82	0.65	0.82
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C			D		A	D	B	A	C	B	A	B
			Delay	21.3			38.5		0.2	40.8	17.4	3.4	31.8	11.6	2.4	14.7
			v/c	0.39			0.46		0.15	0.48	0.64	0.32	0.66	0.64	0.05	0.66
		Improved	LOS	C	B	C	C	A	D	B	A	C	A	A	A	B
			Delay	26.4	15.2	32.9	25.3	0.2	38.9	14.7	3.2	30.8	8.9	2.5	12.5	
			v/c	0.15	0.29	0.4	0.09	0.15	0.5	0.64	0.32	0.67	0.57	0.05	0.67	
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	B	D	D		D	C	B	D	C	A	C	
			Delay	35.8	17.5	45.5	50		54.1	28.6	11	53.1	31.1	4.9	31.1	
			v/c	0.57	0.14	0.38	0.78		0.67	0.72	0.02	0.53	0.79	0.4	0.79	
		Improved	LOS	C	B	D	D		D	C	A	D	C	A	C	
			Delay	25.2	15.5	39.6	43.4		42.5	26.2	9.6	52.2	33.3	5.2	28.7	
			v/c	0.5	0.17	0.43	0.8		0.64	0.76	0.02	0.59	0.88	0.42	0.88	
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	C	B	D	C		D	C	A	C	C	A	C	
			Delay	34.7	17	52.5	28.7		41.2	23.4	8	33.2	33.4	5.9	27.1	
			v/c	0.56	0.41	0.74	0.67		0.51	0.63	0.07	0.15	0.83	0.49	0.83	
		Improved	LOS	C	B	D	C		D	C	A	C	C	A	C	
			Delay	32.3	16.9	45.4	28.4		35.7	25.3	8.4	33.1	26.4	6.7	25.1	
			v/c	0.51	0.41	0.67	0.67		0.4	0.67	0.07	0.15	0.66	0.52	0.67	
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D	D	D		D	D	B	D	D	A	D	
			Delay	39.1	53.4	54.5	43		51.4	36.7	10.9	52.5	53.1	7.4	39.9	
			v/c	0.34	0.87	0.85	0.84		0.58	0.67	0.76	0.45	0.9	0.38	0.90	
Improved		LOS	D	D	D	C		D	C	C	D	D	A	C		
		Delay	46.3	48.5	45.4	23.3		50.4	28.5	21.3	49.3	35.5	5.9	33.5		
		v/c	0.45	0.86	0.83	0.45		0.63	0.59	0.84	0.48	0.76	0.34	0.86		
Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A		A	N/A	N/A	N/A	E		A		
		Delay	8.7	0	N/A	N/A		0	N/A	N/A	N/A	39.7		9.4		
		v/c	0.15	0.18	N/A	N/A		0.24	N/A	N/A	N/A	0.71		0.71		
	Improved	LOS	A	A	N/A	N/A		A	N/A	N/A	N/A	C		A		
		Delay	8.7	0	N/A	N/A		0	N/A	N/A	N/A	18.5		5.1		
		v/c	0.15	0.18	N/A	N/A		0.24	N/A	N/A	N/A	0.46		0.46		
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	B	A		C	C		A	A		A	C		B	
		Delay	20	7.3		22.6	22.4		7.6	8.2		5.8	21.3		15.7	
		v/c	0.19	0.36		0.31	0.44		0.27	0.2		0.01	0.73		0.73	

Table 8.5 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario	
2019 AM Peak Hour Without Project (Cont'd.)	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	A
			Delay	7.0	0	0	7.4	0	0	10.5	9.1	9.1	8.7	8.7	8.7	6.5	
			v/c	<0.01	0.05	0.05	<0.01	0.02	0.02	0.21	0.01	0.01	0.03	0.03	0.03	0.21	
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	B	D	B	C	C		B			C	C		C	
			Delay	19.4	38.3	10.7	23.1	23.5		19.9			24.4	27.3		23.6	
			v/c	0.4	0.57	0.18	0.86	0.77		0.82			0.03	0.62		0.86	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	B	N/A	B	A	
			Delay	9.1	0	N/A	N/A	0	0	N/A	N/A	N/A	14.4	N/A	14.4	0.7	
			v/c	0.03	0.09	N/A	N/A	0.40	0.05	N/A	N/A	N/A	0.09	N/A	0.09	0.40	
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	D		D	C			C	A		A	C	A	C	
			Delay	48.9		49.6	31.2			25.8	4.6		4.5	33.3	5.2	30.6	
			v/c	0.19		0.93	0.37			0.6	0.26		0.04	0.91	0.06	0.93	
	Palani Road and Uluaoa Street	Baseline	LOS	D	N/A	D	N/A	N/A	N/A	B	B	N/A	N/A	B		B	
			Delay	37.9	N/A	37.9	N/A	N/A	N/A	13.7	13.7	N/A	N/A	17.6		19.9	
			v/c	0.72	N/A	0.72	N/A	N/A	N/A	0.63	0.63	N/A	N/A	0.84		0.84	

Table 8.6 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2019 PM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	A	N/A	C
			Delay	N/A	N/A	N/A	47.2	N/A	0.5	N/A	42.7	4	52.4	6.9	N/A	24.2
			v/c	N/A	N/A	N/A	0.67	N/A	0.31	N/A	0.95	0.36	0.86	0.5	N/A	0.95
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	B	B	N/A	N/A	C	A	C
			Delay	45.8	N/A	11.8	N/A	N/A	N/A	19	16	N/A	N/A	34.1	3.3	24.7
			v/c	0.87	N/A	0.46	N/A	N/A	N/A	0.53	0.63	N/A	N/A	0.86	0.3	0.87
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C		E			A	D	D	A	D	C	A	D
			Delay	30.3		72.4			0.2	52.5	53.6	4.5	53.7	33.3	4.3	40.0
			v/c	0.63		0.92			0.14	0.56	0.99	0.28	0.74	0.88	0.13	0.99
		Improved	LOS	C	C		D	D	A	D	D	A	D	C	A	C
			Delay	33.7	25.2		54.1	40.1	0.2	53.6	40.6	4	54.1	27.7	3.7	32.4
			v/c	0.33	0.63		0.8	0.16	0.14	0.59	0.93	0.27	0.76	0.83	0.12	0.93
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	C		E	E		E	D	B	E	E	A	D
			Delay	76.5	34.3		70.6	78.3		79.5	41.9	15.3	75.1	63.3	4.7	54.8
			v/c	0.92	0.43		0.46	0.89		0.82	0.72	0.02	0.7	0.99	0.46	0.99
Improved	LOS	D	D		D	D		D	C	B	D	D	A	D		
	Delay	54.7	35.5		53.2	53.9		53	31.4	12.4	54.8	49.1	4.3	41.5		
v/c	0.85	0.59		0.41	0.83		0.68	0.69	0.02	0.63	0.96	0.45	0.96			

Table 8.6 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario
2019 PM Peak Hour Without Project (Cont'd.)	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	E	E		E	E		E	C	A	E	D	A	D
			Delay	56.1	72.2		79.2	70.1		67.7	31.6	6.9	55.9	45.2	6.6	49.1
			v/c	0.74	0.98		0.88	0.95		0.77	0.65	0.08	0.59	0.92	0.55	0.98
		Improved	LOS	D	C	A	D	D		D	D	A	D	D	B	D
			Delay	40.9	30.9	8.2	44.4	50.8		51.5	36.2	7.6	54.4	37.6	13.3	36.2
			v/c	0.65	0.49	0.42	0.59	0.89		0.69	0.81	0.1	0.69	0.86	0.68	0.89
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	E	E		E	D		E	D	A	E	E	A	D
			Delay	66.3	75.1		79	54.8		71.9	40.3	8.3	64.9	65.2	6.2	53.4
			v/c	0.86	0.99		0.98	0.94		0.81	0.71	0.7	0.8	0.99	0.43	0.99
		Improved	LOS	D	D		D	D		D	D	B	D	D	A	D
			Delay	46	50.8		54.5	41		53.5	35.1	17.7	52	45.5	5.6	40.5
			v/c	0.61	0.87		0.85	0.81		0.64	0.63	0.77	0.67	0.89	0.4	0.89
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	F			C
			Delay	9.2	0	N/A	N/A	0		N/A	N/A	N/A	52.9			17.0
			v/c	0.17	0.13	N/A	N/A	0.31		N/A	N/A	N/A	0.90			0.90
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C			A
			Delay	9.2	0	N/A	N/A	0		N/A	N/A	N/A	23.7			8.3
			v/c	0.17	0.13	N/A	N/A	0.31		N/A	N/A	N/A	0.68			0.68
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	B		B	C		A	A		A	B		B
			Delay	22.7	12.4		19.9	20.5		6.4	8.6		6.6	18.8		14.1
			v/c	0.35	0.33		0.19	0.35		0.22	0.33		0.01	0.52		0.52
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
			Delay	7.3	0	0	7.6	0	0	10.8	9.6	9.6	8.8	8.8	8.8	4.4
			v/c	0.02	0.12	0.12	<0.01	0.01	0.01	0.15	0.01	0.01	0.02	0.02	0.02	0.15
Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	B	D	A	D	C		D			C	B		C	
		Delay	15.6	51.1	5.8	52.1	26.9		36.7			20.2	14.4		34.0	
		v/c	0.42	0.92	0.19	0.92	0.72		0.93			0.03	0.4		0.93	
Palani Road and Kamakaha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
		Delay	9.2	0	N/A	N/A	0	0	N/A	N/A	N/A	20.2	N/A	20.2	2.1	
		v/c	0.05	0.19	N/A	N/A	0.40	0.09	N/A	N/A	N/A	0.40	N/A	0.40	0.40	
Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	B			B	B		A	C	A	B	
		Delay	27.2		12.7	19.2			12.4	12.2		4.7	20.7	3.9	15.0	
		v/c	0.07		0.49	0.23			0.58	0.6		0.14	0.79	0.04	0.79	
Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B	
		Delay	24.2	N/A	24.2	N/A	N/A	N/A	13.8	13.8	N/A	N/A	17.5		16.9	
		v/c	0.57	N/A	0.57	N/A	N/A	N/A	0.68	0.68	N/A	N/A	0.79		0.79	

Table 8.7 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2024 AM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	D	B	N/A	C
			Delay	N/A	N/A	N/A	32.5	N/A	0.3	N/A	32.7	4.9	48.3	12.2	N/A	20.5
			v/c	N/A	N/A	N/A	0.59	N/A	0.22	N/A	0.87	0.26	0.85	0.77	N/A	0.87
		Improved	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	C	B	N/A	B
			Delay	N/A	N/A	N/A	24.3	N/A	0.3	N/A	22.8	4.3	33.7	13	N/A	16.4
			v/c	N/A	N/A	N/A	0.51	N/A	0.22	N/A	0.79	0.24	0.69	0.74	N/A	0.79
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	A	N/A	N/A	N/A	D	A	N/A	N/A	C	A	B
			Delay	39.4	N/A	7.5	N/A	N/A	N/A	46.9	6.1	N/A	N/A	30.3	6.5	19.9
			v/c	0.63	N/A	0.27	N/A	N/A	N/A	0.88	0.28	N/A	N/A	0.88	0.74	0.88
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	D	C		D	D	A	D	C	A	D	C	A	C
			Delay	38.4	31.7		51.4	45.6	0.3	53.8	28.1	3.9	49.6	27.8	3.4	27.0
			v/c	0.16	0.47		0.6	0.07	0.18	0.47	0.72	0.35	0.76	0.9	0.06	0.90
		Improved	LOS	D	D	A	D	D	A	D	B	A	D	B	A	B
			Delay	42.8	40.8	0	47.3	41.3	0.3	54.2	14.4	2.5	37.3	16.5	2.5	17.1
			v/c	0.22	0.08	0.03	0.52	0.13	0.18	0.55	0.57	0.3	0.58	0.82	0.05	0.82
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	C		D	D		D	C	A	D	C	A	C
			Delay	39.9	24.2		50.4	47.5		52.3	25.7	7.7	53.9	28.8	3.8	29.9
			v/c	0.62	0.22		0.46	0.77		0.63	0.69	0.04	0.6	0.81	0.41	0.81
		Improved	LOS	C	C	A	D	D	A	D	C		D	C	A	C
			Delay	28.3	21.7	8.9	37	38.9	8.8	39.9	20.8		39.8	26.5	5.4	24.2
			v/c	0.55	0.13	0.09	0.4	0.62	0.18	0.58	0.59		0.5	0.78	0.49	0.78
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	E		E	C		E	C	C	E	D	A	D
			Delay	50.7	56.7		57.2	28.4		63.7	30.9	21.3	73.5	42.3	5.4	39.5
			v/c	0.5	0.89		0.92	0.53		0.73	0.62	0.85	0.7	0.86	0.36	0.92
		Improved	LOS	D	C	A	D	D	D	D	C	A	D	C	A	C
			Delay	43.8	27.4	7	45.5	38.8	46.1	27.9	7.9	46.7	30	8.4	29.9	
			v/c	0.59	0.27	0.22	0.53	0.76	0.4	0.66	0.06	0.2	0.67	0.56	0.76	
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D		D	D	D	D	D	B	D	D	A	D
			Delay	39.1	53.4		54.5	43	51.4	36.7	10.9	52.5	53.1	7.4	39.9	
			v/c	0.34	0.87		0.85	0.84	0.58	0.67	0.76	0.45	0.9	0.38	0.90	
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D		A	
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	29.9		6.6	
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.65		0.65	
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D	N/A	B	A
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	26.0	N/A	12.7	5.1
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.48	N/A	0.17	0.48
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	A		C	C		B	A		A	C		C	
		Delay	26.8	9.1		34.4	30.2		11.7	7.9		5.6	29.6		22.3	
		v/c	0.29	0.39		0.53	0.55		0.46	0.23		0.01	0.88		0.88	

Table 8.7 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario
2024 AM Peak Hour Without Project (Cont'd.)	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A
			Delay	7.3	0	0	7.4	0	0	11.7	9.3	9.3	8.9	8.9	8.9	7.0
			v/c	0.01	0.06	0.06	<0.01	0.03	0.03	0.28	0.01	0.01	0.05	0.05	0.05	0.28
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	C	C	A	C	C		C			C	C		C
			Delay	24.1	34.4	9.6	32.7	26.8		24.6			23.2	31.3		28.5
			v/c	0.52	0.5	0.16	0.93	0.81		0.86			0.03	0.75		0.93
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A
			Delay	9.3	0	N/A	N/A	0	0	N/A	N/A	N/A	15.4	N/A	15.4	0.8
			v/c	0.04	0.10	N/A	N/A	0.44	0.05	N/A	N/A	N/A	0.11	N/A	0.11	0.44
	Palani Road and Kealaka Street/Palihiolo Street	Baseline	LOS	D		D	C			C	A		A	D	A	C
			Delay	53.7		54.5	34.1			30.4	4.4		5.3	39.1	6.6	34.8
			v/c	0.23		0.94	0.41			0.6	0.27		0.04	0.93	0.06	0.94
	Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	C	C	N/A	N/A	C		C
			Delay	34.1	N/A	34.1	N/A	N/A	N/A	24.4	24.4	N/A	N/A	22.9		24.9
			v/c	0.73	N/A	0.73	N/A	N/A	N/A	0.77	0.77	N/A	N/A	0.89		0.89

Table 8.8 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2024 PM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	F	N/A	A	N/A	D	A	F	A	N/A	C	
			Delay	N/A	N/A	N/A	105.6	N/A	0.6	N/A	44.5	2.8	85.2	6	N/A	30.4	
			v/c	N/A	N/A	N/A	0.93	N/A	0.33	N/A	0.95	0.32	0.96	0.54	N/A	0.96	
		Improved	LOS	N/A	N/A	N/A		N/A		N/A						N/A	
			Delay	N/A	N/A	N/A		N/A		N/A						N/A	
			v/c	N/A	N/A	N/A		N/A		N/A						N/A	
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	D	B	N/A	N/A	D	A	C	
			Delay	53.7	N/A	14.2	N/A	N/A	N/A	42.5	18.8	N/A	N/A	40.4	3.5	30.0	
			v/c	0.93	N/A	0.51	N/A	N/A	N/A	0.77	0.65	N/A	N/A	0.9	0.38	0.93	
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	E	D		F	D	A	F	D	A	F	C	A	D	
			Delay	56.7	40.5		98.9	54.9	0.3	90.4	44.5	3.2	90.8	31.1	2.7	41.3	
			v/c	0.53	0.76		0.99	0.16	0.19	0.77	0.94	0.29	0.94	0.88	0.11	0.99	
		Improved	LOS	D	D	A	D	D	A	D	C	A	D	C	A	C	
			Delay	53.1	48.7	0.1	43.3	52.5	0.3	52.8	25.6	2.5	52.9	28	3.2	26.6	
			v/c	0.48	0.09	0.07	0.58	0.31	0.19	0.57	0.85	0.27	0.72	0.89	0.11	0.89	
Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D		F	F		F	C	A	F	D	A	D		
		Delay	78	48.6		84.9	101.3		102.4	32.6	8.6	80.1	50.9	3.4	53.9		
		v/c	0.97	0.74		0.73	1.06		0.98	0.73	0.03	0.82	0.98	0.45	1.06		
Improved	LOS	D	D	A	D	D	C	D	C		D	D	A	D			
	Delay	55	35.7	8.1	53.8	54	29.6	51.8	26.2		47	38.8	4.9	35.6			
v/c	0.9	0.43	0.34	0.56	0.67	0.4	0.72	0.6		0.54	0.91	0.53	0.91				

Table 8.8 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario		
2024 PM Peak Hour Without Project (Cont'd.)	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	E	D		E	E		E	C	A	E	D	C	D		
			Delay	62.1	37.6		59.3	57.5		67.3	35	6.8	71.9	38.3	20.5	42.8		
			v/c	0.87	0.78		0.73	0.91		0.8	0.79	0.09	0.81	0.88	0.75	0.91		
		Improved	LOS															
			Delay															
			v/c															
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D		D	D		D	D	B	D	D	A	D		
			Delay	46	50.8		54.5	41		53.5	35.1	17.7	52	45.5	5.6	40.5		
			v/c	0.61	0.87		0.85	0.81		0.64	0.63	0.77	0.67	0.89	0.4	0.89		
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D			A		
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	29.9			6.6		
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.65			0.65		
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D	N/A	B	A		
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	26.0	N/A	12.7	5.1		
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.48	N/A	0.17	0.48		
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	B		B	B		A	B		A	B		B		
			Delay	23.9	11.6		19.9	19.3		9.2	13.7		6.6	19.2		15.8		
			v/c	0.47	0.34		0.25	0.34		0.33	0.57		0.01	0.66		0.66		
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A		
			Delay	7.3	0	0	7.4	0	0	11.7	9.3	9.3	8.9	8.9	8.9	7.0		
			v/c	0.01	0.06	0.06	<0.01	0.03	0.03	0.28	0.01	0.01	0.05	0.05	0.05	0.28		
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	C	D	A	D	C		D		C	C		D			
			Delay	21.5	53.7	6.9	54.2	32.9		43.7		24.8	21.1		38.7			
			v/c	0.58	0.91	0.19	0.91	0.77		0.96		0.04	0.46		0.96			
Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A			
		Delay	9.3	0	N/A	N/A	0	0	N/A	N/A	N/A	15.4	N/A	15.4	0.8			
		v/c	0.04	0.10	N/A	N/A	0.44	0.05	N/A	N/A	N/A	0.11	N/A	0.11	0.44			
Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	C		B	B		A	C	A	B				
		Delay	29.5		13.1	20.4		12.4	11.4		4.7	21.4	3.8	15.0				
		v/c	0.08		0.49	0.24		0.58	0.6		0.15	0.8	0.04	0.80				
Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B			
		Delay	26.1	N/A	26.1	N/A	N/A	N/A	14.6	14.6	N/A	N/A	18		17.7			
		v/c	0.61	N/A	0.61	N/A	N/A	N/A	0.69	0.69	N/A	N/A	0.8		0.80			

