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April 28, 2006

Mr. Leslie T. Rogers, Regional Administrator
Federal Transit Administration, Region IX
U. S. Department of Transportation
201 Mission Street, Suite 1650
San Francisco, California 94105

Dear Mr. Rogers:

Subject: Honolulu High-Capacity Transit Corridor Project

We are transmitting for your review and comment one (1) copy of the Conceptual Definition of Alternatives (April 27, 2006) for the subject project.

Should you have any questions regarding this document, please contact Toru Hamayasu at (808) 527-6978.

Sincerely,

Melvin N. Kaku

MELVIN N. KAKU
Acting Director

Enclosure

cc: Mr. Ray Sukys, FTA – Region IX (with enclosure)
Ms. Donna Turchie, FTA – Region IX (with enclosure)
Mr. James Ryan, FTA – Headquarters (enclosure handcarried)
Mr. James Barr, FTA – Headquarters (enclosure handcarried)

mb (F. Miyamoto)

Conceptual Definition of Alternatives
Honolulu High-Capacity Transit Corridor Project

April 27, 2006

Prepared for:
City and County of Honolulu

Prepared by:
Parsons Brinckerhoff Quade and Douglas, Inc.

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Introduction

The purpose of the Honolulu High-Capacity Transit Corridor Project is to provide improved mobility for persons traveling in the highly congested east-west corridor between Kapolei and the University of Hawai'i at Mānoa (UH Mānoa), confined by the Wai'anae and Ko'olau mountain ranges to the north, and the ocean to the south. The Project would provide faster, more reliable public transportation services in the corridor than those services currently operating in mixed-flow traffic. The Project would also provide an alternative to private automobile travel and would additionally improve linkages between Kapolei, Honolulu's urban center, UH Mānoa, Waikīkī, and the urban area in between. In conjunction with other improvements included in the O'ahu Regional Transportation Plan, implementation of the Project would moderate anticipated traffic congestion in the corridor. The Project also would support the goals of the O'ahu General Plan and the O'ahu Regional Transportation Plan by serving areas designated for urban growth.

An extensive range of alternatives with the potential to improve mobility within the corridor were identified and evaluated at a high-level in the *Honolulu High-Capacity Transit Corridor Project Alternatives Screening Memorandum* (DTS, 2006). The screening analysis identified four travel modes, 11 technologies and 73 possible alignments. The classes of alternatives that were evaluated included:

- Fixed Guideway Transit
- Bus
- Bus Rapid Transit
- High-Occupancy and Toll Lanes
- Tunnel or Bridge across Pearl Harbor
- Waterborne Ferries

The alternatives were derived through a screening process intended to refine all possible and reasonable alternatives into those that meet corridor needs, are technically feasible, and are viable for further study. The range of possible alternatives was developed based on previous transit studies, a field review of the study corridor, an analysis of current housing and employment data for the corridor, a literature review of technology modes, and work completed by the O'ahu Metropolitan Planning Organization (OMPO) for its Draft 2030 Regional Transportation Plan and from public and agency comments received during project scoping.

The merits of each class of alternative were evaluated against a number of criteria related to: shortening travel times, project costs, environmental impacts, ease of implementation, support of the City's long-range land use plans, and community benefits. The range of alignment options were evaluated by section. The sections, identified from the Wai'anae to Koko Head direction, were defined based on logical

termini and the presence of existing transportation facilities, travel origins and destinations, and/or neighborhood boundaries. This provided the opportunity to focus on the particular needs and characteristics of an area in order to select the best options within each section of the corridor.

This screening process culminated with the selection of four alternatives, including a "no build" alternative for comparison, a Transportation System Management alternative with additional improvements to the existing bus system, a managed lanes alternative, and a fixed guideway transit alternative with multiple alignment options.

Those four major alternatives were presented to interested agencies and the public in scoping meetings. The purpose of the scoping meetings was to gain agency input and public comment on the purpose of and need for the Project, the process of evaluation, and the potential unmitigatable impacts of the proposed alternatives. The consideration of those comments was an important element of the screening process. The input received was considered during the definition and refinement of alternatives to be considered during the study.

A specific technology will not be selected for the fixed guideway alternative at this point in the analysis. However, the technology screening identified seven technologies as potential candidates for providing the fixed guideway service. The technology is anticipated to be identified after the selection of the Locally Preferred Alternative.

The result of the screening and scoping processes are the following four alternatives that are being advanced for detailed analysis in the Alternatives Analysis. The remainder of this report conceptually defines these alternatives.

The following descriptions define the alternatives as they will be carried forward into the Alternatives Analysis (AA). Adjustments and definitions will evolve through the AA process of evaluation to clarify and pinpoint the final alternatives. Alternatives that emerge from the AA will receive further consideration in the draft EIS.

ALTERNATIVE 1: No Build Alternative

The No Build Alternative includes existing transit and highway facilities and most committed transportation projects anticipated to be operational by 2030. Committed highway transportation projects are those programmed in the financially constrained O'ahu 2030 Regional Transportation Plan (RTP) prepared by OMPO. Transit projects included are those that are contained within the financially constrained RTP and are also included as funded projects in the regional Transportation Improvement Program (TIP), with the exception of the Rail Transit, Kapolei to Mānoa project that is included in the plan. The existing facilities and committed projects in the No Build Alternative also will be included in all other alternatives. The committed projects included in the No Build Alternative are listed in Appendix A.

Some of the committed projects would improve current bus transit service. These include the Nimitz Highway High-Occupancy Vehicle (HOV) Flyover, new HOV and "zipper lane" facilities, intra-island ferry service, and new transit centers in Kalihi, Wahiawa, and Wai'anae . Note that while transit centers at Pearl City and 'Aiea are also contained in the RTP, they are not in the regional TIP; hence, they are not included in the No Build Alternative.

In anticipation of increased roadway congestion and slower overall bus transit speeds, the No Build Alternative's transit component would include an increase in fleet size to allow service frequencies to remain the same as today. It will also include new bus service to serve proposed growth areas (e.g., Kapolei), and restructured "hub and spoke" service to serve the regional transit centers. The specific number of buses, as well as required ancillary facilities, will be determined during the transportation demand analysis completed to support the AA and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.*

ALTERNATIVE 2: Transportation System Management (TSM) Alternative

In addition to the committed projects included in the No Build Alternative, the TSM Alternative would include transit centers at Pearl City and 'Aiea, and an enhanced bus system based on an expanded hub-and-spoke route network and relatively low-cost capital improvements on selected roadway facilities providing priority to buses. Additional service to areas served as part of the No Build Alternative would also be provided where such service is deemed to be productive. The enhanced bus system would include an increase in fleet size that attempts to meet the purpose and needs of

the project. The specific number of buses and ancillary facilities will be determined during the transportation demand analysis completed to support the AA and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.*

ALTERNATIVE 3: Managed Lane Alternative

The Managed Lane Alternative would provide two additional travel lanes between the H-1 and H-2 merge (Waiawa Interchange) and Pacific Street in Iwilei (Figures 1 and 2). Bus operations would be restructured and enhanced by utilizing the managed lanes to provide additional service between Kapolei and other points 'Ewa of Downtown, through to the University of Hawai'i at Mānoa. The alternative would include construction of a two-lane grade-separated facility between Waipahu and the Ke'ehi Interchange along Kamehameha Highway and modifications to the currently proposed Nimitz Highway HOV Flyover project from Ke'ehi Interchange to Pacific Street. Construction of the Nimitz Highway HOV Flyover project is part of the No Build Alternative. The modification of the Nimitz Flyover design would involve widening the proposed two-lane elevated facility to accommodate a 50 mph speed limit instead of the planned 35 mph speed limit.

The entire managed lane facility would be managed to maintain free-flow speeds for buses. Provided enough capacity exists, HOVs and toll-paying single-occupant vehicles would also be allowed to use the facility. Tolls would be variable and set so as to ensure free flow conditions on the facility. Intermediate access points would be provided in the vicinity of Aloha Stadium (bus only access) and the Ke'ehi Interchange. Two design and operational variations of the Managed Lane Alternative will be evaluated: a two-direction facility (one lane in each direction) and a two-lane reversible direction facility.

ALTERNATIVE 3a: Two-direction Facility

As a two-direction facility, the managed roadway would operate with one lane designated for each direction. This facility would have an average roadway width of 46 feet. Shoulders would be provided in each direction that are sufficiently wide to accommodate stalled vehicles. The facility would allow access from the H-1 Freeway in the median area at Managers Drive and would connect directly to the new HOV lanes that are part of the 2030 RTP between Waiawa Interchange and Makakilo Interchange. The facility would also connect directly with the H-2 Freeway along the outside lanes of H-2 near the Waiawa Interchange. The a.m. "zipper" lane and H-1 HOV lanes would not be disrupted by the two-direction managed lane facility in this area.

In the vicinity of Aloha Stadium, a bus-only intermediate access facility would provide an on-ramp for buses Koko Head bound and off-ramp for buses 'Ewa bound.

Bus flyer stops would be provided on the facility at Kaonohi Street and at Radford Drive (Makalapa Gate). The flyer stops would require a widening of the facility on

each side to provide a lane for bus deceleration, stopping and acceleration as well as passenger platforms at the stopping locations. Vertical circulation would be provided from the platforms to the surface of Kamehameha Highway.

At the Ke'ehi Interchange, the managed lane facility would be integrated with the proposed Nimitz Flyover. The Nimitz Flyover would be modified by adding a third lane, resulting in one lane in each direction plus a reversible center lane which would operate in the peak direction (i.e., Koko Head bound in the morning and 'Ewa bound in the afternoon). In the morning, the single Koko Head bound managed lane facility as well as the a.m. "zipper" lane would feed into the two inbound flyover lanes. The outbound flyover lane would continue through the Ke'ehi Interchange as the outbound managed lane. Due to the size of the columns required to support the three-lane structure, the Nimitz Flyover modification would require taking one of three outbound lanes at-grade on Nimitz Highway, but three inbound lanes would remain at-grade. To compensate for the loss of the outbound at-grade lane during the critical p.m. peak period, one of the two outbound flyover lanes would be provided for general purpose traffic in the p.m. peak period.

The managed lane facility would connect with Nimitz Highway on the 'Ewa side of Pacific Street. Separate bus-only flyover ramps (one lane each direction) would be constructed in the vicinity of Sumner Street to provide a priority connection for buses traveling between Nimitz Highway and Hotel Street.

The initial assumption, subject to verification when travel forecasts have been prepared, is that sufficient volumes of buses and HOVs will use the facility in 2030 that no capacity will be available for use for toll-paying SOVs. In order to maintain free-flow speeds it may be necessary to charge tolls to manage the number of 2-person HOVs using the facility.

ALTERNATIVE 3b: Reversible Facility

As a reversible facility, the managed roadway would operate with both lanes traveling in a single direction. This facility would have an average roadway width of 36 feet. It would be operated in the peak direction during peak periods (i.e. Koko Head bound in the a.m. and 'Ewa bound in the p.m.). Shoulders would be provided for stalled vehicles on one side for the length of the facility. The managed lane facility would begin after the H-1/ H-2 Freeway "zipper" lane merge and would turn mauka and follow Kamehameha Highway. In the a.m. the Koko Head bound zipper lane from H-1 and the Koko Head bound HOV zipper lane crossover lane will enter directly onto the managed lane facility.

In the p.m., one lane would continue onto the new 'Ewa bound HOV lane that is in the 2030 RTP through the Waiawa Interchange. The second lane would allow access to the H-2 HOV lane by using the a.m. "zipper" lane crossover ramp to tie into the future p.m. "zipper" lane on H-2 in the mauka direction to get vehicles directly into the H-2 HOV flow.

In the vicinity of Aloha Stadium, a bus-only intermediate access facility would function as an on-ramp for buses Koko Head bound during the a.m. peak and as an off-ramp for buses 'Ewa bound in the p.m. peak.

Bus flyer stops would not be provided on this alternative.

At the Ke'ehi Interchange, the managed lane facility would be integrated with the proposed Nimitz Flyover. There would be two inbound managed lanes in the a.m. peak and two outbound managed lanes in the p.m. peak. Three inbound and three outbound general purpose lanes would remain as existing at-grade on Nimitz Highway. With this alternative, the a.m. "zipper" lane and proposed p.m. "zipper" lane would be completely replaced by the managed lane facility. The HOV lanes on H-1 would remain as they exist today and would not connect with the Nimitz Flyover.

The Nimitz Flyover would be modified by having a flatter profile on the 'Ewa side of the proposed facility to allow a higher design speed. The managed lane facility would remain elevated throughout the entire facility instead of descending to grade near Kalihi Stream and ascending before Sand Island Access Road as planned for the Nimitz Flyover. The managed lane structure would also be four feet wider than the proposed Nimitz Flyover, 36 feet wide instead of 32 feet wide, to accommodate the increased design speed.

The managed lane facility would connect with Nimitz Highway on the 'Ewa side of Pacific Street. A separate single lane reversible bus-only flyover ramp would be constructed in the vicinity of Sumner Street to provide a priority connection for buses traveling between the Nimitz Highway and Hotel Street.

The initial assumption, subject to verification when travel forecasts have been prepared, is the two-lane reversible facility will have sufficient capacity to allow toll-paying SOVs onto it in 2030 while still maintaining free-flow speeds.

ALTERNATIVE 4: Fixed-Guideway Alternative

Overview

The Fixed-Guideway Alternative would include the construction and operation of a fixed-guideway transit system between Kapolei and the University of Hawai'i at Mānoa. The system could use any fixed-guideway transit technology meeting performance requirements and could either be automated or employ drivers. Station and supporting facility locations will be determined during further alternative development and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.* Supporting facilities would include a vehicle maintenance facility and park-and-ride lots. Existing bus service would be reconfigured and enhanced to bring riders on local buses to nearby transit stations. The guideway would be constructed within existing street or highway rights-of-way where possible, but would require the acquisition of additional

property in various locations. This alternative would not preclude future extensions of the system within the corridor, or to other parts of O'ahu.

Technologies Being Considered

A broad range of technologies were considered for application to this alternative, including light rail transit, personal rapid transit, automated people mover, monorail, magnetic levitation (maglev), commuter rail, and emerging technologies that are still in the development stage. Through a screening process, seven transit technologies were selected and will be considered as possible options. Those seven potential technologies include: conventional bus, guided bus, light rail, people mover, monorail, maglev and rapid rail. Technologies that were not carried forward from the screening process include personal rapid transit, commuter rail, and the emerging technologies. The technology screening process and results are documented in the *Honolulu High-Capacity Transit Corridor Project Technology Options Memo.*

Alignments Being Considered

The study corridor has been divided into five sections to simplify analysis and evaluation of impacts that would be associated with each alignment in the Alternatives Analysis. With few exceptions, the various alignments under consideration within each of the sections may be combined with any of the alignments in the adjacent sections.

Each alignment has distinctive characteristics and environmental impacts, and provides different service options; therefore, each alignment will be evaluated individually and compared to the other alignments within that section.

Unless otherwise specified, the alignments proposed below would be on an elevated structure to ensure exclusive right-of-way for the guideway system.

Section I. Kapolei to Fort Weaver Road

Section I extends from a transit terminal facility on the Wai'anae (west) side of Kalaeloa Boulevard in Kapolei to Fort Weaver Road. Four alignments are under consideration in Section I (Figure 3):

- Kamokila Boulevard/Farrington Highway
- Kapolei Parkway/North-South Road
- Saratoga Avenue/North-South Road
- Geiger Road/Fort Weaver Road

Kamokila Boulevard/Farrington Highway

The Kamokila Boulevard/Farrington Highway alignment would follow Kapolei Parkway, turn onto Kamokila Boulevard, and continue along Farrington Highway.

Along Farrington Highway, Koko Head of Kapolei Golf Course Road to the intersection of Fort Weaver Road, the guideway could be located either at-grade with limited grade crossings or on an elevated structure . At Fort Weaver Road, the alignment would become elevated through the next section.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kamokila Boulevard and Wākea Street, Farrington Highway at UH West O'ahu, Farrington Highway and North-South Road, and Farrington Highway between North-South Road and Fort Weaver Road.

Kapolei Parkway/North-South Road

The Kapolei Parkway/North-South Road alignment would follow Kapolei Parkway to North-South Road, turn mauka to Farrington Highway, and continue along Farrington Highway as shown on the Public Facilities Map of the 'Ewa Development Plan. Koko Head of Kalaeloa Boulevard, the guideway could be located either at-grade with limited grade crossings or on an elevated structure. At Fort Weaver Road, the alignment would become elevated through the next section.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Kapolei Parkway and Kamaaha Avenue, Kapolei Parkway and North-South Road, North-South Road between Kapolei Parkway and Farrington Highway, Farrington Highway and North-South Road, and Farrington Highway between North-South Road and Fort Weaver Road.

