

SECTION III.D.3.

INFRASTRUCTURE

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III.D.3. INFRASTRUCTURE

III.D.3.a. Wastewater Disposal

The UH West O’ahu property is within the service area of the Honouliuli Wastewater Treatment Plant (WWTP), which has a treatment capacity of 38 MGD. There are future plans to expand the plant’s capacity to 51 MGD. The Makakilo Interceptor Sewer and the recently completed Kapolei Interceptor Sewer currently transport wastewater from existing developments west of the UH West O’ahu property to the WWTP. According to the DPP, the capacity of the WWTP is limited by the capacity of the solids handling treatment units, which have a current capacity of approximately 27 to 29 MGD average flow. A planned project to add anaerobic digesters, which will increase the solids treatment capacity, is tentatively scheduled to be completed by mid 2008. After completion of this project, the overall WWTP solids handling capacity will be 38 MGD.

Currently, there is no sewer service to the UH West O’ahu property. A 30-inch stub-out was provided on the Kapolei Interceptor Sewer for future connection.

The Honouliuli Water Reclamation Facility was purchased by the BWS and provides 12 MGD of recycled water to the West Loch and ‘Ewa Villages Golf Course, ‘Ewa Mahiko District Park, and Fort Weaver Road.

The proposed sewer system for the UH West O’ahu has been coordinated with the *Wastewater Master Plan for East Kapolei* (2004), and pipes have been sized to accommodate the ultimate East Kapolei development.

Projected Wastewater Flow

The average wastewater flow for the PRU area (7,600-student campus) is projected to be 0.595 MGD.

Proposed Wastewater Improvements

A portion of the major trunk sewer system for East Kapolei is proposed to run through the UH West O’ahu property. The major trunk sewer line is proposed enter the property from North-South Road, run along Road D, and exit the property to North-South Road (through Road F). The sewer line, ranging from 24 to 30 inches in diameter, is proposed to carry wastewater from the property (and properties located north of the UH West O’ahu property) to the 30-inch trunk line in the North-South Road. The DHHL currently plans to construct the off-site sewer system to the southeast corner of the property at Road F.

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Smaller sewer lines ranging from 8 to 18 inches in size are proposed to branch off the major trunk line to serve the property. Sewer lines within dedicable roads are planned to be dedicated to the City where practical. Sewer lines within the campus will not be dedicated to the City, unless sewer easements are established for such purposes.

All wastewater plans will conform to applicable provisions of Chapter 11-62, HAR "Wastewater Systems," and the DOH Wastewater Branch reserves the right to review the detailed wastewater plans for conformance to applicable rules. In addition, UH West O'ahu will work with the BWS and utilize recycled water for irrigation and other non-potable water purposes in the open spaces and for landscaping areas to the extent practicable. As recommended by the City and County of Honolulu, Department of Design and Construction, the DPP will be consulted to determine sewer adequacy, and the City and County of Honolulu, Department of Environmental Services will be consulted to determine the adequacy of the Honouliuli WWTP. During the Draft EIS Public Review Period, the Department of Planning, Site Development Division, Wastewater Branch wrote that the "...projected average flow of 1.68 mgd is included in the approved Wastewater Master Plan for East Kapolei, dated June 2006. A Site Development Master Application for Sewer Connection is required. This project may also be liable for payment of a Wastewater System Facility Charge."

III.D.3.b. Water Facilities

The UH West O'ahu campus lies over the Pearl Harbor Aquifer and the 'Ewa Caprock Aquifer, and is within the BWS' 440- and 215-foot elevation service zones. Based on discussions with the BWS, water is available to both service zones from the existing 215-foot Kapolei potable water system. Two major water transmission mains (30- and 36-inch) in Farrington Highway provide water to the 215-foot Kapolei and Barbers Point reservoirs via the Honouliuli line booster and Kapolei line booster. A 4-million gallon (MG) reservoir for the 215-foot potable water system is planned to accommodate East Kapolei developments (including portions of the UH West O'ahu property). Currently, there are no existing 440-foot potable water system facilities in the project area and a new system will need to be constructed. Water will be conveyed from the 215-foot system to a proposed 440-foot system reservoir through booster pumps. The UH West O'ahu water system will be part of the East Kapolei regional water system, which will accommodate East Kapolei and the future demand of the Kalaeloa area. The water master plan for East Kapolei has been submitted to and approved by the BWS.

Non-potable Water

The Honouliuli Water Recycling Facility (HWRF) produces R-1 recycled water for irrigation and reverse osmosis (RO) recycled water for industrial uses. R-1 recycled water is high quality recycled water, having gone through filtration and disinfection to make it safe for use on lawns, golf courses, parks, and other places that people

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frequent. The HWRF currently produces 12 million gallons of recycled water per day as a non-potable water source for the ‘Ewa area. The BWS plans to extend the existing 215-foot non-potable water system and install irrigation systems along the North-South Road corridor.

The proposed on-site water system for the UH West O’ahu will be designed to conform to the BWS’ Water System Standards (2002) and will be based on guidelines established in the *Ewa Water Master Plan* (prepared by Belt Collins in 1987). The UH West O’ahu water system will be part of the East Kapolei regional water system, which will accommodate East Kapolei and the future demand of the Kalaeloa area. The water master plan for East Kapolei has been submitted to and approved by the BWS. Coordination with the BWS and the DLNR Land Division will take place to incorporate this project into the *Water Use and Development Plan* and the *State Water Projects Plan*.

Projected Water Demand

A dual potable and non-potable water system is planned for the 215-foot elevation service zone. The average potable water demand for the PRU area (7,600-student campus) is estimated to be 1.17 million gallons per day (MGD) (1.17 MGD from the 440-foot system). The average non-potable water demand for the PRU area is estimated to be 0 MGD. The use of non-potable water will be coordinated with the BWS, and non-potable water will be used (to the extent practicable) as permitted by the DOH. The UH West O’ahu has established sustainability guidelines, and with the implementation of water-saving measures, water usage will likely be less than that currently estimated.

Required storage for the PRU area is estimated to be 0 MG for the 215-foot potable water system and 1.76 MG for the 440-foot potable water system. Coordination with the BWS and adjacent developers is necessary for the provision of non-potable water.

The total booster pump capacity needed is estimated at 8,385 gallons per minute (gpm).

Proposed Improvements

The UH West O’ahu property is planned to be served by the 215- and 440-foot potable water systems. The existing 215-foot system will need to be upgraded, and a new 440-foot elevation system will need to be constructed. A dual system (potable and non-potable water) is planned for the 215-foot service zone.

Upgrades to the 215-foot potable water system include the installation of a 4.0-MG reservoir and transmission main in North-South Road. These upgrades are planned to be completed with ongoing developments in the area. It is proposed that the new 440-

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foot elevation system will include a 5.0-MG reservoir or two 2.5-MG reservoirs and a transmission main in North-South Road. These facilities are planned to be completed concurrently with development of the UH West O’ahu. Construction of the 215-foot non-potable water system to the UH West O’ahu property is expected to be completed by the BWS before completion of the UH West O’ahu. UH West O’ahu and/or a private developer will be required to pay the BWS Water System Facilities Charges for resource development and transmission.

The on-site water system will consist of pipes ranging in size from 8 to 24 inches in diameter, laid out in loops. Loops are designed into water systems to provide more reliable flows and provide adequate pressures. Careful consideration will be taken in the design and operation of the proposed water systems to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable water system to the potable water system. The two water systems will be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply. Back flow devices will be tested periodically to assure their proper operation and all non-potable spigots and irrigated areas will be clearly labeled with warning signs to prevent inadvertent consumption of non-potable water. All water system facilities plans will conform to applicable provision of Chapter 11-21, HAR “Cross Connection and Backflow Control.”

UH West O’ahu and/or a private developer will be required to install the necessary water system improvements to serve the proposed development. Water lines within dedicable roads are planned to be dedicated to the BWS where practicable. Water lines within the campus will not be dedicated to the BWS, unless water line easements are established for such purposes. The campus is intended to be metered by several master water meters, which will be able to provide the adequate fire flow. A backflow prevention device will be required by the BWS at all meter locations.

Fire Protection

In compliance with HFD requirements, a water system in which all appurtenances, hydrant spacing, and fire flow requirements meet the BWS standards will be provided. Water infrastructure shall be designed and installed in accordance with the Uniform Fire Code, Section 903.2, as amended. Fire extinguishing systems for the Library, the Administration/Campus Center/Student Services Building, and the Classroom Building will be provided with automatic wet pipe fire sprinkler systems, FM200 gaseous fire suppression systems, and fire extinguishers. Fire hydrants will be spaced throughout the campus within 150 feet of all sides of unsprinklered buildings and 150 feet of the face of sprinklered buildings. All multi-story buildings are assumed to be sprinklered. An HFD access road will be provided within 150 feet of the first floor of the most remote structure. Fire apparatus access roads shall be designed and constructed in accordance with the Uniform Fire Code, Section 902.2.1. The access shall have a

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minimum vertical clearance of 13 feet 6 inches, be constructed of an all-weather driving surface complying with DTS standards, be capable of supporting the minimum 60,000-pound weight of fire apparatus, and have a gradient not to exceed 20 percent. The unobstructed width of the fire apparatus access road shall meet City requirements. All dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround having a radius complying with DTS standards. Civil drawings will be submitted to HFD for review and approval. A Fire Vehicle Access Plan will be prepared in accordance with HFD requirements.

III.D.3.c. Traffic and Parking (TRANSPORTATION PLAN [MULTI-MODAL TRANSPORTATION NETWORK AND TRAFFIC STUDY])

A traffic study for the project was prepared by Parsons Brinckerhoff in May 2006 for the UH West O’ahu EIS and was reviewed by the DPP Traffic Review Branch and the DOT Highways Division. In August 2007, Parsons Brinckerhoff updated the traffic study and this information was incorporated into a Transportation Master Plan for the project which includes a discussion on an internal and regional transit, municipal bus, pedestrian and bikeway network. Portions of the traffic study applicable to the 2014 development of the 500-acre property (including lands within the campus (PRU area), other UH West O’ahu lands, and Private Developer Lands) are included as part of the discussion for this Transportation Master Plan. The updated traffic study is included in its entirety in Appendix H.

Existing Conditions

Roadways

The only existing roadway providing access to the property is Farrington Highway. Once completed, the future North-South Road will provide access to the property from the east. Major roadways in the project area are described below and shown in Figure 30.

The H-1 Freeway is a 6-lane freeway in the vicinity of the UH West O’ahu property. The Makakilo Interchange is located approximately two miles west of the property, and the Kunia Interchange is located approximately two miles east of the property. The posted speed limit on the H-1 Freeway in the vicinity of the property is 60 miles per hour (mph).

Farrington Highway is a major arterial roadway that provides east-west mobility through the ‘Ewa region. It runs along the northwestern boundary of the property as a 2-lane, undivided roadway. Farrington Highway is a 4-lane, divided roadway from the Kapolei Golf Course access road to Kamokila Boulevard in the City of Kapolei. Farrington Highway is also a 4-lane, divided roadway near Fort Weaver Road. The posted speed limit on Farrington

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Highway in the project area is 35 mph.

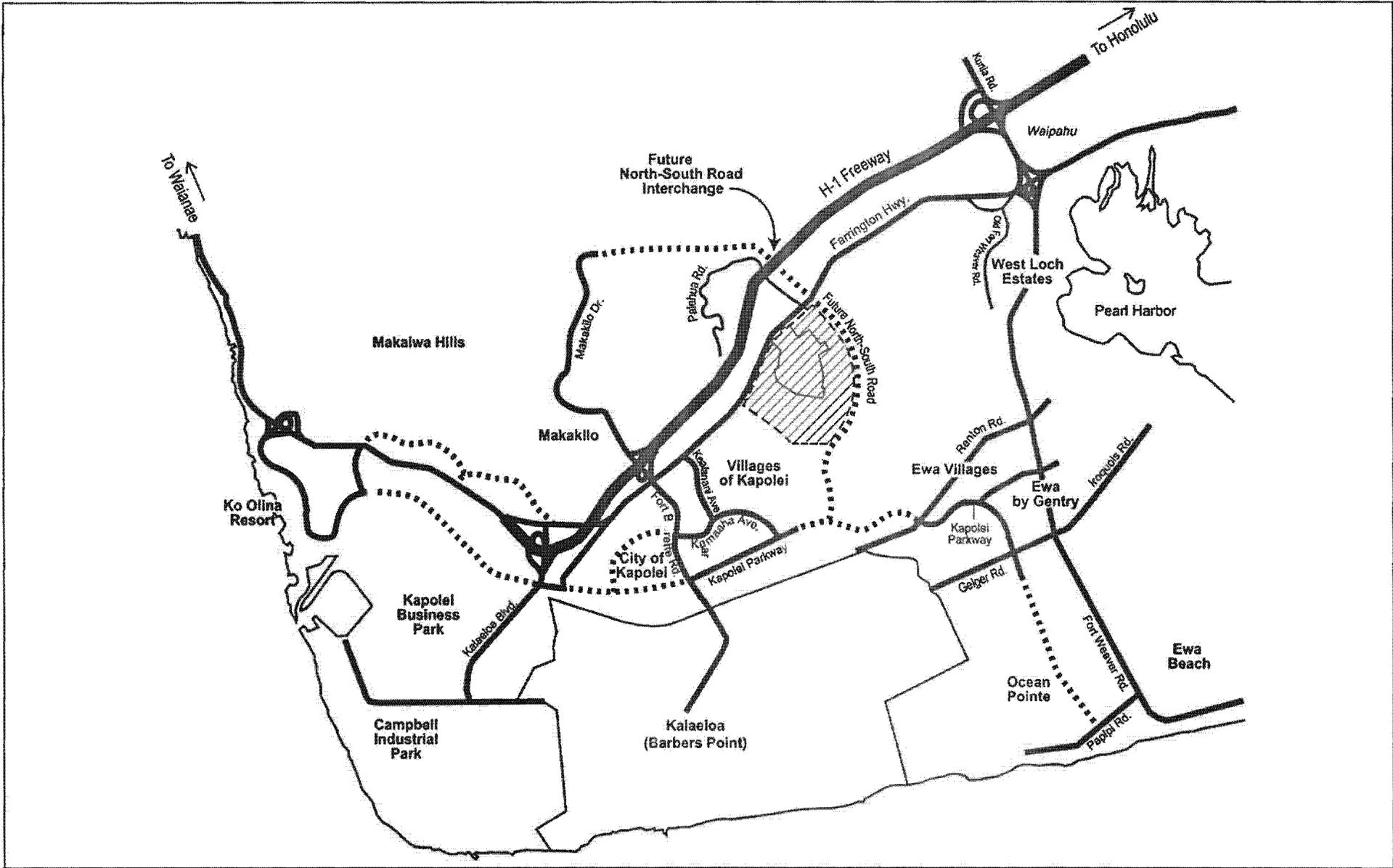
Fort Weaver Road/Kunia Road is currently the principal north-south arterial roadway serving the ‘Ewa and ‘Ewa Beach communities. The roadway is located east of the UH West O’ahu property and is named Fort Weaver Road south of Farrington Highway, and Kunia Road north of Farrington Highway. Fort Weaver Road/Kunia Road is a 6-lane expressway between the H-1 Freeway and Laulanui Street, with interchanges at the H-1 Freeway and Farrington Highway. It is a 4-lane principal arterial from Farrington Highway to the future North-South Road, and a 2-lane minor arterial through the rest of ‘Ewa Beach. The posted speed limit on Fort Weaver Road is 45 mph mauka of Geiger Road and reduces to 35 mph makai of Geiger Road.

Fort Barrette Road/Makakilo Drive is a major north-south roadway serving Makakilo and Kapolei. The roadway provides access to the H-1 Freeway and Farrington Highway. Fort Barrette Road/Makakilo Drive is located west of the UH West O’ahu property. Fort Barrette Road is a 2-lane major arterial road with a posted speed limit varying between 25 and 40 mph. The roadway is planned to be widened to four lanes in the near future. Fort Barrette Road becomes Makakilo Drive north of Farrington Highway. Makakilo Drive is a 4-lane divided roadway with a posted speed limit varying between 25 and 40 mph.

The *Oahu Regional Transportation Plan (ORTP)*, prepared for the Oahu Metropolitan Planning Organization (OMPO), identifies roadway concepts necessary to support future development in the ‘Ewa Plain. Major roadway improvements identified by the ORTP include completion of the Kapolei Parkway and the North-South Road. The North-South Road is currently under construction.

Public Transit

The DTS - Public Transit Division currently provides an island-wide public bus transit system called TheBus. TheHandi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities. Both systems are operated by O’ahu Transit Services (OTS). With a fleet of 525 buses, TheBus provides 86 numbered bus routes, over 120 sub-routes and carries over 70 million passengers annually. Figure 31 shows the existing regional public transit routes within the ‘Ewa Plain. Currently only Routes 40 and 40A (Makaha Beach/Makaha Towers-Honolulu Ala Moana) travels on Farrington Highway past the UH West O’ahu site. Route 41 (Kapolei-‘Ewa Beach) travels in the vicinity of the UH West O’ahu site as it provides service to the Villages of Kapolei development. Route 44 (‘Ewa Beach-Waipahu) provides circulation between ‘Ewa Beach and West Waipahu, while Route 415 provides circulation between the Kapolei Transit Center and Kalaeloa.



Legend

-  UH West O'ahu
-  Approximate University of Hawai'i West O'ahu PRU Boundary
-  Roadway
-  Future Roadway

Source: FB Americas Inc.
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Figure 30
 Regional Roadway Map
 University of Hawai'i-West O'ahu

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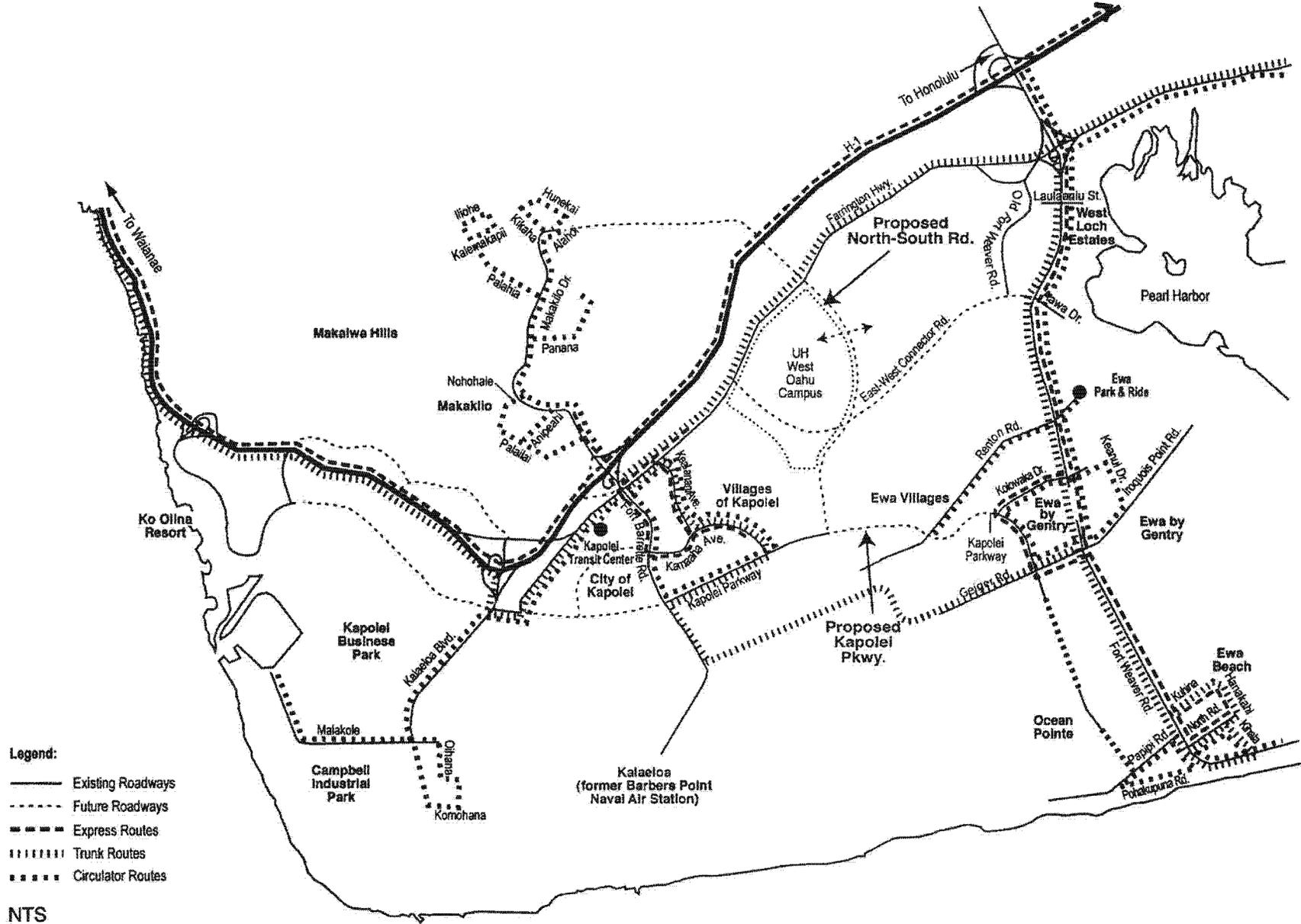


Figure 31
Existing 'Ewa Regional Public Transit Routes
University of Hawai'i-West O'ahu



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Source: PB Americas, Inc.
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The Handi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities.

Traffic

Automatic traffic recorders were placed along Farrington Highway in the vicinity of the future North-South Road on April 15, 2004. The AM peak hour of traffic occurred between 7:00 AM and 8:00 AM, and the PM peak hour of traffic occurred between 4:30 PM and 5:30 PM, respectively. In the vicinity of the UH West O’ahu property, Farrington Highway operated at what the traffic engineering consultant considers an acceptable Level of Service (LOS) E during both AM and PM peak hours of traffic. The majority of traffic on Farrington Highway in the vicinity of the property is traveling between Kapolei and Waipahu. Regional traffic to and from the Primary Urban Center generally travels on the H-1 Freeway.

Five-Year Master Plan (2014)

The Year 2014 time frame pertains to the Five-Year Master Plan. By then, UH West O’ahu development is projected to include campus facilities for 2,750-students, along with student housing, campus expansion/multi-family housing, an extended stay facility, the University Village mixed use development, mixed-use developments in the vicinity of Road B, Road F near Farrington Highway and Road F near North-South Road, two HECO substation, parks, detention basins, an elementary school and a range of residential product types. A majority of the surrounding residential uses developed by the private developer are also projected to be complete (see Figure 17).

In order to provide a comprehensive assessment of traffic conditions for the Five-Year Master Plan, this section of the report contains a traffic evaluation of the conditions and identifies roadway elements that need to be in place to accommodate the projected vehicular demand for the Year 2014 and includes the campus (PRU area), other UH West O’ahu lands, and Private Development Lands.

Year 2014 Roadway Network

The most significant changes in the existing roadway network that are assumed to be in place by the end of 2014 is the widening of existing Farrington Highway from two to four lanes and the a new six-lane North-South Road with a new interchange on H-1 Freeway. Most of the internal roadway system is also assumed to be constructed. The following describes the future roadway network assumptions. Figure 32 illustrates the internal and surrounding roadway network projected for year 2014.

North-South Road. North-South Road is anticipated to be constructed to its ultimate 6-lane, divided configuration with a new interchange on H-1 Freeway by Year 2014.

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Farrington Highway. Farrington Highway was assumed to be widened to a four-lane, divided roadway in the vicinity of UH West O'ahu site. It is also assumed that at the North-South Road intersection, turn movements to and from Farrington Highway are channelized with double left-turn lanes and exclusive right-turn lanes.

Access to the UH West O'ahu property is planned via three intersections at Farrington Highway and three intersections at the North-South Road. The University is coordinating with the DOT, DPP and DTS Traffic Review Branch on roadway improvements to these intersections.

Ten internal roadways are planned within the property, three of the roadways are included within the PRU area, the other seven roadways are located outside of the PRU area and they are described below.

Roadways Located within the PRU Area

Road A. Road A is planned to be constructed in its entirety with the initial UH West O'ahu campus. It will provide primary access to the campus from Farrington Highway. Road A is planned to be constructed as a four-lane urban cross-section with a raised median providing left-turn lanes at intersections. The roadway is planned to have sidewalks and tree wells or a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 33).

Road I. Road I is proposed as a two-lane roadway providing access between Road G, the main entrance Road A, and the University Village area. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Appendix H).

Campus Loop Roadway. The Campus Loop Roadway is planned to serve as the internal campus roadway, connecting the various portions of the campus. The roadway is planned to include a planting strip and multi-purpose path on both sides of the roadway outside of the travelway (see Figure 34).