Table 8.9 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 AM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	C	A	D	B	N/A	C
			Delay	N/A	N/A	N/A	42.7	N/A	0.3	N/A	21.2	3.4	37.2	12.7	N/A	17.0
			v/c	N/A	N/A	N/A	0.67	N/A	0.23	N/A	0.7	0.21	0.63	0.8	N/A	0.80
		Improved	LOS	N/A	N/A	N/A	C	N/A	A	N/A	B	A	C	B	N/A	B
			Delay	N/A	N/A	N/A	26.8	N/A	0.3	N/A	18.6	3.2	34.7	11.9	N/A	15.0
			v/c	N/A	N/A	N/A	0.41	N/A	0.23	N/A	0.72	0.22	0.69	0.82	N/A	0.82
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	A	N/A	N/A	N/A	D	A	N/A	N/A	C	A	C
			Delay	48.8	N/A	7.8	N/A	N/A	N/A	39.4	5.7	N/A	N/A	29.8	7.6	20.1
			v/c	0.71	N/A	0.27	N/A	N/A	N/A	0.83	0.28	N/A	N/A	0.87	0.76	0.87
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	D	D	A	D	D	A	D	B	A	D	C	A	C
			Delay	41.2	41.3	0	45.4	41	0.3	51.7	15.5	2.6	38.1	23.9	2.8	20.6
			v/c	0.2	0.09	0.03	0.54	0.12	0.2	0.55	0.59	0.3	0.62	0.92	0.06	0.92
		Improved	LOS	C	C	A	C	C	A	C	B	A	C	B		B
			Delay	30.7	30.3	0	33.1	30.5	0.3	32.4	13.9	3.4	27.2	15.4		14.9
			v/c	0.16	0.06	0.03	0.44	0.1	0.2	0.38	0.5	0.34	0.53	0.70		0.70
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	C	B	D	D	B	D	C		D	C	A	C
			Delay	39.6	31.1	11.1	50	49	15.7	52.2	20.4		43.5	22.9	4	25.6
			v/c	0.64	0.17	0.11	0.45	0.66	0.19	0.63	0.51		0.41	0.65	0.45	0.66
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	C	A	D	D		D	C	A	D	C	B	C
			Delay	53.2	29.7	7.6	42.2	41.2		52.8	34.6	8.2	48.1	30.1	12.7	33.5
			v/c	0.75	0.34	0.24	0.62	0.86		0.56	0.79	0.07	0.42	0.7	0.64	0.86
		Improved	LOS	D	C	A	D	D	A	D	C		D	C	B	C
			Delay	48.2	29.1	7.1	44.9	38.9	8.1	50.1	28.7		51.1	32.7	12.5	32.1
			v/c	0.67	0.32	0.22	0.64	0.8	0.11	0.49	0.58		0.44	0.73	0.64	0.80
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	E	E		E	C		E	D	C	E	E	B	D
			Delay	64.2	76.4		74.3	33.6		74.2	40.9	24.1	70.4	68.2	10.7	53.2
			v/c	0.53	0.95		0.98	0.52		0.71	0.65	0.79	0.52	0.98	0.39	0.98
		Improved	LOS	D	D	A	D	C		D	D	C	D	D	A	D
			Delay	48.6	52.9	9.7	53.9	24.4		52.9	38.3	23.3	54.5	50.2	7.1	39.9
			v/c	0.52	0.86	0.25	0.94	0.52		0.64	0.76	0.81	0.52	0.92	0.44	0.94
Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D			A	
		Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	29.9			6.6	
		v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.65			0.65	
	Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D	N/A	B	A	
		Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	26.0	N/A	12.7	5.1	
		v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.48	N/A	0.17	0.48	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	A		D	D		B	A		A	C		C	
		Delay	33	9.8		51.9	36.4		18.9	7.9		5.5	34.6		27.3	
		v/c	0.38	0.4		0.74	0.67		0.58	0.24		0.01	0.92		0.92	

Table 8.9 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario	
2029 AM Peak Hour Without Project (Cont'd.)	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A	A
			Delay	7.3	0	0	7.4	0	0	11.7	9.3	9.3	8.9	8.9	8.9	7.0	
			v/c	0.01	0.06	0.06	<0.01	0.03	0.03	0.28	0.01	0.01	0.05	0.05	0.05	0.28	
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	C	D	B	D	D		C			C	C		C	
			Delay	31.3	36.9	10.2	42.5	35.1		28.8			22.4	33.2		28.5	
			v/c	0.6	0.54	0.17	0.97	0.89		0.89			0.03	0.8		0.93	
		Improved	LOS	D	D	A	D	C		C	B		B	D		C	
			Delay	43.5	35.1	9.5	41.9	24.1		21	10		17.6	35.8		28.2	
			v/c	0.54	0.56	0.18	0.88	0.62		0.25	0.6		0.03	0.84		0.88	
	Palani Road and Kamakaha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
			Delay	9.3	0	N/A	N/A	0	0	N/A	N/A	N/A	15.4	N/A	15.4	0.8	
			v/c	0.04	0.10	N/A	N/A	0.44	0.05	N/A	N/A	N/A	0.11	N/A	0.11	0.44	
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	E		E	D		D	A		A	D	A	D		
			Delay	59.8		64.6	37.2		35.2	4.7		5.2	38.3	6.4	37.7		
			v/c	0.26		0.98	0.43		0.63	0.27		0.04	0.93	0.06	0.98		
		Improved	LOS	C		C	B		B	A		A	C		B		
			Delay	28		31.4	18.7		10.9	6.6		5.9	21.6		19.9		
			v/c	0.14		0.87	0.29		0.48	0.29		0.05	0.77		0.87		
	Palani Road and Uluaoa Street	Baseline	LOS	D	N/A	D	N/A	N/A	N/A	C	C	N/A	N/A	C	C		
			Delay	41.7	N/A	41.7	N/A	N/A	N/A	33.2	33.2	N/A	N/A	24.4	29.0		
			v/c	0.78	N/A	0.78	N/A	N/A	N/A	0.85	0.85	N/A	N/A	0.91	0.91		

Table 8.10 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 PM Peak Hour Without Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	E	N/A	A	N/A	C	A	E	A	N/A	C
			Delay	N/A	N/A	N/A	74.9	N/A	0.6	N/A	35	2.2	71.9	7.8	N/A	25.0
			v/c	N/A	N/A	N/A	0.85	N/A	0.34	N/A	0.95	0.31	0.91	0.62	N/A	0.95
		Improved	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	A	N/A	C
			Delay	N/A	N/A	N/A	49.6	N/A	0.6	N/A	35.1	2.3	53.5	6.4	N/A	22.0
			v/c	N/A	N/A	N/A	0.55	N/A	0.34	N/A	0.95	0.32	0.78	0.6	N/A	0.95
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	D	C	N/A	N/A	D	A	C
			Delay	53.1	N/A	15	N/A	N/A	N/A	47.5	20.2	N/A	N/A	47.3	3.6	32.3
			v/c	0.93	N/A	0.52	N/A	N/A	N/A	0.79	0.68	N/A	N/A	0.94	0.39	0.94
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	E	D	A	D	E	A	E	C	A	E	C	A	D
			Delay	61.8	54.7	0.1	50	57.2	0.3	79.5	27.8	2.1	72.2	30.1	2.5	30.0
			v/c	0.54	0.11	0.08	0.64	0.33	0.21	0.76	0.9	0.27	0.85	0.93	0.11	0.93
Improved		LOS	D	D	A	C	D	A	D	C	A	D	C		C	
		Delay	49	38.1	0.1	34.1	37.3	0.3	51.5	21.9	3.1	43.8	20.9		21.8	
		v/c	0.52	0.08	0.08	0.54	0.23	0.21	0.64	0.79	0.32	0.7	0.79		0.79	

Table 8.10 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 PM Peak Hour Without Project (Cont'd.)	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D	A	D	E	C	E	C		D	D	A	D
			Delay	58.7	39.5	8.6	53.8	76.2	34.5	65.3	27.2		49.2	36.5	4.5	37.5
			v/c	0.92	0.48	0.36	0.54	0.85	0.46	0.83	0.63		0.55	0.89	0.53	0.92
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	E	D	B	E	E		E	D	A	E	D	B	D
			Delay	72.7	40.2	15	57	67.1		71.8	39.1	6.6	74.2	41.3	19.9	45.7
			v/c	0.92	0.58	0.46	0.66	0.95		0.81	0.84	0.09	0.8	0.89	0.75	0.95
		Improved	LOS	E	D	B	D	E	A	E	C		D	D	B	D
			Delay	64.8	38.8	10.9	48.1	59.8	9.6	62.7	30.8		48.3	42.9	18.3	40.6
			v/c	0.91	0.65	0.47	0.62	0.92	0.25	0.79	0.69		0.58	0.94	0.76	0.94
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	E	E		E	D		E	D	C	E	D	A	D
			Delay	72.4	75.2		74.3	49.7		78.5	40.9	28.5	66.8	53.5	4.8	53.3
			v/c	0.84	0.96		0.92	0.8		0.77	0.64	0.75	0.71	0.93	0.4	0.96
		Improved	LOS	D	D	A	D	D		D	D	C	D	D	A	D
			Delay	52.9	53.9	8.7	45	36.4		50.9	44.2	27	53.4	43.1	6.3	40.5
			v/c	0.79	0.89	0.3	0.8	0.79		0.64	0.84	0.8	0.72	0.88	0.48	0.89
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D		A	
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	29.9		6.6	
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.65		0.65	
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D	N/A	B	A
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	26.0	N/A	12.7	5.1
			v/c	0.21	0.21	N/A	N/A	0.36		N/A	N/A	N/A	0.48	N/A	0.17	0.48
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	B		C	C		B	B		A	C		B
			Delay	25.2	12.1		22.1	20.6		10.2	16.3		6.8	20.6		17.4
			v/c	0.5	0.38		0.35	0.42		0.38	0.66		0.02	0.70		0.70
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A
			Delay	7.3	0	0	7.4	0	0	11.7	9.3	9.3	8.9	8.9	8.9	7.0
			v/c	0.01	0.06	0.06	<0.01	0.03	0.03	0.28	0.01	0.01	0.05	0.05	0.05	0.28
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	D	E	B	E	D		D		C	C		D	
			Delay	43.5	71.1	10.4	79.3	42		51.4		25	22.7		49.5	
			v/c	0.79	0.97	0.2	0.99	0.83		0.98		0.04	0.45		0.99	
Improved		LOS	D	D	A	D	C		C	C		C	C		C	
		Delay	44.1	46.2	5.3	52.7	28.3		28.4	20.6		20.2	25.7		31.5	
		v/c	0.66	0.9	0.18	0.82	0.58		0.25	0.6		0.03	0.68		0.90	
Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
		Delay	9.3	0	N/A	N/A	0	0	N/A	N/A	N/A	15.4	N/A	15.4	0.8	
		v/c	0.04	0.10	N/A	N/A	0.44	0.05	N/A	N/A	N/A	0.11	N/A	0.11	0.44	

Table 8.10 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 PM Peak Hour Without Project (Cont'd.)	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	C			B	B		A	C	A	B
			Delay	29.8	14.4	20.8			14.2	11.8		4.7	21.5	3.7	15.6	
			v/c	0.09	0.52	0.25			0.61	0.61		0.15	0.8	0.04	0.80	
		Improved	LOS	C		C	B			B	A		A	C		B
			Delay	28	31.4	18.7			10.9	6.6		5.9	21.6		19.9	
			v/c	0.14	0.87	0.29			0.48	0.29		0.05	0.77		0.87	
	Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B
			Delay	28.8	N/A	28.8	N/A	N/A	N/A	17	17	N/A	N/A	19		19.5
			v/c	0.63	N/A	0.63	N/A	N/A	N/A	0.76	0.76	N/A	N/A	0.82		0.82

Table 8.11 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2014 AM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	C	A	E	B	N/A	C	
			Delay	N/A	N/A	N/A	46.9	N/A	0.2	N/A	24.9	5.4	60.4	11	N/A	21.4	
			v/c	N/A	N/A	N/A	0.9	N/A	0.15	N/A	0.74	0.53	0.88	0.59	N/A	0.90	
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	D	N/A	A	N/A	N/A	N/A	B	A	N/A	N/A	C	A	B	
			Delay	39.6	N/A	9	N/A	N/A	N/A	18.7	3.9	N/A	N/A	22.3	2	14.9	
			v/c	0.39	N/A	0.3	N/A	N/A	N/A	0.63	0.22	N/A	N/A	0.83	0.37	0.83	
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C			C			A	C	C	A	C	A	A	B
			Delay	26.5			31.4			0.2	30.8	20.2	4.1	28.2	8.7	2.6	14.7
			v/c	0.47			0.27			0.12	0.37	0.71	0.3	0.72	0.5	0.05	0.72
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	C		D	C		D	C	B	D	C	A	C	
			Delay	38.3	28.9		38.4	28.9		38.3	22.5	12	41.9	25.5	5.2	24.6	
			v/c	0.52	0.37		0.16	0.4		0.33	0.57	0.01	0.19	0.57	0.42	0.57	
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	C	B		D	C		D	C	A	C	C	A	C	
			Delay	31.8	16		41	26.2		38.6	22.2	8.4	32.4	26.2	6.3	26.8	
			v/c	0.47	0.32		0.62	0.6		0.47	0.58	0.07	0.14	0.64	0.45	0.71	
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	C	D		D	D		D	C	B	D	D	A	C	
			Delay	30.9	40.2		50.4	37.4		52.0	30.8	10.0	53.5	36.2	7.5	33.0	
			v/c	0.20	0.78		0.82	0.80		0.66	0.61	0.74	0.56	0.72	0.27	0.82	
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D			A	
			Delay	8.4	0	N/A	N/A	0		N/A	N/A	N/A	33.5			4.8	
			v/c	0.06	0.31	N/A	N/A	0.26		N/A	N/A	N/A	0.56			0.56	
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C			A	
			Delay	8.4	0	N/A	N/A	0		N/A	N/A	N/A	16.5			2.6	
			v/c	0.06	0.31	N/A	N/A	0.26		N/A	N/A	N/A	0.33			0.33	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	B	A		B	B		B	A		A	B		B		
		Delay	16.5	4.1		19.8	13.3		12.1	9.2		8.4	12.6		10.9		
		v/c	0.42	0.34		0.5	0.3		0.43	0.19		0.01	0.11		0.50		
Kealakehe Parkway and Keanalehu Street	Baseline	LOS	N/A	N/A	A	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A	N/A	A	
		Delay	N/A	N/A	7.6	N/A	N/A	N/A	N/A	9.8	N/A	N/A	N/A	N/A	N/A	9.2	
		v/c	N/A	N/A	0.13	N/A	N/A	N/A	N/A	0.36	N/A	N/A	N/A	N/A	N/A	0.36	
Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	B	C	A	C	C		B			B	B		C		
		Delay	14.5	28.5	9.1	21.1	24.6		15.5			20	17.1		20.1		
		v/c	0.31	0.44	0.14	0.81	0.77		0.77			0.03	0.38		0.81		
Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	B	N/A	B	A		
		Delay	9.0	0	N/A	N/A	0	0	N/A	N/A	N/A	14.1	N/A	14.1	0.70		
		v/c	0.03	0.09	N/A	N/A	0.39	0.05	N/A	N/A	N/A	0.09	N/A	0.09	0.39		
Palani Road and Kealaka Street/Palihiolo Street	Baseline	LOS	D		D	C			B	A		A	C	A	C		
		Delay	37.3		52.4	23.4			19.3	5.8		4	27.2	4.1	27.8		
		v/c	0.19		0.96	0.32			0.64	0.28		0.04	0.87	0.06	0.96		
Palani Road and Uluaoa Street	Baseline	LOS	D	N/A	D	N/A	N/A	N/A	C	C	N/A	N/A	C		C		
		Delay	42.9	N/A	42.9	N/A	N/A	N/A	21.6	21.6	N/A	N/A	24.7		26.5		
		v/c	0.75	N/A	0.75	N/A	N/A	N/A	0.75	0.75	N/A	N/A	0.92		0.92		

Table 8.12 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2014 PM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	E	N/A	A	N/A	D	A	E	B	N/A	C	
			Delay	N/A	N/A	N/A	59.1	N/A	0.4	N/A	41.3	6.9	77.5	13.6	N/A	28.7	
			v/c	N/A	N/A	N/A	0.94	N/A	0.25	N/A	0.89	0.72	0.95	0.53	N/A	0.95	
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	C	N/A	B	N/A	N/A	N/A	B	B	N/A	N/A	C	A	C	
			Delay	34.7	N/A	10.1	N/A	N/A	N/A	12.6	12.7	N/A	N/A	32.7	3.5	21.3	
			v/c	0.75	N/A	0.42	N/A	N/A	N/A	0.38	0.56	N/A	N/A	0.86	0.22	0.86	
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C			D			A	D	C	A	D	B	A	C
			Delay	26.6			50			0.3	39.9	32.8	4.9	42.9	17.1	3.2	31.1
			v/c	0.64			0.72			0.23	0.54	0.88	0.18	0.81	0.69	0.12	0.82
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	B		D	D		D	C	B	D	C	A	C	
			Delay	46.6	16.3		48.5	54.4		53.4	24.8	14.3	47.3	31.3	4.8	24.6	
			v/c	0.82	0.34		0.29	0.74		0.75	0.5	0.01	0.54	0.79	0.51	0.57	
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	D		D	D		D	C	A	D	D	A	D	
			Delay	40.3	48.8		51.4	45.8		51.1	29.7	7.7	48.2	43.1	5.8	39.3	
			v/c	0.58	0.9		0.74	0.84		0.68	0.59	0.1	0.6	0.89	0.53	0.90	
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D		D	D		D	D	A	D	D	A	D	
			Delay	38.5	52.1		54.9	39.8		54	44.4	9.4	50.3	53.7	7.3	41.9	
			v/c	0.31	0.86		0.87	0.83		0.63	0.75	0.71	0.66	0.91	0.33	0.91	
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	B	A	N/A	N/A	A		N/A	N/A	N/A	F			A	
			Delay	10.2	0	N/A	N/A	0		N/A	N/A	N/A	56.0			4.8	
			v/c	0.10	0.20	N/A	N/A	0.52		N/A	N/A	N/A	0.76			0.76	
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C			A	
			Delay	8.4	0	N/A	N/A	0		N/A	N/A	N/A	21.1			3.1	
			v/c	0.06	0.31	N/A	N/A	0.26		N/A	N/A	N/A	0.45			0.52	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	B	A		C	B		A	A		A	B		B		
		Delay	18.9	7.7		24.5	18.6		9.9	5		7.4	17.3		12.3		
		v/c	0.23	0.4		0.44	0.31		0.5	0.15		0.01	0.55		0.55		
Kealakehe Parkway and Keanalehu Street	Baseline	LOS	N/A	N/A	A	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A	N/A	A	
		Delay	N/A	N/A	7.9	N/A	N/A	N/A	N/A	9.0	N/A	N/A	N/A	N/A	N/A	8.4	
		v/c	N/A	N/A	0.22	N/A	N/A	N/A	N/A	0.25	N/A	N/A	N/A	N/A	N/A	0.25	
Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	C	D	A	D	D		C			C	B		C		
		Delay	29	48.1	5.8	48.9	37.4		32.3			25	18.4		33.9		
		v/c	0.63	0.89	0.19	0.89	0.86		0.88			0.32	0.5		0.89		
Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A		
		Delay	9.2	0	N/A	N/A	0	0	N/A	N/A	N/A	19.6	N/A	19.6	0.40		
		v/c	0.05	0.18	N/A	N/A	0.40	0.09	N/A	N/A	N/A	0.39	N/A	0.39	0.39		
Palani Road and Kealaka Street/Palihiolo Street	Baseline	LOS	C		B	B			B	B		A	C	A	B		
		Delay	27.2		12.2	19.1			11.4	10.5		4.4	20.7	4	14.4		
		v/c	0.07		0.48	0.23			0.56	0.54		0.12	0.79	0.04	0.79		
Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B		
		Delay	23.6	N/A	23.6	N/A	N/A	N/A	11.6	11.6	N/A	N/A	17		15.8		
		v/c	0.55	N/A	0.55	N/A	N/A	N/A	0.6	0.6	N/A	N/A	0.78		0.78		

Table 8.13 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2019 AM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	D	A	N/A	B
			Delay	N/A	N/A	N/A	29.7	N/A	0.3	N/A	27.3	3.9	46.6	9.3	N/A	17.5
			v/c	N/A	N/A	N/A	0.42	N/A	0.23	N/A	0.85	0.22	0.83	0.73	N/A	0.85
	Mamalahoa Highway and Hina Lani Street	Baseline	LOS	C	N/A	A	N/A	N/A	N/A	C	A	N/A	N/A	C	A	B
			Delay	34.2	N/A	8.9	N/A	N/A	N/A	25.2	5.5	N/A	N/A	25.6	3.9	15.2
			v/c	0.5	N/A	0.29	N/A	N/A	N/A	0.72	0.27	N/A	N/A	0.84	0.64	0.84
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	D	C		D	D	A	D	C	A	D	C	A	C
			Delay	37.2	31.4		54.7	43.4	0.3	53.3	28	3.5	54.7	30.5	3.3	28.6
			v/c	0.17	0.47		0.67	0.07	0.18	0.49	0.78	0.33	0.8	0.93	0.06	0.93
		Improved	LOS	D	D	A	D	D	A	D	C	A	D	C	A	C
			Delay	37.8	41	0	48.7	37.7	0.3	50.6	26.9	3.6	47.2	27.9	3.4	26.0
			v/c	0.17	0.08	0.03	0.61	0.08	0.18	0.53	0.81	0.34	0.78	0.93	0.06	0.93
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	C	B		D	C		D	C	A	D	C	A	C
			Delay	32.8	19.1		41.2	32		47.7	23.8	9.4	44.3	26.3	4.5	26.7
			v/c	0.55	0.17		0.35	0.81		0.62	0.67	0.02	0.54	0.74	0.39	0.81
		Improved	LOS	C	C	A	D	D	B	D	C	A	D	C	A	C
			Delay	27.8	22.1	9.1	37.3	54.4	17.7	49.1	26.6	9.2	44.1	26.4	4.7	27.6
			v/c	0.52	0.14	0.09	0.37	0.81	0.47	0.68	0.78	0.02	0.6	0.78	0.4	0.81
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	B		D	C		D	C	A	C	C	A	C
			Delay	38.5	17.9		53.2	28.5		41.3	23.6	8	33.2	32.7	6	27.2
			v/c	0.62	0.42		0.74	0.7		0.51	0.63	0.07	0.15	0.82	0.5	0.82
		Improved	LOS	D	C	A	C	C	A	D	C	A	C	C	A	C
			Delay	37.9	22.4	6.6	33.5	29.5	9.9	35.7	22.5	7.7	33.1	24	6.1	23.8
			v/c	0.61	0.24	0.21	0.44	0.7	0.07	0.4	0.63	0.07	0.15	0.59	0.51	0.70
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D		D	C		D	C	B	D	D	A	D
			Delay	40.6	51.8		45.4	24		51.6	31.6	19.9	49.2	41.4	6.6	35.4
			v/c	0.33	0.88		0.86	0.47		0.64	0.63	0.84	0.46	0.83	0.35	0.88
		Improved	LOS	D	D	A	D	C		D	C	B	D	D	A	C
			Delay	46.6	45	9.7	44.2	21.7		51.3	31.4	18	49	41.1	6.6	33.2
			v/c	0.45	0.78	0.24	0.85	0.44		0.64	0.63	0.72	0.46	0.82	0.35	0.85
Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C			A	
		Delay	8.8	0	N/A	N/A	0		N/A	N/A	N/A	20.5			5.6	
		v/c	0.15	0.18	N/A	N/A	0.27		N/A	N/A	N/A	0.52			0.52	
	Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C	N/A	B	A	
		Delay	8.1	0	N/A	N/A	0		N/A	N/A	N/A	18.9	N/A	10.9	4.6	
		v/c	0.12	0.18	N/A	N/A	0.27		N/A	N/A	N/A	0.39	N/A	0.12	0.39	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	A		B	C		A	A		A	C		B	
		Delay	20.1	7.2		19.1	22.9		9.7	8.4		5.8	23.8		16.6	
		v/c	0.19	0.38		0.11	0.44		0.4	0.19		0.01	0.78		0.78	

