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HWY-DD 2.3695

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TO: GENEVIEVE K. Y. SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI) AND FINAL
ENVIRONMENTAL ASSESSMENT (FEA)
KAMEHAMEHA HIGHWAY KAIPAPAU STREAM BRIDGE REPLACEMENT
FEDERAL-AID PROJECT NO. BR-083-1(48)

The Hawaii Department of Transportation (HDOT) has reviewed the comments received during the 30-day public comment period which began November 8, 2006, and believes the mitigation measures proposed in the Final EA adequately addresses the issues raised. Concerns regarding traffic, water quality, construction practices, stream construction activities, and drainage are addressed in the Final EA. No other significant concerns were raised during the public review period.

Best Management Practices and mitigation measures described in the Final EA will ensure that no significant negative impacts to urban lands, water and air quality, flora and fauna, cultural and scenic resources, land use, or community well-being will result from the proposed project. The proposed action will further benefit the motoring public by providing a safe and functional new bridge by replacing the currently substandard bridge with one that meets Federal and State standards.

HDOT hereby issues this finding of no significant impact. Please publish this notice in the March 8, 2007, *Environmental Notice*. We have enclosed a completed OEQC Environmental Notice Publication Form, two hard copies of the Final EA, and one CD of the project in pdf format. Please contact Li Nah Okita at 692-7581 or Duane Taniguchi at 692-7582, if you have any questions and reference HWY-DD 2.3695 as noted above.

Enclosure

DT/RMT:rva

bc: HWY-DD(LNO)
FHWA(EW)

c: R. M. Towill (Walter Chong)

Final Environmental Assessment

Kaipapa‘u Stream Bridge Replacement

State Route 83, Kamehameha Highway

PROJECT NO. BR-083-1(48)

DISTRICT OF KO‘OLAULOA, O‘AHU, HAWAI‘I

Prepared For:

State of Hawai‘i
Department of Transportation
Highways Division

Prepared By:

R.M. Towill Corporation
Honolulu, Hawai‘i
1-19548-0P

February 2007

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PROJECT SUMMARY

Project:	Kaipapa'u Stream Bridge Replacement Federal Aid Project No. BR-083-1(48)
Applicant:	State of Hawai'i, Department of Transportation, Highways Division
Accepting Authority:	State of Hawai'i, Department of Transportation
Tax Map Key: (TMK)	Adjacent to Plats (1) 5-4-011 and 018. Roadways and bridges are not assigned TMK numbers.
Location:	Kamehameha Highway (State Route 83) at Kaipapa'u Stream, Hau'ula, Ko'olauloa District, Island of O'ahu
Project Area:	1.3 acres (includes bridge, roadway approaches, construction access and adjacent staging areas)
Agent:	R. M. Towill Corporation 420 Waiakamilo Road, Suite 411 Honolulu, Hawai'i 96817 Attn: Chester Koga, AICP Phone: (808) 842-1133 Facsimile: (808) 842-1937
Existing Land Use:	State Highway and Bridge
Proposed Action:	Replace and widen the highway bridge at Kaipapa'u Stream on Kamehameha Highway, State Route 83. Construct wider travel lanes, shoulders, ADA-compliant pedestrian walkway/bicycling facilities, reinforced guardrails, and drainage features. Construct improvements to approach roads with retaining walls.
Anticipated Permit Requirements	Section 404 Department of the Army Nationwide Permit # 33, "Temporary Construction, Access, and Dewatering;" Section 401 Water Quality Certification; Stream Channel Alteration Permit; Coastal Zone Management Federal Consistency Review; NPDES Notice of Intent for Storm Water, Hydrotesting and Dewatering during Construction; Special Management Area Permit; and Right-of-Entry from private land owners.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

The Kaipapa‘u Stream Bridge is located on Kamehameha Highway, State Route 83, Hau‘ula, Ko‘olauloa, O‘ahu (**Figure 1, Project Location and Vicinity Map**). This project is one in a series of bridge replacements being implemented by the State Department of Transportation (SDOT-H) and Federal Highway Administration (FHWA) along the windward coast of O‘ahu. Replacement and widening of the bridge will ensure that the structure meets Federal and State bridge and roadway standards.

SDOT-H is mandated to maintain the functional and structural integrity of bridges on State roadways. The fulfillment of this mandate requires SDOT-H to conduct regular inspections of bridges within its jurisdiction and make recommendations to modify or replace structurally deficient bridges to meet current standards for roadway widths and safety features as specified by the American Association of State Highway and Transportation Officials (AASHTO) and SDOT-H design criteria. Based on the current bridge replacement program of SDOT-H, the Kaipapa‘u Stream Bridge is listed in the National Bridge Inventory (NBI) and has a rating of 37 (based on a scale of 1-100) and warrants rehabilitation or replacement. Its structure number is 0033000830302099.

Proposed work includes construction to increase the dimensions of the bridge to approximately 110-foot long by 57-foot wide. The widened portions of the bridge will be constructed of prestressed concrete planks with cast-in-place bridge decks. The replacement bridge will also include bicycle and pedestrian facilities. Current standards for highway speed, loading, sight distances, guard railings, and other safety measures will be used in the design of the project.

