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# TRAFFIC IMPACT ANALYSIS REPORT POIPU ROAD MULTIMODAL IMPROVEMENTS KOLOA, KAUAI, HAWAII

July 2, 2018

Prepared for:

County of Kauai  
Department of Public Works  
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## TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION.....	1-3
1.1 Project Location and Description.....	1
1.2 Study Methodology.....	3
1.3 Intersection Analysis .....	3
2. EXISTING CONDITIONS.....	4-19
2.1 Roadway System .....	4
2.2 Multimodal Facilities .....	5
2.2.1 Complete Streets.....	5
2.2.2 Pedestrian Accessibility.....	5
2.2.3 Bicycle Accessibility.....	7
2.2.4 Public Transit.....	7
2.3 Collision History.....	11
2.4 Existing Traffic Volumes.....	15
2.5 Existing Traffic Conditions Analysis and Observations .....	15
2.5.1 Regional Background .....	15
2.5.2 Vehicular Average Daily Traffic .....	15
2.5.3 Existing Conditions Observations and Analysis.....	17
3. BASE YEAR 2037 TRAFFIC CONDITIONS .....	20-26
3.1 Defacto Growth Rate.....	20
3.2 Traffic Forecasts for Known Developments.....	20
3.3 Planned Roadway Projects .....	20
3.4 Base Year 2037 Analysis .....	24
4. FUTURE YEAR 2037 TRAFFIC CONDITIONS .....	27-29

**TABLE OF CONTENTS**  
**Cont'd**

4.1	Future Year 2037 Analysis .....	27
5.	PROPOSED MULTIMODAL IMPROVEMENTS .....	30-52
5.1	Project Background .....	30
5.2	Proposed Poipu Road Roadway Cross Sections .....	33
5.2.1	Koloa Town Cross Section .....	33
5.2.2	Koloa Church Cross Section.....	34
5.2.3	Koloa Elementary School .....	35
5.2.4	Blake Lane and South .....	36
5.2.5	North of Poipu Road/Ala Kalanikaumaka Street/ Lawai Road Roundabout .....	37
5.2.6	East of Poipu Road/Ala Kalanikaumaka Street/ Lawai Road Roundabout .....	38
5.2.7	West of Poipu Road/Ala Kinoiki Street Intersection.....	39
5.2.8	East of Poipu Road/Ala Kinoiki Street Intersection.....	40
5.3	Marked Crosswalks .....	41
5.3.1	Existing Marked Crosswalks Improvements .....	41
5.3.2	Proposed Marked Crosswalks .....	46
5.4	Bicycle Facilities .....	51
5.5	Multimodal Assessment and Recommendations.....	51
5.5.1	Existing Multimodal Assessment .....	51
5.5.2	Project Proposed Multimodal Facilities .....	52
5.5.3	Pedestrian Crossings .....	52
6.	CONCLUSIONS .....	53-54
6.1	Existing Conditions .....	53
6.2	Base Year 2037 Conditions.....	53

**TABLE OF CONTENTS**  
**Cont'd**

6.3	Future Year 2037 Conditions .....	53
6.4	Project Proposed Multimodal Facilities .....	54
7.	REFERENCES.....	55

**TABLE OF CONTENTS**  
**Cont'd**

**TABLES**

2.1	ACCIDENTS INVOLVING BICYCLISTS OR PEDESTRIANS.....	11
2.2	VEHICLE-TO-VEHICLE COLLISION TYPE.....	12
2.3	EXISTING CONDITIONS LOS SUMMARY.....	19
3.1	TOTAL TRIPS GENERATED BY KNOWN DEVELOPMENTS IN PROJECT VICINITY .....	22
3.2	EXISTING CONDITIONS AND BASE YEAR 2037 LEVEL OF SERVICE SUMMARY .....	26
4.1	BASE YEAR 2037 AND FUTURE YEAR 2037 LEVEL OF SERVICE SUMMARY .....	28
5.1	SUMMARIZED EXISTING CROSSWALK IMPROVEMENTS .....	45
5.2	SUMMARIZED PROPOSED CROSSWALK.....	49-50

**FIGURES**

1.1	LOCATION MAP .....	2
2.1	EXISTING PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES .	9-10
2.2	COLLISION LOCATIONS.....	13-14
2.3	AVERAGE DAILY TRAFFIC VOLUME MAP.....	16
2.4	EXISTING LANE CONFIGURATION, VOLUMES, AND LOS.....	18
3.1	BACKGROUND PROJECTS.....	23
3.2	BASE YEAR 2037 LANEAGE, VOLUMES AND LOS.....	25
4.1	FUTURE YEAR 2037 LANEAGE, VOLUMES, AND LOS.....	29
5.1	PROPOSED PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES .....	31-32
5.2	TYPICAL CROSS SECTION – KOLOA TOWN .....	33

**TABLE OF CONTENTS**  
**Cont'd**

5.3	TYPICAL CROSS SECTION – KOLOA CHURCH.....	34
5.4	TYPICAL CROSS SECTION – KOLOA ELEMENTARY SCHOOL.....	35
5.5	TYPICAL CROSS SECTION – BLAKE LANE AND SOUTH.....	36
5.6	TYPICAL CROSS SECTION – NORTH OF ROUNDABOUT .....	37
5.7	TYPICAL CROSS SECTION – EAST OF ROUNDABOUT .....	38
5.8	TYPICAL CROSS SECTION – WEST OF POIPU ROAD/ ALA KINOIKI STREET .....	39
5.9	TYPICAL CROSS SECTION – EAST OF POIPU ROAD/ ALA KINOIKI STREET .....	40

**TABLE OF CONTENTS**  
**Cont'd**

**APPENDICES**

- A. TRAFFIC COUNT DATA  
(to be included with draft final)
- B. LEVEL OF SERVICE CRITERIA  
(to be included with draft final)
- C. LEVEL OF SERVICE CALCULATIONS  
(to be included with draft final)



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## DRAFT

# TRAFFIC IMPACT ANALYSIS REPORT POIPU ROAD MULTIMODAL IMPROVEMENTS

## Koloa, Kauai, Hawaii

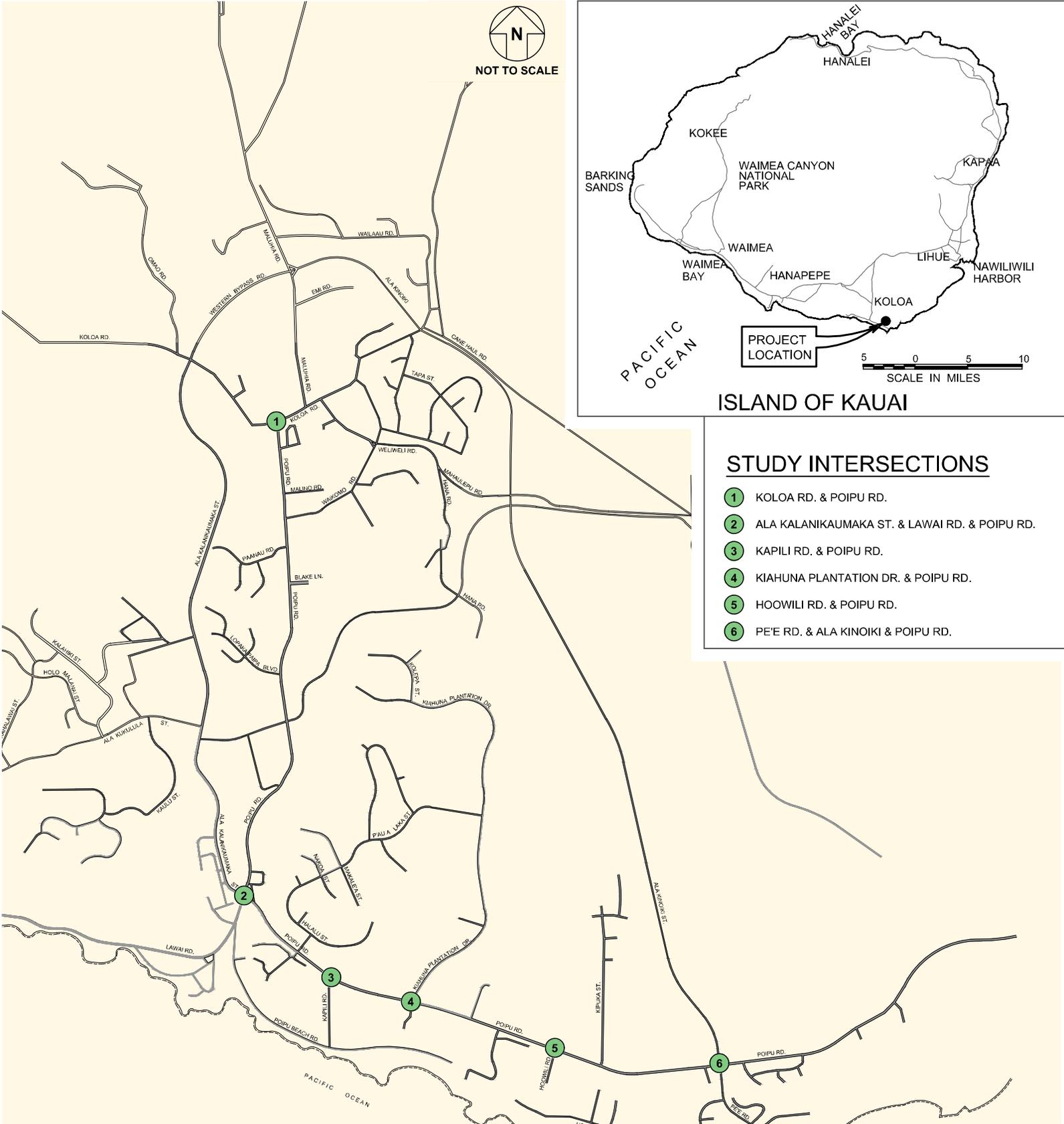
### 1. INTRODUCTION

This report documents the findings of a transportation evaluation conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the potential impacts resulting from the proposed Poipu Road Multimodal Improvements project (hereinafter referred to as the "Project").

#### 1.1 Project Location and Description

The Project proposes to incorporate multimodal transportation improvements into the existing Poipu Road right-of-way. The portion along Poipu Road from Koloa Road to the Ala Kalanikaumaka Street/Lawai Road/Poipu Road roundabout will be hereinafter referred to as the "North-South segment" and the portion from the Ala Kalanikaumaka Street/Lawai Road/Poipu Road roundabout to about 275-feet beyond Keleka Road will be referred to as "East-West segment". The Project proposes to enhance pedestrian and bicycle routes and connectivity by adding sidewalks, bicycle lanes, and medians where appropriate and constructing single-lane roundabouts at the Poipu Road/Kiahuna Plantation Drive and Poipu Road/Ala Kinoiki intersections. Refer to the construction plans for more details of the proposed improvements. This TIAR will address traffic operations through the existing and proposed corridor.

See Figure 1.1 for the Project location.



**FIGURE 1.1**

**LOCATION MAP**



## 1.2 Study Methodology

This study will address the following:

- Existing traffic operating conditions and multimodal facilities at key intersections within the study area.
- Traffic projections for Base Year 2037 (without the Project) including traffic generated by other known developments in the vicinity of the Project in addition to ambient growth rate. These other known developments are projects that are currently under construction or known new/future developments that are anticipated to affect traffic demand and operations within the study area.
- Traffic projections for Future Year 2037 (with the Project multimodal facilities), which includes Base Year traffic volumes in addition to the proposed Project.
- Discussion of Project proposed multimodal facilities and recommendations.

## 1.3 Intersection Analysis

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 6<sup>th</sup> Edition includes methods for calculating volume to capacity ratios, delays, and corresponding Levels of Service that were utilized in this study. LOS definitions for signalized and unsignalized intersections are provided in Appendix B.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. These reports contain control delay results as based on intersection lane geometry, signal timing, and hourly traffic volumes. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.



## 2. EXISTING CONDITIONS

### 2.1 Roadway System

The following are brief descriptions of the existing roadways in the vicinity of the Project:

Poipu Road – is generally a two-lane, two-way major collector roadway that provides regional travel between the Koloa and Poipu area. It is a north-south roadway until it reaches the Ala Kalanikaumaka Road/Lawai Road roundabout at which point it turns into an east-west roadway. The posted speed limit of this roadway is generally 25 miles per hour (mph).

Koloa Road – is a two-lane, two-way State major collector roadway that provides regional travel between the Lawai and Koloa areas. It begins to the north at the Kaunualii Highway/Kua Road and travels southeast until terminating at the Maluhia Road intersection. The posted speed limit of this roadway near the Project is 25 mph.

Lawai Road – is a two-lane, two-way major collector roadway that provides access to resorts and golf courses. It is mostly an east-west roadway which begins to the west at its intersection with Ala Kalanikaumaka Street and Lawai Road travelling east up to a gated area. The posted speed limit of this roadway is generally 25 mph.

Ala Kalanikaumaka Street – is generally a two-lane, two-way arterial roadway that bypasses Poipu Road to connect to Koloa Road. It provides travel in the north-south direction. The posted speed of this roadway is generally 25 mph.

Kapili Road – is a two-lane, two-way local roadway that extends approximately 1,000 feet. It is a north-south roadway that connects Poipu Road with Poipu Beach Road and also provides access to a couple of condominiums. The posted speed limit of this roadway is generally 25 mph.

Kiahuna Plantation Road – is a two-lane, two-way roadway. It is mostly a north-south roadway that provides access to a Kiahuna golf course and some residential neighborhoods. The posted speed limit of this roadway is generally 20 mph.

Hoowili Road – is a two-lane, two-way local roadway that extends for approximately 1,000 feet. It is a north-south roadway that connects Poipu Road to Honne Road. A park is located adjacent to the southbound lane. The posted speed limit of this roadway is generally 25 mph.

Pe'e Road – is a two-lane, two-way roadway that provides access to several resorts and residential areas. It is mostly a north-south roadway that loops around the peninsula until it continues as Honne Road along the shore. The posted speed limit of this roadway is assumed to be 20 mph.

Ala Kinoiki Street – is generally a two-lane, two-way major collector roadway that runs parallel to the northern portion of Poipu Road. It is a north-south roadway that begins to the south at its intersection with Poipu Road and travels northbound until reaching its intersection with Maluhia Road. The posted speed limit near the Project intersection is generally 40 mph.



## 2.2 Multimodal Facilities

### 2.2.1 Complete Streets

While transportation planning has traditionally focused on automobile travel, recent “Complete Streets” policies also recognize the numerous benefits of encouraging the use of alternative modes of transportation. “Complete Streets” policies encourage the provision of equitable, accessible and safe transportation for all modes.

Hawaii State Senate Bill 718 (2009) required that the Hawaii Department of Transportation (HDOT) and the City transportation departments:

*“...adopt a complete streets policy that seeks to reasonably accommodate convenient access and mobility for all users of the public highways within their respective jurisdictions...”*

Pursuant to this goal, the Project proposes to modify the roadway cross section to encourage multimodal access through and within the area.

Figure 2.1 illustrates the existing pedestrian, bicycle and transit facilities.

### 2.2.2 Pedestrian Accessibility

In the vicinity of the Project, sidewalks are provided along the following roadways:

- Poipu Road (North-South segment)
  - East side of roadway – A 4.5-foot to 5.5-foot sidewalk is currently provided along North-South Poipu Road on the east side of the roadway between Waikomo Road and Koloa Road, connecting to the sidewalk on the south side of Koloa Road that extends to Maluhia Road.
  - West side of roadway – A 3.5-foot to 5-foot sidewalk is currently provided along North-South Poipu Road on the west side of the roadway between Malino Road and near Paanau Road.
- Poipu Road (East-West segment)
  - South side of roadway – A 4-foot to 5-foot sidewalk is currently provided along East-West Poipu Road on the south side of the roadway between the Ala Kalanikaumaka Street/Lawai Road/Poipu Road roundabout and Kapili Road intersection, which connects to the sidewalk on the west side of Kapili Road that extends to Poipu Beach Road. A 4-foot to 5-foot sidewalk is also currently provided along the south side of East-West Poipu Road between Kipuka Street and Ala Kinoiki Street/Pe’e Road, where it continues south on Pe’e Road for approximately 200 feet.
  - North side of roadway – A 5.5-foot sidewalk is currently provided along East-West Poipu Road on the north side of the roadway for approximately 250 feet between Kukona A La’a Street to a non-operational bus stop east of the intersection. The sidewalk continues north along Kukona A La’a Street to Halau Street.



Refer to Figure 2.1A and Figure 2.1B for a visual representation of the existing sidewalks within the area.

As shown in the images below, roadway segments that did not provide designated sidewalks but were observed to be used by pedestrians contained several obstructions such as parked cars, trash cans, mud, or overgrown vegetation.



In the vicinity of the Project, marked crosswalks are currently provided at the following intersections:

- Poipu Road (North-South segment) at:
  - [1] Koloa Road – Along the east approach
  - [2] Waikomo Road – Along the north approach
  - [3] Waikomo Road – Along the east approach
- Poipu Road (East-West segment) at:
  - [4] Ala Kalanikaumaka Street/Lawai Road – Along the south approach
  - [5] Kapili Road – Along the south approach
  - [6] Kiahuna Plantation Drive – Along the east approach
  - [7] Kiahuna Swim & Tennis Club Access Road – Along the east approach
  - [8] Kipuka Street – Along the east approach, includes a pedestrian-activated Rectangular Rapid Flashing Beacon (RRFB)

Additionally, marked crosswalks are currently provided at the following midblock locations:

- Poipu Road (North-South segment) at:
  - [9] Approximately 600-feet south of the Poipu Road/Koloa Road Intersection
  - [10] Approximately 180-feet south of the Poipu Road/Waikomo Road Intersection

Refer to Figure 2.1A and Figure 2.1B for a visual representation of the existing crosswalks within the area.