Roadways Located Outside of the PRU Area

Road B. Road B is planned to be constructed by Year 2014. During this time frame, it will provide access to the campus, the University Village, campus mixed-use parcels, the extended stay facility, and two residential parcels. It would also provide access to the mauka portion of Road D. The roadway will be located opposite one of the accesses for the proposed D.R. Horton development, Ho'opili, located Koko Head of North-South Road. Upon full build-out of the roadway (beyond Year 2014), Road B is planned to be a four-lane divided roadway with a raised median providing left-turn lanes at

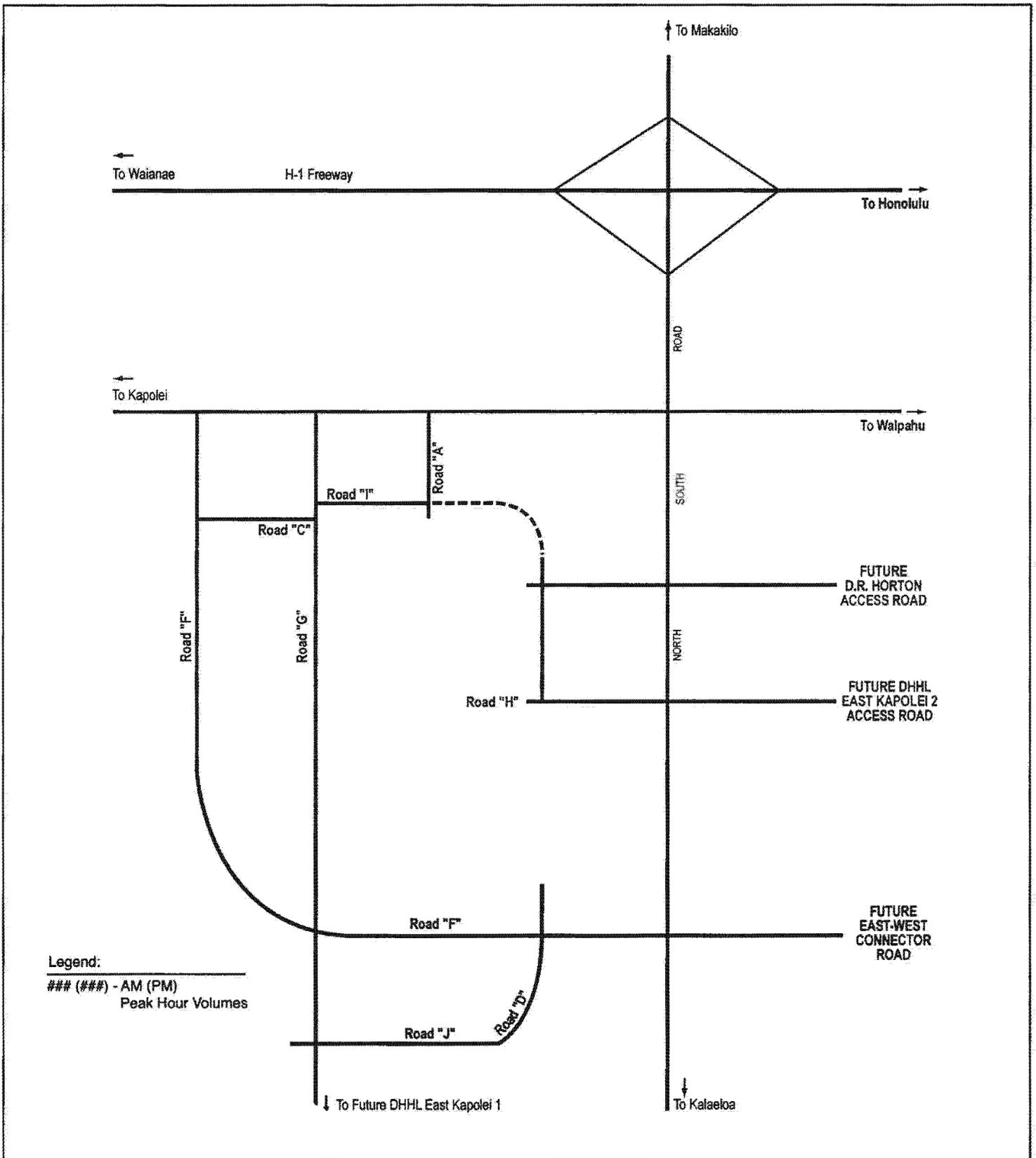


Figure 32
 Year 2014 Roadway Network
 University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
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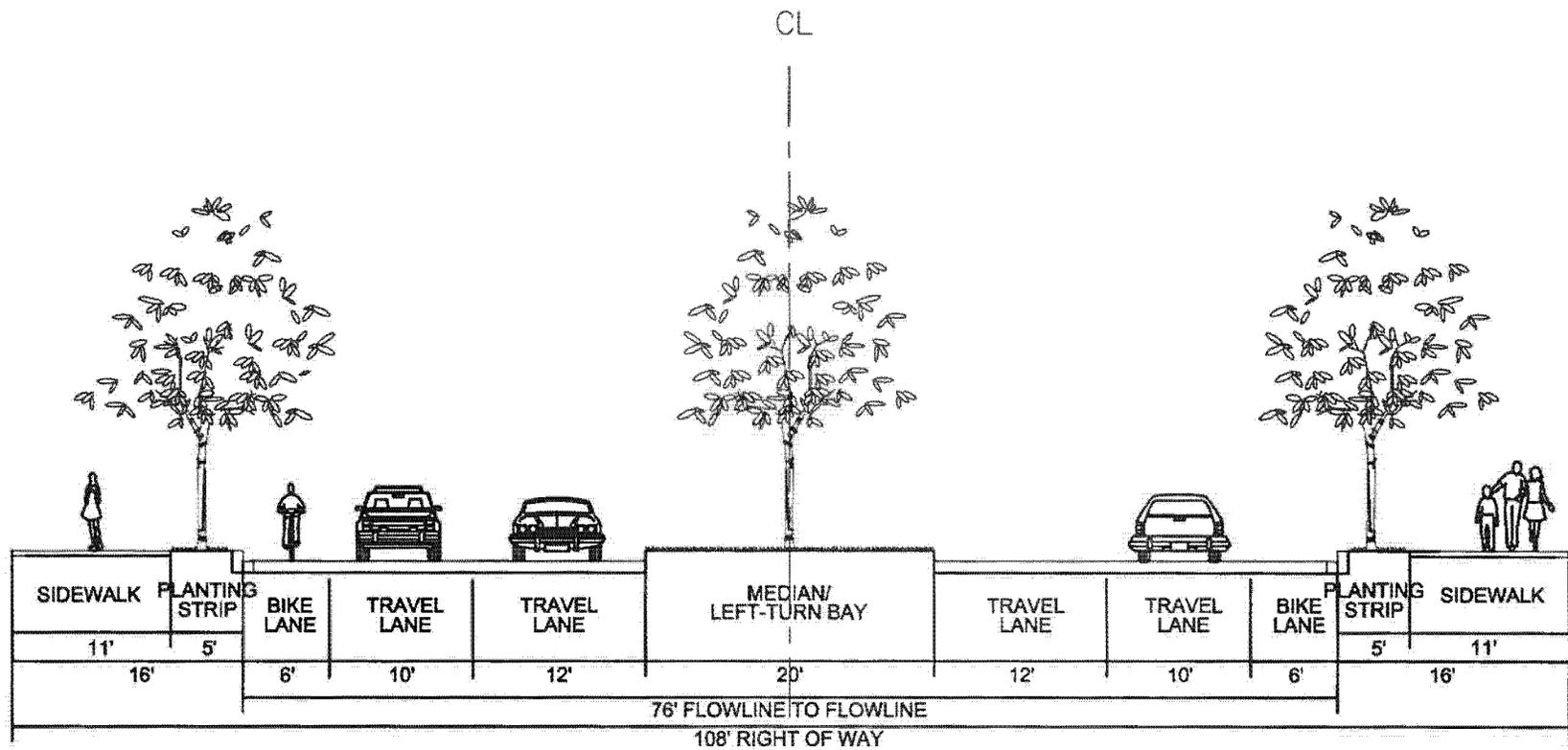


Figure 33
 Roads "A" and "B" Typical Section
 (Up to Intersection with Road D)
University of Hawai'i-West O'ahu



Source: PB Americas, Inc.
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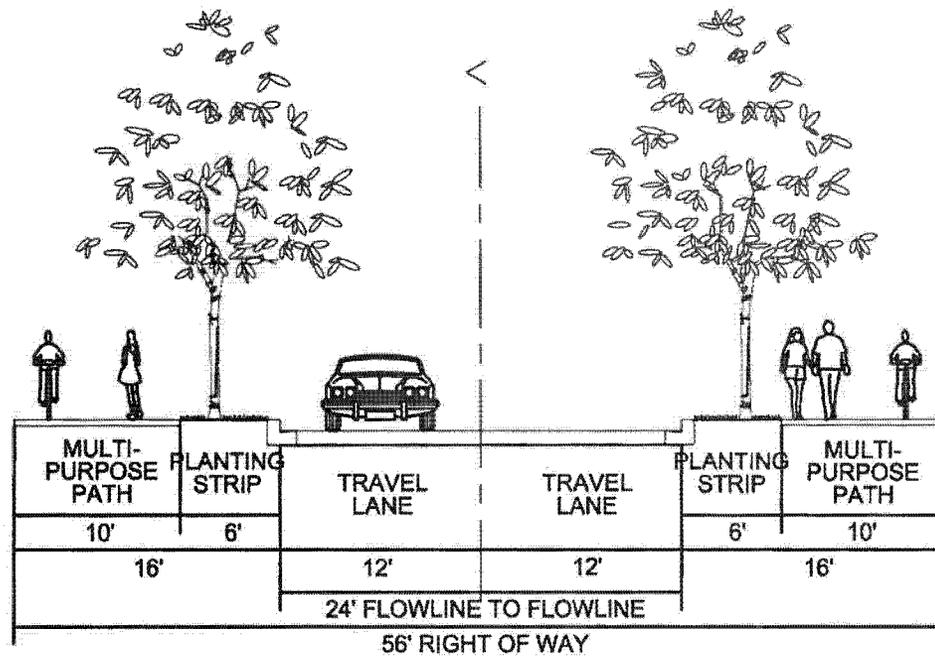


Figure 34
 Campus Loop Road
 Typical Section
University of Hawai'i-West O'ahu



Source: PB Americas, Inc.
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intersections. The full build-out of the roadway is planned to include sidewalks and tree wells or a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figures 33 and 35).

Road C. Road C is proposed as a two-lane roadway providing internal access to both UH West O’ahu campus uses and to the private development mixed use and low-density residential uses. It intersects Road F, one of the major roadways that transect the UH West O’ahu site, just makai of Farrington Highway. At its full build-out, the roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Appendix H).

Road D. By Year 2014, Road D will only extend from Road B to Road H and for a short section from Road F. It is planned to provide access to two residential parcels. When fully built-out (beyond Year 2014), Road D will be an undivided, four-lane, collector roadway that will provide an internal connection between Road B and Road F within the UH West O’ahu site. Left-turn lanes at intersections along Road D will be provided if needed for the full build-out of the roadway. The ultimate section for the roadway will have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 36).

Road F. By Year 2014, all of Road F is proposed to be constructed between Farrington Highway and North-South Road. Road F, also known as the East-West Connector Road, is planned to be a four-lane, collector roadway that will transect the UH West O’ahu site, providing access for the site to both Farrington Highway and North-South Road. Road F would intersect North-South Road directly opposite a major access for the DHHL East Kapolei Development Parcel 2 residential and mixed-use development located Koko Head of North-South Road. This intersection is planned to be signalized when traffic signal warrants are satisfied. At full build-out, Road F is planned to be a four-lane, divided roadway with a median providing left-turns at intersections. For this roadway, the private developer has proposed that planted medians be provided only at the intersection of North-South Road/Road F and at the intersection of Farrington Highway/Road F, a painted striped median is proposed between the entry median. Internal to the UH West O’ahu site, Road F will intersect Roads D, G, and C providing access to the adjacent residential private development and mixed use development as well as to internal areas of the UH West O’ahu campus via other access roads. The roadway is planned to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 37).

Road G. Road G is proposed as a two-lane undivided roadway with center turning lane providing access for the Department of Hawaiian Homelands

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(DHHL) East Kapolei I residential development located makai of the UH West O’ahu campus. It will intersect Roads C, I, and F. Upon full build-out, makai of Road J, the roadway is proposed to have a multi-purpose (bike and pedestrian) path on one side of the roadway and a sidewalk on the other, along with planting strips all located outside of the travelway. Mauka of Road J up to the elementary school, the roadway is proposed to have two multi-purpose paths and planting strips located outside of the travelway, upon full build-out. Mauka of the elementary school, the roadway is proposed to have a multi-purpose (bike and pedestrian) path on one side of the roadway along with planting strips on both sides of the right-of-way, upon full build-out (see Appendix H).

Road H. Road H is proposed to be a two-lane roadway providing access to North-South Road at a proposed right-in/right-out (RI/RO) driveway located between the planned Road B and Road E intersections along North-South Road. DHHL’s East Kapolei Development Parcel 2 has planned a RI/RO access directly across from Road H. Upon full build-out, the roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Appendix H).

Road I. Road I is proposed as a two-lane roadway providing access between Road G, the main entrance Road A, and the University Village area. At its full build-out, the roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Appendix H).

Road J. Road J is proposed to be an extension of Road D from Road F to Road G. At full build-out, it will be an undivided, four-lane roadway that will provide an additional access route for vehicles entering or exiting DHHL’s East Kapolei Development Parcel 1. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Appendix H).

It is proposed that all roads (and water, sewer and drainage systems) within the 500-acre project site will be dedicated to the City and County of Honolulu, except Road A, the portion of Road B westward of the intersection with Road D, and possibly Road C (in the Private Development Lands). During the EIS public review period, the City and County of Honolulu Department of Facility Maintenance wrote: *“Roads, drainage facilities and their related infrastructure should be owned and maintained by the State of Hawaii for this State facility, similarly to that at the Manoa Campus. The City and County of Honolulu will not accept the dedication or maintenance of this facility.”* This was identified as an unresolved issue in the EIS, since the DPP is specifying roads within the 500-acre project to provide regional connectivity, and the Private Development Lands will include residential and commercial uses that will generate

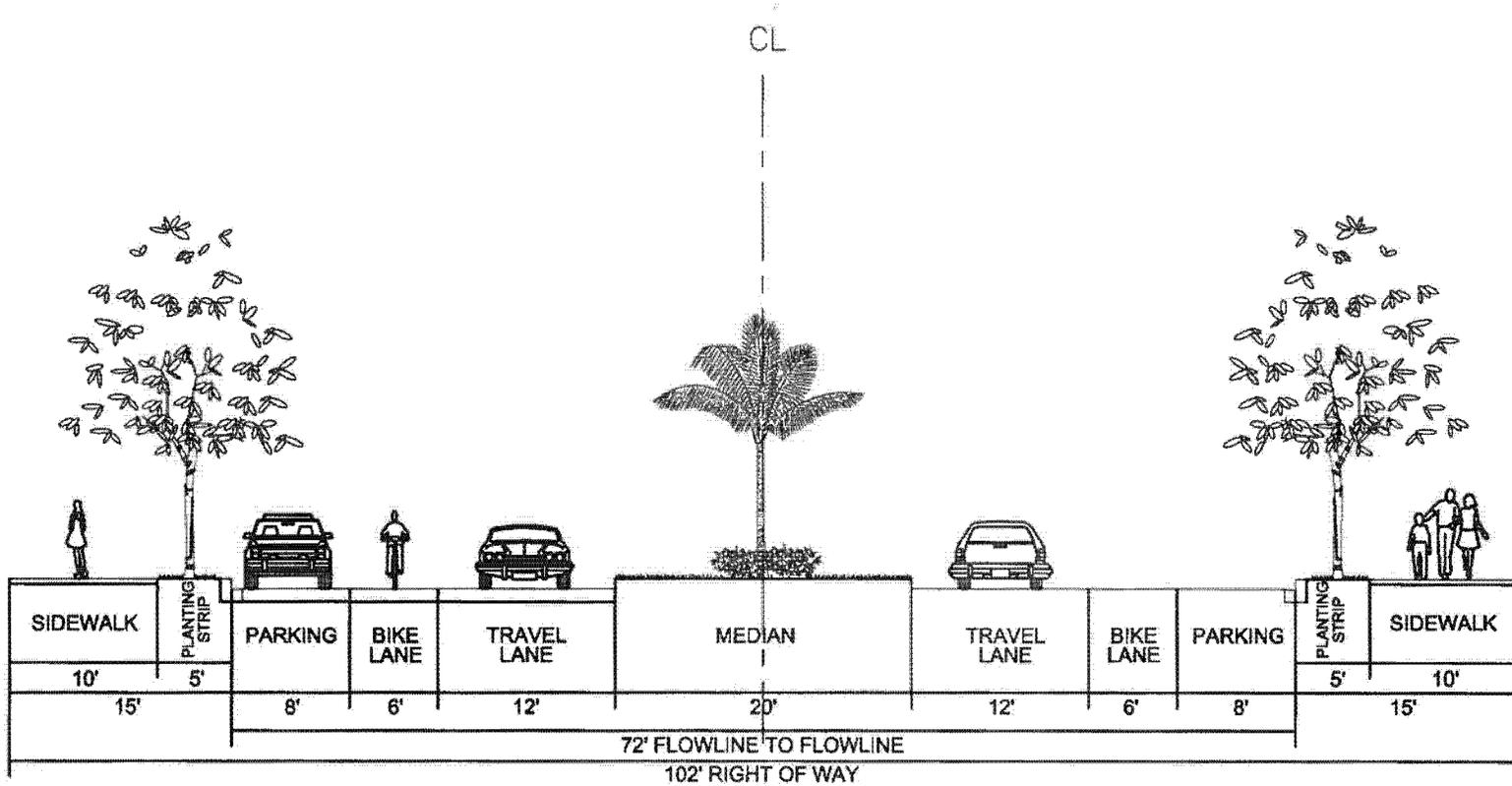


Figure 35
 Road "B" Typical Section
 (From Road D to Campus Drop-Off)
University of Hawai'i-West O'ahu



Source: PB Americas, Inc.

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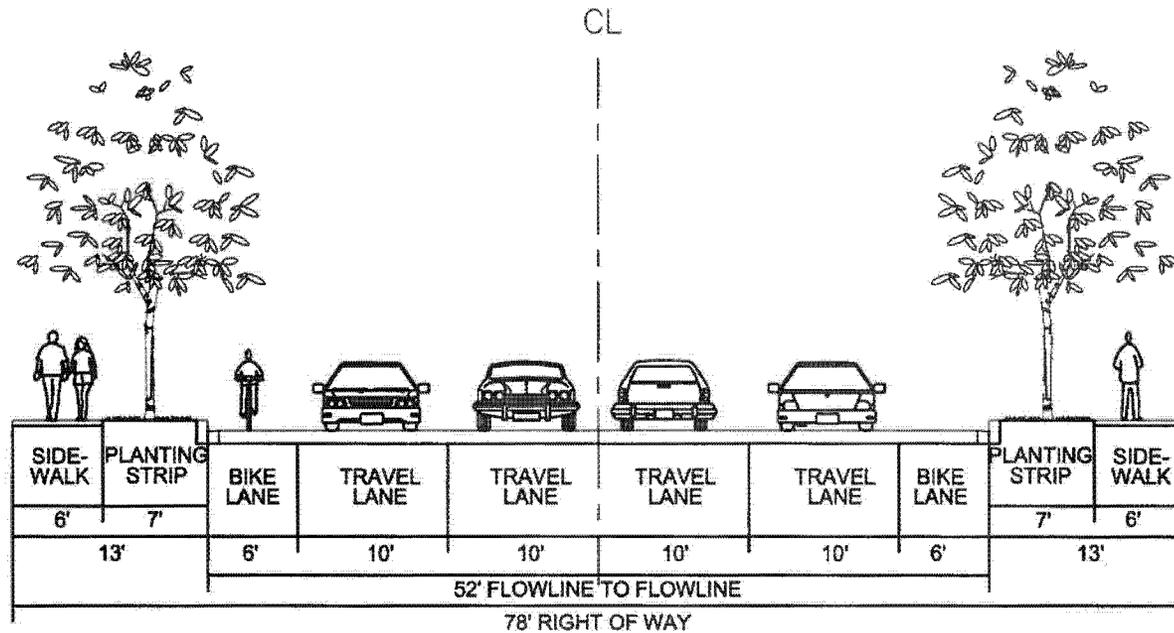


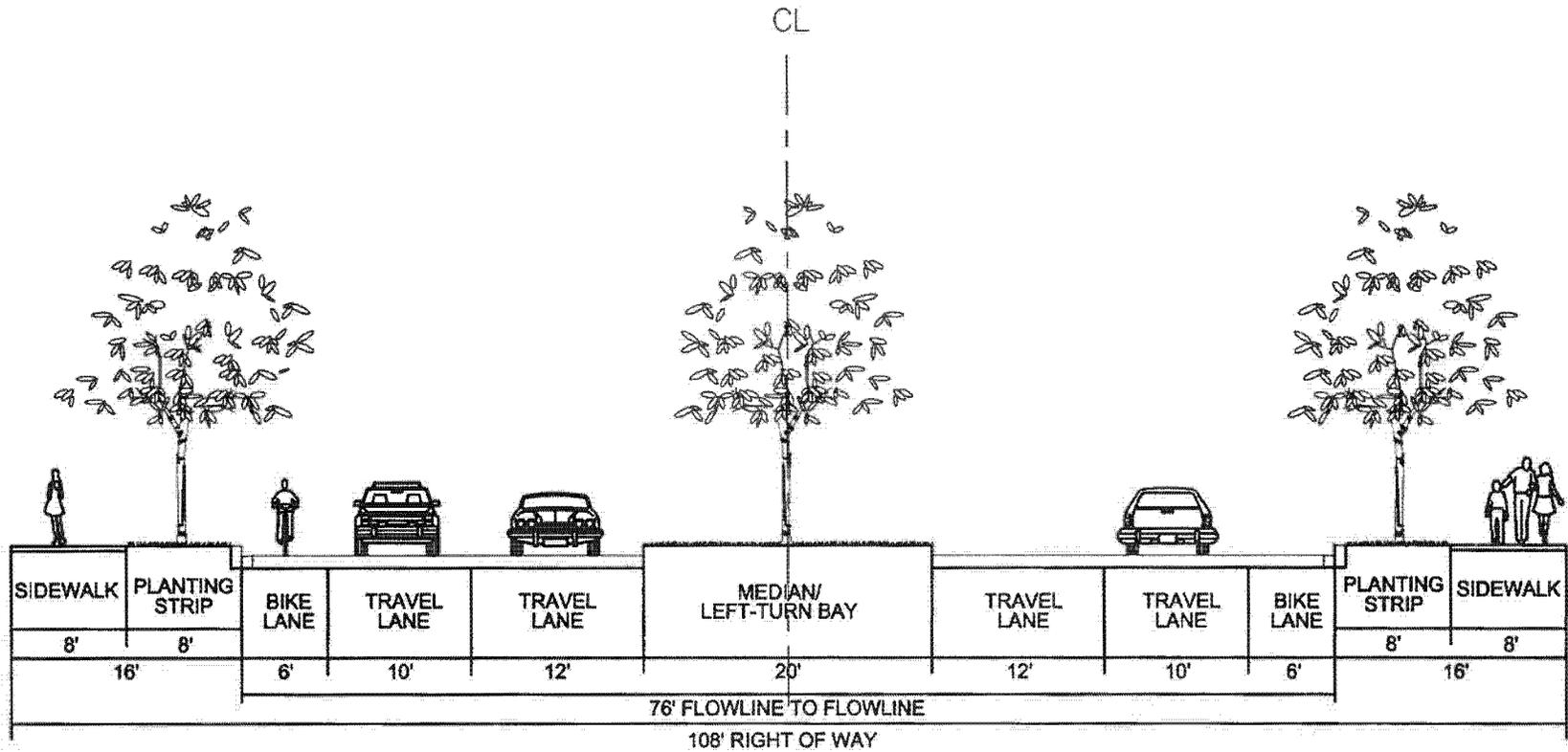
Figure 36
 Road "D" Typical Section
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.

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Note: The private developer proposes that planted medians shown on this graphic be provided at the intersection of North-South Road and Road "F", and Farrington Highway and Road "F" only.

Source: PB Americas, Inc.

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Figure 37
Road "F" Typical Section
University of Hawai'i-West O'ahu



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property tax revenue to the City and County of Honolulu, it is felt that the roads should be allowed to be dedicated to the County.

During the EIS public review period, the DTS wrote: *“The design of the project should ensure that TheHandi-Van vehicles have access to the project buildings. Presently, the tallest vehicle is 127 inches high. In addition to facilitating TheHandi-Van vehicle circulation, mobility features should be integrated into the design of public spaces on campus and among the private development land areas to promote accessibility for persons with disabilities...”* As TheHandi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities, the campus is relatively flat, the campus will be designed to accommodate fire engines within 150 feet of all buildings, and all campus parking areas will include wheelchair accessible parking stalls, the design of applicable roadways will ensure TheHandi-Van vehicle accessibility and ADA accessibility to project buildings.

Year 2014 Transit Service

The Year 2014 transit service is assumed to acknowledge the changes in the roadway network. The completion of North-South Road between Kapolei Parkway and H-1 Freeway with a new interchange at H-1 Freeway will enable more regional routes to serve the UH West O’ahu site. Although these route changes have not been specifically identified by the DTS, potential transit service could be as shown in Figure 38. This plan assumes that the proposed Honolulu High Capacity Transit Corridor Project (HHCTCP) currently being planned by DTS is not in service. It is noted that the Mayor has indicated that the initial operating segment of the HHCTCP could be constructed from the west, starting in the vicinity of the UH West O’ahu site. However, for the purposes of this study, it was assumed that the HHCTCP was not in operation within the 2014 time frame.