Saratoga Avenue/North-South Road

The Saratoga Avenue/North-South Road alignment would follow Kapolei Parkway to Wākea Street, and then turn makai to a future extension of Wākea Street to Saratoga Avenue. The guideway would continue on a future extension of Saratoga Avenue and turn mauka to follow North-South Road to Farrington Highway. Wai'anae of Fort Weaver Road, the guideway could be located either at-grade with limited grade crossings, or on an elevated structure.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Saratoga Avenue and Wākea Street, Saratoga Avenue and Fort Barrette Road, Saratoga Avenue and North-South Road, Kapolei Parkway and North-South Road, North-South Road between Kapolei Parkway and Farrington Highway, Farrington Highway and North-South Road and, Farrington Highway between North-South Road and Fort Weaver Road.

Geiger Road/Fort Weaver Road

The Geiger Road/Fort Weaver Road alignment would follow Kapolei Parkway to Wākea Street, and then turn makai to Saratoga Avenue. The guideway would continue on a future extension of Saratoga Avenue and Geiger Road onto Fort Weaver Road. Continuing on Fort Weaver Road, the alignment would turn Koko Head at Farrington Highway.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Saratoga Avenue and Wākea Street, Saratoga Avenue and Fort Barrette Road, Saratoga Avenue and North-South Road, Geiger Road and Fort Weaver Road, and Fort Weaver Road and Renton Road.

Section II. Fort Weaver Road to Aloha Stadium

Section II comprises the corridor from Fort Weaver Road to Aloha Stadium. In this vicinity, the only practical alignment follows Farrington Highway Koko Head on an elevated structure to Kamehameha Highway (Figure 4). Additionally, this is the preferred transit route the Pearl City and 'Aiea communities have adopted in their community plans. Stations on this alignment would be located generally near the following intersections: Farrington Highway and Leokū Street, Farrington Highway and Mokuola Street, Kamehameha Highway and Kuala Street, and Kamehameha Highway and Kaonohi Street.

Section III. Aloha Stadium to Ke'ehi Interchange

Section III extends from Aloha Stadium to the vicinity of Middle Street/Ke'ehi Interchange. Four alignments are under consideration in Section III (Figure 5):

- Salt Lake Boulevard
- Mauka side of the Airport Viaduct
- Makai of the Airport Viaduct
- Aolele Street

Salt Lake Boulevard

The Salt Lake Boulevard alignment would turn from Kamehameha Highway to follow Salt Lake Boulevard onto Pūkōloa Street, then continue elevated over Moanalua Stream. Stations on this alignment would be located generally near the following intersections: Salt Lake Boulevard and Kahuapaani Street, and Salt Lake Boulevard across from Ala Inoi Place.

There are two options for connecting this alignment to Section IV alignments. To connect to the North King Street alignment, this alignment would continue adjacent to Moanalua Road. To connect this alignment to Dillingham Boulevard, the

alignment would follow the Koko Head bank of Moanalua Stream, and then cross over the H-1 Freeway.

Mauka side of the Airport Viaduct

The Mauka side of the Airport Viaduct alignment would continue along Kamehameha Highway to Nimitz Highway and continue either elevated or at-grade on the mauka side of the H-1 Airport Viaduct to the vicinity of Middle Street. Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, and Nimitz Highway and Paiea Street.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Makai of the Airport Viaduct

The Makai of the Airport Viaduct alignment would follow Kamehameha Highway to Nimitz Highway and continue elevated on the makai side of the H-1 Airport Viaduct to the vicinity of Middle Street.

Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, Kamehameha Highway and Aolele Street, and Kamehameha Highway and Lagoon Drive.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Aolele Street

The Aolele Street alignment would continue along Kamehameha Highway to Nimitz Highway and turn makai onto Aolele Street and then follow Aolele Street Koko Head to reconnect to Nimitz Highway near Ke'ehi Interchange. Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, at the Honolulu International Airport, and Aolele Street and Lagoon Drive.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Section IV. Ke'ehi Interchange to Iwilei

Section IV extends from Middle Street/Ke'ehi Interchange to Iwilei. Two alignments are under consideration in Section IV (Figure 6):

- North King Street
- Dillingham Boulevard

In either alignment, the guideway would continue elevated. Four configurations for connecting the Section III alignments to the Section IV alignments are under consideration:

Connection of the Salt Lake Boulevard alignments to the North King Street alignment would be by an alignment that is adjacent to Moanalua Freeway. Portions of the alignment may be within the freeway right of way and portions may be within U.S. Army properties. Stations on this alignment would be located generally near the following intersections: North King Street and Owen Street, North King Street and Waiakamilo Road, and either North King Street and Dillingham Boulevard or North King Street and Liliha Street depending on the following section connection.

Connecting Salt Lake Boulevard to Dillingham Boulevard would be along an alignment that follows the Koko Head bank of Moanalua Stream, and then crosses over the H-1 Freeway. Properties on the Koko Head side of Moanalua Stream belong to the U.S. Army. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, Dillingham Boulevard and Mokauea Street, Dillingham and Kōkea Street, and on Ka'aahi Street.

The Mauka side and Makai of the Airport Viaduct alignments and the Aolele Street alignment would be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, Dillingham Boulevard and Mokauea Street, Dillingham Boulevard and Kōkea Street, and on Ka'aahi Street.

Connecting these alignments to North King Street would be along an alignment between Middle Street and the H-1 Freeway. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, North King Street and Owen Street, North King Street and Waiakamilo Road, and either North King Street and Dillingham Boulevard or North King Street and Liliha Street depending on the following section connection.

Section V. Iwilei to UH Mānoa

Section V extends from Iwilei to the eastern project terminus at the University of Hawai'i at Mānoa's Lower Campus. Five alignments are under consideration in Section V; four of the alignments include an option for a Waikīkī Spur (Figure 7):

- Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard with or without Waikīkī Spur
- Hotel Street/Waimanu Street/Kapi'olani Boulevard with or without Waikīkī Spur
- Nimitz Highway/Queen Street /Kapi'olani Boulevard with or without Waikīkī Spur
- Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard with or without Waikīkī Spur
- Waikīkī Spur
- Beretania Street/South King Street

Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard

The Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard alignment would descend to grade from one of the elevated alignments described in Section IV and follow Hotel Street Koko Head of Iwilei Road. The guideway would operate at-grade on Hotel Street, crossing traffic at intersections, with transit signal priority to minimize delays. At Alakea Street the guideway would begin to descend into a tunnel with a portal at Richards Street. The guideway would continue in a tunnel under the government campus past South King Street and follow Kawaiaha'o Street, where it would transition to an elevated structure past South Street. The guideway would continue on Kawaiaha'o Street to near Kamakee Street, where property on each side of Kamakee Street would be acquired to allow the alignment to cross over to Kona Street and follow Kona Street to past Ala Moana Center. It would turn mauka just before Atkinson Drive, and follow Kapi'olani Boulevard to University Avenue. The guideway would then turn mauka and follow University Avenue past the H-1 Freeway, ending at a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Hotel Street and Kekaulike Street, Hotel Street and Nu'uanu Avenue, Hotel Street and Fort Street Mall, subgrade at Punchbowl Street and Hotel Street (Honolulu Hale), Kawaiaha'o Street and Cooke Street, Kawaiaha'o Street and Kamakee Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Hotel Street/Waimanu Street/Kapi'olani Boulevard

The Hotel Street/ Waimanu Street/Kapi'olani Boulevard alignment would descend to grade and follow Hotel Street Koko Head of Iwilei Road. The guideway would

operate at-grade on Hotel Street and descend into a tunnel past Alapa'i Street as with the Hotel Street/Kawaiaha'o Street alignment. However, instead of following Kawaiaha'o Street, the alignment would follow Kapi'olani Boulevard to Dreier Street. The guideway would turn makai and transition to an elevated structure on private property on Waimanu Street between Dreier Street and Kamani Street. Following Waimanu Street past Kamakee Street, the guideway would turn mauka and follow Kona Street and continue to the UH at Mānoa as with the Hotel Street/Kawaiaha'o Street alignment.

Stations on this alignment would be located generally near the following intersections: Hotel Street and Kekaulike Street, Hotel Street and Nu'uanu Avenue, Hotel Street and Fort Street Mall, subgrade at King Street and Kapi'olani Boulevard (Honolulu Hale), Waimanu Street and Cummins Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Nimitz Highway/Queen Street /Kapi'olani Boulevard

The Nimitz Highway/Queen Street /Kapi'olani Boulevard alignment would allow a continuous elevated guideway from Section III all the way to UH at Mānoa. The alignment would follow Nimitz Highway Koko Head to Queen Street, then along Queen Street past Kamakee Street following the new Queen Street Extension alignment. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. As in the Hotel Street/Kawaiaha'o Street alignment, the guideway would run above Kona Street through Ala Moana Center, and then turn mauka to follow Kapi'olani Boulevard to University Avenue where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Nimitz Highway and Kekaulike Street, Queen Street and Fort Street Mall, Queen Street and South Street, Queen Street and Cummins Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard

The Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard alignment would allow a continuous elevated guideway from Section III all the way to UH at Mānoa. The alignment would follow Nimitz Highway Koko Head to Halekauwila Street, then along Halekauwila Street past Ward Avenue where it would transition to Queen Street and the new Queen Street Extension alignment. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. As in the Hotel Street/Kawaiaha'o Street alignment, the guideway would run

above Kona Street through Ala Moana Center, and then turn mauka to follow Kapi'olani Boulevard to University Avenue where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Nimitz Highway and Kekaulike Street, Nimitz Highway and Fort Street Mall, Halekauwila Street and South Street, Halekauwila Street and Ward Avenue, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Waikīkī Spur

The Waikīkī Spur would be a branch line from a transfer point at Ala Moana Center or the Hawai'i Convention Center, into Waikīkī following Kalākaua Avenue to Kūhiō Avenue, then extend along Kūhiō Avenue to the vicinity of Kapahulu Avenue.

The Kapi'olani Boulevard and McCully Street station discussed for the above alignments would be replaced by a station at the Hawai'i Convention Center on Kalākaua Avenue. Other Waikīkī Spur stations would be located generally near the following intersections: Kūhiō Avenue and Kālaimoku Street, Kūhiō Avenue and Lili'uokalani Avenue.

Beretania Street/South King Street

The Beretania Street/South King Street alignment would descend to a tunnel portal in the vicinity of Ka'aahi Street, continue through a tunnel under 'A'ala Park and Nu'uanu Stream, and then follow Beretania Street. It would transition to an elevated structure on the makai side of Beretania Street between Punchbowl Street and Alapa'i Street. The guideway would cross over Alapai Street, turning makai to continue elevated on South King Street to Kai'ali'u Street, where it would turn mauka to cross over University Avenue and the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Beretania Street and Fort Street Mall, Beretania Street and Alapa'i Street, South King Street and Pensacola Street, South King Street and Kalākaua Avenue, South King Street and McCully Street, South King Street and McCully Street, South King Street and Hausten Street, and at the UH Lower Campus.

Connections between Section IV and Section V

Six configurations for connecting the Section IV alignments to the Section V alignments are under consideration:

Connecting the North King Street alignment at Liliha Street to the Hotel Street alignments would be along an elevated alignment that follows North King Street to Iwilei Road, where it would descent to grade before reaching River Street.

The North King Street connection at Liliha Street to Nimitz Highway would be along an alignment over private property on the makai side on North King Street. It then crosses over Iwilei Road, and continues over private property between the inbound and outbound lanes of Nimitz Highway.

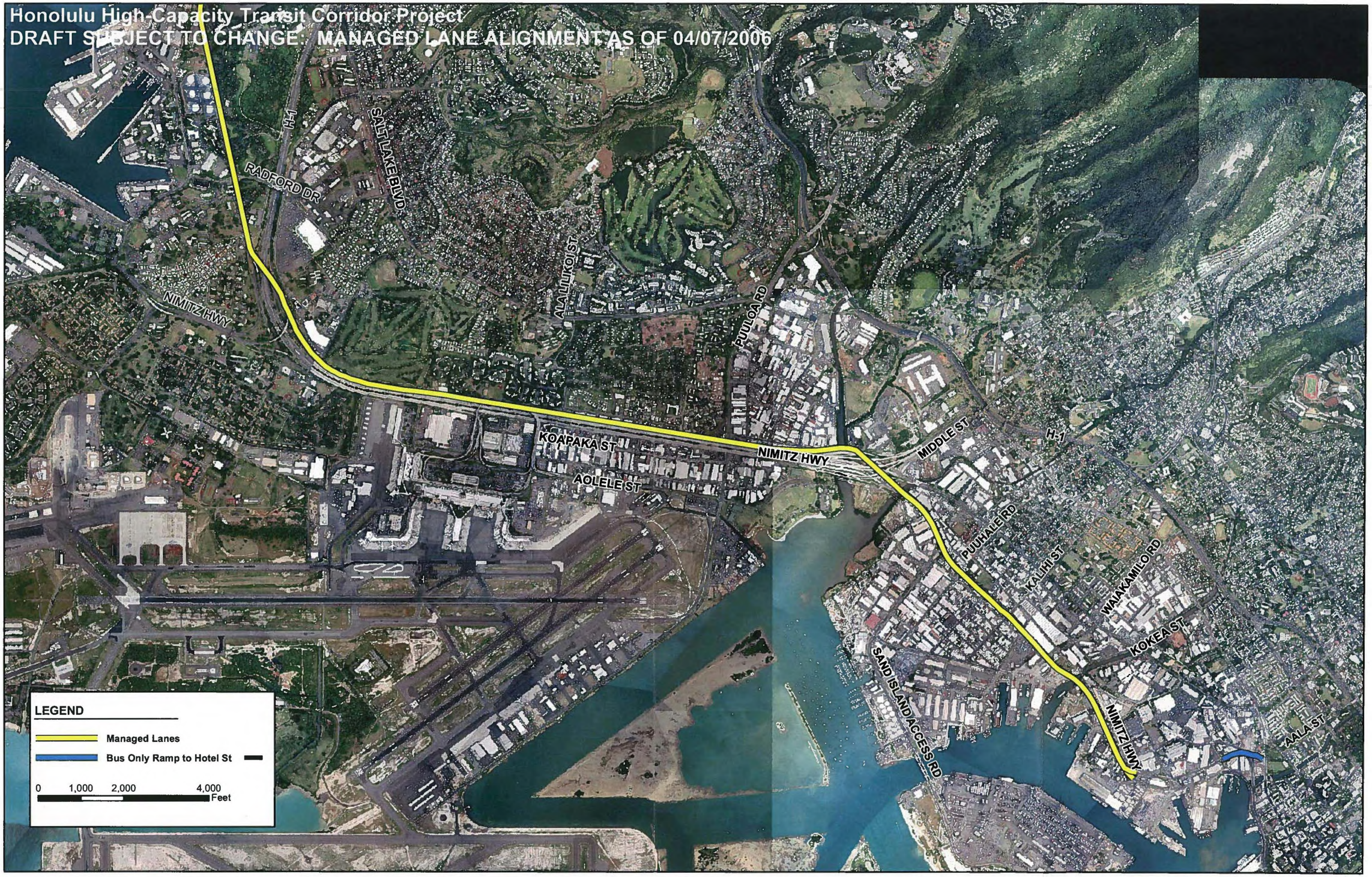
The North King Street connection to Beretania Street would be along an alignment that descends to a tunnel on property on the mauka side of North King Street just Koko Head of Liliha Street.

Connecting the Dillingham Boulevard alignment to the Hotel Street alignments would be along an alignment that descends to grade on private properties on the makai side of Dillingham Boulevard just before Ka'aahi Street, and continues at-grade on Iwilei Road and North King Street.