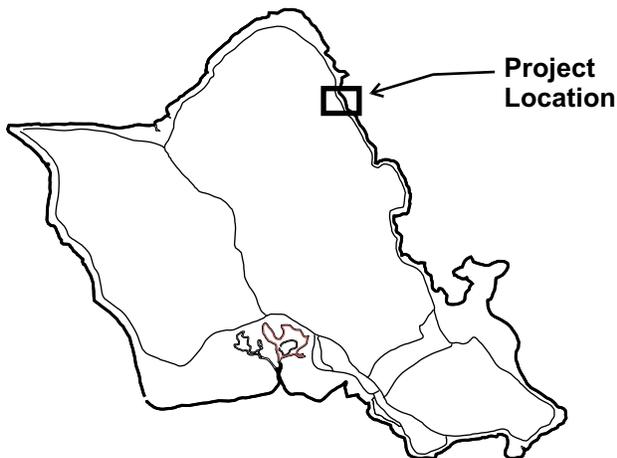
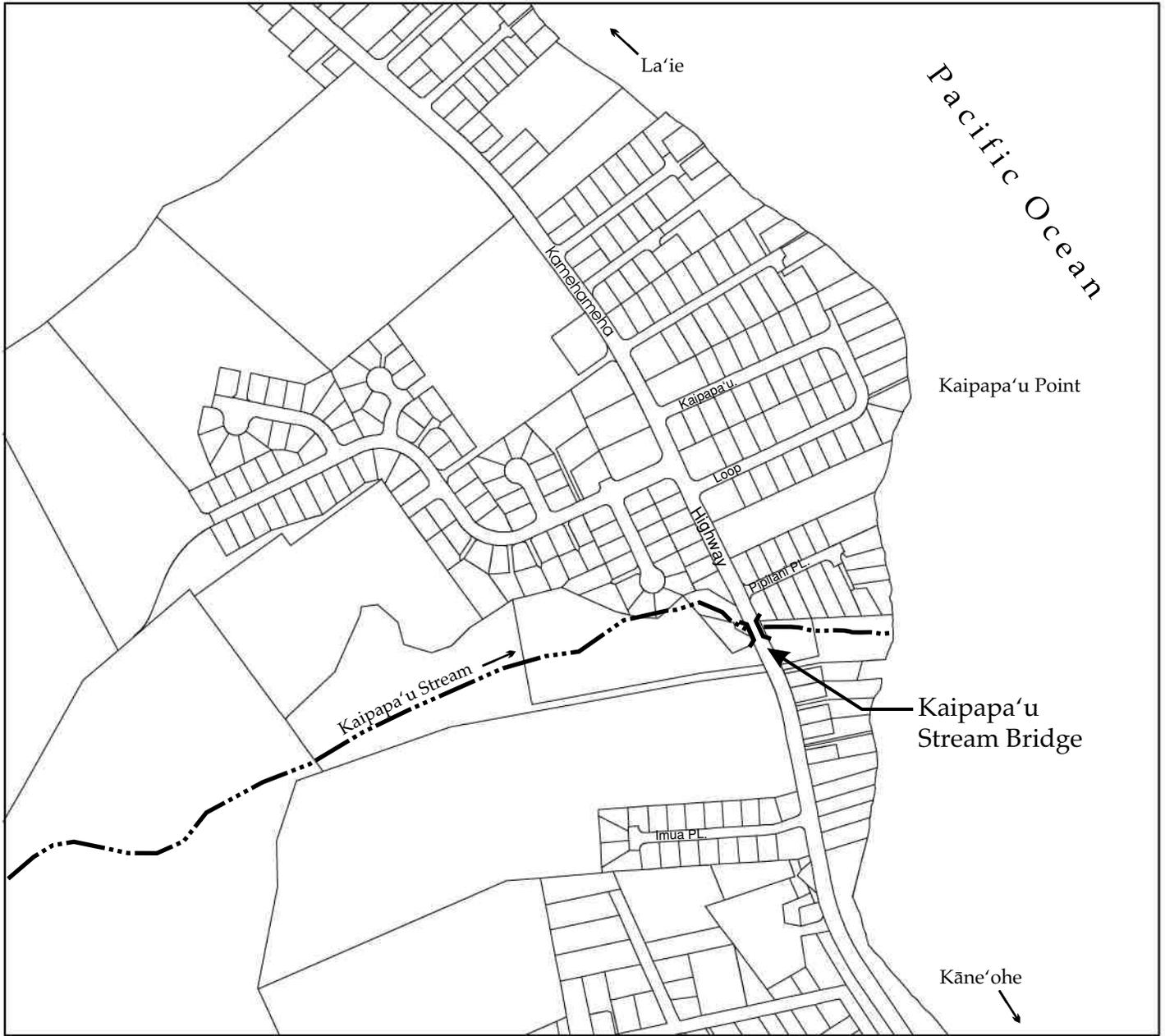


FIGURE 1
PROJECT LOCATION & VICINITY MAP
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



1.2 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This project is subject to preparation of environmental documentation in compliance with requirements of Chapter 200, Title 11, Hawai'i Administrative Rules (HAR), Chapter 343, Hawai'i Revised Statutes (HRS), and the National Environmental Policy Act (NEPA) because State of Hawai'i and Federal (FHWA) funds will be used for development. The requirements for the NEPA will be handled through the filing of a Documentation for Categorical Exclusions listed under Title 23 of the Code of Federal Regulations, Section 771.117(d).

A Draft Environmental Assessment (EA) was published for public review in the November 8, 2006 issue of the State Department of Health (DOH), Office of Environmental Quality Control (OEQC), Environmental Notice. Comments were received during the public comment period (see **Appendix F - Public Consultation**).

This Final EA provides additional information based on the comments received that further describes the proposed project, the environmental conditions of the site, the potential for significant adverse impacts, and the application of mitigation measures as appropriate, to reduce the potential for significant environmental impacts.

The Final EA and accompanying Finding of No Significant Impact (FONSI) will be filed with the Office of Environmental Quality Control (OEQC) by SDOT-H.

1.3 PURPOSE AND NEED FOR PROJECT

SDOT-H is mandated to maintain the functional and structural integrity of bridges on State roadways. Based on the current bridge replacement program of SDOT-H, the Kaipapa'u Stream Bridge facility has a National Bridge Inventory (NBI) rating of 37 based on a scale of 1-100. This NBI rating warrants rehabilitation or replacement of the bridge. This proposed bridge project is needed to mitigate bridge maintenance concerns, increase traffic safety (for motorists and pedestrians) and meet the projected vehicle usage of the Kamehameha Highway.

CHAPTER 2

ALTERNATIVES TO THE PROPOSED ACTION

2.1 OVERVIEW OF ALTERNATIVES

The alternatives analysis for this project included the following approaches to addressing the deficiencies of the existing Kaipapa‘u Stream Bridge:

- Alternative 1: No Action - no improvements to existing bridge.
- Alternative 2: Delayed Action - postponement of improvements for an indefinite period of time.
- Alternative 3: Rehabilitation of the Existing Bridge - repair of the existing bridge in place.
- Alternative 4: Bridge Replacement and Widening - No Detour Road: phased development to maintain two traffic lanes for the duration of the project.
- Alternative 5: Bridge Rehabilitation and Widening - No Detour Road: phased development to maintain two traffic lanes for the duration of the project.
- Alternative 6: Bridge Replacement - One-Lane Detour Road (Mauka): phased development with a one-lane detour road and a single traffic lane maintained on the existing bridge.
- Alternative 7: Bridge Replacement - Two-Lane Detour Road (Mauka): single phase with a two-lane detour road on the mauka side of the bridge that would provide two traffic lanes for the duration of the project.
- Alternative 8: Bridge Replacement - Two-Lane Detour Road (Makai): single phase with a two-lane detour road on the makai side of the bridge that would provide two traffic lanes for the duration of the project.

2.2 ALTERNATIVES REJECTED

Alternatives 1, 2 and 3 do not meet the most critical criterion: meeting Federal and State standards. Additional considerations also supported rejection of these alternatives, as discussed below.

- ***Alternative 1 - No Action***

The no-action alternative would result in no effort to repair or replace the bridge to meet current safety standards. Under this option, environmental impacts resulting from bridge replacement activities would be averted, and bridge replacement costs would be spared. However, the bridge would continue to deteriorate, requiring regular inspection and increasing maintenance to maximize its useful lifespan. Eventually, the bridge may no longer provide a safe support for vehicle traffic and could face closure.

- ***Alternative 2 - Delayed Action***

Under this alternative, the existing Kaipapa'u Stream Bridge would continue to be used for an undefined period. Regular inspections and maintenance to prolong the useful life of the Kaipapa'u Stream Bridge would continue to be performed by SDOT-H until a future decision is made to undertake the replacement project. Under this alternative, resource expenditures for bridge replacement would be averted in the short-term. However, project activities would ultimately incur higher development cost due to inflation while generating environmental outcomes similar to other alternatives for immediate action.

- ***Alternative 3 - Bridge Rehabilitation of Existing Bridge***

This alternative would result in extensive replacement of elements of the bridge superstructure and substructure, including steel girders, timber beams and braces. Existing concrete girders would be strengthened by adding stirrups and bottom beam reinforcement with six inches of concrete. Additional supports and reinforcements might

also be required, particularly to the bridge railings which do not meet currently acceptable safety standards (SDOT-H Bridge Inspection Report, October 1997).

This alternative to only rehabilitate the existing bridge would result in less construction and right-of-way impacts to the surrounding residences at the Kaipapa'u Stream Bridge crossing. Federal funds however would not be available for bridge improvements because only rehabilitating the existing bridge would not result in conformance to federal standards for bridge design and highway safety. Therefore, the entire cost of renovation and maintenance would have to be borne by the State.

This alternative would also increase the depth of the bridge girders, which would reduce the volume of water that passes under the bridge.

