

3.6 TRAFFIC AND TRANSPORTATION

3.6.1 Introduction/Region of Influence

This section describes roads and traffic, defines traffic terms, and describes the regional transportation agencies and applicable standards.

Traffic and circulation refers to the movement of vehicles and pedestrians along and adjacent to roads. Freeways and major roads are under the jurisdiction of the State through the Hawai'i DOT; other streets and roads are under the jurisdiction of the counties. Roadways consist of multilane road networks with asphalt surfaces to unpaved plantation roads. Traffic conditions in Hawai'i vary depending on location but are typically over capacity during peak hours, resulting in significant traffic delays. These traffic delays occur in urban areas with multilane roads as well as less developed areas with only two-lane roads.

Mākua Military Reservation

The MMR ROI for this traffic study is Farrington Highway, specifically those portions adjacent to MMR and within the Wai'anae town area. While the Army transports troops and equipment using Interstate Highways H-1 and H-2 and local roadways, this impact analysis excludes those freeways because vehicles traveling to and from MMR account for only a small proportion of the volumes on Interstate Highways H-1 and H-2, and the multiple lanes on the freeways allow faster vehicles to pass the slower military convoys. Additionally, there were some objections in the public scoping comments about transporting ammunitions through Wai'anae, especially when school children are traveling to and from school. The public asked for information about the number and types of vehicles in military convoys, as well as travel times and travel routes.

Pōhakuloa Training Area

The PTA ROI for traffic and transportation resources is the travel corridor between Kawaihae Harbor and PTA, which generally follows Saddle Road, Māmalahoa Highway, and Queen Ka'ahumanu Highway. This corridor is approximately 26 miles (42 kilometers) long.

The major urban areas on the Island of Hawai'i are Hilo, which is on the eastern side of the Island, and Kailua-Kona, which is on the western side. Air service to these centers is provided by Hilo International Airport and Kona International Airport, respectively. Generally, state highways around the island link the major population centers. The only roadway across the central part of the Island is Saddle Road. With minor exceptions within the urban areas, the major roads are two-lane roadways. The major roadways

on the Island are Queen Ka‘ahumanu Highway, Māmalahoa Highway, Hawai‘i Belt Road, Volcano Highway, Kawaihae Road, and Waikoloa Road.

3.6.2 Traffic Terms

Traffic and circulation refers to the movement of vehicles on local and regional street networks. The roadway network is a hierarchy of roads and streets classified by function. For example, arterial streets are typically four or more lanes that provide the connection from limited access highways to local collector streets, which collect traffic from local neighborhood-serving streets.

Level of Service

Level of service (LOS) denotes traffic operating conditions that may occur on a given lane, roadway, or intersection when it is subjected to specific traffic volumes, geometric conditions, and traffic controls. LOS is a qualitative measure of the effect of a number of factors, including speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience.

There are six LOSs (A through F) that relate to the driving conditions from best to worst. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion with stop-and-go conditions. LOS E is typically considered the highest acceptable LOS for peak-hour conditions in urban areas.

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

Unsignalized Intersections

The operating conditions at unsignalized intersections (which are controlled by stop or yield signs) can be classified by LOS A to F. The methodology for determining LOS for these intersections is based on the acceptance of gaps in traffic on the major street by motorists crossing or turning through that traffic stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps through which to execute a desired maneuver. Therefore, the criteria

for LOS at an intersection without signals are based on delay of each turning movement. Table 3.6-1 summarizes the definitions for LOS and the corresponding delay for such intersections.

**Table 3.6-1
LOS Definitions for Unsignalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
A	<10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	>50.1

Source: Transportation Research Board 2000

Note: When demand volume exceeds the capacity of the lane, extreme delays are encountered with queuing, which may cause severe congestion, affecting other traffic movements in the intersection. This condition usually indicates improvements may be needed at the intersection.

Signalized Intersections

The operating conditions at signalized intersections (which are controlled by traffic signal controls) can be classified by LOS A to F. The methodology for determining LOS for signalized intersections assesses control delay, which is an indicator of driver discomfort frustration, fuel consumption, and increased travel time. A traffic control signal allocates time to conflicting movements at an intersection, and the analytical methodology estimates the delay caused by the traffic signal operations. Table 3.6-2 summarizes the LOS and the corresponding delay for signalized intersections.

**Table 3.6-2
LOS Definitions for Signalized Intersections**

Level of Service	Control Delay(Seconds per Vehicle)
A	<10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	See note

Source: Transportation Research Board 2000

Note: When demand volume exceeds the capacity of the lane, extreme delays are encountered with queuing, which may cause severe congestion, affecting other traffic movements in the intersection. This condition usually indicates improvements may be needed at the intersection.

3.6.3 Roads

Mākua Military Reservation

Farrington Highway

Farrington Highway is a state-owned and state-maintained roadway that has two lanes between Ka'ena Point State Park and Mākaha and four travel lanes between Mākaha and Kapolei, with left turn lanes at many of the intersections. In general, the travel lanes are 11 and 12 feet (3.5 to 4 meters) wide, and the shoulder width varies between 0 and 10 feet (0 and 3 meters).