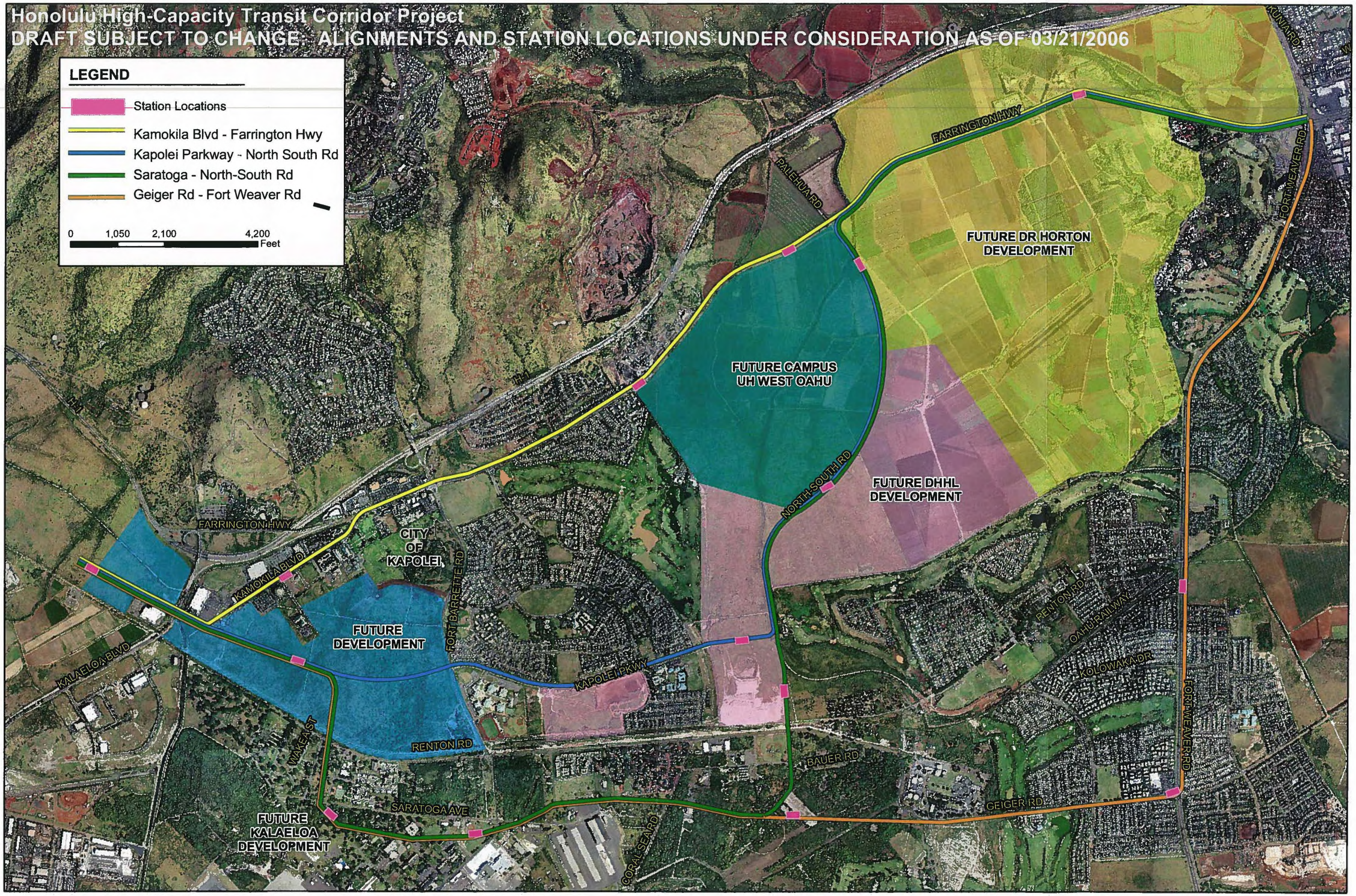
The Dillingham Boulevard alignment connection to the Queen Street alignment descends to at-grade similar to the Hotel Street alignment connection, becomes elevated before crossing Iwilei Road, and continues over private property between the inbound and outbound lanes of Nimitz Highway. Descending to at-grade avoids the relocation of a major electrical substation near Ka'aahi Street.

The connection of the Dillingham Boulevard alignment to the Beretania Street alignment descends into a tunnel on private properties on the makai side of Dillingham Boulevard before Ka'aahi Street, crosses under North King Street and 'A'ala Park, and then continues in tunnel under Beretania Street.

Alternative 3: Managed Lanes (Ewa Section)

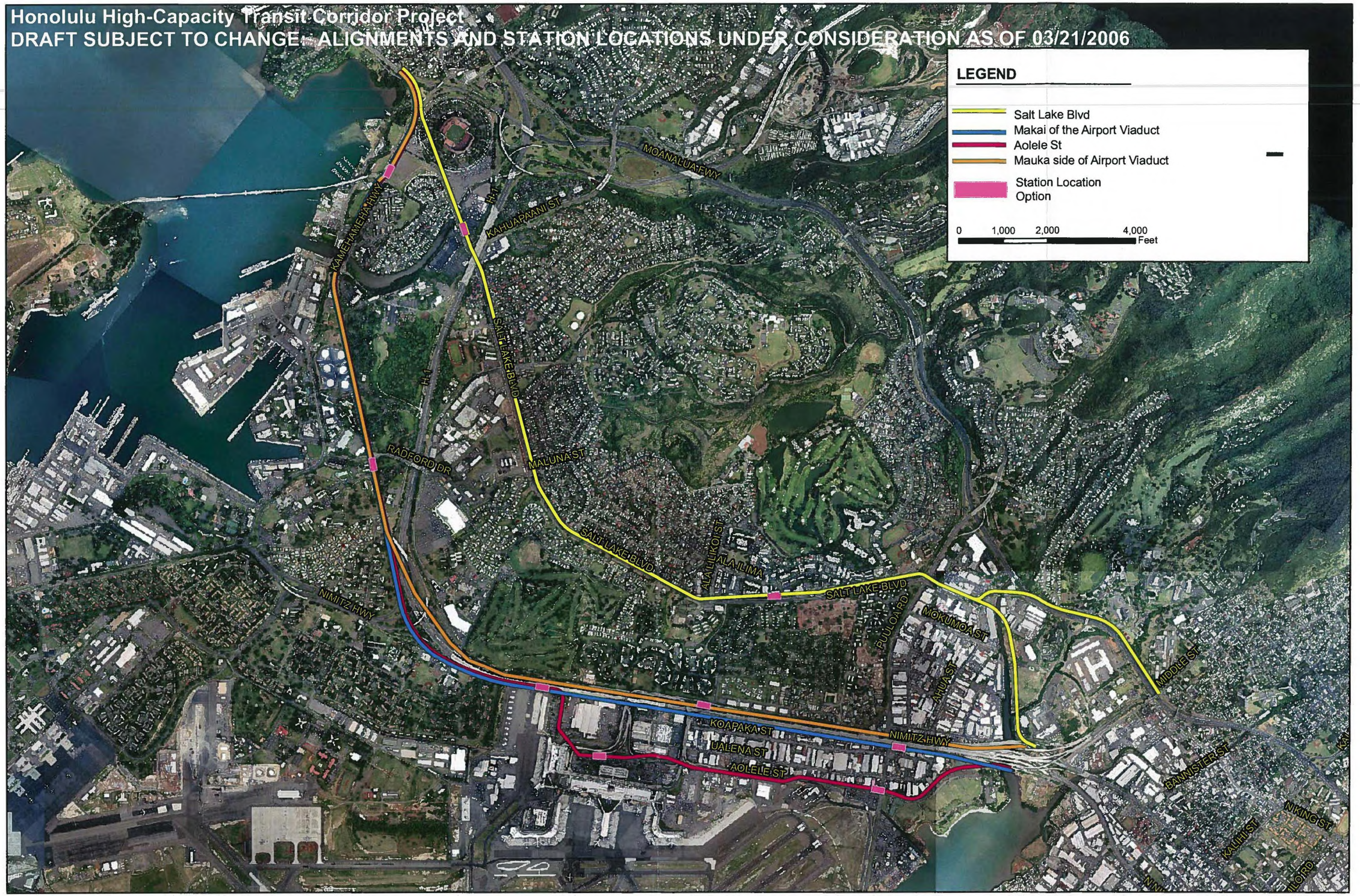


Alternative 3: Managed Lanes (Koko Head Section)



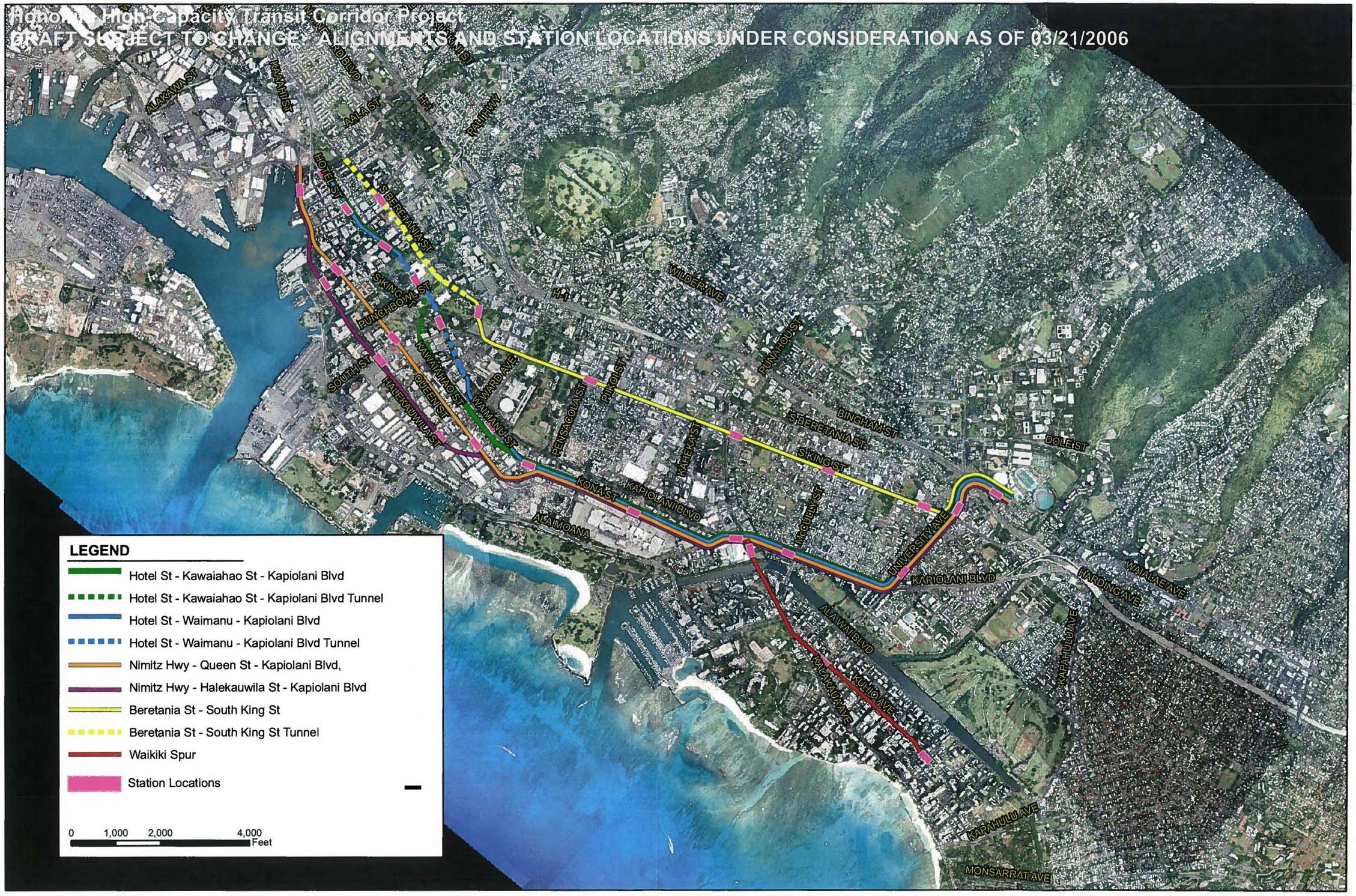
Alternative 4 Fixed Guideway Section I

Alternative 4 Fixed Guideway Section II



Alternative 4 Fixed Guideway Section III

Alternative 4 Fixed Guideway Section IV



Alternative 4 Fixed Guideway Section V

Conclusion

The conceptual alternatives described in this memorandum are the basis upon which the detailed definition of alternatives will be defined. The detailed alternatives definition will include typical structural features, operating characteristics, bus route connections, roadway interfaces and typical station drawings. These alternatives will then be analyzed for transportation benefits and impacts, environmental consequences, and financial requirements. Initial estimates of user benefits, cost effectiveness, land use effects, and capital and operating finances will be created. This Alterative Analysis (AA) will be used by the Honolulu City Council to select a Locally Preferred Alternative.

The Locally Preferred Alternative will define the mode (either bus or rail), the alternative, and the alignment for the fiscally constrained project. This project will be adopted into the fiscally constrained O'ahu Regional Transportation Plan. The design will be advanced to support the development of the Draft Environmental Impact Statement (DEIS) while developing the information needed for a New Starts application to enter Preliminary Engineering. Environmental consequence mitigation plans will be developed and the assessment of user benefits, cost effectiveness, land use, and capital and operating finances will be solidified.

The process described above is a tentative plan and requires further coordination with the Federal Transit Administration (FTA). The process is subject to change and may affect the order of task execution or the details of analysis.

Appendix A: Projects Included in No Build

Facility/Project Title	Project Description
OMPO BASELINE PROJECTS	
Fort Weaver Road Widening, Vicinity of 'A 'awa Street to	Widen the roadway to six lanes. Improvements include turning lanes, traffic signal modifications, and additional highway lighting.
Freeway Management System, Interstate H-1, H-2 and Moanalua Freeway	Construct a freeway management system, including intelligent transportation systems (ITS) technologies and interagency coordination to monitor and manage traffic operations.
Interstate Route H-1, AM Contraflow lane, Pearl Harbor Interchange to Ke'ehi Interchange, AM Zipper Lane extension	Extend the AM zipper lane from the vicinity of Radford Drive Overpass to Kalihi Stream.
Kamehameha Highway Bikeway, Radford Drive to Arizona Memorial	Construct a bikeway, including drainage improvements, markings, signing, and Americans with Disabilities Act improvements.
North-South Road, Kapolei Parkway to Vicinity of Interstate Route H-1	Construct a three-lane roadway from Kapolei Parkway to Interstate Route H-1.
Computerized Traffic Control System	Upgrade and expand fiber-optic lines, CCTV cameras, data collection, and signal control in urban center and outlying areas for connectivity to the Traffic Control Center.
Kamokila Boulevard Extension	Plan, design and construct an extension of Kamokila Boulevard from Franklin D. Roosevelt Avenue in Kapolei.
Salt Lake Boulevard Widening, Phase 2B	Complete Salt Lake Boulevard Widening project, from Maluna Street to Ala Liliko'i Street.
MID-RANGE PLAN (2006 TO 2015)	
ISLANDWIDE PROJECTS - 2006 to 2015	
Alapa'i Transit Center & Joint Transportation Management Center	Construct a multi-use facility at Alapa'i Street to include a transit center, City-State transportation management center, and other operations.
Bike Plan Hawai'i - O'ahu	Implement O'ahu elements of the State of Hawai'i's *Bike Plan Hawai'i*. (*Bike Plan Hawai'i* includes only "Priority One" projects as identified in the *Honolulu Bicycle Master Plan*).
Enhancement Projects	Implement enhancement projects, including, but not limited to, projects from the *Transportation Enhancement Program for O'ahu.* Includes development of a pedestrian plan for O'ahu.
Intelligent Transportation Systems (ITS)	Implement ITS projects including, but not limited to, those identified in the *O'ahu Regional ITS Architecture.*
Rockfall Protection, Various Locations	Install rockfall protection or mitigation measures along various state highways at various locations.
Transportation Demand Management (TDM) Program	Develop an aggressive, TDM program that could include, but is not limited to: 1. Free real-time online carpool matching, 2. Outreach promotion and marketing of alternative transportation, 3. Emergency ride home program, 4. Major special events, 5. Employer based commuter programs, 6. Emerging and innovative strategies (i.e., car sharing).
Van Pool Program	Continue implementation and expansion of the State's Van Pool Program.
SAFETY & INFORMATIONAL MERIT PROJECTS - 2006 - 2015	
Kalaniana'ole Highway, Safety & Operational Improvements, Olomana Golf Course to Waimānalo Beach Park	Construct safety and operational improvements along Kalaniana'ole Highway between the Olomana Golf Course and Waimānalo Beach Park. Specific safety and operational improvements includes construction of turning lanes, sidewalks, wheelchair ramps, bike paths or bike lanes, traffic signal upgrades, utility relocation, and drainage improvements.
Kamehameha Highway, Safety Improvements, Hale'iwa to Kahalu'u	Construct safety improvements along Kamehameha Highway, from Hale'iwa to Kahalu'u. Safety improvements include turn lanes, guardrails, signage, crosswalks, etc. to improve safety. Widening of Kamehameha Highway will only be in areas where needed for storage/turn lanes safety improvements.