2.3 EVALUATIVE CRITERIA FOR REMAINING ALTERNATIVES

The following criteria were utilized to compare the feasibility, benefits, and relative impacts of the remaining four project alternatives (Section 2.1, Alternative # 4, 5, 6, 7 and 8). Each criterion and its application to the remaining alternatives has been addressed in the following sections:

- 2.4 *Highway and Bridge Standards*** - This involves criteria to meet both Federal and State standards for highways and bridges.
- 2.5 *Dwelling Demolition and Resident Relocation Requirements***- This is to determine the extent to which nearby single-family residences and their occupants will be affected by construction, including requirements to demolish dwellings and temporarily or permanently relocate current residents from the project area.
- 2.6 *Complexity of Utility Relocation*** - This involves and examination of the relative difficulty of replacing existing utilities such as overhead electrical lines and water lines.
- 2.7 *Site Distance*** - This criteria evaluates the degree to which visibility for drivers will be impaired by various construction alternatives.

- 2.8** *Traffic Control* - This examines the impact and cost of keeping traffic moving through the bridge area before and during construction.
- 2.9** *Construction Duration* - This criteria compares alternatives based on estimated elapsed construction time. Alternatives are likely to be similar with regard to the amount of time it may take to make arrangements for right-of-entry to private properties as well as residential demolition and relocation arrangements.
- 2.10** *Pedestrian Access During Construction* - This examines the ability of pedestrians to traverse the bridge during construction.
- 2.11** *Alternative Comparison* - This estimates and compares construction costs, ROW purchase costs, and vehicular user costs between alternatives.

2.4 HIGHWAY AND BRIDGE STANDARDS

The purpose of this project is to rehabilitate or replace and widen the existing Kaipapa‘u Stream Bridge to meet all current Federal and State bridge and roadway standards. These include, but are not limited to, regulations for roadway sections (lane widths, pedestrian and bicycle facilities, and shoulders), seismic strength, guardrails, and the Americans with Disabilities Act. Alternatives 4 through 8 meet this central criterion and were evaluated using additional criteria to select the preferred alternative for the project.

2.5 DWELLING DEMOLITION AND RESIDENT RELOCATION REQUIREMENTS

The proposed project will require removal of single family residences in the immediate area. The number of dwellings requiring removal varies from 2 to 7. Demolition of private residences and relocation will have cost consequences, as owners will be compensated for their loss of property. Preliminary right of way costs were estimated for the alternatives. The most expensive alternative from this perspective is Alternative 7: Bridge Replacement - Two-Lane Detour Road (Mauka), estimated at \$2.3 million. Alternative 4: Bridge Replacement and Widening - No Detour Road and

Alternative 5: Bridge Rehabilitation and Widening - No Detour Road were the least expensive with an estimated cost of \$0.33 million. **Table 1, Summary of Demolition and Relocation Requirements** provides an overview.

Table 1
Summary of Demolition and Relocation Requirements

Alternative No.		Dwellings Requiring Demolition	Temporary Relocation of Residents	Right-Of-Way (ROW) Costs (\$ in Millions)
4	Bridge Replacement and Widening - No Detour Road	1	3	\$0.33
5	Bridge Rehabilitation and Widening - No Detour Road	1	3	\$0.33
6	Bridge Replacement - One-Lane Detour Road (Mauka)	6	2	\$1.7
7	Bridge Replacement - Two-Lane Detour Road (Mauka)	7	3	\$2.3
8	Bridge Replacement - Two-Lane Detour Road (Makai)	7	1	\$1.9

Below is a list of properties that may be affected as a result of the construction activities in Alternatives 4 through 8. (The specific properties that will be affected by the preferred alternative are discussed in more detail in **Section 5.2 Demolition of Residences and Relocation Requirements**):

- TMK: 5-4-11:04 (makai-Kāne' ohe side of bridge)
- TMK: 5-4-11:21 (makai-Kahuku side of bridge)
- TMK: 5-4-11:06 (makai-Kahuku side of bridge)
- TMK: 5-4-11:07 (makai-Kahuku side of bridge)
- TMK: 5-4-18:01 (mauka-Kāne' ohe side of bridge)
- TMK: 5-4-18:02 (mauka-Kāne' ohe side of bridge)
- TMK: 5-4-18:03 (mauka-Kahuku side of bridge)
- TMK: 5-4-18:04 (mauka-Kahuku side of bridge)
- TMK: 5-4-18:05 (mauka-Kahuku side of bridge)

2.6 TRAFFIC CONTROL REQUIREMENTS

Traffic control requirements for alternatives 4 through 8 will include use of arrow boards, signs or other traffic control devices to identify detours and notify motorists of ongoing construction activities. The speed limit within the project area and on the detour roads will be limited to 25 miles per hour during construction for Alternatives 4 and 5. Alternatives 6, 7 and 8 will have a speed limit of 15 miles per hour to minimize right-of-way requirements for the detour roads.

- ***Alternative 4: Bridge Replacement and Widening - No Detour Road***

Of the five alternatives, Alternative 4 will have the least impact on vehicular traffic because it has the shortest estimated construction period of approximately 16 months. Project phasing will allow for the construction of the mauka and makai bridge expansions while maintaining both lanes on the existing bridge to be open to traffic. Work completed on the mauka and makai expansions will then be utilized to accommodate traffic in both directions, while the existing bridge structure is replaced.

- ***Alternative 5: Bridge Rehabilitation and Widening - No Detour Road***

Alternative 5 will have the second shortest estimated construction period of approximately 18 months. Project phasing will also allow for the construction of the mauka and makai bridge expansions while maintaining both lanes on the existing bridge to be open to traffic. Work completed on the mauka and makai expansions will then be utilized to accommodate traffic in both directions, while the existing bridge structure is rehabilitated.

- ***Alternative 6: Bridge Replacement - One-Lane Detour Road (Mauka)***

Under this alternative, there will be two through lanes available at all times. However, because construction of the new bridge must accommodate a traffic lane, the duration of the bridge construction will be approximately 22 months.

· *Alternative 7: Bridge Replacement - Two-Lane Detour Road (Mauka) and Alternative 8: Bridge Replacement - Two-Lane Detour Road (Makai)*

Alternatives 7 and 8 will have less impact on vehicular traffic than alternative 6. Under these scenarios, there will be two through lanes available at all times. Because traffic will be redirected away from the bridge site onto the detour road, the duration of the bridge construction can proceed in a single phase and can be completed in approximately 17 months.

2.6.1 Construction Sequencing and Traffic Control Requirements

This section provides details of the relationship between construction sequencing among the alternatives and the associated requirements for traffic control. Traffic controls are in *italics*.