### 2.2.3 Bicycle Accessibility

In the vicinity of the Project, bicycle lanes are provided along the following roadways.

- Poipu Road (North-South segment):
  - Shared lane bike markings (often referred to as “sharrows”) are provided adjacent to the southbound lanes between Waikomo Road and the Koloa Elementary School library driveway.
  - Designated bike lanes are provided adjacent to the northbound lanes between Waikomo Road and the Koloa Elementary School library driveway.
- Poipu Road (East-West segment):
  - Although the roadway along this segment does not include any designated bike lanes or markings, bicyclists were observed using the sidewalk on the mauka side of the roadway despite the lack of signage encouraging the use.

As observed during the field assessment, the existing bike lanes on the North-South segment show signs of wear and are discontinuous along Poipu Road north and south of the Koloa Elementary School area.



Refer to Figure 2.1A and Figure 2.1B for a visual representation of the existing bicycle facilities within the Project area.

### 2.2.4 Public Transit

The Kauai Bus is the sole provider of public transit for the Island of Kauai. Within the Kauai Bus system, the Koloa Shuttle (Route 30) provides service in the vicinity of the Project and includes bus stops along Kaunualii Highway, Koloa Road, Omao Road, Ala Kinoiki Street and Poipu Road.



Within the vicinity of the project, there are seven (7) bus stops servicing Route 30 located at the following locations:

- Koloa Road:
  - Along Koloa Road near the Poipu Road intersection
- Poipu Road (North-South segment):
  - Along Poipu Road at the Paanau Road intersection and nearby the Koloa Elementary School
  - Along Poipu Road near the shopping complex 350-feet north of the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout
- Poipu Road (East-West segment):
  - Along Poipu Road near the Kiahuna Plantation Drive intersection
  - Two (2) stops along Poipu Road near the Hoowili Road intersection, one heading eastbound and one heading westbound
- Ala Kinoiki Street:
  - Along Ala Kinoiki Street near the Poipu Road intersection

All bus stops observed in the area were marked with signage and did not include a bus shelter or bench.

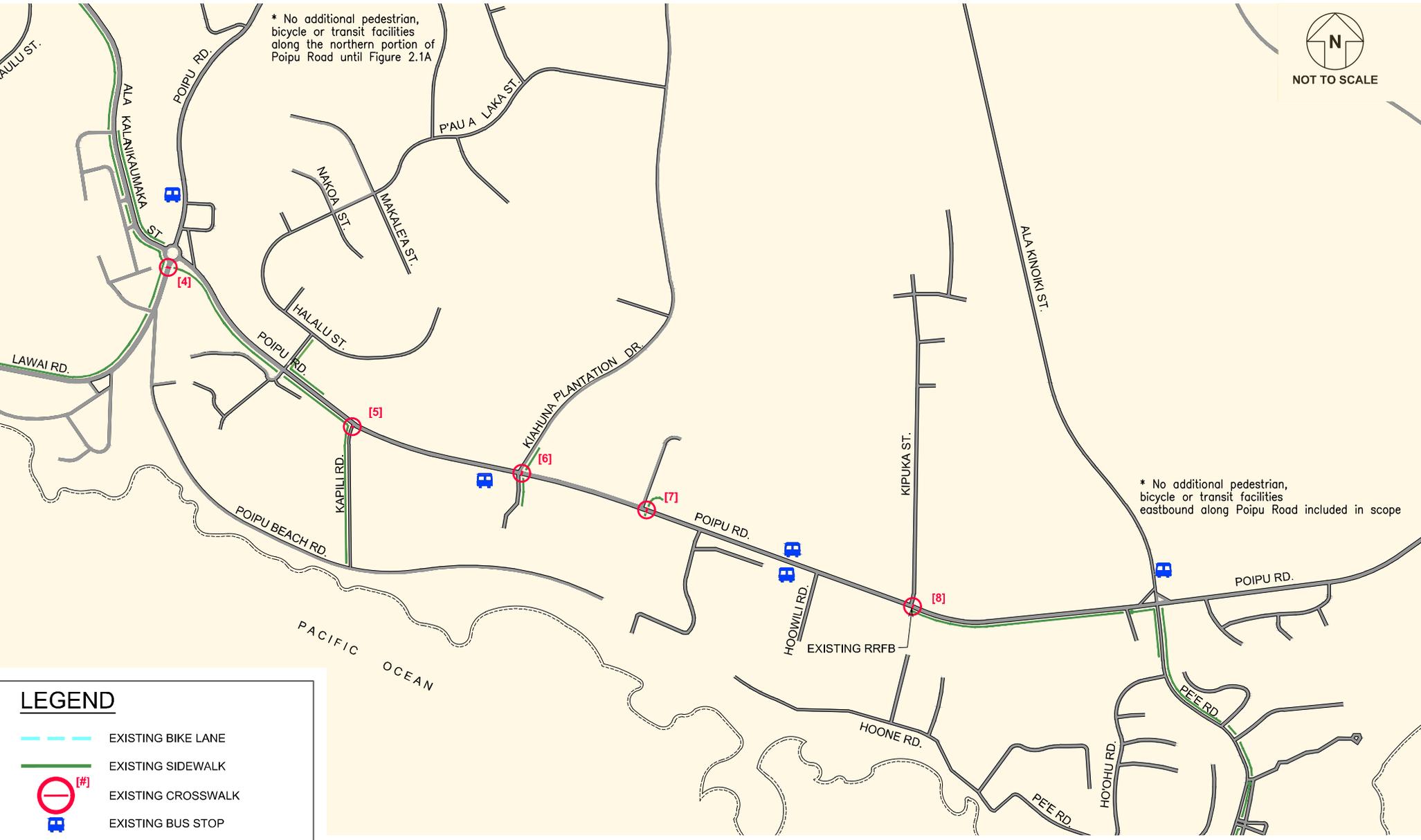
Refer to Figure 2.1A and Figure 2.1B for a visual representation of the existing bus stops within the Project area.



## FIGURE 2.1A

## EXISTING PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES NORTH - SOUTH SEGMENT

# POIPU ROAD MULTIMODAL IMPROVEMENTS TIAR



**FIGURE 2.1B**

**EXISTING PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES EAST - WEST SEGMENT**



## 2.3 Collision History

Based on the County of Kauai collision history from 2008 to 2012 within the Project area, a total of 36 accidents were recorded with no reported fatalities. Of the 36 accidents, four (4) were reported as accidents involving pedestrians, of which one (1) accident involved five (5) pedestrians, 17 were reported as vehicle-to-vehicle collisions of varying variety, and 13 were vehicular collisions into an object. See Table 2.1 and Table 2.2 for details related to the pedestrian accidents and vehicle-to-vehicle collisions, respectively, within the Project area.

**Table 2.1: Accidents Involving Bicyclists or Pedestrians**

Location	Involving	Date	Time	Collision Event	Accident Severity <sup>a</sup>
<b>Koloa Rd / Maluhia Rd</b>	5 Pedestrians	6/03/2008	7:21 AM	Vehicle travelling south ran off roadway	1
<b>Poipu Rd / Paanau Rd</b>	1 Pedestrian	4/15/2012	7:00 AM	Vehicle traveling west collided with pedestrian crossing street in unmarked crosswalk	2
<b>Poipu Rd/ Hoowili Rd</b>	1 Pedestrian	2/16/2010	8:01 AM	Vehicle collision with pedestrian	2
<b>Hoowili Rd/ Hoone Rd</b>	1 Pedestrian	8/09/2012	11:27 AM	Vehicle collided with pedestrian crossing street no crosswalk	2

<sup>a</sup> Accident Severity 1 = Possible injury, 2 = Non-incapacitating injury

No bicyclist accidents reported in this section for the listed years



**Table 2.2: Vehicle-to-Vehicle Collision Type**

Type of Vehicle-to-Vehicle Collision	No. of collisions	Percentage of collisions
Head on	2	12%
Rear End	8	47%
Sideswipe - Same Direction	1	6%
Sideswipe - Opposite Direction	1	6%
Broadside	5	29%

A summary of the collision data based on Table 2.1, Table 2.2, and Figure 2.2 is as follows:

- Accidents involving pedestrians account for 11% of the recorded accidents over the 5 year span when data was collected. The dispersion of the accidents involving pedestrians suggests that there is no single location that is more prone to pedestrian accidents than others. Accidents involving pedestrians generally occurred in the morning, with 3 of 4 occurring between 7:00 AM and 8:30 AM.
- There were no reports of accidents involving bicyclists.
- The majority of accidents occurred off-roadway in either the right shoulder or the right roadside (30%). 24% of accidents occurred at the intersection.
- The Koloa Road/Poipu Road (16%), Poipu Road/Paanau Road (13.5%), Poipu Road/Ala Kalanikaumaka Roundabout (16%), and the Poipu Road/Ala Kinoiki Street (19%) are intersections that had five or more accidents reported.
- The majority of vehicle-to-vehicle collisions were of the rear end and broadside variety (76% of all vehicle-to-vehicle collisions).
- Five of the six accidents that were reported at the Poipu Road/Ala Kalanikaumaka Street/Lawai Road Roundabout involved vehicle-to-object collisions.

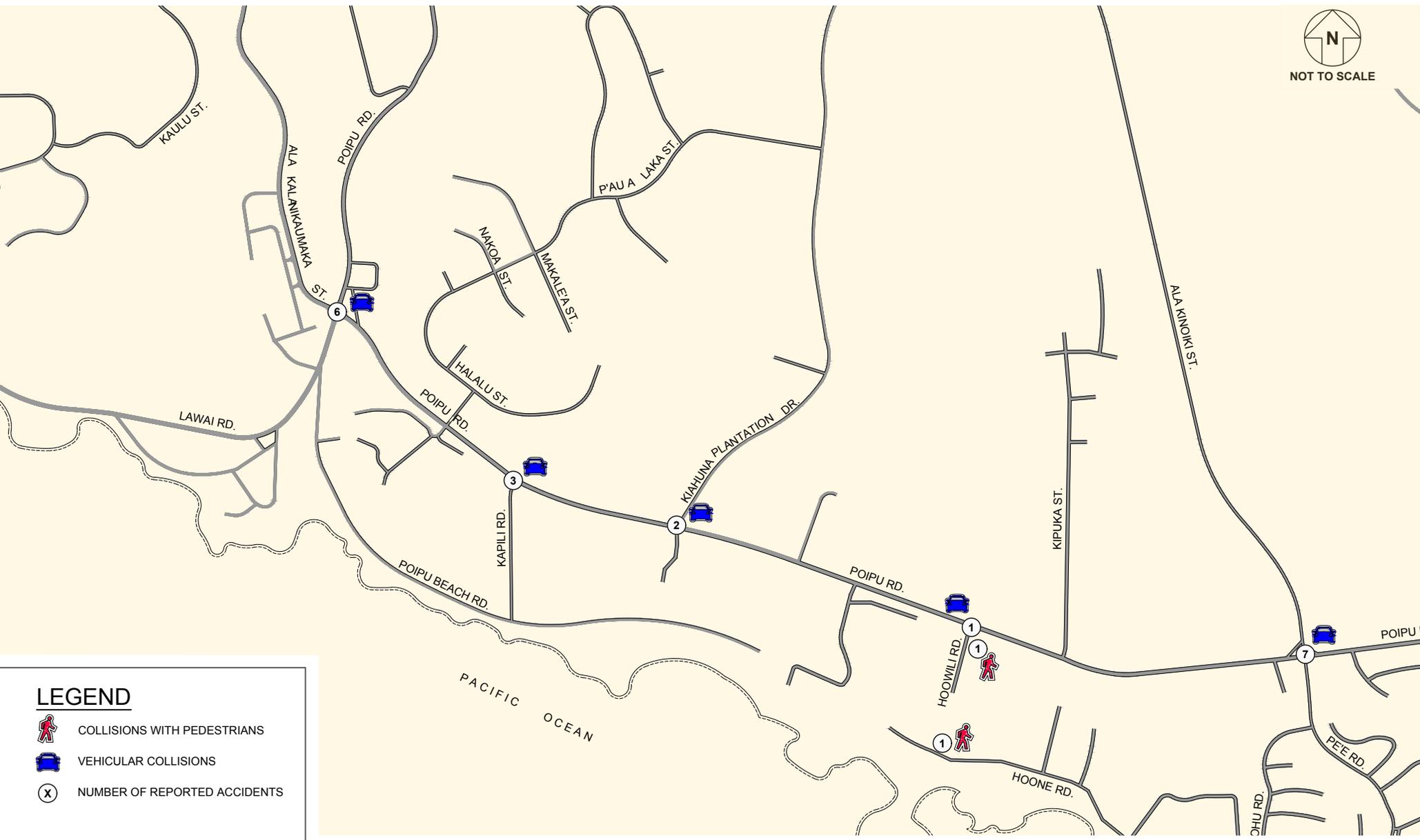
Figure 2.2 illustrates the locations and types of collisions reported within the Project vicinity.



FIGURE 2.2A

COLLISIONS LOCATIONS NORTH - SOUTH SEGMENT

# POIPU ROAD MULTIMODAL IMPROVEMENTS TIAR



- LEGEND**
- COLLISIONS WITH PEDESTRIANS
  - VEHICULAR COLLISIONS
  - NUMBER OF REPORTED ACCIDENTS

FIGURE 2.2B

COLLISION LOCATIONS  
EAST - WEST SEGMENT



## 2.4 Existing Traffic Volumes

The hourly turning movement data utilized in this report were collected on November 19, 2017. The traffic count data from the Poipu Road and Koloa Road was collected on May 24, 2016. Based on the proximity to the proposed Project site the following intersections were studied in the existing conditions scenario:

- (1) Poipu Road/Koloa Road (Unsignalized)
- (2) Poipu Road/Ala Kalanikaumaka Street/Lawai Road (Unsignalized, Roundabout)
- (3) Poipu Road/Kapili Road (Unsignalized)
- (4) Poipu Road/Kiahuna Plantation Drive (Unsignalized)
- (5) Poipu Road/Hoowili Road (Unsignalized)
- (6) Poipu Road/Ala Kinoiki/Pe'e Road (Unsignalized)

Based on traffic count data, the weekday morning and evening peak hours of traffic were determined to occur between 7:30 AM and 8:30 AM and between 3:45 PM and 4:45 PM, respectively. The traffic count data is provided in Appendix A.

## 2.5 Existing Traffic Conditions Analysis and Observations

### 2.5.1 Regional Background

The Project is generally located in the South Kauai region, in the beach resort area of Poipu. Located in Poipu is approximately 40 percent of Kauai's resort accommodations and is a major center of employment<sup>1</sup>. In the vicinity of the Project, Poipu Road (North-South) and Ala Kinoiki Street are the major regional north-south corridors and are supplemented by Ala Kalanikaumaka Street. Poipu Road (East-West) and Koloa Road are the major east-west corridors within the area. The Project region is currently comprised of residential, commercial, and tourist areas. Several large resorts and golf courses anchor various retail areas throughout the region.

### 2.5.2 Vehicular Average Daily Traffic

Approximate vehicular average daily traffic (ADT) through the Project corridor ranges between 5,000 and 11,000 with lower volumes occurring near the east end of the Project and higher volumes near the west end. The volumes along Poipu Road (North-South) are significantly higher than Ala Kinoiki Street, indicating the popularity of the north-south connector due to the destinations along the route.

See Figure 2.3 for the vehicular ADT within the Project vicinity.

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<sup>1</sup> PBR Hawaii & Associates, Inc., South Kauai Community Plan, July 2015



NOT TO SCALE

## LEGEND

### AVERAGE DAILY TRAFFIC VOLUMES:

- 0 - 5,000 BETWEEN 0 AND 5,000 ADT
- 5,000 - 7,500 BETWEEN 5,000 AND 7,500 ADT
- 7,500 - 10,000 BETWEEN 5,000 AND 10,000 ADT
- 10,000 + MORE THAN 10,000 ADT

### STUDY INTERSECTIONS

- 1 KOLOA RD. & POIPU RD.
- 2 ALA KALANIKAUMAKA ST. & LAWAI RD. & POIPU RD.
- 3 KAPILI RD. & POIPU RD.
- 4 KIAHUNA PLANTATION DR. & POIPU RD.
- 5 HOOWILI RD. & POIPU RD.
- 6 PE'E RD. & ALA KINOIKI & POIPU RD.