Kamehameha Highway, Safety & Operational Improvements, Ka'alaea Stream to Hygienic Store	Construct safety and operational improvements along Kamehameha Highway, between Ka'alaea Stream and Hygienic Store. Safety and operational improvements include passing and turning lanes, modification of signals, installation of signs, flashers, and other warning devices. This project also includes replacement of Ka'alaea Stream Bridge and Haiamoa Stream Bridge with structures that meet current design standards.
CONGESTION RELIEF PROJECTS - 2006 - 2015	
Farrington Highway, Widening, Fort Barrette Road to west of Fort Weaver Road	Widen Farrington Highway from 2 to 4 lanes, from Fort Barrette Road to west of Fort Weaver Road.
Fort Barrette Road, Widening, Farrington Highway to Franklin D. Roosevelt Avenue	Widen Fort Barrette Road from 2 to 4 lanes, from Farrington Highway to Franklin D Roosevelt Avenue.
Hanua Street, Extension, Farrington Highway to Malakole Street; Interstate Route H-1, New On- & Off-Ramps, Pālailai Interchange	• Extend Hanua Street from Malakole Street to Farrington Highway. This new 4-lane roadway will provide access to Kalaeloa Harbor. • Construct new on- and off-ramps at Interstate Route H-1 Pālailai Interchange to Hanua Street extension.
Interstate Route H-1, New Interchange, Kapolei Interchange	Construct new Interstate Route H-1 Kapolei Interchange for Kapolei between the Pālailai Interchange and Makakilo Interchange.
Interstate Route H-1, Widening, Middle Street to Vineyard Boulevard	Widen the Interstate Route H-1 by 1 lane, in the eastbound direction, from Middle Street to Vineyard Boulevard, as identified below: • From 2 to 3 lanes from Middle Street to Likelike Highway off-ramp • From 3 to 4 lanes from Likelike Highway off-ramp to Vineyard Boulevard This project also includes the widening of: • Gulick Avenue overpass to allow 5 lanes to pass under it • Kalihi Interchange overcrossings to allow 4 lanes to pass under it
Interstate Route H-1, Operational Improvements, Lunalilo Street to Vineyard Boulevard	Modify the weaving movements on the Interstate Route H-1, in the westbound direction, between the Lunalilo Street on-ramp and the Vineyard Boulevard off-ramp.
Interstate Route H-1, New On- & Off-Ramps, Makakilo Interchange	Construct a new eastbound off-ramp and a new westbound on-ramp to the Interstate Route H-1 at the Makakilo Interchange.
Interstate Route H-1, Widening, Waiau Interchange to Waiawa	Widen Interstate Route H-1 in the westbound direction by 1 lane from the Waiau Interchange to the Waiawa Interchange.
Interstate Route H-1, Widening, Waiawa Interchange	Widen the Interstate Route H-1 by 1 lane, in the westbound direction, through the Waiawa Interchange. This project will begin in the vicinity of the Waiawa Interchange and end at the Paiwa Interchange. • From 2 to 3 lanes in AM peak • From 4 to 5 lanes in PM peak
Interstate Route H-1, Zipper Lane (PM), Ke'ehi Interchange to Kunia Interchange	Construct a Zipper lane on the Interstate Route H-1, in the westbound direction, from Ke'ehi Interchange to Kunia Interchange. This project would be in use during the PM peak.
Interstate Route H-1, Widening, Waipahu Off-Ramp	Widen the Interstate Route H-1 Waipahu Street off-ramp from 1 to 2 lanes, in the westbound direction, at the Waiawa Interchange.
Interstate Route H-2, Widening, Waipi'o Interchange	Widen both on- and off-ramps on Interstate Route H-2, at the Waipi'o Interchange. This project includes the widening of the Ka Uka Boulevard overpass and intersection improvements to facilitate movement to and from the on- and off-ramps.
Interstate Route H-1, Operational Improvements, Ward Avenue On-Ramp to University Avenue Interchange	Improve traffic flow on the Interstate Route H-1, in the eastbound direction, from the Ward Avenue on-ramp to the University Avenue Interchange through operational improvements.

Interstate Routes H-1 & H-2, Operational Improvements, Waiawa Interchange	Modify the Interstate Routes H-1 and H-2 Waiawa Interchange, to improve merging characteristics through operational improvements (e.g., additional transition lanes).
Kamehameha Highway, Widening, Lanikuhana Avenue to Ka Uka Boulevard	Widen Kamehameha Highway from a 3-lane to a 4-lane divided facility between Lanikuhana Avenue and Ka Uka Boulevard. This project includes shoulders for bicycles and disabled vehicles, bridge crossing replacement, bikeways, etc.
Kapolei Parkway, Extension, Kamokila Boulevard to Pāpipi Road	Extend the existing 4-lane Kapolei Parkway by constructing the segments in each of the following areas: • Kamokila Boulevard to Fort Barrette Road • 'Ewa Village boundary to Renton Road • Geiger Road to Pāpipi Road
Kapolei Parkway, Extension and Widening, Ali'inui Drive to Kalaeloa Boulevard	Extend the existing 4-lane Kapolei Parkway, from Ali'inui Drive to Hanua Street. This project includes widening of Kapolei Parkway from 4 to 6 lanes from Hanua Street to Kalaeloa Boulevard.
North-South Road, Widening & Extension, Interstate Route H-1 to Franklin D Roosevelt Avenue	Widen and extend North-South Road as follows: • From 3 to 6 lanes from Kapolei Parkway to Interstate Route H-1 • Extend from Kapolei Parkway to Franklin D Roosevelt Avenue (6 lanes)
SECOND ACCESS PROJECTS - 2006 to 2015	
Makakilo Drive, Second Access, Makakilo Drive to North-South Road/Interstate Route H-1 Interchange	Extend Makakilo Drive (vicinity Pueonani Street) south to the Interstate Route H-1 Freeway Interchange as 4-lane roadway, connecting Makakilo Drive to North-South Road.
TRANSIT PROJECTS - 2006 - 2015	
Ferry, Intra-Island Express Commuter, in the vicinity of Ocean Pointe Marina to Honolulu Harbor	Implement intra-island passenger ferry in the vicinity of the Ocean Pointe Marina in 'Ewa to Honolulu Harbor.
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2006- 2015	
City Operations and Maintenance (O&M)	Maintain and operate the City's existing and future roadway and transit operations and routine maintenance. Includes, but is not limited to, operation of the transit system (including bus, rail, and ferry), replacement of existing fleet, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, etc.
State Operations and Maintenance	Maintain and operate the State's existing and future highway operations and routine maintenance. Includes, but is not limited to, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, traffic signal upgrade and retrofit, etc.
System Preservation	Preserve the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, pavement preventative maintenance, etc.
LONG-RANGE PLAN (2016 TO 2030)	
ISLANDWIDE PROJECTS - 2016 to 2030	
Bike Plan Hawai'i - O'ahu	See description in Mid-Range Plan
Enhancement Projects	See description in Mid-Range Plan
Intelligent Transportation Systems	See description in Mid-Range Plan
Transportation Demand Management Program	See description in Mid-Range Plan
SAFETY & OPERATIONAL IMPROVEMENT PROJECTS - 2016 - 2030	
Farrington Highway, Safety Improvements, Mākua Valley Road to Ali'inui Drive	Construct safety improvements on Farrington Highway along the Wai'anae Coast, from Mākua Valley Road (Ka'ena Point) to Ali'inui Drive (Kahe Point). This project includes realignment around Mākaha Beach Park, between Makau Street and Water Street.

CONGESTION RELIEF PROJECTS - 2016 -2030	
Farrington Highway, Widening, west of Fort Weaver Road to Waiawa Interchange	Widen Farrington Highway from Kunia to Walawa by 1 lane in each direction, from west of Fort Weaver Road to Waiawa Interchange.
Farrington Highway, Widening, Hakimo Road to Kalaeloa Boulevard	Widen Farrington Highway from 4 to 6 lanes, from Hakimo Road to Kalaeloa Boulevard, including intersection of Lualualei Naval Road.
Interstate Route H-1, Widening, Liliha Street to Pali Highway	Widen the Interstate Route H-1 by 1 lane, from 3 to 4 lanes in the eastbound direction, from the Liliha Street on-ramp to Pali Highway off-ramp.
Interstate Route H-1, On- & Off- Ramp Modifications, Various Locations	Modify and/or close various on- and off- ramps on the Interstate Route H-1 from Middle Street to University Avenue. This project includes modification of auxillary lanes at various exits and other operational changes to Interstate Route H-1. The identification of the precise improvements to be made will require a separate detailed corridor study.
Interstate Route H-1, On- & Off- Ramp Modifications, University Avenue Interchange	Modify on- and off-ramps at the University Avenue Interchange on Interstate Route H-1. This project includes the construction of new ramps to allow all movements, safety improvements, including the closure of the eastbound on-ramp at University Avenue Interchange to Interstate Route H-1 and the construction of a new makai bound off-ramp to University Avenue from Interstate Route H-1.
Interstate Route H-1, Widening, Vineyard Boulevard to Middle Street	Widen the Interstate Route H-1 by 1 lane in the westbound direction, from Vineyard Boulevard to Middle Street.
Interstate Route H-1, HOV Lanes, Waiawa Interchange to Makakilo Interchange	Construct 2 new lanes in the freeway median for HOV use, 1 in the westbound direction and 1 in the eastbound direction, on Interstate Route H-1, from the Waiawa Interchange to the Makakilo Interchange.
Interstate Route H-1, Widening, Waiawa Interchange to Hālawa Interchange	Widen the Interstate Route H-1 by 1 lane in the eastbound direction, from the Waiawa Interchange to the Hālawa Interchange.
Interstate Route H-1, Widening, Ward Avenue to Punahou Street	Widen the existing Interstate Route H-1 by 1 lane in the eastbound direction, from Ward Avenue to Punahou Street.
Interstate Route H-2, New Interchange, Pineapple Road Overpass	Construct a new full-service freeway interchange on Interstate Route H-2, between Meheula Parkway and Ka Uka Boulevard, to accommodate future developments in Central O'ahu. This project includes the widening of the existing Pineapple Road Overpass from 2 lanes to 4 lanes; and addition of new on- and off-ramps to and from Interstate Route H-2 at Pineapple Road Overpass.
Kahekili Highway, Widening, Kamehameha Highway to Ha'ikū Road	Widen Kahekili Highway from 2 to 4 lanes, from Kamehameha Highway to Ha'ikū Road. This project also includes the following improvements: • Contraflow in existing right-of-way between Hui Iwa Street and Ha'ikū Road • Intersection improvements at Hui Iwa Street and Kamehameha Highway
Kunia Road, Widening and Interchange Improvement, Wilikina Drive to Farrington Highway	Widen Kunia Road as follows: • From 2 to 4 lanes, from Wilikina Drive to Anonui Street. • From 2 to 4 lanes, Anonui Street to Kupuna loop. • From 4 to 6 lanes, Kupuna Loop to Farrington Highway. • Add 1 lane eastbound loop on-ramp at Kunia Road & Interstate Route H-1.
Likelike Highway, Widening, Kamehameha Highway to Kahekili Highway	Widen Likelike Highway from 4 to 6 lanes, from Kamehameha Highway to Kahekili Highway.
Makakilo Mauka Frontage Road, New Roadway, Kalaeloa Boulevard to Makakilo Drive	Construct a new 2-lane Makakilo Mauka Frontage Road, mauka of Interstate Route H-1, from Kalaeloa Boulevard to Makakilo Drive.
Nimitz Highway, High Occupancy Vehicle (HOV) Flyover, Ke'ehi Interchange to Pacific Street	Construct a new 2-lane elevated and reversible HOV flyover above Nimitz Highway, from the Ke'ehi Interchange to Pacific Street. This project includes the removal of the existing eastbound contraflow lane in the AM peak and restoration of all turning movements on the at-grade portion of Nimitz Highway.

Pu'uloa Road, Widening, Pukuloa Road to Nimitz Highway	Widen Pu'uloa Road, from Pukuloa Road to Nimitz Highway, as follows: • From 3 lanes (1 lane southbound and 2 lane northbound) to 5 lanes (2 lanes southbound and 3 lanes northbound), from Pukuloa Road to Kamehameha
Pi'ikoi-Pensacola Couplet Reversal	Reverse the direction of the existing one-way Pi'ikoi Street and Pensacola Street couplet.
SECOND ACCESS PROJECTS - 2016 - 2030	
Central Mauka Road, Second Access, Mililani Mauka to Waiawa	Construct Central Mauka Road, a new 4-lane, 2.5-mile road from Mililani Mauka to Waiawa. Road connects Meheula Parkway to Kamehameha Highway in Pearl City; parallel to & mauka of Interstate Route H-2. The new 4-lane north-south road includes connections to Interstate Route H-2 interchanges.
Wahiawa, Second Access, Whitmore Avenue to Meheula Parkway	Construct a new 2-lane second access road between Whitmore Village and Wahiawa, from Whitmore Avenue to California Avenue. Continue the new 2-lane second access road to Mililani Mauka, from California Avenue to Meheula Parkway.
Wai'anae, Second Access, Farrington Highway to Kunia Road	Construct a new 2-lane second access road to Wai'anae from Farrington Highway in the vicinity of Mā'ili, over the Wai'anae Mountain Range, to Kunia Road.
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2016 TO 2030	
City Operations and Maintenance (O&M)	See description in Mid-Range Plan
State Operations and Maintenance	See description in Mid-Range Plan
System Preservation	See description in Mid-Range Plan
RIGHT-OF-WAY PRESERVATION	
CONGESTION RELIEF PROJECTS - ROW PRESERVATION	
Kalaeloa East-West Spine Road, New Roadway, Kalaeloa Boulevard to Geiger Road	Establish and preserve right-of-way (ROW) for Kalaeloa East-West Spine Road (see project description on illustrative project list).
Keone'ula Boulevard, Extension, Kapolei Parkway to Franklin D. Roosevelt Avenue	Establish and preserve right-of-way (ROW) for Keone'ula Boulevard Extension (see project description on illustrative project list).

Conceptual Definition of Alternatives
Honolulu High-Capacity Transit Corridor Project

April 27, 2006

Prepared for:
City and County of Honolulu

Prepared by:
Parsons Brinckerhoff Quade and Douglas, Inc.

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Introduction

The purpose of the Honolulu High-Capacity Transit Corridor Project is to provide improved mobility for persons traveling in the highly congested east-west corridor between Kapolei and the University of Hawai'i at Mānoa (UH Mānoa), confined by the Wai'anae and Ko'olau mountain ranges to the north, and the ocean to the south. The Project would provide faster, more reliable public transportation services in the corridor than those services currently operating in mixed-flow traffic. The Project would also provide an alternative to private automobile travel and would additionally improve linkages between Kapolei, Honolulu's urban center, UH Mānoa, Waikīkī, and the urban area in between. In conjunction with other improvements included in the O'ahu Regional Transportation Plan, implementation of the Project would moderate anticipated traffic congestion in the corridor. The Project also would support the goals of the O'ahu General Plan and the O'ahu Regional Transportation Plan by serving areas designated for urban growth.

An extensive range of alternatives with the potential to improve mobility within the corridor were identified and evaluated at a high-level in the *Honolulu High-Capacity Transit Corridor Project Alternatives Screening Memorandum* (DTS, 2006). The screening analysis identified four travel modes, 11 technologies and 73 possible alignments. The classes of alternatives that were evaluated included:

- Fixed Guideway Transit
- Bus
- Bus Rapid Transit
- High-Occupancy and Toll Lanes
- Tunnel or Bridge across Pearl Harbor
- Waterborne Ferries

The alternatives were derived through a screening process intended to refine all possible and reasonable alternatives into those that meet corridor needs, are technically feasible, and are viable for further study. The range of possible alternatives was developed based on previous transit studies, a field review of the study corridor, an analysis of current housing and employment data for the corridor, a literature review of technology modes, and work completed by the O'ahu Metropolitan Planning Organization (OMPO) for its Draft 2030 Regional Transportation Plan and from public and agency comments received during project scoping.

The merits of each class of alternative were evaluated against a number of criteria related to: shortening travel times, project costs, environmental impacts, ease of implementation, support of the City's long-range land use plans, and community benefits. The range of alignment options were evaluated by section. The sections, identified from the Wai'anae to Koko Head direction, were defined based on logical

termini and the presence of existing transportation facilities, travel origins and destinations, and/or neighborhood boundaries. This provided the opportunity to focus on the particular needs and characteristics of an area in order to select the best options within each section of the corridor.