The potential transit/municipal bus route modifications in the 2014 time frames to service the campus could include:

- Route C – directed to continue on Farrington Highway to the future North-South Road interchange before accessing H-1 Freeway instead of accessing H-1 Freeway at the Makakilo Interchange as it does currently;
- Route 41 – reroute to serve the UH West O’ahu site via Kapolei Parkway, North-South Road, and the East-West Arterial (Road F);
- New Circulator Route – create a new circulator anchored to the Waipahu Transit Center.

Additionally, if demand warrants, Express service could be provided to UH West O’ahu from Central O’ahu and Honolulu.

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2014 Pedestrian and Bike Network

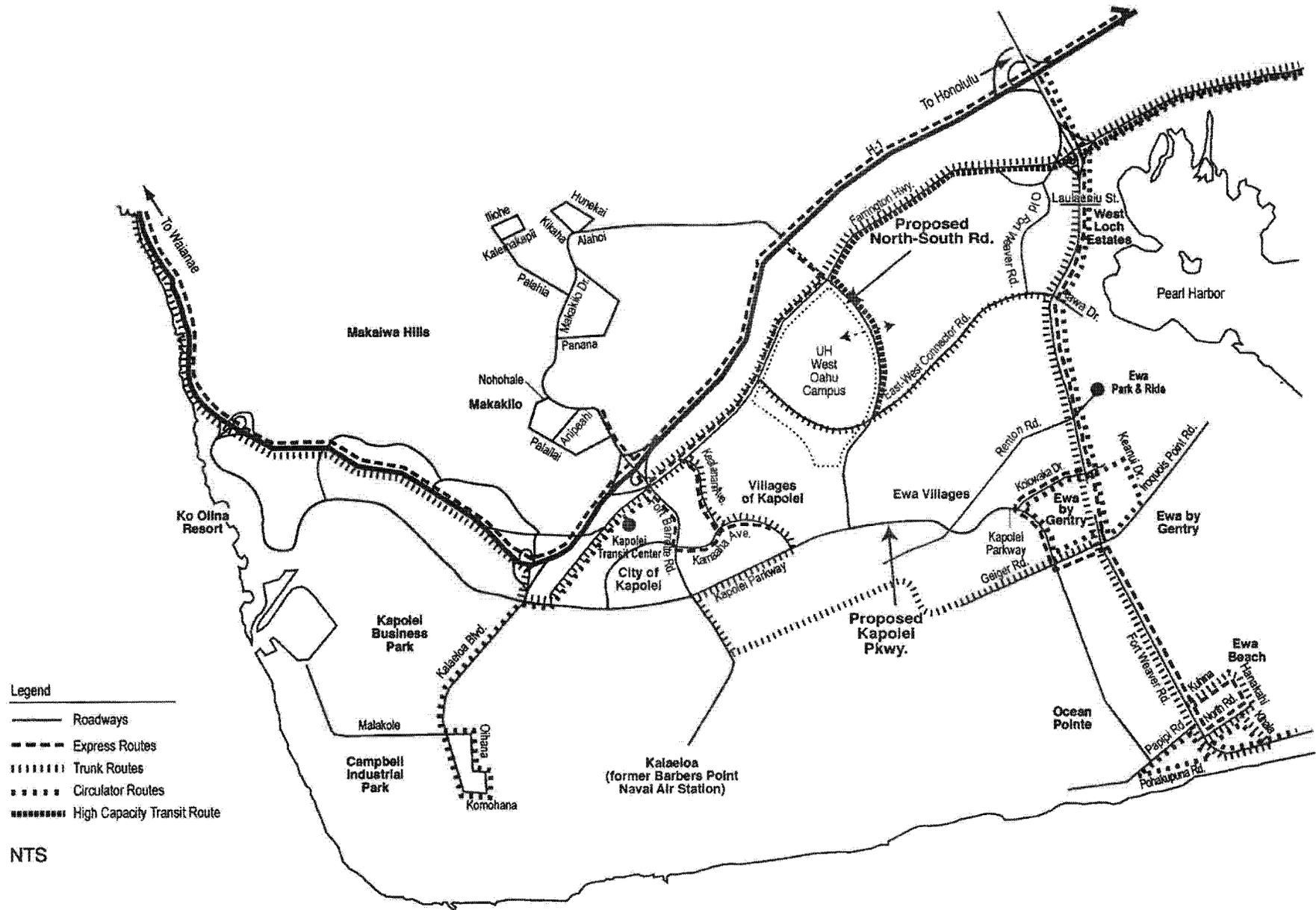
The pedestrian and bikeway network is an important element of the multi-modal transportation system for the project. As part of the Transportation Master Plan, the pedestrian and bikeway network was analyzed in conjunction with the vehicular and transit/municipal bus circulation network to develop an optimal multi-modal circulation network.

Ultimate 2025 Campus Pedestrian and Bikeway Master Plan

At the regional level, the UH West O'ahu regional pedestrian and bicycle network incorporates elements from the *Ewa Roadway Connectivity Study* and the *State of Hawai'i Bicycle Plan*. A *Conceptual Regional Public Facilities and Bikeway Master Plan* was prepared by the UH West O'ahu and developers in the area to assure an interconnected pedestrian and bicycle network between major projects in the 'Ewa Plain, and to link this network with major public facilities, parks and open spaces (see Figure 13).

Within the 500-acre property, a *Pedestrian, Bike, and Bus Circulation Plan* has been prepared to assure coordination between the various modes of transportation upon ultimate development of the property. Sidewalks, bike lanes and/or combination multi-purpose paths are provided for all major roadways described within the project (Roads A, B, C, D, E, F, G, H, I, J and the Campus Loop Road). Depending on the function of the road and its linkage with other roadways, the pedestrian and bikeway network could include sidewalks and bike lanes or multi-purpose paths, or a combination of the two. The sidewalk and bikeway configuration for the major roadways within the project area is depicted in Appendix H and Figure 39.

In addition to sidewalks and bikeways within roadway sections, the Kalo'i Greenway is planned to provide a multi-purpose pedestrian/bike path that could connect the campus to the residential and mixed-use commercial developments within the campus. Within the campus area, this pathway will generally follow the alignment of the existing gulch and will, for the most part, be unimpeded by vehicular traffic. Within the vicinity of the campus, other pedestrian paths and bikeways could extend from the Kalo'i Greenway providing access to various portions of the campus and connecting with the pedestrian and bicycle roadway network. Together the proposed greenways, sidewalks, bikeways and multi-purpose paths could provide pedestrians and bikes with a number of opportunities to access recreational, educational, commercial and residential uses within the property creating a pedestrian and bike friendly environment for residents to live, learn, work, and play within this unique community.



- Legend**
- Roadways
 - - - Express Routes
 - | | | | | Trunk Routes
 - • • • • Circulator Routes
 - High Capacity Transit Route

NTS

Figure 38
 Future 'Ewa Regional Public Transit Routes
 University of Hawai'i-West O'ahu



NOT TO SCALE



Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

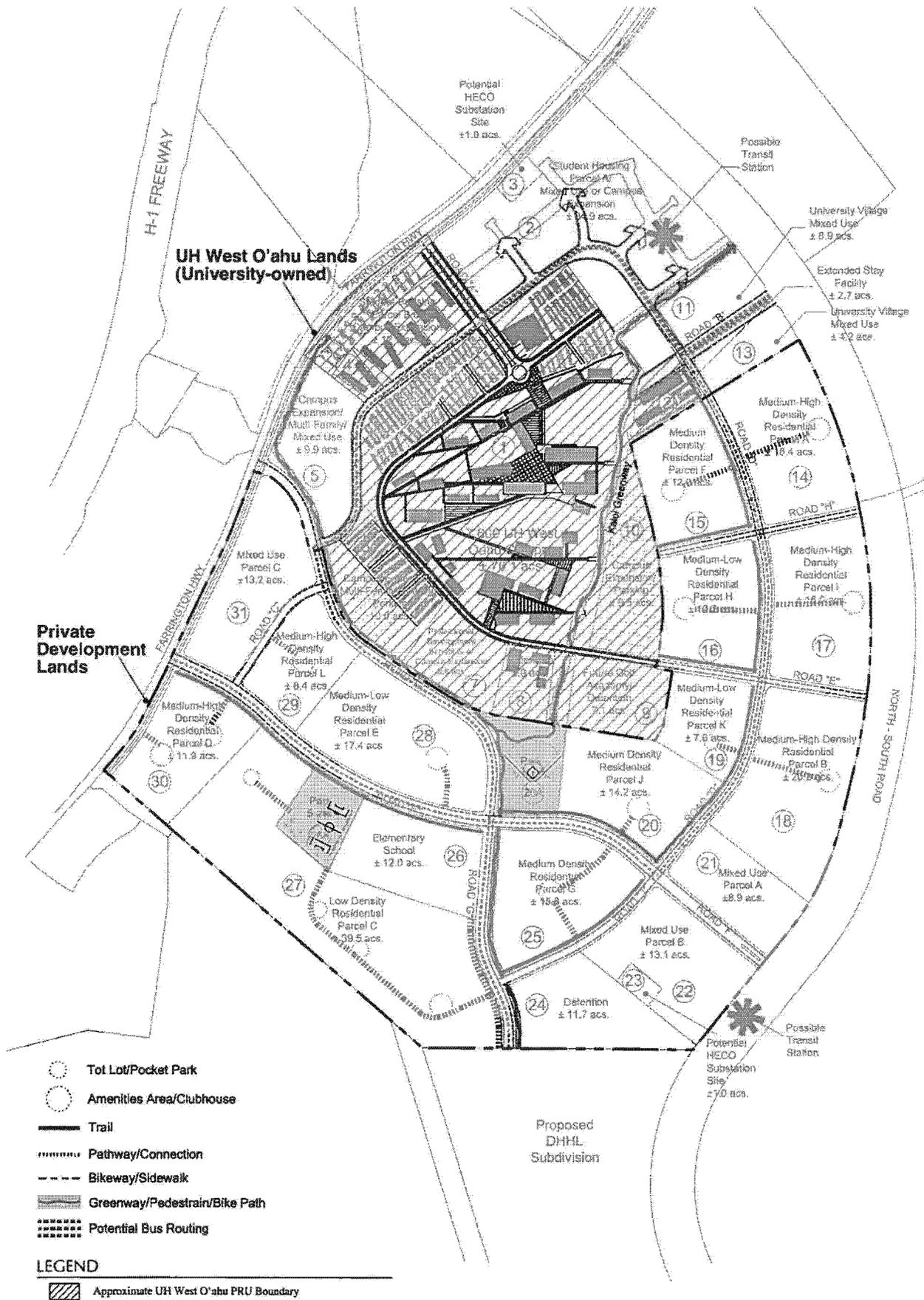


Figure 39
 Pedestrian, Bike and Bus Circulation
 University of Hawai'i West O'ahu

Source: EDAW | AECOM

Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.



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2014 Pedestrian and Bikeway Master Plan

The actual shape of the pedestrian and bike network in year 2014 will depend on how much of the DHHL East Kapolei Development Parcel 2 and D.R. Horton development is constructed. However, the following elements are expected to be in place within this time frame:

- dedicated path on east side of North-South Road between Kapolei Parkway and Farrington Highway;
- bike path on Road G continuing through the DHHL Kapolei I development makai of UH West O’ahu;
- bike path/bike lanes on the future East-West arterial between Fort Weaver Road and Farrington Highway;
- bike paths/bike lanes on future Wai’anae-Koko Head-oriented road within the D.R. Horton development; and
- bike route on improved sections of Farrington Highway between Road F and Fort Barrette Road.

Together, these regional pedestrian/bike facilities will enable bicyclist and pedestrians to access the more local pedestrian/bike facilities in a manner consistent with the recommendations of the *Ewa Roadway Connectivity Study* being completed by the DPP.

Projected Year 2014 Travel Demand

Trip Generation. Year 2014 trips were generated based on the methodology of the *Institute of Transportation Engineers (ITE), Trip Generation, 7th edition (2003)*. Table 9 summarizes the total trips generated by the UH West O’ahu development by Year 2014. Trips associated with the DHHL East Kapolei Development Parcels 1 and 2 makai and Koko Head of UH West O’ahu, respectively, were generated and assigned to the Year 2014 background network. The DHHL East Kapolei Development Parcel 2 is planned to be completed by Year 2016. By Year 2014, it was assumed that 912 single family and 584 multi-family dwelling units, and a proposed 600-student elementary school would be constructed. The DHHL East Kapolei Development Parcel 1 was assumed to be fully built out by Year 2014. D.R. Horton’s Ho’opili development was assumed to have 400 multi-family dwelling units and about 92,000 square-feet of retail space.

Trip Distribution and Assignment. The traffic generated for Year 2014 of the UH West O’ahu development was distributed and assigned to the network based on the regional travel patterns discussed in the Year 2025 trip distribution and assignment section. Traffic generated from the UH West O’ahu study area were distributed and assigned to the road network and are reflected in the project generated traffic turning volumes. The trips associated with the elementary school were assumed to serve residential

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development within the UH West O’ahu site, the DHHL East Kapolei Development Parcel 1, and some of the Villages of Kapolei site. Year 2014 project generated volumes are summarized in Figure 40.

Background Traffic Volumes. Background traffic volumes are volumes not directly associated with development proposed for the UH West O’ahu site. These volumes are comprised of sub-regional volumes using North-South Road and Farrington Highway and future trips associated with D.R. Horton’s Ho’opili development, the DHHL East Kapolei Development Parcels 1 and 2 located makai and Koko Head of UH West O’ahu site, respectively. Embedded in the DHHL East Kapolei Development Parcel 2 are volumes generated by the proposed Kroc Center that will be located on the mauka-Koko Head corner of North-South Road and Road F. These components were assigned to the future roadway system to estimate Year 2014 background traffic volumes and are summarized in Figure 41.

Total Traffic Volumes. The traffic generated by the UH West O’ahu development by Year 2014 (see Figure 40) was combined with the background traffic shown in Figure 41. This sum represents the total Year 2014 traffic volumes with the UH West O’ahu development and is shown in Figure 42. As part of this summation, background traffic was re-assigned to take advantage of the new roadway network connections provided by Road F and Road G within the UH West O’ahu site.

Projected Year 2014 Traffic Operations. Table 10 summarizes the projected Year 2014 peak hour intersection level-of-service without and with the UH West O’ahu development. Based on the projected Year 2014 peak hour traffic volumes, all intersections on Farrington Highway and North-South Road as well as the Road D/Road F intersection are expected to operate as signalized intersections and are analyzed as such. Additional access to Farrington Highway east of North-South Road as well as between the DHHL East Kapolei Development Parcel 2 and D.R. Horton Ho’opili developments were assumed. Appendix C of the traffic study includes intersection capacity worksheets.

As shown in Table 10, the development levels assumed for the Five-Year Master Plan time frame can be accommodated with the assumed completion of North-South Road and widening of Farrington Highway.

Summary of Results. All signalized intersections along North-South Road operated at LOS E or better during the 2014 time frame. The intersections at Roads F, G and A along Farrington Highway operated well at LOS D or better. All but one internal intersection that was analyzed operated well at LOS C or better. The southbound left-turn at Road D/ Road F operated at LOS F due to high demand.

Table 9 – Year 2014 UH West O’ahu Trip Generation Summary

Land Use	Land Use	ITE Code	Intensity	Units	AM Peak Hour Trips		PM Peak Hour Trips	
					Enter	Exit	Enter	Exit
UH West O’ahu Campus								
UH West O’ahu Campus-Education Facilities(Includes Road A)(Parcel 1)	University	550	2,750	Students	442	110	170	397
Multi-Family Housing	Multi-Family	230	437	DU	10	47	47	23
Commercial - Office	Office	710	169,667	SF	219	30	39	190
Commercial - Retail	Retail	820	294,683	SF	139	89	487	527
Subtotal					810	276	743	1,137
Private Development Lands								
Multi-Family Housing	Multi-Family	230	1,616	DU	36	174	174	86
Single Family Housing	Single Family	210	237	DU	44	131	147	86
Commercial - Office	Office	710	96,921	SF	125	17	22	108
Commercial - Retail	Retail	820	142,659	SF	67	43	236	255
Elementary School [^]	Elementary	520	550	Students	107	88	0	46
Subtotal					379	453	579	582
Grand Total					1,189	730	1,322	1,719
[^] Elementary School PM entering trips assumed negligible since the study PM peak hour is a commuter peak.								

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)

Table 10 – Year 2014 Intersection Level-of-Service Summary (Without and With UH West O’ahu)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
North-South Rd/ H-1 WB Off Ramp Terminus	D	38.8	D	37.8	D	48.5	D	53.2
H-1 WB Off Ramp Left	D	37.2	C	31.5	D	44	D	46.8
H-1 WB Off Ramp Right	C	25.0	B	14.1	C	25.0	B	14.1
North-South NB Left	D	36.4	D	51.0	E	64.7	E	79.9
North-South NB Through	B	18.4	C	33.6	B	17.9	C	33.6
North-South SB Through	D	54.3	E	72.2	D	54.3	E	72.2
North-South SB Right	A	9.5	A	4.2	A	9.5	A	4.2
North-South Rd/ H-1 EB Off Ramp Terminus	A	7.6	A	8.5	B	16.9	B	19.6
H-1 EB Off Ramp Left	E	56.3	D	51.8	E	56.3	D	51.8
H-1 EB Off Ramp Right	A	0.1	A	0.1	A	0.1	A	0.2
North-South NB Through	B	12.4	C	28.4	B	13.0	C	31.6
North-South NB Right	A	0.6	A	0.1	C	23.4	C	32.9
North-South SB Left	E	66.9	C	30.4	E	66.9	C	30.4
North-South SB Through	A	4.0	B	10.1	A	4.3	B	12.3
North-South Rd/ Farrington Hwy	D	41.8	D	41.6	D	45.0	D	51.1
Farrington EB Left	D	50.8	D	50.2	E	55.7	E	57.8
Farrington EB Through	D	49.8	D	48.6	D	50.1	D	49.3
Farrington EB Right	B	17.3	D	52.5	B	17.1	E	61.8
Farrington WB Left	E	64.7	E	62.2	E	65.3	E	63.2
Farrington WB Through	E	59.0	E	64.8	E	61.0	E	66.1
Farrington WB Right	D	36.5	C	24.3	D	36.5	C	24.3
North-South NB Left	D	41.9	E	70.1	D	41.8	E	64.6
North-South NB Through	C	34.8	D	43.0	D	39.2	E	51.8
North-South NB Right	B	14.2	B	19.1	B	14.3	B	19.4
North-South SB Left	E	59.2	D	45.2	E	59.2	D	45.2
North-South SB Through	E	45.4	C	33.8	D	51.4	D	52.8
North-South SB Right	B	14.4	B	15.8	B	17.2	B	19.1
North-South Rd/ Road B	D	34.9	B	19.3	D	49.8	E	61.3
Road B EB Left	-	-	-	-	D	54.0	D	50.4
Road B EB Through/Right	-	-	-	-	D	51.2	E	58.2
Road B WB Left	D	43.1	D	50.5	D	53.5	E	62.0
Road B WB Through	-	-	-	-	E	56.2	E	63.3
Road B WB Right	E	62.5	C	22.8				

Table 10 – Year 2014 Intersection Level-of-Service Summary (Without and With UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
North-South NB Left	-	-	-	-	D	44.2	E	71.6
North-South NB Through/Right	D	50.5	C	27.9	D	50.0	E	74.2
North-South SB Left	E	66.2	D	46.6	E	58.1	D	38.3
North-South SB Through	A	4.2	A	5.5	D	47.8	E	56.8
North-South SB Right	-	-	-	-				
North South Rd/ Road H*	Unsignalized RIRO**				Unsignalized RIRO**			
Road H EB Right (UHWO)	-	-	-	-	C	17.5	D	28.3
Road H WB Right (Ho’opili/EK 2)	F	80.0	C	23.6	F	74.4	D	31.9
North-South Rd/ Road F	D	49.9	D	44.5	D	54.7	D	48.8
Road F EB Left	-	-	-	-	E	55.1	E	61.2
Road F EB Through/Right	-	-	-	-	D	45.3	D	56.9
Road F WB Left	D	36.2	D	45.3	D	53.9	E	60.9
Road F WB Through	-	-	-	-	E	62.6	E	77.6
Road F WB Right	E	55.5	E	71.5				
North-South NB Left	-	-	-	-	D	54.9	E	62.5
North-South NB Through/Right	E	74.6	E	67.7	D	54.2	C	34.8
North-South SB Left	E	71.2	E	76.4	E	56.7	D	53.4
North-South SB Through	B	18.6	B	15.9	D	53.1	D	44.1
North-South SB Right	-	-	-	-				
Farrington Hwy/ Road A	This Intersection Does Not Exist In this Scenario				C	25.6	B	18.3
Farrington EB Through/Right					C	28.0	C	20.1
Farrington WB Left					D	49.9	D	49.4
Farrington WB Through					A	3.8	A	5.4
Road A NB Left					D	53.8	D	53.0
Road A NB Right					C	22.4	D	37.4
Farrington Hwy/ Road G	This Intersection Does Not Exist In this Scenario				B	12.9	B	11.6
Farrington EB Through/Right					B	16.3	B	14.9
Farrington WB Left					D	49.1	D	54.3
Farrington WB Through					A	5.2	A	7.2
Road G NB Left					D	49.0	D	47.3
Road G NB Right					C	28.5	C	30.0
Farrington Hwy/ Road F	This Intersection Does Not Exist In this Scenario				C	21.3	C	20.1
Farrington EB Through					C	22.8	C	25.3
Farrington EB Right					D	47.8	D	48.3
Farrington WB Left								
Farrington WB Through					A	8.1	A	9.5

Table 10 – Year 2014 Intersection Level-of-Service Summary (Without and With UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Road A NB Left					D	47.2	D	46.8
Road A NB Right					C	23.0	C	22.2
Road D/ Road F	This Intersection Does Not Exist In this Scenario				B	12.8	B	15.0
Road F EB Left					B	12.5	A	9.6
Road F EB Through/Right					B	13.1	B	10.7
Road F WB Left					B	14.1	B	17.5
Road F WB Through/Right					B	14.2	B	10.8
Road D NB Left					B	10.8	B	14.2
Road D NB Through/Right					B	10.3	B	18.9
Road D SB Left					B	11.1	B	18.8
Road D SB Through/Right					A	8.8	B	12.4
Road D/ Road B	This Intersection Does Not Exist In this Scenario				Unsignalized			
Road B EB Left					A	7.3	A	7.2
Road B WB Left					A	7.2	A	7.6
Road D NB Left/Through					A	9.8	B	15.0
Road D NB Right					A	8.7	A	9.1
Road D SB Left					B	10.1	F	117.1
Road B SB Through/Right					A	9.6	C	16.6
Road A/ Road I	This Intersection Does Not Exist In this Scenario				Unsignalized			
Road I EB Left/Through/Right					B	12.7	B	13.6
Road I WB Left/Through/Right					C	18.2	B	14.9
Road A NB Left					A	7.6	A	7.5
Road A SB Left					A	7.7	A	7.8
Road G/ Road F	This Intersection Does Not Exist In this Scenario				Unsignalized			
Road F EB Left					A	7.5	A	7.6
Road F WB Left					A	7.5	A	7.8
Road G NB Left					B	12.0	B	13.2
Road G NB Through/Right					B	10.5	B	11.4
Road G SB Left					B	12.5	B	14.4
Road G SB Through/Right	B	10.9	B	12.9				
Road J/ Road G	This Intersection Does Not Exist In this Scenario				Unsignalized			
Road J EB Left					A	9.7	A	9.9
Road J EB Right					B	10.9	B	11.0
Road J WB Left					B	10.6	B	11.3
Road J WB Right					A	9.5	B	10.1
Road G NB Left					A	7.2	A	7.3

Table 10 – Year 2014 Intersection Level-of-Service Summary (Without and With UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Road G SB Left					A	7.5	A	7.6
Note: NB=North Bound, SB=South Bound, EB=East Bound, WB=West Bound * Highway Capacity Manual methodology does not allow for more than two through lanes on the major street. ** RIRO - Right-In/Right-Out								

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)