Table 8.13 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario	
2019 AM Peak Hour With Project (Cont'd.)	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	A
			Delay	7.0	0	0	7.4	0	0	10.5	9.1	9.1	8.7	8.7	8.7	6.5	
			v/c	<0.01	0.05	0.05	<0.01	0.02	0.02	0.21	0.01	0.01	0.03	0.03	0.03	0.21	
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	D	D	B	D	D		C			C	C		C	
			Delay	36.9	44.1	11.5	35.9	35.3		25.5			27.9	28.7		31.8	
			v/c	0.63	0.58	0.18	0.92	0.87		0.84			0.3	0.67		0.92	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	B	N/A	B	A	
			Delay	9.1	0	N/A	N/A	0	0	N/A	N/A	N/A	14.4	N/A	14.4	0.7	
			v/c	0.03	0.09	N/A	N/A	0.40	0.05	N/A	N/A	N/A	0.09	N/A	0.09	0.40	
	Palani Road and Kealaka Street/Palihiolo Street	Baseline	LOS	D		D	C		C	A		A	D	A	C		
			Delay	53.8		53.8	34.5		30.7	4.5		5.3	39.2	6.7	34.3		
			v/c	0.23		0.94	0.41		0.6	0.29		0.04	0.93	0.06	0.94		
	Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	C	C	N/A	N/A	C		C	
			Delay	33.3	N/A	33.3	N/A	N/A	N/A	21.7	21.7	N/A	N/A	21.3		23.1	
			v/c	0.71	N/A	0.71	N/A	N/A	N/A	0.75	0.75	N/A	N/A	0.87		0.87	

Table 8.14 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2019 PM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	A	N/A	C
			Delay	N/A	N/A	N/A	53.1	N/A	0.5	N/A	43.5	3.8	54.5	7.1	N/A	25.0
			v/c	N/A	N/A	N/A	0.69	N/A	0.29	N/A	0.95	0.34	0.86	0.54	N/A	0.95
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	C	B	N/A	N/A	D	A	C
			Delay	54	N/A	14.9	N/A	N/A	N/A	20.5	17.3	N/A	N/A	38.5	3.1	28.3
			v/c	0.89	N/A	0.47	N/A	N/A	N/A	0.55	0.63	N/A	N/A	0.88	0.3	0.89
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	D	C		E	D	A	E	C	A	E	C	A	C
			Delay	37.4	32.2		69	45	0.2	77.8	33.5	3.1	75.6	27.1	3	32.9
			v/c	0.35	0.7		0.88	0.19	0.13	0.76	0.89	0.24	0.87	0.86	0.12	0.89
	Queen Kaahumanu Highway and Makala Boulevard	Improved	LOS	D	D	A	D	D	A	D	D	A	D	C	A	D
			Delay	51.9	53	0.1	51.8	48.6	0.2	54.1	38.8	3.9	54.7	31.7	3.9	33.2
			v/c	0.41	0.09	0.07	0.71	0.22	0.13	0.55	0.92	0.24	0.72	0.89	0.12	0.92
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D		E	D		E	C	B	D	D	A	D
			Delay	65.3	36.8		63.3	48.4		74.8	31.7	11.5	54.2	40.3	3.9	42.6
			v/c	0.91	0.59		0.49	0.9		0.86	0.67	0.02	0.68	0.9	0.4	0.91
Queen Kaahumanu Highway and Makala Boulevard	Improved	LOS	D	D	A	D	D	A	D	C	B	D	D	A	D	
		Delay	54.7	38.9	0.1	52.1	54.5	0.2	54.2	30.8	11.6	54.6	52.9	4.4	39.7	
			v/c	0.85	0.44	0.1	0.39	0.63	0.17	0.69	0.67	0.02	0.71	0.98	0.42	0.98

Table 8.14 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Scenario
2019 PM Peak Hour With Project (Cont'd.)	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	E	E		E	E		E	C	A	E	D	A	D
			Delay	64.5	70.4		79.3	55.5		71.1	34.2	7.3	62.9	51.5	9.2	50.9
			v/c	0.79	0.97		0.86	0.85		0.76	0.63	0.09	0.63	0.94	0.57	0.97
		Improved	LOS	D	D	A	D	D	A	D	C	A	D	C	B	C
			Delay	50.3	35.3	8.3	45.1	45.2	8.9	52.6	32.2	7.2	49.3	32	12.9	33.8
			v/c	0.77	0.62	0.44	0.6	0.82	0.23	0.7	0.74	0.1	0.62	0.78	0.65	0.82
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	E		E	D		D	D	C	D	D	A	D
			Delay	51.4	63.6		66.1	39.6		53.6	37.2	33.7	54.7	47.6	5.7	46.4
			v/c	0.59	0.95		0.92	0.74		0.57	0.62	0.9	0.65	0.88	0.4	0.95
		Improved	LOS	D	D	A	D	C		D	D	C	D	E	A	D
			Delay	44.6	53.8	8.6	45.7	32.2		49.9	35.7	25.5	52.2	60.9	6.1	41.3
			v/c	0.61	0.9	0.29	0.82	0.73		0.64	0.7	0.78	0.72	0.99	0.42	0.99
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	E			B
			Delay	9.8	0	N/A	N/A	0		N/A	N/A	N/A	41.1			13.5
			v/c	0.19	0.12	N/A	N/A	0.38		N/A	N/A	N/A	0.86			0.86
		Improved	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	C	N/A	B	A
			Delay	8.7	0	N/A	N/A	0		N/A	N/A	N/A	19.3	N/A	14.5	5.9
			v/c	0.15	0.18	N/A	N/A	0.24		N/A	N/A	N/A	0.43	N/A	0.40	0.43
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	A		B	B		A	B		A	B		B
			Delay	20.1	9.3		16.9	18.9		9.3	10.5		5.8	16.5		12.8
			v/c	0.3	0.37		0.06	0.33		0.4	0.43		0.01	0.56		0.56
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A
			Delay	7.3	0	0	7.5	0	0	10.3	9.5	9.5	9.0	9.0	9.0	4.8
			v/c	0.02	0.09	0.09	<0.01	0.01	0.01	0.12	0.03	0.0	0.01	0.01	0.01	0.12
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	E	E	A	E	E		E			C	C		E
			Delay	62.2	79.6	9	74	66.8		56			32.1	21.2		56.3
			v/c	0.87	1.00	0.2	0.98	0.98		1.00			0.41	0.44		1.00
		Improved	LOS	D	D	A	D	D		D	D	C	C	D		D
			Delay	54.3	35	5.1	45	53		41.3	39.8	20.8	29.4	40.5		38.8
			v/c	0.72	0.76	0.16	0.67	0.94		0.53	0.58	0.84	0.25	0.82		0.94
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A
			Delay	9.4	0	N/A	N/A	0	0	N/A	N/A	N/A	21.8	N/A	21.8	2.2
			v/c	0.05	0.21	N/A	N/A	0.43	0.09	N/A	N/A	N/A	0.43	N/A	0.43	0.43
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	C			B	B		A	C	A	B
			Delay	29.8		14.9	20.9			16.2	11.8		4.5	21	3.7	15.8
			v/c	0.08		0.52	0.25			0.63	0.61		0.14	0.81	0.04	0.81
Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	B	B	N/A	N/A	B		B	
		Delay	32	N/A	32	N/A	N/A	N/A	13.2	13.2	N/A	N/A	16.9		17.2	
		v/c	0.62	N/A	0.62	N/A	N/A	N/A	0.7	0.7	N/A	N/A	0.81		0.81	

Table 8.15 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2024 AM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	C	A	D	B	N/A	C
			Delay	N/A	N/A	N/A	36.5	N/A	0.3	N/A	32.7	4.3	54.4	12	N/A	21.3
			v/c	N/A	N/A	N/A	0.62	N/A	0.23	N/A	0.89	0.23	0.87	0.77	N/A	0.89
		Improved	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	C	B	N/A	B
			Delay	N/A	N/A	N/A	32.3	N/A	0.3	N/A	25.6	3.8	33.1	13.4	N/A	17.9
			v/c	N/A	N/A	N/A	0.59	N/A	0.23	N/A	0.83	0.22	0.63	0.8	N/A	0.83
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	A	N/A	N/A	N/A	D	A	N/A	N/A	D	A	C
			Delay	48.5	N/A	9.7	N/A	N/A	N/A	54.9	5.9	N/A	N/A	35.1	6.8	23.0
			v/c	0.69	N/A	0.28	N/A	N/A	N/A	0.89	0.32	N/A	N/A	0.92	0.74	0.92
		Improved	LOS	D	N/A	A	N/A	N/A	N/A	D	A	N/A	N/A	C		C
			Delay	49.1	N/A	9.9	N/A	N/A	N/A	45.9	5.9	N/A	N/A	26.3		25.5
			v/c	0.7	N/A	0.28	N/A	N/A	N/A	0.84	0.32	N/A	N/A	0.93		0.93
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	E	E	A	E	D	A	E	C	A	E	C	A	C
			Delay	59.8	61.3	0	63.7	54.7	0.3	76.6	24.3	3	61.9	21.9	2.6	24.8
			v/c	0.23	0.12	0.03	0.63	0.1	0.18	0.64	0.68	0.3	0.81	0.86	0.05	0.86
		Improved	LOS	B	D	A	D	D	A	D	B	A	D	B	A	B
			Delay	52.1	45.2	0	50.1	47	0.3	50.9	15.4	2.3	41.6	19.5	2.7	18.9
			v/c	0.3	0.08	0.03	0.52	0.16	0.18	0.49	0.63	0.28	0.59	0.86	0.05	0.86
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	D	C	A	D	D	A	D	C	A	D	C	A	C
			Delay	40.1	30.6	0	47.5	49.5	0.3	52.7	28.3	7.7	52.6	31.4	4.1	29.7
			v/c	0.63	0.19	0.02	0.42	0.73	0.19	0.63	0.75	0.04	0.67	0.84	0.43	0.84
		Improved	LOS	C	C	A	D	D	B	D	C		C	C	A	C
			Delay	28.3	20.9	8.5	37	46.3	19.7	40	30.1		34.1	28.5	5.8	28.0
			v/c	0.55	0.15	0.09	0.4	0.79	0.55	0.58	0.8		0.52	0.81	0.51	0.81
Queen Kaahumanu Highway and Palani Road	Baseline	LOS	C	C	A	C	C	A	C	C	A	C	C	A	C	
		Delay	34.3	23.3	6.9	31.2	33.8	9.9	33.9	28.1	8.3	33.3	34.1	8.4	28.0	
		v/c	0.58	0.33	0.24	0.41	0.8	0.07	0.36	0.73	0.07	0.16	0.84	0.62	0.84	
	Improved	LOS	D	C	A	D	D	B	D	C		D	C	B	C	
		Delay	42.8	25.2	6.5	44.4	35.5	10.8	45.7	23.8		44.1	29	12.6	28.4	
		v/c	0.6	0.28	0.21	0.52	0.74	0.06	0.43	0.5		0.19	0.66	0.61	0.74	
Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	E	B	D	C		E	C	B	E	D	A	D	
		Delay	54.5	70.8	11.1	53.9	27.5		70.9	33.6	17.7	62.8	47.5	5.8	41.0	
		v/c	0.53	0.94	0.27	0.92	0.51		0.78	0.63	0.73	0.57	0.88	0.36	0.94	
	Improved	LOS	D	D	A	D	C		D	D	C	D	D	A	D	
		Delay	47	48.8	9.6	44.4	21.3		53.3	41.4	21.6	50.1	44	7.7	36.4	
		v/c	0.51	0.83	0.25	0.89	0.47		0.67	0.81	0.78	0.49	0.85	0.44	0.89	

Table 8.15 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2024 AM Peak Hour With Project (Cont'd.)	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	D	N/A	B	A	
			Delay	9.7	0	N/A	N/A	0		N/A	N/A	N/A	27.2	N/A	12.6	5.6	
			v/c	0.20	0.20	N/A	N/A	0.37		N/A	N/A	N/A	0.54	N/A	0.16	0.54	
		Improved	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	N/A	C	N/A	B	A
			Delay	8.6	0	N/A	N/A	0	0	N/A	N/A	N/A	N/A	20.9	N/A	11.8	4.6
			v/c	0.16	0.10	N/A	N/A	0.22	0.15	N/A	N/A	N/A	N/A	0.46	N/A	0.15	0.46
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	D	B		C	D		C	A		A	C		C	
			Delay	38.9	10.8		34.3	41.7		24.4	6.8		5	34		26.6	
			v/c	0.4	0.45		0.26	0.65		0.69	0.2		0.01	0.92		0.92	
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A	
			Delay	7.3	0	0	7.4	0	0	11.1	9.3	9.3	9.0	9.0	9.0	6.5	
			v/c	0.01	0.05	0.05	0.01	0.03	0.03	0.20	0.01	0.01	0.05	0.05	0.05	0.20	
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	F	D	B	E	E		E	D	A	D	E		E	
			Delay	128.4	48.5	10.8	71.1	70.5		59	48.2	7.4	39.6	75.2		61.2	
			v/c	0.91	0.33	0.11	0.88	0.99		0.52	0.34	0.63	0.25	0.96		0.99	
		Improved	LOS	D	D	B	D	C		D	C	A	C	C		C	
			Delay	52.4	41.8	10.7	38.4	30.8		45	20.5	5.1	21.7	28.7		28.5	
			v/c	0.63	0.59	0.18	0.83	0.77		0.51	0.27	0.58	0.21	0.81		0.83	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
			Delay	9.6	0	N/A	N/A	0	0	N/A	N/A	N/A	16.4	N/A	16.4	0.7	
			v/c	0.04	0.10	N/A	N/A	0.48	0.05	N/A	N/A	N/A	0.11	N/A	0.11	0.48	
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	E		E	D		D	A		A	D	A	D		
			Delay	80		75.6	51		46.1	4.2		5.6	41.7	7.5	42.4		
			v/c	0.34		0.99	0.48		0.64	0.3		0.04	0.94	0.05	0.99		
		Improved	LOS	C		C	C		B	A		A	C		C		
			Delay	30.5		33.2	20.2		12.1	6.5		5.8	21.8		20.2		
			v/c	0.14		0.87	0.29		0.48	0.33		0.05	0.78		0.87		
Palani Road and Uluaoa Street	Baseline	LOS	D	N/A	D	N/A	N/A	N/A	D	D	N/A	N/A	C		C		
		Delay	53.6	N/A	53.6	N/A	N/A	N/A	36.5	36.5	N/A	N/A	22.2		30.0		
		v/c	0.83	N/A	0.83	N/A	N/A	N/A	0.89	0.89	N/A	N/A	0.89		0.89		

Table 8.16 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2024 PM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	F	N/A	A	N/A	D	A	F	A	N/A	C
			Delay	N/A	N/A	N/A	117.1	N/A	0.5	N/A	50	2.7	91.8	6.3	N/A	33.2
			v/c	N/A	N/A	N/A	0.97	N/A	0.32	N/A	0.98	0.31	0.98	0.59	N/A	0.98
		Improved	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	A	N/A	C
			Delay	N/A	N/A	N/A	54.9	N/A	0.5	N/A	46.3	2.8	54.6	9.6	N/A	27.4
			v/c	N/A	N/A	N/A	0.69	N/A	0.32	N/A	0.99	0.32	0.78	0.65	N/A	0.99
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	E	N/A	B	N/A	N/A	N/A	D	B	N/A	N/A	D	A	D
			Delay	69.6	N/A	17.5	N/A	N/A	N/A	50.7	18.6	N/A	N/A	49.8	3.1	36.3
			v/c	0.99	N/A	0.55	N/A	N/A	N/A	0.82	0.68	N/A	N/A	0.96	0.37	0.99
		Improved	LOS	D	N/A	B	N/A	N/A	N/A	C	C	N/A	N/A	C		C
			Delay	45.9	N/A	14.6	N/A	N/A	N/A	34.2	22.2	N/A	N/A	28.8		28.7
			v/c	0.91	N/A	0.51	N/A	N/A	N/A	0.7	0.76	N/A	N/A	0.86		0.91
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	E	E	A	F	E	A	F	D	A	F	C	A	D
			Delay	77.2	69.8	0.1	85.3	61.9	0.2	128.3	51.4	3	99.1	30.8	2.6	43.4
			v/c	0.58	0.12	0.07	0.91	0.23	0.17	0.93	0.99	0.28	0.96	0.9	0.1	0.99
		Improved	LOS	D	D	A	D	D	A	D	D	A	D	D	A	D
			Delay	54.9	54.2	0.1	44.5	54.5	0.2	54.4	36.2	2.7	53	50.1	3.7	0.38
			v/c	0.46	0.1	0.07	0.54	0.29	0.17	0.55	0.94	0.27	0.67	1.01	0.11	1.01
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D	A	E	F	A	F	C	A	E	D	A	D
			Delay	79.4	49.4	0.1	78.9	109.3	0.3	90.1	32.5	8.5	66.4	53	3.5	48.5
			v/c	0.98	0.64	0.1	0.7	0.99	0.23	0.93	0.74	0.03	0.83	0.99	0.46	0.99
		Improved	LOS	D	C	A	D	D	C	D	C		D	D	A	D
			Delay	54	34.9	7.8	47.6	50.5	34.5	51.7	34.2		43.4	46.2	5.3	39.1
			v/c	0.9	0.51	0.34	0.51	0.7	0.7	0.74	0.77		0.69	0.96	0.54	0.96
Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	D	A	D	D	A	D	D	A	D	D	B	D	
		Delay	54	39	6.8	49.4	52.3	9.2	53.6	44	8	54.2	53	18.4	43.6	
		v/c	0.79	0.65	0.4	0.58	0.86	0.22	0.64	0.87	0.1	0.61	0.97	0.75	0.97	
	Improved	LOS	D	D	A	D	D	A	D	C		D	D	C	D	
		Delay	51.4	36.5	6.6	47.1	53	9.1	53.1	32.3		47.5	53.8	20.8	41.6	
		v/c	0.8	0.66	0.41	0.6	0.89	0.23	0.68	0.68		0.57	0.98	0.78	0.98	
Queen Kaahumanu Highway and Henry Street	Baseline	LOS	E	E	A	E	D		E	D	C	E	D	A	D	
		Delay	66.3	70.6	9.1	69.1	39.4		73.7	35.8	30.1	69.2	50.8	5.0	48.4	
		v/c	0.82	0.96	0.29	0.95	0.75		0.8	0.63	0.83	0.81	0.93	0.4	0.96	
	Improved	LOS	D	D	A	D	C		D	D	D	D	D	A	D	
		Delay	47.6	50.8	8.1	50.5	32		50.6	49	40.9	52.7	47	6.9	43.0	
		v/c	0.68	0.88	0.27	0.87	0.71		0.63	0.87	0.92	0.71	0.9	0.48	0.92	

Table 8.16 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2024 PM Peak Hour With Project (Cont'd.)	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A		N/A	N/A	N/A	F	N/A	C	B	
			Delay	11.2	0	N/A	N/A	0		N/A	N/A	N/A	64.7	N/A	21.2	13.9	
			v/c	0.28	0.17	N/A	N/A	0.49		N/A	N/A	N/A	0.89	N/A	0.60	0.89	
		Improved	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	N/A	D	N/A	B	A
			Delay	8.3	0	N/A	N/A	0	0	N/A	N/A	N/A	N/A	30.7	N/A	13.6	7.5
			v/c	0.17	0.09	N/A	N/A	0.15	0.34	N/A	N/A	N/A	N/A	0.68	N/A	0.43	0.68
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	A		B	B		C	B		A	C		B	
			Delay	22.4	8.3		16	18.3		22.3	17.7		7.2	28.8		19.3	
			v/c	0.46	0.44		0.11	0.36		0.67	0.63		0.01	0.81		0.81	
	Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	A	B	A	A	A	A	A	A
			Delay	7.3	0	0	7.6	0	0	11.3	9.9	9.9	9.2	9.2	9.2	5.1	
			v/c	0.03	0.11	0.11	<0.01	0.02	0.02	0.16	0.04	0.04	0.02	0.02	0.02	0.16	
	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	E	C	A	E	E		E	D	C	D	E		D	
			Delay	76.2	32.7	4.4	59.8	68.6		57.7	47.8	27.1	41.2	56.8		49.9	
			v/c	0.89	0.7	0.15	0.78	1.00		0.65	0.69	0.87	0.44	0.92		1.00	
		Improved	LOS	D	D	A	D	D		C	C	B	C	C		D	
			Delay	51.8	50.8	5.5	52.8	36.1		30.9	33	19.1	24.3	32.2		36.0	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
			Delay	9.6	0	N/A	N/A	0	0	N/A	N/A	N/A	24.7	N/A	24.7	2.3	
			v/c	0.07	0.23	N/A	N/A	0.46	0.09	N/A	N/A	N/A	0.47	N/A	0.47A	0.47	
	Palani Road and Kealakaa Street/Palihiolo Street	Baseline	LOS	C		B	C		B	B		A	C	A	B		
			Delay	34.6		16.2	23.6		17.8	11		4.5	22.8	4	16.6		
			v/c	0.09		0.52	0.27		0.63	0.62		0.15	0.84	0.04	0.84		
		Improved	LOS	C		B	C		A	B		A	B		B		
			Delay	29.6		16.4	20.3		5.9	12.8		5.9	13.8		12.9		
	Palani Road and Uluaoa Street	Baseline	LOS	C	N/A	C	N/A	N/A	N/A	C	C	N/A	N/A	C		C	
			Delay	30.1	N/A	30.1	N/A	N/A	N/A	22.2	22.2	N/A	N/A	22		23.0	
v/c			0.64	N/A	0.64	N/A	N/A	N/A	0.83	0.83	N/A	N/A	0.87		0.87		