This screening process culminated with the selection of four alternatives, including a "no build" alternative for comparison, a Transportation System Management alternative with additional improvements to the existing bus system, a managed lanes alternative, and a fixed guideway transit alternative with multiple alignment options.

Those four major alternatives were presented to interested agencies and the public in scoping meetings. The purpose of the scoping meetings was to gain agency input and public comment on the purpose of and need for the Project, the process of evaluation, and the potential unmitigatable impacts of the proposed alternatives. The consideration of those comments was an important element of the screening process. The input received was considered during the definition and refinement of alternatives to be considered during the study.

A specific technology will not be selected for the fixed guideway alternative at this point in the analysis. However, the technology screening identified seven technologies as potential candidates for providing the fixed guideway service. The technology is anticipated to be identified after the selection of the Locally Preferred Alternative.

The result of the screening and scoping processes are the following four alternatives that are being advanced for detailed analysis in the Alternatives Analysis. The remainder of this report conceptually defines these alternatives.

The following descriptions define the alternatives as they will be carried forward into the Alternatives Analysis (AA). Adjustments and definitions will evolve through the AA process of evaluation to clarify and pinpoint the final alternatives. Alternatives that emerge from the AA will receive further consideration in the draft EIS.

ALTERNATIVE 1: No Build Alternative

The No Build Alternative includes existing transit and highway facilities and most committed transportation projects anticipated to be operational by 2030. Committed highway transportation projects are those programmed in the financially constrained O'ahu 2030 Regional Transportation Plan (RTP) prepared by OMPO. Transit projects included are those that are contained within the financially constrained RTP and are also included as funded projects in the regional Transportation Improvement Program (TIP), with the exception of the Rail Transit, Kapolei to Mānoa project that is included in the plan. The existing facilities and committed projects in the No Build Alternative also will be included in all other alternatives. The committed projects included in the No Build Alternative are listed in Appendix A.

Some of the committed projects would improve current bus transit service. These include the Nimitz Highway High-Occupancy Vehicle (HOV) Flyover, new HOV and "zipper lane" facilities, intra-island ferry service, and new transit centers in Kalihi, Wahiawa, and Wai'anae . Note that while transit centers at Pearl City and 'Aiea are also contained in the RTP, they are not in the regional TIP; hence, they are not included in the No Build Alternative.

In anticipation of increased roadway congestion and slower overall bus transit speeds, the No Build Alternative's transit component would include an increase in fleet size to allow service frequencies to remain the same as today. It will also include new bus service to serve proposed growth areas (e.g., Kapolei), and restructured "hub and spoke" service to serve the regional transit centers. The specific number of buses, as well as required ancillary facilities, will be determined during the transportation demand analysis completed to support the AA and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.*

ALTERNATIVE 2: Transportation System Management (TSM) Alternative

In addition to the committed projects included in the No Build Alternative, the TSM Alternative would include transit centers at Pearl City and 'Aiea, and an enhanced bus system based on an expanded hub-and-spoke route network and relatively low-cost capital improvements on selected roadway facilities providing priority to buses. Additional service to areas served as part of the No Build Alternative would also be provided where such service is deemed to be productive. The enhanced bus system would include an increase in fleet size that attempts to meet the purpose and needs of

the project. The specific number of buses and ancillary facilities will be determined during the transportation demand analysis completed to support the AA and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.*

ALTERNATIVE 3: Managed Lane Alternative

The Managed Lane Alternative would provide two additional travel lanes between the H-1 and H-2 merge (Waiawa Interchange) and Pacific Street in Iwilei (Figures 1 and 2). Bus operations would be restructured and enhanced by utilizing the managed lanes to provide additional service between Kapolei and other points 'Ewa of Downtown, through to the University of Hawai'i at Mānoa. The alternative would include construction of a two-lane grade-separated facility between Waipahu and the Ke'ehi Interchange along Kamehameha Highway and modifications to the currently proposed Nimitz Highway HOV Flyover project from Ke'ehi Interchange to Pacific Street. Construction of the Nimitz Highway HOV Flyover project is part of the No Build Alternative. The modification of the Nimitz Flyover design would involve widening the proposed two-lane elevated facility to accommodate a 50 mph speed limit instead of the planned 35 mph speed limit.

The entire managed lane facility would be managed to maintain free-flow speeds for buses. Provided enough capacity exists, HOVs and toll-paying single-occupant vehicles would also be allowed to use the facility. Tolls would be variable and set so as to ensure free flow conditions on the facility. Intermediate access points would be provided in the vicinity of Aloha Stadium (bus only access) and the Ke'ehi Interchange. Two design and operational variations of the Managed Lane Alternative will be evaluated: a two-direction facility (one lane in each direction) and a two-lane reversible direction facility.

ALTERNATIVE 3a: Two-direction Facility

As a two-direction facility, the managed roadway would operate with one lane designated for each direction. This facility would have an average roadway width of 46 feet. Shoulders would be provided in each direction that are sufficiently wide to accommodate stalled vehicles. The facility would allow access from the H-1 Freeway in the median area at Managers Drive and would connect directly to the new HOV lanes that are part of the 2030 RTP between Waiawa Interchange and Makakilo Interchange. The facility would also connect directly with the H-2 Freeway along the outside lanes of H-2 near the Waiawa Interchange. The a.m. "zipper" lane and H-1 HOV lanes would not be disrupted by the two-direction managed lane facility in this area.

In the vicinity of Aloha Stadium, a bus-only intermediate access facility would provide an on-ramp for buses Koko Head bound and off-ramp for buses 'Ewa bound.

Bus flyer stops would be provided on the facility at Kaonohi Street and at Radford Drive (Makalapa Gate). The flyer stops would require a widening of the facility on

each side to provide a lane for bus deceleration, stopping and acceleration as well as passenger platforms at the stopping locations. Vertical circulation would be provided from the platforms to the surface of Kamehameha Highway.

At the Ke'ehi Interchange, the managed lane facility would be integrated with the proposed Nimitz Flyover. The Nimitz Flyover would be modified by adding a third lane, resulting in one lane in each direction plus a reversible center lane which would operate in the peak direction (i.e., Koko Head bound in the morning and 'Ewa bound in the afternoon). In the morning, the single Koko Head bound managed lane facility as well as the a.m. "zipper" lane would feed into the two inbound flyover lanes. The outbound flyover lane would continue through the Ke'ehi Interchange as the outbound managed lane. Due to the size of the columns required to support the three-lane structure, the Nimitz Flyover modification would require taking one of three outbound lanes at-grade on Nimitz Highway, but three inbound lanes would remain at-grade. To compensate for the loss of the outbound at-grade lane during the critical p.m. peak period, one of the two outbound flyover lanes would be provided for general purpose traffic in the p.m. peak period.

The managed lane facility would connect with Nimitz Highway on the 'Ewa side of Pacific Street. Separate bus-only flyover ramps (one lane each direction) would be constructed in the vicinity of Sumner Street to provide a priority connection for buses traveling between Nimitz Highway and Hotel Street.

The initial assumption, subject to verification when travel forecasts have been prepared, is that sufficient volumes of buses and HOVs will use the facility in 2030 that no capacity will be available for use for toll-paying SOVs. In order to maintain free-flow speeds it may be necessary to charge tolls to manage the number of 2-person HOVs using the facility.

ALTERNATIVE 3b: Reversible Facility

As a reversible facility, the managed roadway would operate with both lanes traveling in a single direction. This facility would have an average roadway width of 36 feet. It would be operated in the peak direction during peak periods (i.e. Koko Head bound in the a.m. and 'Ewa bound in the p.m.). Shoulders would be provided for stalled vehicles on one side for the length of the facility. The managed lane facility would begin after the H-1/ H-2 Freeway "zipper" lane merge and would turn mauka and follow Kamehameha Highway. In the a.m. the Koko Head bound zipper lane from H-1 and the Koko Head bound HOV zipper lane crossover lane will enter directly onto the managed lane facility.

In the p.m., one lane would continue onto the new 'Ewa bound HOV lane that is in the 2030 RTP through the Waiawa Interchange. The second lane would allow access to the H-2 HOV lane by using the a.m. "zipper" lane crossover ramp to tie into the future p.m. "zipper" lane on H-2 in the mauka direction to get vehicles directly into the H-2 HOV flow.

In the vicinity of Aloha Stadium, a bus-only intermediate access facility would function as an on-ramp for buses Koko Head bound during the a.m. peak and as an off-ramp for buses 'Ewa bound in the p.m. peak.

Bus flyer stops would not be provided on this alternative.

At the Ke'ehi Interchange, the managed lane facility would be integrated with the proposed Nimitz Flyover. There would be two inbound managed lanes in the a.m. peak and two outbound managed lanes in the p.m. peak. Three inbound and three outbound general purpose lanes would remain as existing at-grade on Nimitz Highway. With this alternative, the a.m. "zipper" lane and proposed p.m. "zipper" lane would be completely replaced by the managed lane facility. The HOV lanes on H-1 would remain as they exist today and would not connect with the Nimitz Flyover.

The Nimitz Flyover would be modified by having a flatter profile on the 'Ewa side of the proposed facility to allow a higher design speed. The managed lane facility would remain elevated throughout the entire facility instead of descending to grade near Kalihi Stream and ascending before Sand Island Access Road as planned for the Nimitz Flyover. The managed lane structure would also be four feet wider than the proposed Nimitz Flyover, 36 feet wide instead of 32 feet wide, to accommodate the increased design speed.

The managed lane facility would connect with Nimitz Highway on the 'Ewa side of Pacific Street. A separate single lane reversible bus-only flyover ramp would be constructed in the vicinity of Sumner Street to provide a priority connection for buses traveling between the Nimitz Highway and Hotel Street.

The initial assumption, subject to verification when travel forecasts have been prepared, is the two-lane reversible facility will have sufficient capacity to allow toll-paying SOVs onto it in 2030 while still maintaining free-flow speeds.

ALTERNATIVE 4: Fixed-Guideway Alternative

Overview

The Fixed-Guideway Alternative would include the construction and operation of a fixed-guideway transit system between Kapolei and the University of Hawai'i at Mānoa. The system could use any fixed-guideway transit technology meeting performance requirements and could either be automated or employ drivers. Station and supporting facility locations will be determined during further alternative development and will be defined in the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Definition of Alternatives Report.* Supporting facilities would include a vehicle maintenance facility and park-and-ride lots. Existing bus service would be reconfigured and enhanced to bring riders on local buses to nearby transit stations. The guideway would be constructed within existing street or highway rights-of-way where possible, but would require the acquisition of additional

property in various locations. This alternative would not preclude future extensions of the system within the corridor, or to other parts of O'ahu.

Technologies Being Considered

A broad range of technologies were considered for application to this alternative, including light rail transit, personal rapid transit, automated people mover, monorail, magnetic levitation (maglev), commuter rail, and emerging technologies that are still in the development stage. Through a screening process, seven transit technologies were selected and will be considered as possible options. Those seven potential technologies include: conventional bus, guided bus, light rail, people mover, monorail, maglev and rapid rail. Technologies that were not carried forward from the screening process include personal rapid transit, commuter rail, and the emerging technologies. The technology screening process and results are documented in the *Honolulu High-Capacity Transit Corridor Project Technology Options Memo.*

Alignments Being Considered

The study corridor has been divided into five sections to simplify analysis and evaluation of impacts that would be associated with each alignment in the Alternatives Analysis. With few exceptions, the various alignments under consideration within each of the sections may be combined with any of the alignments in the adjacent sections.

Each alignment has distinctive characteristics and environmental impacts, and provides different service options; therefore, each alignment will be evaluated individually and compared to the other alignments within that section.

Unless otherwise specified, the alignments proposed below would be on an elevated structure to ensure exclusive right-of-way for the guideway system.

Section I. Kapolei to Fort Weaver Road

Section I extends from a transit terminal facility on the Wai'anae (west) side of Kalaeloa Boulevard in Kapolei to Fort Weaver Road. Four alignments are under consideration in Section I (Figure 3):

- Kamokila Boulevard/Farrington Highway
- Kapolei Parkway/North-South Road
- Saratoga Avenue/North-South Road
- Geiger Road/Fort Weaver Road

Kamokila Boulevard/Farrington Highway

The Kamokila Boulevard/Farrington Highway alignment would follow Kapolei Parkway, turn onto Kamokila Boulevard, and continue along Farrington Highway.

Along Farrington Highway, Koko Head of Kapolei Golf Course Road to the intersection of Fort Weaver Road, the guideway could be located either at-grade with limited grade crossings or on an elevated structure . At Fort Weaver Road, the alignment would become elevated through the next section.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kamokila Boulevard and Wākea Street, Farrington Highway at UH West O'ahu, Farrington Highway and North-South Road, and Farrington Highway between North-South Road and Fort Weaver Road.

Kapolei Parkway/North-South Road

The Kapolei Parkway/North-South Road alignment would follow Kapolei Parkway to North-South Road, turn mauka to Farrington Highway, and continue along Farrington Highway as shown on the Public Facilities Map of the 'Ewa Development Plan. Koko Head of Kalaeloa Boulevard, the guideway could be located either at-grade with limited grade crossings or on an elevated structure. At Fort Weaver Road, the alignment would become elevated through the next section.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Kapolei Parkway and Kamaaha Avenue, Kapolei Parkway and North-South Road, North-South Road between Kapolei Parkway and Farrington Highway, Farrington Highway and North-South Road, and Farrington Highway between North-South Road and Fort Weaver Road.

Saratoga Avenue/North-South Road

The Saratoga Avenue/North-South Road alignment would follow Kapolei Parkway to Wākea Street, and then turn makai to a future extension of Wākea Street to Saratoga Avenue. The guideway would continue on a future extension of Saratoga Avenue and turn mauka to follow North-South Road to Farrington Highway. Wai'anae of Fort Weaver Road, the guideway could be located either at-grade with limited grade crossings, or on an elevated structure.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Saratoga Avenue and Wākea Street, Saratoga Avenue and Fort Barrette Road, Saratoga Avenue and North-South Road, Kapolei Parkway and North-South Road, North-South Road between Kapolei Parkway and Farrington Highway, Farrington Highway and North-South Road and, Farrington Highway between North-South Road and Fort Weaver Road.

Geiger Road/Fort Weaver Road

The Geiger Road/Fort Weaver Road alignment would follow Kapolei Parkway to Wākea Street, and then turn makai to Saratoga Avenue. The guideway would continue on a future extension of Saratoga Avenue and Geiger Road onto Fort Weaver Road. Continuing on Fort Weaver Road, the alignment would turn Koko Head at Farrington Highway.

Stations on this alignment would be located generally near the following intersections: Kapolei Parkway and Hanua Street (terminal), Kapolei Parkway and Wākea Street, Saratoga Avenue and Wākea Street, Saratoga Avenue and Fort Barrette Road, Saratoga Avenue and North-South Road, Geiger Road and Fort Weaver Road, and Fort Weaver Road and Renton Road.

Section II. Fort Weaver Road to Aloha Stadium

Section II comprises the corridor from Fort Weaver Road to Aloha Stadium. In this vicinity, the only practical alignment follows Farrington Highway Koko Head on an elevated structure to Kamehameha Highway (Figure 4). Additionally, this is the preferred transit route the Pearl City and 'Aiea communities have adopted in their community plans. Stations on this alignment would be located generally near the following intersections: Farrington Highway and Leokū Street, Farrington Highway and Mokuola Street, Kamehameha Highway and Kuala Street, and Kamehameha Highway and Kaonohi Street.

Section III. Aloha Stadium to Ke'ehi Interchange

Section III extends from Aloha Stadium to the vicinity of Middle Street/Ke'ehi Interchange. Four alignments are under consideration in Section III (Figure 5):

- Salt Lake Boulevard
- Mauka side of the Airport Viaduct
- Makai of the Airport Viaduct
- Aolele Street

Salt Lake Boulevard

The Salt Lake Boulevard alignment would turn from Kamehameha Highway to follow Salt Lake Boulevard onto Pūkōloa Street, then continue elevated over Moanalua Stream. Stations on this alignment would be located generally near the following intersections: Salt Lake Boulevard and Kahuapaani Street, and Salt Lake Boulevard across from Ala Inoi Place.

There are two options for connecting this alignment to Section IV alignments. To connect to the North King Street alignment, this alignment would continue adjacent to Moanalua Road. To connect this alignment to Dillingham Boulevard, the

alignment would follow the Koko Head bank of Moanalua Stream, and then cross over the H-1 Freeway.