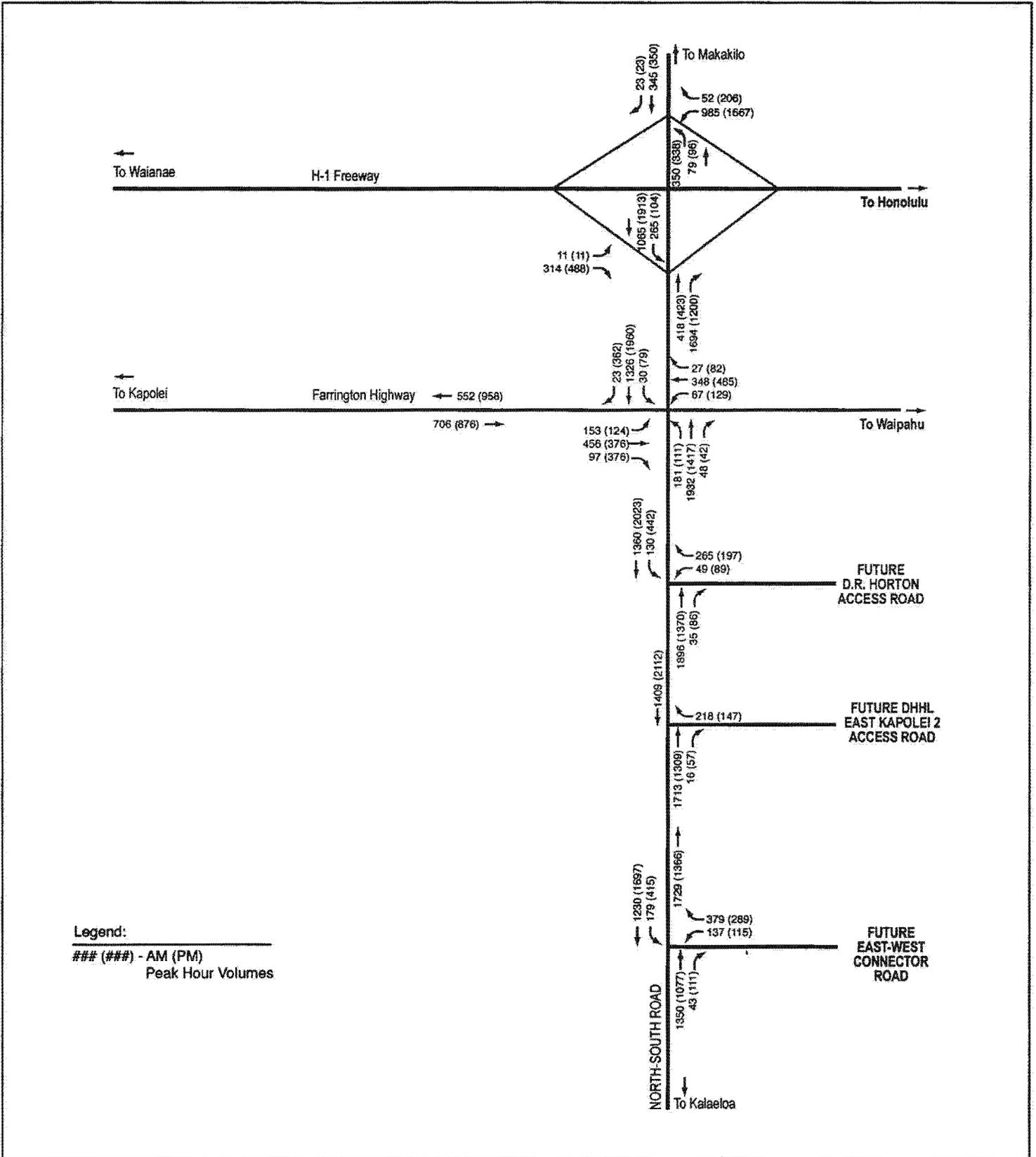


Figure 40
 Year 2014 Project Generated Peak Hour
 Traffic Volumes
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

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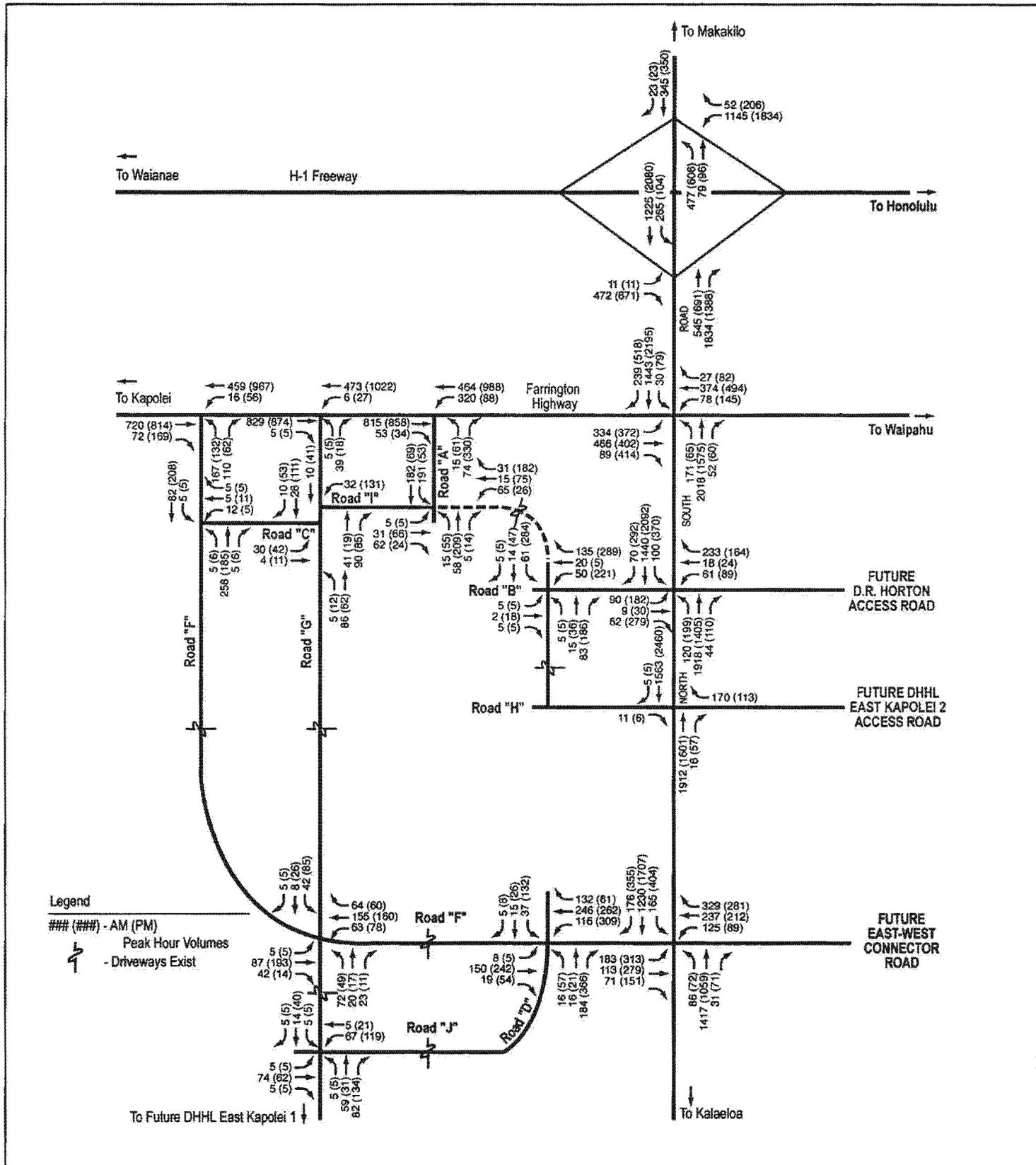


Figure 41
 Year 2014 Background Peak Hour Traffic
 Volumes without UH West O'ahu
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning
 purposes only and is subject to change.

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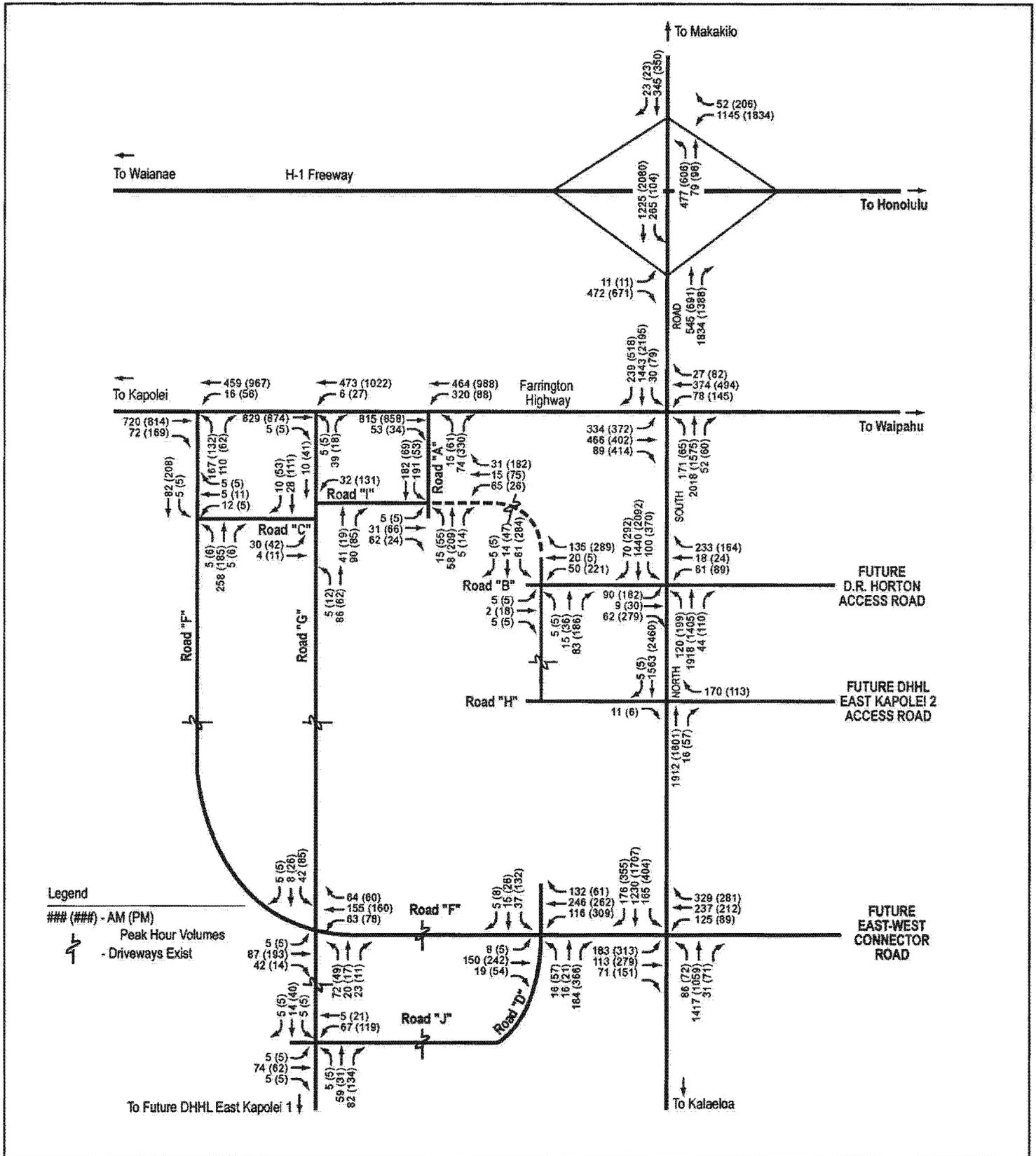


Figure 42
 Year 2014 Total Peak Hour Traffic Volumes
 with UH West O'ahu
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

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**UNIVERSITY OF HAWAII – WEST O’AHU
PLAN REVIEW USE APPLICATION**

YEAR 2014 RECOMMENDATIONS

This section of the report serves to verify that the assumed future roadway system will adequately handle the traffic demand placed on it at Year 2014 of the UH West O’ahu development. The future roadway system is separated into regional and internal roadway components.

Regional Roadway Improvements

North-South Road. By Year 2014, North-South Road is assumed to be a six-lane, divided roadway from Kapolei Parkway to H-1 Freeway with a diamond interchange on H-1 Freeway. It is recommended that North-South Road be fully channelized with double left-turn lanes and exclusive through and right turn lanes. Double left-turn lanes are needed at the Road B and Road F intersections. The intersections at Farrington Highway, Road B, and Road F are expected to warrant signalization by Year 2014. Alternative pedestrian and bike facilities such as overpass or underpasses should be considered at North-South Road intersections for those crossing North-South Road due to the volume of traffic projected for North-South Road.

Farrington Highway. Farrington Highway is assumed to be a four-lane, divided roadway within the Year 2014 time frame. It was also assumed that full channelization would be implemented at the Farrington Highway/North-South Road intersection to provide double left-turn lanes and exclusive through and right-turn lanes. At Road A, Road G, and Road F intersections, it is recommended to have exclusive left-turn lanes on Farrington Highway as well as on Road A, Road G, and Road F. All study intersections along Farrington Highway are expected to warrant a traffic signal by Year 2014.

Internal Roadway Improvements

The internal roadways were evaluated with regard to amount of traffic carried. The roadway cross-sections as proposed were found to adequately handle the traffic demand projected for the UH West O’ahu development by Year 2014. Lane configurations at the intersections were assumed to remain the same as described in the Year 2025 recommendation section.

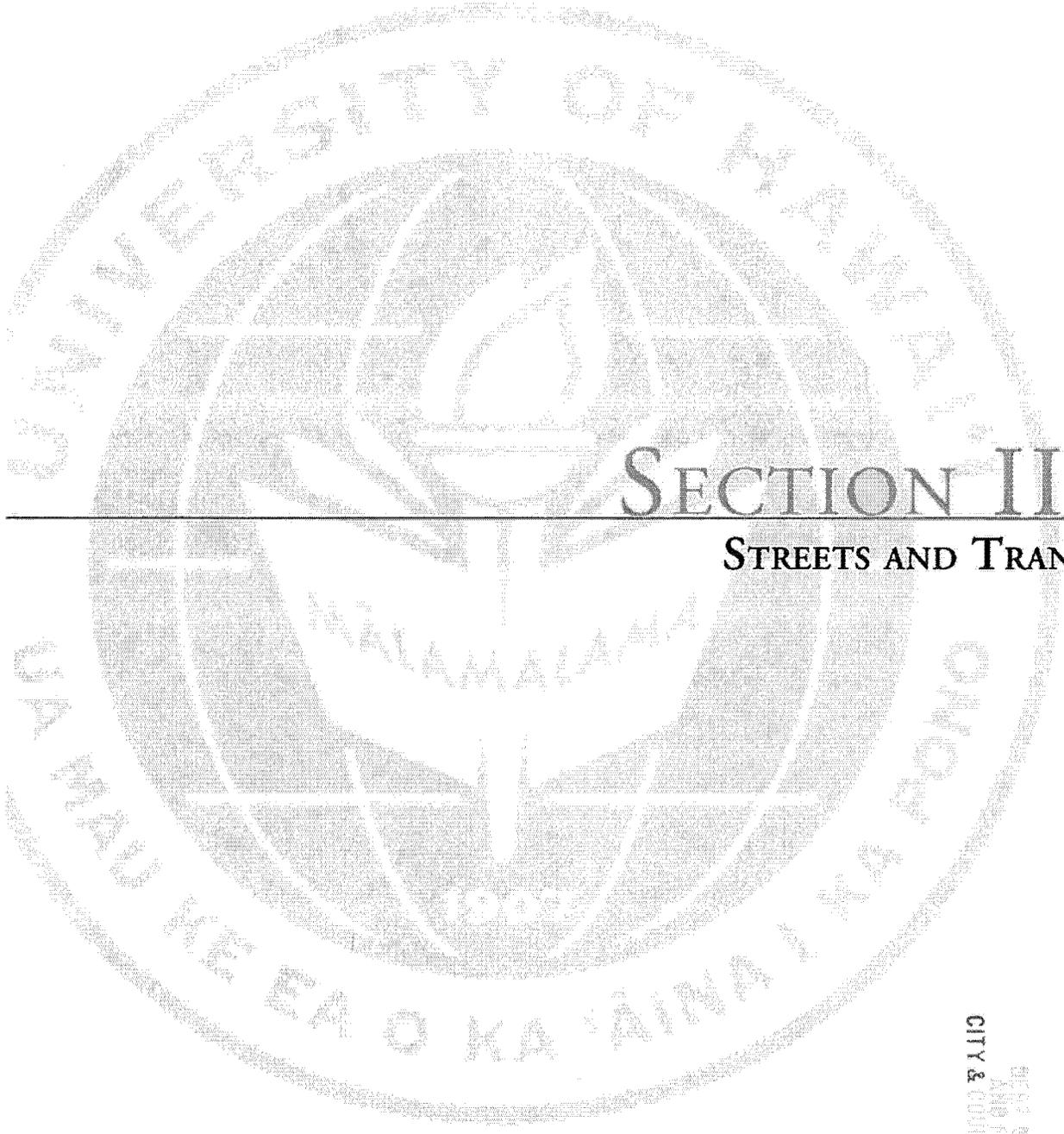
Road D/ Road F Intersection. It is recommended that the Road D approaches be configured to have an exclusive left-turn lane and a shared through/right-turn lane. The Road F approaches should have an exclusive left-turn lane located within the median, one through lane, and a shared through/right-turn lane. These lane configurations will be able to process the expected demand through the intersection. By Year 2014, the volumes at this intersection are projected to warrant signalization.

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Road B/ Road D Intersection. It is recommended that a signal warrant study be done after the commercial mixed-use parcel on the mauka side of Road B is completed. As one of the main entry points into the UH West O’ahu development area, this intersection is expected to handle significant traffic turning movements and will likely be signalized in the future.

Road A/ Road I Intersection. This intersection does not warrant signalization by Year 2014. It is recommended to have TWSC on the Road I approaches.

Road F/ Road G Intersection. This intersection is the junction of Road G that provides continuity into the DHHL East Kapolei Development Parcel 1 and Road F which is part of the proposed East-West arterial. Additionally, an elementary school is proposed on the makai-Wai’anae corner of this intersection. It is, therefore, recommended to monitor this intersection and install a traffic signal when warranted. The recommended configuration for the Road F approaches is a left-turn lane within the median, one through lane, and a shared through/right-turn lane. The configuration for the Road G approaches is an exclusive left-turn lane and a shared through/right-turn lane.



SECTION III.F.4.

STREETS AND TRANSPORTATION

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DEPT. OF TRANSPORTATION
AND CITY ENGINEERING
CITY & COUNTY OF HONOLULU

III.F.4. STREETS AND TRANSPORTATION (TRANSPORTATION MASTER PLAN: MULTI- MODAL TRANSPORTATION NETWORK AND TRAFFIC STUDY)

A traffic study for the project was prepared by Parsons Brinckerhoff in May 2006 for the *UH West O'ahu Final EIS* and was reviewed by the DPP Traffic Review Branch and the State Department of Transportation Highways Division. In August 2007, Parsons Brinckerhoff updated the traffic study and this information was incorporated into a Transportation Master Plan for the project which includes a discussion on an internal and regional transit, municipal bus, pedestrian and bikeway network. Portions of the traffic study are included as part of the discussion for this Transportation Master Plan. The updated traffic study is included in its entirety in Appendix G.

Existing Conditions

Roadways

The only existing roadway providing access to the property is Farrington Highway. Once completed, the future North-South Road will provide access to the property from the east. Major roadways in the project area are described below and shown in Figure 50.

The H-1 Freeway is a 6-lane freeway in the vicinity of the UH West O'ahu property. The Makakilo Interchange is located approximately two miles west of the property, and the Kunia Interchange is located approximately two miles east of the property. The posted speed limit on the H-1 Freeway in the vicinity of the property is 60 miles per hour (mph).

Farrington Highway is a major arterial roadway that provides east-west mobility through the 'Ewa region. It runs along the northwestern boundary of the property as a 2-lane, undivided roadway. Farrington Highway is a 4-lane, divided roadway from the Kapolei Golf Course access road to Kamokila Boulevard in the City of Kapolei. Farrington Highway is also a 4-lane, divided roadway near Fort Weaver Road. The posted speed limit on Farrington Highway in the project area is 35 mph.

Fort Weaver Road/Kunia Road is currently the principal north-south arterial roadway serving the 'Ewa and 'Ewa Beach communities. The roadway is located east of the UH West O'ahu property and is named Fort Weaver

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N 24 1/2

**UNIVERSITY OF HAWAII – WEST O’AHU
ZONE CHANGE APPLICATION**

Road south of Farrington Highway, and Kunia Road north of Farrington Highway. Fort Weaver Road/Kunia Road is a 6-lane expressway between the H-1 Freeway and Laulahu Street, with interchanges at the H-1 Freeway and Farrington Highway. It is a 4-lane principal arterial from Farrington Highway to the future North-South Road, and a 2-lane minor arterial through the rest of 'Ewa Beach. The posted speed limit on Fort Weaver Road is 45 mph mauka of Geiger Road and reduces to 35 mph makai of Geiger Road.] ?

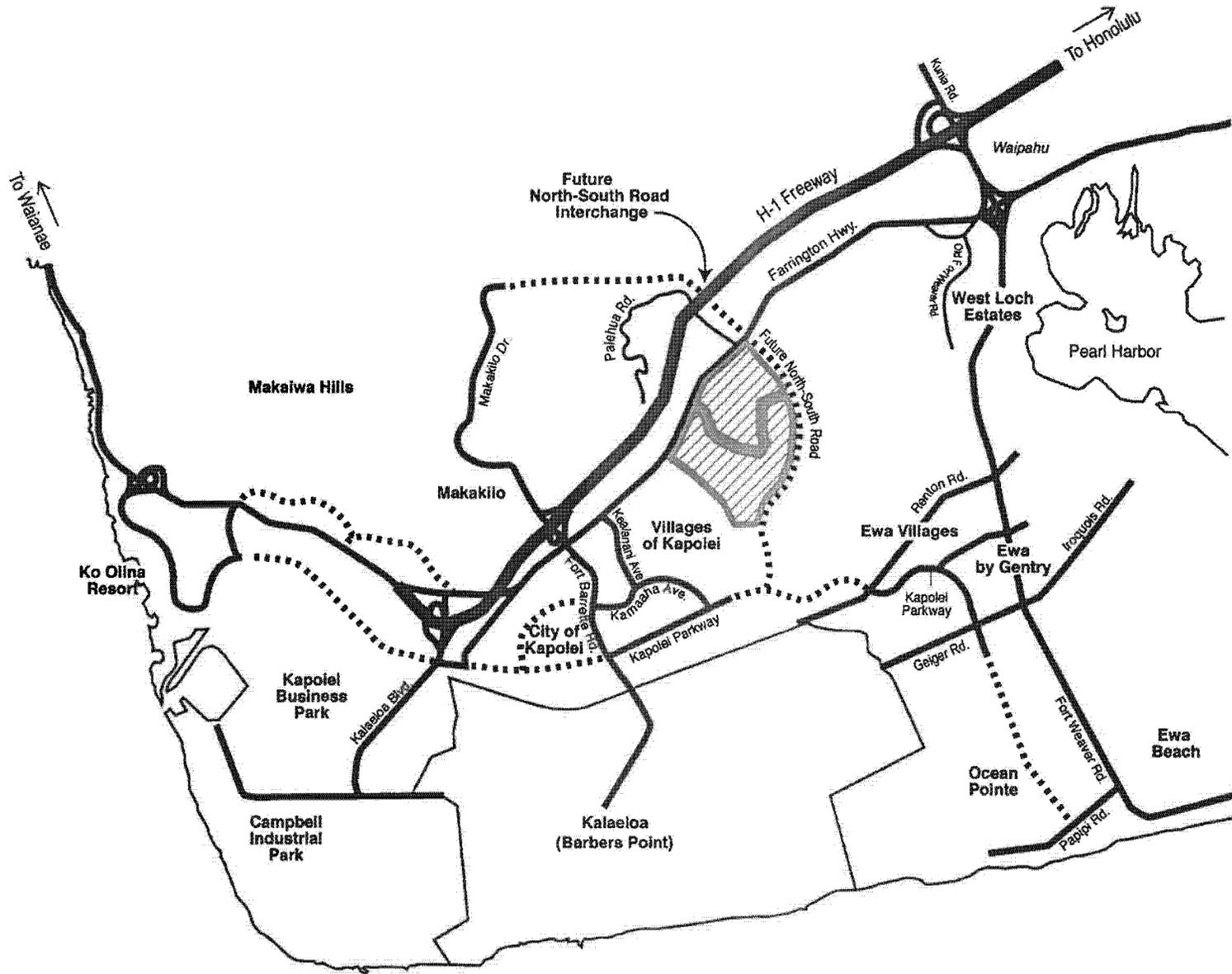
Fort Barrette Road/Makakilo Drive is a major north-south roadway serving Makakilo and Kapolei. The roadway provides access to the H-1 Freeway and Farrington Highway. Fort Barrette Road/Makakilo Drive is located west of the UH West O’ahu property. Fort Barrette Road is a 2-lane major arterial road with a posted speed limit varying between 25 and 40 mph. The roadway is planned to be widened to four lanes in the near future. Fort Barrette Road becomes Makakilo Drive north of Farrington Highway. Makakilo Drive is a 4-lane divided roadway with a posted speed limit varying between 25 and 40 mph.

The *Oahu Regional Transportation Plan* (ORTP), prepared for the Oahu Metropolitan Planning Organization (OMPO), identifies roadway concepts necessary to support future development in the 'Ewa Plain. Major roadway improvements identified by the ORTP include completion of the Kapolei Parkway and the North-South Road. The North-South Road is currently under construction.

Public Transit

The City and County of Honolulu, Department of Transportation Services (DTS) - Public Transit Division currently provides an island-wide public bus transit system called TheBus. TheHandi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities. Both systems are operated by Oahu Transit Services (OTS). With a fleet of 525 buses, TheBus provides 86 numbered bus routes, over 120 sub-routes and carries over 70 million passengers annually. Figure 51 shows the existing regional public transit routes within the 'Ewa Plain. Currently only Routes 40 and 40A (Mākaha Beach/Mākaha Towers-Honolulu Ala Moana) travels on Farrington Highway past the UH-West O’ahu site. Route 41 (Kapolei-'Ewa Beach) travels in the vicinity of the UH-West O’ahu site as it provides service to the Villages of Kapolei development. Route 44 ('Ewa Beach-Waipahu) provides circulation between 'Ewa Beach and West Waipahu, while Route 415 provides circulation between the Kapolei Transit Center and Kalaeloa.

The Handi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities.