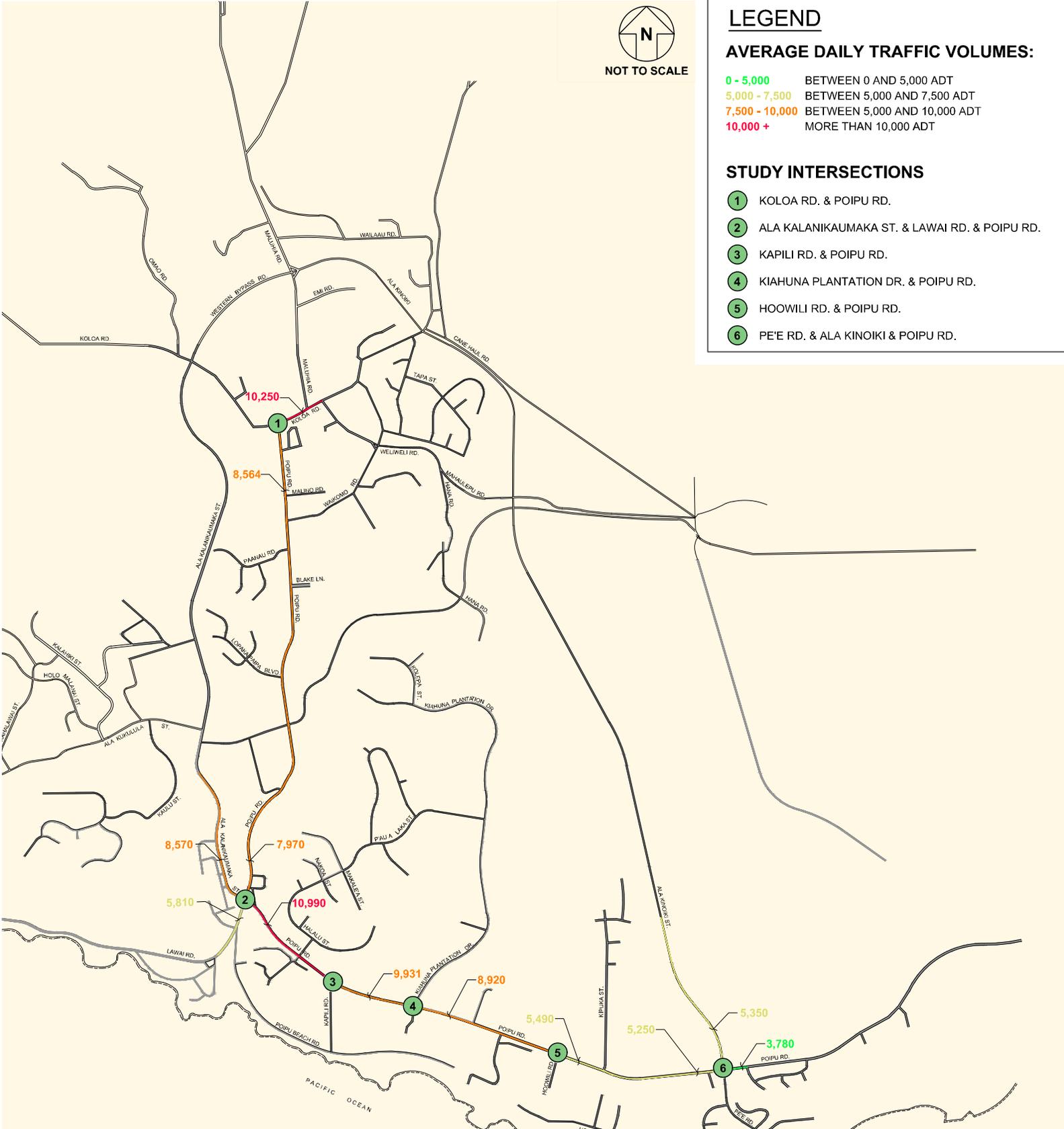


FIGURE 2.3

AVERAGE DAILY TRAFFIC VOLUME MAP



### 2.5.3 Existing Conditions Observations and Analysis

Traffic through the Project corridor is generally free-flowing during the AM and PM peak hours of traffic with no heavy congestion or queuing. The exception to this observation is the southbound spillback along Poipu Road (North-South) stemming from the Koloa Elementary School driveway as vehicles access the school for student drop-offs around 7:35 AM; however, this spillback did not last long as by 7:50 AM queuing was minimal to nonexistent. The Kukui'ula Shopping Center was observed to be a high traffic generator, especially during the afternoon and evening hours where its associated parking lot was observed to be at or near capacity. In contrast, the retail area on the northeast corner of the Poipu Road/Kiahuna Plantation Drive intersection was observed to have very light traffic and activity.

Some pedestrian activity as observed in the North-South section as parents walked students to the Koloa Elementary School. However, as mentioned above, sidewalks on the North-South section are discontinuous and uneven, with many obstructions impeding on footpaths where there are no sidewalks present. Pedestrian traffic through the East-West Project corridor was observed to be very light near the resort area. Within this area, pedestrian activity was higher within the side street communities off Poipu Road, with little pedestrian activity occurring along the sidewalks on the main road.

A few bicyclists were observed to bike on the makai sidewalk of the East-West section.

All individual vehicular turning movements operate at LOS D or better with the exception of the northbound left-turn movement at the Poipu Road/Koloa Road intersection which operates at LOS E during the AM and PM peak hours of traffic due to significant volumes along Koloa Road. Despite operating at LOS E, no significant queuing or congestion was observed during the peak hours of traffic.

Figure 2.4 illustrates the existing lane configurations, volumes and LOS. See Table 2.3 for a summary of the existing conditions analysis.



**NOTE:**  
THIS DRAWING IS FOR  
ILLUSTRATIVE PURPOSES ONLY.  
DO NOT USE FOR CONSTRUCTION.

**DATE OF COUNTS:**  
KOLOA/POIPU INT. MAY 24, 2016  
ALL OTHERS, NOVEMBER 29, 2017

**AM PEAK HOUR:**  
7:30 AM - 8:30 AM

**PM PEAK HOUR:**  
3:45 PM - 4:45 PM

### LEGEND

##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

(X) - UNSIGNALIZED INTERSECTION X

(R) - ROUNDABOUT R

X(X) - AM(PM) LOS

- BICYCLE

- PEDESTRIAN

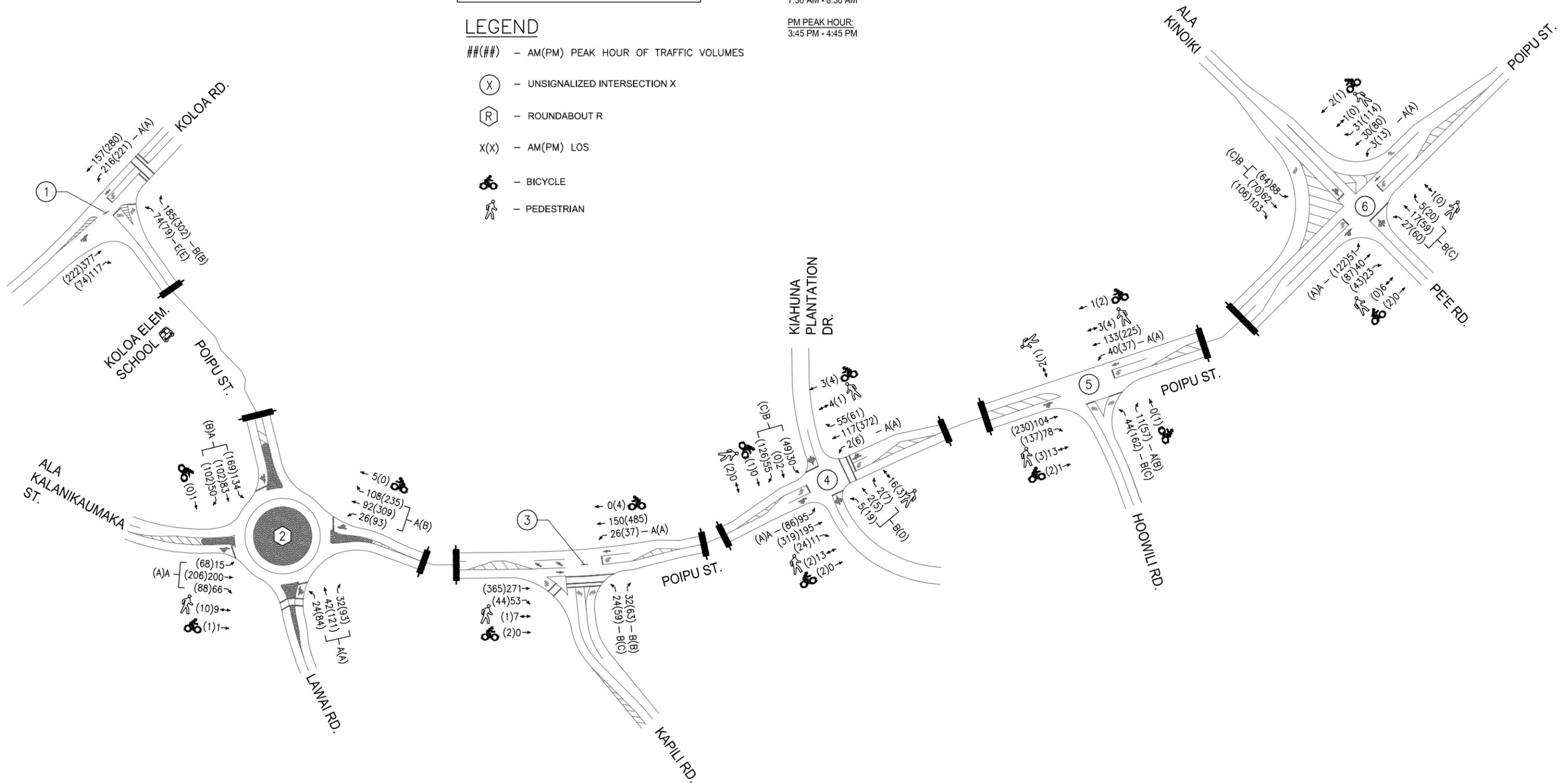


FIGURE 2.4

EXISTING LANE CONFIGURATION,  
VOLUME AND LOS

**Table 2.3 - Existing Conditions Level of Service Summary**

Intersection	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
<b>1: Poipu Rd &amp; Koloa Rd</b>						
NB LT	40.9	0.45	E	36.4	0.43	E
NB RT	14.2	0.34	B	13.3	0.43	B
WB LT	9.5	0.23	A	8.6	0.19	A
<b>2: Lawai Rd &amp; Ala Kalanikaumaka Rd &amp; Poipu Rd</b>						
NB LT/TH/RT	5.1	0.12	A	9.2	0.40	A
EB LT/TH/RT	6.4	0.30	A	9.3	0.44	A
WB LT/TH/RT	4.6	0.20	A	15.0	0.70	B
SB LT/TH/RT	5.4	0.25	A	12.1	0.52	B
<b>3: Kapili Rd &amp; Poipu Rd</b>						
NB LT	12.8	0.05	B	24.3	0.26	C
NB RT	10.3	0.05	B	11.4	0.11	B
WB LT	8.1	0.02	A	8.3	0.04	A
<b>4: Kiahuna Plantation Dr &amp; Poipu Rd</b>						
NB LT/TH/RT	14.0	0.02	B	28.4	0.18	D
EB LT	7.8	0.07	A	8.6	0.09	A
WB LT	7.7	0.00	A	8.1	0.01	A
SB LT/TH/RT	12.0	0.16	B	23.0	0.49	C
<b>5: Hoowili Rd &amp; Poipu Rd</b>						
NB LT	11.6	0.08	B	19.7	0.42	C
NB RT	9.1	0.01	A	10.5	0.09	B
WB LT	7.7	0.03	A	8.2	0.04	A
<b>6: Pe'e Rd/Ala Kinoiki Way &amp; Poipu Rd</b>						
NB LT/TH/RT	10.8	0.08	B	18.0	0.35	C
EB LT	7.4	0.04	A	7.6	0.09	A
WB LT	7.4	0.00	A	7.5	0.01	A
SB LT/TH	11.9	0.24	B	19.8	0.38	C



### 3. BASE YEAR 2037 TRAFFIC CONDITIONS

#### 3.1 Defacto Growth Rate

Projections for Base Year 2037 traffic were based upon existing traffic counts performed by ATA, assumed Kauai Regional Travel Demand Model (KRTDM) ambient growth, and nearby developments in the immediate vicinity of the Project. The resulting growth was approximately a 0.77 percent per year along Poipu Road, 1.15 percent per year along Koloa Road, 1.60 percent per year along Ala Kinoiki Road and 0.58 percent per year along Pe'e Road.

#### 3.2 Traffic Forecasts for Known Development

By year 2037, the following developments shown in Figure 3.1 and Table 3.1 may be constructed.

- **Island Country Market at Kukuiula** – This project is located in the region of Koloa with the southern-most point adjacent to the roundabout at the Ala Kalanikaumaka Street/Lawai Road/Poipu Road intersection. This development plans to build a convenience store, a restaurant and a gasoline station on over 22,500 square feet of land. The project's TIAR estimated completion in the year 2016; however, the project completion date has been delayed and thus was assumed to be in 2037 in order to remain conservative.
- **Koae Affordable Housing** – This project is located in the region of Koloa east of Poipu Road and west of the Kiahuna Golf Course. The development plans to build a maximum of 150 multi-family residential units on approximately 11 acres of land. The project's TIAR estimated completion date is in the year 2037.
- **Village at Koloa Town** – This project is located in the region of Koloa east of Koloa Road, adjacent to Weliweli Road. The development plans to build a mixed-use community comprising of 45,000 square feet of retail, general offices, and medical offices, as well as 34 duplex units.
- **Village at Poipu** – This project plans to develop approximately 210 acres into 503 attached and detached single-family homes and a community park with a total area of 12 acres. The development is proposed in three (3) phases. The project's TIAR estimated completion date in the year 2015; however, the project completion date has been delayed and thus was assumed to be in 2037 in order to remain conservative.

#### 3.3 Planned Roadway Projects

The following improvements in the studied region were assumed as part of Base Year roadway conditions:

- **Northern Leg of the Western Bypass Road** – The Environmental Assessment projects the Northern Leg of the Western Bypass Road to be a two-lane, two-way roadway completed by 2035. It proposes to connect the existing Western Bypass Road (Ala Kalanikaumaka Street), from where it presently terminates at its intersection with Koloa Road, with the existing Ala Kinoiki (Eastern Bypass Road) at its intersection with Maluhia Road.



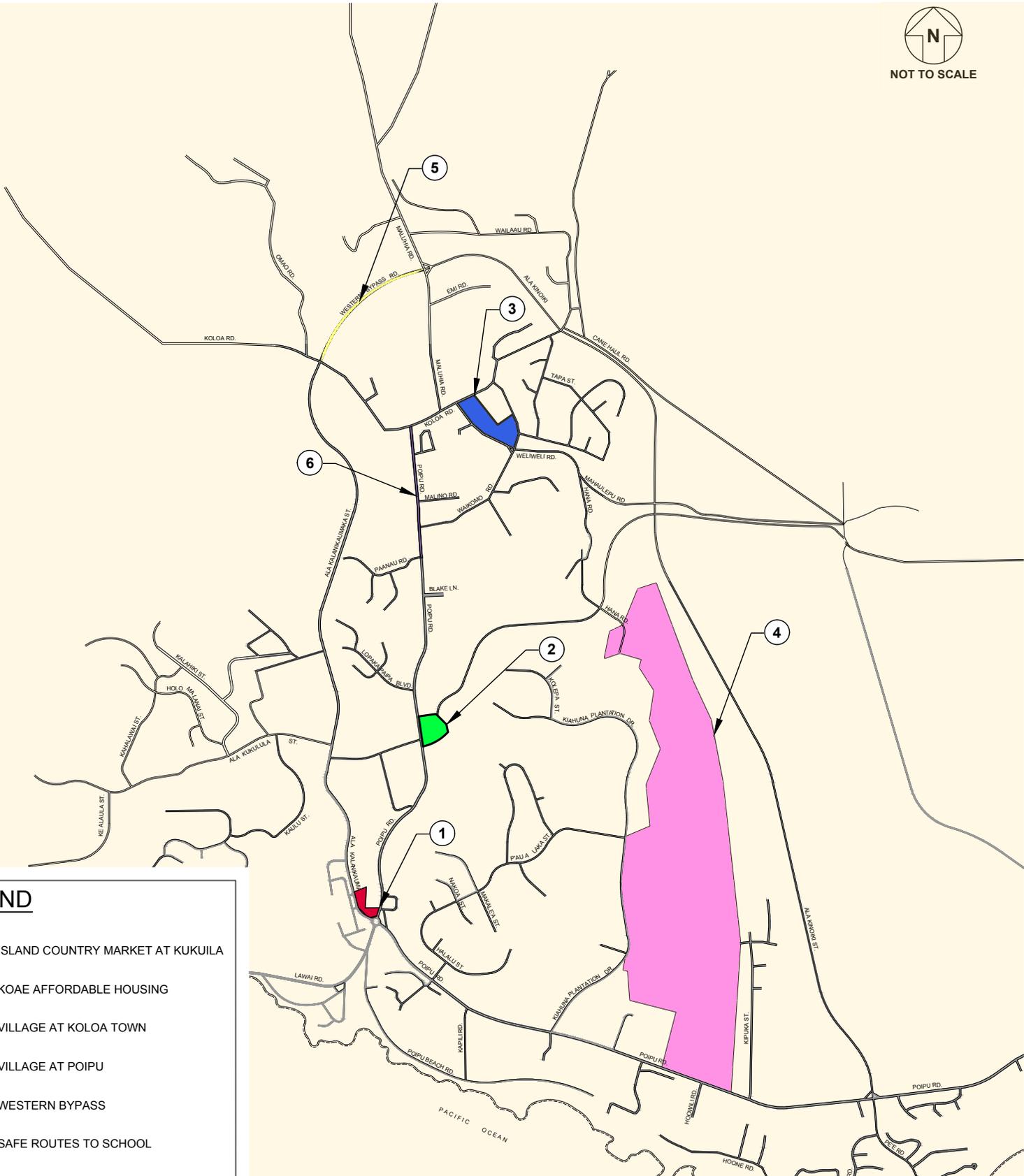
- **Safe Routes to School: Koloa Elementary School** – The Safe Routes to School project for Koloa Elementary School will add sharrows in both directions of Poipu Road from Koloa Road to just north of Waikomo Road to connect with existing facilities fronting the school. In the southbound direction, the project will also replace the existing sidewalk with a new sidewalk and the existing sharrow with a dedicated bike lane from just north of Waikomo Road to the Koloa Elementary School entrance. In the northbound direction, the project will also extend the existing bike lane and asphalt pedestrian footpath from the Koloa Elementary School entrance to just south of Paanau Road; from there to Blake Lane, the project will combine the bike lane and asphalt pedestrian footpath into a shared facility with markings for both pedestrian and bicycle use. Although not yet constructed, these improvements are expected to occur prior to the construction of the proposed Poipu Road Multimodal Project.