Near MMR, Farrington Highway is a rural two-lane roadway. It provides access to farms and recreational facilities in the area, as well as to the Air Force satellite tracking station north of MMR. The highway ends about 2 miles (3 kilometers) north of MMR at Ka'ena Point State Park.

Mākua Valley Road

Mākua Valley Road is an unimproved roadway that meanders through the valley for approximately 1.3 miles (2 kilometers).

Mākaha Valley Road

Mākaha Valley Road provides access to the town of Mākaha, approximately 3 miles (5 kilometers) south of MMR, and to the Mākaha Valley Country Club, which is approximately one mile east of Farrington Highway. The intersection of Mākaha Valley Road and Farrington Highway is approximately five miles south of the installation.

Pōhakuloa Training Area

Saddle Road

Saddle Road (SR 200) is a two-lane, two-way roadway that connects PTA with Māmalahoa Highway. The posted speed limit is 45 miles (72 kilometers) per hour; however, a more practical speed limit is 30 to 35 miles (48 to 56 kilometers) per hour because of the deteriorated pavement conditions, constrained alignment, and several one-lane bridges. Advisory speed limits are as low as 25 miles (40 kilometers) per hour. The average daily traffic (ADT) is approximately 400 vehicles per day.

Māmalahoa Highway

Māmalahoa Highway (SR 190) is a two-lane undivided state highway connecting Kailua-Kona with Waimea. The posted speed limit is 55 miles (89 kilometers) per hour between Waikoloa Road and approximately 1 mile (1.6 kilometers) south of Waimea; the remaining section is 35 miles (56 kilometers) per hour. The ADT between Waikoloa Road and south of

Waimea is 5,200 vehicles per day; within Waimea, the ADT is approximately 7,000 vehicles per day.

Waikoloa Road

Waikoloa Road runs between Queen Ka‘ahumanu Highway on the west and Māmalahoa Highway on the east. It is a two-lane undivided roadway, except for a short section midway that is a four-lane divided roadway. This section is posted for a 35–mile- (56–kilometer-) per-hour speed limit; west of this section, the speed limit is 45 miles (72 kilometers) per hour. The speed limit to the east is 55 miles (89 kilometers) per hour. No traffic volume data were available for Waikoloa Road.

Queen Ka‘ahumanu Highway

Queen Ka‘ahumanu Highway (SR 19) is a two-lane state roadway connecting Kailua-Kona with Kawaihae. The posted speed limit is 55 miles (89 kilometers) per hour. The ADT between Waikoloa Road and Kawaihae Road is 10,400 vehicles per day.

Kawaihae Road

Kawaihae Road runs east-west between Waimea and Kawaihae. East of Waimea, the speed limit varies between 35 and 55 miles (56 and 89 kilometers) per hour with speed limits reduced to 25 miles (40 kilometers) per hour near schools and at the intersection of Kawaihae Road at SR 250, which is a congested area. The ADT varies from approximately 17,000 vehicles per day in Waimea to 8,000 vehicles per day just east of Queen Ka‘ahumanu Highway.

3.6.4 Transportation Agencies

Three transportation agencies have authority in the MMR and PTA ROI: the Hawai‘i DOT, City and County of Honolulu Department of Transportation Services, and County of Hawai‘i Department of Public Works. None of these agencies have specific guidelines or criteria for traffic impact studies; rather, they defer to national standards. Guidelines established by the Institute of Transportation Engineers (ITE) have been used to evaluate traffic conditions.

Adopted transportation goals and policies that guide O‘ahu’s and Hawai‘i’s transportation development are contained in the *Transportation for O‘ahu Plan 2025* (TOP 2025) and *Hawai‘i Long Range Land Transportation Plan* (LRLTP).

3.6.5 Existing Traffic Conditions

Following in this and subsequent sections is a comprehensive description of the existing traffic conditions in the MMR ROI, along Farrington

Highway. Also detailed are the transportation requirements for Army units that would train at MMR.

A greater discussion of the traffic conditions in the PTA ROI is presented in the traffic and transportation section (4.6). Studies and analysis were not as rigorous for the PTA ROI.

In this section and subsequent sections is a comprehensive description of the existing traffic conditions in the MMR ROI, along Farrington Highway. Also detailed are the transportation requirements for Army units that would train at MMR. Studies and analysis were rigorous for the MMR ROI. A greater discussion of the traffic conditions in the PTA ROI is presented in the traffic and transportation section in Chapter 4.

Field observations showed that the following types of vehicles operate at MMR, accessing it from Farrington Highway:

- HMMWVs;
- 5-ton (4.5 metric ton) light medium tactical vehicle (LMTV) (cargo truck);
- 10-ton (9 metric ton) palletized loading system (PLS), also known as family of medium tactical vehicles (FMTV);
- 20-foot (6-meter) trailer;
- HMMWV-type vehicles (most standard, but two equipped for fire support with hoses, pump, and small water tank);
- Flatbed truck;
- Septic tank truck (maintenance contractor vehicle);
- Tractor;
- Bobcat (small loader);
- 8-passenger vans;
- 44-passenger buses;
- Forklift;
- Fire trucks and HMMWV equipped as small fire trucks; and
- Privately owned vehicles (POV).