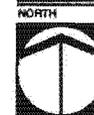


Legend

-  UH West O'ahu Lands to be developed for the UH West O'ahu Campus/Community
-  UH West O'ahu Lands to be developed by a private developer
-  Roadway
-  Future Roadway
-  UH West O'ahu

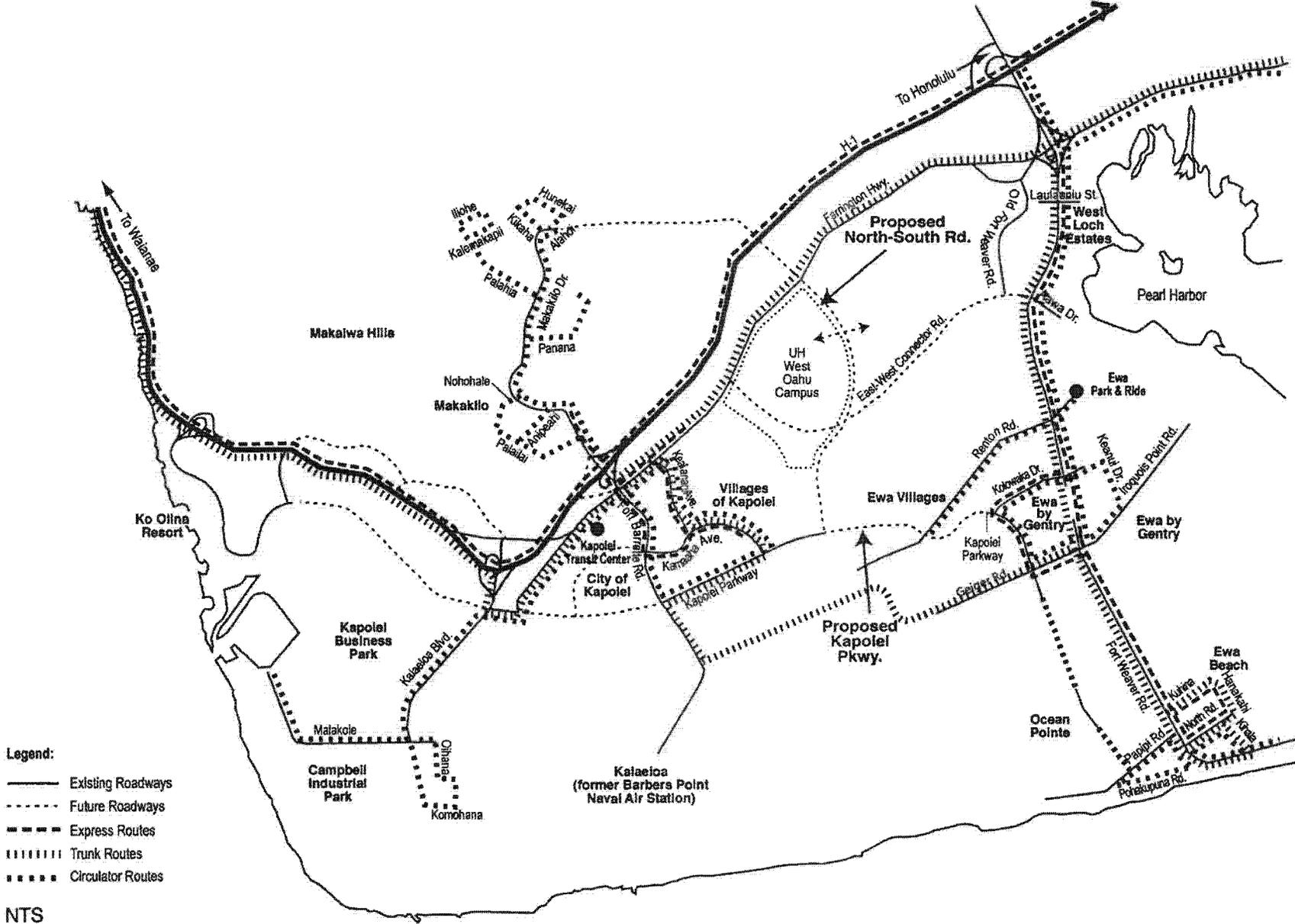
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Figure 50
 Regional Roadway Map
 University of Hawai'i-West O'ahu



NOT TO SCALE





- Legend:**
- Existing Roadways
 - - - Future Roadways
 - ==== Express Routes
 - Trunk Routes
 - Circulator Routes

NTS

Figure 51
Existing 'Ewa Regional Public Transit Routes
University of Hawai'i-West O'ahu



NOT TO SCALE



Source: PB Americas, Inc.
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Traffic

Automatic traffic recorders were placed along Farrington Highway in the vicinity of the future North-South Road on April 15, 2004. The AM peak hour of traffic occurred between 7:00 AM and 8:00 AM, and the PM peak hour of traffic occurred between 4:30 PM and 5:30 PM, respectively. In the vicinity of the UH West O'ahu property, Farrington Highway operated at what the traffic engineering consultant considers an acceptable Level of Service (LOS) E during both AM and PM peak hours of traffic. The majority of traffic on Farrington Highway in the vicinity of the property is traveling between Kapolei and Waipahu. Regional traffic to and from the Primary Urban Center generally travels on the H-1 Freeway.

Year 2025

Ultimate Build Out

The proposed project is anticipated to be completed by Year 2025. As such, Parsons Brinckerhoff used forecasted traffic volumes for 2025 in its traffic study for UH West O'ahu. Developments that were assumed to be completed by 2025 include:

- **DHHL East Kapolei Development Parcel 1.** The DHHL East Kapolei Development Parcel 1 was assumed to be 100% complete and includes single family residential, retail, and office uses.
- **DHHL East Kapolei Development Parcel 2.** The DHHL East Kapolei Development Parcel 2 is also assumed to be 100 percent complete and single and multi-family residential uses, an elementary and middle school, and the Salvation Army's Kroc Center.
- **Ho'opili Master Planned Community.** A portion of the ultimate residential and commercial uses currently proposed.

Roadways

The roadway network in the vicinity of the UH West O'ahu property is expected to change significantly in the future. Phase 1 of North-South Road and its interchange with the H-1 Freeway will be constructed by 2009. Consistent with the ORTP, the H-1 Freeway and Farrington Highway will be widened. The DOT and DTS have been consulted in the timing of these projects. Roadway improvements that are anticipated by 2025 include the widening of Fort Barrette Road and Fort Weaver Road, additional roadways proposed by Ho'opili and East Kapolei Development Parcel 1 and the completion of the East-West Connector Road between Farrington

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Highway and Fort Weaver Road. The external and internal (within the 500-acre property) roads are further described below.

H-1 Freeway. Based on the *2030 Oahu Regional Transportation Plan* (ORTP) published by the Oahu Metropolitan Planning Organization, the high-occupancy vehicle (HOV) lanes on H-1 Freeway are planned to be extended from Wai'awa Interchange (H-1/H-2 Merge) to the Makakilo Interchange.

North-South Road. Also included in the ORTP and currently under construction is a new north-south arterial roadway built by HDOT between H-1 Freeway and Kapolei Parkway. The new North-South Road will provide additional access to H-1 Freeway for the 'Ewa region and provide sub-regional accessibility for developments in the vicinity of the UH West O'ahu site. The ultimate configuration of North-South Road includes three vehicular lanes with paved shoulders in each direction, a 28-foot median which has been discussed as a possible location for a rapid transit corridor, and sidewalks on both sides. In conjunction with the North-South Road, a new diamond interchange connecting it to H-1 Freeway is planned to be completed by late Year 2008.

Farrington Highway. Based on the ORTP and other roadway plans for the 'Ewa area, Farrington Highway is assumed to be widened from a two-lane, undivided cross-section to a four-lane, divided cross-section between the Kapolei Golf Course Access Road and Fort Weaver Road. This would make Farrington Highway a continuous 4-lane, divided roadway between Kamokila Boulevard and the Wai'awa Interchange.

Access to the UH West O'ahu property is planned via three intersections at Farrington Highway and four intersections at North-South Road. The University is coordinating with the DOT, DTS and DPP Traffic Review Branch on roadway improvements to these intersections.

Ten internal roadways are planned within the property and are described below.

Road A. Road A will be the main access to the UH West O'ahu campus from Farrington Highway, Wai'anae of the North-South Road/Farrington Highway intersection. It will be one of the primary accesses to the UH West O'ahu campus. Road A will be constructed as a four-lane urban cross-section with a raised median providing left-turn lanes at intersections. Road A will provide access to the campus, student housing, and the mixed use village planned as part of the UH West O'ahu development. The roadway

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will have sidewalks and tree wells or a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 52).

Road B. Road B is proposed as the first access to the UH West O'ahu site from North-South Road, makai of the Farrington Highway/North-South Road intersection. It will be located opposite one of the accesses for the proposed D.R. Horton development, Ho'opili, located Koko Head of North-South Road. This intersection will be signalized when traffic signal warrants are satisfied. Road B is planned to be a four-lane divided roadway with a raised median providing left-turn lanes at intersections. Road B will provide access to the campus, student housing, and the University Village. It will also provide access to the medium-high density residential development areas planned adjacent to North-South Road by the University's private developer. The roadway is proposed to have sidewalks and tree wells or a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 52 and 53).

Road C. Road C is proposed as a two-lane roadway providing internal access to both UH West O'ahu campus uses and to the private development mixed use and low-density residential uses. It intersects Road F, one of the major roadways that transect the UH West O'ahu site, just makai of Farrington Highway. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 54).

Road D. Road D is proposed as an undivided, four-lane, collector roadway that will provide an internal connection between Road B and Road F within the UH West O'ahu site. Left-turn lanes at intersections along Road D will be provided if needed. Road D will provide internal circulation within the UH West O'ahu site and access to the medium-high and medium density residential parcels proposed by the University's private developer. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 55).

Road E. Road E is proposed as a two-lane roadway providing access to North-South Road at a proposed right-in/right-out (RI/RO) driveway located between the planned Road H and Road F intersections along North-South Road. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 54).

Road F. Road F, also known as the East-West Connector Road, is proposed as a four-lane, collector roadway that will transect the UH West O'ahu site,

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providing access for the site to both Farrington Highway and North-South Road. Road F will intersect North-South Road directly opposite a major access for the DHHL East Kapolei Development Parcel 2 located Koko Head of North-South Road. This intersection is planned to be signalized when traffic signal warrants are satisfied. Road F is proposed to be a four-lane, divided roadway with a median providing left-turns at intersections. For this roadway, the private developer has proposed that planted medians be provided only at the intersection of North-South Road/Road F and at the intersection of Farrington Highway/Road F, a painted striped median is proposed between the entry medians. Internal to the UH West O'ahu site, Road F will intersect Roads D, G, and C providing access to the adjacent residential private development and mixed use development as well as to internal areas of the UH West O'ahu campus via other access roads. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 56).

Road G. Road G is proposed as a two-lane undivided roadway with center turning lane providing access for the Department of Hawaiian Homelands (DHHL) East Kapolei I residential development located makai of the UH West O'ahu campus. It will intersect Roads C, I, and F. Makai of Road J, the roadway is proposed to have a multi-purpose (bike and pedestrian) path on one side of the roadway and a sidewalk on the other, along with planting strips all located outside of the travelway. Mauka of Road J up to the elementary school, the roadway is proposed to have two multi-purpose paths and planting strips located outside of the travelway. Mauka of the elementary school, the roadway is proposed to have a multi-purpose (bike and pedestrian) path on one side of the roadway along with planting strips on both sides of the right-of-way (see Figure 57).

Road H. Road H is proposed to be a two-lane roadway providing access to North-South Road at a proposed right-in/right-out (RI/RO) driveway located between the planned Road B and Road E intersections along North-South Road. DHHL's East Kapolei Development Parcel 2 has planned a RI/RO access directly across from Road H. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 54).

Road I. Road I is proposed as a two-lane roadway providing access between Road G, the main entrance Road A, and the University Village area. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 54).

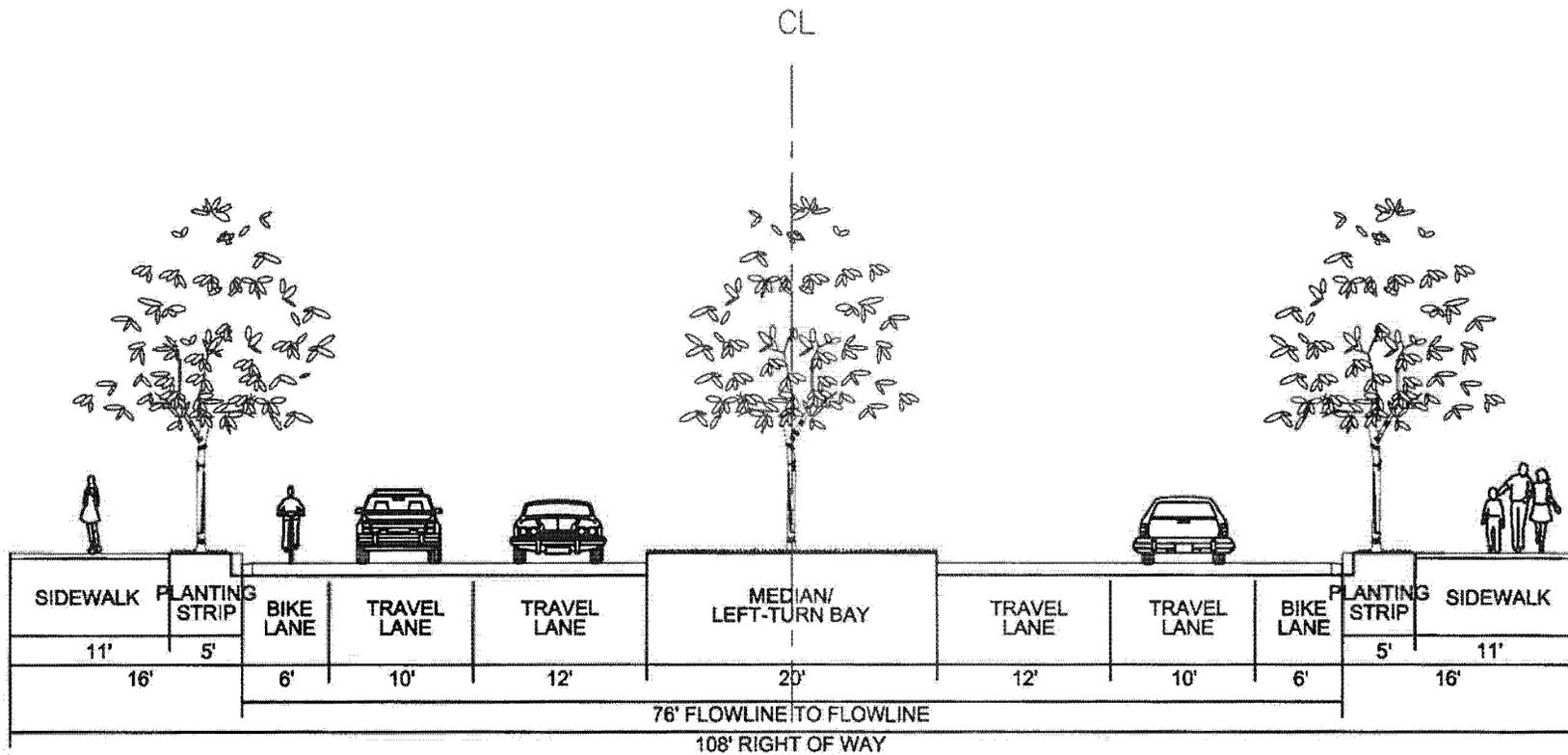


Figure 52
 Roads "A" and "B" Up to Intersection
 with Road D
 Typical Section
University of Hawai'i-West O'ahu



Source: PB Americas, Inc.

Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

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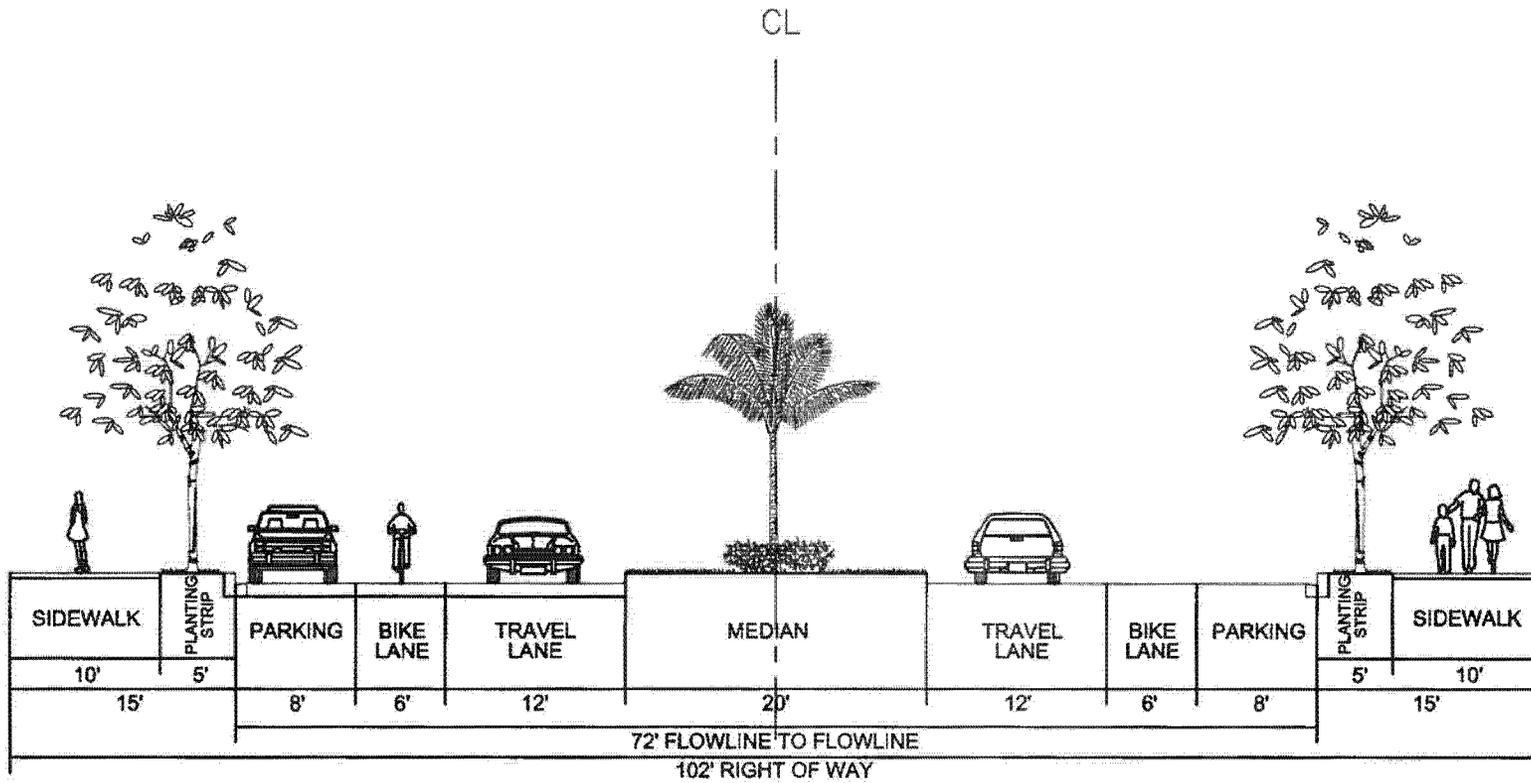


Figure 53
 Road "B" Typical Section
 (Road D to Campus Drop-Off)
University of Hawai'i-West O'ahu



NOT TO SCALE

Source: PB Americas, Inc.

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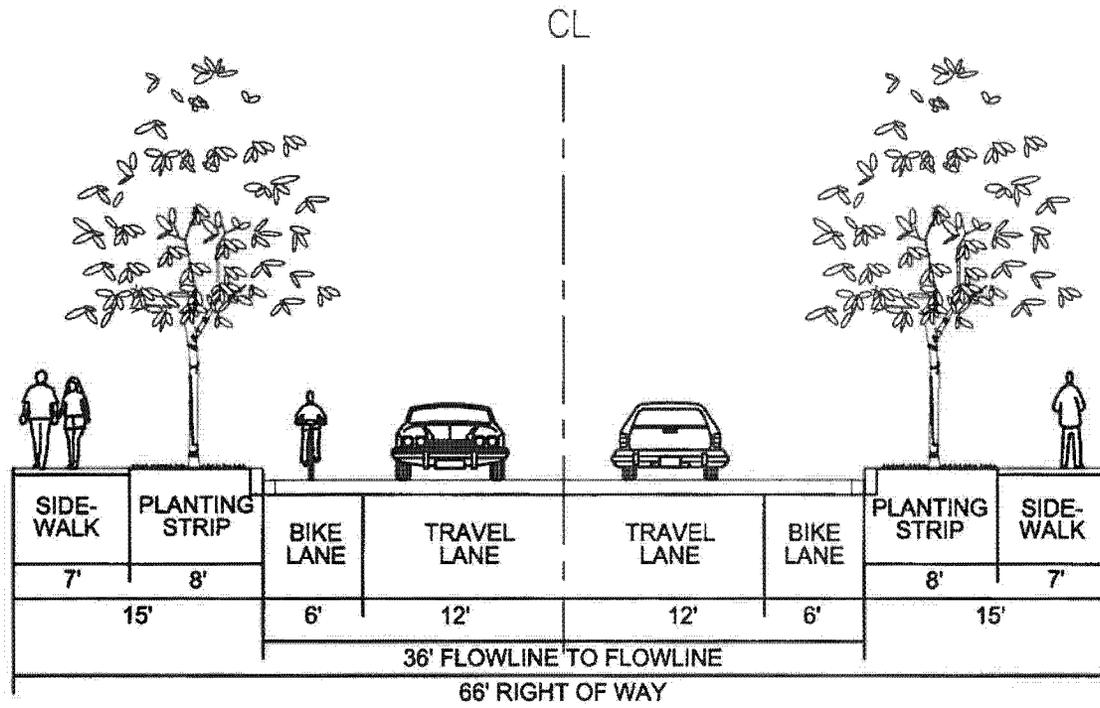


Figure 54
 Road "C", "E", "H", and "I"
 Typical Section
University of Hawai'i-West O'ahu



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Source: PB Americas, Inc.

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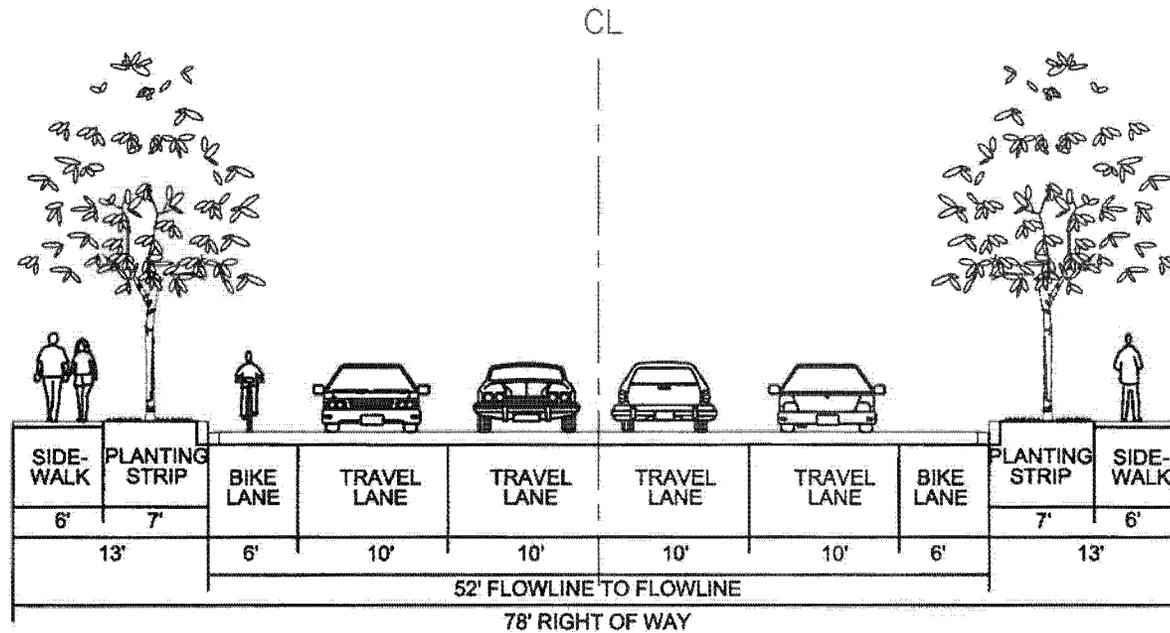


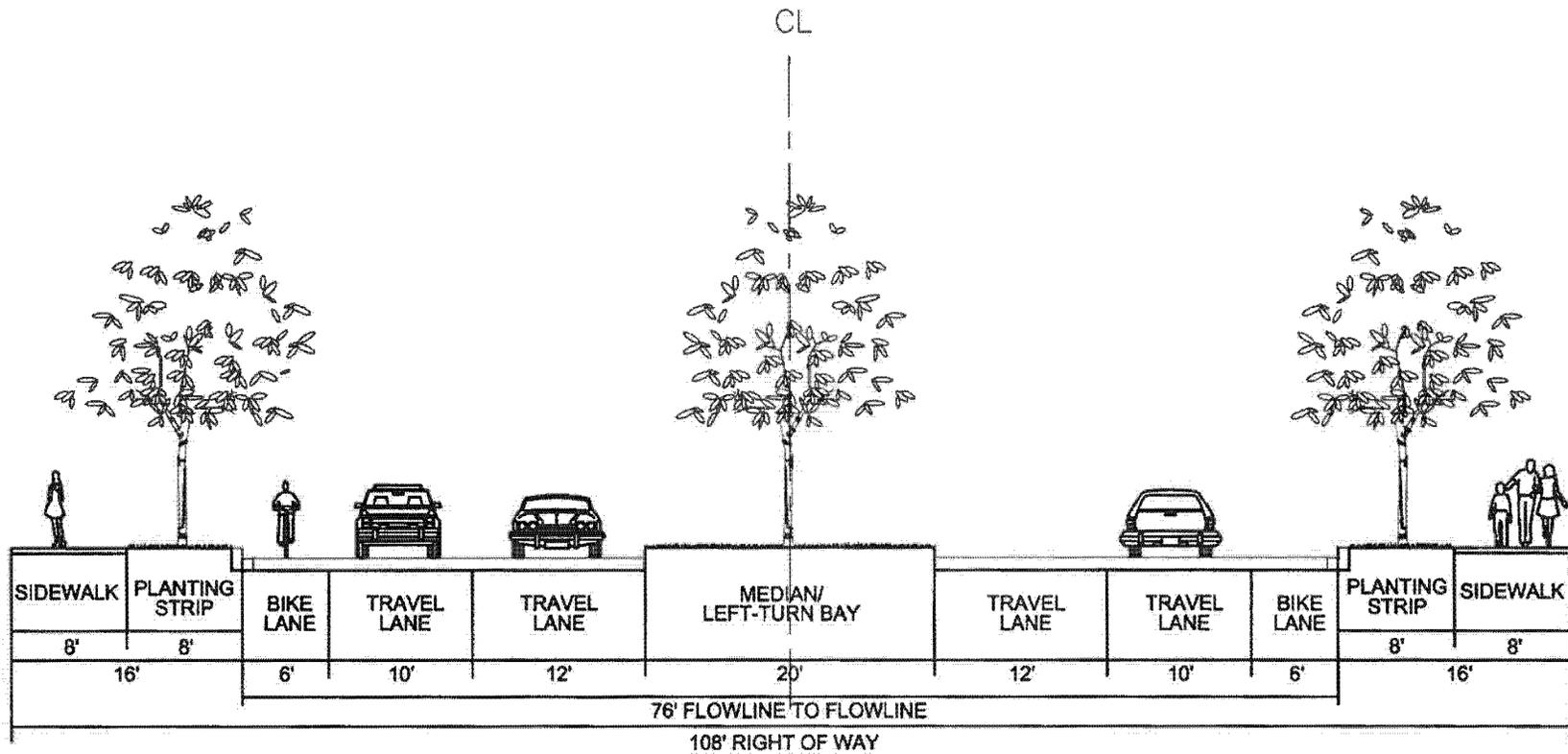
Figure 55
 Road "D" and "J" Typical Section
University of Hawai'i-West O'ahu



Source: PB Americas, Inc.