Table 3.1 - Total Trips Generated by Known Development in Project Vicinity

Known Development	Land Use	Unit	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
<b>Island Country Market at Kukuiula</b>	Commercial	22,500 sq ft	94	85	179	159	152	311
<b>Koae Affordable Housing</b>	Multi-Family Residential	150 units	12	60	72	56	28	84
<b>Village at Koloa Town</b>	Residential & Commercial	45,000 sq ft & 34 units	112	80	192	63	72	135
<b>Village at Poipu</b>	Residential	503 units	77	165	242	188	132	320

Note:

Table 3.1 shows trips generated by known developments in the vicinity of the Project. Not all traffic generated by these developments travel through the study area of this TIAR, since some traffic will be routed to various roadways and intersections that were not included in this TIAR.



## LEGEND

- 1 ISLAND COUNTRY MARKET AT KUKUILA
- 2 KOAE AFFORDABLE HOUSING
- 3 VILLAGE AT KOLOA TOWN
- 4 VILLAGE AT POIPU
- 5 WESTERN BYPASS
- 6 SAFE ROUTES TO SCHOOL

# FIGURE 3.1

# BACKGROUND PROJECTS



### 3.4 Base Year 2037 Analysis

Under Base Year 2037 conditions, all individual turning movements are expected to operate at LOS E or better except at three intersections. The northbound left-turn movement at the Poipu Road and Koloa Road intersection is expected to operate at LOS F and overcapacity conditions during both AM and PM peak hours of traffic. Because this movement operated adequately during existing conditions and traffic patterns and assumptions are likely to change within the 20 year horizon, it is recommended that this intersection be monitored over time to determine the appropriate course of action.

The westbound approach at the Ala Kalanikaumaka Street/Lawai Road/Poipu Road roundabout is also expected to operate at LOS F and overcapacity conditions during the PM peak hour. Lastly, the shared northbound and southbound movements at the Poipu Road/Kiahuna Plantation Drive intersection are expected to operate at LOS F during the PM peak.

Figure 3.2 illustrates the Base Year 2037 forecast traffic volumes and LOS for the study intersection movements. Table 3.2 summarizes the Base Year 2037 LOS at the study intersections compared to existing conditions. LOS worksheets are provided in Appendix C.



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**LEGEND**

- ##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
- (X) - UNSIGNALIZED INTERSECTION X
- (R) - ROUNDABOUT R
- X(X) - AM(PM) LOS

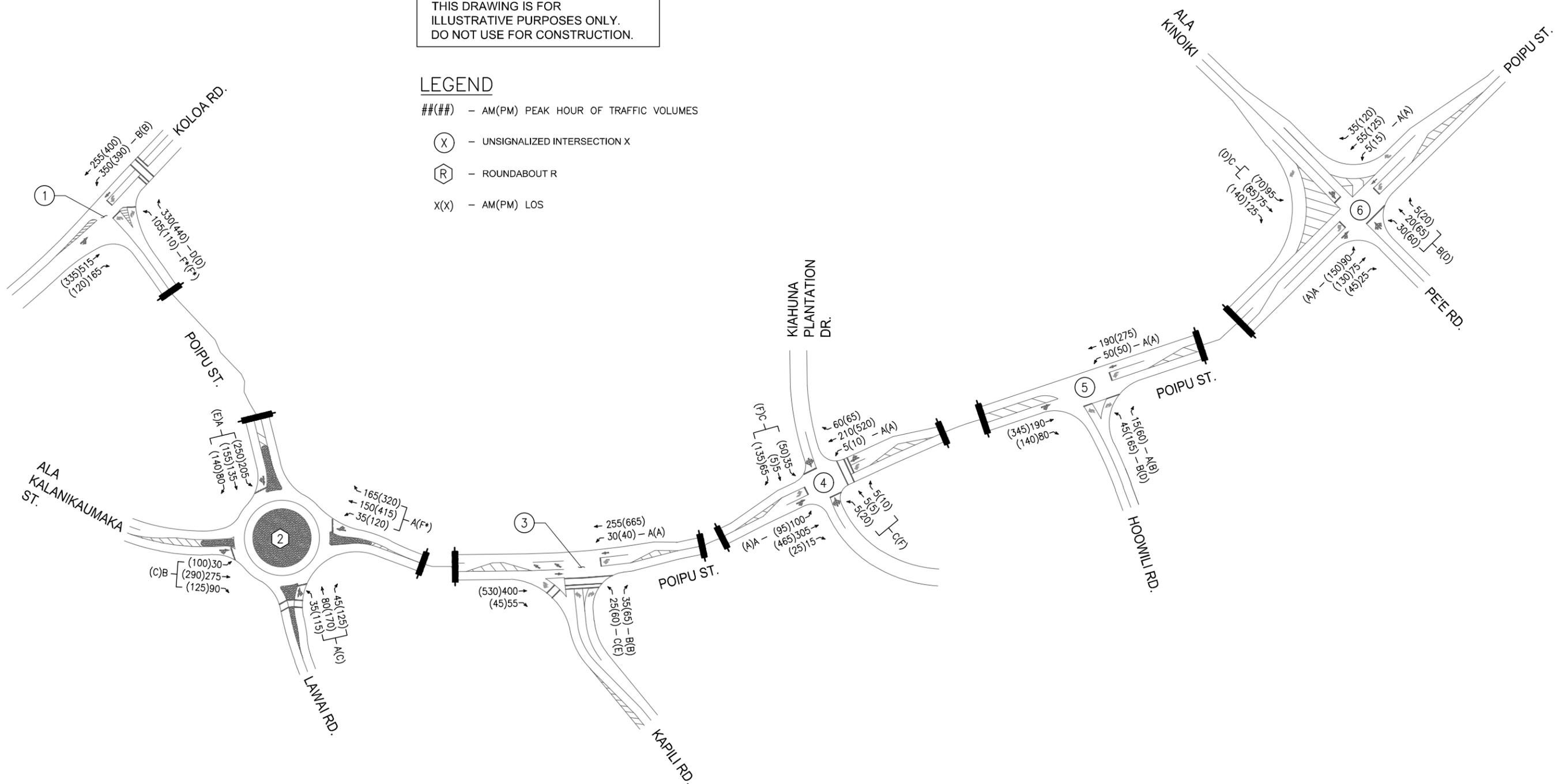


FIGURE 3.2

BASE YEAR 2037 LANEAGE,  
VOLUMES AND LOS

**Table 3.2 - Existing Conditions and Base Year 2037 Level of Service Summary**

Intersection	Existing Conditions						Base Year 2037					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
<b>1: Poipu Rd &amp; Koloa Rd</b>												
NB LT	40.9	0.45	E	36.4	0.43	E	604.8	1.97	F*	610.4	1.99	F*
NB RT	14.2	0.34	B	13.3	0.43	B	33.5	0.77	D	26.9	0.76	D
WB LT	9.5	0.23	A	8.6	0.19	A	12.4	0.44	B	10.6	0.40	B
<b>2: Lawai Rd &amp; Ala Kalanikaumaka Rd &amp; Poipu Rd</b>												
NB LT/TH/RT	5.1	0.12	A	9.2	0.40	A	7.3	0.23	A	19.8	0.68	C
EB LT/TH/RT	6.4	0.30	A	9.3	0.44	A	10.3	0.49	B	21.4	0.75	C
WB LT/TH/RT	4.6	0.20	A	15.0	0.70	B	6.4	0.33	A	69.5	1.06	F*
SB LT/TH/RT	5.4	0.25	A	12.1	0.52	B	8.2	0.43	A	41.7	0.91	E
<b>3: Kapili Rd &amp; Poipu Rd</b>												
NB LT	12.8	0.05	B	24.3	0.26	C	16.5	0.08	C	48.2	0.45	E
NB RT	10.3	0.05	B	11.4	0.11	B	11.4	0.06	B	13.4	0.14	B
WB LT	8.1	0.02	A	8.3	0.04	A	8.5	0.03	A	8.9	0.05	A
<b>4: Kiahuna Plantation Dr &amp; Poipu Rd</b>												
NB LT/TH/RT	14.0	0.02	B	28.4	0.18	D	17.1	0.05	C	59.9	0.37	F
EB LT	7.8	0.07	A	8.6	0.09	A	8.1	0.09	A	9.3	0.11	A
WB LT	7.7	0.00	A	8.1	0.01	A	8.0	0.00	A	8.5	0.01	A
SB LT/TH/RT	12.0	0.16	B	23.0	0.49	C	15.8	0.26	C	64.7	0.83	F
<b>5: Hoowili Rd &amp; Poipu Rd</b>												
NB LT	11.6	0.08	B	19.7	0.42	C	13.7	0.11	B	31.4	0.58	D
NB RT	9.1	0.01	A	10.5	0.09	B	9.7	0.02	A	11.6	0.11	B
WB LT	7.7	0.03	A	8.2	0.04	A	8.0	0.04	A	8.7	0.05	A
<b>6: Pe'e Rd/Ala Kinoiki Way &amp; Poipu Rd</b>												
NB LT/TH/RT	10.8	0.08	B	18.0	0.35	C	13.0	0.12	B	27.1	0.50	D
EB LT	7.4	0.04	A	7.6	0.09	A	7.5	0.06	A	7.8	0.11	A
WB LT	7.4	0.00	A	7.5	0.01	A	7.4	0.00	A	7.6	0.01	A
SB LT/TH	11.9	0.24	B	19.8	0.38	C	15.5	0.35	C	32.7	0.58	D



## **4. FUTURE YEAR 2037 TRAFFIC CONDITIONS**

The Future Year 2037 scenario represents the traffic conditions with the Project improvements, including two (2) proposed roundabouts at the intersections of Poipu Road/Ala Kinoiki Way and Poipu Road/Kiahuna Plantation Drive. Section 5 will review the multimodal improvements proposed as part of this project.

### **4.1 Future Year 2037 Analysis**

Upon completion of the Project, all study intersections are forecast to operate with LOS similar to Base Year 2037 conditions except at the two proposed roundabout locations at Poipu Road/Ala Kinoiki Way and Poipu Road/Kiahuna Plantation Drive where the LOS is expected to improve to LOS A for all movements.

Figure 4.1 illustrates the Future Year 2037 forecast traffic volumes and LOS for the study intersection movements. Table 4.1 summarizes the Future Year 2037 LOS at the study intersections compared to Base Year 2037 conditions. LOS worksheets are provided in Appendix C.



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### LEGEND

- ##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
- (X) - UNSIGNALIZED INTERSECTION X
- (R) - ROUNDABOUT R
- X(X) - AM(PM) LOS

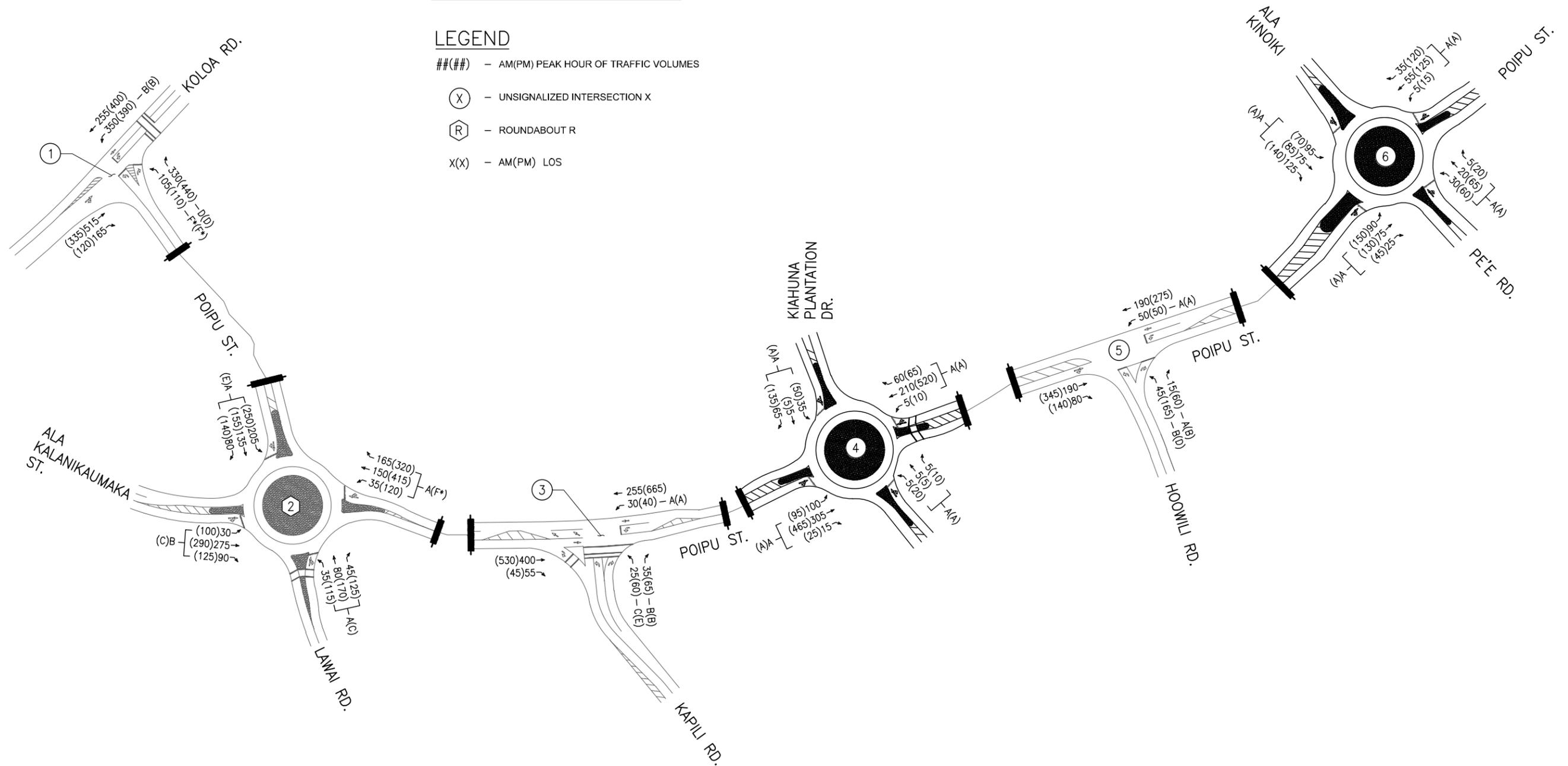


FIGURE 4.1

FUTURE YEAR 2037 LANEAGE,  
VOLUMES AND LOS

**Table 4.1 - Base Year 2037 and Future Year 2037 Level of Service Summary**

Intersection	Base Year 2037						Future Year 2037					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
<b>1: Poipu Rd &amp; Koloa Rd</b>												
NB LT	604.8	1.97	F*	610.4	1.99	F*	604.8	1.97	F*	610.4	1.99	F*
NB RT	33.5	0.77	D	26.9	0.76	D	33.5	0.77	D	26.9	0.76	D
WB LT	12.4	0.44	B	10.6	0.40	B	12.4	0.44	B	10.6	0.40	B
<b>2: Lawai Rd &amp; Ala Kalanikaumaka Rd &amp; Poipu Rd</b>												
NB LT/TH/RT	7.3	0.23	A	19.8	0.68	C	7.3	0.23	A	19.8	0.68	C
EB LT/TH/RT	10.3	0.49	B	21.4	0.75	C	10.3	0.49	B	21.4	0.75	C
WB LT/TH/RT	6.4	0.33	A	69.5	1.06	F*	6.4	0.33	A	69.5	1.06	F*
SB LT/TH/RT	8.2	0.43	A	41.7	0.91	E	8.2	0.43	A	41.7	0.91	E
<b>3: Kapili Rd &amp; Poipu Rd</b>												
NB LT	16.5	0.08	C	48.2	0.45	E	16.5	0.08	C	48.2	0.45	E
NB RT	11.4	0.06	B	13.4	0.14	B	11.4	0.06	B	13.4	0.14	B
WB LT	8.5	0.03	A	8.9	0.05	A	8.5	0.03	A	8.9	0.05	A
<b>4: Kiahuna Plantation Dr &amp; Poipu Rd</b>												
NB LT/TH/RT	17.1	0.05	C	59.9	0.37	F	4.5	0.02	A	5.8	0.06	A
EB LT	8.1	0.09	A	9.3	0.11	A	-	-	-	-	-	-
EB LT/TH/RT	-	-	-	-	-	-	6.1	0.36	A	8.3	0.51	A
WB LT	8.0	0.00	A	8.5	0.01	A	-	-	-	-	-	-
WB LT/TH/RT	-	-	-	-	-	-	5.2	0.25	A	9.4	0.55	A
SB LT/TH/RT	15.8	0.26	C	64.7	0.83	F	4.4	0.11	A	8.3	0.28	A
<b>5: Hoowili Rd &amp; Poipu Rd</b>												
NB LT	13.7	0.11	B	31.4	0.58	D	13.7	0.11	B	31.4	0.58	D
NB RT	9.7	0.02	A	11.6	0.11	B	9.7	0.02	A	11.6	0.11	B
WB LT	8.0	0.04	A	8.7	0.05	A	8.0	0.04	A	8.7	0.05	A
<b>6: Pe'e Rd/Ala Kinoiki Way &amp; Poipu Rd</b>												
NB LT/TH/RT	13.0	0.12	B	27.1	0.50	D	4.1	0.06	A	5.6	0.17	A
EB LT	7.5	0.06	A	7.8	0.11	A	-	-	-	-	-	-
EB LT/TH/RT	-	-	-	-	-	-	4.9	0.19	A	6.3	0.32	A
WB LT	7.4	0.00	A	7.6	0.01	A	-	-	-	-	-	-
WB LT/TH/RT	-	-	-	-	-	-	3.9	0.09	A	6.5	0.29	A
SB LT/TH	15.5	0.35	C	32.7	0.58	D	-	-	-	-	-	-
SB LT/TH/RT	-	-	-	-	-	-	5.3	0.26	A	6.2	0.30	A



## **5. PROPOSED MULTIMODAL IMPROVEMENTS**

In addition to the proposed roundabouts discussed in Section 4, this section will discuss the Project improvements as it relates to multimodal enhancements and accessibility.