Larger vehicles are transported by aircraft, and Blackhawk helicopters travel under their own power to the site. Some vehicles, such as the bobcat and the two HMMWVs equipped as small fire trucks, are assigned to the MMR and remain on-site at all times.

Convoy Policies and Instructions

The Division Transportation Office (DTO) recently issued revised instructions for convoy operations (25th ID[L] PAM 55-1). Based on those instructions, convoy clearances are required from DTO for the following:

- Any group of six or more vehicles temporarily organized to operate together, with or without an escort, proceeding together under a single commander;
- Ten or more vehicles an hour dispatched to the same destination over the same route; or
- Any vehicle, with or without escort, that requires a special hauling permit. Convoys and vehicles requiring special hauling permits are prohibited on local highways from 6:00 AM to 8:30 AM and from 3:00 PM to 6:00 PM, Monday through Friday.

Convoys are organized into serials, which are further divided into march units. A convoy is limited to four serials and a serial is limited to four march units. A march unit is the smallest element in a convoy and is limited to 25 vehicles. Recommended spacing between march units is 15 minutes and between serials is 30 minutes (25th ID[L] PAM 55-1). Buses also may be used to transport military personnel; Hawai'i DOT has confirmed that the buses are considered civilian vehicles and do not have to adhere to the banned travel times for convoys.

Hawai'i DOT policy regarding convoys states that vehicles traveling under permit authority requiring escort vehicles (i.e., convoys containing oversize or overweight vehicles) shall not be allowed to travel in convoys on two-lane highways, and a separate escort shall be provided for each vehicle or vehicles and load moved under escort (Section 19-104-26[a], Hawai'i Administrative Rules). Vehicles are considered oversize if their dimensions are greater than the following: 9 feet (3 meters) wide; 13 feet 6 inches (4 meters) tall; 40 feet (12 meters) (single vehicle), 58 feet (18 meters) (truck and semi trailer), or 65 feet (20 meters) (truck and full trailer) long (Section 19-104-14, Hawai'i Administrative Rules). Vehicles are considered overweight if they exceed the limit calculated based on the distance between their axles (Section 19-104-21[a], Hawai'i Administrative Rules). Such vehicles shall also be spaced about 15 minutes apart along the route (Section 19-104-26[a], Hawai'i Administrative Rules). The Hawai'i DOT policy regarding convoys on multilane highways is that the district engineer may permit oversize or overweight vehicles to travel by pairs under escort. The foregoing spacing requirement of 15 minutes shall also apply between pairs of vehicles (Section 19-104-26[b], Hawai'i Administrative Rules).

Existing Conditions—Types and Number of Vehicles

The actual number and types of vehicles vary for each CALFEX exercise as the battalion commander has the discretion to use vehicles as appropriate for the planned activities. The following listing of number and types of vehicles represents the baseline conditions for the various activities that usually occur during a CALFEX:

- 17 HMMWVs;
- 7 HMMWVs with trailers;
- 2 5-ton LMTVs;
- 1 10-ton PLS;
- 6 buses or 12 LMTVs to transport infantry; and
- 2 fire trucks.

In addition, senior battalion officers can visit and observe the CALFEX at any time and may travel in military automobiles or POVs.

Existing Conditions—Mākuā Military Reservation Transport Schedule and Travel Route

The following describes a typical schedule of transport activities that occur during a five-day CALFEX :

- Day 1 (Monday). Tactical Operations Center staff begin setting up at MMR in the afternoon.
- Day 2 (Tuesday). The rest of the participants are transported to MMR in military vehicles or buses in the morning. Food and water are scheduled for delivery twice a day, once in the morning and afternoon. The afternoon delivery includes a hot evening meal and the next day's breakfast.
- Days 3 and 4 (Wednesday and Thursday). Two Lualualei fire trucks and one SBMR HMMWV arrive in the morning and remain on-site during training. They return to their respective bases in the afternoon. Cleanup usually begins on Thursday afternoon.
- Day 5 (Friday). Personnel with equipment depart on Friday after cleanup is complete.

The approximate travel times and number of vehicles in the convoys are identified in Section 4.6, Traffic and Transportation. The convoys primarily travel between SBMR and MMR via Interstate Highway H-2, Interstate Highway H-1, and Farrington Highway.