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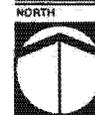


Note: Planted medians shown on this graphic will be provided at the intersection of North-South Road and Road "F", and Farrington Highway and Road "F" only.

Source: PB Americas, Inc.

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Figure 56
Road "F" Typical Section
University of Hawai'i-West O'ahu



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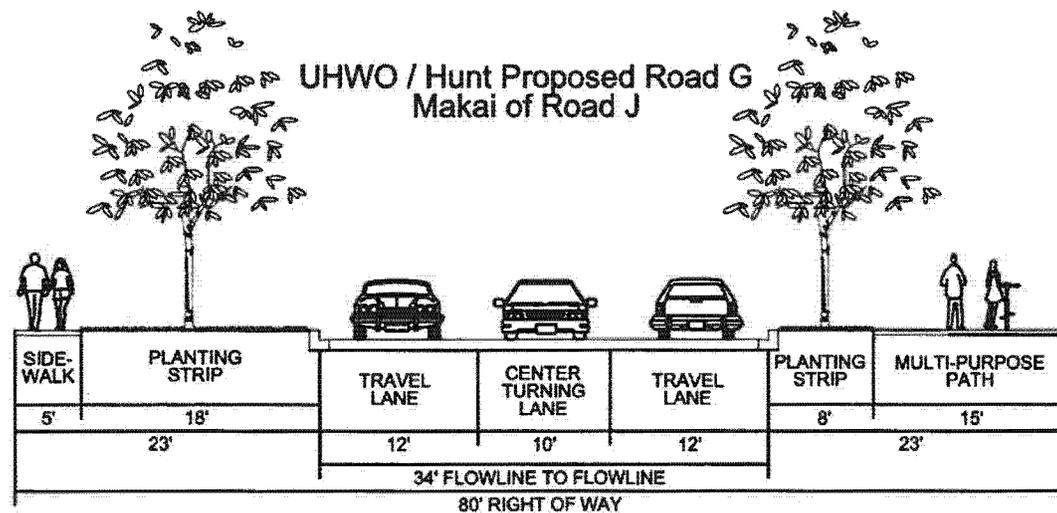
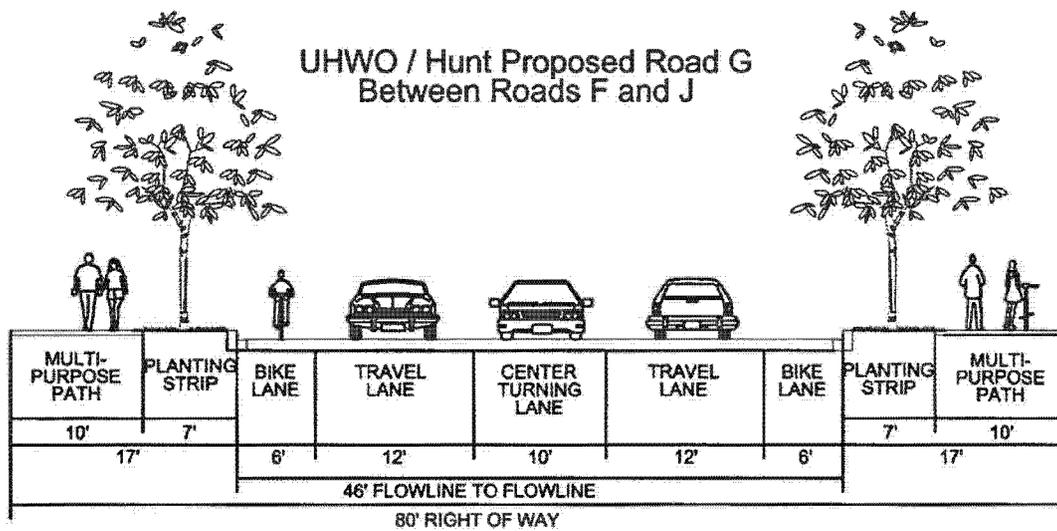
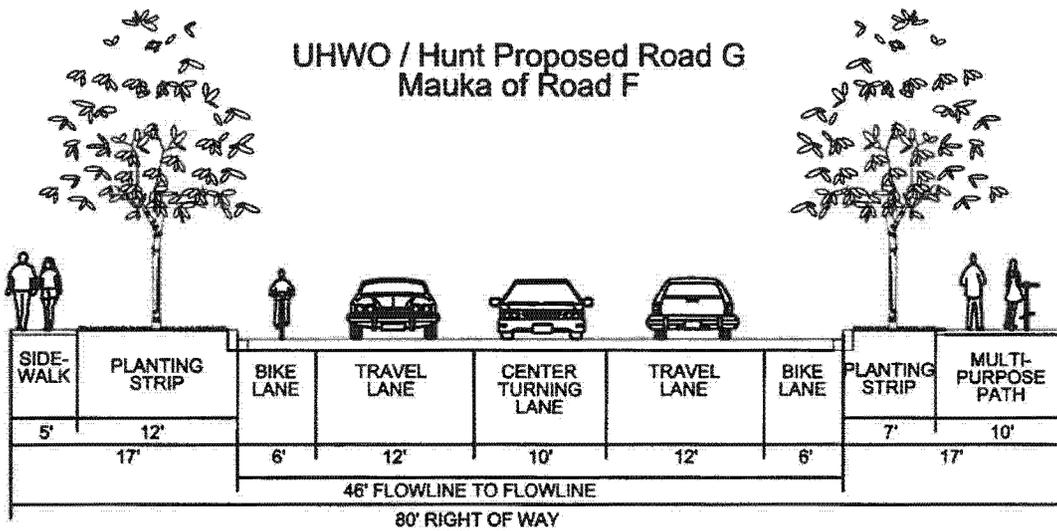


Figure 57
Road G Typical Section
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
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Road J. Road J is proposed to be an extension of Road D from Road F to Road G. It will be an undivided, four-lane roadway that will provide an additional access route for vehicles entering or exiting DHHL’s East Kapolei Development Parcel 1. The roadway is proposed to have sidewalks and a planting strip outside of the travelway, and bike lanes are included within the travelway (see Figure 55).

Campus Loop Road. The Campus Loop Road will serve as the internal campus roadway connecting the various portions of the campus. The roadway includes a planting strip and multi-purpose path on both sides of the roadway outside of the travelway (see Figure 58).

It is proposed that all roads (and water, sewer and drainage systems) within the 500-acre property will be dedicated to the City and County of Honolulu, except Road A, the portion of Road B westward of the intersection with Road D, and possibly Road C (in the Private Development Lands). During the EIS public review period, the City and County of Honolulu, Department of Facility Maintenance wrote: *“Roads, drainage facilities and their related infrastructure should be owned and maintained by the State of Hawaii for this State facility, similarly to that at the Manoa Campus. The City and County of Honolulu will not accept the dedication or maintenance of this facility.”* This was identified as an unresolved issue in the EIS, since the Department of Planning and Permitting is specifying roads within the 500-acre project to provide regional connectivity, and the Private Development Lands will include residential and commercial uses that will generate property tax revenue to the City and County of Honolulu, it is felt that the roads should be allowed to be dedicated to the County.

During the EIS public review period, the City and County of Honolulu, Department of Transportation Services wrote: *“The design of the project should ensure that TheHandi-Van vehicles have access to the project buildings. Presently, the tallest vehicle is 127 inches high. In addition to facilitating TheHandi-Van vehicle circulation, mobility features should be integrated into the design of public spaces on campus and among the private development land areas to promote accessibility for persons with disabilities...”* As TheHandi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities, the campus is relatively flat, the campus will be designed to accommodate fire engines within 150 feet of all buildings, and all campus parking areas will include wheelchair accessible parking stalls, the design of applicable roadways will ensure TheHandi-Van vehicle accessibility and ADA accessibility to project buildings.

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Transit/Municipal Bus Service/Shuttle Service

Honolulu High-Capacity Transit Corridor Project. A rapid transit corridor is planned to connect the City of Kapolei with Waipahu and onward to the Primary Urban Center. The corridor could provide for shuttle service, express bus service, or even higher-speed dedicated transit service. The Ewa DP notes that by connecting to the Primary Urban Center via Waipahu, the corridor could provide for a future high-speed connection between the Kapolei campus of the UH West O’ahu and Leeward Community College, Honolulu Community College, and the UH Mānoa. Near the vicinity of the project, the ‘Ewa rapid transit corridor is planned to run from Waipahu along the Farrington Highway right-of-way, turning south at the North-South Road and west again in the Kapolei Parkway right-of-way to the City of Kapolei. The corridor could eventually extend to Barber Point Harbor and a turn-around/maintenance facility could be sited in the Kapolei Business Park. To support the proposed transit corridor, the *Ewa Development Plan* Public Facilities Map (see Figure 44) shows two transit nodes on the North-South Road adjacent to the UH West O’ahu campus. One of the proposed transit nodes is located within the University Village and the other in the southern portion of the property near the intersection of North-South Road and Road F.

Since 2005, the City and County of Honolulu, Department of Transportation Services has been working on the Honolulu High-Capacity Transit Corridor Project (HHCTCP), the purpose of which is to provide high capacity, high-speed transit in the highly congested east-west transportation corridor between Kapolei and the University of Hawai’i at Mānoa, as specified in the *2030 Oahu Regional Transportation Plan* (ORTP) (Parsons Brinkerhoff, May 2007). The DTS has completed scoping activities and an Alternatives Analysis for the project, and in December 2006, the City and County of Honolulu City Council under Ordinance 07-001 selected a Locally Preferred Alternative (LPA), consisting of a fixed guideway system extending from Kapolei to UH Mānoa with a connection to Waikīkī. The route starts at or near the intersection of Kapolei Parkway and Kalaeloa Boulevard, down Saratoga Avenue to North/South Road (green route) or through Kamokila Boulevard (yellow route), as determined by the city administration before or during preliminary engineering. The route then proceeds to Farrington Highway across Ft. Weaver Road, to Kamehameha Highway to Honolulu via Dillingham Boulevard to UH Mānoa with a branch to Waikīkī. This decision was signed into law by Mayor Mufi Hannemann in January 2007. Subsequently, City Council Resolution 07-039 defined the first phase of the project, or a minimum operable segment (MOS) that will extend from the southwest corner of DHHL’s East Kapolei Development Parcel 2 up the North-South Road to Farrington Highway, through Waipahu, Pearl City, Aiea, and via Salt Lake Boulevard through downtown Honolulu to Ala Moana Center.

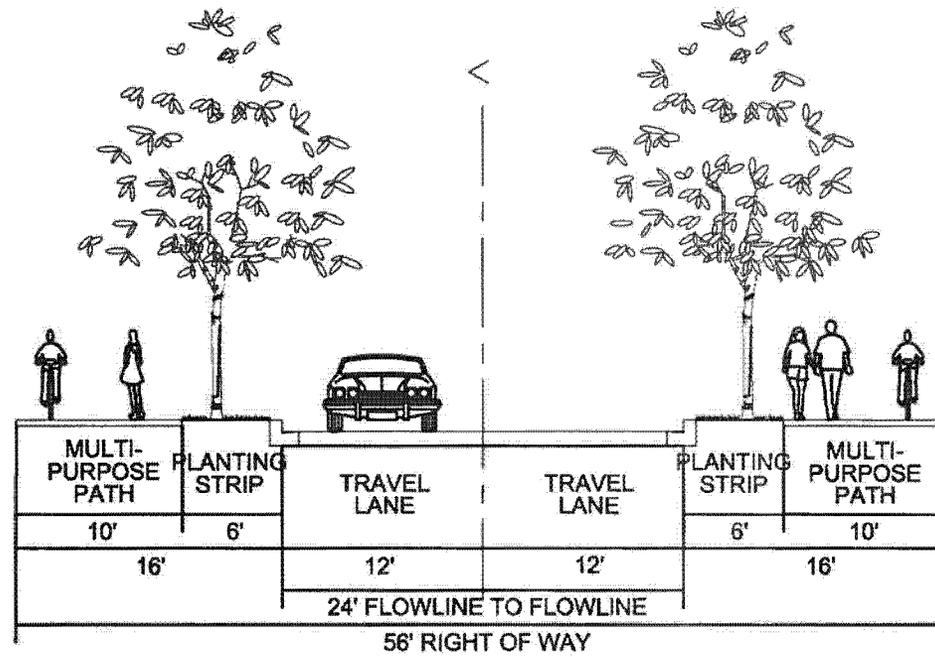


Figure 58
 Campus Loop Road
 Typical Section
University of Hawai'i-West O'ahu



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The Fixed Guideway Alternative alignments that are adjacent to the UH West O’ahu site would likely be elevated structures. The fixed guideway could be as narrow as 25 feet wide. If the structures are elevated, they would be supported by six foot wide columns and the structure could be about 30 feet tall.

At this time, no decision has been made regarding the technology that would be used for the Fixed Guideway Alternative. This decision will be made at a later stage of project development. The City is currently in the process of preparing a Draft EIS and has requested approval from Federal Transit Administration to begin preliminary engineering (project design). The earliest that construction could begin on a selected alternative would be 2009. Due to the size and cost of the overall project, it is likely to be built in several phases lasting several years, starting with the MOS.

Year 2025 Transit Service. Within the Year 2025 time frame, it is assumed that the minimum operable segment (MOS) of the Honolulu High-Capacity Transit Corridor Project (HHCTCP) proposed by the City and County of Honolulu will be operational. The MOS will begin at a transit station located in the vicinity of the North-South Road/East-West Arterial (Road F) intersection. It will then proceed mauka along North-South Road, stopping at a transit station in the vicinity of the North-South Road/Road B intersection. From there, it will proceed mauka along North-South Road to Farrington Highway, turning to travel along Farrington Highway to a transit station approximately half way between North-South Road and Fort Weaver Road. It would then continue along Farrington Highway into Waipahu, eventually terminating at Ala Moana Center.

The presence of the HHCTCP would enable the reallocation of many buses from regional line-haul operation to circulator and sub-regional service. Figure 59 illustrates the potential future transit service in the ‘Ewa plain.

The HHCTCP would provide excellent transit service to the UH-West O’ahu site, serving its campus master planned, transit-ready development. The HHCTCP would also provide excellent transit service to the D.R. Horton and DHHL Kapolei II development, including the future Kroc Community Center.

Municipal Bus Service/Shuttle Service. Circulator bus routes could be developed to serve the proposed transit stations, providing good transit service between the HHCTCP and the developments in the UH-West O’ahu area. Figure 60 illustrates these potential bus routes. The current bus route can be modified or supplemented to accommodate service to the proposed development, while still servicing the current route. Examples of potential access to the campus could be from Farrington Highway through Road F, Road G, and/or Road A; and/or through Road B off of the North-South Road. Circulation could be provided through a number of

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possible route options that could traverse throughout the campus property as shown in Figure 60.

The UH West O’ahu could provide a shuttle service on campus as an alternative form of transportation, when there is a critical mass of students, faculty and staff.

Pedestrian and Bike Network. The pedestrian and bikeway network is an important element of the multi-modal transportation system for the project. As part of the Transportation Master Plan, the pedestrian and bikeway network was analyzed in conjunction with the vehicular and transit/municipal bus circulation network to develop an optimal multi-modal circulation network.

At the regional level, the UH West O’ahu regional pedestrian and bicycle network incorporates elements from the *Ewa Roadway Connectivity Study* and the *State of Hawai’i Bicycle Plan*. A *Conceptual Regional Public Facilities and Bikeway Master Plan* was prepared by the UH West O’ahu and developers in the area to assure an interconnected pedestrian and bicycle network between major projects in the ‘Ewa Plain, and to link this network with major public facilities, parks and open spaces (see Figure 45).

Within the 500-acre property, a *Pedestrian, Bike and Bus Circulation Plan* has been prepared to assure coordination between the various modes of transportation. Sidewalks, bike lanes and/or combination multi-purpose paths are provided for all major roadways described within the project (Roads A, B, C, D, E, F, G, H, I, J and the Campus Loop Road). Depending on the function of the road and its linkage with other roadways, the pedestrian and bikeway network could include sidewalks and bike lanes or multi-purpose paths, or a combination of the two. The sidewalk and bikeway configuration for the major roadways within the project area are depicted in Figures 52 through 58, and in Figure 60.

In addition to sidewalks and bikeways within roadway sections, the Kalo’i Greenway is proposed to provide a multi-purpose pedestrian/bike path that could connect the campus to the residential and mixed-use commercial developments within the campus. Within the campus area, this pathway will generally follow the alignment of the existing gulch and will, for the most part, be unimpeded by vehicular traffic. Within the vicinity of the campus, other pedestrian paths and bikeways could extend from the Kalo’i Greenway providing access to various portions of the campus and connecting with the pedestrian and bicycle roadway network. Together the proposed greenways, sidewalks, bikeways and multi-purpose paths could provide pedestrians and bikes with a number of opportunities to access recreational, educational, commercial and residential uses within the property creating a pedestrian and bike friendly environment for residents to live, learn, work, and play within this unique community.

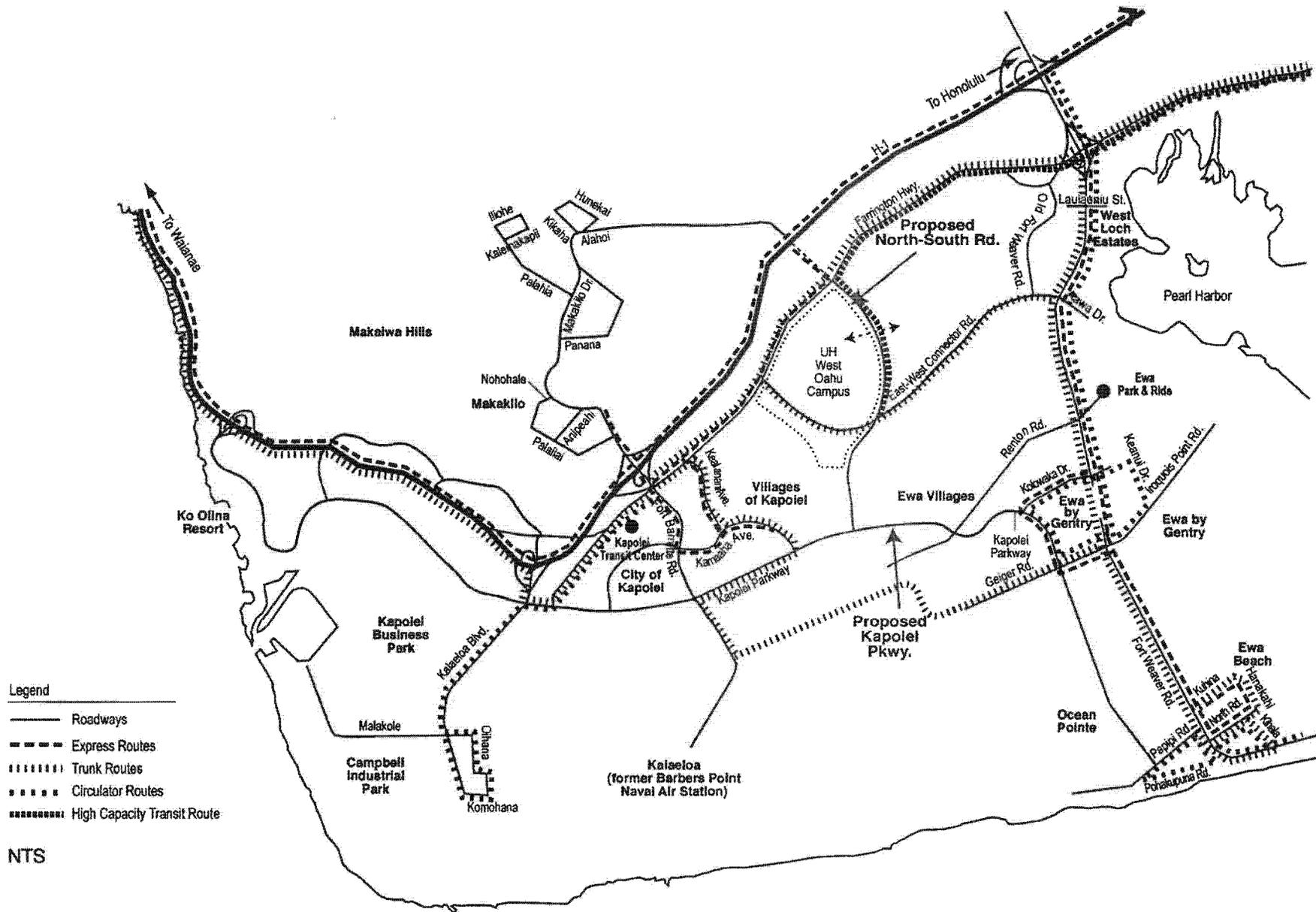
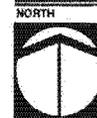


Figure 59
 Future 'Ewa Regional Public Transit Routes
 University of Hawai'i-West O'ahu



NOT TO SCALE



Source: PB Americas, Inc.