Mauka side of the Airport Viaduct

The Mauka side of the Airport Viaduct alignment would continue along Kamehameha Highway to Nimitz Highway and continue either elevated or at-grade on the mauka side of the H-1 Airport Viaduct to the vicinity of Middle Street. Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, and Nimitz Highway and Paiea Street.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Makai of the Airport Viaduct

The Makai of the Airport Viaduct alignment would follow Kamehameha Highway to Nimitz Highway and continue elevated on the makai side of the H-1 Airport Viaduct to the vicinity of Middle Street.

Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, Kamehameha Highway and Aolele Street, and Kamehameha Highway and Lagoon Drive.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Aolele Street

The Aolele Street alignment would continue along Kamehameha Highway to Nimitz Highway and turn makai onto Aolele Street and then follow Aolele Street Koko Head to reconnect to Nimitz Highway near Ke'ehi Interchange. Stations on this alignment would be located generally near the following intersections: Kamehameha Highway and Salt Lake Boulevard, Kamehameha Highway and Radford Drive, at the Honolulu International Airport, and Aolele Street and Lagoon Drive.

There are two options for connecting this alignment to Section IV alignments. It could be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Or it could be connected to North King Street along an alignment between Middle Street and the H-1 Freeway.

Section IV. Ke'ehi Interchange to Iwilei

Section IV extends from Middle Street/Ke'ehi Interchange to Iwilei. Two alignments are under consideration in Section IV (Figure 6):

- North King Street
- Dillingham Boulevard

In either alignment, the guideway would continue elevated. Four configurations for connecting the Section III alignments to the Section IV alignments are under consideration:

Connection of the Salt Lake Boulevard alignments to the North King Street alignment would be by an alignment that is adjacent to Moanalua Freeway. Portions of the alignment may be within the freeway right of way and portions may be within U.S. Army properties. Stations on this alignment would be located generally near the following intersections: North King Street and Owen Street, North King Street and Waiakamilo Road, and either North King Street and Dillingham Boulevard or North King Street and Liliha Street depending on the following section connection.

Connecting Salt Lake Boulevard to Dillingham Boulevard would be along an alignment that follows the Koko Head bank of Moanalua Stream, and then crosses over the H-1 Freeway. Properties on the Koko Head side of Moanalua Stream belong to the U.S. Army. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, Dillingham Boulevard and Mokauea Street, Dillingham and Kōkea Street, and on Ka'aahi Street.

The Mauka side and Makai of the Airport Viaduct alignments and the Aolele Street alignment would be connected to Dillingham Boulevard by crossing over portions of Ke'ehi Interchange. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, Dillingham Boulevard and Mokauea Street, Dillingham Boulevard and Kōkea Street, and on Ka'aahi Street.

Connecting these alignments to North King Street would be along an alignment between Middle Street and the H-1 Freeway. Stations on this alignment would be located generally near the following intersections: Dillingham Boulevard and Middle Street at the Middle Street Transit Center, North King Street and Owen Street, North King Street and Waiakamilo Road, and either North King Street and Dillingham Boulevard or North King Street and Liliha Street depending on the following section connection.

Section V. Iwilei to UH Mānoa

Section V extends from Iwilei to the eastern project terminus at the University of Hawai'i at Mānoa's Lower Campus. Five alignments are under consideration in Section V; four of the alignments include an option for a Waikīkī Spur (Figure 7):

- Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard with or without Waikīkī Spur
- Hotel Street/Waimanu Street/Kapi'olani Boulevard with or without Waikīkī Spur
- Nimitz Highway/Queen Street /Kapi'olani Boulevard with or without Waikīkī Spur
- Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard with or without Waikīkī Spur
- Waikīkī Spur
- Beretania Street/South King Street

Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard

The Hotel Street/Kawaiaha'o Street/Kapi'olani Boulevard alignment would descend to grade from one of the elevated alignments described in Section IV and follow Hotel Street Koko Head of Iwilei Road. The guideway would operate at-grade on Hotel Street, crossing traffic at intersections, with transit signal priority to minimize delays. At Alakea Street the guideway would begin to descend into a tunnel with a portal at Richards Street. The guideway would continue in a tunnel under the government campus past South King Street and follow Kawaiaha'o Street, where it would transition to an elevated structure past South Street. The guideway would continue on Kawaiaha'o Street to near Kamakee Street, where property on each side of Kamakee Street would be acquired to allow the alignment to cross over to Kona Street and follow Kona Street to past Ala Moana Center. It would turn mauka just before Atkinson Drive, and follow Kapi'olani Boulevard to University Avenue. The guideway would then turn mauka and follow University Avenue past the H-1 Freeway, ending at a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Hotel Street and Kekaulike Street, Hotel Street and Nu'uanu Avenue, Hotel Street and Fort Street Mall, subgrade at Punchbowl Street and Hotel Street (Honolulu Hale), Kawaiaha'o Street and Cooke Street, Kawaiaha'o Street and Kamakee Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Hotel Street/Waimanu Street/Kapi'olani Boulevard

The Hotel Street/ Waimanu Street/Kapi'olani Boulevard alignment would descend to grade and follow Hotel Street Koko Head of Iwilei Road. The guideway would

operate at-grade on Hotel Street and descend into a tunnel past Alapa'i Street as with the Hotel Street/Kawaiaha'o Street alignment. However, instead of following Kawaiaha'o Street, the alignment would follow Kapi'olani Boulevard to Dreier Street. The guideway would turn makai and transition to an elevated structure on private property on Waimanu Street between Dreier Street and Kamani Street. Following Waimanu Street past Kamakee Street, the guideway would turn mauka and follow Kona Street and continue to the UH at Mānoa as with the Hotel Street/Kawaiaha'o Street alignment.

Stations on this alignment would be located generally near the following intersections: Hotel Street and Kekaulike Street, Hotel Street and Nu'uanu Avenue, Hotel Street and Fort Street Mall, subgrade at King Street and Kapi'olani Boulevard (Honolulu Hale), Waimanu Street and Cummins Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Nimitz Highway/Queen Street /Kapi'olani Boulevard

The Nimitz Highway/Queen Street /Kapi'olani Boulevard alignment would allow a continuous elevated guideway from Section III all the way to UH at Mānoa. The alignment would follow Nimitz Highway Koko Head to Queen Street, then along Queen Street past Kamakee Street following the new Queen Street Extension alignment. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. As in the Hotel Street/Kawaiaha'o Street alignment, the guideway would run above Kona Street through Ala Moana Center, and then turn mauka to follow Kapi'olani Boulevard to University Avenue where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Nimitz Highway and Kekaulike Street, Queen Street and Fort Street Mall, Queen Street and South Street, Queen Street and Cummins Street, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard

The Nimitz Highway/Halekauwila Street /Kapi'olani Boulevard alignment would allow a continuous elevated guideway from Section III all the way to UH at Mānoa. The alignment would follow Nimitz Highway Koko Head to Halekauwila Street, then along Halekauwila Street past Ward Avenue where it would transition to Queen Street and the new Queen Street Extension alignment. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. As in the Hotel Street/Kawaiaha'o Street alignment, the guideway would run

above Kona Street through Ala Moana Center, and then turn mauka to follow Kapi'olani Boulevard to University Avenue where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Nimitz Highway and Kekaulike Street, Nimitz Highway and Fort Street Mall, Halekauwila Street and South Street, Halekauwila Street and Ward Avenue, Kona Street and Ke'eaumoku Street, the Hawai'i Convention Center on Kapi'olani Boulevard or Kapi'olani Boulevard and McCully Street, University Avenue and Date Street, University Avenue and South King Street, and at the UH Lower Campus.

Waikīkī Spur

The Waikīkī Spur would be a branch line from a transfer point at Ala Moana Center or the Hawai'i Convention Center, into Waikīkī following Kalākaua Avenue to Kūhiō Avenue, then extend along Kūhiō Avenue to the vicinity of Kapahulu Avenue.

The Kapi'olani Boulevard and McCully Street station discussed for the above alignments would be replaced by a station at the Hawai'i Convention Center on Kalākaua Avenue. Other Waikīkī Spur stations would be located generally near the following intersections: Kūhiō Avenue and Kālaimoku Street, Kūhiō Avenue and Lili'uokalani Avenue.

Beretania Street/South King Street

The Beretania Street/South King Street alignment would descend to a tunnel portal in the vicinity of Ka'aahi Street, continue through a tunnel under 'A'ala Park and Nu'uanu Stream, and then follow Beretania Street. It would transition to an elevated structure on the makai side of Beretania Street between Punchbowl Street and Alapa'i Street. The guideway would cross over Alapai Street, turning makai to continue elevated on South King Street to Kai'ali'u Street, where it would turn mauka to cross over University Avenue and the H-1 Freeway to a proposed terminal facility in the University of Hawai'i at Mānoa's Lower Campus.

Stations on this alignment would be located generally near the following intersections: Beretania Street and Fort Street Mall, Beretania Street and Alapa'i Street, South King Street and Pensacola Street, South King Street and Kalākaua Avenue, South King Street and McCully Street, South King Street and McCully Street, South King Street and Hausten Street, and at the UH Lower Campus.

Connections between Section IV and Section V

Six configurations for connecting the Section IV alignments to the Section V alignments are under consideration:

Connecting the North King Street alignment at Liliha Street to the Hotel Street alignments would be along an elevated alignment that follows North King Street to Iwilei Road, where it would descent to grade before reaching River Street.

The North King Street connection at Liliha Street to Nimitz Highway would be along an alignment over private property on the makai side on North King Street. It then crosses over Iwilei Road, and continues over private property between the inbound and outbound lanes of Nimitz Highway.

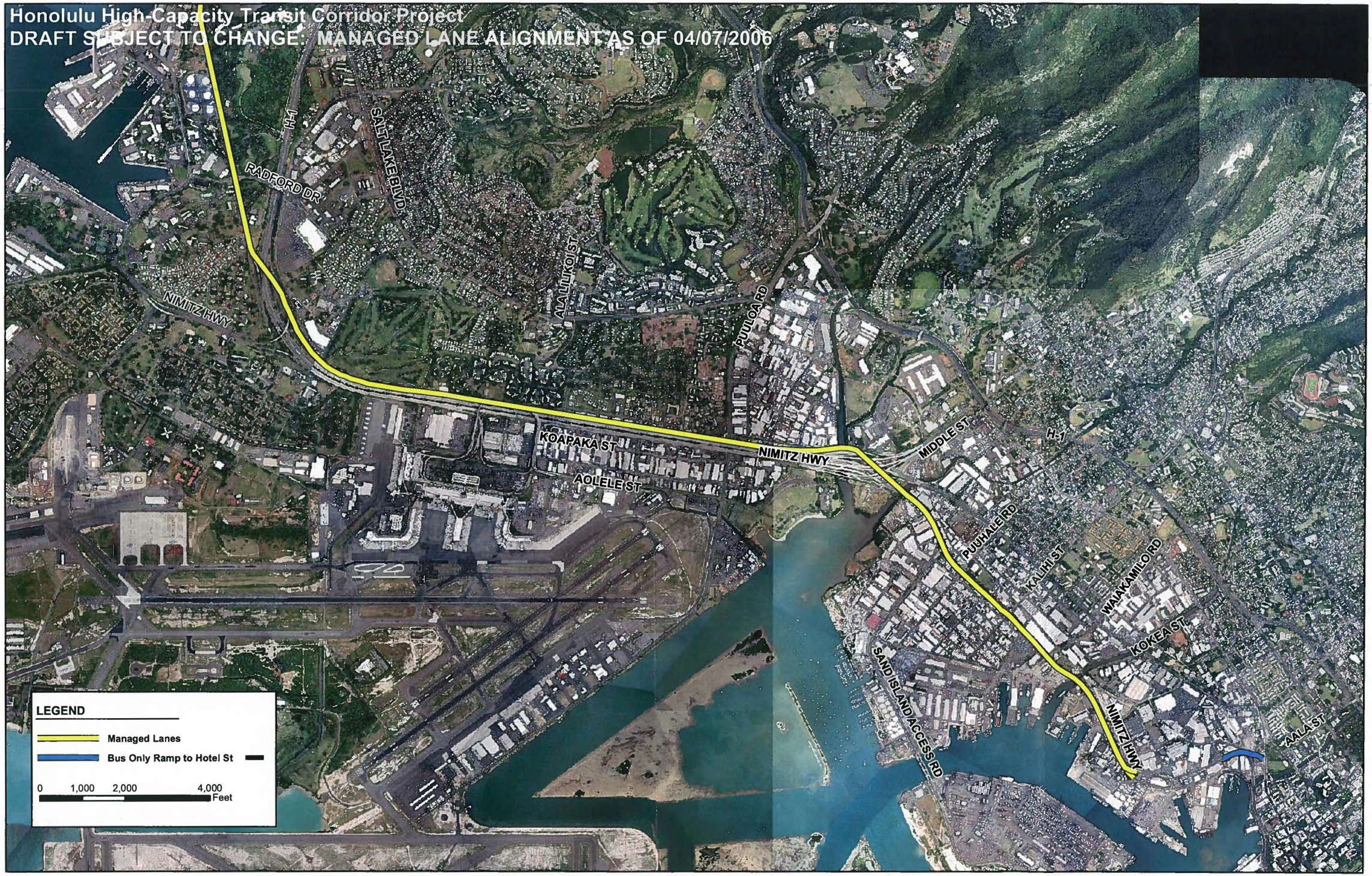
The North King Street connection to Beretania Street would be along an alignment that descends to a tunnel on property on the mauka side of North King Street just Koko Head of Liliha Street.

Connecting the Dillingham Boulevard alignment to the Hotel Street alignments would be along an alignment that descends to grade on private properties on the makai side of Dillingham Boulevard just before Ka'aahi Street, and continues at-grade on Iwilei Road and North King Street.

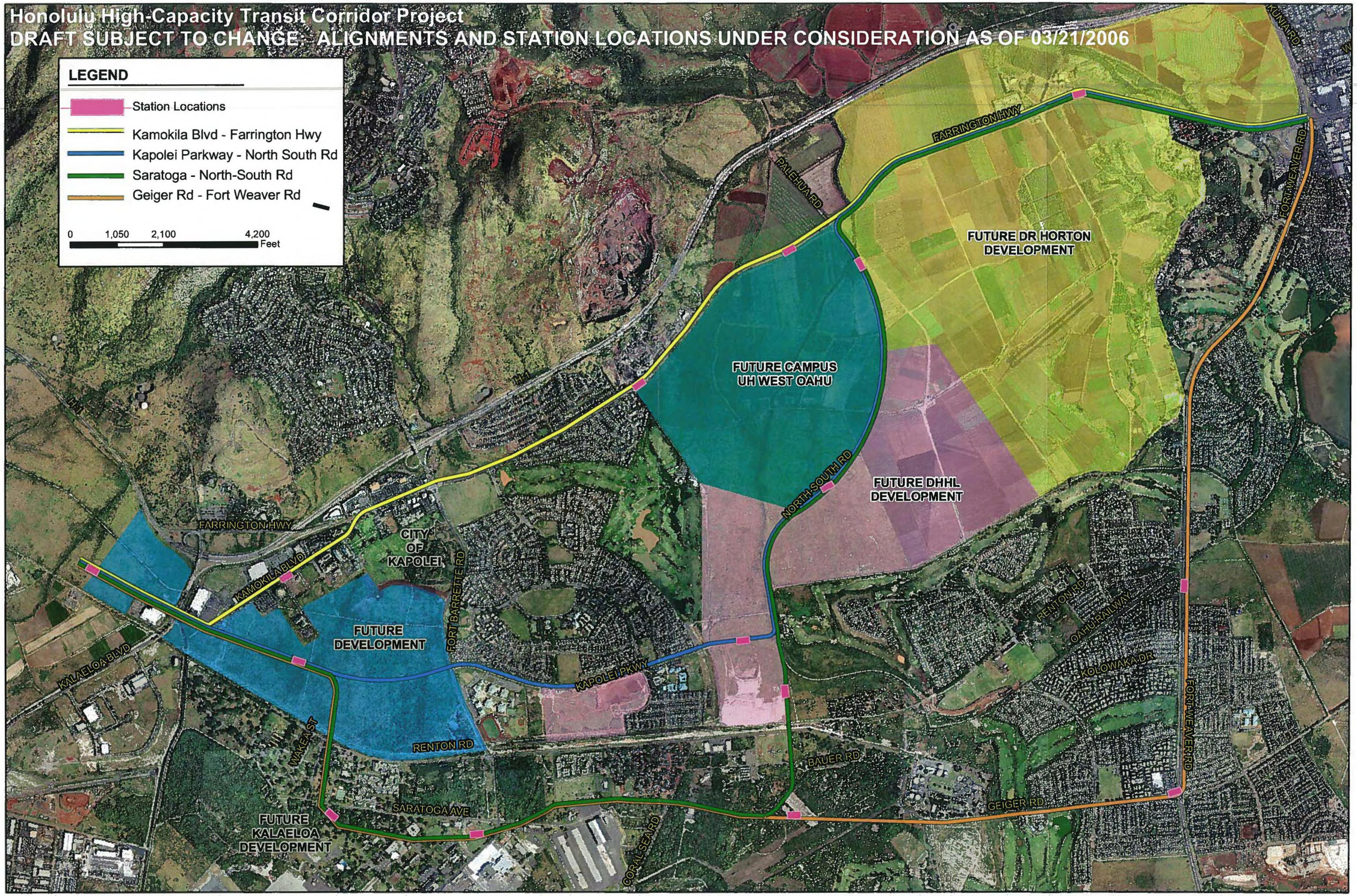
The Dillingham Boulevard alignment connection to the Queen Street alignment descends to at-grade similar to the Hotel Street alignment connection, becomes elevated before crossing Iwilei Road, and continues over private property between the inbound and outbound lanes of Nimitz Highway. Descending to at-grade avoids the relocation of a major electrical substation near Ka'aahi Street.