Intersection Turning Movement Traffic Counts

Manual traffic counts were conducted at the two MMR driveways off Farrington Highway (shown on Figure 2-2) and at the intersection of Farrington Highway and Mākaha Valley Road on April 22 and 23, 2003. These were the first two travel days of a CALFEX. The MMR south driveway serves as the primary access to the MMR administrative office, maintenance buildings, and paved parking lots. The MMR north driveway is located at the bivouac area. Mākaha Valley Road at Farrington Highway is the location of the first signalized intersection when traveling southbound from MMR; Farrington Highway also transitions from two to four lanes in the vicinity of this intersection. Figure 3.6-1 shows the traffic volumes at these intersections for an early morning peak hour (6:00 AM to 7:00 AM) and a mid-morning peak hour (10:00 AM to 11:00 AM).

At Mākaha Valley Road, there is one northbound through lane and a separate right turn lane on Farrington Highway. The southbound approach widens to allow two through lanes and a separate left turn lane at this intersection. For the Mākaha Valley Road approach, there are double left turn lanes; the north lane is shared with the right turn movement.

Unsignalized Intersection Analysis Results

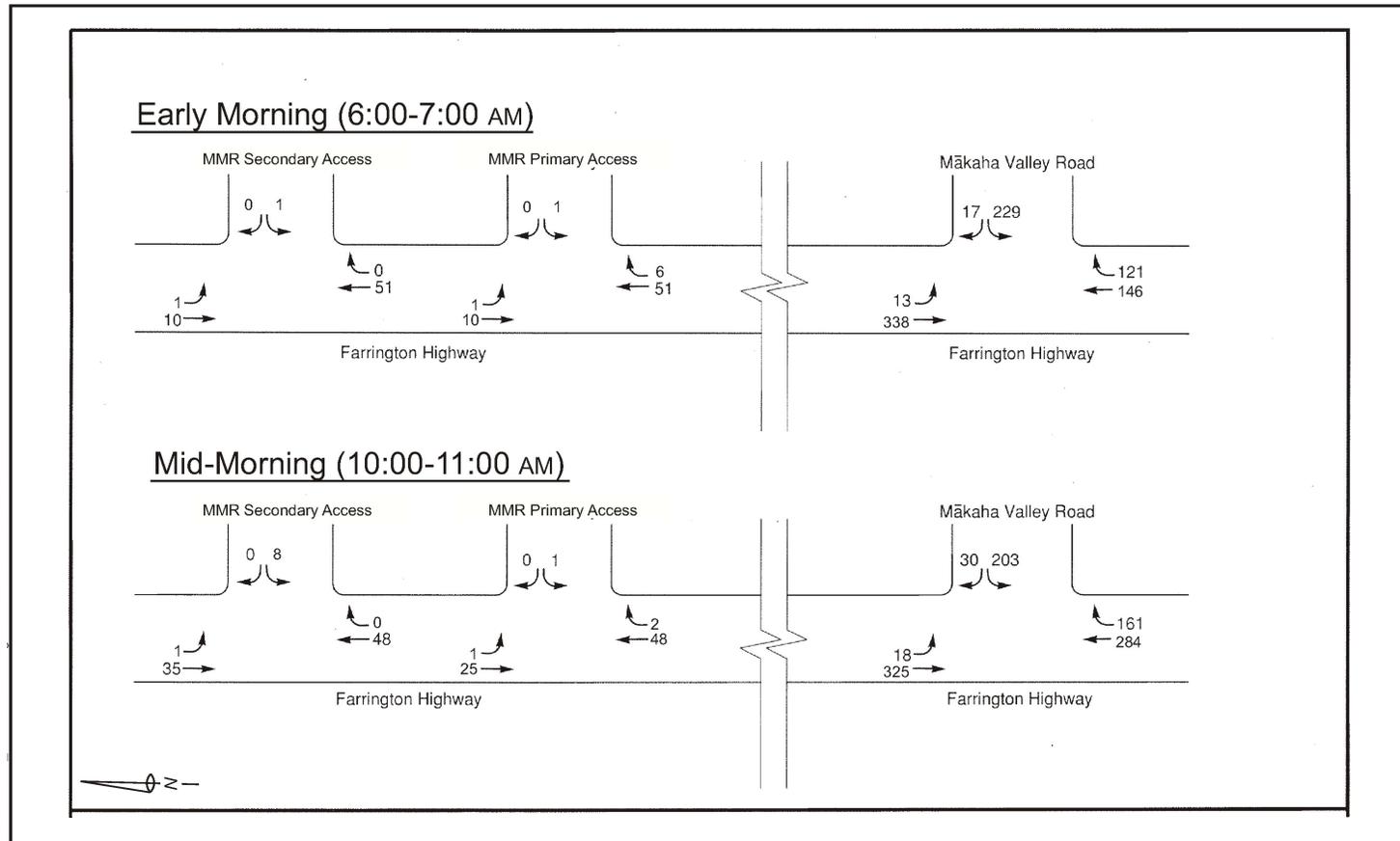
The MMR primary and secondary driveway connections to Farrington Highway are analyzed according to the 2000 Highway Capacity Manual (HCM, Transportation Safety Board 2000) unsignalized intersection methodology. The analysis results are given in Table 3.6-3 for the Primary MMR South Access Road and in Table 3.6-4 for the Secondary MMR North Access Road.