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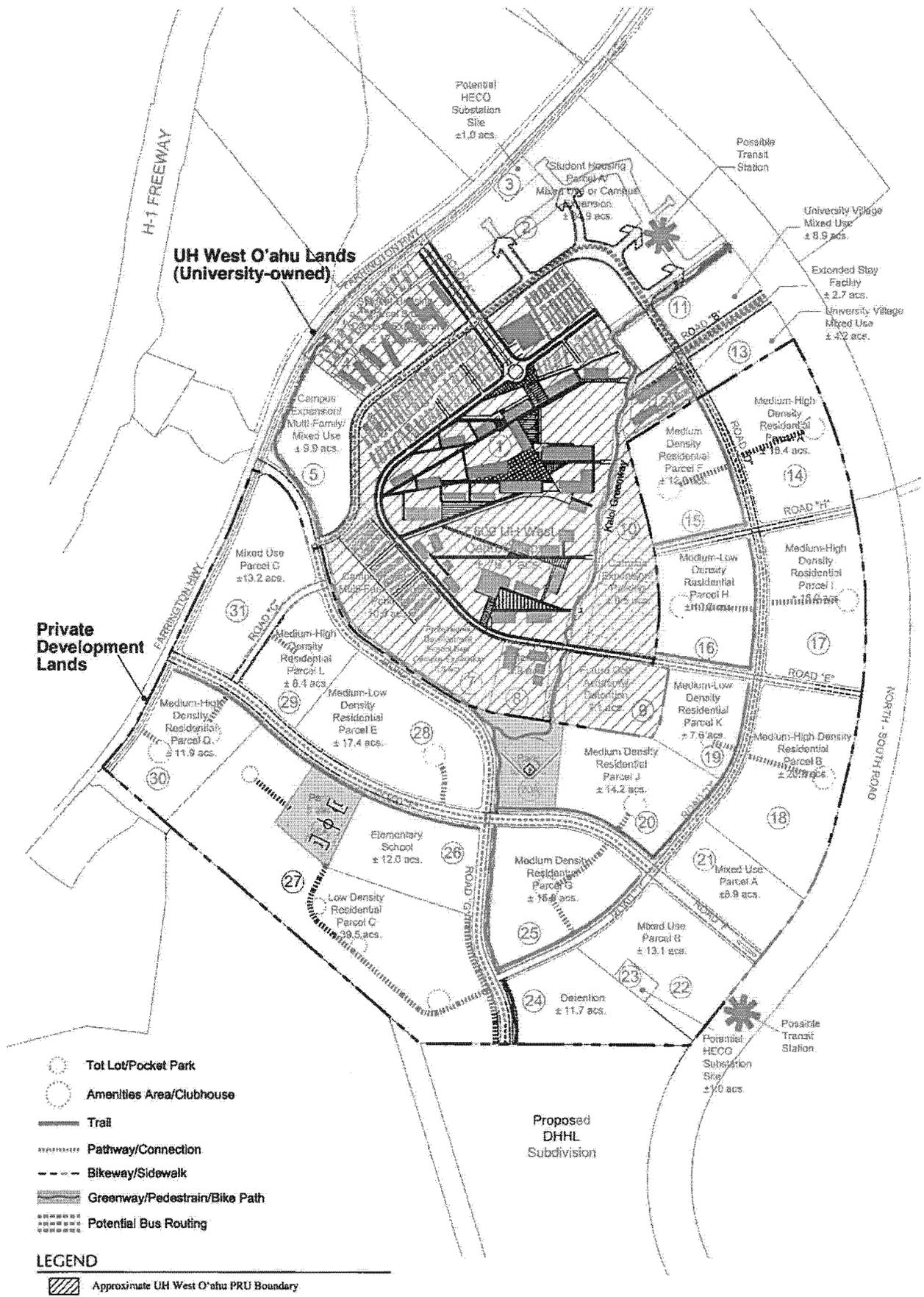
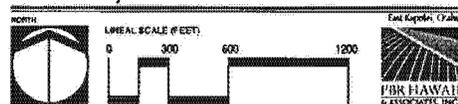


Figure 60
 Pedestrian, Bike and Bus Circulation
 University of Hawaii-West O'ahu



Source: EDAW | AECOM

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Traffic

Project-generated Traffic. Traffic generated from the UH West O'ahu study area was based on trip generation equations documented in the *Institute of Transportation (ITE) publication Trip Generation, 7th edition* (2003). Traffic generated by the project was directionally distributed and assigned to the road network and are reflected in the project generated peak hour traffic volumes. These distributions were applied to the ultimate build out trips generated, and the resulting project-generated trip assignment is shown in Figure 61. At full build-out (year 2025), the proposed UH West O'ahu development is estimated to generate 2,856 vehicular trips (1,750 entering and 1,106 exiting) during the AM peak hour. The development is estimated to generate 4,058 vehicular trips (1,765 entering and 2,293 exiting) during the PM peak hour (see Table 13).

Background Traffic. Background traffic for Year 2025 was assumed to include buildout of the DHHL East Kapolei Development Parcels 1 and 2. A portion of the Ho'opili project being developed by D.R. Horton is also included in the background traffic. Sub regional traffic based on the *North-South Road and Kapolei Parkway Environmental Assessment (EA)* were also included to estimate the non-specific traffic growth in the area. These components were assigned to the future roadway system to estimate Year 2025 background traffic volumes (see Figure 62).

Total Traffic. Total Year 2025 traffic volumes were calculated from Year 2025 background volumes and Year 2025 UH West O'ahu project generated volumes, and is summarized in Figure 63. It was assumed that from 2014 to 2025, the growth occurring within the corridor was due to increased traffic demand from UH West O'ahu and the DHHL developments as well as a 1% growth factor for traffic flowing through the study area. As part of this summation, background traffic was re-assigned to take advantage of the new roadway network connections provided by Road F and Road G within the UH West O'ahu site.

Year 2025 Intersection Traffic Operations. Roadway intersections were analyzed using the methodologies for unsignalized and signalized intersections outlined in the *2000 Highway Capacity Manual (HCM)*. Operating conditions at an intersection are expressed as qualitative measures known as Level of Service (LOS) ranging from A to F. LOS A represents free-flow operations with low delay, while LOS F represents conditions with relatively high delay²¹. The approach LOS is a

²¹ The Highway Capacity Manual defines six Level of Service (LOS), with A indicating the best condition and F indicating the worst condition. The LOS for signalized and unsignalized intersections is defined in terms of average user delays. LOS A indicates little or no delay. LOS B indicates short traffic delays. LOS C indicates average traffic delays. LOS D indicates long traffic

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weighted average of the LOS of individual traffic movement groups. By the Year 2025 time frame, all of the future roadway network in the vicinity of the proposed UH West O’ahu development is assumed to be in place including D.R. Horton Ho’opili’s and DHHL East Kapolei Development Parcel 2’s proposed roadways and the East West Connector Road. The Road F, Road G, and Road A intersections along Farrington Highway, Road B and Road F intersections along North-South Road, and Road D and Road F are expected to warrant signalization by Phase 2 (Year 2014) and were analyzed as such for the Year 2025 scenario.

Table 14 summarizes the projected Year 2025 peak hour intersection level-of-service without and with the UH-West O’ahu development.

Summary of Results. The North-South Road/ Farrington Highway intersection and the North-South Road/ H-1 off-on ramp intersections did not operate well with projected 2025 traffic volumes, even without UH West O’ahu included. Projected background regional traffic through the North-South Road corridor, as well as generated traffic from the East Kapolei developments and UH West O’ahu will overwhelm the current ultimate build out configurations of these intersections.

The North-South Road intersections at Road B and Road F both operated at LOS E or better. The intersections along Farrington Highway, west of North-South Road operated acceptably at LOS D or better. All but one internal UH West O’ahu intersection operated acceptably at LOS C or better. The southbound left-turn at the Road D/ Road B intersection operated at LOS F.

YEAR 2025 RECOMMENDATIONS

The future roadway network is separated into regional and internal roadway components. Recommended land configurations for the study intersections within and around the UH West O’ahu development is illustrated in Figure 64.

Regional Roadway Improvements.

1. North-South Road

- a) North-South Road/Farrington Highway Intersection. North-South Road is assumed to be a six-lane, divided roadway by the year 2025 time frame. The currently planned ultimate configuration for the North-South Road/Farrington Highway intersection would provide exclusive right-turn lanes and double left-turn lanes on all approaches. It is clear, however, that this configuration will not be sufficient for the traffic demand

delays. LOS E indicates very long traffic delays. LOS F indicates that demand volume exceeds capacity, resulting in extreme delays that may cause severe congestion and may affect other movements at the intersection.

Table 13 – Year 2025 UH West O’ahu Trip Generation Summary

Land Use	Land Use	ITE Code	Intensity	Units	AM Peak Hour Trips		PM Peak Hour Trips	
					Enter	Exit	Enter	Exit
UH West O’ahu Campus								
UH West O’ahu Campus-Education Facilities*	University	550	7,600	Students	709	177	271	631
Multi-Family Housing** †	Multi-Family	210	650	DU	14	70	70	34
Commercial - Retail	Retail	820	294,684	SF	139	89	487	527
Commercial - Office**	Office	711	247,290	SF	255	35	43	208
Professional Development School - K-8 grades^	Private K-8	534	550	Students	266	217	0	40
Subtotal					1,311	529	870	1,440
Private Development Lands								
Multi-Family Housing** †	Multi-Family	230	2,394	DU	64	291	295	149
Single Family Housing** †	Single Family	210	237	DU	33	98	110	64
Commercial - Office [†]	Office	710	96,921	SF	100	14	17	81
Commercial - Retail	Retail	820	286,407	SF	135	86	473	513
Elementary School^	Elementary	520	550	Students	107	88	0	46
Subtotal					440	577	895	853
Grand Total					1,750	1,106	1,765	2,293
<p>* Generated University trips reduced to account for 45% transit mode share for students and 20% (AM) /25% (PM) transit mode share for faculty/staff</p> <p>†Generated residential and office trips reduced to account for 20% (AM) and 25% (PM) transit mode share.</p> <p>^ Elementary/Professional Development Schools PM entering trips assumed negligible since the study PM peak hour is a commuter peak.</p> <p>** Residential trips adjusted to account for retail-residential interaction.</p>								

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)

Table 14 – Year 2025 Intersection Level-of-Service Summary (Without and With the UH West O’ahu)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
North-South Rd/ H-1 WB Off Ramp Terminus	F	80.9	F	146.2	F	104.5	F	153.3
H-1 WB Off Ramp Left	E	73.1	F	202.8	F	118.7	F	192.8
H-1 WB Off Ramp Right	C	25.0	B	16.5	C	25	B	16.5
North-South NB Left	E	56.4	E	64.6	E	75.1	F	153.7
North-South NB Through	B	19.0	C	30.5	B	19	C	30.5
North-South SB Through	F	126.1	E	70.2	F	126.1	E	70.2
North-South SB Right	A	6.2	A	5.1	A	6.2	A	5.1
North-South Rd/ H-1 EB Off Ramp Terminus	D	53.1	B	17.2	D	52.8	B	19.3
H-1 EB Off Ramp Left	E	69.4	E	56.5	E	69.4	E	56.5
H-1 EB Off Ramp Right	A	0.1	A	0.2	A	0.2	A	0.5
North-South NB Through	A	9.8	A	9.6	B	10.3	B	10.4
North-South NB Right	F	117.6	A	1.0	F	125.3	B	15.6
North-South SB Left	E	74.0	E	68.3	E	74.0	E	68.3
North-South SB Through	A	2.9	C	31.9	A	3.5	C	27.9
North-South Rd/ Farrington Hwy	F	90.9	F	100.7	F	86.1	F	91.8
Farrington EB Left	E	57.8	D	50.5	F	91.3	E	62.3
Farrington EB Through	E	78.4	E	58.3	F	80.2	E	56.9
Farrington EB Right	C	20.5	D	46.6	C	20.8	E	72.6
Farrington WB Left	E	68.0	E	60.7	E	70.1	E	61.1
Farrington WB Through	F	156.8	F	94.4	F	147.2	F	90.1
Farrington WB Right	D	46.1	F	193.5	D	46.1	F	193.5
North-South NB Left	D	43.0	E	73.6	D	43.2	F	93.8
North-South NB Through	F	111.7	D	36.6	F	102.9	D	36.2
North-South NB Right	B	14.5	B	14.1	B	14.6	B	14.2
North-South SB Left	F	150.0	E	75.5	F	150.0	E	75.5
North-South SB Through	E	58.2	F	163.6	E	64.7	F	142.8
North-South SB Right	B	15.4	B	12.7	C	21.8	B	16.2
North-South Rd/ Road B	C	29.5	D	37.4	E	67.9	E	71.7
Road B EB Left	--	--	--	--	E	66.9	D	52.5
Road B EB Through	--	--	--	--	E	58.5	E	58.4
Road B EB Right	--	--	--	--				
Road B WB Left	D	49.8	D	43.1	D	52.6	E	76.7
Road B WB Through	--	--	--	--	E	74.8	E	76.0
Road B WB Right	E	67.2	B	13.5				
North-South NB Left	--	--	--	--	D	36.2	E	64.5

Table 14 – Year 2025 Intersection Level-of-Service Summary (Without and With the UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
North-South NB Through/Right	D	36.6	E	76.4	E	72.4	E	73.8
North-South SB Left	E	76.0	D	46.8	E	75.8	E	60.6
North-South SB Through	--	--	--	--	E	60.9	E	76.2
North-South SB Right	A	1.7	A	7.5				
North-South Rd/ Road H*	Unsignalized RIRO**				Unsignalized RIRO**			
Road H EB Right (UHWO)	--	--	--	--	C	20.4	E	40.1
Road H WB Right (East Kapolei 2)	F	706.2	F	61.6	F	466.4	E	36.0
North-South Rd/ Road E*	Unsignalized RIRO**				Unsignalized RIRO**			
Road E EB Right (UHWO)	--	--	--	--	C	19.1	D	35.0
North-South Rd/ Road F	D	44.7	D	44.8	E	64.1	E	69.9
Road F EB Left	--	--	--	--	E	73.4	D	54.7
Road F EB Through/Right	--	--	--	--	E	55.6	D	51.2
Road F WB Left	C	32.0	C	34.6	D	43.4	E	64.7
Road F WB Through	--	--	--	--	E	74.3	E	73.8
Road F WB Right	E	66.1	E	66				
North-South NB Left	--	--	--	--	D	51.8	E	77.0
North-South NB Through/Right	D	50.9	D	54.4	D	48.0	E	76.1
North-South SB Left	E	76.8	E	78.4	E	65.3	D	41.2
North-South SB Through	C	23.6	C	25.3	E	79.5	E	75.2
North-South SB Right	--	--	--	--				
Farrington Hwy/ Road A	This Intersection Does Not Exist In this Scenario				C	26.9	B	16.8
Farrington EB Through/Right					D	42.5	B	17.9
Farrington WB Left					D	38.3	D	54.4
Farrington WB Through					A	6.7	A	6.9
Road A NB Left					D	48.6	D	53.1
Road A NB Right					B	14.0	D	39.2
Farrington Hwy/ Road G	This Intersection Does Not Exist In this Scenario				B	19.0	B	16.3
Farrington EB Through/Right					C	24.2	C	23.1
Farrington WB Left					D	45.8	D	48.3
Farrington WB Through					A	5.9	A	5.1
Road G NB Left					D	49.4	D	54.4
Road G NB Right					C	23.6	C	31.4
Farrington Hwy/ Road F	This Intersection Does Not Exist In this Scenario				C	22.8	B	19.3
Farrington EB Through					C	27.3	C	23.4
Farrington EB Right					C	20.8	B	18.9
Farrington WB Left					D	47.3	D	53.5
Farrington WB Through					B	11.0	A	9.5

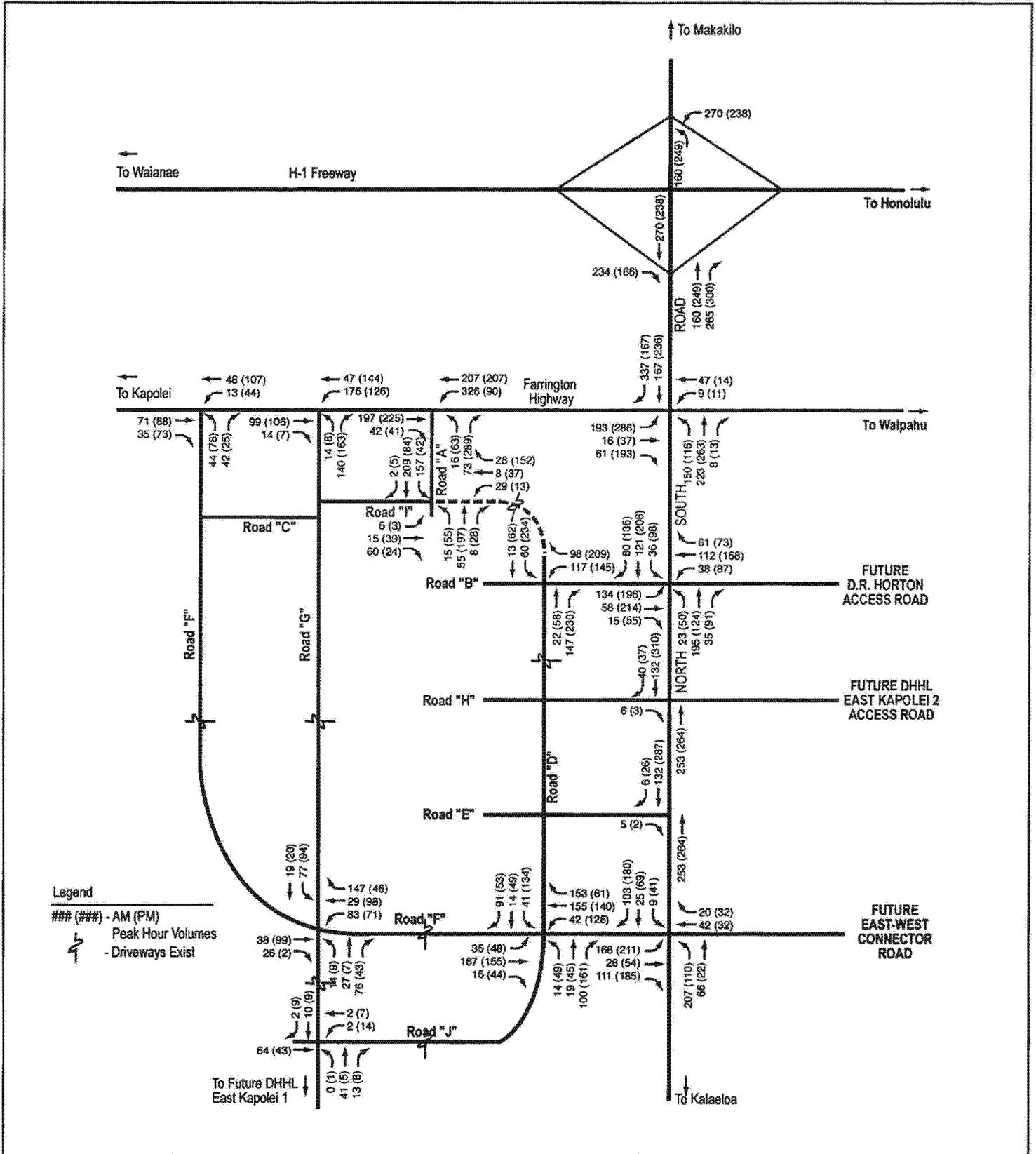
Table 14 – Year 2025 Intersection Level-of-Service Summary (Without and With the UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Road A NB Left					D	45.7	D	51.5
Road A NB Right					B	19.1	C	28.2
Road D/ Road F					B	12.6	B	15.8
Road F EB Left					B	10.3	B	11.4
Road F EB Through/Right					B	10.5	B	12.0
Road F WB Left					B	11.1	C	21.4
Road F WB Through/Right					B	11.7	B	12.0
Road D NB Left					B	13.7	B	13.0
Road D NB Through/Right					B	16.2	B	18.3
Road D SB Left					B	15.3	B	19.4
Road D SB Through/Right					B	14.8	B	13.5
Road D/ Road B					Unsignalized			
Road B EB Left					A	7.3	A	7.3
Road B WB Left					A	7.3	A	7.7
Road D NB Left/Through					B	10.5	C	15.2
Road D NB Right					A	8.5	B	10.1
Road D SB Left					A	10.0	F	282.9
Road B SB Through/Right					A	9.6	C	15.7
Road A/ Road I					Unsignalized			
Road A EB Left/Through/Right					B	11.2	B	11.8
Road A WB Left/Through/Right					B	11.6	B	13.1
Road I NB Left					A	7.7	B	12.4
Road I SB Left					A	7.6	B	12.4
Road G/ Road F					Unsignalized			
Road F EB Left					A	7.7	A	7.7
Road F WB Left					A	7.6	A	7.9
Road G NB Left					B	12.4	B	13.0
Road G NB Through/Right					B	10.7	B	11.0
Road G SB Left					C	17.1	C	16.0
Road G SB Through/Right					B	13.2	B	13.3
Road J/ Road G					Unsignalized			
Road J EB Left					A	9.7	A	9.7
Road J EB Through/Right					B	10.9	B	10.7
Road J WB Left					B	10.6	B	11.3
Road J WB Through/Right					A	9.5	A	9.6
Road G NB Left					A	7.3	A	7.3
Road G SB Left					A	7.5	A	7.6

Table 14 – Year 2025 Intersection Level-of-Service Summary (Without and With the UH West O’ahu) (cont.)

Intersection	Without UH West O’ahu				With UH West O’ahu			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Note: NB=North Bound, SB=South Bound, EB=East Bound, WB=West Bound * Highway Capacity Manual methodology does not allow for more than two through lanes on the major street. ** RIRO - Right-In/Right-Out -- Movement does not exist								

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)



Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

NOT TO SCALE



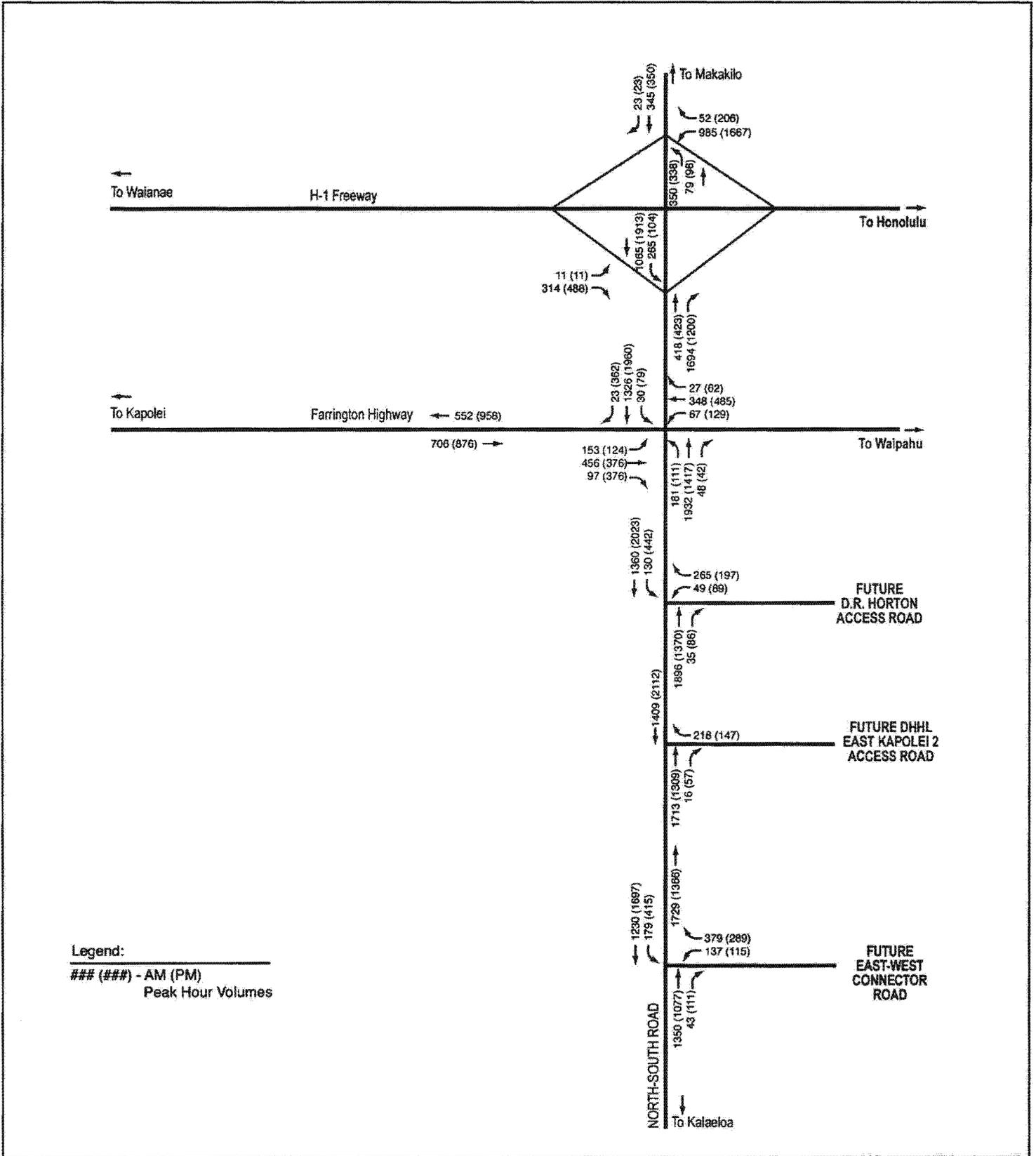
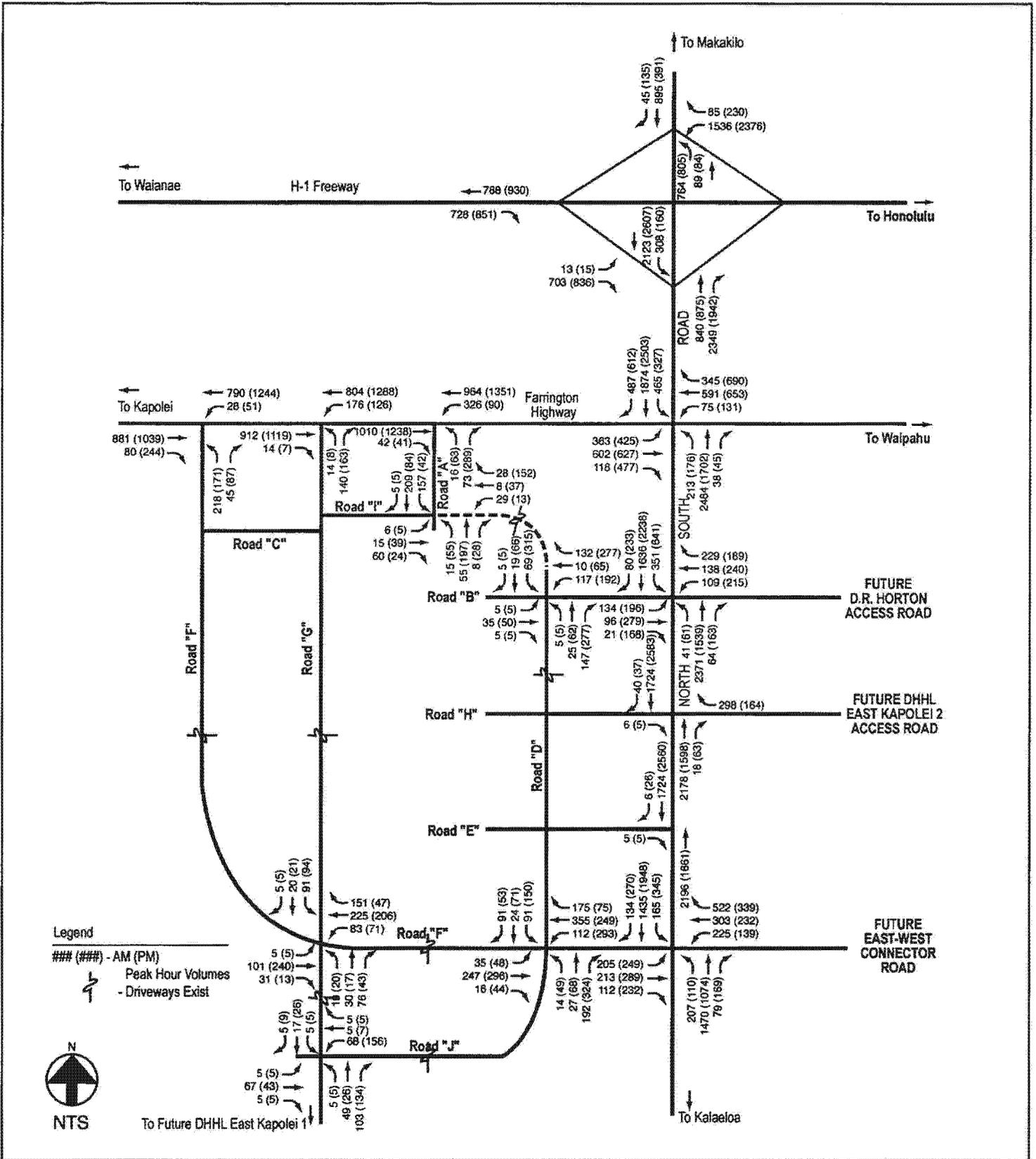


Figure 62
 Year 2025 Background Peak Hour Traffic
 Volumes without UH West O'ahu
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning
 purposes only and is subject to change.