Alternative 4: Bridge Replacement and Widening - No Detour Road

Phase 1

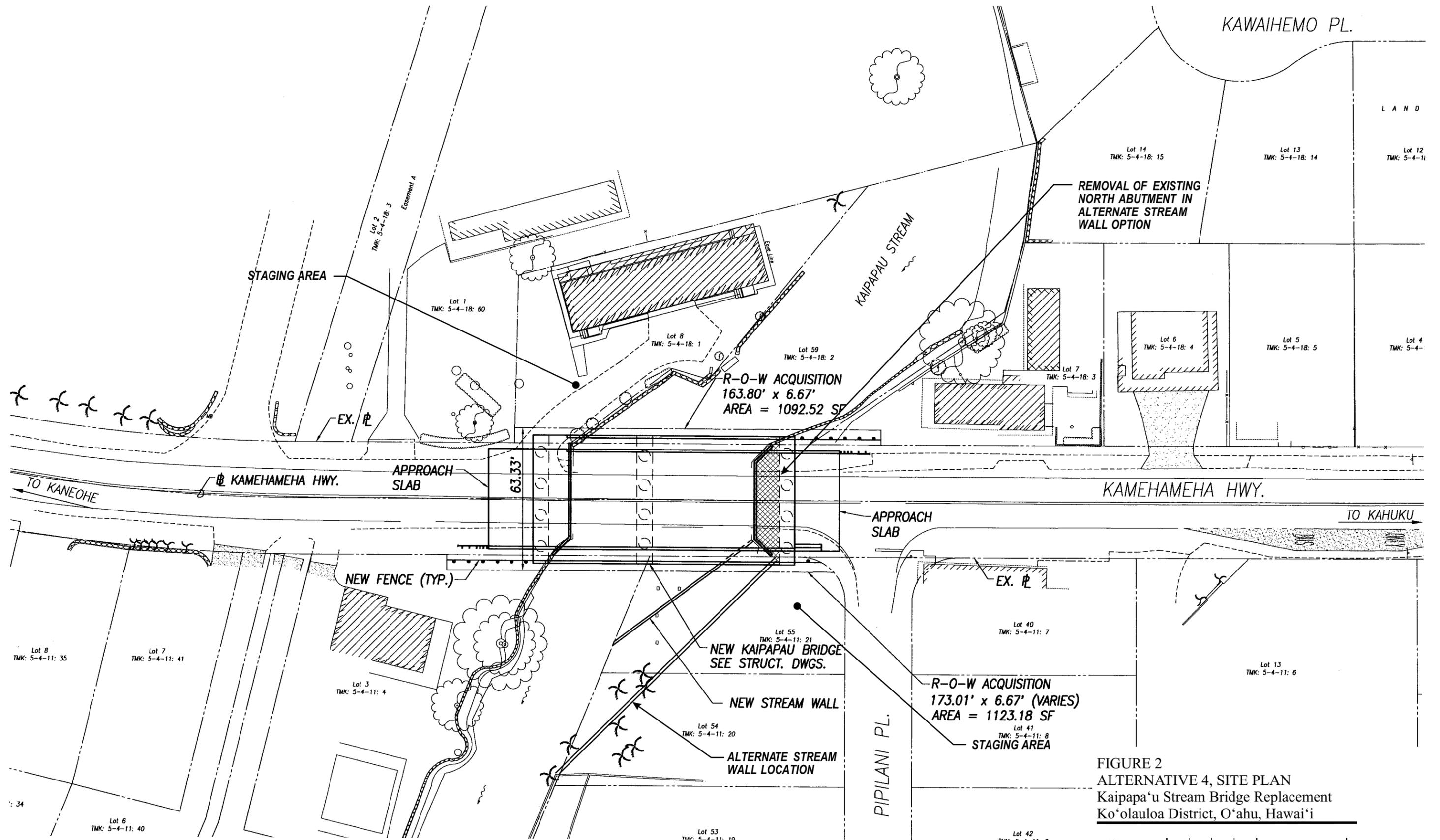
Construct 16'-8" section on the makai side of the existing bridge. This section provides the pedestrian walkway used during construction in Phase 2. Work includes:

- *Maintain two 10-foot wide vehicle travel lanes with 1'-0" shoulders on the existing bridge.*
- Construct 5'-0" diameter drilled shafts, one beyond each abutment and one adjacent to the center pier at the makai side of the existing bridge. Partially demolish abutment wing walls as required for the installation of prestressed planks.
- Construct abutments, piercaps, prestressed planks, etc., with construction joints short of the existing bridge with provisions to "tie-in" at the final stage of construction.
- Construct approach slabs within the limits of Phase 1 construction.
- Construct wall makai of bridge for slope protection (location to be determined during design).
- Provide slope protection (rip-rap or CRM) at the abutment walls as required. **See Figure 2, Alternative 4, Site Plan.**

Phase 2

Construct 16'-8" section on the mauka side of the existing bridge. Work includes:

- *Maintain one 11-foot wide vehicle travel lanes with 1'-0" shoulders on the existing bridge and a 5'-0" wide pedestrian walkway and the existing bridge and one 10-foot wide vehicle travel lane with 1'-0" shoulders on the Phase 1 constructed deck.*



Note:
See Table 3 for Sight Distance Concerns

FIGURE 2
ALTERNATIVE 4, SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



- Demolish the existing pedestrian walkway at the mauka side of existing bridge.
- Construct 5'-0" diameter drilled shafts, one beyond each abutment and one adjacent to the center pier at the mauka side of existing bridge. Partially demolish abutment wing walls as required for the installation of prestressed planks.
- Construct abutments, piercaps, prestressed planks, etc., with construction joints short of the existing bridge with provisions to "tie-in" at the final stage of construction.
- Construct approach slabs within the limits of Phase 2 construction.
- Provide slope protection (rip-rap or CRM) at the abutment walls as required.

Phase 3

In this phase, the balance of the existing bridge is demolished and vehicle travel is temporarily detoured to the newly constructed Phase 1 and 2 sections. The remainder of the new bridge will be constructed in this Phase. A temporary pedestrian walkway will also be provided on the mauka side of the bridge. Work includes:

- *Relocate one 10-foot wide vehicle travel lane with 1'-0" shoulders to the Phase 2 constructed deck while maintaining the temporary makai travel lane and shoulders constructed in Phase 1.*
- Construct a temporary pedestrian walkway at the mauka side of the bridge.
- Remove the balance of the existing bridge deck and center pier as required while maintaining portions of the existing abutments.
- Construct two new 5'-0" diameter drilled shaft at interior of each new abutment and center pier.
- Construct piercaps and tie-in to the newly constructed Phase 1 and 2 abutments and center pier.
- Construct balance of bridge structure between the Phase 1 and 2 widening sections.
- Construct approach slabs.

Phase 4

This phase prepares the bridge for its final configuration. Work includes:

- *Construct new jersey barriers, complete asphalt pavement and realign the road travel lanes.*
- Remove temporary pedestrian walkway.

Alternative 5: Bridge Rehabilitation and Widening - No Detour Road

Phase 1

Construct 10'-3" section on the makai side of the existing bridge. This section provides the pedestrian walkway used during construction in Phase 2. Work includes:

- *Maintain two 11-foot wide vehicle travel lanes with 1'-0" shoulders on the existing bridge.*
- Construct 5'-0" diameter drilled shafts, one at each abutment and two at the center pier at the makai side of existing bridge. Demolish abutment footings and provide sheet piling as required for the installation of drilled shafts at the abutments.
- Construct abutments, piers, caps, girders, etc., with construction joints short of the existing bridge with provisions to "tie-in" at the final stage of construction.
- Construct approach slabs within the limits of Phase 1 construction.
- Construct wall makai of bridge for slope protection (location to be determined during design).
- Reconstruct wing walls and provide slope protection (rip-rap or CRM wall as required).
See Figure 3, Alternative 5, Site Plan.