### **5.1 Project Background**

The County of Kauai (COK) engaged the local community at a community design workshop for Poipu Road on May 10-13, 2013. At this meeting the COK was able to receive feedback from the community about their ideas and priorities of improvements for the area, and resulting from the meeting, a general vision for the area was created.

Generally, multimodal improvements and accessibility as a whole was seen as one of the most important aspects to the community at large for the Poipu Road corridor as the region grows and develops. This desire became the catalyst for the basis of the civil design as the Project continues to move forward.

The following sections describe the proposed Project corridor improvements in regards to multimodal enhancement and connectivity. As mentioned earlier, the Safe Routes to School project for Koloa Elementary School will add pedestrian and bicycle improvements to the North-South section of Poipu Road prior to the implementation of the Project. This Project will incorporate and build off of these improvements to provide multimodal connectivity throughout the corridor. Thus, all proposed improvements will be inclusive of the Safe Routes to School project. See Figure 5.1A and Figure 5.1B for the proposed Project facilities. Figures 5.2 - 5.9 show the typical cross section for various portions of roadway throughout Poipu Road.

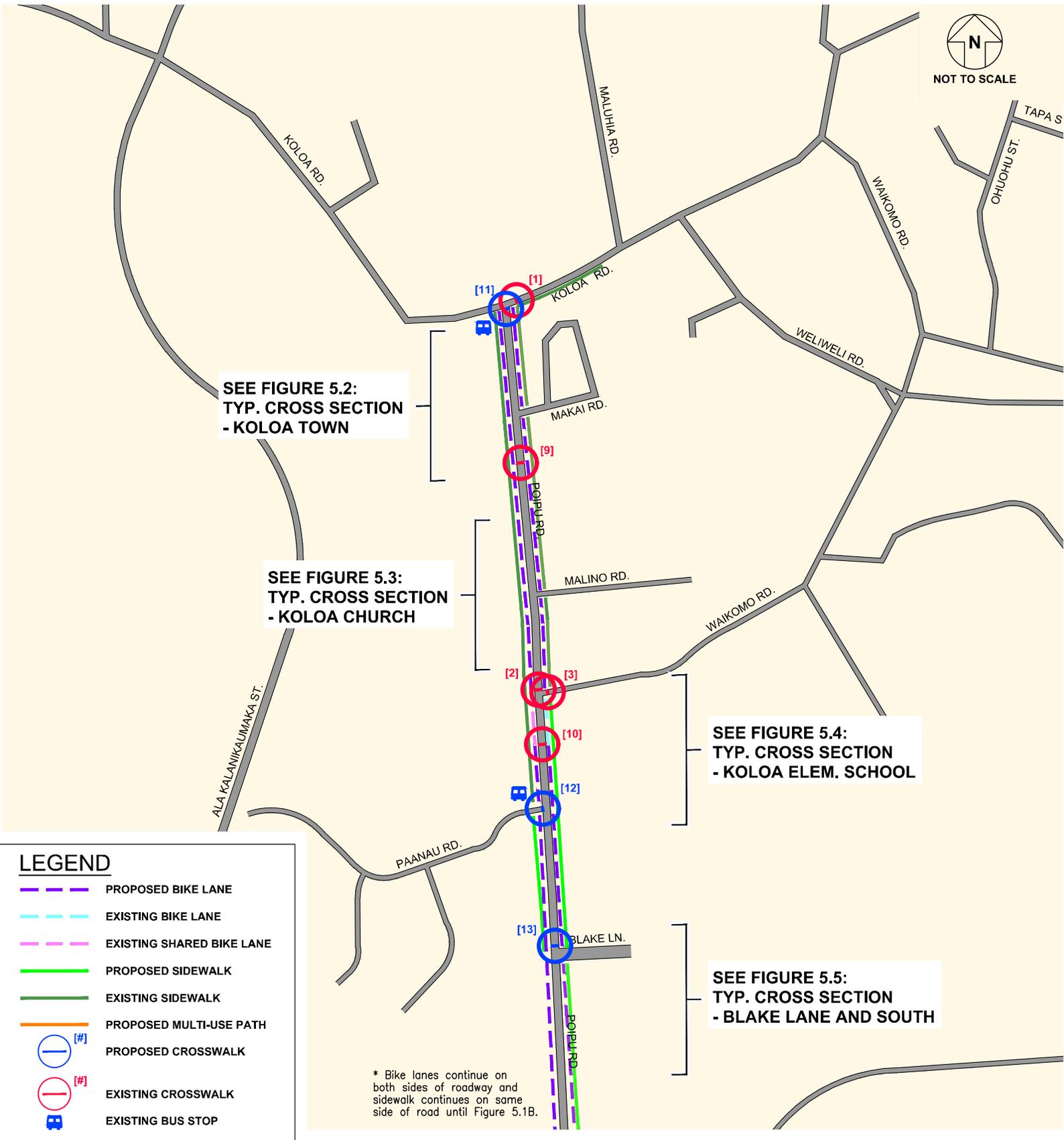


FIGURE 5.1A

PROPOSED PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES NORTH - SOUTH SEGMENT

# POIPU ROAD MULTIMODAL IMPROVEMENTS TIAR

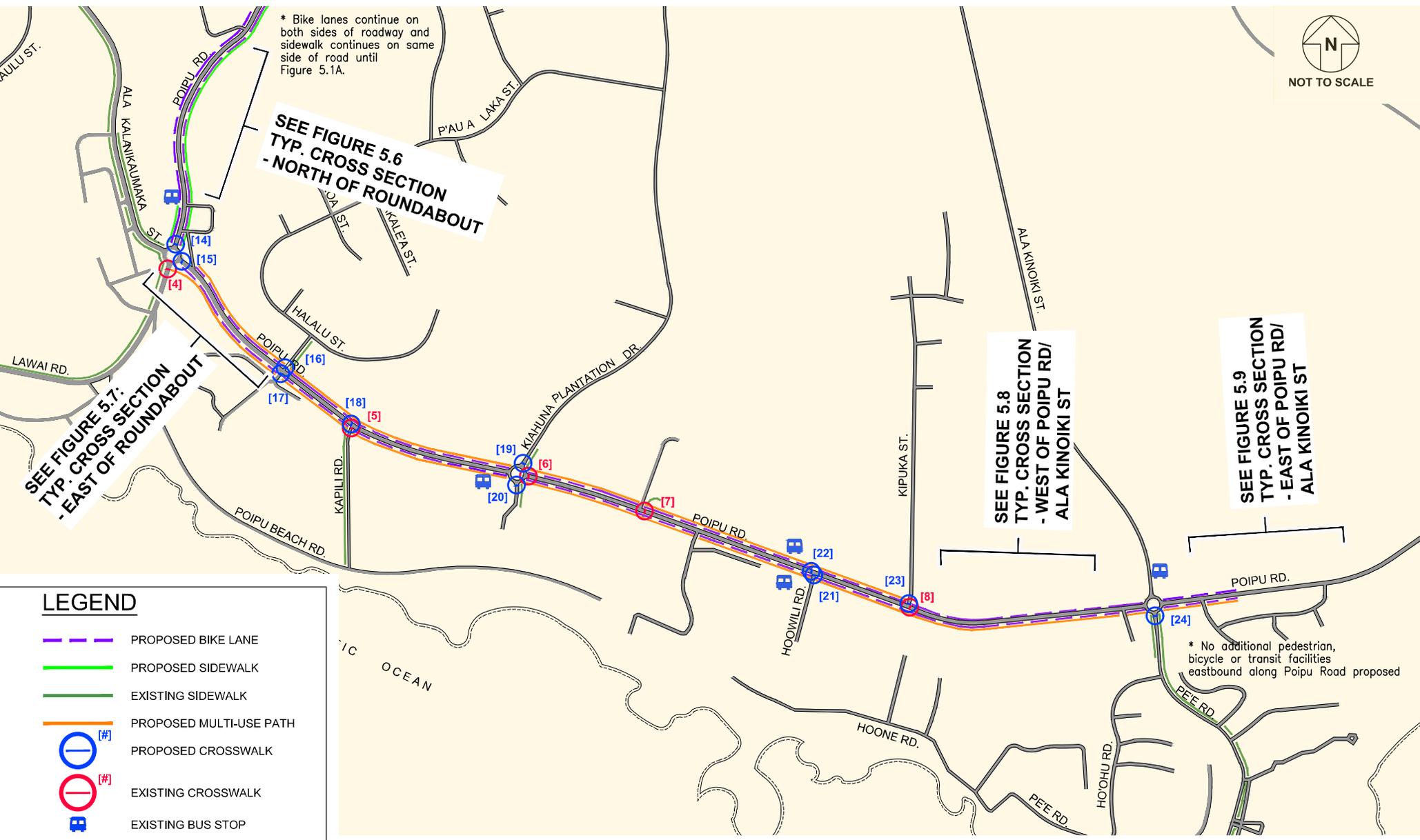


FIGURE 5.1B

PROPOSED PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES EAST - WEST SEGMENT

## 5.2 Proposed Poipu Road Roadway Cross Sections

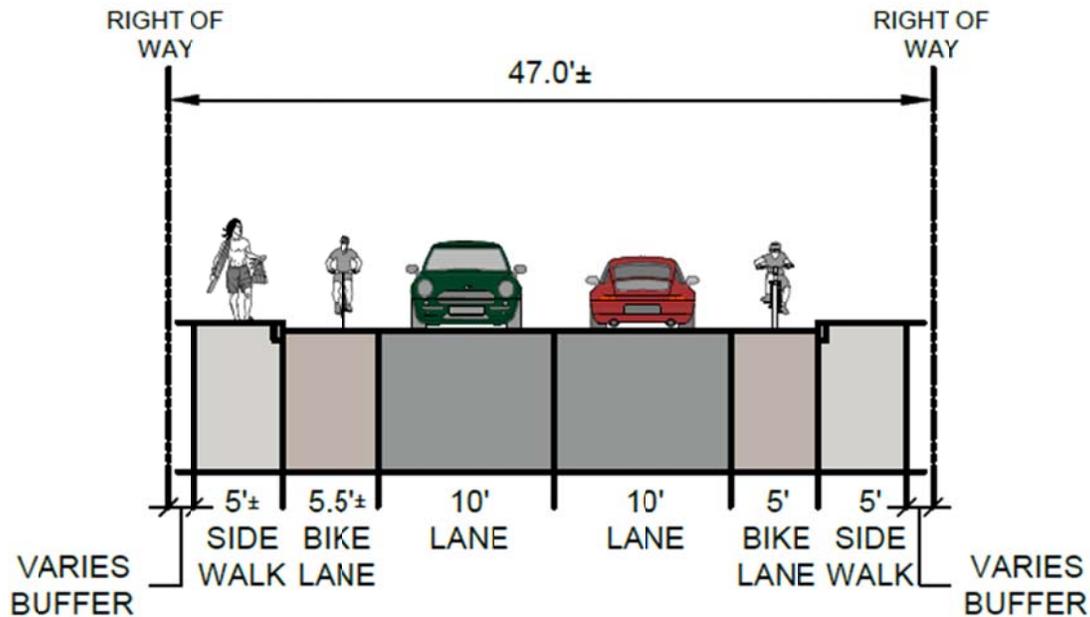
The following sections describe the proposed roadway cross sections for various segments of the Project.

### 5.2.1 Koloa Town Cross Section

The existing roadway section for this portion of Poipu Road includes a sidewalk with curb and gutter on the east side of the roadway. The proposed roadway section as shown below will preserve this sidewalk and mirror it with a 5-foot curbed sidewalk on the west side of the roadway. Dedicated bike lanes, 5-foot to 5.5-foot wide including gutter, will be added to both sides of the roadway, effectively reducing the vehicular travel way to 10-feet in each direction.

See Figure 5.2 below for a graphical depiction of the Koloa Town typical cross section.

**Figure 5.2: Typical Cross Section – Koloa Town (Traveling South)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

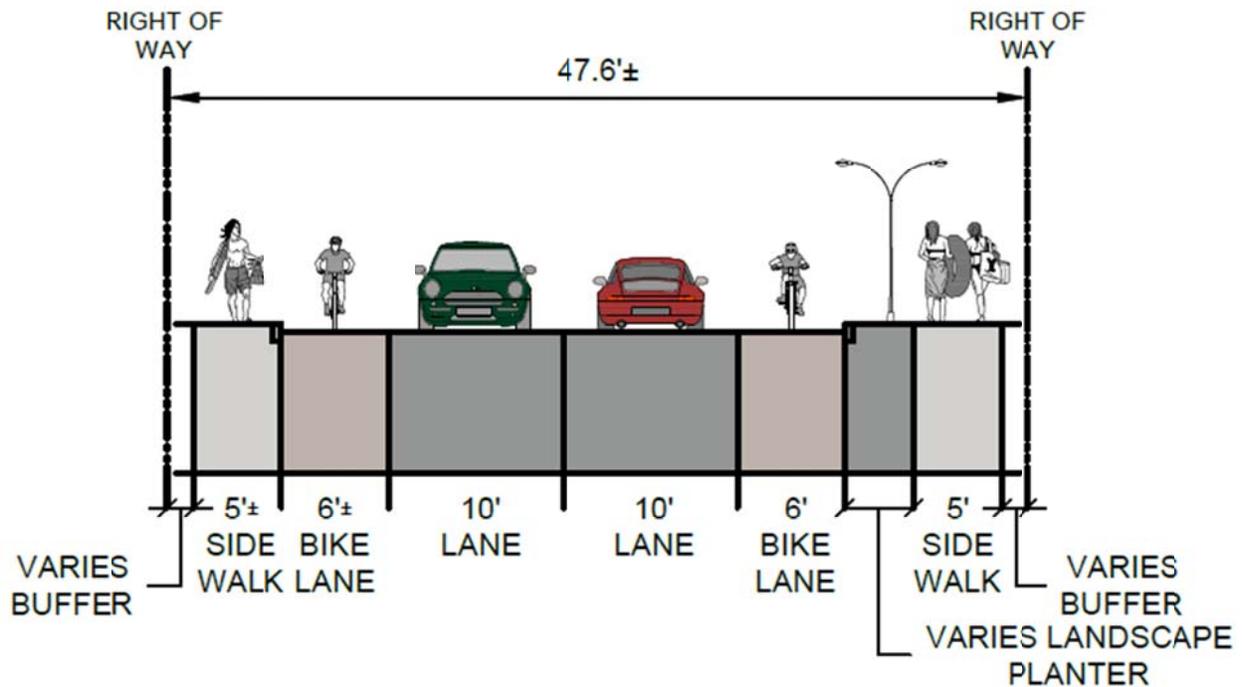
As the first segment of the Project at the north end near Koloa Town, it was important for this section to create an entry-way to the Project corridor that provides multimodal travel options to the various users coming to and from Koloa Town via Poipu Road. Elevated 5-foot wide sidewalks on both sides of the roadway enhance the pedestrian comfort within the area and similarly, effective 5-foot to 5.5-foot dedicated bike lanes enhance bicyclist comfort. These Project improvements strive to encourage alternate modes of transportation along this corridor by providing the accessibility at this northern junction.

## 5.2.2 Koloa Church Cross Section

Similar to the Koloa Town roadway section, the existing roadway section for the Koloa Church portion includes a sidewalk with curb and gutter on the east side of the roadway. The proposed roadway section as shown below will preserve this sidewalk and mirror it with a 5-foot curbed sidewalk on the west side of the roadway. A landscape planter, varied in width, will be added next to the sidewalk on the west side of the roadway. Dedicated bike lanes, approximately 6-foot wide including gutter, will be added to both sides of the roadway, effectively reducing the vehicular travel way to 10-feet in each direction.

See Figure 5.3 below for a graphical depiction of the Koloa Church typical cross section.

**Figure 5.3: Typical Cross Section – Koloa Church (Traveling South)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

To provide continuous multimodal connectivity and access, dedicated elevated sidewalks as well as dedicated bike lanes on both sides of the roadway continue to provide separated spaces and an enhanced sense of comfort for all users of the roadway. With the mixed-use nature of Koloa Town and destinations adjacent to Poipu Road including churches, commercial enterprises, the Koloa Elementary School, and residential dwellings, enhancing Poipu Road to incorporate multimodal features would benefit users in the area by making the main corridor more walkable and bikeable on both sides of the roadway.