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Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.

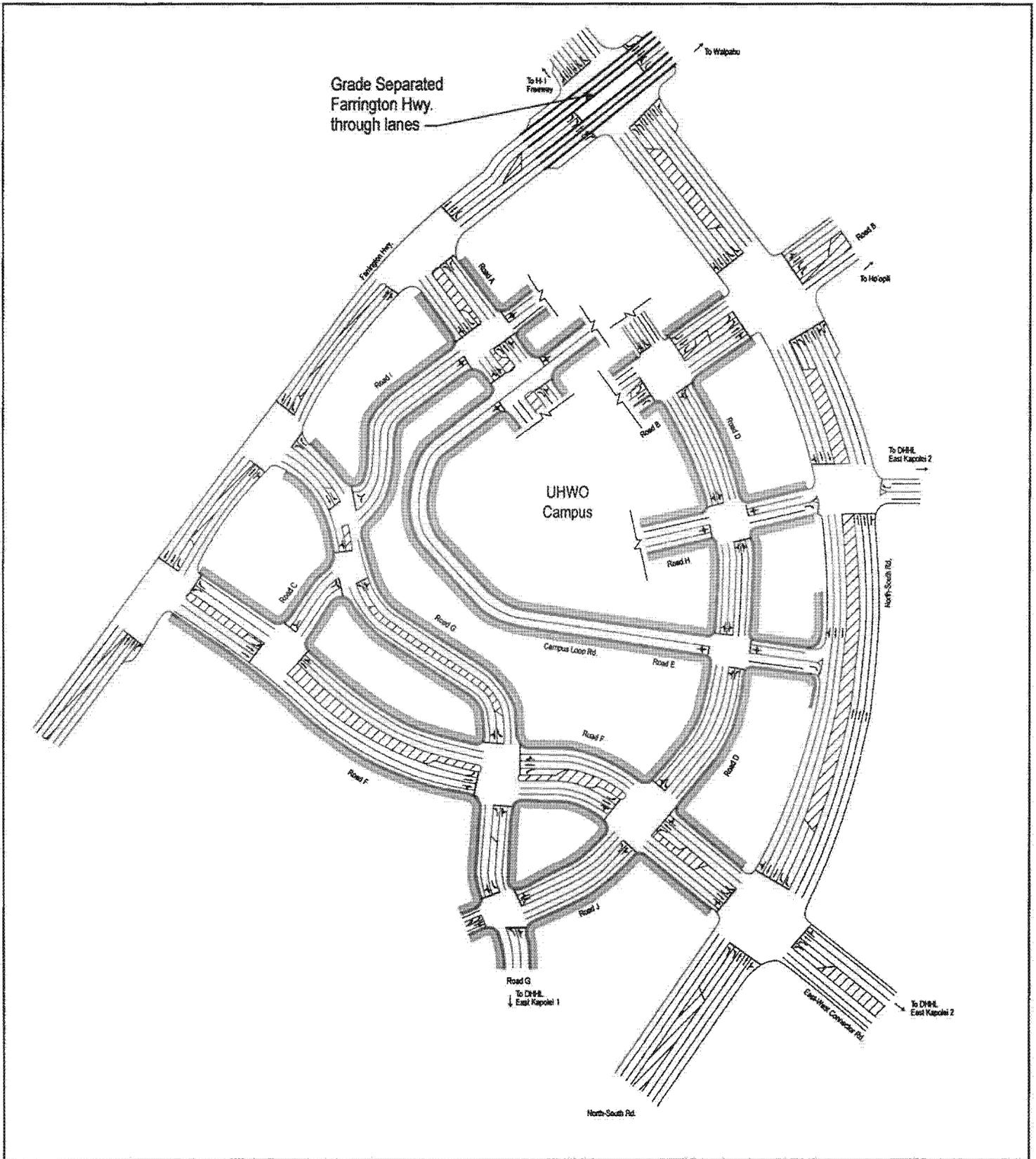
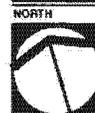


Figure 64
 Year 2025 Recommended Lane Configurations
University of Hawai'i-West O'ahu

Source: PB Americas, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only and is subject to change.



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identified for this time frame. The traffic volumes projected for this intersection indicate the need for a grade-separation. The need for this grade-separation is projected to occur somewhere between the Year 2014 and Year 2025 time frames, depending on the rate of development within the 'Ewa plain. A potential configuration for a grade separation would be to conduct the Farrington Highway through movement over the intersection. North-South Road would remain as an at-grade facility and all turning movements would occur at-grade at the intersection. By removing the Farrington Highway through movement from the intersection, more green traffic signal time can be allocated to the other movements, accommodating the projected traffic volumes. Table 15 summarizes the effect of the proposed grade-separation on traffic operations at the Farrington Highway/North-South Road intersection. As shown, there would be dramatic improvement in intersection level of service. As traffic volumes increase at this intersection, alternative pedestrian or bicycle facilities need to be implemented to cross Farrington Highway and North-South Road. To cross North-South Road, the proposed Honolulu High Capacity Transit Corridor Project (HHCTCP) station could serve such a function. Because the HHCTCP is likely to be elevated in this area, the transit station proposed makai of the Farrington Highway/North-South Road intersection would bridge North-South Road to allow access to the transit station from both sides of North-South Road. To cross Farrington Highway, an overpass or underpass might be needed if enough demand materializes. This would ideally be located on the Wai'anae side of the intersection to avoid interfering with the HHCTCP line. If needed, it may need to be removed if a grade separation to conduct Farrington Highway over North-South Road is implemented.

- b) North-South Road Intersections at Road B and Road F. The intersections at Road B and Road F are projected to operate as signalized intersections within the year 2025 time frame. These two intersections are expected to be fully channelized with double left-turn lanes and exclusive right-turn lanes on most approaches. At Road B, the recommended configurations at this intersection include exclusive double left-turn lanes, through lanes, and shared through/right-turn lanes. Double left-turn lanes are especially recommended for the North-South Road southbound left-turn and Road B westbound left-turn movements, which are not associated with UH West O'ahu. North-South Road at Roads H and E will be unsignalized right-in/right-outs (RIROs). It is recommended that pedestrian access across North-South Road either be prohibited at these intersections, or that alternative pedestrian facilities such as overpasses or underpasses be constructed. Without any control devices

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on North-South Road, it will be unsafe for pedestrians to cross the six lane facility at-grade. At the Road F intersection, the recommended configurations include exclusive double left-turn lanes, through lanes, and shared through/right-turn lanes. These configurations will be able to accommodate anticipated Year 2025 traffic demand at this intersection. Alternative pedestrian/bike facilities are recommended across North-South Road. One option is a pedestrian overpass that could tie the proposed transit station with the UH West O’ahu private developer’s commercial mixed-use parcel on the west side of North-South Road.

- c) North-South Road/H-1 Freeway Interchange. As development increases in the ‘Ewa plain, it is projected that there will be a need to improve the North-South Road interchange at H-1 Freeway. The most important improvement would be to provide higher capacity for the H-1 Freeway Wai’anae-bound to North-South Road makai-bound movement. The Wai’anae-bound off-ramp from H-1 Freeway handling this movement is projected to be overwhelmed by the year 2025 traffic demand. One way to provide more capacity for this movement is to modify the interchange to include a loop ramp for this traffic movement. This is consistent with the North-South Road Interchange Access Modification Report, which identifies a potential need to construct a westbound to southbound loop off-ramp as the North-South Road corridor becomes populated. Table 15 summarizes the effect of providing a loop ramp as proposed. As shown, the loop ramp resolves the operational issues identified in Table 14.

- 2. **Farrington Highway.** Farrington Highway is assumed to be widened to a four-lane, divided roadway with median left-turn lanes within the year 2025 time frame. Signalization of major intersections along Farrington Highway is recommended when warranted. The recommended configurations at the intersections of Road A and Road G are exclusive left-turn lane and two through lanes in the Farrington Highway Wai’anae-bound approach, through lane and shared through/right-turn lanes in the Farrington Highway Koko Head-bound approach, and exclusive left and right-turn mauka-bound lanes on Roads A and G. At Road F, the recommended configuration is exclusive left-turn lane and two through lanes in the Farrington Highway Wai’anae-bound approach, two through lanes and exclusive right-turn lane in the Koko Head-bound approach, and exclusive left and right-turn mauka-bound lanes on Road F.

Table 15 – Comparison of Year 2025 Intersection LOS with Recommended Improvements

Intersection	Without Improvements				With Improvements*			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
North-South Rd/ H-1 WB On/Off Ramp Terminus	F	105	F	153	C	23.8	C	20.6
H-1 WB Off Ramp Left	F	118.7	F	192.8	--	--	--	--
H-1 WB Off Ramp Right	C	25	B	16.5	A	0.2	A	0.2
North-South NB Left	E	75.1	F	153.7	C	27.6	C	28.1
North-South NB Through	B	19	C	30.5	A	0.2	A	0.2
North-South SB Through	F	126.1	E	70.2	C	25.2	C	21.1
North-South SB Right	A	6.2	A	5.1				
North-South Rd/ H-1 EB On/Off Ramp Terminus	D	52.8	B	19.3	C	27.9	C	34.7
H-1 EB Off Ramp Left	E	69.4	E	56.5	E	61.2	D	52.9
H-1 EB Off Ramp Right	A	0.2	A	0.5	A	0.2	A	0.5
North-South NB Through	B	10.3	B	10.4	D	44.6	D	51.0
North-South NB Right	F	125.3	B	15.6	D	47.8	B	15.4
North-South SB Left	E	74.0	E	68.3	D	54.5	D	50.9
North-South SB Through	A	3.5	C	27.9	A	6.3	D	40.2
North-South Rd/ Farrington Hwy	F	86.1	F	91.8	D	39.7	D	41.2
Farrington EB Left	F	91.3	E	62.3	E	57.2	D	52.9
Farrington EB Through	F	80.2	E	56.9	--	--	--	--
Farrington EB Right	C	20.8	E	72.6	C	27.6	D	48.0
Farrington WB Left	E	70.1	E	61.1	D	49.3	D	46.1
Farrington WB Through	F	147.2	F	90.1	--	--	--	--
Farrington WB Right	D	46.1	F	193.5	C	34.5	D	53.6
North-South NB Left	D	43.2	F	93.8	D	50.1	D	55.0
North-South NB Through	F	102.9	D	36.2	D	53.2	C	28.9
North-South NB Right	B	14.6	B	14.2	A	5.3	A	6.2
North-South SB Left	F	150.0	E	75.5	E	61.2	D	44.2
North-South SB Through	E	64.7	F	142.8	C	22.1	D	50.2
North-South SB Right	C	21.8	B	16.2	A	8.0	A	6.8

Notes:
-- Movement does not exist in Mitigated Scenario.
* Improvements include H-1 Freeway westbound to North South Road southbound two-lane loop ramp and grade separation at Farrington Highway/North South Road Intersection.

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)

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UH West O'ahu Project Internal Roadway Improvements

The internal roadways were evaluated with regard to amount of traffic carried. The roadway cross-sections as proposed in the section below were found to adequately handle the traffic demand projected at build out of the UH West O'ahu development.

These internal roadways would be constructed by UH West O'ahu and its private developer as part of the development of the UH West O'ahu site. Figures 52 through 58 summarize the proposed cross-sections for the internal roadways. The internal intersections that were studied include Road D/Road F, Road B/Road D, Road A/Road I, Road F/Road G, and Road G/Road J. These intersections are planned to be the major intersections and are designed to handle higher traffic volumes compared to other internal intersections within the UH West O'ahu development.

1. **Road B/ Road D Intersection.** Current projections do not warrant signalization at this intersection. It is recommended that this intersection be Two-Way-Stop-Controlled (TWSC) with the controlled approaches along Road D. The recommended intersection configuration is exclusive left-turn, through, and right-turn lanes on Road B, exclusive left-turn lane and shared through/right-turn lane in the southbound approach on Road D, and exclusive right-turn lane and shared left-through lane in the northbound approach. Because of higher southbound left-turn demand, it is also recommended that a signal warrant study be done when the commercial mixed-use parcels mauka of Road B and the University Village are constructed.
2. **Road D/ Road F Intersection.** This intersection will warrant signalization. The recommended intersection configuration is exclusive left-turn and shared through/right-turn lanes on Road D, and exclusive left-turn, a through lane, and a shared through/right-turn lane on Road F.
3. **Road F/ Road G Intersection.** This intersection does not meet signal warrant criteria for current 2025 projections. However, signalization may be considered when the elementary school opens or with the completion of the East-West Connector Road. In the interim, it is recommended that this intersection be TWSC with the Road F approaches being controlled. The recommended lane configurations are exclusive left-turn lanes and shared through/right-turn lanes on Road G, and exclusive left-turn lanes, through lanes, and shared through/right-turn lanes on Road F.
4. **Road A/ Road I Intersection.** Currently this intersection does not warrant signalization for 2025, however, it is recommended that a signal warrant

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study be done when the commercial mixed-use parcel on the east side of Road A is completed.

Left-Turn Storage Analysis

Queuing analyses were conducted using the Cumulative Poisson Distribution Method to determine storage lengths required for left-turn lanes at intersections. Table 16 summarizes the calculated minimum left-turn lanes needed at the Road A/Farrington Highway, Road G/Farrington Highway, Road F/Farrington Highway, Road B/North-South Road, and Road F/North-South Road intersections.

By the year 2025, much of the future roadway network in the project vicinity is assumed to be in place. The majority of intersections analyzed are projected to operate acceptably (LOS E or better) during the peak hours of traffic, with or without the proposed development (see Table 14). For this analysis, North-South Road was assumed to be built to its ultimate 6-lane cross-section with left-turn lanes at intersections. The intersections of Farrington Highway with Roads A and F, and the intersections of North-South Road with Roads B and F were expected to be signalized.

The North-South Road and Farrington Highway intersection will be channelized to provide exclusive right-turn lanes and double left-turn lanes on all approaches. The ultimate configuration of North-South Road as a 6-lane, divided roadway is sufficient for the projected 2025 traffic demand with the proposed UH West O’ahu development. The ultimate configuration of Farrington Highway as a 4-lane, divided roadway is also sufficient for the projected 2025 traffic demand with the proposed development. Internal roadways will be designed to accommodate the projected year 2025 traffic demand with the proposed development.

In general, the proposed UH West O’ahu development will increase traffic volumes in the area as the campus population increases and the project achieves build-out. Initial development of the campus will accommodate only 1,520 students, and build-out of the 7,600-student campus will occur over several years. Currently, 23 percent of undergraduate students at the UH Mānoa campus reside on the west side of Red Hill, and traffic on the H-1 Freeway is noticeably heavier when the UH Mānoa campus is in session. Providing an additional campus and employment center in Kapolei for Leeward and Central O’ahu residents could divert enough vehicles to improve eastbound traffic flow on the H-1 Freeway.

Table 16 – Left-Turn Storage Requirements

Direction		Time Period with Max. Demand	Left-Turn Peak Hour Volume (veh/hr)	Probable Vehicles Queued (# of vehicles)	Length of Left-Turn Bay Needed (feet)**	# of Left Turn Lanes
From	To					
Farrington Hwy EB	North South Road NB	PM	425	23	320	2
Farrington Hwy WB	"Road A" SB	AM	326	19	475	1
"Road A" NB	Farrington Hwy WB	PM	61	5	125	1
Farrington Hwy WB	"Road G" SB	AM	176	11	275	1
"Road G" NB	Farrington Hwy WB	AM	14	2	100*	1
Farrington Hwy WB	"Road F" SB	PM	56	5	125	1
"Road F" NB	Farrington Hwy WB	AM	218	13	325	1
"Road B" EB	North South Road NB	PM	196	12	165	2
North South Road NB	"Road B" WB	PM	199	12	165	2
"Road F" EB	North South Road NB	PM	313	18	250	2
North South Road NB	"Road F" WB	AM	207	13	180	2

Note: * Minimum 100-foot left-turn lane on an arterial roadway.
 ** Lengths have been rounded up to the nearest 5 feet.
 Max. = maximum left-turn demand for specified left-turn movement.
 Traffic Signal Cycle Length Assumed = 140 seconds.

Source: Parsons Brinckerhoff Quade & Douglas, Inc., Traffic Study University of Hawaii West Oahu (August 2007)

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Summary and Conclusion

The *General Plan* of the City and County of Honolulu and its companion *Ewa Development Plan* designates the ‘Ewa plain as the focus of a second urban area on the island of O’ahu. As a result, the growth forecasted for this area is significant. Within the East Kapolei area alone, population is projected to grow by approximately 49,333 and employment is projected to grow by approximately 8,941.

Need for Regional and Sub-Regional Transportation Improvements

The need for continuing improvement to the transportation system to address this growth has been recognized. The new North-South Road with its new Interchange on H-1 Freeway is a project by the State of Hawai‘i, Department of Transportation (DOT) that is essential to allow the ‘Ewa plain to achieve its goal as the second urban area. It is currently under construction and its initial phase is expected to be complete by 2009. DOT has also started the second phase of its Fort Weaver Road widening project that will widen Fort Weaver Road to six lanes between Laulanui Street and Geiger Road. It is also projected for completion by 2009. Design is underway on two other DOT projects: Fort Barrette Road Widening and a new Kapolei Interchange at Wakea Street.

A key segment of Kapolei Parkway between the OR&L right-of-way and Renton Road was recently completed by the City and County of Honolulu and the segment of Kapolei Parkway between Renton Road and North-South Road has recently been awarded to a contractor for construction. The State of Hawai‘i, Department of Hawaiian Home Lands (DHHL) is designing the segment of Kapolei Parkway between North-South Road and the existing terminus of Kapolei Parkway near the Kapolei Middle School. The completion of balance of Kapolei Parkway, Wai‘anae of Fort Barrette Road, and other roadways within Kapolei is also underway as a partnership between the City and County of Honolulu and Kapolei Property Development. Farrington Highway is being planned for widening to four lanes.

The City and County of Honolulu is also proposing to construct the Honolulu High Capacity Transit Corridor Project (HHCTCP), a fixed guideway transit line between Kapolei and the University of Hawai‘i at Mānoa. The Alternatives Analysis for the project has been completed and the Honolulu City Council has selected a Locally Preferred Alternative (LPA) and a Minimum Operable Segment (MOS). Work will begin soon on the Final Environmental Impact Statement (FEIS) and Preliminary Engineering. If accepted by the U.S. Department of Transportation – Federal Transit Administration (FTA) as a New Starts project, the MOS, connecting UH-West O’ahu to Ala Moana Center, is expected to be completed by year 2017.

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HHCTCP will enable the bus network to be modified to provide better coverage and service for the 'Ewa plain area.

Additionally, the proposed developments in the East Kapolei area: UH-West O'ahu, Ho'opili, and DHHL East Kapolei Development Parcels 1 and 2 are constructing the supporting roadway network for the area. A key roadway is the East-West Arterial Roadway, referred to as Road F in this report. This roadway will extend from Farrington Highway on its Wai'anae end to Fort Weaver Road on its Koko Head end. It will provide needed Wai'anae-Koko Head capacity for the roadway network.

Increasing Urbanization Reduces External Transportation Demand

Currently, a large share of the travel originating in the 'Ewa plain is destined for areas outside the 'Ewa plain. This puts stress on the access points into the 'Ewa plain; mainly the interchanges on H-1 Freeway and the arterials leading up to them.

The increasing urbanization of the 'Ewa plain introduces its own travel demands, but increasing the non-residential component of future development retains more trips within the 'Ewa plain, decreasing the proportion of trips that travel external to the area. This allows the 'Ewa plain to accommodate much more development than would be possible as a pure "bedroom" community.

The proposed HHCTCP has spurred the planning of transit-oriented development (TOD) that is hoped to encourage the use of transit as a mode of travel within and external to the 'Ewa plain.

Construction of Internal Roadway Network Important

To accommodate this intra-'Ewa plain travel, it is important that the internal transportation network including roadways and transit be developed fully. As previously mentioned in this report, the developments within the UH West O'ahu study area have a share of the responsibility to construct key roadways that contribute to the internal transportation network of 'Ewa. These key roadways will provide for multi-modal travel within the 'Ewa plain.

Several transportation improvements are already identified as part of the 'Ewa transportation impact fee ordinance passed by the Honolulu City Council (Chapter 33A of the *Revised Ordinances of Honolulu*). This ordinance establishes a schedule of transportation impact fees for various types of land uses. Developers pay this impact fee at time of building permit. The current ordinance specifically identifies six projects as recipients of the impact fees. They are:

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- North-South Road and Interchange – H-1 to Kapolei Parkway
- Kapolei Parkway Completion – Ko 'Olina to Ewa Beach
- Kapolei Interchange – New interchange at Wakea;
- Makakilo Interchange Improvements;
- Fort Weaver Road Widening – Farrington Highway to North Road;
- Fort Barrette Road Widening – Farrington Highway to Franklin D. Roosevelt Avenue;

The ordinance includes a provision that "The director of transportation services, in consultation with the director of planning and permitting and the state director of transportation, shall review the Ewa highway master plan once every five years in terms of land uses, densities, highway improvements, and changes in costs and make appropriate changes thereto. This review and revision shall include consultation and input from the Ewa region developers." This five year review has recently been initiated. As part of this review, it would be prudent to modify the *Ewa Highway Master Plan* project list to include the following long-range objectives:

- Loop ramp at North-South Road Interchange for Wai'anae-bound to makai-bound movement;
- Grade Separation at Farrington Highway/North-South Road intersection;
- Farrington Highway Widening – Fort Weaver Road to Kapolei Golf Course Road;
- East-West Arterial – New Roadway between Fort Weaver Road and Farrington Highway.

These are roadway improvements that would improve transportation mobility for all modes of travel.

The proposed University of Hawai'i West O'ahu, the DHHL East Kapolei Development Parcels 1 and 2, and the Ho'opili development are within the area covered by the Impact Fee Ordinance and will pay impact fees on their respective developments.

Conclusion

Based on the analysis of the proposed University of Hawai'i West O'ahu development in the context of the projected growth for the East Kapolei area and the 'Ewa region, it is concluded that the University of Hawai'i West O'ahu campus and surrounding development is an important part of the policy to urbanize the 'Ewa plain. It provides the type of mixed use development that is essential to transform the 'Ewa plain from a bedroom community to the second city of O'ahu.

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The UH West O'ahu campus helps to re-orient regional travel patterns in a way that distribute college-level travel in directions other than urban Honolulu. The UH West O'ahu campus and adjacent development will place demands on the surrounding transportation system, but with the transportation improvements identified in this report, these demands could be accommodated by the projected transportation system.

The UH West O'ahu campus is also consistent with the proposed Honolulu High Capacity Transit Corridor Project (HHCTCP), providing a tangible destination for the endpoint of the Minimum Operable Segment (MOS) approved by the Honolulu City Council.

Attendance 9/12/07

8,468.8

Henry Teng	DPP
MIKE JONES	DR HUNTON
GENE ADAKUNI	UHWO
LARRY SUMIDA	DHHL
DARRELL NG	DHHL
Phil Russell	GMR/Kroc Center
Dean Kukura	D.R. HUNTON
Bob Sumitomo	DPP/SDD
Kathy Sokenawa	DPP/P
Toru Hamayasu	DTS/RT.