Phase 2

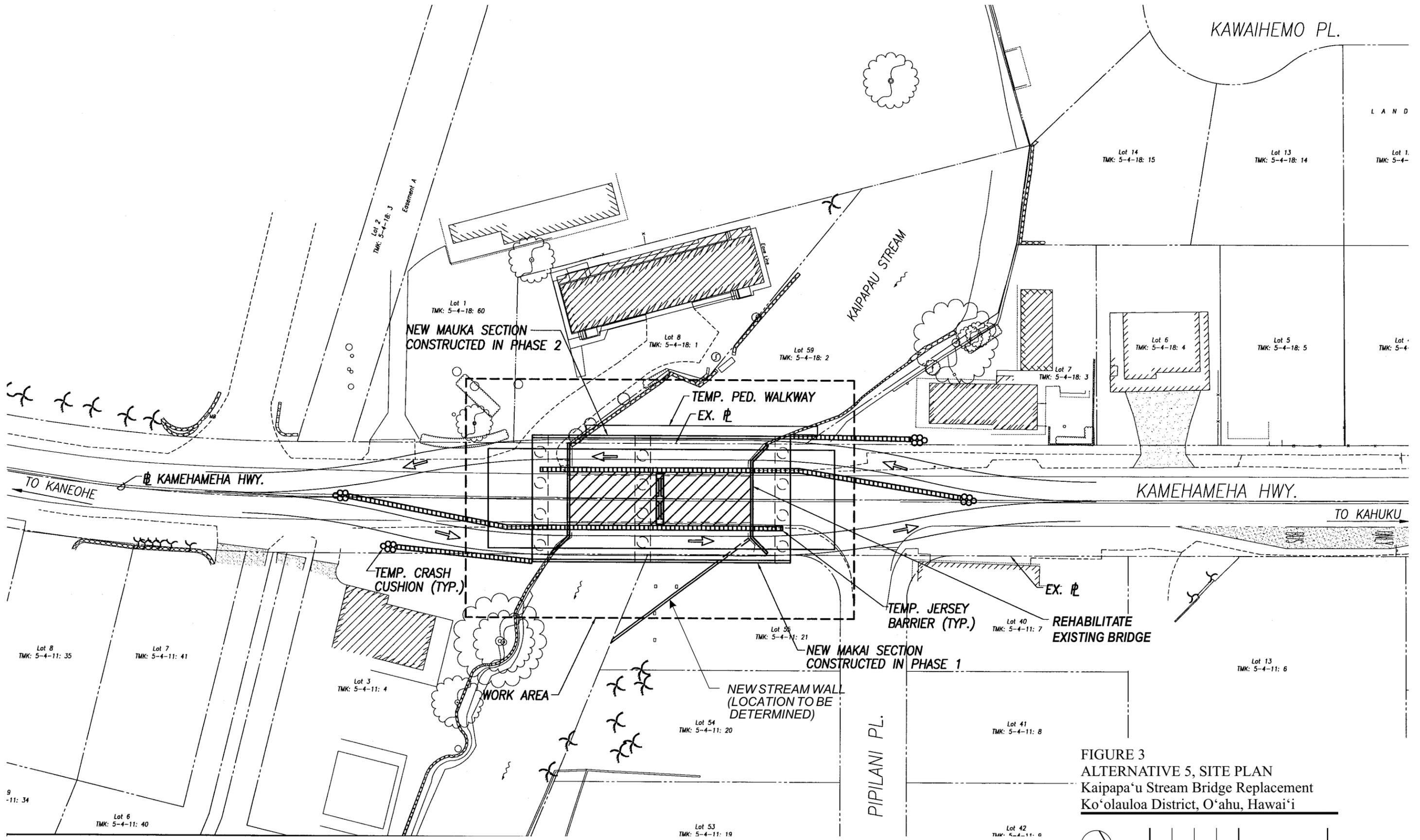
Construct 10'-3" section on the mauka side of the existing bridge. This section provides the pedestrian walkway used during construction in Phase 3. Work includes:

- *Maintain two 11-foot wide vehicle travel lanes with 1'-0" shoulders on the existing bridge.*
- Demolish the existing pedestrian walkway at the mauka side of existing bridge.
- Construct 5'-0" diameter drilled shafts, one at each abutment and two at the center pier at the mauka side of existing bridge. Demolish abutment footings and provide sheet piling as required for the installation of drilled shafts at the abutments.
- Construct abutments, piers, caps, girders, etc., with construction joints short of the existing bridge with provisions to "tie-in" at the final stage of construction.
- Construct approach slabs within the limits of Phase 2 construction.
- Reconstruct wing walls and provide slope protection (rip-rap or CRM wall as required).

Phase 3

The duration of this phase is relatively short and provides the necessary vehicle travel widths and pedestrian walkway for construction in Phase 4. Work includes:

- *Reduce vehicle travel lanes to 10'-0" wide each with 1'-0" shoulders.*
- Remove the existing concrete railing at the makai side of the existing bridge.



Note:
See Table 3 for Sight Distance Concerns

FIGURE 3
ALTERNATIVE 5, SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



Phase 4

Shift the vehicle travel lanes and pedestrian walkway to the makai side of the bridge allowing the new bridge deck at the mauka side to be "tied-in" with the existing bridge. In addition, strengthen the mauka existing girder. Work includes:

- *Shift the two 11-foot wide vehicle travel lanes with 1'-0" shoulders and a 5-foot walkway to the makai side of the bridge.*
- Provide metal plates throughout bridge at the makai side and "blend-in" asphalt topping for smooth riding surface. The existing bridge has a 3"± thick layer of asphalt atop of the existing structural concrete deck.
- Remove portion of existing bridge at the mauka side of the exterior girder and prepare for the "tie-in" to the new portion of bridge.
- Strengthen mauka existing girder by adding stirrups and bottom beam reinforcing with 6"± concrete each side of beam. Shore existing exterior girder and chip out bottom to provide for new bottom reinforcing. Existing girder shall be intentionally roughened prior to pouring of concrete encasement around existing girder.
- Construct "tie-in" to existing bridge deck at the mauka side of the existing bridge.

Phase 5

Shift the vehicle travel lanes and pedestrian walkway to the mauka side of the bridge allowing the new bridge deck at the makai side to be "tied-in" with the existing bridge. In addition, strengthen the makai existing girder. Work includes:

- *Shift the two 11-foot wide vehicle travel lanes with 1'-0" shoulders and a 5-foot walkway to the mauka side of the bridge.*
- Remove portion of existing bridge at the makai side of the exterior girder and prepare for the "tie-in" to the new portion of bridge.
- Strengthen makai existing girder by adding stirrups and bottom beam reinforcing with 6"± concrete each side of beam. Shore existing exterior girder and chip out bottom to provide for new bottom reinforcing. Existing girder shall be intentionally roughened prior to pouring of a concrete encasement around existing girder.
- Construct "tie-in" to existing bridge deck at the makai side of the existing bridge.

Phase 6

This phase allows the remainder of the existing bridge to be strengthened while the vehicle travel lanes are situated at each side of the bridge. A temporary pedestrian walkway will also be provided. Work includes:

- *Provide two 11-foot wide vehicle travel lanes with 10" shoulders at each side of the existing bridge.*
- Construct a temporary pedestrian walkway at the mauka side of the bridge.

- Construct two new 5'-0" diameter drilled shaft at interior of each the abutments. Shafts shall be constructed thru the existing abutment foundation.
- Construct piercap and tie-in to the newly constructed widening of abutment at each end of the bridge structure.
- Construct approach slabs within the limits of Phase 6 construction.
- Strengthen the existing interior two girders by intentionally roughening the beam and providing stirrups and bottom reinforcing with 6"± concrete encasement each side and at the bottom of the existing girder.
- Remove existing asphalt, roughen existing surface of the concrete bridge deck and provide negative reinforcement at the center pier as well and transverse reinforcement for the deck slab with an additional 6"± of topping to make the bridge continuous and monolithic.