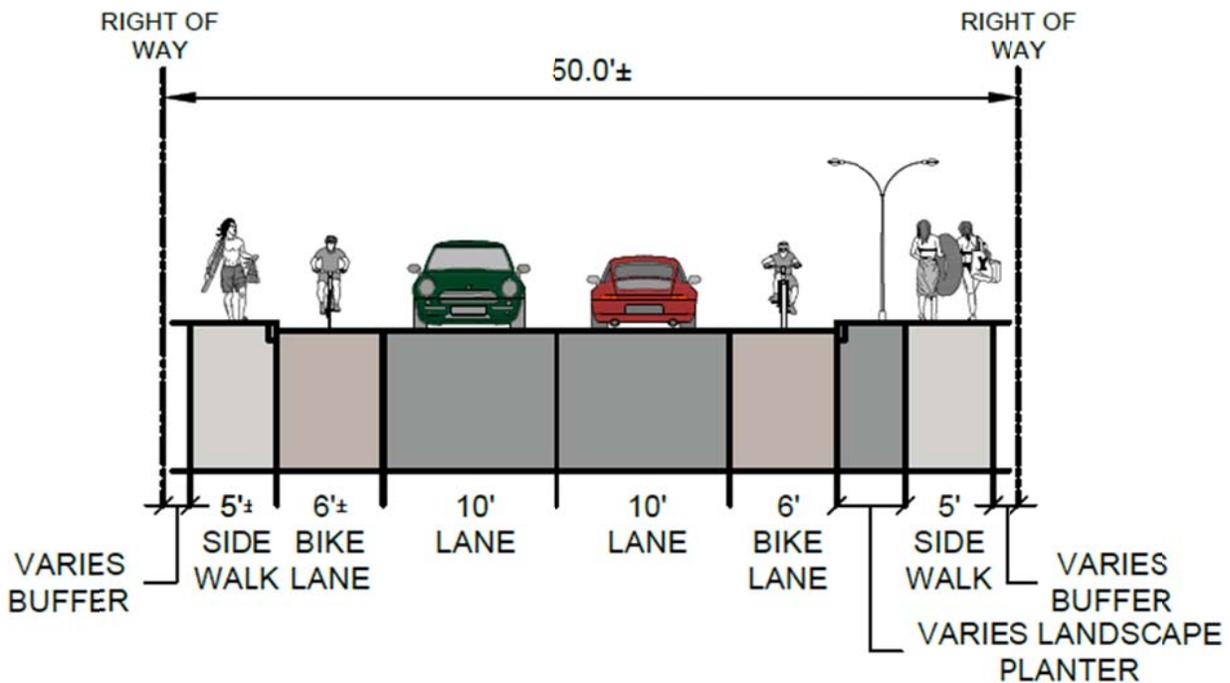


### 5.2.3 Koloa Elementary School

Providing a continuous access and aesthetic from the Koloa Church roadway section, the existing sidewalk and curb and gutter on the east side of the roadway for the Koloa Elementary School section will be preserved where provided. Where not provided, a new curbed 5-foot wide sidewalk adjacent to a curb and gutter will be added. A new curbed 5-foot wide sidewalk will also be provided on the west side of the roadway. Similar to the Koloa Church cross section, a landscape planter, varied in width, will be added next to the sidewalk on the west side of the roadway and dedicated bike lanes, approximately 6-foot wide including gutter, will be added to both sides of the roadway, effectively reducing the vehicular travel way to 10-feet in each direction. As mentioned above, the Safe Routes to School project for Koloa Elementary School is expected to add pedestrian and bicycle improvements in this area prior to the Project and thus, the improvements listed here are inclusive of that project.

See Figure 5.4 below for a graphical depiction of the Koloa Elementary School typical cross section.

**Figure 5.4: Typical Cross Section – Koloa Elementary School (Traveling South)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

With Koloa Elementary School adjacent to the Project roadway as well as a local church, pedestrian and bicyclist comfort and accessibility is paramount in this area. Continuing the section set forth at the Koloa Town roadway cross section and incorporating improvements completed by the Safe Routes to School project, the proposed elevated 5-foot wide sidewalks and dedicated bike lanes on both sides of the roadway provide an increased sense of comfort to non-vehicular users of the roadway. A landscape strip between the curb face and the sidewalk

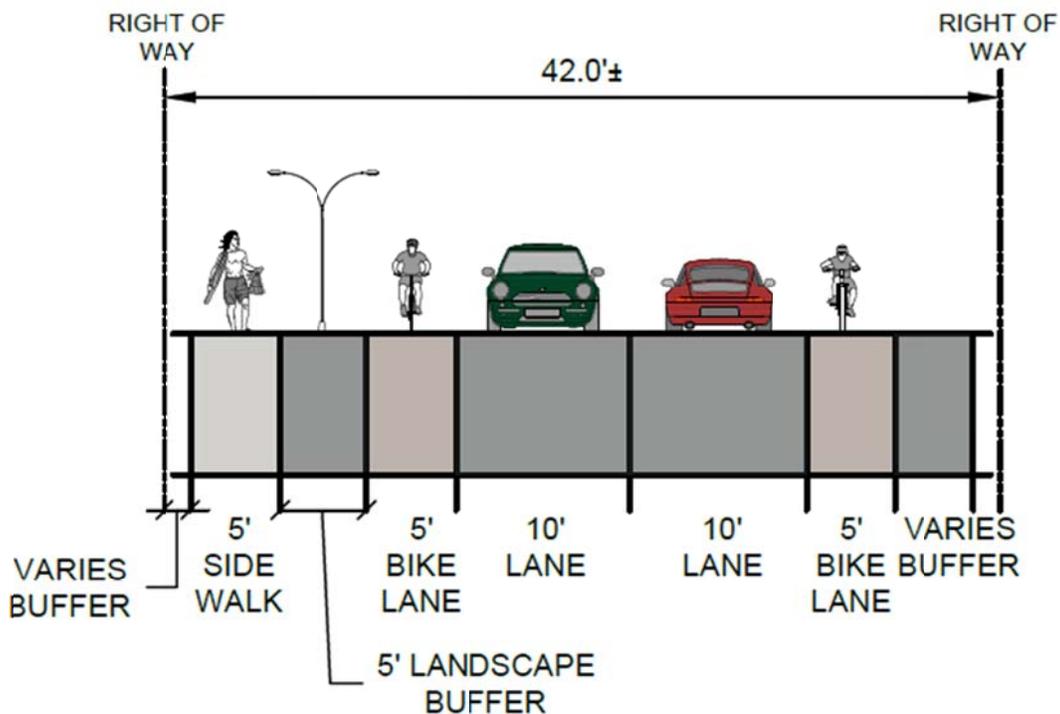
on the Koloa Elementary School (west) side of Poipu Road should further contribute to the feel of enhanced comfort for pedestrians.

### 5.2.4 Blake Lane and South

As Poipu Road (North-South portion) travels out of Koloa Town towards the Poipu resort area and the right-of-way (ROW) reduces in width, the proposed roadway cross section will also transition along with the ROW. The curbed sidewalk on the west side of Poipu Road will end near Blake Lane where a crosswalk will be provided to cross Poipu Road to the curbed sidewalk on the east side. The east side of the roadway will continue the 5-foot wide sidewalk from sections above followed by either a curb or a 5-foot wide landscape buffer where ROW width allows. Adjacent to the curb or 5-foot wide landscape buffer, a 5-foot dedicated bike lane will be provided. A 5-foot wide bike lane will continue on the west side of the roadway. Northbound and southbound travel lanes will be maintained at 10-foot wide

See Figure 5.5 below for a graphical depiction of the Blake Lane and South typical cross section.

**Figure 5.5: Typical Cross Section – Blake Lane and South (Traveling South)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

For the area between Koloa Town and the resort area, it was important for the Project to provide non-vehicular connectivity between these two areas. To achieve this goal, the Project proposes to provide a continuous 5-foot wide sidewalk along the east side of Poipu Road near Blake Lane to the area north of the Poipu Road/Ala Kalanikaumaka Street/Lawai Round Roundabout and thus providing pedestrian connectivity between the two most populated areas in the region.



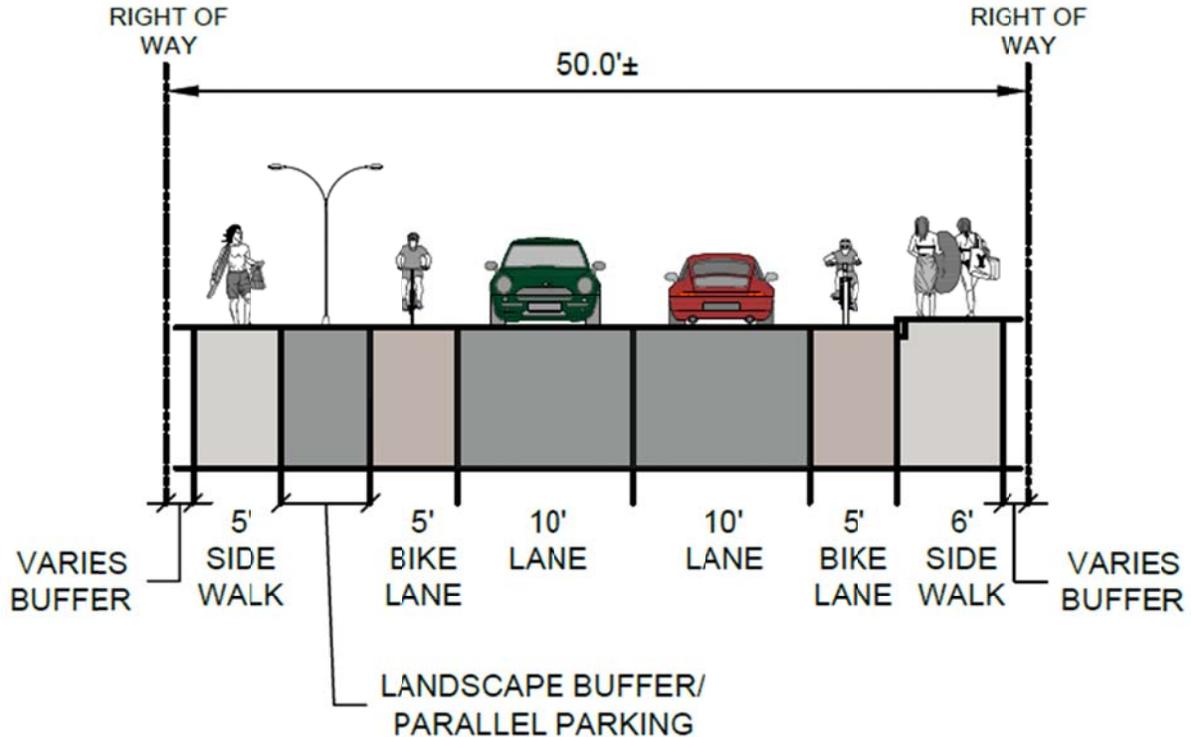
Continuing multimodal connectivity through the corridor, 5-foot wide dedicated bike lanes are provided in both directions to enhance comfort and encourage bicycle use.

### 5.2.5 North of Poipu Road/Ala Kalanikaumaka Street/Lawai Road Roundabout

North of the Poipu Road/Ala Kalanikaumaka Street/Lawai Road Roundabout, the Poipu Road roadway cross section continues the theme of multimodal access and connectivity by continuing the 5-foot curbed sidewalk on the east side of Poipu Road and mirroring it on the west side with a 6-foot curbed sidewalk. In this section, the east side of Poipu Road will provide a landscape buffer or parallel parking where appropriate. The 5-foot dedicated bike lanes will be continued from the Blake Lane and South cross section on both sides of the roadway, providing effective 10-foot travel ways in the northbound and southbound directions of travel.

See Figure 5.6 below for a graphical depiction of the North of Roundabout typical cross section.

**Figure 5.6: Typical Cross Section – North of Roundabout (Traveling South)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

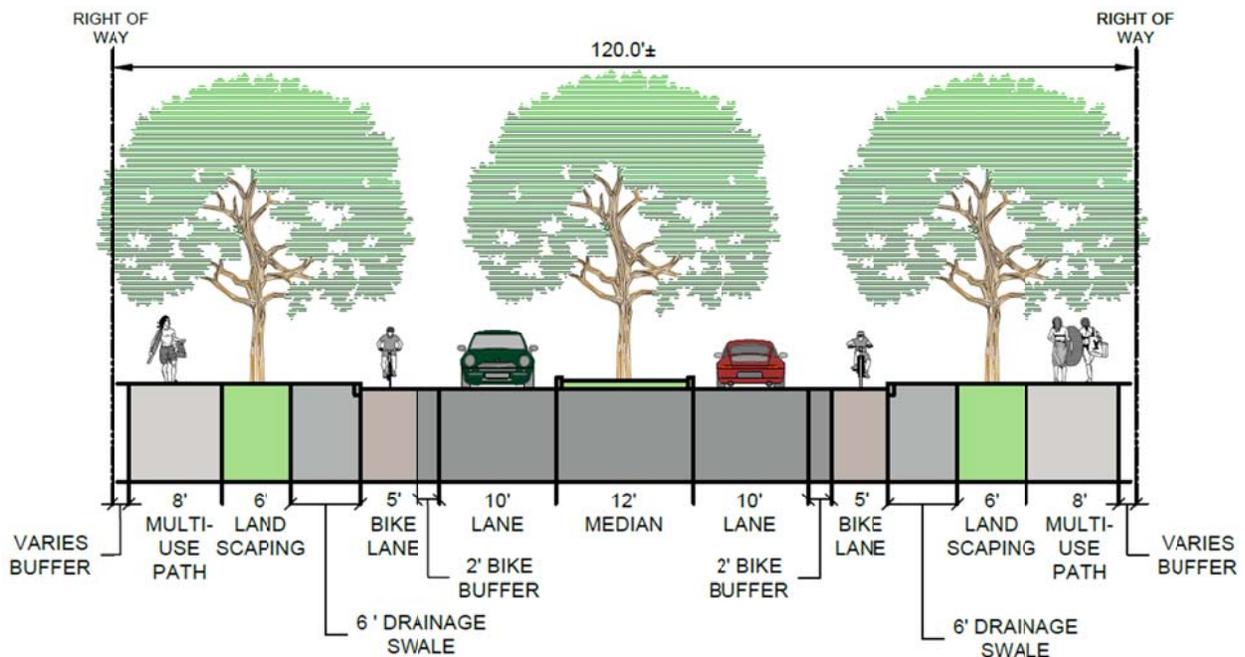
As Poipu Road transitions from Koloa Town and into the roundabout and resort area, it is important to continue the pedestrian network and provide connectivity to all relevant areas. Elevated sidewalks on both sides of the roadway reappear to provide access around the roundabout as well as the adjacent commercial areas to the west side of Poipu Road. The bicycle network and connectivity throughout the Poipu Road corridor continues in the area and through the roundabout.

### 5.2.6 East of Poipu Road/Ala Kalanikaumaka Street/Lawai Road Roundabout

East of the Poipu Road/Ala Kalanikaumaka Street/Lawai Road Roundabout, the Poipu Road ROW expands to 120-foot wide, providing latitude to expand the roadway cross section. Depending on restrictions in the existing ROW, the section generally begins with an 8-foot wide multi-use path on the mauka (north) side of cross section. Adjacent to the multi-use path is a 6-foot wide landscape strip followed by a 6-foot wide drainage swale area. The travel way includes a 5-foot wide dedicated bike lane, 2-foot wide buffer, and 10-foot wide vehicle travel lane. A 12-foot wide median area is provided in the center of the roadway, and the north cross section elements are mirrored on the south side.

See Figure 5.7 below for a graphical depiction of the East of Roundabout typical cross section.

**Figure 5.7: Typical Cross Section – East of Roundabout (Traveling East)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

Once Poipu Road transitions to the east-west portion and begins to front the resort area, the expanded ROW provides the opportunity to not only provide facilities for all users of the corridor but also enhance those facilities to create even more multimodal comfort and aesthetic appeal. The sidewalks provided are widened from the North-South section and become multi-use paths for both pedestrian and bicycle use separated from the travel way with landscaping and a drainage swale. The 5-foot wide dedicated bike lane section is enhanced to include a 2-foot buffer between the bike lane and the vehicle travel way to provide additional comfort. These improvements further enhance the comfort level and aesthetic appeal for all users in an area where alternate modes of transportation is encouraged for transit as well as recreation.