The connection of the Dillingham Boulevard alignment to the Beretania Street alignment descends into a tunnel on private properties on the makai side of Dillingham Boulevard before Ka'aahi Street, crosses under North King Street and 'A'ala Park, and then continues in tunnel under Beretania Street.

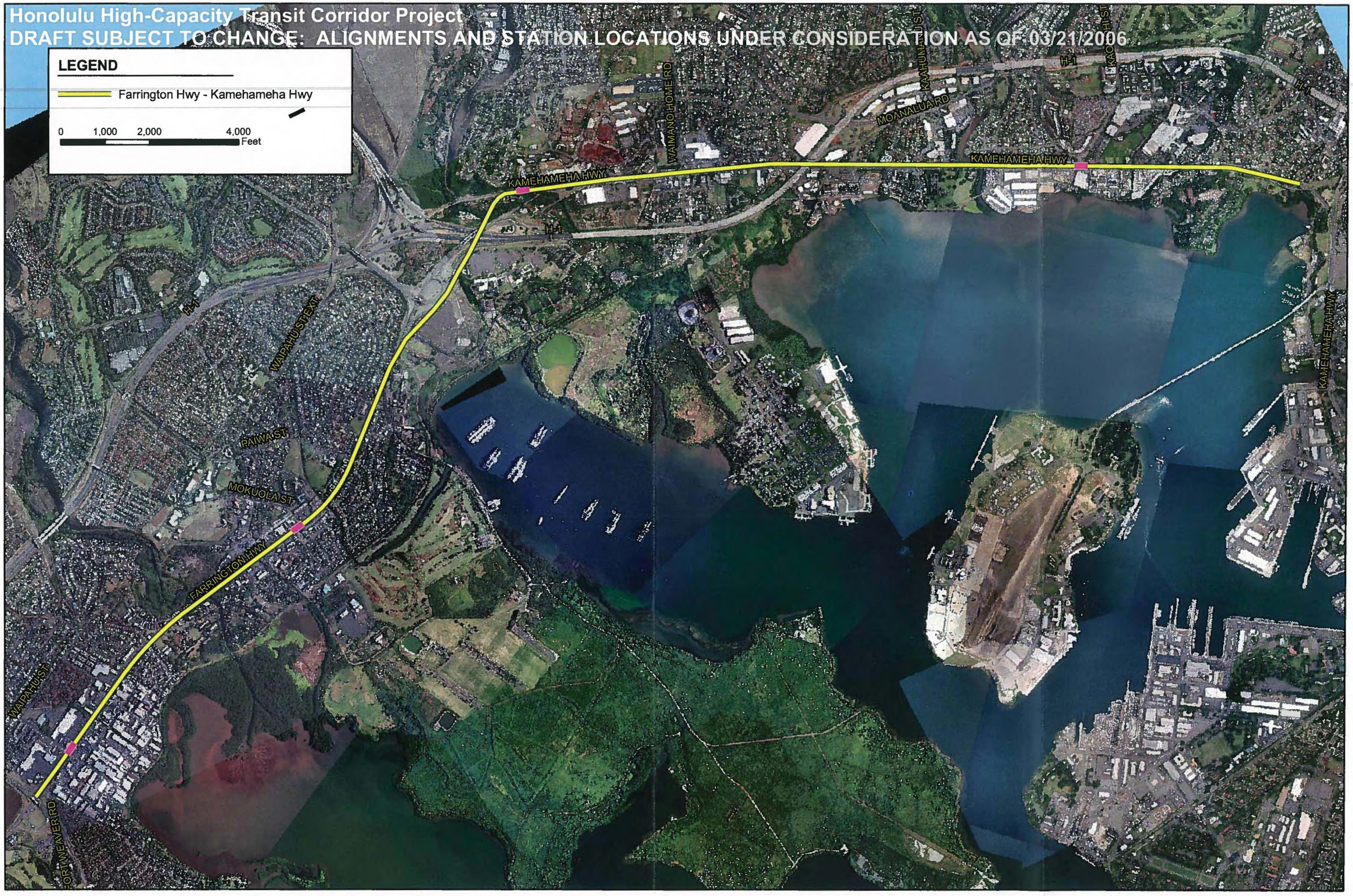
Alternative 3: Managed Lanes (Ewa Section)



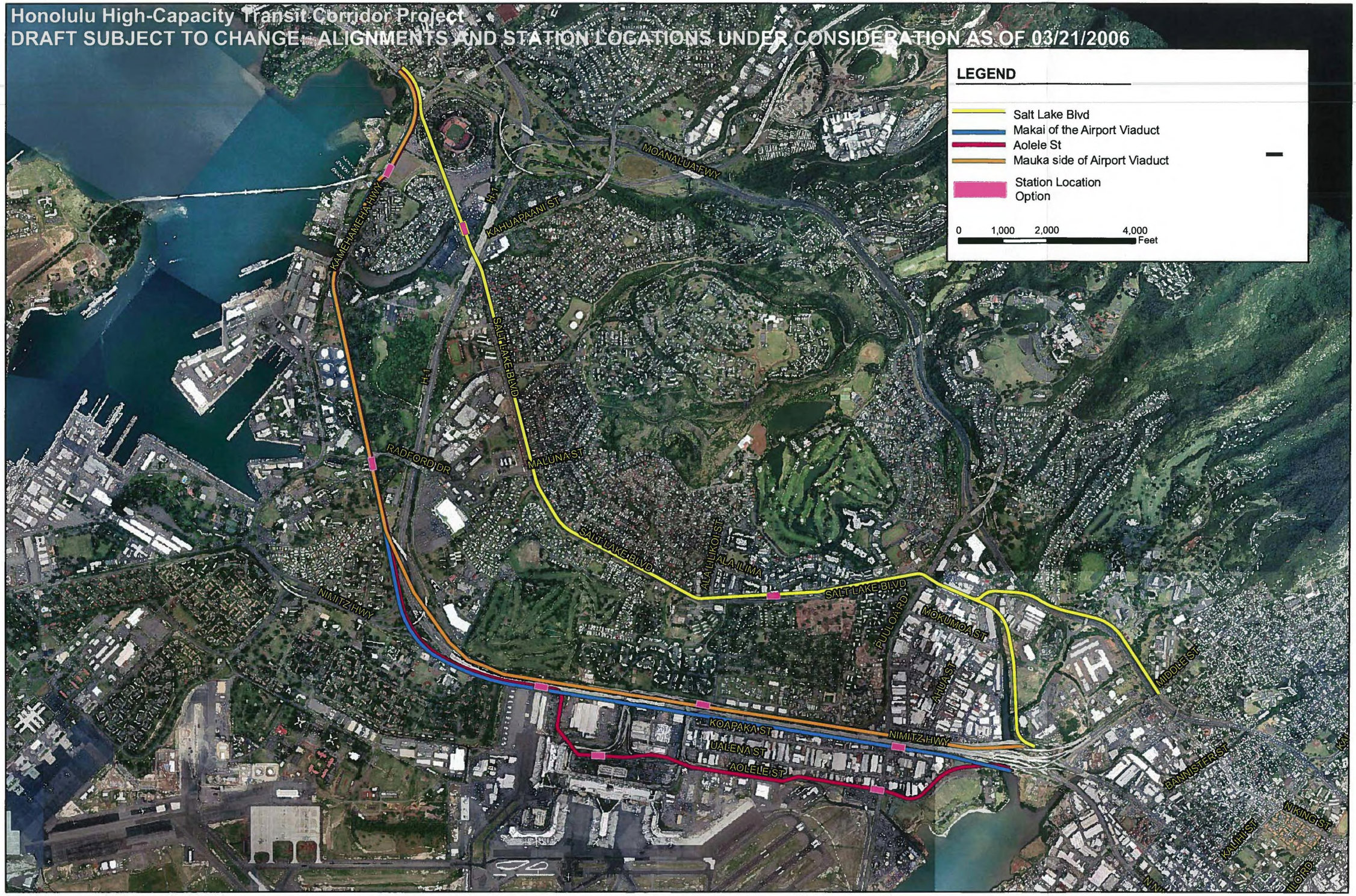
Alternative 3: Managed Lanes (Koko Head Section)



Alternative 4 Fixed Guideway Section I

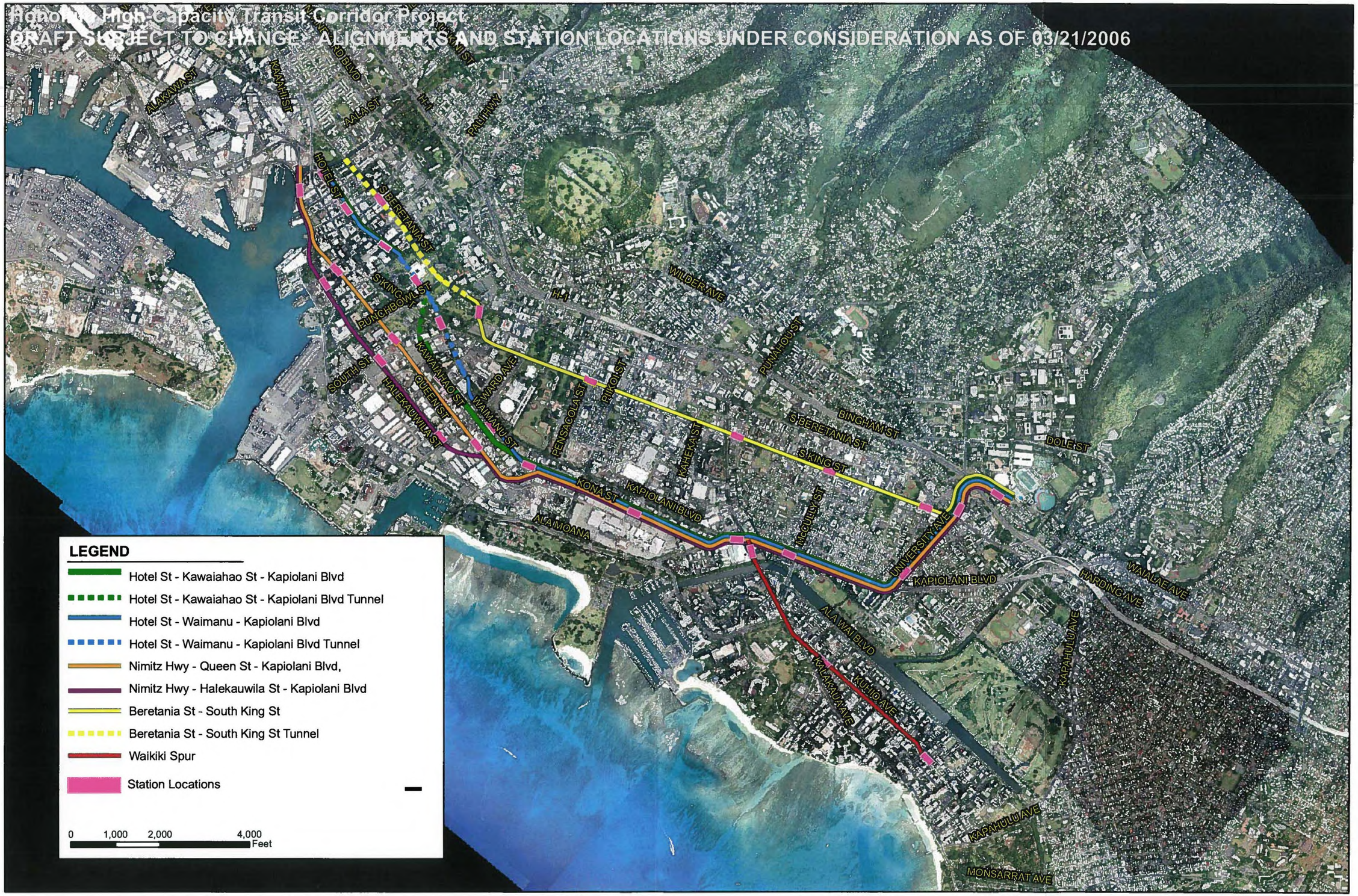


Alternative 4 Fixed Guideway Section II



Alternative 4 Fixed Guideway Section III

Alternative 4 Fixed Guideway Section IV



Alternative 4 Fixed Guideway Section V

Conclusion

The conceptual alternatives described in this memorandum are the basis upon which the detailed definition of alternatives will be defined. The detailed alternatives definition will include typical structural features, operating characteristics, bus route connections, roadway interfaces and typical station drawings. These alternatives will then be analyzed for transportation benefits and impacts, environmental consequences, and financial requirements. Initial estimates of user benefits, cost effectiveness, land use effects, and capital and operating finances will be created. This Alterative Analysis (AA) will be used by the Honolulu City Council to select a Locally Preferred Alternative.

The Locally Preferred Alternative will define the mode (either bus or rail), the alternative, and the alignment for the fiscally constrained project. This project will be adopted into the fiscally constrained O'ahu Regional Transportation Plan. The design will be advanced to support the development of the Draft Environmental Impact Statement (DEIS) while developing the information needed for a New Starts application to enter Preliminary Engineering. Environmental consequence mitigation plans will be developed and the assessment of user benefits, cost effectiveness, land use, and capital and operating finances will be solidified.

The process described above is a tentative plan and requires further coordination with the Federal Transit Administration (FTA). The process is subject to change and may affect the order of task execution or the details of analysis.

Appendix A: Projects Included in No Build

Facility/Project Title	Project Description
OMPO BASELINE PROJECTS	
Fort Weaver Road Widening, Vicinity of 'A 'awa Street to	Widen the roadway to six lanes. Improvements include turning lanes, traffic signal modifications, and additional highway lighting.
Freeway Management System, Interstate H-1, H-2 and Moanalua Freeway	Construct a freeway management system, including intelligent transportation systems (ITS) technologies and interagency coordination to monitor and manage traffic operations.
Interstate Route H-1, AM Contraflow lane, Pearl Harbor Interchange to Ke'ehi Interchange, AM Zipper Lane extension	Extend the AM zipper lane from the vicinity of Radford Drive Overpass to Kalihi Stream.
Kamehameha Highway Bikeway, Radford Drive to Arizona Memorial	Construct a bikeway, including drainage improvements, markings, signing, and Americans with Disabilities Act improvements.
North-South Road, Kapolei Parkway to Vicinity of Interstate Route H-1	Construct a three-lane roadway from Kapolei Parkway to Interstate Route H-1.
Computerized Traffic Control System	Upgrade and expand fiber-optic lines, CCTV cameras, data collection, and signal control in urban center and outlying areas for connectivity to the Traffic Control Center.
Kamokila Boulevard Extension	Plan, design and construct an extension of Kamokila Boulevard from Franklin D. Roosevelt Avenue in Kapolei.
Salt Lake Boulevard Widening, Phase 2B	Complete Salt Lake Boulevard Widening project, from Maluna Street to Ala Liliko'i Street.
MID-RANGE PLAN (2006 TO 2015)	
ISLANDWIDE PROJECTS - 2006 to 2015	
Alapa'i Transit Center & Joint Transportation Management Center	Construct a multi-use facility at Alapa'i Street to include a transit center, City-State transportation management center, and other operations.
Bike Plan Hawai'i - O'ahu	Implement O'ahu elements of the State of Hawai'i's *Bike Plan Hawai'i*. (*Bike Plan Hawai'i* includes only "Priority One" projects as identified in the *Honolulu Bicycle Master Plan*).
Enhancement Projects	Implement enhancement projects, including, but not limited to, projects from the *Transportation Enhancement Program for O'ahu.* Includes development of a pedestrian plan for O'ahu.
Intelligent Transportation Systems (ITS)	Implement ITS projects including, but not limited to, those identified in the *O'ahu Regional ITS Architecture.*
Rockfall Protection, Various Locations	Install rockfall protection or mitigation measures along various state highways at various locations.
Transportation Demand Management (TDM) Program	Develop an aggressive, TDM program that could include, but is not limited to: 1. Free real-time online carpool matching, 2. Outreach promotion and marketing of alternative transportation, 3. Emergency ride home program, 4. Major special events, 5. Employer based commuter programs, 6. Emerging and innovative strategies (i.e., car sharing).
Van Pool Program	Continue implementation and expansion of the State's Van Pool Program.
SAFETY & INFORMATIONAL MERIT PROJECTS - 2006 - 2015	
Kalaniana'ole Highway, Safety & Operational Improvements, Olomana Golf Course to Waimānalo Beach Park	Construct safety and operational improvements along Kalaniana'ole Highway between the Olomana Golf Course and Waimānalo Beach Park. Specific safety and operational improvements includes construction of turning lanes, sidewalks, wheelchair ramps, bike paths or bike lanes, traffic signal upgrades, utility relocation, and drainage improvements.
Kamehameha Highway, Safety Improvements, Hale'iwa to Kahalu'u	Construct safety improvements along Kamehameha Highway, from Hale'iwa to Kahalu'u. Safety improvements include turn lanes, guardrails, signage, crosswalks, etc. to improve safety. Widening of Kamehameha Highway will only be in areas where needed for storage/turn lanes safety improvements.