Phase 7

This phase prepares the bridge for its final configuration. Work includes:

- *Construct new jersey barriers and realign the road travel lanes and shoulder widths.*
- Remove temporary pedestrian walkway.

Alternative 6: Bridge Replacement - One-Lane Detour Road (Mauka)

Phase 1

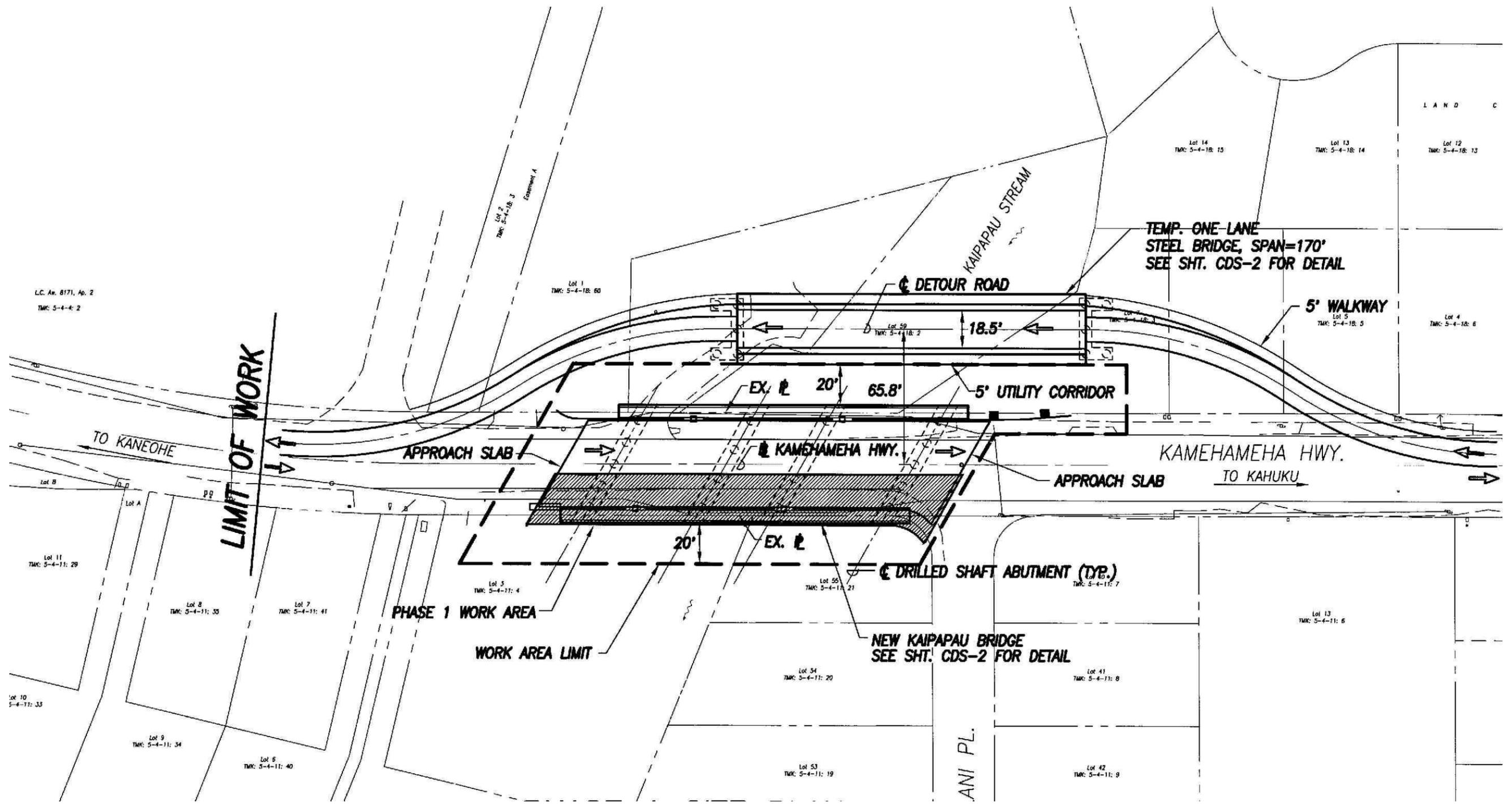
This phase allows for the construction of the mauka detour road and the demolition and reconstruction of the makai side of the bridge. Work includes:

- *Construct a single lane detour road on the mauka side of the existing bridge.* Locate the detour road to provide a minimum of 20 feet of horizontal clearance between the detour road and the new bridge. The makai side of the existing bridge. Demolish and reconstruct the makai side of the bridge.
- *Maintain a single lane of traffic on the mauka side of the existing bridge for Kahuku-bound traffic.* Accommodate Kāne' ohe-bound traffic with the detour road, assuring two traffic lanes will be available at all times. **See Figure 4, Alternative 6, Phase 1 Site Plan.**

Phase 2

This phase allows for the demolition and reconstruction of the mauka side of the bridge. Work includes:

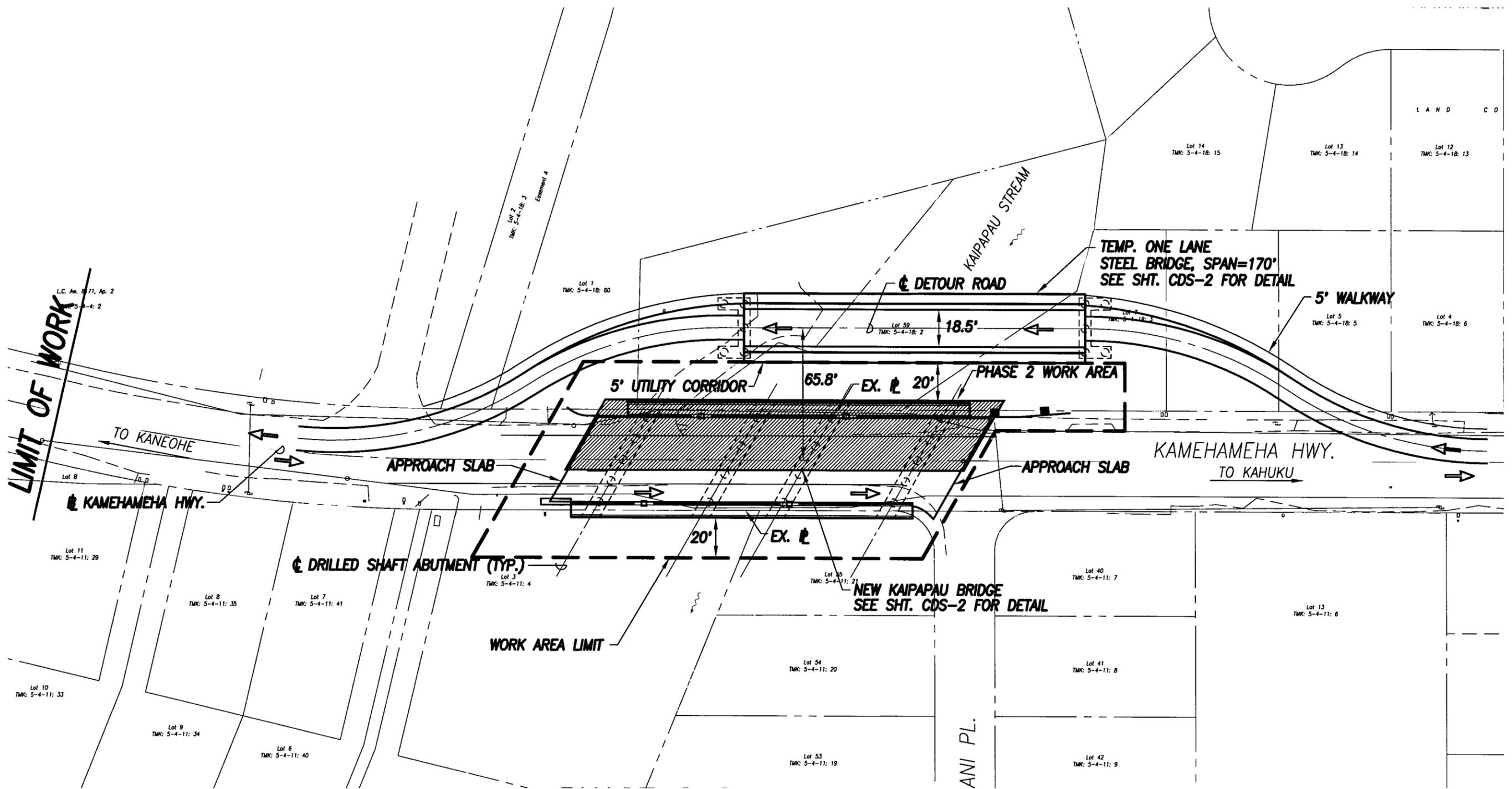
- Demolish the mauka side of the existing bridge and construct the makai side of the bridge. *Maintain a single lane of traffic for Kahuku-bound traffic on the portion of the new bridge constructed in Phase 1.*
- *Accommodate Kāne' ohe-bound traffic with a detour road, assuring two traffic lanes will be available at all times. See Figure 5, Alternative 6, Phase 2 Site Plan.*