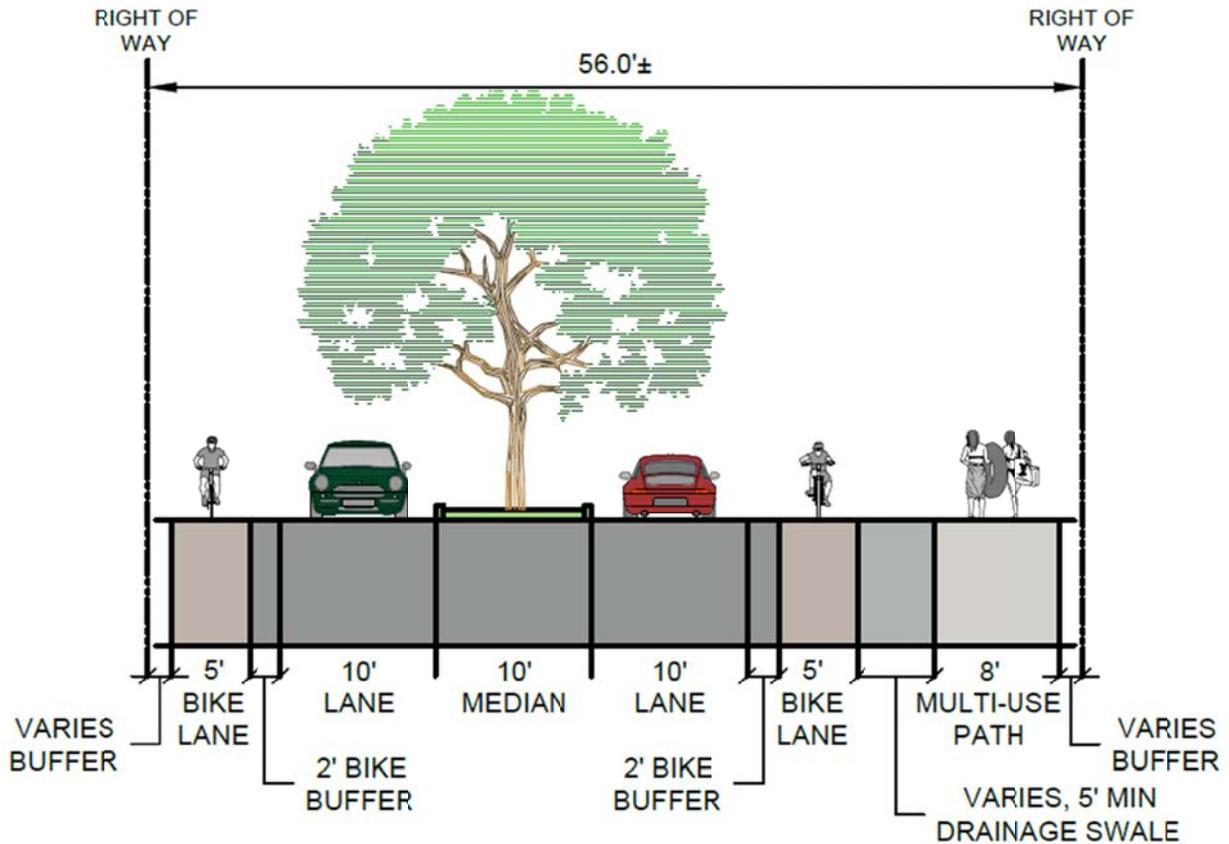


### 5.2.7 West of Poipu Road/Ala Kinoiki Street Intersection

As the ROW narrows as it approaches the Poipu Road/Ala Kinoiki Street intersection, the roadway cross section transitions to a smaller section while maintaining multimodal connectivity and accessibility. On the north side of the roadway, the 8-foot wide multi-use path is discontinued just past the Poipu Road/Kipuka Street intersection at the crosswalk provided to cross Poipu Road. Following the end of the multi-use path on the north side of the road, a 5-foot wide dedicated bike lane is provided, followed by a 2-foot wide buffer and a 10-foot wide vehicular travel lane. A 10-foot wide median area is provided in the center of the roadway, followed by a 10-foot wide vehicular travel lane for eastbound travel. Next to the eastbound travel lane, a 2-foot bike buffer is provided next to a 5-foot dedicated bike lane, followed by a generally 5-foot wide drainage swale area next to the continuing 8-foot multi-use path.

See Figure 5.8 below for a graphical depiction of the East of Roundabout typical cross section.

**Figure 5.8: Typical Cross Section – West of Poipu Road/Ala Kinoiki Street (Traveling East)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.

It was important for the Project to present a unified, consistent approach to multimodal travel in the East-West portion of Poipu Road that fronts the resort area. In that frame of reference, the Project's strategy was to keep the dedicated bike lanes in each direction and the multi-use path on the resort side of the roadway as the ROW narrows. To provide an increased sense of



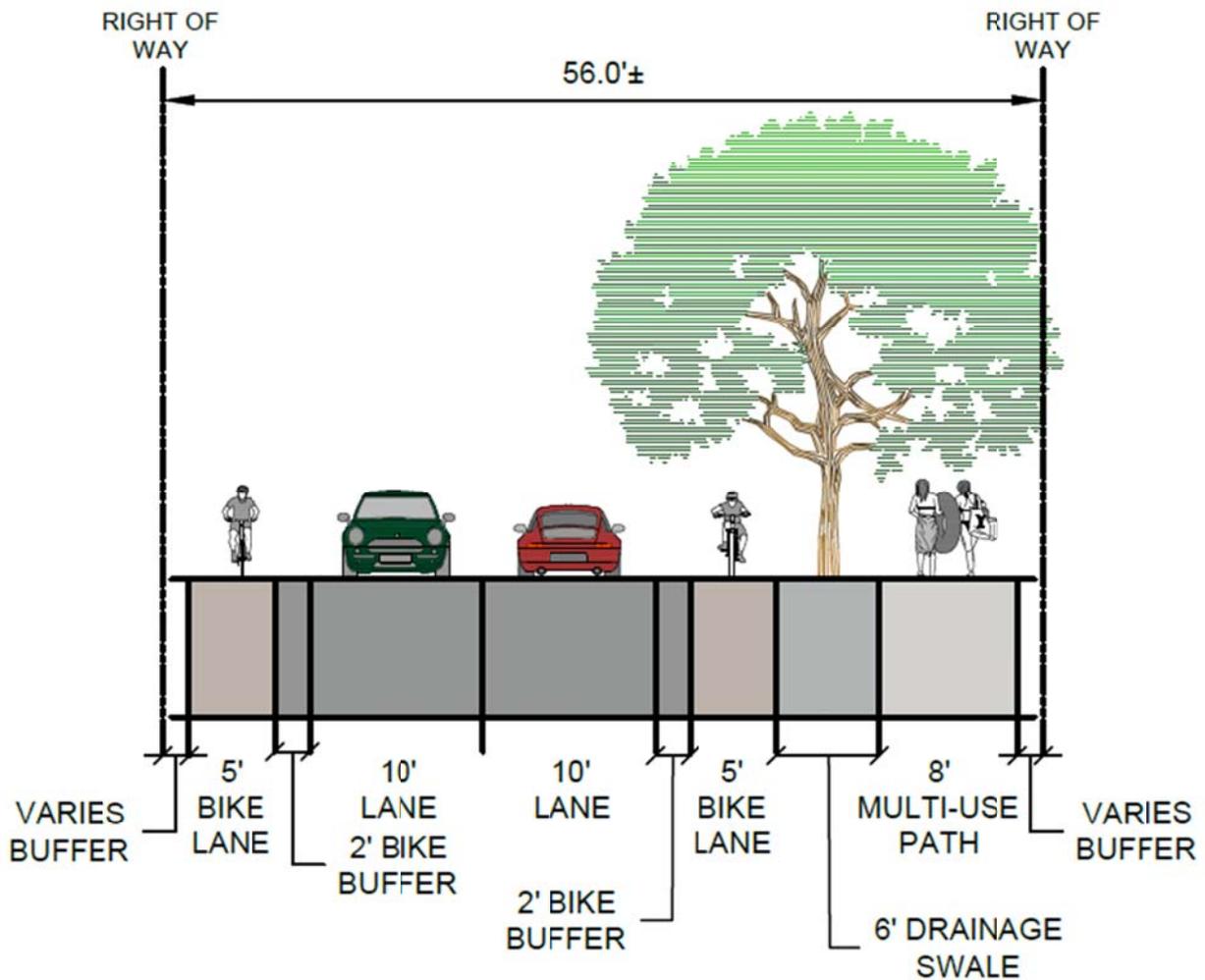
bicyclist and pedestrian comfort, the dedicated bike lanes continue to be provided with a 2-foot buffer and the multi-use path continues to be offset from the roadway cross section.

### 5.2.8 East of Poipu Road/Ala Kinoiki Street Intersection

As Poipu Road continues east after the Poipu Road/Ala Kinoiki Street intersection, the roadway features that appeared west of the intersection will generally continue on the east side of the intersection, except without a median area. A 5-foot wide dedicated bike lane is provided at the north side of the roadway cross section, followed by a 2-foot wide buffer and a 10-foot wide vehicular travel lane. The section is then mirrored with a 10-foot wide eastbound vehicular travel lane, followed by a 2-foot wide buffer and 5-foot wide bike lane. The south side of the intersection also continues and slightly widens the drainage swale to 6-feet, as well as continuing the 8-foot multi-use path.

See Figure 5.9 below for a graphical depiction of the East of Roundabout typical cross section.

**Figure 5.9: Typical Cross Section – East of Poipu Road/Ala Kinoiki Street (Traveling East)**



Notes: 1. Sidewalk width as shown does not include the width of the curb, if provided. 2. Bike lanes include gutter width, if provided.



As illustrated in the above cross section, Poipu Road continues to provide multimodal facilities and access until the Project terminus approximately 270-feet east of the Poipu Road/Keleka Road intersection. Within this area, the pedestrian and bicycle network continue with the dedicated bike lanes and buffers as well as a shared pedestrian/bicycle path offset from the roadway.

In general, the Project aims for each multimodal improvement to upgrade the existing facility and accessibility to provide a multimodal network that encourages pedestrian and bicycle modes of transportation by providing each mode a dedicated space within the roadway and an enhanced sense of comfort.

## 5.3 Marked Crosswalks

### 5.3.1 Existing Marked Crosswalks Improvements

As pedestrian access and comfort are important aspects relating to its use as a mode of transportation, a discussion of the locations and potential improvements to each of the existing crosswalks is vital. The following is an analysis of the adjacent land uses and the proposed recommended treatment for each of the nine (9) existing crosswalks as well as additional proposed crossing locations. See Table 5.1 for a summary of the existing marked crosswalk improvements.

Recommendations generally fall into the following categories:

- **KEEP** – Leave location and striping as is; no improvements made as part of the proposed improvements for the project.
- **REMOVE** – Remove an existing crosswalk.
- **CONSOLIDATE** – Combine two or more crosswalks to reduce the number of conflict points between vehicles and pedestrians along a given stretch of roadway.
- **ADD TRAFFIC CALMING** – Add a measure of signing, striping or optical suggestion to encourage vehicles to slow down in the adjacent area or stop prior to the crosswalk.
- **ADD REFUGE** – Shorten the crossing distance by providing a refuge area where pedestrians can stop and assess traffic before proceeding.
- **OTHER** – Use other treatment that does not fit in the above categories.

Existing crosswalks are described in Section 2.2; this section will describe the recommendations for the crosswalks already present at intersections within the Project area:

- [1] Poipu Road/Koloa Road – Along the east approach

#### **ADD TRAFFIC CALMING**

This existing crosswalk serves to provide access between shopping areas on the north and south sides of Koloa Road. Currently the crosswalk terminates at the driveway for the Chevron Station on the south side and exits in an at-grade dirt path on the north side. While no traffic accidents involving pedestrians were reported between 2008 and 2012, the Koloa Road/Poipu Road Intersection is heavily traveled and this crosswalk should be highlighted to vehicles. Thus, it is recommended that this crosswalk be kept and that traffic calming enhancements be considered, such as increased signage along Koloa Road to highlight the crosswalk to approaching vehicles.



- [2] Poipu Road/Waikomo Road – Along the north approach

**ADD TRAFFIC CALMING OR CONSOLIDATE**

The existing crosswalk along the north approach to the Poipu Road/Waikomo Road intersection serves to provide access between the residential residences on the east side of Poipu Road and the Koloa Church and Koloa Elementary School on the west side of the road. With the upcoming Safe Routes to School project at Koloa Elementary School, the crosswalk will be received by an at grade sidewalk on the east side of the crosswalk and a curb ramp on the west side of the crosswalk.

Due to the proximity of the crosswalk to the Koloa Elementary School, it is recommended that this crosswalk either be kept and enhanced with traffic calming measures, or be consolidated with the mid-block crosswalk fronting Koloa Elementary School (crosswalk [9] below), due to its close proximity approximately 250-feet away.

- [3] Poipu Road/Waikomo Road – Along the east approach

**KEEP**

The existing crosswalk along the east approach to the Poipu Road/Waikomo Road intersection serves to provide a continuous pedestrian path along the east side of Poipu Road. With the upcoming Safe Routes to School project, it appears that the crosswalk will be received by at-grade sidewalks on both the north and south sides of the crosswalk. As Waikomo Road approaches Poipu Road and forks into two receiving lanes, a natural pedestrian refuge is formed by the landscaped island, allowing pedestrians to make a two-stage crossing to cross the wide section.

- [4] Poipu Road/Ala Kalanikaumaka Street/Lawai Road – Along the south approach

**KEEP**

The existing crosswalk along the south approach to the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout serves to provide access between the Kukui'ula Village Shopping Center and the resort area along the makai (south) side of Poipu Road. The crosswalk is currently received by two curb ramps on the east and west sides of the crosswalk and features a pedestrian refuge located in the landscaped median. It is recommended to keep the crosswalk.

- [5] Poipu Road/Kapili Road – Along the south approach

**ADD REFUGE ISLANDS**

The existing crosswalk along the south approach to the Poipu Road/Kapili Road intersection serves to provide a continuous pedestrian path along the south side of Poipu Road. Although there is currently no receiving sidewalk on the east side of the crosswalk and the sidewalk on the west side does not connect to the crosswalk, approximately 7(1) pedestrians were observed using the crosswalk during the AM(PM) peak hours of traffic. With the Project, the 8-foot wide multi-use path will connect up to both ends of this crosswalk location to provide a continuous shared path along this corridor. Thus, it is recommended that this crosswalk be kept and the existing pedestrian refuge islands be enhanced with restriping or providing curbed islands (preferred).



- [6] Poipu Road/Kiahuna Plantation Drive – Along the east approach

#### **OTHER**

The existing crosswalk along the east approach to the Poipu Road/Kiahuna Plantation Road intersection serves to provide access from the Kiahuna Plantation Resort on the south side of Poipu Road to the Poipu Shopping Village on the northeast corner of the intersection. The crosswalk is currently received by the roadway shoulder on the south side of the crosswalk which leads to a sidewalk from the Kiahuna Plantation Resort. On the north side of the crosswalk, a sidewalk heading north to the Poipu Shopping Village abuts the crosswalk. As part of the Project, a roundabout with pedestrian crossings will be provided on the north, south and east approaches at this intersection thus replacing the existing crosswalk. Proposed Project improvements will include appropriate signage and a pedestrian refuge in the median splitter island approaching the roundabout.

- [7] Poipu Road/Kiahuna Swim & Tennis Club Access Road – Along the east approach

#### **ADD TRAFFIC CALMING**

The existing crosswalk along the east approach to the Poipu Road/Kiahuna Swim & Tennis Club Access Road intersection serves to provide access from the Kiahuna Plantation Resort on the south side of Poipu Road to the Kiahuna Swim & Tennis Club on the north side of Poipu Road. The crosswalk is currently received by an asphalt ramp connecting to a concrete sidewalk from the Kiahuna Plantation Resort on the south side of Poipu Road and an at-grade concrete sidewalk on the north side of the road. Based on this crosswalk's proximity to destinations and its significant distance from nearby crosswalks crossing Poipu Road (900-2,200 feet away), it is recommended that this crosswalk be kept and that traffic calming enhancements be considered, such as increased signage and/or an RRFB. The Project will also provide a pedestrian refuge at the landscaped island in the median of Poipu Road at this location. Note that there is no existing lighting at the crosswalk ends and that tree overhang may cast shadows on the crosswalk, making pedestrians less visible to vehicles.

- [8] Poipu Road/Kipuka Street – Along the east approach

#### **KEEP**

The existing crosswalk along the east approach to the Poipu Road/Kipuka Street intersection serves to provide access from the residential subdivision on the north side of Poipu Road to the sidewalk that either continues east along Poipu Road or turns south to a beach access path that leads to Kuai Road. The crosswalk is received by a small concrete landing on the north side of Poipu Road and an at-grade concrete sidewalk on the south side of Poipu Road. As the existing crosswalk has recently installed an RRFB crossing at this location, it is recommended to keep the crosswalk as is. The Project will also provide a pedestrian refuge at the landscaped island in the median of Poipu Road at this location.

Additionally, marked crosswalks are provided at the following midblock locations:

- [9] Poipu Road – Approximately 600-feet south of the Poipu Road/Koloa Road Intersection

#### **ADD TRAFFIC CALMING**

This existing crosswalk serves to provide access from the existing sidewalk on the east side of the Poipu Road to the Historic Koloa Plantation Building on the west side of



Poipu Road. The crosswalk is received by a curb ramp on the east side of Poipu Road and a grass landscaped area adjacent to a sidewalk that leads to the Historic Koloa Plantation Building on the west side of Poipu Road. Based on the crosswalk's proximity to destinations and its significant distance away from nearby crosswalks crossing Poipu Road (approximately 600-800 feet away), it is recommended that this crosswalk be kept and that traffic calming enhancements be considered, such as increased signage and/or an RRFB.

- [10] Poipu Road – Approximately 180-feet south of the Poipu Road/Waikomo Road Intersection

#### **ADD TRAFFIC CALMING**

The existing crosswalk serves to provide access from residences on the east side of Poipu Road to Koloa Elementary School. The crosswalk is the last existing marked crossing across Poipu Road on the south side of the North-South portion of Poipu Road until the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout. With the upcoming Safe Routes to School project, the crosswalk will be received by a 2-inch high rolled curb on the east side of the crosswalk and a curb ramp on the west side of the crosswalk. Due to the crosswalk's close proximity to Koloa Elementary School, facilitating crossings for children and parents accessing the school, it is recommended that this crosswalk be kept and that traffic calming enhancements be considered, such as increased signage and an RRFB.

As mentioned above, consolidation with the Poipu Road/Waikomo Road crosswalk (crosswalk [2] above) may also be an option.