**Table 3.6-3
Farrington Highway at Primary MMR South Access Road
Unsignalized Intersection Analysis Results**

	Early Morning		Mid-Morning	
	Delay (seconds)	LOS	Delay (seconds)	LOS
Southbound Left Turn	7.3	A	7.3	A
Primary MMR Access Road	8.8	A	8.9	A

**Table 3.6-4
Farrington Highway at Secondary MMR North Access Road
Unsignalized Intersection Analysis Results**

	Early Morning		Mid-Morning	
	Delay (seconds)	LOS	Delay (seconds)	LOS
Southbound Left Turn	7.3	A	7.3	A
Secondary MMR Access Road	8.8	A	8.9	A



Traffic counts were conducted at two intersections near MMR.

Existing Traffic Volumes

Mākuā Military Reservation
O'ahu, Hawai'i

Figure 3.6-1 Existing Traffic Volumes, MMR

With the low volumes on Farrington Highway and at the two MMR driveways, the motorists turning into or out of these driveways experience LOS A conditions. While no motorists were observed making the southbound left turn from Farrington Highway into either the primary MMR South Access Road or the secondary MMR North Access Road, the delays shown in Tables 3.6-3 and 3.6-4 for this movement represent the average delay if a motorist were to make such a move. Similarly, for the delay at Farrington Highway at primary MMR South Access Road, where the existing count was zero, Table 3.6-3 represents a delay if a motorist were to make a left or right turn onto Farrington Highway.

Signalized Intersection Analysis Results

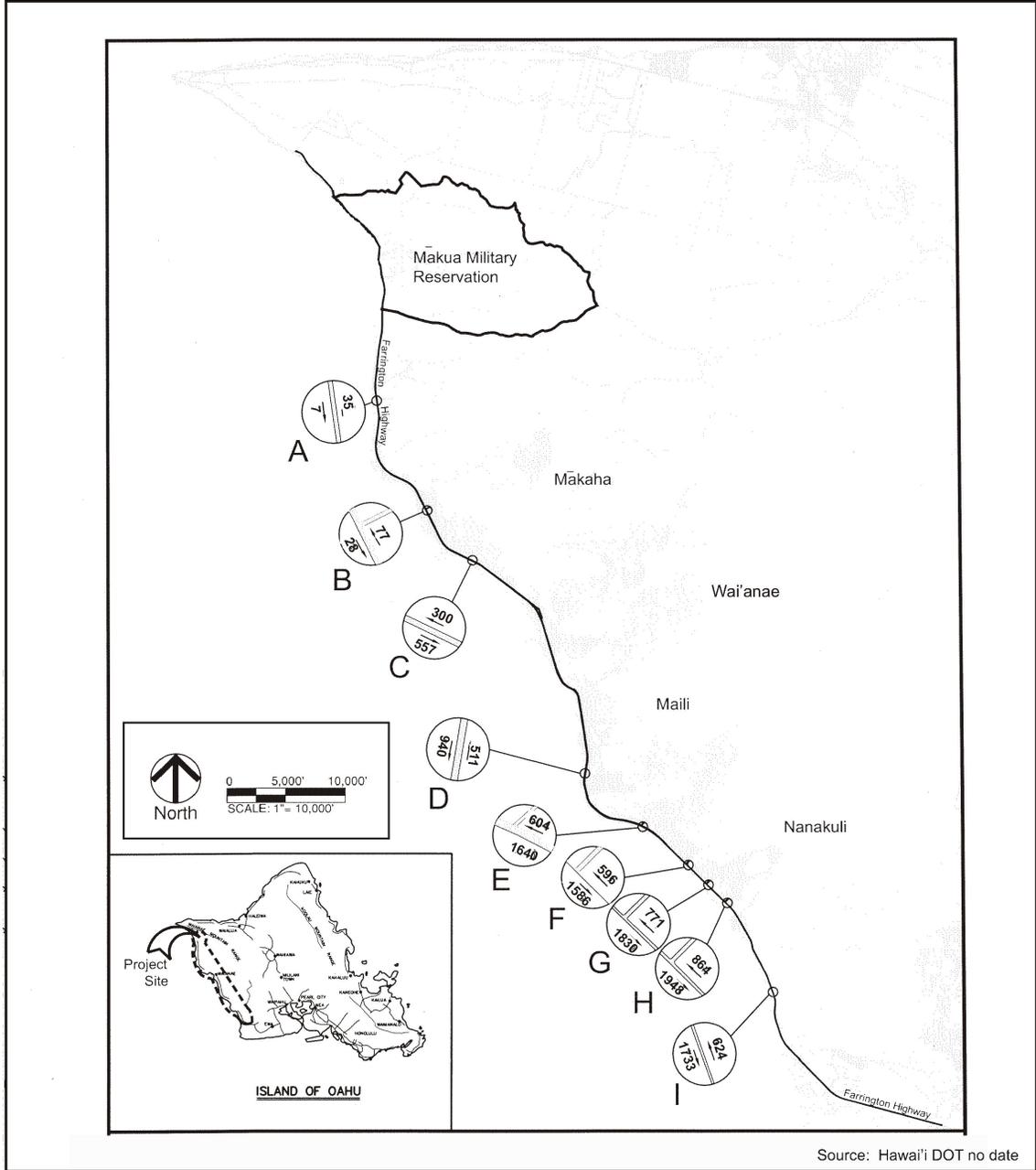
The HCM 2000 signalized intersection methodology is used to analyze the intersection of Farrington Highway and Mākaha Valley Road, and the results are given in Table 3.6-5. The Mākaha Valley Road approach experiences LOS C conditions during the early AM peak hour and the mid-morning AM peak hour. The Farrington Highway southbound left turn is at LOS D in the early AM peak hour and at LOS C in the mid-morning AM peak hour. The northbound and southbound approaches are at LOS A, respectively, while the overall intersection operations are at LOS B.