Table 8.17 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 AM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	C	N/A	A	N/A	C	A	D	B	N/A	B
			Delay	N/A	N/A	N/A	27.1	N/A	0.4	N/A	20.8	3	39.5	13.2	N/A	16.6
			v/c	N/A	N/A	N/A	0.41	N/A	0.24	N/A	0.81	0.21	0.74	0.84	N/A	0.84
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	D	A	N/A	N/A	D		C
			Delay	53.1	N/A	12.3	N/A	N/A	N/A	45.6	6.4	N/A	N/A	35.5		31.7
			v/c	0.72	N/A	0.28	N/A	N/A	N/A	0.82	0.34	N/A	N/A	0.98		0.98
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	C	C	A	C	C	A	C	B	A	C	B		B
			Delay	32	32.9	0	33.8	32.9	0.3	34.3	14.4	3.1	29.8	16.5		15.7
			v/c	0.15	0.07	0.03	0.41	0.1	0.2	0.39	0.56	0.32	0.52	0.73		0.73
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	C	C	A	D	D	C	D	C		D	C	A	D
			Delay	34.4	23.6	8.9	42.4	45.9	28.2	53.4	31.2		35.9	27.9	5.1	29.9
			v/c	0.6	0.16	0.09	0.42	0.77	0.7	0.69	0.77		0.47	0.78	0.5	0.78
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	D	C	A	D	D	A	D	C		D	C	B	C
			Delay	48.9	27.8	7.5	38.4	40.2	7.9	53.7	25.5		46	28.4	12.2	30.2
			v/c	0.74	0.37	0.25	0.62	0.86	0.12	0.62	0.6		0.47	0.73	0.65	0.86
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D	A	D	C		D	D	C	D	D	A	D
			Delay	48.6	52.9	9.7	53.9	24.4		52.9	38.3	23.3	54.5	50.2	7.1	39.9
			v/c	0.52	0.86	0.25	0.94	0.52		0.64	0.76	0.81	0.52	0.92	0.44	0.94
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	B	A
			Delay	8.8	0	N/A	N/A	0	0	N/A	N/A	N/A	23.3	N/A	12.4	4.9
			v/c	0.17	0.10	N/A	N/A	0.25	0.16	N/A	N/A	N/A	0.51	N/A	0.16	0.51
		Improved	LOS	B	A	N/A	N/A	C	A	N/A	N/A	N/A	C	N/A	A	B
			Delay	11.7	7.1	N/A	N/A	25.4	4.5	N/A	N/A	N/A	20.9	N/A	5.6	13.9
	Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	D	B		D	D		C	A		A	D		C
Delay			54.7	13.5		45.3	53		34	6.7		5.2	37.5		31.6	
v/c			0.54	0.48		0.42	0.76		0.76	0.21		0.01	0.93		0.93	
Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A	
		Delay	7.4	0	0	7.4	0	0	12.3	9.5	9.5	9.3	9.3	9.3	6.9	
		v/c	0.01	0.06	0.06	0.01	0.04	0.04	0.24	0.02	0.02	0.08	0.08	0.08	0.24	
Ane Keohokalole Highway/Manawalea Street	Improved	LOS	D	C		D	D		B	C	A	B	D		C	
		Delay	46.9	34.5		42.7	47.2		11	21	4.1	11.6	36.3		31.6	
		v/c	0.83	0.45		0.82	0.77		0.03	0.49	0.15	0.12	0.9		0.93	
Ane Keohokalole Highway/Makala Boulevard	Improved	LOS	C	C		C	C		A	B		A	C		C	
		Delay	22	22.5		34.7	26.7		9.6	15		6.9	26		22.4	
		v/c	0.02	0.16		0.59	0.5		0.29	0.52		0.16	0.84		0.84	

Table 8.17 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2029 AM Peak Hour With Project	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	D	D	B	D	D		C	C	A	B	D		D	
			Delay	52.5	49.7	10.6	46.1	37.4		23	22.6	3.8	17.8	53.2		38.0	
			v/c	0.65	0.75	0.18	0.9	0.86		0.29	0.3	0.45	0.01	0.97		0.97	
		Improved	LOS	D	D	B	D	C		C	C	A	B	D	A	D	
			Delay	53.9	48.7	10.6	38.4	31.6		23	24.1	3.8	19.2	36.6	6.4	29.1	
			v/c	0.66	0.74	0.18	0.84	0.8		0.26	0.33	0.46	0.01	0.78	0.47	0.84	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	C	N/A	C	A	
			Delay	10.5	0	N/A	N/A	0	0	N/A	N/A	N/A	20.1	N/A	20.1	0.7	
			v/c	0.05	0.13	N/A	N/A	0.58	0.05	N/A	N/A	N/A	0.15	N/A	0.15	0.58	
	Palani Road and South Street	Improved	LOS	A	A	N/A	N/A	B		N/A	N/A	N/A	C	N/A	A	C	
			Delay	8.6	8.8	N/A	N/A	19.4		N/A	N/A	N/A	28.9	N/A	0.1	15.5	
			v/c	0.37	0.6	N/A	N/A	0.84		N/A	N/A	N/A	0.38	N/A	0.08	0.84	
	Palani Road and D Street	Improved	LOS	N/A	A	N/A	A	A	N/A	C	A						
			Delay	N/A	0	N/A	0	0	N/A	16.5	0.3						
			v/c	N/A	0.48	N/A	0.45	0.01	N/A	0.11	0.48						
	Palani Road and C Street	Improved	LOS	N/A	A	N/A	A	A	N/A	C	A						
			Delay	N/A	0	N/A	0	0	N/A	15.9	0.1						
			v/c	N/A	0.24	N/A	0.45	0.04	N/A	0.05	0.45						
	Palani Road and Kealakaa Street/Palihiolo Street	Baseline	LOS	C		C	C			B	A		A	C		C	
			Delay	31.1		33.4	20.4			12.7	6.6		6.4	25		21.7	
			v/c	0.16		0.88	0.31			0.48	0.35		0.05	0.82		0.88	
	Palani Road and Uluaoa Street	Baseline	LOS	F	N/A	F	N/A	N/A	N/A	C	C	N/A	N/A	B		D	
			Delay	138.6	N/A	138.6	N/A	N/A	N/A	26.9	26.9	N/A	N/A	18.3		37.2	
			v/c	1.09	N/A	1.09	N/A	N/A	N/A	0.84	0.84	N/A	N/A	0.86		1.09	
Improved		LOS	D	N/A	B	N/A	N/A	N/A	D	D	N/A	N/A	C		C		
		Delay	54.9	N/A	10.8	N/A	N/A	N/A	36.5	36.5	N/A	N/A	21.5		26.9		
		v/c	0.63	N/A	0.39	N/A	N/A	N/A	0.9	0.9	N/A	N/A	0.9		0.90		

Table 8.18 Summary of Capacity Analysis

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
2029 PM Peak Hour With Project	Queen Kaahumanu Highway and Hina Lani Street	Baseline	LOS	N/A	N/A	N/A	D	N/A	A	N/A	D	A	D	A	N/A	C
			Delay	N/A	N/A	N/A	54.3	N/A	0.5	N/A	48.9	2.3	54.2	7.2	N/A	30.8
			v/c	N/A	N/A	N/A	0.56	N/A	0.32	N/A	1.01	0.31	0.75	0.67	N/A	0.93
	Mamalaho Highway and Hina Lani Street	Baseline	LOS	D	N/A	B	N/A	N/A	N/A	C	C	N/A	N/A	C		C
			Delay	50	N/A	16	N/A	N/A	N/A	34.4	24	N/A	N/A	31		30.8
			v/c	0.93	N/A	0.52	N/A	N/A	N/A	0.71	0.8	N/A	N/A	0.89		0.93
	Queen Kaahumanu Highway and Kealakehe Parkway	Baseline	LOS	D	D	A	D	D	A	D	C	A	D	C		C
			Delay	46.7	35.4	0.1	35.1	38.7	0.2	53	23.9	3	47.5	22.7		23.7
			v/c	0.52	0.08	0.08	0.57	0.29	0.18	0.66	0.87	0.31	0.77	0.86		0.87
	Queen Kaahumanu Highway and Makala Boulevard	Baseline	LOS	E	D	A	E	E	D	E	D		D	D	A	D
			Delay	65	39.3	7.7	71.8	64.4	42.2	70.7	36		51.6	40.9	4.6	42.5
			v/c	0.95	0.59	0.35	0.7	0.8	0.75	0.87	0.8		0.77	0.93	0.52	0.95
	Queen Kaahumanu Highway and Palani Road	Baseline	LOS	E	D	A	E	E	B	D	C		D	D	C	D
			Delay	78	41.2	8.3	58.1	60.4	10.7	54.6	32.7		52.2	48.8	23.3	44.1
			v/c	0.97	0.77	0.44	0.79	0.94	0.51	0.7	0.71		0.72	0.97	0.8	0.97
	Queen Kaahumanu Highway and Henry Street	Baseline	LOS	D	D	A	D	C		E	D	D	E	D	A	D
			Delay	52.3	52.3	7.9	49.4	32.8		67.8	49.6	52.2	76	51.4	6.7	47.5
			v/c	0.7	0.87	0.26	0.83	0.68		0.77	0.86	0.98	0.87	0.92	0.48	0.98
	Kealakehe Parkway and Kamanu Street	Baseline	LOS	A	A	N/A	N/A	A	A	N/A	N/A	N/A	E	N/A	B	A
			Delay	8.4	0	N/A	N/A	0	0	N/A	N/A	N/A	36.8	N/A	14.0	8.2
			v/c	0.18	0.09	N/A	N/A	0.17	0.37	N/A	N/A	N/A	0.75	N/A	0.45	0.75
Improved		LOS	B	A	N/A	N/A	B	A	N/A	N/A	N/A	C	N/A	A	B	
		Delay	13	8.1	N/A	N/A	19.6	6.5	N/A	N/A	N/A	23.2	N/A	5.2	11.4	
Kealakehe Parkway and Ane Keohokalole Highway	Baseline	LOS	C	B		C	C		B	B		A	C		B	
		Delay	33.5	12.6		27.7	28.5		12.4	12.7		6.3	25.2		18.1	
		v/c	0.51	0.52		0.19	0.45		0.61	0.6		0.02	0.76		0.76	
Kealakehe Parkway and Keanalehu Street	Baseline	LOS	A	A	A	A	A	A	B	A	A	A	A	A	A	
		Delay	7.4	0	0	7.6	0	0	12.7	10.5	10.5	9.7	9.7	9.7	5.8	
		v/c	0.04	0.12	0.12	0.01	0.02	0.02	0.20	0.08	0.08	0.04	0.04	0.04	0.20	
Ane Keohokalole Highway/Manawalea Street	Improved	LOS	D	D		C	D		B	D	A	C	D		D	
		Delay	51.4	52.9		31.3	52.8		15.2	44.8	4.1	31.3	37.7		40.2	
		v/c	0.85	0.79		0.67	0.85		0.03	0.88	0.33	0.59	0.87		0.88	
Ane Keohokalole Highway/Makala Boulevard	Improved	LOS	C	C		C	C		A	C		C	B		C	
		Delay	24.8	32		34.4	30.3		5.9	31.5		24	13.5		25.5	
		v/c	0.05	0.55		0.48	0.75		0.08	0.9		0.67	0.57		0.90	

Table 8.17 Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	Condition	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection	
2029 PM Peak Hour With Project	Palani Road and Henry Street/Ane Keohokalole Highway	Baseline	LOS	E	E	A	E	C		D	D	C	C	D		D	
			Delay	55.9	58.6	4.7	56.4	34.6		38.9	35.3	26	24.4	46.6		41.8	
			v/c	0.84	0.98	0.17	0.85	0.78		0.54	0.64	0.81	0.14	0.92		0.98	
		Improved	LOS	D	D	A	D	D		C	D	C	C	D	A	D	
			Delay	53.6	54.2	6.6	53.1	36.8		32.2	41.5	34.2	28.3	43.3	8.6	40.3	
			v/c	0.79	0.94	0.17	0.78	0.75		0.37	0.68	0.93	0.15	0.64	0.53	0.94	
	Palani Road and Kamakaeha Avenue	Baseline	LOS	B	A	N/A	N/A	A	A	N/A	N/A	N/A	E	N/A	E	A	
			Delay	10.8	0	N/A	N/A	0	0	N/A	N/A	N/A	44.3	N/A	44.3	3.4	
			v/c	0.08	0.28	N/A	N/A	0.60	0.10	N/A	N/A	N/A	0.67	N/A	0.67	0.67	
	Palani Road and South Street	Improved	LOS	B	C	N/A	N/A	B		N/A	N/A	N/A	D	N/A	A	B	
			Delay	10.7	24.1	N/A	N/A	15.1		N/A	N/A	N/A	41.7	N/A	0.2	18.4	
			v/c	0.55	0.92	N/A	N/A	0.6		N/A	N/A	N/A	0.51	N/A	0.16	0.92	
	Palani Road and D Street	Improved	LOS	N/A	A	N/A	A	A	N/A	B	A						
			Delay	N/A	0	N/A	0	0	N/A	12.8	0.1						
			v/c	N/A	0.79	N/A	0.33	0.01	N/A	0.03	0.79						
	Palani Road and C Street	Improved	LOS	N/A	A	N/A	A	A	N/A	B	A						
			Delay	N/A	0	N/A	0	0	N/A	12.7	0.0						
			v/c	N/A	0.40	N/A	0.33	0.05	N/A	0.01	0.40						
	Palani Road and Kealakaa Street/ Palihiolo Street	Baseline	LOS	C		B	C			A	B		A	B		B	
			Delay	29.7		17	20.7			7.1	14.6		7.0	15.1		14.3	
			v/c	0.08		0.5	0.24			0.49	0.69		0.2	0.6		0.69	
	Palani Road and Uluaoa Street	Baseline	LOS	D	N/A	D	N/A	N/A	N/A	B	B	N/A	N/A	B		C	
			Delay	54.3	N/A	54.3	N/A	N/A	N/A	15.6	15.6	N/A	N/A	17.4		20.7	
			v/c	0.79	N/A	0.79	N/A	N/A	N/A	0.77	0.77	N/A	N/A	0.83		0.83	
Improved		LOS	D	N/A	B	N/A	N/A	N/A	B	B	N/A	N/A	B		B		
		Delay	49.9	N/A	11.5	N/A	N/A	N/A	13.4	13.4	N/A	N/A	16.4		18.0		
		v/c	0.69	N/A	0.17	N/A	N/A	N/A	0.73	0.73	N/A	N/A	0.82		0.82		

Table 9. Summary of Traffic Mitigation

Facility	Type	Approach	Proposed Improvements (Year of Implementation With Project/Year of Implementation Without Project)
Queen Kaahumanu Highway	Area	N/A	Widen Queen Kaahumanu Highway from two lanes to four lanes from Kealakehe Parkway to Kona International Airport Access Road. (2014/2014)
Ane Keohokalole Highway	Area	NB/SB	Extend Ane Keohokalole Highway from Puohuluhuli Street to Palani Road (2014/2014).
		NB/SB	Provide left-turn lanes at Makala Boulevard Extension (2014/2014).
		NB/SB	Provide left-turn lanes at Manawalea Street Extension (2014/2014).
		NB/SB	Extend the two-lane Ane Keohokalole Highway to Hina Lani Street (2019/2019).
Palani Rd and Ane Keohokalole Hwy/Henry Street	Area	SB	Construct a left-turn lane, a through lane, and a shared through/right-turn lane on Ane Keohokalole Highway (2014/2014). Widen Ane Keohokalole Highway to provide an exclusive right-turn lane (2029)
		EB	Widen mauka bound Palani Road to provide exclusive left-turn and right-turn lanes at Ane Keohokalole Highway/Henry Street (2014/2014)
		All	Modify the traffic signal phasing to provide protected-permissive left-turn phases on all approaches to the intersection (2014/2014).
		WB	Widen makai bound Palani Road to provide an additional through-only lane (2024 /2029).
			Widen makai bound Palani Road to provide an additional left-turn lane (2019/2029).
		NB	Widen Henry Street to provide a separate left-turn lane (2019/2029). Widen Henry Street to provide a separate right-turn lane (2019/2029+).
Hina Lani Street and Queen Kaahumanu Hwy	Area	SB	Widen Queen Kaahumanu Highway to provide an additional left-turn lane (2024/2024).
		EB	Widen/restripe mauka bound Hina Lani Street to provide two lanes between Queen Kaahumanu Highway and Kanalani Street (2024/2024).
		WB	Widen Hina Lani Street to provide an additional left-turn lane (2029/2029).
Kealakehe Pkwy and Queen Kaahumanu Hwy	Area	WB	Widen Kealakehe Parkway to provide a left-turn lane (2019/2019).
		EB	Widen Kealakehe Parkway to provide exclusive left-turn and right-turn lanes (2019/2019).
		All	Modify the traffic signal phasing to provide protected-left-turn phases on all approaches (2019/2019).
		WB	Widen Kealakehe Parkway to provide an additional left-turn lane (2024/2029+).
		SB	Widen Queen Kaahumanu Highway to provide an additional left-turn lane (2024/2029+).
		EB	Widen the east leg of Kealakehe Parkway from one lane to two lanes from Queen Kaahumanu Highway (2024/2029+).
		SB	Convert the exclusive right-turn lane on Queen Kaahumanu Highway to a shared through/right-turn lane (2029/2029).
		SB	Convert the right lane on the south leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2029/2029).
		NB	Widen Queen Kaahumanu to provide an additional through lane (2029/2029).
		NB	Convert the right lane on the north leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2029/2029).
Makala Blvd and Queen Kaahumanu Hwy	Area	EB	Widen Makala Boulevard to provide two exclusive left-turn lanes, a through-only lane and a shared through/right-turn lane (2014/2014).
		EB	Restripe shared left-turn/through/right-turn lane on Makala Boulevard to a shared through/right-turn lane (2014/2014)
		All	Modify the traffic signal phasing to provide an eight-phase operation with protected left-turn phases on all approaches (2014/2014).
		EB	Widen Makala Boulevard to provide two exclusive left- an exclusive right-turn lane (2019/2024).
		WB	Widen Makala Boulevard to provide a left-turn lane, a through-only lane, and a shared through/right-turn lane (2019).
		WB	Widen Makala Boulevard to provide a left-turn lane, two through-only lanes, and a right-turn lane (2019/2024).
		SB	Restripe Queen Kaahumanu Highway to provide an additional left-turn lane (2019/2024).
		NB	Convert the exclusive right-turn lane on Queen Kaahumanu Highway to a shared through/right-turn lane (2024/2024).
		NB	Convert the right lane on the north leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2024/2024).
		SB	Widen the Queen Kaahumanu Highway approach to provide three through lanes (2024/2024).
		SB	Convert the right lane on the south leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2024/2024).
		Palani Road and Queen Kaahumanu Hwy	Area
WB	Widen Palani Road to provide an additional left-turn lane and an exclusive right-turn lane (2019/2024).		
SB	Widen the Queen Kaahumanu Highway approach to provide three through lanes (2019/2019).		
	Convert the existing right lane on the south leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2019/2019).		
NB	Convert the right-turn lane on Queen Kaahumanu Highway to a shared through/right-turn lane to provide three through lanes (2024/2029). Convert the existing right lane on the north leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2024/2029).		

Table 9. Summary of Traffic Mitigation (Cont'd.)