Table 5.1 - Summarized Existing Crosswalk Improvements

Crosswalk ID and location	Existing/ Proposed	Distance between next crosswalk	Recommendation	Description of Recommendation
[1] Poipu Road / Koloa Road- Along the east approach	Existing	350 ft from nearest Koloa Road crossing	Add traffic calming	Consider traffic calming enhancements, such as increased signage along Koloa Road.
[2] Poipu Road/ Waikomo Road – Along the north approach	Existing	800 ft from [9], 250 ft from [10]	Add traffic calming or Consolidate	Either consider traffic calming enhancements, or consolidate with the mid-block crosswalk fronting Koloa Elementary School [9].
[3] Poipu Road/ Waikomo Road –Along the east approach	Existing	n/a	Keep	Keep crosswalk.
[4] Poipu Road/ Ala Kalanikaumaka Street/ Lawai Road - Along the south approach	Existing	n/a	Keep	Keep crosswalk.
[5] Poipu Road/ Kapili Road - Along the south approach	Existing	n/a	Add refuge islands	Enhance existing pedestrian refuge islands by restriping or providing curbed islands.
[6] Poipu Road/Kiahuna Plantation Drive – Along the east approach	Existing	1,400 ft from [5], 900 ft from [7]	Other	Project will convert this intersection into a roundabout; this crosswalk will be maintained with a pedestrian refuge in the median splitter island.
[7] Poipu Road/ Kiahuna Swim & Tennis Club Access Road – Along the east approach	Existing	900 ft from [6], 2,220 ft from [8]	Add traffic calming	Consider traffic calming enhancements, such as increased signage and/or RRFB; however, note that there is no existing lighting at the crosswalk ends and that tree overhang shadows may reduce visibility of pedestrians.
[8] Poipu Road/ Kipuka Street – Along the east approach	Existing	2,200 ft from [6]	Keep	Keep crosswalk.
[9] Poipu Road – Approximately 600-feet south of the Poipu Road/ Koloa Road Intersection	Existing	600 ft from [11], 800 ft from [2]	Add traffic calming	Consider traffic calming enhancements, such as increased signage and/or RRFB.
[10] Poipu Road – Approximately 180-feet south of the Poipu Road/ Waikomo Road Intersection	Existing	270 ft from [2]	Add traffic calming	Install traffic calming enhances, such as increased signage and RRFB. Consider consolidation with Poipu Road/Waikomo Road [2].



### 5.3.2 Proposed Marked Crosswalks

The following are marked crosswalk locations that are proposed as part of the Project. See Table 5.2 for a summary.

- [11] Poipu Road/Koloa Road – Along the south approach

#### **ADD REFUGE**

The proposed crosswalk would provide access from the existing sidewalk on the east side of Poipu Road to the proposed sidewalk on the west side of Poipu Road. The crosswalk will be received by curb ramps on both sides of the roadway provided as part of the Project. The Project proposes to include appropriate signage as well as a pedestrian refuge at landscape or striped islands that will delineate right and through lanes on both the southwest and southeast corners of the intersection.

- [12] Poipu Road/Paanau Road – Along the west approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage.

- [13] Poipu Road/Blake Lane – Along the north approach

#### **ADD TRAFFIC CALMING**

As mentioned above, the North-South section of Poipu Road between Blake Lane and the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout provides a sidewalk on the east side of the roadway only. Therefore, this crosswalk will facilitate pedestrian movements across the street to and from this sidewalk. This crosswalk will be received by curb ramps provided by the Project on both sides of the roadway. The project proposes to include enhanced signage and consider providing a RRFB crossing at this midblock crossing.

- [14] Poipu Road/Ala Kalanikaumaka Street/Lawai Road – Along the north approach

#### **ADD REFUGE**

To further realize the goal of the Project by facilitating pedestrian connectivity through the corridor, the proposed crosswalk will provide pedestrian options for navigating the roundabout to get to their destination. The proposed crosswalk will be received by curb ramps provided by the Project on both sides of the roadway. The Project proposes to include appropriate signage as well as a pedestrian refuge in the median splitter island.

- [15] Poipu Road/Ala Kalanikaumaka Street/Lawai Road – Along the east approach

#### **ADD REFUGE**

The proposed crosswalk would provide access from the proposed sidewalk on the north side of Poipu Road to the existing sidewalk on the south side of Poipu Road and serve to further realize the goal of the Project by facilitating pedestrian connectivity through the Project corridor. The proposed crosswalk will be received by curb ramps provided by the Project on both sides of the roadway. The Project proposes to include appropriate signage as well as a pedestrian refuge in the median splitter island.



- [16] Poipu Road/Kukona A La'a Street – Along the north approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage.

- [17] Poipu Road/Kukona A La'a – Along the south approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage.

- [18] Poipu Road/Kapili Road – Along the west approach

#### **ADD REFUGE**

The proposed crosswalk would serve to provide a crossing location across Poipu Road between the crossing at Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout approximately 1,900 feet to the west and the crossing at the Poipu Road/Kiahuna Plantation Drive intersection 1,400 feet to the east. The crossing will also facilitate pedestrian movement between the north and south sides of Poipu Road to access specific destinations. The crosswalk would be received by at-grade curb ramps provided by the Project on both sides of the roadway. The Project proposes to include appropriate signage as well as pedestrian refuge located at the right-turn landscaped or striped island for the eastbound approach to the intersection.

- [19] Poipu Road/Kiahuna Plantation Drive – Along the north approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage. As part of the Project, this intersection will be converted into a roundabout with pedestrian crossings provided on the north, south, and east approaches of the intersection.

- [20] Poipu Road/Kiahuna Plantation Drive – Along the south approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage. As part of the Project, this intersection will be converted into a roundabout with pedestrian crossings provided on the north, south, and east approaches of the intersection.

- [21] Poipu Road/Hoowili Road – Along the south approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage.

- [22] Poipu Road/Hoowili Road – Along the west approach

#### **ADD REFUGE**

The proposed crosswalk would serve to provide a crossing location across Poipu Road between the crossing at the Poipu Road/Kiahuna Swim & Tennis Club Access Road intersection approximately 1,350 feet to the west and the crossing at the Poipu Road/Kipuka Street intersection 900 feet to the east. The crossing will also facilitate pedestrian movement between the north and south sides of Poipu Road to access



specific destinations. The crosswalk would be received by at-grade curb ramps provided by the Project on both sides of the roadway. The Project proposes to include appropriate signage as well as pedestrian refuge located in the median.

- [23] Poipu Road/Kipuka Street – Along the north approach

This proposed crosswalk would serve to provide a continuous pedestrian path along Poipu Road. With the installation of this crosswalk, the Project proposes to include all appropriate markings and signage.

- [24] Poipu Road/Pe'e Road/Ala Kinoiki Road – Along the south approach

#### **ADD REFUGE**

The proposed crosswalk would continue to provide a continuous pedestrian path along the south side of Poipu Road, connecting the new Project-proposed multi-use paths across Pe'e Road. As part of the Project, this intersection will be converted into a roundabout with this proposed pedestrian crossing. The Project proposes to include appropriate signage and a pedestrian refuge in the median splitter island.

Table 5.2 - Summarized Proposed Crosswalks

Crosswalk ID and location	Existing/ Proposed	Distance between next crosswalk	Recommendation	Description of Recommendation
[11] Poipu Road/Koloa Road – Along the south approach	Proposed	575 ft from [9]	Add Refuge	Provide appropriate signage along the roadway and pedestrian refuge at landscape or striped islands at the southwest and southeast corners.
[12] Poipu Road/Paanau Road - Along the west approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[13] Poipu Road/Blake Lane – Midblock crossing	Proposed	775 ft from [10]	Add Traffic Calming	Provide enhanced signage and consider providing a RRFB crossing.
[14] Poipu Road/Ala Kalanikaumaka Street/Lawai Road – Along the north approach	Proposed	5,150 ft from [13]	Add Refuge	Provide appropriate signage along the roadway and add a pedestrian refuge in the median splitter island.
[15] Poipu Road/Ala Kalanikaumaka Street/Lawai Road – Along the east approach	Proposed	1,900 ft from [16]	Add Refuge	Provide appropriate signage along the roadway and add a pedestrian refuge in the median splitter island.
[16] Poipu Road/Kukona A La'a Street – Along the north approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[17] Poipu Road/Kukona A La'a Street – Along the south approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[18] Poipu Road/Kapili Road – Along the west approach	Proposed	1,900 ft from [15], 1,400 ft from [6]	Add Refuge	Provide appropriate signage along the roadway and add a pedestrian refuge at the right-turn landscaped or striped island for the eastbound approach.

Table 5.2 - Summarized Proposed Crosswalks Continuation

Crosswalk ID and location	Existing/ Proposed	Distance between next crosswalk	Recommendation	Description of Recommendation
[19] Poipu Road/ Kiahuna Plantation Drive – Along the north approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[20] Poipu Road/ Kiahuna Plantation Drive – Along the south approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[21] Poipu Road/ Hoowili Road – Along the south approach	Proposed	n/a		Provide all appropriate markings and signage along the roadway.
[22] Poipu Road/ Hoowili Road – Along the west approach	Proposed	1,350 ft from [7], 900 ft from [8]	Add Refuge	Provide appropriate signage as well as pedestrian refuge in the median.
[23] Poipu Road/ Kipuka Street - Along the north approach	Proposed	n/a		Provide appropriate signage along the roadway.
[24] Poipu Road/ Pee Road/Ala Kinoiki Road – Along the south approach	Proposed	n/a	Add Refuge	Project will convert intersection into a roundabout with a pedestrian crossing at this approach. Provide appropriate signage along the roadway and add a pedestrian refuge at the median splitter island.



## 5.4 Bicycle Facilities

As discussed in Section 5.1, the following have been identified as bicycle improvements proposed as part of this project.

- In the North-South segment of Poipu Road, 5-foot wide dedicated bike lanes adjacent to the travel lane on both northbound and southbound directions are proposed from Koloa Road to Poipu Road/Ala Kalanikaumaka Street Intersection. The 5-foot wide bike lane would be composed of either 5-feet of asphalt pavement or 4-feet of asphalt pavement with a 1-foot gutter.
- In the East-West segment of Poipu Road, 5-foot wide dedicated bike lanes adjacent to a 2-foot buffer prior to the travel lanes for both eastbound and westbound directions are proposed from just east of the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout to the Project terminus approximately 275-feet past the Poipu Road/Keleka Road Intersection.

In the vicinity of the Project, the following bicycle facilities are noted in the Bike Plan Hawaii:

- Hapa Road – Weliweli Road to Poipu Road as a bike path with a total length of 1.1 miles.
- Koloa-Poipu Bypass – Maluhia Road to Poipu Road as a signed shared road with a total length of 2.0 miles.
- Poipu Road – Koloa Road to Poipu Road as a signed shared road with a total length of 2.7 miles.
- Lawai Road – Kukuiula Road to Poipu Road as a signed shared road with a total length of 1.4 miles.

## 5.5 Multimodal Assessment and Recommendations

### 5.5.1 Existing Multimodal Assessment

The existing Poipu Road provides some multimodal facilities through the corridor but appears to lack continuity and a consistent approach to multimodal transportation. Existing sidewalks are provided in areas that seem to serve the immediate adjacent land uses, however, provide limited connectivity to other existing facilities within the corridor, creating a lack of continuity. Within the Poipu Road North-South corridor, areas that did not continue sidewalk facilities were obstructed with parked cars, trash cans, utility poles, mud, and overgrown vegetation. Likewise, the existing bike facilities also seem to be provided in areas that serve the immediate adjacent land uses and generally are severely lacking throughout the corridor. Bicyclists tend to share the existing roadway with vehicles in areas where no definitive bike facilities exist. Within the East-West Poipu Road corridor which is nearby the Poipu resort area, a few bicyclists seem to ride along the existing sidewalk for recreation.

With seven bus stops along the Poipu Road corridor in the vicinity of the Project, the existing bus facilities appear to serve the demand.



### **5.5.2 Project Proposed Multimodal Facilities**

The Project proposes to create clear and continuous pedestrian and bicycle facilities throughout the Poipu Road corridor. Sidewalks on both sides of Poipu Road are provided in the Koloa area from Koloa Road to Blake Lane and then from just north of the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout to the Poipu Road/Kipuka Street Intersection. A sidewalk or multi-use path on at least one side of Poipu Road will appear in all other areas to provide a continuous pedestrian path throughout the whole Poipu Road corridor. New sidewalks are proposed to be 5-feet wide and new multi-use paths are proposed to be 8-feet wide. Likewise, dedicated bicycle lanes in both directions of travel are provided along the entire Project corridor, along Poipu Road from Koloa Road through the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout to the Project limit, approximately 275-feet past the Poipu Road/Keleka Road intersection. Dedicated bicycle lanes will be 5-feet wide consisting of either 5-feet of asphalt pavement or 4-feet of asphalt pavement with a 1-foot gutter. A 2-foot buffer between the travel lane and the dedicated bicycle lane will be provided on the East-West portion of Poipu Road from the Poipu Road/Ala Kalanikaumaka Street/Lawai Road roundabout to eastern Project limit. Together, the proposed sidewalks and bicycle lanes combined with the existing pedestrian and bicycle facilities would create a robust, continuous multimodal network system throughout the Poipu Road corridor.

### **5.5.3 Pedestrian Crossings**

Existing pedestrian crossings will remain in place with improvements proposed with the Project. To enhance pedestrian safety, the existing pedestrian crossings that will remain is proposed to be enhanced with traffic calming measures such as signage consistent with the latest design guidelines at a minimum, and pedestrian refuges or RRFB crossings as appropriate. In addition to the existing pedestrian crossings, the Project proposes to include twelve (12) new crossings that will also include signage consistent with the latest design guidelines at all new crossings, and pedestrian refuges or RRFB crossings as appropriate. Traffic calming initiatives such as landscape medians and wider striping are also being considered as part of the Project.

Existing marked crosswalks that cross Poipu Road appear to be relevantly spaced along the corridor according to destinations; however, the distance between these marked crosswalks are significant, often exceeding 1,000 feet. Proposed Poipu Road pedestrian crossings included in the Project look to enhance pedestrian access and connectivity by complementing the existing Poipu Road crosswalk locations. Recommended pedestrian comfort improvements for each crosswalk can be found in the pedestrian facilities section.

While not as closely located as the crossings in the Koloa Town area, the proposed and existing crossings in the East-West section of Poipu Road together provide adequate crossing locations to connect not only the multi-use paths on both sides of Poipu Road, but also direct access to various facilities along both sides of the roadway. These crossings would help create a comprehensive and connected pedestrian network throughout the resort area that Poipu Road services.



## 6. CONCLUSION

The Project is planned to be incorporated in South Kauai, in the Poipu area, and proposes to incorporate a multimodal approach to Poipu Road in order to accommodate all users while improving connectivity through the corridor. The Project proposes to enhance pedestrian and bicycle routes and connectivity by adding sidewalks, bicycle lanes, and medians where appropriate and constructing single-lane roundabouts at the Poipu Road/Kiahuna Plantation Drive and Poipu Road/Ala Kinoiki intersections.

### 6.1 Existing Conditions

The existing Poipu Road provides some multimodal facilities through the corridor but appears to lack continuity and a consistent approach to multimodal transportation. Existing sidewalks and bicycle facilities are provided in areas that seem to serve the immediate adjacent land uses, however, provide limited connectivity to other existing facilities within the corridor, creating a lack of continuity.

All individual vehicular turning movements operate at LOS D or better with the exception of the northbound left-turn movement at the Poipu Road/Koloa Road intersection which operates at LOS E during the AM and PM peak hours of traffic due to significant volumes along Koloa Road.

### 6.2 Base Year 2037 Conditions

The Safe Routes to School project for Koloa Elementary School will make some pedestrian and bicycle improvements along the frontage of the school and is expected to be complete prior to the Poipu Road Multimodal Improvements Project. Thus, all proposed improvements will be inclusive of the Safe Routes to School project.

Under Base Year 2037 conditions, all individual turning movements are expected to operate at LOS E or better except at three intersections. The northbound left-turn movement at the Poipu Road and Koloa Road intersection is expected to operate at LOS F and overcapacity conditions during both AM and PM peak hours of traffic. Because this movement operated adequately during existing conditions and traffic patterns and assumptions are likely to change within the 20 year horizon, it is recommended that this intersection be monitored over time to determine the appropriate course of action. The westbound approach at the Ala Kalanikaumaka Street/Lawai Road/Poipu Road roundabout is also expected to operate at LOS F and overcapacity conditions during the PM peak hour. Lastly, the shared northbound and southbound movements at the Poipu Road/Kiahuna Plantation Drive intersection are expected to operate at LOS F during the PM peak.

### 6.3 Future Year 2037 Conditions

Upon completion of the Project, all study intersections are forecast to operate with LOS similar to Base Year 2037 conditions except at the two proposed roundabouts where the LOS is expected to improve to LOS A for all movements.

In addition to the traffic and proposed roadway improvements, bicycle and pedestrian improvements are also proposed in the project.



## **6.4 Project Proposed Multimodal Facilities**

The Project proposes to create clear and continuous pedestrian and bicycle facilities throughout the Poipu Road corridor. Sidewalks or multi-use paths will be provided on at least one side of the roadway but often both where ROW allows. Dedicated bike lanes in both directions of the roadway will be provided throughout the entire Project corridor. With these improvements, Poipu Road will continue to act as a main collector roadway but will now also provide viable routes for alternate modes of transportation and recreation.

Along with the primary Project goal to provide facilities that encourage and enhance multimodal travel from a connectivity and network aspect, the Project has also proposed improvements to increase pedestrian and bicyclist comfort within those proposed facilities. Such comfort improvements include allocating each mode of transportation its own space by providing dedicated bike lanes, dedicated sidewalks, and dedicated vehicle travel ways, providing buffers and separation where possible, and considering various traffic calming measures to increase awareness between vehicles and users of alternate modes of transportation.



## 7. REFERENCES

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