**Table 3.6-5
Farrington Highway and Mākaha Valley Road
Signalized Intersection Analysis Results**

	Early Morning		Mid-Morning	
	Delay (seconds)	LOS	Delay (seconds)	LOS
Northbound approach	9.3	A	9.3	A
Southbound approach	6.4	A	6.8	A
Left turn	36.0	D	31.5	C
Through movement	5.3	A	5.5	A
Mākaha Valley Road approach	32.4	C	26.1	C
Overall intersection	14.6	B	12.3	B

Farrington Highway Two-Way Traffic Counts

The Farrington Highway two-way traffic counts collected by Hawai‘i DOT are shown in Figure 3.6-2 for the early morning peak hour and in Figure 3.6-3 for the mid-morning peak hour. The most recent traffic count data available from Hawai‘i DOT is for 2002. The list of stations in Table 3.6-6 is arranged according to count station proximity to the MMR, with the closest station at the top of the list. In general, the Farrington Highway traffic volumes are lowest nearest MMR and increase as the stations become closer to Kapolei.

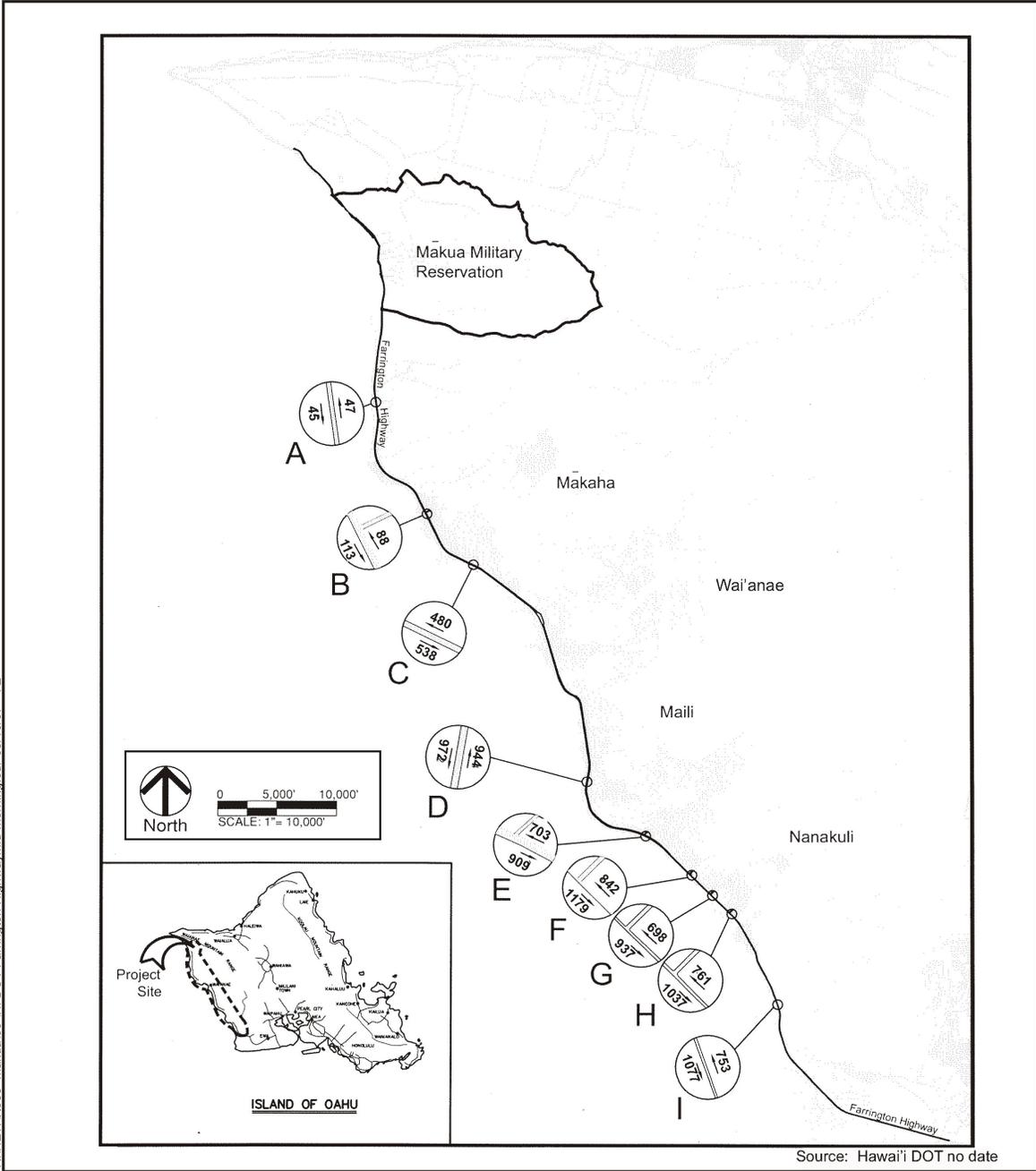


The Hawai'i DOT collected traffic counts at several locations along Farrington Highway.

**Farrington Highway Traffic Volumes
Early Morning (6:00-7:00 AM) Peak Hour**

Mākua Military Reservation
O'ahu, Hawai'i

Figure 3.6-2 Farrington Highway Traffic Volumes, Early Morning (6:00-7:00 AM) Peak Hour, MMR



In general, the Farrington Highway traffic volumes are lowest near MMR.

Farrington Highway Traffic Volumes Mid-Morning (10:00-11:00 AM) Peak Hour

Mākua Military Reservation
O'ahu, Hawai'i

Figure 3.6-3 Farrington Highway Traffic Volumes, Mid-Morning (10:00-11:00 AM) Peak Hour, MMR

**Table 3.6-6
Hawai'i DOT Farrington Highway Count Stations**

Station	Location
A	Mākaha Bridge #5A, 'Ōhikilolo Stream Bridge
B	South of Water Street
C	Approximately 420 feet (128 meters) northwest of Māi'u'u Road
D	Maili'ili'i Stream E south of Hakimo Road
F	South of Lualualei Naval Road
G	South of Haleakalā Avenue
H	South of Nānākuli Avenue
I	Keananoio Bridge

Farrington Highway Vehicle Type Classification Counts

The Hawai'i DOT also conducts vehicle type classification (VTC) counts, and the VTC counts for 2000 along Farrington Highway are provided in Table 3.6-7. At the 'Ōhikilolo Stream Bridge, where traffic volumes are low, buses and trucks range between 1.5 percent and 10.9 percent of the total vehicles on Farrington Highway. In the vicinity of Maili'ili'i Stream Bridge and Keananoio Bridge, where traffic volumes are higher, the buses and trucks range between 1.8 percent and 5.4 percent of the Farrington Highway traffic volumes.

Wai'anae Coast Emergency Access Road