Facility	Type	Approach	Proposed Improvements (Year of Implementation With Project/Year of Implementation Without Project)
Henry Street and Queen Kaahumanu Highway	Area	WB	Widen Henry Street to provide an additional left-turn lane. Restripe the shared through/left-turn lane to a through-only lane (2019/2019).
		EB	Widen Henry Street to provide an additional left-turn lane (2019/2019).
			Widen Henry Street to provide a right-turn lane (2019/2029).
		All	Modify the traffic signal phasing to provide an eight-phase operation with protected left-turn phases on all approaches (2019/2019).
		SB	Widen the Queen Kaahumanu Highway approach to provide three through lanes (2024/2029).
	SB	Convert the existing right lane on the south leg of Queen Kaahumanu Highway from a right-turn acceleration lane to a merging lane (2024/2029).	
Mamalahoa Highway and Hina Lani Street	Area	SB	Extend the exclusive right-turn lane to a total of 600 feet in length (2019/2019).
			Convert the exclusive right-turn lane on southbound Mamalahoa Highway to a shared through/right-turn lane (2024/2029+).
			Widen south leg of Mamalahoa Highway to provide a merging lane from two lanes to one lane in the southbound direction (2024/2029+).
Manawalea Street and Ane Keohokalole Highway	Area	N/A	Extend Makala Boulevard to Ane Keohokalole Highway opposite Manawalea Street (2019).
	Local	NB	Widen Ane Keohokalole Highway to provide a right-turn lane or widen Ane Keohokalole Highway to provide an additional through lane (2024).
		EB/WB	Provide exclusive left-turn lanes and shared through/right-turn lanes (2019).
Makala Boulevard and Ane Keohokalole Highway	Local	All	Signalize the intersection, when warranted (2019/2024).
		WB	Construct Makala Blvd with left-turn and shared through/right-turn lanes (2019).
		SB	Restripe northbound left turn lane on Ane Keohokalole Highway to a median shelter lane (2019)
		EB	Construct Makala Blvd with left-turn and shared through/right-turn lanes (2024).
	Area	EB/WB	Extend Makala Boulevard to Ane Keohokalole Highway (2024).
Ane Keohokalole Hwy and Kealakehe Pkwy	Area	All	Signalize the intersection, when warranted (2014/2014).
South Street and Ane Keohokalole Highway	Local	WB	Construct South Street with stop-controls and restricted to right-turn-in and right-turn-out movements only (2029).
Palani Road and School Street	Local	SB	Construct School Street with separate left-turn and right-turn lanes (2029).
		WB	Widen makai bound Palani Road to provide a additional through lane and a right-turn lane at School Street (2029).
		EB	Widen Palani Road to provide an exclusive left-turn lane at School Street (2029).
		N/A	Signalize the intersection of School Street and Palani Road when warranted (2029).
Palani Road and D Street	Local	SB	Construct D Street at Palani Road with stop-controls and restricted to right-turn-in and right-turn-out movements only (2029).
		WB	Widen Palani Road to provide an additional through lane and a right-turn deceleration lane to D Street (2029).
		WB	Widen Palani Road to provide a right-turn acceleration lane from D Street (2029).
Palani Road and C Street	Local	SB	Construct C Street at Palani Road with stop-controls and restricted to right-turn-in and right-turn-out movements only (2029).
		WB	Widen Palani Road to provide an additional through lane and a right-turn deceleration lane to C Street (2029).
		WB	Widen Palani Road to provide a right-turn acceleration lane from C Street (2029).
Kealakehe Parkway and Kamanu Street	Area	EB	Widen east leg of Kealakehe Parkway to provide a median left-turn lane (2014/2019).
		SB	Restripe Kamanu Street to provide separate left-turn and right-turn lanes (2019/2024).
		EB	Widen Kealakehe Parkway to provide an additional through lane (2024/2029+).
		WB	Widen Kealakehe Parkway to provide a channelized exclusive right-turn lane (2024/2029+).
		All	Signalize when warranted (2029/2029)
Kealakehe Parkway and Keanalehu Street	Area	NB	Extended Kealakehe Parkway to provide access to Lanihau Partners Mauka Lands (2019).
		EB	Extended Keanalehu Street to provide access to Lanihau Partners Mauka Lands (2019).
Palani Road and Kamakaeha Avenue	Area	EB	Widen/restripe Palani Road to provide two through lanes (2014/2014).
		EB	Widen Palani Road to provide an exclusive left-turn lane and a median shelter lane (2014/2014).
		WB	Restripe the right-turn lane on Palani Road to a shared through/right-turn lane (2029/2029+).
		All	Signalize intersection when warranted (2029+/2029+).

Table 9. Summary of Traffic Mitigation (Cont'd.)

Facility	Type	Approach	Proposed Improvements (Year of Implementation With Project/ <i>Year of Implementation Without Project</i>)
Palani Road and Kealakea Street/Pahiliolo Street	Area	All	Signalize intersection (2010/2010).
		NB/SB	Provide exclusive left-turn lanes in both directions (2010/2010).
		SB	Provide an exclusive right-turn lane (2010/2010).
		SB	Convert exclusive right-turn lane into a shared through/right-turn lane (2024/2029).
		SB	Widen south leg of Palani Road to provide a merging lane from two lanes to one lane in the southbound direction (2024/2029).
Palani Road and Uluaoa Street	Area	All	Signalize the intersection when warranted (2014/2014).
		EB	Restripe Uluaoa Street to provide separate left-turn and right-turn lanes (2024)
Manawalea Street and Keanalehu Street	Local	NB/SB	Extend Manawalea Street to Keanalehu Street (2014)
		NB	Provide exclusive left-turn lane and through lane on Manawalea Street (2014).
		SB	Restripe Manawalea Street to provide a channelized right-turn lane and a through lane (2014).
		All	Install all-way stop controls at the intersection (2014).

**TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU**

APPENDICES

**TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU**

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Kealahke Pkwy
 N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK-Kealahke

PERIOD: AM Peak
 NORTH: Jamie/Video
 TECHNICIAN: Jamie/Video
 DATE: 9/23/09

TIME	Kealahke Pkwy				Queen Kaahumanu Hwy				SBR	TOTAL HRLY				
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT			NBR	SBL	SBT	
6:00	6:15	0	0	0	10	2	20	10	133	10	0	0	0	185
6:15	6:30	0	0	0	14	2	19	17	179	15	0	0	0	246
6:30	6:45	3	3	7	14	1	42	14	243	38	12	89	15	481
6:45	7:00	5	0	1	24	0	26	19	226	33	10	111	11	466 1378
7:00	7:15	3	0	3	24	2	23	18	185	36	23	129	8	454 1647
7:15	7:30	11	2	7	40	2	36	19	186	54	27	145	12	541 1942
7:30	7:45	4	1	13	40	6	29	23	171	63	32	183	20	585 2046
7:45	8:00	5	2	11	63	1	33	9	182	99	40	219	10	674 2254
8:00	8:15	4	1	9	92	5	39	24	161	60	21	160	8	584 2384
8:15	8:30	6	2	9	31	3	26	24	179	23	7	173	11	494 2337
8:30	8:45	6	2	9	14	4	27	27	178	25	8	158	9	467 2219
8:45	9:00	5	0	13	32	1	13	11	179	13	5	169	19	460 2005

AM PEAK HOUR

7:15	8:15	24	6	40	235	14	137	75	700	276	120	707	50	2384	2384
PHF		1.20	0.75	0.91	0.93	3.50	1.04	2.08	0.96	0.70	0.75	0.81	1.25	0.88	0.90 PHF

**APPENDIX A
TRAFFIC COUNT DATA**

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Kealahke Pkwy
 N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK-Kealahke

PERIOD: PM Peak
 NORTH: Jamie/Video
 TECHNICIAN: Jamie/Video
 DATE: 9/22/09

TIME	Kealahke Pkwy				Queen Kaahumanu Hwy				SBR	TOTAL HRLY				
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT			NBR	SBL	SBT	
15:00	15:15	9	0	28	69	3	17	16	193	48	28	213	20	638
15:15	15:30	18	0	27	81	11	19	26	211	50	23	257	23	746
15:30	15:45	16	1	21	42	3	24	12	163	44	13	232	11	582
15:45	16:00	16	5	19	56	2	24	14	236	63	17	245	17	714 2680
16:00	16:15	16	1	21	32	2	19	15	164	45	27	184	16	541 2583
16:15	16:30	15	1	21	35	2	28	15	205	44	18	222	7	613 2450
16:30	16:45	15	1	21	35	2	28	15	205	44	18	222	7	613 2450
16:45	17:00	14	9	16	38	2	19	8	175	29	14	242	14	580 2448
17:00	17:15	12	4	16	30	5	18	17	197	51	21	250	14	635 2369
17:15	17:30	9	0	21	42	4	21	14	155	46	27	234	8	581 2409
17:30	17:45	14	5	14	31	2	11	13	135	32	19	210	11	497 2293
17:45	18:00	4	4	17	24	2	11	12	155	41	17	163	5	455 2168

PM PEAK HOUR

15:15	16:15	59	6	95	248	19	93	75	781	205	81	947	71	2680	2680
PHF		0.82	N/A	0.88	0.77	0.43	1.22	0.72	0.93	1.03	0.88	0.92	0.77	0.90 PHF	

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Makala Blvd
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK-Makala

PERIOD: AM Peak
NORTH: Bonnie/Video
TECHNICIAN:
DATE: 9/23/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows include times from 6:00 to 8:30 and AM PEAK HOUR summary.

AM PEAK HOUR

7:30 8:30 279 30 35 14 29 33 127 709 20 33 676 221 2206 2206
PHF 1.06 0.94 1.46 0.39 0.91 0.75 0.91 0.87 0.83 1.03 0.99 1.32 0.96 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Makala Blvd
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK-Makala

PERIOD: PM Peak
NORTH: Bonnie/Video
TECHNICIAN:
DATE: 9/22/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows include times from 15:00 to 17:30 and PM PEAK HOUR summary.

PM PEAK HOUR

15:30 16:30 419 168 129 29 69 59 257 606 39 103 838 286 3002 3002
PHF 0.93 0.78 0.90 1.21 0.96 2.11 1.04 0.99 0.98 1.03 0.81 0.85 0.91 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Road
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK Palani

PERIOD: AM Peak
NORTH: Joseph/Tim
TECHNICIAN:
DATE: 9/23/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows include times from 6:00 to 8:15 and AM Peak summary.

AM Peak

7:15 8:15 225 111 69 13 283 16 101 640 8 30 385 201 2082 2082
PHF 1.06 0.96 1.01 1.08 0.88 0.67 0.97 0.94 0.67 1.88 0.89 0.70 0.91 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Road
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK Palani

PERIOD: PM Peak
NORTH: Joseph/Tim
TECHNICIAN:
DATE: 9/22/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows include times from 15:00 to 17:15 and PM PEAK HOUR summary.

PM PEAK HOUR

15:30 16:30 295 252 193 46 299 71 206 547 16 176 734 418 3253 3253
PHF 1.05 1.13 0.91 1.05 0.89 0.89 1.03 0.91 0.80 1.26 0.77 1.00 0.93 PHF

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION: Queen Kaahumanu + Henry St		TIME: 6:30 AM to 8:30 AM			
JURISDICTION: Queen Kaahumanu		DATE: 10-22-09, Thu			
PROJECT TITLE:		PROJECT NO:			
<p>PEAK HOUR PERIOD: 7:15 AM to 8:15 AM</p> <p>PEAK 15 MINUTE PERIOD: 7:30 AM to 7:45 AM</p>					
INTERSECTION PEAK HOUR FACTOR: 0.92					
RUNNING PERIOD	Henry Eastbound	Henry Westbound	Queen Kaahumanu Northbound	Queen Kaahumanu Southbound	TOTAL
6:45 AM	A 18	B 29	C 9	D 2	E 6
7:00 AM	A 26	B 41	C 17	D 12	E 24
7:15 AM	A 48	B 96	C 28	D 210	E 34
7:30 AM	A 63	B 131	C 36	D 297	E 55
7:45 AM	A 86	B 219	C 54	D 417	E 88
8:00 AM	A 101	B 287	C 62	D 530	E 117
8:15 AM	A 112	B 336	C 75	D 608	E 158
8:30 AM	A 132	B 389	C 87	D 690	E 178
PERIOD COUNTS	A	B	C	D	E
6:45 AM	18	29	9	2	6
7:00 AM	26	41	17	12	24
7:15 AM	48	96	28	210	34
7:30 AM	63	131	36	297	55
7:45 AM	86	219	54	417	88
8:00 AM	101	287	62	530	117
8:15 AM	112	336	75	608	158
8:30 AM	132	389	87	690	178
PERIOD	A	B	C	D	E
6:45 AM	0.70	0.68	0.65	0.95	0.81
7:00 AM	0.70	0.68	0.65	0.95	0.81
7:15 AM	0.70	0.68	0.65	0.95	0.81
7:30 AM	0.70	0.68	0.65	0.95	0.81
7:45 AM	0.70	0.68	0.65	0.95	0.81
8:00 AM	0.70	0.68	0.65	0.95	0.81
8:15 AM	0.70	0.68	0.65	0.95	0.81
8:30 AM	0.70	0.68	0.65	0.95	0.81
PHF=	0.70	0.68	0.65	0.95	0.81
HOURLY TOTALS	0.70	0.68	0.65	0.95	0.81
PERIOD	A	B	C	D	E
6:30 AM	63	131	50	329	55
6:45 AM	68	190	45	353	73
7:00 AM	75	236	45	371	76
7:15 AM	64	240	47	375	83
7:30 AM	69	258	51	374	77
PERIOD	A	B	C	D	E
6:30 AM	18	29	9	2	6
6:45 AM	26	41	17	12	24
7:00 AM	48	96	28	210	34
7:15 AM	63	131	36	297	55
7:30 AM	86	219	54	417	88
7:45 AM	101	287	62	530	117
8:00 AM	112	336	75	608	158
8:30 AM	132	389	87	690	178
PERIOD	A	B	C	D	E
6:30 AM	0.70	0.68	0.65	0.95	0.81
6:45 AM	0.70	0.68	0.65	0.95	0.81
7:00 AM	0.70	0.68	0.65	0.95	0.81
7:15 AM	0.70	0.68	0.65	0.95	0.81
7:30 AM	0.70	0.68	0.65	0.95	0.81
7:45 AM	0.70	0.68	0.65	0.95	0.81
8:00 AM	0.70	0.68	0.65	0.95	0.81
8:30 AM	0.70	0.68	0.65	0.95	0.81
PHF=	0.70	0.68	0.65	0.95	0.81
HOURLY TOTALS	0.70	0.68	0.65	0.95	0.81
PERIOD	A	B	C	D	E
6:30 AM	84	288	91	381	176
6:45 AM	76	299	90	402	162
7:00 AM	71	313	87	402	173
7:15 AM	68	325	90	401	180
7:30 AM	69	341	86	409	186
PERIOD	A	B	C	D	E
6:30 AM	0.76	0.84	0.80	0.82	0.88
6:45 AM	0.76	0.84	0.80	0.82	0.88
7:00 AM	0.76	0.84	0.80	0.82	0.88
7:15 AM	0.76	0.84	0.80	0.82	0.88
7:30 AM	0.76	0.84	0.80	0.82	0.88
7:45 AM	0.76	0.84	0.80	0.82	0.88
8:00 AM	0.76	0.84	0.80	0.82	0.88
8:30 AM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION: Queen Kaahumanu + Henry St		TIME: 3:00 PM to 5:00 PM			
JURISDICTION: Queen Kaahumanu		DATE: 10-22-09, Thu			
PROJECT TITLE:		PROJECT NO:			
<p>PEAK HOUR PERIOD: 4:00 PM to 5:00 PM</p> <p>PEAK 15 MINUTE PERIOD: 4:45 PM to 5:00 PM</p>					
INTERSECTION PEAK HOUR FACTOR: 0.94					
RUNNING PERIOD	Henry Eastbound	Henry Westbound	Queen Kaahumanu Northbound	Queen Kaahumanu Southbound	TOTAL
3:15 PM	A 28	B 70	C 18	D 103	E 88
3:30 PM	A 46	B 140	C 46	D 192	E 180
3:45 PM	A 63	B 203	C 70	D 284	E 266
4:00 PM	A 84	B 288	C 91	D 362	E 357
4:15 PM	A 104	B 369	C 108	D 501	E 440
4:30 PM	A 117	B 453	C 133	D 608	E 515
4:45 PM	A 131	B 528	C 160	D 685	E 614
5:00 PM	A 154	B 629	C 177	D 790	E 711
PERIOD COUNTS	A	B	C	D	E
3:15 PM	28	70	18	103	88
3:30 PM	46	140	46	192	180
3:45 PM	63	203	70	284	266
4:00 PM	84	288	91	362	357
4:15 PM	104	369	108	501	440
4:30 PM	117	453	133	608	515
4:45 PM	131	528	160	685	614
5:00 PM	154	629	177	790	711
PERIOD	A	B	C	D	E
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0.76	0.84	0.80	0.82	0.88
4:00 PM	0.76	0.84	0.80	0.82	0.88
4:15 PM	0.76	0.84	0.80	0.82	0.88
4:30 PM	0.76	0.84	0.80	0.82	0.88
4:45 PM	0.76	0.84	0.80	0.82	0.88
5:00 PM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88
PERIOD	A	B	C	D	E
3:00 PM	84	288	91	381	176
3:15 PM	76	299	90	402	162
3:30 PM	71	313	87	402	173
3:45 PM	68	325	90	401	180
4:00 PM	70	341	86	409	186
PERIOD	A	B	C	D	E
3:00 PM	0.76	0.84	0.80	0.82	0.88
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0.76	0.84	0.80	0.82	0.88
4:00 PM	0.76	0.84	0.80	0.82	0.88
4:15 PM	0.76	0.84	0.80	0.82	0.88
4:30 PM	0.76	0.84	0.80	0.82	0.88
4:45 PM	0.76	0.84	0.80	0.82	0.88
5:00 PM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88
PERIOD	A	B	C	D	E
3:00 PM	84	288	91	381	176
3:15 PM	76	299	90	402	162
3:30 PM	71	313	87	402	173
3:45 PM	68	325	90	401	180
4:00 PM	70	341	86	409	186
PERIOD	A	B	C	D	E
3:00 PM	0.76	0.84	0.80	0.82	0.88
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0.76	0.84	0.80	0.82	0.88
4:00 PM	0.76	0.84	0.80	0.82	0.88
4:15 PM	0.76	0.84	0.80	0.82	0.88
4:30 PM	0.76	0.84	0.80	0.82	0.88
4:45 PM	0.76	0.84	0.80	0.82	0.88
5:00 PM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88
PERIOD	A	B	C	D	E
3:00 PM	84	288	91	381	176
3:15 PM	76	299	90	402	162
3:30 PM	71	313	87	402	173
3:45 PM	68	325	90	401	180
4:00 PM	70	341	86	409	186
PERIOD	A	B	C	D	E
3:00 PM	0.76	0.84	0.80	0.82	0.88
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0.76	0.84	0.80	0.82	0.88
4:00 PM	0.76	0.84	0.80	0.82	0.88
4:15 PM	0.76	0.84	0.80	0.82	0.88
4:30 PM	0.76	0.84	0.80	0.82	0.88
4:45 PM	0.76	0.84	0.80	0.82	0.88
5:00 PM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88
PERIOD	A	B	C	D	E
3:00 PM	84	288	91	381	176
3:15 PM	76	299	90	402	162
3:30 PM	71	313	87	402	173
3:45 PM	68	325	90	401	180
4:00 PM	70	341	86	409	186
PERIOD	A	B	C	D	E
3:00 PM	0.76	0.84	0.80	0.82	0.88
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0.76	0.84	0.80	0.82	0.88
4:00 PM	0.76	0.84	0.80	0.82	0.88
4:15 PM	0.76	0.84	0.80	0.82	0.88
4:30 PM	0.76	0.84	0.80	0.82	0.88
4:45 PM	0.76	0.84	0.80	0.82	0.88
5:00 PM	0.76	0.84	0.80	0.82	0.88
PHF=	0.76	0.84	0.80	0.82	0.88
HOURLY TOTALS	0.76	0.84	0.80	0.82	0.88
PERIOD	A	B	C	D	E
3:00 PM	84	288	91	381	176
3:15 PM	76	299	90	402	162
3:30 PM	71	313	87	402	173
3:45 PM	68	325	90	401	180
4:00 PM	70	341	86	409	186
PERIOD	A	B	C	D	E
3:00 PM	0.76	0.84	0.80	0.82	0.88
3:15 PM	0.76	0.84	0.80	0.82	0.88
3:30 PM	0.76	0.84	0.80	0.82	0.88
3:45 PM	0				

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Rd
N-S STREET: Henry St

FILE NAME: Palani-Henry

PERIOD: AM Peak
NORTH: Kona, Hawaii
TECHNICIAN: Shawn/Video
DATE: 9/23/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows for times 6:00-8:30 and AM PEAK HOUR summary.

AM PEAK HOUR

7:15 8:15 0 156 47 688 418 0 43 0 422 0 0 0 1774
PHF N/A 0.98 0.90 0.94 0.81 N/A 1.08 N/A 0.96 N/A N/A N/A 0 0.91 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Kealahke Pkwy
N-S STREET: Aneohokalo Hwy

FILE NAME: QK-Makala

PERIOD: AM Peak
NORTH: Kona, Hawaii
TECHNICIAN: Shawn/Video
DATE: 9/23/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows for times 6:00-8:30 and AM PEAK HOUR summary.

AM PEAK HOUR

7:15 8:15 0 85 326 0 249 0 190 0 3 0 0 853
PHF N/A 0.85 0.73 N/A 0.79 N/A 0.74 N/A 0.38 N/A N/A N/A 0 0.76 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Rd
N-S STREET: Henry St

FILE NAME: Palani-Henry

PERIOD: PM Peak
NORTH: Kona, Hawaii
TECHNICIAN: Shawn/Video
DATE: 9/22/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows for times 15:00-17:30 and PM PEAK HOUR summary.

PM PEAK HOUR

16:00 17:00 0 481 103 386 422 0 70 0 442 0 0 0 1904
PHF N/A 0.96 1.43 0.89 1.01 N/A 0.92 N/A 0.97 N/A N/A N/A 0 0.97 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Kealahke Pkwy
N-S STREET: Aneohokalo Hwy

FILE NAME: QK-Makala

PERIOD: PM Peak
NORTH: Kona, Hawaii
TECHNICIAN: Shawn/Video
DATE: 9/22/09

Table with 14 columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL HRLY. Rows for times 15:00-17:30 and PM PEAK HOUR summary.

PM PEAK HOUR

16:00 17:00 0 164 105 3 85 0 132 0 1 0 0 480
PHF N/A 1.14 1.09 N/A 0.79 N/A 0.87 N/A N/A N/A N/A N/A 0 0.98 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana
LOCATION: Kona, Hawaii
E-W STREET: Hina Lani St
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK Hina Lani

PERIOD: AM Peak
NORTH: Video
TECHNICIAN: Video
DATE: 2/9/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBR, WBTL, WBT, WBR, SBL, SBT, SBR, TOTAL, HRLY. Data for Queen Kaahumanu Hwy.

AM PEAK HOUR

7:30 8:30 0 0 0 265 0 207 0 593 326 168 729 0 2288 2288
PHF 1.07 0.99 0.82 0.91 1.05 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana
LOCATION: Kona, Hawaii
E-W STREET: Hina Lani St
N-S STREET: Queen Kaahumanu Hwy

FILE NAME: QK Hina Lani

PERIOD: PM Peak
NORTH: Video
TECHNICIAN: Video
DATE: 2/8/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBR, WBTL, WBT, WBR, SBL, SBT, SBR, TOTAL. Data for Queen Kaahumanu Hwy.