Kamehameha Highway, Safety & Operational Improvements, Ka'alaea Stream to Hygienic Store	Construct safety and operational improvements along Kamehameha Highway, between Ka'alaea Stream and Hygienic Store. Safety and operational improvements include passing and turning lanes, modification of signals, installation of signs, flashers, and other warning devices. This project also includes replacement of Ka'alaea Stream Bridge and Haiamoa Stream Bridge with structures that meet current design standards.
CONGESTION RELIEF PROJECTS - 2006 - 2015	
Farrington Highway, Widening, Fort Barrette Road to west of Fort Weaver Road	Widen Farrington Highway from 2 to 4 lanes, from Fort Barrette Road to west of Fort Weaver Road.
Fort Barrette Road, Widening, Farrington Highway to Franklin D. Roosevelt Avenue	Widen Fort Barrette Road from 2 to 4 lanes, from Farrington Highway to Franklin D Roosevelt Avenue.
Hanua Street, Extension, Farrington Highway to Malakole Street; Interstate Route H-1, New On- & Off-Ramps, Pālailai Interchange	• Extend Hanua Street from Malakole Street to Farrington Highway. This new 4-lane roadway will provide access to Kalaeloa Harbor. • Construct new on- and off-ramps at Interstate Route H-1 Pālailai Interchange to Hanua Street extension.
Interstate Route H-1, New Interchange, Kapolei Interchange	Construct new Interstate Route H-1 Kapolei Interchange for Kapolei between the Pālailai Interchange and Makakilo Interchange.
Interstate Route H-1, Widening, Middle Street to Vineyard Boulevard	Widen the Interstate Route H-1 by 1 lane, in the eastbound direction, from Middle Street to Vineyard Boulevard, as identified below: • From 2 to 3 lanes from Middle Street to Likelike Highway off-ramp • From 3 to 4 lanes from Likelike Highway off-ramp to Vineyard Boulevard This project also includes the widening of: • Gulick Avenue overpass to allow 5 lanes to pass under it • Kalihi Interchange overcrossings to allow 4 lanes to pass under it
Interstate Route H-1, Operational Improvements, Lunalilo Street to Vineyard Boulevard	Modify the weaving movements on the Interstate Route H-1, in the westbound direction, between the Lunalilo Street on-ramp and the Vineyard Boulevard off-ramp.
Interstate Route H-1, New On- & Off-Ramps, Makakilo Interchange	Construct a new eastbound off-ramp and a new westbound on-ramp to the Interstate Route H-1 at the Makakilo Interchange.
Interstate Route H-1, Widening, Waiau Interchange to Walawa	Widen Interstate Route H-1 in the westbound direction by 1 lane from the Waiau Interchange to the Walawa Interchange.
Interstate Route H-1, Widening, Walawa Interchange	Widen the Interstate Route H-1 by 1 lane, in the westbound direction, through the Waiawa Interchange. This project will begin in the vicinity of the Waiawa Interchange and end at the Paiwa Interchange. • From 2 to 3 lanes in AM peak • From 4 to 5 lanes in PM peak
Interstate Route H-1, Zipper Lane (PM), Ke'ehi Interchange to Kunia Interchange	Construct a Zipper lane on the Interstate Route H-1, in the westbound direction, from Ke'ehi Interchange to Kunia Interchange. This project would be in use during the PM peak.
Interstate Route H-1, Widening, Waipahu Off-Ramp	Widen the Interstate Route H-1 Waipahu Street off-ramp from 1 to 2 lanes, in the westbound direction, at the Waiawa Interchange.
Interstate Route H-2, Widening, Waipi'o Interchange	Widen both on- and off-ramps on Interstate Route H-2, at the Waipi'o Interchange. This project includes the widening of the Ka Uka Boulevard overpass and intersection improvements to facilitate movement to and from the on- and off-ramps.
Interstate Route H-1, Operational Improvements, Ward Avenue On-Ramp to University Avenue Interchange	Improve traffic flow on the Interstate Route H-1, in the eastbound direction, from the Ward Avenue on-ramp to the University Avenue Interchange through operational improvements.

Interstate Routes H-1 & H-2, Operational Improvements, Waiawa Interchange	Modify the Interstate Routes H-1 and H-2 Waiawa Interchange, to improve merging characteristics through operational improvements (e.g., additional transition lanes).
Kamehameha Highway, Widening, Lanikuhana Avenue to Ka Uka Boulevard	Widen Kamehameha Highway from a 3-lane to a 4-lane divided facility between Lanikuhana Avenue and Ka Uka Boulevard. This project includes shoulders for bicycles and disabled vehicles, bridge crossing replacement, bikeways, etc.
Kapolei Parkway, Extension, Kamokila Boulevard to Pāpipi Road	Extend the existing 4-lane Kapolei Parkway by constructing the segments in each of the following areas: • Kamokila Boulevard to Fort Barrette Road • 'Ewa Village boundary to Renton Road • Geiger Road to Pāpipi Road
Kapolei Parkway, Extension and Widening, Ali'inui Drive to Kalaeloa Boulevard	Extend the existing 4-lane Kapolei Parkway, from Ali'inui Drive to Hanua Street. This project includes widening of Kapolei Parkway from 4 to 6 lanes from Hanua Street to Kalaeloa Boulevard.
North-South Road, Widening & Extension, Interstate Route H-1 to Franklin D Roosevelt Avenue	Widen and extend North-South Road as follows: • From 3 to 6 lanes from Kapolei Parkway to Interstate Route H-1 • Extend from Kapolei Parkway to Franklin D Roosevelt Avenue (6 lanes)
SECOND ACCESS PROJECTS - 2006 to 2015	
Makakilo Drive, Second Access, Makakilo Drive to North-South Road/Interstate Route H-1 Interchange	Extend Makakilo Drive (vicinity Pueonani Street) south to the Interstate Route H-1 Freeway Interchange as 4-lane roadway, connecting Makakilo Drive to North-South Road.
TRANSIT PROJECTS - 2006 - 2015	
Ferry, Intra-Island Express Commuter, in the vicinity of Ocean Pointe Marina to Honolulu Harbor	Implement intra-island passenger ferry in the vicinity of the Ocean Pointe Marina in 'Ewa to Honolulu Harbor.
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2006- 2015	
City Operations and Maintenance (O&M)	Maintain and operate the City's existing and future roadway and transit operations and routine maintenance. Includes, but is not limited to, operation of the transit system (including bus, rail, and ferry), replacement of existing fleet, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, etc.
State Operations and Maintenance	Maintain and operate the State's existing and future highway operations and routine maintenance. Includes, but is not limited to, resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, traffic signal upgrade and retrofit, etc.
System Preservation	Preserve the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, pavement preventative maintenance, etc.
LONG-RANGE PLAN (2016 TO 2030)	
ISLANDWIDE PROJECTS - 2016 to 2030	
Bike Plan Hawai'i - O'ahu	See description in Mid-Range Plan
Enhancement Projects	See description in Mid-Range Plan
Intelligent Transportation Systems	See description in Mid-Range Plan
Transportation Demand Management Program	See description in Mid-Range Plan
SAFETY & OPERATIONAL IMPROVEMENT PROJECTS - 2016 - 2030	
Farrington Highway, Safety Improvements, Mākua Valley Road to Ali'inui Drive	Construct safety improvements on Farrington Highway along the Wai'anae Coast, from Mākua Valley Road (Ka'ena Point) to Ali'inui Drive (Kahe Point). This project includes realignment around Mākaha Beach Park, between Makau Street and Water Street.

CONGESTION RELIEF PROJECTS - 2016 -2030	
Farrington Highway, Widening, west of Fort Weaver Road to Waiawa Interchange	Widen Farrington Highway from Kunia to Waiawa by 1 lane in each direction, from west of Fort Weaver Road to Waiawa Interchange.
Farrington Highway, Widening, Hakimo Road to Kalaeloa Boulevard	Widen Farrington Highway from 4 to 6 lanes, from Hakimo Road to Kalaeloa Boulevard, including intersection of Lualualei Naval Road.
Interstate Route H-1, Widening, Liliha Street to Pali Highway	Widen the Interstate Route H-1 by 1 lane, from 3 to 4 lanes in the eastbound direction, from the Liliha Street on-ramp to Pali Highway off-ramp.
Interstate Route H-1, On- & Off- Ramp Modifications, Various Locations	Modify and/or close various on- and off- ramps on the Interstate Route H-1 from Middle Street to University Avenue. This project includes modification of auxillary lanes at various exits and other operational changes to Interstate Route H-1. The identification of the precise improvements to be made will require a separate detailed corridor study.
Interstate Route H-1, On- & Off- Ramp Modifications, University Avenue Interchange	Modify on- and off-ramps at the University Avenue Interchange on Interstate Route H-1. This project includes the construction of new ramps to allow all movements, safety improvements, including the closure of the eastbound on-ramp at University Avenue Interchange to Interstate Route H-1 and the construction of a new makai bound off-ramp to University Avenue from Interstate Route H-1.
Interstate Route H-1, Widening, Vineyard Boulevard to Middle Street	Widen the Interstate Route H-1 by 1 lane in the westbound direction, from Vineyard Boulevard to Middle Street.
Interstate Route H-1, HOV Lanes, Waiawa Interchange to Makakilo Interchange	Construct 2 new lanes in the freeway median for HOV use, 1 in the westbound direction and 1 in the eastbound direction, on Interstate Route H-1, from the Waiawa Interchange to the Makakilo Interchange.
Interstate Route H-1, Widening, Waiawa Interchange to Hālawa Interchange	Widen the Interstate Route H-1 by 1 lane in the eastbound direction, from the Waiawa Interchange to the Hālawa Interchange.
Interstate Route H-1, Widening, Ward Avenue to Punahou Street	Widen the existing Interstate Route H-1 by 1 lane in the eastbound direction, from Ward Avenue to Punahou Street.
Interstate Route H-2, New Interchange, Pineapple Road Overpass	Construct a new full-service freeway interchange on Interstate Route H-2, between Meheula Parkway and Ka Uka Boulevard, to accommodate future developments in Central O'ahu. This project includes the widening of the existing Pineapple Road Overpass from 2 lanes to 4 lanes; and addition of new on- and off-ramps to and from Interstate Route H-2 at Pineapple Road Overpass.
Kahekili Highway, Widening, Kamehameha Highway to Ha'ikū Road	Widen Kahekili Highway from 2 to 4 lanes, from Kamehameha Highway to Ha'ikū Road. This project also includes the following improvements: • Contraflow in existing right-of-way between Hui Iwa Street and Ha'ikū Road • Intersection improvements at Hui Iwa Street and Kamehameha Highway
Kunia Road, Widening and Interchange Improvement, Wilikina Drive to Farrington Highway	Widen Kunia Road as follows: • From 2 to 4 lanes, from Wilikina Drive to Anonui Street. • From 2 to 4 lanes, Anonui Street to Kupuna loop. • From 4 to 6 lanes, Kupuna Loop to Farrington Highway. • Add 1 lane eastbound loop on-ramp at Kunia Road & Interstate Route H-1.
Likelike Highway, Widening, Kamehameha Highway to Kahekili Highway	Widen Likelike Highway from 4 to 6 lanes, from Kamehameha Highway to Kahekili Highway.
Makakilo Mauka Frontage Road, New Roadway, Kalaeloa Boulevard to Makakilo Drive	Construct a new 2-lane Makakilo Mauka Frontage Road, mauka of Interstate Route H-1, from Kalaeloa Boulevard to Makakilo Drive.
Nimitz Highway, High Occupancy Vehicle (HOV) Flyover, Ke'ehi Interchange to Pacific Street	Construct a new 2-lane elevated and reversible HOV flyover above Nimitz Highway, from the Ke'ehi Interchange to Pacific Street. This project includes the removal of the existing eastbound contraflow lane in the AM peak and restoration of all turning movements on the at-grade portion of Nimitz Highway.

Pu'uloa Road, Widening, Pukuloa Road to Nimitz Highway	Widen Pu'uloa Road, from Pukuloa Road to Nimitz Highway, as follows: • From 3 lanes (1 lane southbound and 2 lane northbound) to 5 lanes (2 lanes southbound and 3 lanes northbound), from Pukuloa Road to Kamehameha
Pi'ikoi-Pensacola Couplet Reversal	Reverse the direction of the existing one-way Pi'ikoi Street and Pensacola Street couplet.
SECOND ACCESS PROJECTS - 2016 - 2030	
Central Mauka Road, Second Access, Mililani Mauka to Waiawa	Construct Central Mauka Road, a new 4-lane, 2.5-mile road from Mililani Mauka to Waiawa. Road connects Meheula Parkway to Kamehameha Highway in Pearl City; parallel to & mauka of Interstate Route H-2. The new 4-lane north-south road includes connections to Interstate Route H-2 interchanges.
Wahiawa, Second Access, Whitmore Avenue to Meheula Parkway	Construct a new 2-lane second access road between Whitmore Village and Wahiawa, from Whitmore Avenue to California Avenue. Continue the new 2-lane second access road to Mililani Mauka, from California Avenue to Meheula Parkway.
Wai'anae, Second Access, Farrington Highway to Kunia Road	Construct a new 2-lane second access road to Wai'anae from Farrington Highway in the vicinity of Mā'ili, over the Wai'anae Mountain Range, to Kunia Road.
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2016 TO 2030	
City Operations and Maintenance (O&M)	See description in Mid-Range Plan
State Operations and Maintenance	See description in Mid-Range Plan
System Preservation	See description in Mid-Range Plan
RIGHT-OF-WAY PRESERVATION	
CONGESTION RELIEF PROJECTS - ROW PRESERVATION	
Kalaeloa East-West Spine Road, New Roadway, Kalaeloa Boulevard to Geiger Road	Establish and preserve right-of-way (ROW) for Kalaeloa East-West Spine Road (see project description on illustrative project list).
Keone'ula Boulevard, Extension, Kapolei Parkway to Franklin D. Roosevelt Avenue	Establish and preserve right-of-way (ROW) for Keone'ula Boulevard Extension (see project description on illustrative project list).

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April 4, 2006

DTS
TRANS PLANNING
APR 4 3 28 PM '06

Mr. Melvin Kaku, Acting Director
Department of Transportation Services
City and County of Honolulu
650 S. King Street, 3rd Floor
Honolulu, Hawaii 96813

Attention: Mr. Toru Hamayasu

Subject: Honolulu High-Capacity Transit Corridor Project
PBQD Reference: 16434A

Dear Mr. Kaku:

We are transmitting to you for acceptance 10 copies and 1 CD of the following contract deliverable for the Honolulu High-Capacity Transit Corridor Project:

Product 7.2	Final AA/DEIS Annotated Outline

Please notify us of your acceptance of this deliverable so that we may submit an invoice.

If you have any questions or comments please contact me at (808) 566-2227.

Sincerely,

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

Mark H. Scheibe

Mark H. Scheibe
Project Manager

Enclosures