In the past, accidents along the Wai'anae Coast have caused Farrington Highway to be closed and have resulted in extensive delays to motorists while emergency services and the police respond to the situations. The city DTS is developing the Wai'anae Coast Emergency Access Road in response to the community's request for an alternative road to Farrington Highway in such incidents; a portion of the planned emergency road is under design. Also, although the Wai'anae Coast Emergency Access Road roadway is not contiguous throughout the Wai'anae Coast, it does offer an alternative route in selected areas if Farrington Highway is closed for any reason.

Mākua Military Reservation Ammunition Routes

The Army's first priority is to transport ammunition to MMR by helicopter, thereby avoiding travel on Farrington Highway where there are several schools adjacent to the highway. This policy would be followed by other military units using MMR for training, such as the US Marine Corps

**Table 3.6-7
Farrington Highway Vehicle Type Classification Counts**

Location	Date	AM Peak Hour			PM Peak Hour			24-Hour Total		
		Northbound	Southbound	Total	Northbound	Southbound	Total	Northbound	Southbound	Total
Mākaha Bridge #5A (‘Ōhikilolo Stream Bridge)	January 17-18, 2002	<u>11:00 AM - 12:00 PM</u>			<u>2:45 PM - 3:45 PM</u>			<u>1:00 PM - 1:00 PM</u>		
Passenger vehicles		55	41	96	56	75	131	607	604	1,211
Buses		0	0	0	0	0	0	1	3	4
Trucks		1	5	6	0	2	2	3	35	38
Total		56	46	102	56	77	133	611	642	1,253
Subtotal buses and trucks		1	5	6	0	2	2	4	38	42
Percent buses and trucks		1.8%	10.9%	5.9%	0.0%	2.6%	1.5%	0.7%	5.9%	3.4%
Mali‘ili‘i Stream Bridge	January 17-18, 2002	<u>7:15 AM - 8:15 AM</u>			<u>3:30 PM - 4:30 PM</u>			<u>12:00 PM - 12:00 PM</u>		
Passenger vehicles		1,044	989	2,033	1,303	992	2,295	16,243	15,370	31,613
Buses		1	0	1	2	1	3	11	9	20
Trucks		34	56	90	39	17	56	419	590	1,009
Total		1,079	1,045	2,124	1,344	1,010	2,354	16,673	15,969	32,642
Subtotal buses and trucks		35	56	91	41	18	59	430	599	1,029
Percent buses and trucks		3.2%	5.4%	4.3%	3.1%	1.8%	2.5%	2.6%	3.8%	3.2%
Keanoio Bridge	January 17-18, 2002	<u>6:30 AM - 7:30 AM</u>			<u>3:15 PM - 4:15 PM</u>			<u>11:00 AM - 11:00 AM</u>		
Passenger vehicles		876	1,535	2,411	1,785	1,112	2,897	17,704	18,102	35,806
Buses		2	8	10	11	4	15	100	108	208
Trucks		24	27	51	28	20	48	433	544	977
Total		902	1,570	2,472	1,824	1,136	2,960	18,237	18,754	36,991
Subtotal buses and trucks		26	35	61	39	24	63	533	652	1,185
Percent buses and trucks		2.9%	2.2%	2.5%	2.1%	2.1%	2.1%	2.9%	3.5%	3.2%