PM PEAK HOUR

15:15 16:15 0 0 0 362 0 263 0 643 580 250 721 0 2819 2819
PHF 0.93 0.82 0.96 1.02 1.02 0.92 0.95 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana
LOCATION: Kona, Hawaii
E-W STREET: Hina Lani St
N-S STREET: Mamalahoa Hwy

FILE NAME: MamalahoaHinaLani

PERIOD: AM Peak
NORTH: Video
TECHNICIAN: Video
DATE: 2/9/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBR, WBTL, WBT, WBR, SBL, SBT, SBR, TOTAL, HRLY. Data for Mamalahoa Hwy.

AM PEAK HOUR

7:15 8:15 54 0 96 0 0 155 282 0 0 802 142 1531 1531
PHF 0.90 0.69 1.02 0.95 0.87 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana
LOCATION: Kona, Hawaii
E-W STREET: Hina Lani St
N-S STREET: Mamalahoa Hwy

FILE NAME: MamalahoaHinaLani

PERIOD: PM Peak
NORTH: Video
TECHNICIAN: Video
DATE: 2/8/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBR, WBTL, WBT, WBR, SBL, SBT, SBR, TOTAL. Data for Mamalahoa Hwy.

PM PEAK HOUR

16:00 17:00 246 0 290 0 0 94 508 0 0 480 72 1690 1690
PHF 1.18 0.90 1.02 0.86 0.98 PHF

TRAFFIC COUNT DATA
 PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Kealahke Parkway
 N-S STREET: Kamanu Street

FILE NAME: Kamanu Kealahke
 PERIOD: AM Peak
 NORTH: Kona, Hawaii
 TECHNICIAN: Derrick Henning
 DATE: 4/20/10

TIME	Kealahke Parkway										TOTAL HRLY	
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL		SBT
6:00	4	13	0	0	0	6	0	0	0	0	3	0
6:15	7	19	0	0	0	27	1	0	0	14	0	2
6:30	9	32	0	0	0	44	15	0	0	13	0	1
6:45	8	40	0	0	0	51	13	0	0	19	0	2
7:00	7	47	0	0	0	43	12	0	0	9	0	2
7:15	9	47	0	0	0	66	14	0	0	5	0	6
7:30	6	105	0	0	0	81	18	0	0	25	0	3
7:45	11	121	0	0	0	108	31	0	0	30	0	4
8:00	9	98	0	0	0	60	37	0	0	20	0	6
8:15	4	33	0	0	0	39	5	0	0	8	0	4
8:30	7	28	0	0	0	39	5	0	0	3	0	2
8:45	4	21	0	0	0	29	11	0	0	6	0	6

AM PEAK HOUR
 7:15 8:15 35 371 0 0 363 100 0 0 0 80 0 19 968 968
 PHF 0.80 0.77 0.84 0.81

TRAFFIC COUNT DATA
 PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Kealahke Parkway
 N-S STREET: Kamanu Street

FILE NAME: Kamanu Kealahke
 PERIOD: PM Peak
 NORTH: Kona, Hawaii
 TECHNICIAN: Derrick Henning
 DATE: 4/19/10

TIME	Kealahke Parkway										TOTAL HRLY	
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL		SBT
15:00	12	78	0	0	0	40	9	0	0	16	0	5
15:15	9	65	0	0	0	125	65	0	0	17	0	4
15:30	10	37	0	0	0	67	38	0	0	26	0	7
15:45	10	42	0	0	0	59	15	0	0	18	0	17
16:00	12	36	0	0	0	43	11	0	0	19	0	8
16:15	6	33	0	0	0	36	8	0	0	11	0	20
16:30	8	49	0	0	0	42	9	0	0	12	0	8
16:45	0	51	0	0	0	50	0	0	0	12	0	8
17:00	13	53	0	0	0	46	10	0	0	14	0	9
17:15	0	54	0	0	0	44	7	0	0	16	0	5

PM PEAK HOUR
 15:00 16:00 41 222 0 0 291 127 0 0 0 77 0 33 791 791
 PHF 1.14 0.85 0.58 0.49

TRAFFIC COUNT DATA
 PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Puohuluhuli Street
 N-S STREET: Keanelehu Street

FILE NAME: Keanelehu Puohuluhuli
 PERIOD: AM Peak
 NORTH: Kona, Hawaii
 TECHNICIAN: John Gerth/Video
 DATE: 4/20/10

TIME	Puohuluhuli Street										TOTAL HRLY	
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL		SBT
6:00	0	0	0	0	0	0	0	0	0	2	13	0
6:15	0	0	0	0	0	0	6	3	15	0	0	7
6:30	0	0	0	2	4	0	11	4	22	3	0	5
6:45	1	0	0	1	2	2	6	7	41	3	1	8
7:00	2	2	2	6	4	3	4	7	31	1	1	14
7:15	3	0	8	6	1	6	29	36	1	0	13	0
7:30	2	0	12	7	2	4	33	41	3	1	42	1
7:45	19	0	26	2	4	4	59	43	5	1	22	2
8:00	17	1	34	1	3	7	85	29	5	2	17	5
8:15	3	1	13	1	1	2	19	19	2	3	10	3
8:30	0	1	5	2	0	0	5	9	26	2	1	10
8:45	0	1	5	2	0	0	5	9	26	2	1	10

AM PEAK HOUR
 7:15 8:15 41 1 80 16 10 21 206 149 14 4 94 8 644 644
 PHF 0.60 0.25 0.59 4.00 0.83 0.75 0.61 1.28 0.70 0.50 1.38 0.40 0.78

TRAFFIC COUNT DATA
 PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Puohuluhuli Street
 N-S STREET: Keanelehu Street

FILE NAME: Keanelehu Puohuluhuli
 PERIOD: PM Peak
 NORTH: Kona, Hawaii
 TECHNICIAN: John Gerth/Video
 DATE: 4/19/10

TIME	Puohuluhuli Street										TOTAL HRLY	
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL		SBT
14:45	0	1	2	3	0	3	14	21	3	5	24	4
15:00	4	2	7	3	2	3	21	19	1	5	18	4
15:15	52	7	76	3	1	5	23	25	1	5	27	2
15:30	6	2	25	5	2	4	11	19	4	6	33	2
15:45	4	0	10	3	0	3	5	17	8	5	18	1
16:00	3	2	14	4	1	5	7	17	7	3	20	3
16:15	3	0	5	2	0	4	6	14	2	4	19	0
16:30	2	0	9	4	0	2	0	17	7	4	20	0
16:45	2	1	10	2	1	4	6	19	1	6	18	0
17:00	0	3	20	1	0	4	12	15	8	1	21	0
17:15	1	1	9	4	1	5	5	9	2	9	26	0
17:30	0	1	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR
 15:15 16:15 65 11 125 15 4 17 46 78 20 19 98 8 506 515
 PHF 0.31 0.39 0.41 1.25 1.00 0.85 0.50 0.78 5.00 0.95 0.91 1.00 0.56

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Road
N-S STREET: Kamakaeha Ave

FILE NAME: Kamakaeha Av Palani Rd

PERIOD: AM Peak
NORTH: John
TECHNICIAN: John
DATE: 5/18/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL, HRLY. Rows include times from 6:00 to 9:00 and AM PEAK HOUR summary.

AM PEAK HOUR

7:30 8:30 1 171 0 0 367 74 0 0 0 17 0 13 643 643
PHF N/A 0.86 0.98 0.93 0.71 1.63 0.93 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Road
N-S STREET: Kamakaeha Ave

FILE NAME: Kamakaeha Av Palani Rd

PERIOD: PM Peak
NORTH: John
TECHNICIAN: John
DATE: 5/17/10

Table with columns: TIME, EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR, TOTAL, HRLY. Rows include times from 14:00 to 17:30 and PM PEAK HOUR summary.

PM PEAK HOUR

15:45 16:45 1 452 0 0 352 133 0 0 0 72 0 66 1076 1076
PHF 0.25 0.94 1.11 0.88 0.86 0.97 0.97 PHF

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
N-S STREET: Palani Road
E-W STREET: Kealakaa Street

FILE NAME: Keanelehu Puohuluhuli

PERIOD: AM Peak
NORTH: Shawn Rivera
TECHNICIAN: Shawn Rivera
DATE: 4/20/10

Table with columns: TIME, NBL, NBT, NBR, SBL, SBT, SBR, WBL, WBT, WBR, EBL, EBT, EBR, TOTAL, HRLY. Rows include times from 6:00 to 8:45 and AM PEAK HOUR summary.

AM PEAK HOUR

7:15 8:15 275 317 0 0 677 45 0 0 0 16 0 365 1695 1695
PHF 1.01 0.93 0.90 0.94 0.80 0.69 0.86

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
LOCATION: Kona, Hawaii
E-W STREET: Palani Road
N-S STREET: Kealakaa Street

FILE NAME: Keanelehu Puohuluhuli

PERIOD: PM Peak
NORTH: Shawn Rivera
TECHNICIAN: Shawn Rivera
DATE: 4/19/10

Table with columns: TIME, NBL, NBT, NBR, SBL, SBT, SBR, WBL, WBT, WBR, EBL, EBT, EBR, TOTAL, HRLY. Rows include times from 14:30 to 17:15 and PM PEAK HOUR summary.

PM PEAK HOUR

16:00 17:00 238 586 0 0 624 19 0 0 0 9 0 250 1726 1726
PHF 0.92 0.91 1.01 0.59 0.75 1.12 0.97

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 N-S STREET: Palani Road
 E-W STREET: Uluaoa St

FILE NAME: Uluaoa St Palani Rd

PERIOD: AM Peak
 NORTH: Chass
 TECHNICIAN: 5/17/10
 DATE:

TIME	Palani Road				Uluaoa St				EBR TOTAL	HRLY				
	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT			WBR	EBL	EBT	EBR
6:00	2	26	0	0	59	9	0	0	0	0	4	0	5	105
6:15	6:30	3	31	0	83	14	0	0	10	0	10	0	3	144
6:30	6:45	9	28	0	107	12	0	0	14	0	14	0	8	178
6:45	7:00	4	44	0	141	29	0	0	16	0	16	0	10	244
7:00	7:15	7	50	0	145	47	0	0	22	0	22	0	11	282
7:15	7:30	7	56	0	146	88	0	0	24	0	24	0	11	332
7:30	7:45	20	38	0	158	106	0	0	24	0	24	0	28	374
7:45	8:00	15	66	0	143	98	0	0	32	0	32	0	20	374
8:00	8:15	8	69	0	115	64	0	0	31	0	31	0	23	310
8:15	8:30	8	54	0	133	37	0	0	26	0	26	0	6	264
8:30	8:45	7	70	0	107	39	0	0	10	0	10	0	9	242
8:45	9:00	9	47	0	108	27	0	0	19	0	19	0	8	218
AM PEAK HOUR													82	1390
PHF													0.63	0.93

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Puohuluhuli Street
 N-S STREET: Keanelehu Street

FILE NAME: Keanelehu Puohe

PERIOD: AM Peak
 NORTH: John Gerth/Video
 TECHNICIAN: 4/20/10
 DATE:

TIME	Puohuluhuli Street				Keanelehu Street				SBR TOTAL										
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT		NBR	SBT								
7:15	7:30	0	0	0	2	0	17	0	43	2	2	11	0	77					
7:30	7:45	0	0	0	10	0	12	0	46	1	7	34	0	110					
7:45	8:00	0	0	0	6	0	14	0	61	5	6	19	0	111					
8:00	8:15	0	0	0	6	0	13	0	49	4	4	18	0	94					
AM PEAK HOUR													199	12	19	82	0	392	
PHF													1.00	0.82	0.60	0.79	1.08	0	0.88

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 E-W STREET: Puohuluhuli Street
 N-S STREET: Keanelehu Street

FILE NAME: Keanelehu Puohe

PERIOD: PM Peak
 NORTH: John Gerth/Video
 TECHNICIAN: 4/19/10
 DATE:

TIME	Puohuluhuli Street				Keanelehu Street				SBR TOTAL											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT		NBR	SBT									
15:15	15:30	0	0	0	0	0	11	0	76	6	8	34	0	135						
15:30	15:45	0	0	0	0	0	8	0	21	8	11	41	0	89						
15:45	16:00	0	0	0	1	0	12	0	24	0	22	23	0	82						
16:00	16:15	0	0	0	2	0	12	0	22	3	12	24	0	75						
PM PEAK HOUR													43	0	143	17	53	122	0	381
PHF													0.98	0	0.47	0.71	1.66	0.90	0	0.71

TRAFFIC COUNT DATA

PROJECT: Kamakana Villages at Keahuolu
 LOCATION: Kona, Hawaii
 N-S STREET: Palani Road
 E-W STREET: Uluaoa St

FILE NAME: Uluaoa St Palani Rd

PERIOD: PM Peak
 NORTH: Chass
 TECHNICIAN: 5/17/10
 DATE:

TIME	Palani Road				Uluaoa St				EBR TOTAL	HRLY				
	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT			WBR	EBL	EBT	EBR
14:45	15:00	5	89	0	90	12	0	0	29	0	29	0	7	232
15:00	15:15	8	139	0	109	38	0	0	27	0	27	0	12	333
15:15	15:30	6	106	0	107	23	0	0	51	0	51	0	8	301
15:30	15:45	7	121	0	150	18	0	0	25	0	25	0	10	331
15:45	16:00	7	131	0	154	21	0	0	26	0	26	0	9	348
16:00	16:15	8	118	0	116	29	0	0	21	0	21	0	5	297
16:15	16:30	6	125	0	107	28	0	0	20	0	20	0	9	295
16:30	16:45	6	146	0	136	24	0	0	20	0	20	0	11	343
16:45	17:00	9	140	0	105	12	0	0	16	0	16	0	6	288
17:00	17:15	4	95	0	73	13	0	0	8	0	8	0	6	199
17:15	17:30	9	120	0	101	20	0	0	15	0	15	0	7	272
PM PEAK HOUR													39	1313
PHF													1.00	0.94

**TRAFFIC IMPACT ANALYSIS REPORT
FOR THE PROPOSED
KAMAKANA VILLAGES
AT KEAHUOLU**

Kamakana Villages at Keahuolu
1: Honokohau Harbor & Queen Kaahumanu Hwy

Existing AM Peak Hour Traffic
Lanes, Volumes, Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	24	6	40	235	14	137	75	700	276	120	707
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	0	0	0	0	0	200	550	0	300	0	550
Storage Length (ft)	0	0	0	0	0	1	1	1	1	1	1
Storage Lanes	100	100	100	100	100	100	100	100	100	100	100
Taper Length (ft)	0	1674	0	0	1779	1538	1770	1810	1583	1719	1810
Satd. Flow (prot)	0.802	0.735	0.126								
Flt Permitted	0	1365	0	0	1369	1538	235	1810	1583	324	1810
Satd. Flow (perm)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red	44	30	30	30	30	30	30	30	394	30	50
Satd. Flow (RTOR)	1000	800	800	1000	1000	1000	1000	1000	900	900	900
Link Speed (mph)	22.7	18.2	18.2	22.7	22.7	22.7	22.7	22.7	20.5	20.5	20.5
Link Distance (ft)	1.00	0.75	0.91	1.00	1.00	1.00	1.00	0.96	0.70	0.75	0.81
Travel Time (s)	5%	2%	2%	2%	2%	2%	2%	5%	2%	5%	5%
Peak Hour Factor	0	76	0	0	267	137	75	729	394	160	873
Heavy Vehicles (%)	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Shared Lane Traffic (%)	4	4	8	8	8	8	1	6	6	5	2
Lane Group Flow (vph)	4	4	8	8	8	8	1	6	6	5	2
Turn Type	Protected Phases	4	4	8	8	8	1	6	6	5	2
Permitted Phases	Detector Phase	4	4	8	8	8	1	6	6	5	2
Detector Phase	Switch Phase	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Switch Phase	Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Minimum Split (s)	Total Split (%)	29.1%	29.1%	0.0%	29.1%	29.1%	29.1%	9.1%	60.0%	60.0%	61.8%
Total Split (%)	Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Yellow Time (s)	All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All-Red Time (s)	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Total Lost Time (s)	Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead/Lag	Recall Mode	None	None	None	None	None	None	None	None	None	None
Recall Mode	Act Effect Green (s)	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Act Effect Green (s)	Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Actuated g/C Ratio	v/c Ratio	0.21	0.83	0.29	0.38	0.40	0.56	0.51	0.51	0.60	0.56
v/c Ratio	Control Delay	18.8	59.7	7.8	13.1	26.9	2.5	15.4	30.0	3.3	3.3
Control Delay	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	Total Delay	18.8	59.7	7.8	13.1	26.9	2.5	15.4	30.0	3.3	3.3
Total Delay	LOS	B	E	A	B	C	A	B	C	A	A
LOS	Approach Delay	18.8	42.1	18.0	26.6						
Approach Delay	Approach LOS	B	D	B	C						
Approach LOS	Queue Length 50th (ft)	17	172	0	17	373	0	39	493	0	0
Queue Length 50th (ft)											

The Traffic Management Consultant

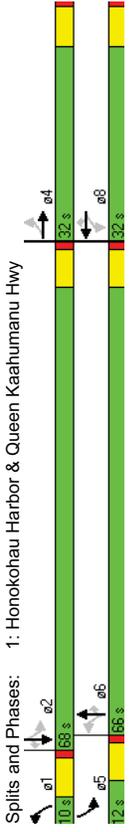
Page B-1

**APPENDIX B
CAPACITY ANALYSIS WORKSHEETS
EXISTING PEAK HOUR TRAFFIC**

Kamakana Villages at Keahuolu
1: Honokohau Harbor & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
2: Makala Blvd & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	43			320	49	34	529	34	529	4	53	561
Internal Link Dist (ft)	920			720			920		920			820
Turn Bay Length (ft)					200	550					300	550
Base Capacity (vph)	413			383	529	195	1168	1162	286	1207	1043	
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	0.18			0.70	0.26	0.38	0.62	0.34	0.56	0.72	0.05	
Intersection Summary												
Area Type: Other												
Cycle Length: 110												
Actuated Cycle Length: 96.7												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 25.0												
Intersection Capacity Utilization 78.9%												
ICU Level of Service D												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	W	T	B	W	T	B	W	T	B	W	T	B
Volume (vph)	279	30	35	14	29	33	127	709	20	33	676	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0	0	0	0	400	400	400	400	400	400
Storage Lanes	2	0	0	1	0	0	2	1	1	1	1	1
Taper Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100
Satd. Flow (prot)	3335	1717	0	1681	1594	0	3433	3438	1583	1719	3438	1538
Flt Permitted	0.950			0.950	0.998		0.950			0.950		
Satd. Flow (perm)	3335	1717	0	1681	1594	0	3433	3438	1583	1719	3438	1538
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	35			44			30			24		
Link Speed (mph)	30			30			30			30		
Link Distance (ft)	400			1000			1000			1000		
Travel Time (s)	9.1			22.7			22.7			22.7		
Peak Hour Factor	1.00	0.94	1.00	0.39	0.91	0.75	0.91	0.87	0.83	1.00	0.99	1.00
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	5%
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	279	67	0	32	80	0	140	815	24	33	683	221
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		1	6	6	5	2	2
Permitted Phases												
Detector Phase	4	4		8	8		1	6	6	5	2	2
Switch Phase												
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)	22.0	22.0		10.0	10.0		10.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	22.0	22.0		12.0	12.0		13.0	39.0	39.0	12.0	38.0	38.0
Total Split (%)	25.9%	25.9%		14.1%	14.1%		15.3%	45.9%	45.9%	14.1%	44.7%	44.7%
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?	None	None		None	None		None	None	None	None	None	None
Recall Mode	11.8	11.8		6.6	6.6		7.5	27.8	27.8	6.6	22.4	22.4
Act Effect Green (s)	0.18	0.18		0.10	0.10		0.11	0.42	0.42	0.10	0.34	0.34
Actuated g/C Ratio	0.47	0.20		0.19	0.40		0.36	0.56	0.56	0.19	0.58	0.33
v/c Ratio	30.5	17.8		37.3	26.0		36.1	17.7	17.7	37.4	21.7	4.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	17.8		37.3	26.0		36.1	17.7	17.7	37.4	21.7	4.3
LOS	C	B		D	C		D	B	A	D	C	A
Approach Delay	28.1			29.3			20.1			18.1		
Approach LOS	C			C			C			B		
Queue Length 50th (ft)	58	12		13	15		29	114	0	14	131	0

Kamakana Villages at Keahuolu
 2: Makala Blvd & Queen Kaahumanu Hwy

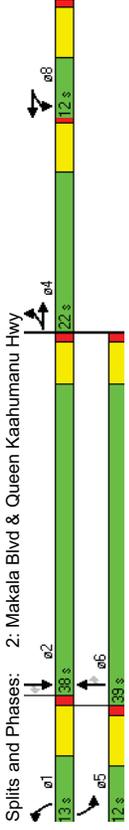
Kamakana Villages at Keahuolu
 3: Palani Rd & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	49	106	320	20	#68	920	66	228	13	45	198	43
Internal Link Dist (ft)												
Turn Bay Length (ft)												
Base Capacity (vph)	922	500	174	204	415	1944	905	178	1885	943	400	400
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	0.30	0.13	0.18	0.39	0.34	0.42	0.03	0.19	0.36	0.23	0.23	0.23