Source: HI DOT no date

Note: Peak hours determined by Hawai‘i DOT.

If ammunition must be transported on the ground, it is done with a front and back escort at a maximum speed of 45 miles (72 kilometers) per hour. Transport is conducted in accordance with all Hawai'i DOT rules and regulations for transporting explosive materials (Husemann 2003c).

For Army transportation of ammunition:

- Operators transporting explosives, grenades, mines, artillery rounds, anti-tank rounds, and mortar rounds avoid using the Farrington Highway from 5:00 AM to 7:00 PM; and
- Operators transporting other munitions and ordnance on Farrington Highway avoid using the highway during peak traffic hours and at times when children are traveling to and from school (5:30 AM to 8:30 AM and 12:30 PM to 6:30 PM).

These restrictions combine to substantially reduce the risk of accidents involving ammunition transport vehicles and public exposure to potential accidental explosion of munitions should an accident occur.

The Wai'anae community has expressed concerns about transporting ammunition when children are traveling to and from school. In general, Wai'anae public schools begin the school day between 7:45 AM and 8:00 AM. The ending time varies by school and day of week, but most public schools end the school day between 1:10 PM and 2:10 PM; hence, the morning school transport period is between 7:00 AM and 8:30 AM, and the afternoon school transport period is slightly longer, approximately 12:30 PM to 3:00 PM. Many children are transported to and from school in automobiles. In addition, field observations showed that many students of various ages walk along Farrington Highway or wait at bus stops for city buses.

As presented above, the Army's ammunition transport times avoid use of Farrington Highway during those times when schoolchildren are likely to be present.

Ammunition is stored at three separate locations: WAAF, Lualualei Naval Magazine, and West Loch Naval Magazine. For WAAF, the primary route is Interstate Highways H-2 and H-1 and Farrington Highway. Vehicle trips begin at WAAF's Aerodrome Road, exit at the Kunia Gate, then head east on Kunia Road, turning onto Wilikina Drive to reach Interstate Highway H-2, southbound. At the Wahiawa Interchange, the vehicles travel west onto Interstate Highway H-1. If a secondary route is required, then vehicles travel southbound on Kunia Road, between the Kunia Gate and the Kunia interchange with Interstate Highway H-1, then proceed westbound on Interstate H-1. In the vicinity of Kapolei, Interstate Highway

H-1 becomes Farrington Highway. Vehicles remain on Farrington Highway to access MMR.

For the Lualualei Naval Magazine, the travel route begins at Lualualei Naval Road (southwest bound), then turns onto Farrington Highway northbound to reach MMR. This is the only travel route between Lualualei Naval Magazine and MMR.

For the West Loch Naval Magazine, the primary travel route is Interstate Highway H-1 and Farrington Highway. The trip begins at Iroquois Point Road (westbound), then turns onto Fort Weaver Road northbound and accesses Interstate Highway H-1 (westbound) at the Kunia Interchange, then onto Farrington Highway (westbound) to MMR. A secondary travel route begins on Iroquois Point Road (westbound) and travels straight onto Geiger Road, then onto Roosevelt Avenue (westbound), through the former Barbers Point Naval Air Station, then onto Fort Barrette Road (northbound) and Farrington Highway to MMR.

If ammunition must be transported through the Interstate Highway H-3 tunnels (for example, for use of MMR by other military units, such as the US Marine Corps), the revised DTO convoy instructions require the units to contact the Interstate Highway H-3 Tunnel Control Center and to call 911 to inform the Honolulu Police Department, Fire Department, and Emergency Services.

The Army's DTO instructions do not meet the requirements of the Hawai'i Statewide Traffic Code for transporting explosives on any public roadway. The code requires that the police department and fire department in the affected county be provided with written 48-hour minimum advance notice that indicates quantity and type of explosive to be shipped, date and time of shipment, and description of travel route (Section 286-226, Hawai'i Revised Statutes). The military is exempted from this state requirement when the President or the Governor proclaims a civil defense emergency.