Existing AM Peak Hour Traffic
Lanes, Volumes, Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	225	111	100	13	283	16	101	640	8	30	520	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	0	200	0	400	0	400	0	400	0	400	400
Storage Lanes	2	0	1	0	2	0	2	1	2	0	2	1
Taper Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100
Satd. Flow (prot)	3335	3295	0	1770	3497	0	3433	3438	1583	3335	3438	1538
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3335	3295	0	1770	3497	0	3433	3438	1583	3335	3438	1538
Right Turn on Red	Yes											
Satd. Flow (RTOR)	100	30	30	30	30	30	30	30	30	30	30	30
Link Speed (mph)	1000	800	800	800	800	800	1000	1000	1000	1000	1000	1000
Link Distance (ft)	22.7	18.2	18.2	18.2	18.2	18.2	22.7	22.7	22.7	22.7	22.7	22.7
Travel Time (s)	1.00	0.96	1.00	1.00	0.88	0.67	0.94	0.67	0.94	0.67	1.00	0.89
Peak Hour Factor	5%	2%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	216	0	13	346	0	104	681	12	30	584	287
Turn Type	Prot	Perm										
Protected Phases	7	4	4	3	8	5	2	2	2	1	6	6
Permitted Phases												
Detector Phase	7	4	4	3	8	5	2	2	2	1	6	6
Switch Phase												
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)	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0
Total Split (s)	14.0	31.0	0.0	10.0	27.0	0.0	11.0	29.0	10.0	28.0	28.0	28.0
Total Split (%)	17.5%	38.8%	0.0%	12.5%	33.8%	0.0%	13.8%	36.3%	36.3%	12.5%	35.0%	35.0%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	None	Min										
Recall Mode	8.0	24.4	4.2	11.9	5.2	22.5	22.5	4.2	17.8	17.8	17.8	17.8
Act Effect Green (s)	0.12	0.38	0.07	0.18	0.08	0.35	0.35	0.07	0.28	0.28	0.28	0.28
Actuated g/C Ratio	0.55	0.17	0.11	0.53	0.38	0.57	0.02	0.14	0.62	0.45	0.45	0.45
v/c Ratio	35.1	10.0	35.5	27.7	36.2	20.3	10.1	34.4	24.4	5.5	5.5	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	10.0	35.5	27.7	36.2	20.3	10.1	34.4	24.4	5.5	5.5	5.5
LOS	D	B	D	C	D	C	D	C	B	C	C	A
Approach Delay	22.8	28.0	22.8	28.0	22.8	28.0	22.8	28.0	22.8	28.0	22.8	28.0
Approach LOS	C	C	C	C	C	C	C	C	C	C	C	B
Queue Length 50th (ft)	46	15	15	5	68	21	98	0	6	110	0	0

The Traffic Management Consultant

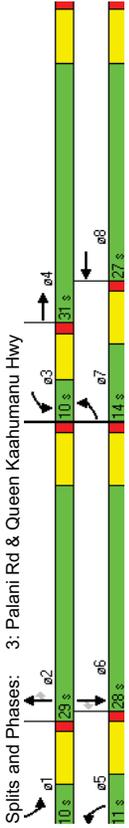


Kamakana Villages at Keahuolu
3: Palani Rd & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
4: Henry St & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#89	47	23	107	48	202	48	202	7	20	171	16
Internal Link Dist (ft)	920	920	200	720	400	920	400	920	400	400	920	400
Turn Bay Length (ft)	300	429	1415	114	1187	276	1386	645	214	1216	730	730
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
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	0.15	0.11	0.29	0.38	0.49	0.02	0.14	0.48	0.39	0.48	0.39

Intersection Summary
Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 64.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 21.9
Intersection LOS: C
Intersection Capacity Utilization 55.8%
ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



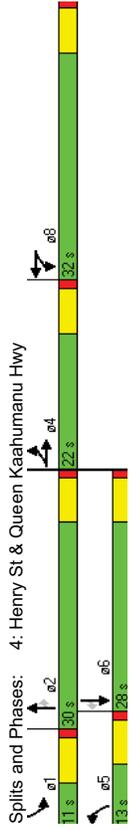
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑	↑ ↑
Volume (vph)	65	240	47	375	307	85	164	600	401	75	434	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	0	200	0	330	350	370	0	0	0	0
Storage Lanes	1	0	0	1	0	2	1	2	1	2	1	2
Taper Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100
Satd. Flow (prot)	1770	3451	0	1610	3252	0	3433	3539	1583	3433	3539	1583
Flt Permitted	0.950	0.950	0.988	0.950	0.988	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1770	3451	0	1610	3252	0	3433	3539	1583	3433	3539	1583
Right Turn on Red	Yes											
Satd. Flow (RTOR)	22	29	30	30	30	30	30	30	30	30	30	30
Link Speed (mph)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Link Distance (ft)	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Travel Time (s)	0.70	0.68	0.65	0.95	1.00	0.80	1.00	0.96	0.86	1.00	0.96	0.94
Peak Hour Factor	0.70	0.68	0.65	0.95	1.00	0.80	1.00	0.96	0.86	1.00	0.96	0.94
Shared Lane Traffic (%)	32%											
Lane Group Flow (vph)	93	425	0	269	539	0	164	625	466	75	452	132
Turn Type	Split											
Protected Phases	4	4	8	8	8	5	2	1	6	6	6	6
Permitted Phases	4	4	8	8	8	5	2	1	6	6	6	6
Detector Phase	4	4	8	8	8	5	2	1	6	6	6	6
Switch Phase	4	4	8	8	8	5	2	1	6	6	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)	22.0	22.0	22.0	22.0	22.0	10.0	22.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	22.0	22.0	0.0	32.0	32.0	0.0	13.0	30.0	30.0	11.0	28.0	28.0
Total Split (%)	23.2%	23.2%	0.0%	33.7%	33.7%	0.0%	13.7%	31.6%	31.6%	11.6%	29.5%	29.5%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	None											
Recall Mode	None											
Act Effct Green (s)	14.2	14.2	20.9	20.9	20.9	7.1	23.8	23.8	5.1	18.9	18.9	18.9
Actuated g/C Ratio	0.17	0.17	0.24	0.24	0.24	0.08	0.28	0.28	0.06	0.22	0.22	0.22
v/c Ratio	0.32	0.72	0.68	0.66	0.66	0.58	0.64	0.60	0.37	0.58	0.58	0.29
Control Delay	37.2	40.8	39.9	32.3	32.3	49.5	32.6	32.6	6.6	47.8	33.8	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	37.2	40.8	39.9	32.3	32.3	49.5	32.6	32.6	6.6	47.8	33.8	7.6
LOS	D	D	D	C	C	D	C	C	A	D	C	A
Approach Delay	40.2	34.8	34.8	34.8	34.8	25.2	30.1	30.1	30.1	30.1	30.1	30.1
Approach LOS	D	C	C	C	C	C	C	C	C	C	C	C
Queue Length 50th (ft)	48	116	154	146	146	48	171	171	0	22	121	0
Queue Length 95th (ft)	73	124	249	203	203	#90	241	241	60	46	176	45

Kamakana Villages at Keahuolu
4: Henry St & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
5: Palani Rd & Henry St

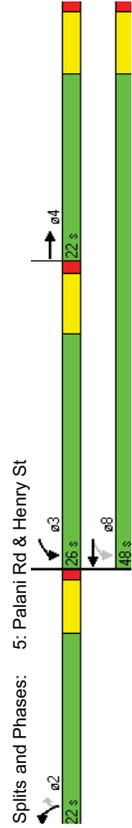
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)	150	200	330	330	330	330	350	370	920	920	920	920
Turn Bay Length (ft)	338	678	500	1030	287	1015	786	205	930	513	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap 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	0.28	0.63	0.54	0.52	0.57	0.62	0.59	0.37	0.49	0.26	0.49	0.26

Intersection Summary
 Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 85.6
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 31.0
 Intersection Capacity Utilization 62.8%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	156	47	688	418	43	422
Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	0	150	0	0	0	0
Storage Length (ft)	0	1	1	1	1	1
Storage Lanes	100	100	100	100	100	100
Taper Length (ft)	1775	0	1543	1624	1770	1553
Satd. Flow (prot)	0.400	0.650	1624	1770	1553	0.950
Fit Permitted	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red	22	30	30	30	30	30
Satd. Flow (RTOR)	800	1000	1000	1000	1000	1000
Link Speed (mph)	18.2	22.7	22.7	22.7	22.7	22.7
Travel Time (s)	0.98	0.90	0.94	0.81	1.00	0.96
Peak Hour Factor	4%	2%	17%	17%	2%	4%
Heavy Vehicles (%)	0	0	0	0	0	0
Shared Lane Traffic (%)	0	0	0	0	0	0
Lane Group Flow (vph)	211	0	732	516	43	440
Turn Type	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	4	3	8	2	2	2
Permitted Phases	4	3	8	2	2	2
Detector Phase	4	3	8	2	2	2
Switch Phase	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Initial (s)	22.0	10.0	22.0	22.0	22.0	22.0
Minimum Split (s)	22.0	0.0	26.0	48.0	22.0	22.0
Total Split (s)	31.4%	0.0%	37.1%	68.6%	31.4%	31.4%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.2	37.5	37.5	8.5	8.5	8.5
Actuated g/C Ratio	0.19	0.64	0.64	0.15	0.15	0.15
v/c Ratio	0.59	1.00	0.49	0.17	0.73	0.73
Control Delay	26.8	47.9	8.0	23.6	10.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	47.9	8.0	23.6	10.8	10.8
LOS	C	D	A	C	B	B
Approach Delay	26.8	31.4	11.9	11.9	11.9	11.9
Approach LOS	C	C	B	B	B	B
Queue Length 50th (ft)	57	143	67	13	13	13

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	132	#481	159	38	68	
Internal Link Dist (ft)	720		920	920	920	
Turn Bay Length (ft)	150					
Base Capacity (vph)	511	730	1188	493	750	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.41	1.00	0.43	0.09	0.59	
Intersection Summary						
Area Type:	Other					
Cycle Length:	70					
Actuated Cycle Length:	58.2					
Natural Cycle:	80					
Control Type:	Actuated-Uncoordinated					
Maximum v/c Ratio:	1.00					
Intersection Signal Delay:	26.0					
Intersection Capacity Utilization:	67.5%					
ICU Level of Service:	C					
Analysis Period (min)	15					
#	95th percentile volume exceeds capacity, queue may be longer.					
	Queue shown is maximum after two cycles.					



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	226	165	531	327	154	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	600	600		
Storage Lanes	1	1	1	1	1	1
Taper Length (ft)	100	100	100	100		
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950			0.220		
Satd. Flow (perm)	1770	1583	1863	1583	410	1863
Right Turn on Red	Yes	Yes	Yes	Yes		
Satd. Flow (RTOR)	165		45	330		45
Link Speed (mph)	30		1000	700		10.6
Link Distance (ft)	1000		15.2			
Travel Time (s)	22.7		1.00	0.99	0.82	0.91
Peak Hour Factor	0.93					
Shared Lane Traffic (%)						
Lane Group Flow (vph)	243	165	531	330	188	607
Turn Type	Perm	Perm	Perm	pm+pt		
Protected Phases	8	2	2	2	1	6
Permitted Phases	8	8	2	2	1	6
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	10.0	22.0	
Total Split (s)	31.0	31.0	54.0	54.0	15.0	69.0
Total Split (%)	31.0%	31.0%	54.0%	54.0%	15.0%	69.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	None	Min
Act Effct Green (s)	15.2	15.2	26.6	26.6	41.5	41.5
Actuated g/C Ratio	0.22	0.22	0.38	0.38	0.60	0.60
v/c Ratio	0.63	0.35	0.74	0.41	0.46	0.54
Control Delay	34.2	7.1	25.6	3.5	10.4	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	7.1	25.6	3.5	10.4	10.8
LOS	C	A	C	A	B	B
Approach Delay	23.2		17.1		10.7	
Approach LOS	C		B		B	
Queue Length 50th (ft)	93	0	185	0	30	130
Queue Length 95th (ft)	202	48	342	46	66	276

Kamakana Villages at Keahuolu
14: Hina Lani St & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
15: Hina Lani St & Mamalaha Hwy

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	920		920		620	620
Turn Bay Length (ft)		600		600		600
Base Capacity (vph)	673	704	1359	1244	431	1642
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	0.23	0.39	0.27	0.44	0.37

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 69.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

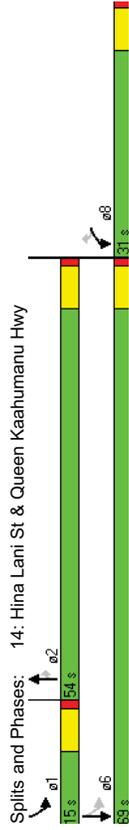
Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.9

Intersection Capacity Utilization 64.0%

ICU Level of Service C

Analysis Period (min) 15



Lane Group	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations						
Volume (vph)	61	96	160	314	822	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300	300		100	
Storage Lanes	1	1	1		1	
Taper Length (ft)	100	100	100		100	
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.130			
Satd. Flow (perm)	1770	1583	242	1863	1863	1583
Right Turn on Red	Yes	Yes			Yes	Yes
Satd. Flow (RTOR)		139			30	30
Link Speed (mph)	30			1000	1000	
Link Distance (ft)	1000			22.7	22.7	
Travel Time (s)	22.7			1.00	0.95	
Peak Hour Factor	0.90	0.69	0.88	1.00	0.95	0.53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	139	182	314	865	281
Turn Type	pm+ov	pm+pt			Perm	Perm
Protected Phases	4	5	5	2	6	6
Permitted Phases	4	2			6	6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	10.0	10.0	22.0	22.0	22.0
Total Split (s)	22.0	15.0	15.0	78.0	63.0	63.0
Total Split (%)	22.0%	15.0%	15.0%	78.0%	63.0%	63.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	None	None	None	Min	Min	Min
Recall Mode	None	None	None	Min	Min	Min
Act Effct Green (s)	8.8	20.7	60.2	62.1	44.5	44.5
Actuated g/C Ratio	0.11	0.27	0.77	0.80	0.57	0.57
v/c Ratio	0.34	0.27	0.49	0.21	0.81	0.29
Control Delay	41.6	6.5	10.0	3.5	21.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	6.5	10.0	3.5	21.6	5.6
LOS	D	A	A	C	A	A
Approach Delay	18.0		5.9	17.7		
Approach LOS	B		A	B		
Queue Length 50th (ft)	33	0	21	39	334	33
Queue Length 95th (ft)	80	18	62	75	553	26

Kamakana Villages at Keahuolu
 15: Hina Lani St & Mamalahoia Hwy

Kamakana Villages at Keahuolu
 8: Kealakehe Pkwy & Ane Keohokaloie Hwy

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist. (ft)	920		920	920	920	
Turn Bay Length (ft)	300	300	300			100
Base Capacity (vph)	387	528	375	1641	1382	1210
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	0.26	0.49	0.19	0.63	0.23

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 78

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

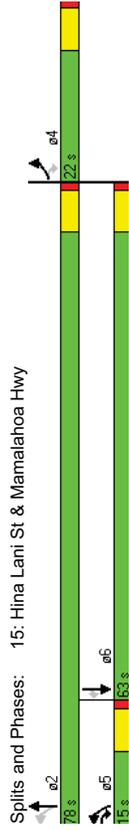
Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection Capacity Utilization: 70.5%

ICU Level of Service: B

Analysis Period (min): 15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Volume (veh/h)	5	93	326	1	249	5	190	5	3	5	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop
Grade	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
Hourly flow rate (vph)	5	101	354	1	271	5	207	5	3	5	5
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	276			455			570	567	228	343	742
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	276			455			570	567	228	343	742
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	100			100			48	99	100	99	98
cM capacity (veh/h)	1284			1102			395	429	775	577	340
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2		
Volume Total	5	67	388	1	276	207	9	5	11		
Volume Left	5	0	0	1	0	207	0	5	0		
Volume Right	0	0	354	0	5	0	3	0	5		
cSH	1284	1700	1700	1102	1700	395	515	577	463		
Volume to Capacity	0.00	0.04	0.23	0.00	0.16	0.52	0.02	0.01	0.02		
Queue Length 95th (ft)	0	0	0	0	0	73	1	1	2		
Control Delay (s)	7.8	0.0	0.0	8.3	0.0	23.7	12.1	11.3	13.0		
Lane LOS	A	A	A	C	B	B	B	B	B		
Approach Delay (s)	0.1			0.0			23.2		12.4		
Approach LOS				C					B		

Intersection Summary		
Average Delay	5.4	
Intersection Capacity Utilization	37.3%	ICU Level of Service: A
Analysis Period (min)	15	

Kamakana Villages at Keahuolu
 15: Hina Lani St & Mamalahoia Hwy

Kamakana Villages at Keahuolu
 8: Kealakehe Pkwy & Ane Keohokaloie Hwy

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist. (ft)	920		920	920	920	
Turn Bay Length (ft)	300	300	300			100
Base Capacity (vph)	387	528	375	1641	1382	1210
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	0.26	0.49	0.19	0.63	0.23

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 78

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

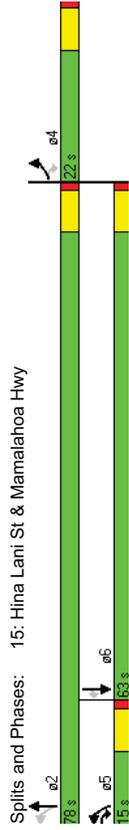
Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection Capacity Utilization: 70.5%

ICU Level of Service: B

Analysis Period (min): 15



Intersection Summary		
Average Delay	5.4	
Intersection Capacity Utilization	37.3%	ICU Level of Service: A
Analysis Period (min)	15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	35	371	363	100	80	19
Volume (veh/h)		Free	Free	Free	Stop	Stop
Sign Control		0%	0%	0%	0%	0%
Grade		0.80	0.77	0.84	0.81	0.67
Peak Hour Factor		44	482	432	123	119
Hourly flow rate (vph)						
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	556				1063	494
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556				1063	494
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				49	97
cM capacity (veh/h)	1015				236	575
Direction, Lane #	EB 1	EB 2	WB 1	WB 1	SB 1	SB 1
Volume Total	44	482	556	138		
Volume Left	44	0	0	119		
Volume Right	0	0	123	19		
cSH	1015	1700	1700	257		
Volume to Capacity	0.04	0.28	0.33	0.54		
Queue Length 95th (ft)	3	0	0	73		
Control Delay (s)	8.7	0.0	0.0	34.2		
Lane LOS	A			D		
Approach Delay (s)	0.7		0.0	34.2		
Approach LOS				D		
Intersection Summary						
Average Delay	4.2					
Intersection Capacity Utilization	41.3%					
Analysis Period (min)	15					
ICU Level of Service	A					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	171	367	74	17	13
Volume (veh/h)		Free	Free	Free	Stop	Stop
Sign Control		0%	0%	0%	0%	0%
Grade		0.92	0.86	0.98	0.93	0.71
Peak Hour Factor		1	199	374	80	24
Hourly flow rate (vph)						
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	374				576	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	374				576	374
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				95	98
cM capacity (veh/h)	1184				479	672
Direction, Lane #	EB 1	WB 1	WB 2	SB 1	SB 1	SB 1
Volume Total	200	374	80	37		
Volume Left	1	0	0	24		
Volume Right	0	0	80	13		
cSH	1184	1700	1700	533		
Volume to Capacity	0.00	0.22	0.05	0.07		
Queue Length 95th (ft)	0	0	0	6		
Control Delay (s)	0.1	0.0	0.0	12.3		
Lane LOS	A			B		
Approach Delay (s)	0.1	0.0	0.0	12.3		
Approach LOS				B		
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	29.3%					
Analysis Period (min)	15					
ICU Level of Service	A					

Kamakana Villages at Keahuolu
20: Kealakaa St & Palani Rd

Kamakana Villages at Keahuolu
21: Uluaoa St & Palani Rd

Existing AM Peak Hour Traffic
HCM Unsignalized Intersection Capacity Analysis

Existing AM Peak Hour Traffic
HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Volume (veh/h)	16	0	365	0	0	0	275	317	0	0	677	45
Sign Control	Stop	0%	0%	Stop	0%	0%	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.80	0.92	0.69	0.92	0.92	1.00	0.93	0.92	0.92	0.92	0.90	0.94
Hourly flow rate (vph)	20	0	529	0	0	0	275	341	0	0	752	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1643	1643	752	2172	1643	341	752	341				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1643	1643	752	2172	1643	341	752	341				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	67	100	0	100	100	68	100	100				
cM capacity (veh/h)	60	68	410	0	68	702	857	1218				
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2						
Volume Total	20	529	0	616	752	48						
Volume Left	20	0	0	275	0	0						
Volume Right	0	529	0	0	0	48						
cSH	60	410	1700	857	1218	1700						
Volume to Capacity	0.33	1.29	0.00	0.32	0.00	0.03						
Queue Length 95th (ft)	30	584	0	35	0	0						
Control Delay (s)	92.6	175.7	0.0	7.5	0.0	0.0						
Lane LOS	F	F	A	A	A	A						
Approach Delay (s)	172.7	0.0	7.5	0.0	0.0	0.0						
Approach LOS	F		A									
Intersection Summary												
Average Delay	50.6											
Intersection Capacity Utilization	80.9%											
ICU Level of Service	D											
Analysis Period (min)	15											

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W	4	4	4	4	4
Volume (veh/h)	111	82	50	229	562	356
Sign Control	Stop	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	0.73	0.63	1.00	0.89	0.84
Hourly flow rate (vph)	111	112	79	229	631	424
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1231	843	1055			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1231	843	1055			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	36	69	88			
cM capacity (veh/h)	172	364	660			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	223	308	1055			
Volume Left	111	79	0			
Volume Right	112	0	424			
cSH	234	660	1700			
Volume to Capacity	0.95	0.12	0.62			
Queue Length 95th (ft)	212	10	0			
Control Delay (s)	91.7	4.0	0.0			
Lane LOS	F	A	A			
Approach Delay (s)	91.7	4.0	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay	13.7					
Intersection Capacity Utilization	72.8%					
ICU Level of Service	C					
Analysis Period (min)	15					

Kamakana Villages at Keahuolu
 54: Kealakehe Pkwy & Keanalenu St

Kamakana Villages at Keahuolu
 1: Honokohau Harbor & Queen Kaahumanu Hwy

Existing AM Peak Hour Traffic
 HCM Unsignalized Intersection Capacity Analysis

Existing PM Peak Hour Traffic
 Lanes, Volumes, Timings

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	Stop	Stop	Stop	Stop	W	W
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Volume (vph)	0	101	0	0	255	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	110	0	0	277	0
Direction, Lane #	EB 1	WB 1	NB 1	NB 1		
Volume Total (vph)	110	0	277			
Volume Left (vph)	0	0	277			
Volume Right (vph)	110	0	0			
Hadj (s)	-0.57	0.00	0.23			
Departure Headway (s)	4.0	4.7	4.4			
Degree Utilization, x	0.12	0.00	0.34			
Capacity (veh/h)	838	731	803			
Control Delay (s)	7.5	7.7	9.6			
Approach Delay (s)	7.5	0.0	9.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			9.0			
HCM Level of Service			A			
Intersection Capacity Utilization			27.0%			ICU Level of Service
Analysis Period (min)			15			A

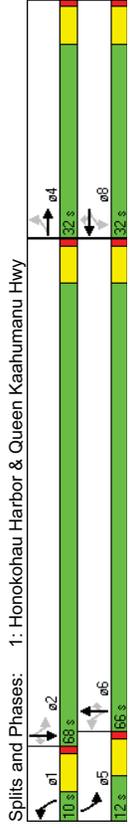
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	59	6	96	248	16	93	75	781	205	81	947	71
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	0	0	0	0	0	200	550	0	300	550	0	0
Storage Length (ft)	0	0	0	0	0	1	1	1	1	1	1	1
Storage Lanes	100	100	100	100	100	100	100	100	100	100	100	100
Taper Length (ft)	0	1672	0	0	1783	1553	1770	1827	1583	1719	1810	1538
Satd. Flow (prot)	0.310				0.574	0.064			0.142			
Fit Permitted	0	528	0	0	1069	1553	119	1827	1583	257	1810	1538
Satd. Flow (perm)	Yes											
Right Turn on Red	59				93				193			92
Satd. Flow (RTOR)	30				30				30			30
Link Speed (mph)	1000				800				1000			900
Link Distance (ft)	22.7				18.2				22.7			20.5
Travel Time (s)	0.82	0.92	0.88	0.77	0.43	1.00	0.72	0.93	1.00	0.88	0.92	0.77
Peak Hour Factor	4%	2%	2%	2%	2%	4%	2%	4%	2%	4%	2%	5%
Heavy Vehicles (%)	4%	2%	2%	2%	2%	4%	2%	4%	2%	4%	2%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	188	0	0	359	93	104	840	205	92	1029	92
Turn Type	Perm											
Protected Phases	4	4	4	4	4	4	4	4	4	4	4	4
Permitted Phases	4	8	8	8	8	6	6	6	6	2	2	2
Detector Phase	4	4	4	4	4	1	1	6	6	5	5	2
Switch Phase												
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)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	29.1%	29.1%	0.0%	29.1%	29.1%	29.1%	9.1%	60.0%	60.0%	10.9%	61.8%	61.8%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?	Yes											
Recall Mode	None											
Act Effect Green (s)	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Control Delay	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3	129.3
LOS	F	F	F	F	F	F	F	F	F	F	F	F
Approach Delay	129.3				195.2			25.9				48.1
Approach LOS	F				F			C				D
Queue Length 50th (ft)	~118				~343			0		25	476	4
										22	~711	0

Kamakana Villages at Keahuolu
1: Honokohau Harbor & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
2: Makala Blvd & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#263			160	42	#45	#687	920	37	39	#1013	14
Internal Link Dist (ft)	920			720								820
Turn Bay Length (ft)				200	550					300		550
Base Capacity (vph)	170			253	438	131	1037	981	239	1020	907	
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	1.11			1.42	0.21	0.79	0.81	0.21	0.38	1.01	0.10	

Intersection Summary
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.42
Intersection Signal Delay: 66.8
Intersection LOS: E
Intersection Capacity Utilization 90.2%
ICU Level of Service E
Analysis Period (min) 15
~ 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.

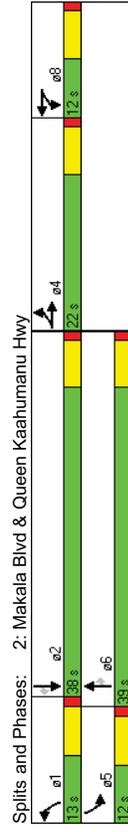


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	419	168	129	129	69	59	257	606	39	103	838	286
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	0	0	0	0	0	0	400	400	400	400	400	400
Storage Length (ft)	2	0	1	0	0	2	1	1	1	1	1	1
Storage Lanes	100	100	100	100	100	100	100	100	100	100	100	100
Taper Length (ft)	3367	1751	0	1681	1642	0	3433	3471	1583	1719	3438	1538
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	3367	1751	0	1681	1642	0	3433	3471	1583	1719	3438	1538
Satd. Flow (perm)	Yes											
Right Turn on Red	35	30	30	30	30	30	30	30	30	30	30	30
Satd. Flow (RTOR)	400	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Link Speed (mph)	9.1	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Link Distance (ft)	0.93	0.78	0.90	1.00	0.96	1.00	1.00	0.99	0.98	1.00	0.81	0.85
Travel Time (s)	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Peak Hour Factor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Heavy Vehicles (%)	358	0	116	144	0	257	612	40	103	1035	336	336
Shared Lane Traffic (%)	Split	4	4	8	8	8	8	8	6	5	2	2
Lane Group Flow (vph)	4	4	4	4	4	4	4	4	4	4	4	4
Turn Type	4	4	4	4	4	4	4	4	4	4	4	4
Protected Phases	4	4	4	4	4	4	4	4	4	4	4	4
Permitted Phases	4	4	4	4	4	4	4	4	4	4	4	4
Detector Phase	4	4	4	4	4	4	4	4	4	4	4	4
Switch Phase	4	4	4	4	4	4	4	4	4	4	4	4
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)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (%)	25.9%	25.9%	0.0%	14.1%	14.1%	0.0%	15.3%	45.9%	45.9%	14.1%	44.7%	44.7%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes											
Recall Mode	None											
Act Effect Green (s)	16.0	16.0	6.0	6.0	7.0	31.6	31.6	6.0	30.6	30.6	30.6	30.6
Actuated g/C Ratio	0.19	0.19	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
v/c Ratio	0.70	0.99	0.96	0.97	0.89	0.47	0.06	0.82	0.43	0.43	0.43	0.43
Control Delay	38.6	77.1	115.2	101.9	72.2	21.0	5.9	88.6	30.5	4.1	0.0	0.0
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	38.6	77.1	115.2	101.9	72.2	21.0	5.9	88.6	30.5	4.1	0.0	0.0
LOS	D	E	F	F	F	E	C	A	F	C	A	A
Approach Delay	55.6	107.9	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8
Approach LOS	E	F	C	C	C	C	C	C	C	C	C	C
Queue Length 50th (ft)	117	176	66	64	71	124	0	56	254	0	0	0

Kamakana Villages at Keahuolu
2: Makala Blvd & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
3: Palani Rd & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	168	#277	#175	#188	#141	920	171	920	19	#147	284	41
Internal Link Dist (ft)		320										
Turn Bay Length (ft)												
Base Capacity (vph)	644	363	121	148	288	1370	649	123	1315	796		
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	0.99	0.96	0.97	0.89	0.45	0.06	0.84	0.79	0.42		
Intersection Summary												
Area Type: Other												
Cycle Length: 85												
Actuated Cycle Length: 83.7												
Natural Cycle: 80												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.99												
Intersection Signal Delay: 42.5												
Intersection LOS: D												
Intersection Capacity Utilization 74.4%												
ICU Level of Service D												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												



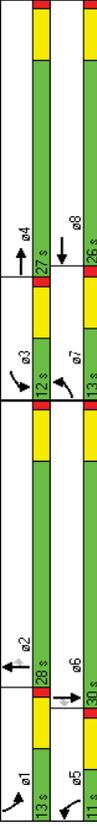
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑	↑↑	↑↑	↑↑
Volume (vph)	295	252	193	43	299	71	206	547	16	176	844	418
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	0	200	0	400	0	400	0	400	0	400	400
Storage Lanes	2	0	1	0	2	0	2	1	2	1	2	1
Taper Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100
Satd. Flow (prot)	3367	3295	0	1770	3424	0	3433	3471	1583	3335	3438	1538
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3367	3295	0	1770	3424	0	3433	3471	1583	3335	3438	1538
Right Turn on Red	Yes											
Satd. Flow (RTOR)	212	35	35	35	35	35	35	35	20	20	35	334
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30
Link Distance (ft)	1000	800	800	800	800	800	1000	1000	1000	1000	1000	1000
Travel Time (s)	22.7	18.2	18.2	18.2	18.2	18.2	22.7	22.7	22.7	22.7	22.7	22.7
Peak Hour Factor	1.00	1.00	0.91	1.00	0.89	0.89	1.00	0.91	0.80	1.00	0.77	1.00
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%	4%	2%	4%	2%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	295	464	0	43	416	0	206	601	20	176	1096	418
Turn Type	Prot	Perm										
Protected Phases	7	4	3	8	5	2	2	1	6	6	6	6
Permitted Phases	7	4	3	8	5	2	2	1	6	6	6	6
Detector Phase	7	4	3	8	5	2	2	1	6	6	6	6
Switch Phase												
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)	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0	10.0	27.0
Total Split (s)	13.0	27.0	0.0	12.0	26.0	0.0	11.0	28.0	28.0	13.0	30.0	30.0
Total Split (%)	16.3%	33.8%	0.0%	15.0%	32.5%	0.0%	13.8%	35.0%	35.0%	16.3%	37.5%	37.5%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	None	Min										
Recall Mode	7.0	19.8	5.9	13.8	5.0	22.1	22.1	7.0	24.1	24.1	24.1	24.1
Act Effect Green (s)	0.09	0.27	0.08	0.19	0.07	0.30	0.30	0.09	0.33	0.33	0.33	0.33
Actuated g/C Ratio	0.92	0.45	0.30	0.62	0.88	0.58	0.04	0.56	0.98	0.58	0.58	0.58
v/c Ratio	70.9	14.4	39.3	29.5	73.4	25.2	9.7	40.2	49.6	8.7	8.7	8.7
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	70.9	14.4	39.3	29.5	73.4	25.2	9.7	40.2	49.6	8.7	8.7	8.7
LOS	E	B	D	C	E	C	A	D	D	A	D	A
Approach Delay	36.3	30.4	30.4	30.4	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Queue Length 50th (ft)	70	53	19	84	48	120	0	40	255	27	27	27

Kamakana Villages at Keahuolu
3: Palani Rd & Queen Kaahumanu Hwy

Kamakana Villages at Keahuolu
4: Henry St & Queen Kaahumanu Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)#153	95	126	#117	188	920	13	75	#329	112			
Internal Link Dist (ft)	300	200	400	400	400	400	400	400	400	400	400	400
Turn Bay Length (ft)	320	1135	144	954	233	1038	488	317	1119	726		
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
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	0.92	0.41	0.30	0.44	0.88	0.58	0.04	0.56	0.98	0.58		
Intersection Summary												
Area Type: Other												
Cycle Length: 80												
Actuated Cycle Length: 73.9												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.98												
Intersection Signal Delay: 36.7												
Intersection LOS: D												
Intersection Capacity Utilization 68.2%												
ICU Level of Service C												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

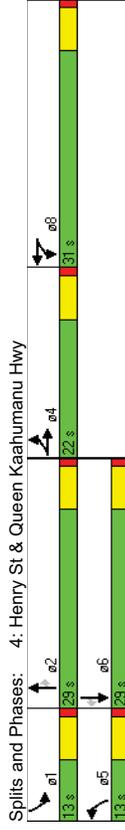
Splits and Phases: 3: Palani Rd & Queen Kaahumanu Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	341	86	409	349	205	134	487	358	199	735	146
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	150	0	200	0	330	0	350	370	0	2	1	2
Storage Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100
Taper Length (ft)	1770	3447	0	1610	3215	0	3433	3539	1583	3433	3539	1583
Satd. Flow (prot)	0.950	0.950	0.994	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	1770	3447	Yes	1610	3215	Yes	3433	3539	1583	3433	3539	1583
Satd. Flow (perm)	23	64	30	64	30	64	30	64	30	64	30	64
Right Turn on Red	30	1000	1000	30	1000	1000	30	1000	1000	30	1000	1000
Satd. Flow (RTOR)	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Link Speed (mph)	0.76	0.84	1.00	0.97	0.90	1.00	0.73	1.00	0.81	1.00	1.00	0.78
Link Distance (ft)	19%											
Travel Time (s)	101	492	0	342	673	0	184	487	442	199	735	187
Peak Hour Factor	4	4	8	8	8	5	2	2	1	6	6	6
Shared Lane Traffic (%)	4	4	8	8	8	5	2	2	1	6	6	6
Lane Group Flow (vph)	4	4	8	8	8	5	2	2	1	6	6	6
Turn Type	4	4	8	8	8	5	2	2	1	6	6	6
Protected Phases	4	4	8	8	8	5	2	2	1	6	6	6
Permitted Phases	4	4	8	8	8	5	2	2	1	6	6	6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6	6
Switch Phase	4	4	8	8	8	5	2	2	1	6	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)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	22.0	22.0	0.0	31.0	31.0	0.0	13.0	29.0	29.0	13.0	29.0	29.0
Total Split (%)	23.2%	23.2%	0.0%	32.6%	32.6%	0.0%	13.7%	30.5%	30.5%	13.7%	30.5%	30.5%
Yellow 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
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
Lost Time Adjust (s)	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 Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead Lag Lead Lag Lead Lag Lead Lag											
Lead-Lag Optimize?	None											
Recall Mode	None											
Act Effct Green (s)	15.3	15.3	23.5	23.5	23.5	7.0	22.1	22.1	7.0	22.1	22.1	22.1
Actuated g/C Ratio	0.17	0.17	0.26	0.26	0.26	0.08	0.24	0.24	0.08	0.24	0.24	0.24
v/c Ratio	0.34	0.83	0.83	0.78	0.83	0.70	0.57	0.62	0.76	0.87	0.36	0.36
Control Delay	38.5	49.1	51.5	35.9	7.3	62.2	46.0	6.7	6.7	6.7	6.7	6.7
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	38.5	49.1	51.5	35.9	7.3	62.2	46.0	6.7	6.7	6.7	6.7	6.7
LOS	D	D	D	D	D	E	C	A	E	D	A	A
Approach Delay	47.3 41.1 27.5 27.5 42.3											
Approach LOS	D D C C D D											
Queue Length 50th (ft)	54	145	212	186	57	136	0	61	223	0	223	0
Queue Length 95th (ft)	86	#187	#367	255	73	187	43	#118	#320	32		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Internal Link Dist (ft)	920			920			920			920	
Turn Bay Length (ft)	150	200		330			350		370		920
Base Capacity (vph)	309	622	440	924	262	889	728	262	889	538	538
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.79	0.78	0.73	0.70	0.55	0.61	0.76	0.83	0.35	0.35

Intersection Summary
 Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 92
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 38.5
 Intersection Capacity Utilization 75.0%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

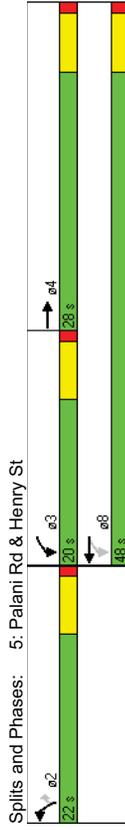


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	4	3	8	2	2	2
Volume (vph)	481	103	386	422	70	442
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	0	0	0	0
Storage Lanes	0	1	1	1	1	1
Taper Length (ft)	100	100	100	100	100	100
Satd. Flow (prot)	1820	0	1770	1863	1770	1583
Flt Permitted	1820	0	142	1863	1770	1583
Satd. Flow (perm)	1820	0	265	1863	1770	1583
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	15	30	30	30	30	456
Link Speed (mph)	800	800	1000	1000	1000	1000
Link Distance (ft)	18.2	18.2	22.7	22.7	22.7	22.7
Travel Time (s)	0.96	1.00	0.89	1.00	0.92	0.97
Peak Hour Factor	0.96	1.00	0.89	1.00	0.92	0.97
Shared Lane Traffic (%)	0	0	0	0	0	0
Lane Group Flow (vph)	604	434	422	76	456	456
Turn Type	pm+pt	pm+pt	pm+pt	Perm	Perm	Perm
Protected Phases	4	3	8	2	2	2
Permitted Phases	4	3	8	2	2	2
Detector Phase	4	3	8	2	2	2
Switch Phase	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Initial (s)	22.0	10.0	22.0	22.0	22.0	22.0
Minimum Split (s)	28.0	0.0	20.0	48.0	22.0	22.0
Total Split (s)	40.0%	0.0%	28.6%	68.6%	31.4%	31.4%
Total Split (%)	5.0	5.0	5.0	5.0	5.0	5.0
Yellow Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	6.0	4.0	6.0	6.0	6.0	6.0
Total Lost Time (s)	Lag	Lead	Lag	Lead	Lag	Lead
Lead/Lag	Yes	Yes	Yes	Yes	Yes	Yes
Lead-Lag Optimize?	None	None	None	None	None	None
Recall Mode	22.1	41.9	41.9	9.1	9.1	9.1
Act Effct Green (s)	0.35	0.67	0.67	0.14	0.14	0.14
Actuated g/C Ratio	0.93	0.86	0.34	0.30	0.74	0.74
v/c Ratio	45.4	33.2	6.1	26.8	10.8	10.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	45.4	33.2	6.1	26.8	10.8	10.8
Total Delay	D	C	A	C	B	B
LOS	D	C	A	C	B	B
Approach Delay	45.4	19.8	13.1	13.1	13.1	13.1
Approach LOS	D	B	B	B	B	B
Queue Length 50th (ft)	207	100	53	26	0	0
Queue Length 95th (ft)#473	#297	135	59	69	69	69

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist. (ft)	720			920	920	
Turn Bay Length (ft)	150					
Base Capacity (vph)	648	512	1248	452	744	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.85	0.34	0.17	0.61	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	63
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	25.8
Intersection Capacity Utilization:	71.8%
Analysis Period (min):	15
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	61	96	160	314	822	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300	300			100
Storage Lanes	1	1	1			1
Taper Length (ft)	100	100	100			100
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.130			
Satd. Flow (perm)	1770	1583	242	1863	1863	1583
Right Turn on Red	Yes	Yes				Yes
Satd. Flow (RTOR)		139				136
Link Speed (mph)	30			30		30
Link Distance (ft)	1000			1000		1000
Travel Time (s)	22.7			22.7		22.7
Peak Hour Factor	0.90	0.69	0.88	1.00	0.95	0.53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	139	182	314	865	281
Turn Type	pm+ov	pm+pt				Perm
Protected Phases	4	5	5	2	6	6
Permitted Phases	4	2				6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	10.0	22.0	22.0	22.0	22.0
Total Split (s)	22.0	15.0	15.0	78.0	63.0	63.0
Total Split (%)	22.0%	15.0%	15.0%	78.0%	63.0%	63.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	None	None	None	Min	Min	Min
Recall Mode	None	None	None	Min	Min	Min
Act Effct Green (s)	8.8	20.7	60.2	62.1	44.5	44.5
Actuated g/C Ratio	0.11	0.27	0.77	0.80	0.57	0.57
v/c Ratio	0.34	0.27	0.49	0.21	0.81	0.29
Control Delay	41.6	6.5	10.0	3.5	21.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	6.5	10.0	3.5	21.6	5.6
LOS	D	A	A	A	C	A
Approach Delay	18.0			5.9	17.7	
Approach LOS	B			A	B	
Queue Length 50th (ft)	33	0	21	39	334	33
Queue Length 95th (ft)	80	18	62	75	553	26

Kamakana Villages at Keahuolu
 15: Hina Lani St & Mamalahoia Hwy

Kamakana Villages at Keahuolu
 8: Kealakehe Pkwy & Ane Keohokaloie Hwy

Existing PM Peak Hour Traffic
 Lanes, Volumes, Timings

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist. (ft)	920		920	920	920	
Turn Bay Length (ft)	300	300				100
Base Capacity (vph)	387	528	375	1641	1382	1210
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	0.26	0.49	0.19	0.63	0.23

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 78

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

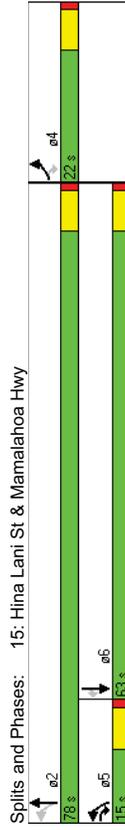
Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection Capacity Utilization: 70.5%

ICU Level of Service: B

Analysis Period (min): 15



Existing PM Peak Hour Traffic
 HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (veh/h)	5	161	127	2	157	5	245	5	10	5	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	1.00	0.64	0.92	0.60	0.92	0.62	0.92	0.31	0.92	0.92
Hourly flow rate (vph)	5	161	198	2	262	5	395	5	32	5	5
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	267			359			545	543	180	395	264
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	267			359			545	543	180	395	264
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.9
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	100			100			4	99	96	99	99
cM capacity (veh/h)	1294			1196			412	443	832	511	390
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2		
Volume Total	5	107	252	2	267	395	38	5	11		
Volume Left	5	0	0	2	0	395	0	5	0		
Volume Right	0	0	198	0	5	0	32	0	5		
cSH	1294	1700	1700	1196	1700	412	739	511	509		
Volume to Capacity	0.00	0.06	0.15	0.00	0.16	0.96	0.05	0.01	0.02		
Queue Length 95th (ft)	0	0	0	0	0	0	280	4	1		
Control Delay (s)	7.8	0.0	0.0	8.0	0.0	66.8	10.1	12.1	12.2		
Lane LOS	A	A	A	F	B	B	B	B	B		
Approach Delay (s)	0.1			0.1			61.9		12.2		
Approach LOS				F					B		

Intersection Summary

Average Delay: 25.0

Intersection Capacity Utilization: 35.5%

ICU Level of Service: A

Analysis Period (min): 15