Note:
See Table 3 for Sight Distance Concerns

FIGURE 4
ALTERNATIVE 6, PHASE 1 SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i





Note:
See Table 3 for Sight Distance Concerns

FIGURE 5
ALTERNATIVE 6, PHASE 2 SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



Alternative 7: Bridge Replacement - Two-Lane Detour Road (Mauka)

Phase 1

This phase allows for the construction of the two-lane detour road. The two-lane detour road will permit construction to be done in a single phase. Work includes:

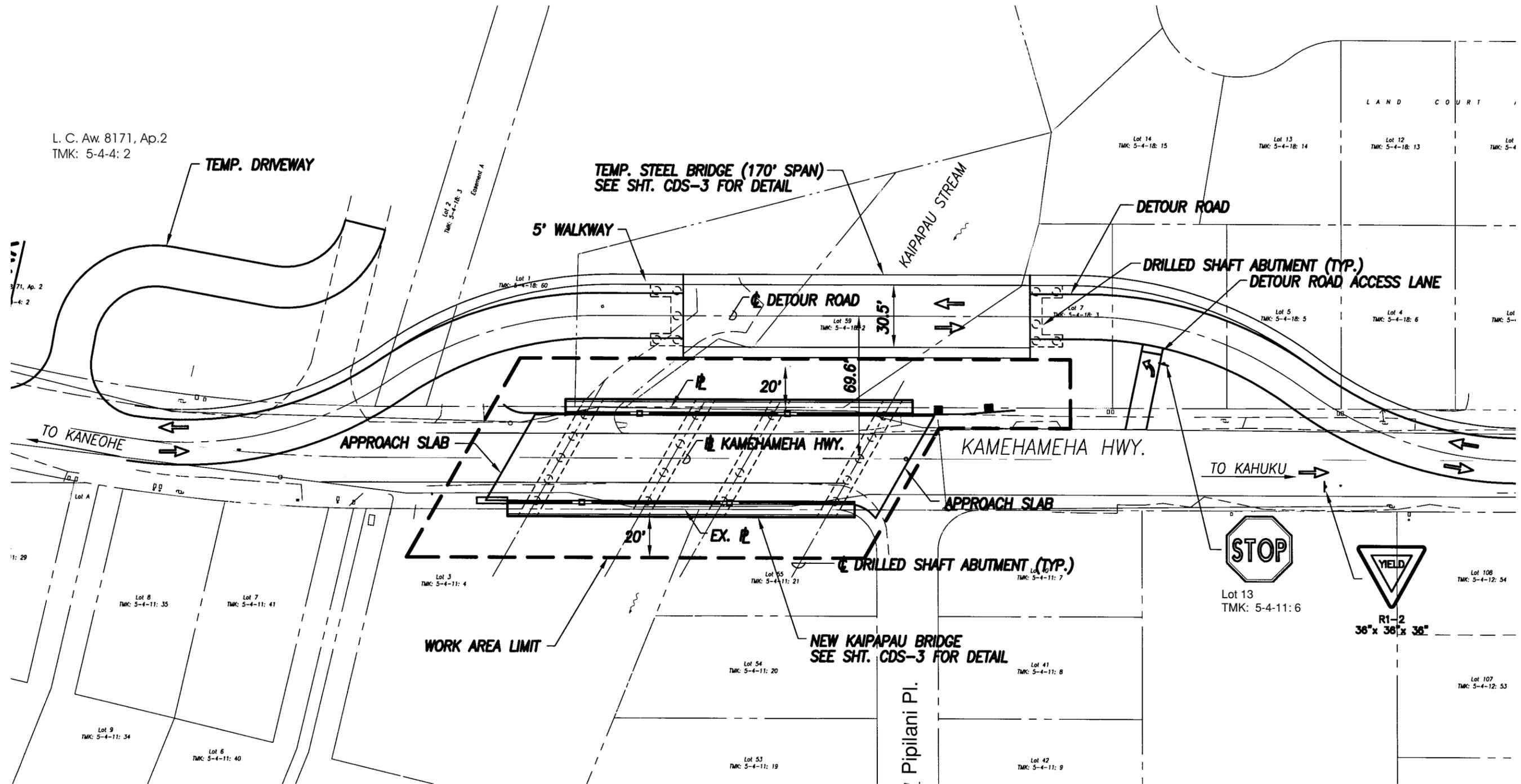
- *Prior to demolition of the existing bridge, construct a two-lane detour road on the mauka side of the existing bridge. Locate the detour road to provide a minimum of 20 feet of horizontal clearance between the detour road and the new bridge.*
- *Divert all through-traffic to the detour road to provide two traffic lanes available at all times. Provide an access lane to the detour road for traffic to and from Pipilani Lane. See Figure 6, Alternative 7, Site Plan.*

Alternative 8: Bridge Replacement - Two-Lane Detour Road (Makai)

Phase 1

This phase allows for the construction of the two-lane detour road. The two-lane detour road will permit construction to be done in a single phase. Work includes:

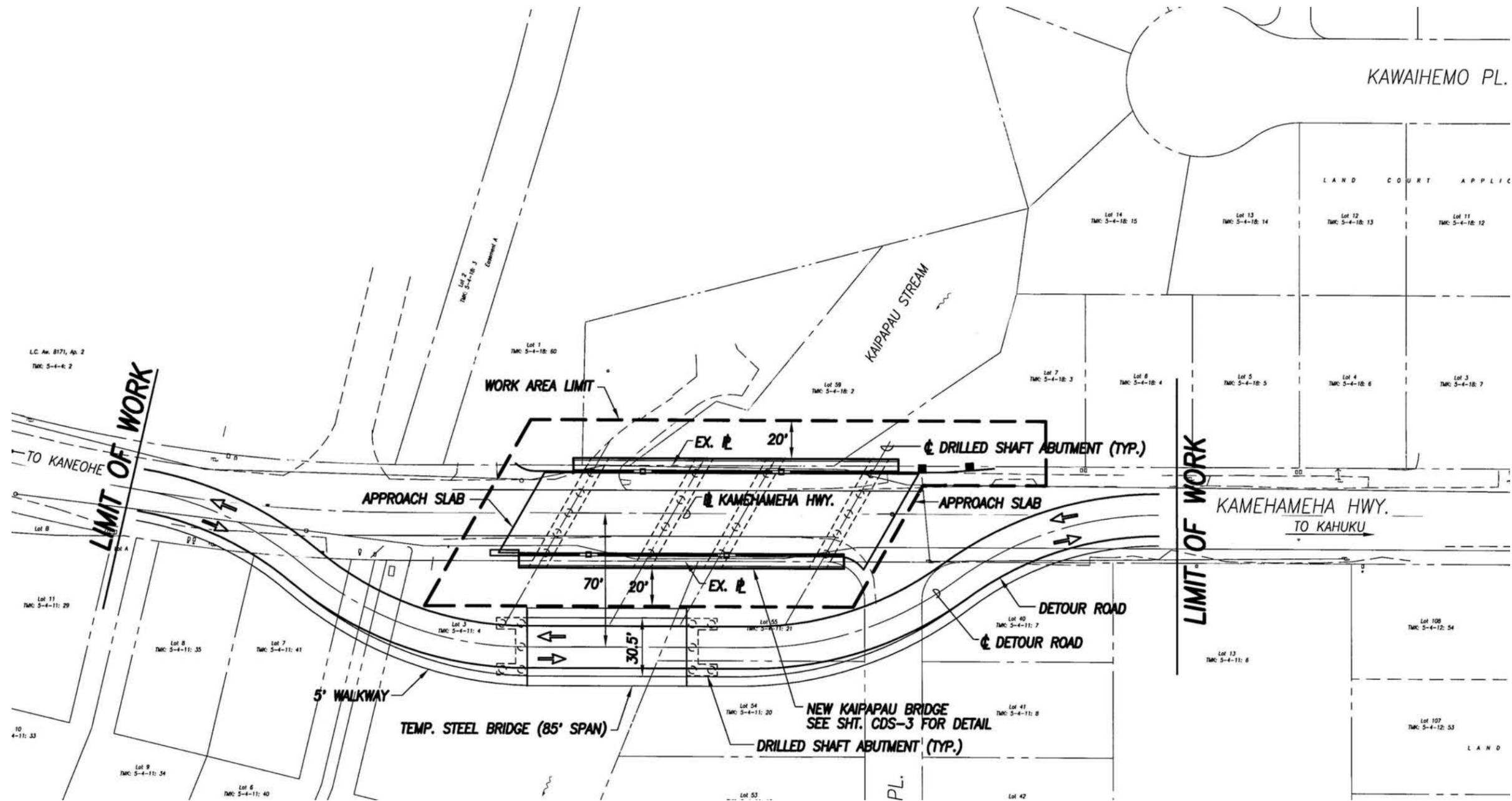
- *Prior to demolition of the existing bridge, construct a two-lane detour road on the makai side of the existing bridge. Locate the detour road to provide a minimum of 20 feet of horizontal clearance between the detour road and the new bridge.*
- *Divert all through-traffic to the detour road to provide two traffic lanes available at all times. Provide an access lane to the detour road for traffic to and from Pipilani Lane. See Figure 7, Alternative 8, Site Plan.*



Note:
See Table 3 for Sight Distance Concerns

FIGURE 6
ALTERNATIVE 7 SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i





Note:
See Table 3 for Sight Distance Concerns

FIGURE 7
ALTERNATIVE 8 SITE PLAN
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



2.7 UTILITY RELOCATION REQUIREMENTS

Each alternative considered the existing overhead electrical utility lines and poles as well as relocation of existing 12-inch and 16-inch water lines. See **Table 2, Relocation of Utilities**, for a summary of utility requirements for each alternative.

Table 2
Relocation of Utilities

Alternative		Phase 1 Utility Relocation Requirements	Phase 2 Utility Relocation Requirements
4	Bridge Replacement and Widening - No Detour Road	<p>Temporarily relocate existing 16" diameter water line (in the streambed, makai of the existing bridge) to the mauka underside of existing bridge. (Phase 1)</p> <p>Temporarily relocate existing 12" diameter waterline (currently in the streambed, mauka of the existing bridge) to the mauka underside of existing bridge. (Phase 2)</p> <p>Temporarily relocate the existing overhead electrical utilities on both mauka and makai sides of the work area.</p>	<p>Relocate 16" diameter waterline from mauka underside of existing bridge to the makai underside of the Phase 1 portion of the bridge. (Phase 2)</p> <p>Relocate existing 12" diameter waterline from the mauka underside of the existing bridge to the mauka side of the Phase 2 portion of the bridge. (Phase 3)</p>
5	Bridge Rehabilitation and Widening - No Detour Road	<p>Relocate existing 16" diameter water line (currently in the streambed, makai of the existing bridge) to the mauka underside of existing bridge.</p> <p>Temporarily relocate the existing overhead electrical utilities on both mauka and makai sides of the work area.</p>	<p>Relocate existing 12" diameter waterline (in the streambed, mauka of the existing bridge) to the makai underside of existing bridge.</p> <p>Relocate 16" diameter waterline from mauka underside of existing bridge to the makai underside of the Phase 1 portion of the bridge widening adjacent to the relocated 12" diameter waterline.</p>

6	Bridge Replacement - One-Lane Detour Road (Mauka)	Temporarily relocate existing 12-inch water line adjacent to the detour road and attach to the detour bridge on the makai side of existing bridge. Temporarily relocate existing overhead electrical utilities to the mauka side away from new construction.	Permanently realign the 12-inch water line on the makai underside of existing bridge. Relocate existing 16" diameter water line (currently in the streambed, makai of the existing bridge) to the makai underside of the Phase 1 portion of the bridge widening adjacent to the relocated 12" diameter waterline.
7	Bridge Replacement - Two-Lane Detour Road (Mauka)	Same as Alternative 6	Same as Alternative 6
8	Bridge Replacement - Two-Lane Detour Road (Makai)	Temporarily relocate existing 16-inch water line adjacent to the detour road and attach to the detour bridge on the mauka side.	Permanently realign the 16-inch water line (in the streambed, makai of the existing bridge) to the makai underside of the Phase 1 portion of the bridge widening adjacent to the relocated 12" diameter waterline.

2.8 SITE DISTANCE DURING CONSTRUCTION

The alternatives which feature either no detour road or one detour road also carry site distance concerns. The alternatives proposing a two-lane detour road will not impact site distance for vehicle travel. See Table 3, Site Distance During Construction.

Table 3
Site Distance During Construction

#	Alternative	Sight Distance Issues, If Any
4	Bridge Replacement and Widening - No Detour Road	During construction, there are potential sight distance conflicts through the work area for cars entering the highway from driveways and side streets.
5	Bridge Rehabilitation and Widening - No Detour Road	During construction, there are potential sight distance conflicts through the work area for cars entering the highway from driveways and side streets.
6	Bridge Replacement - One-Lane Detour Road (Mauka)	During construction, there are potential sight distance conflicts through the work area for cars entering the highway from driveways and side streets.

7	Bridge Replacement - Two-Lane Detour Road (Mauka)	During construction, there are no potential sight distance conflicts for cars entering the highway from driveways and side streets. After construction, there is potential sight distance conflict with the new bridge railing from the driveway for the property at TMK: 5-4-18:60, as shown on Figure 5. The design of the new bridge railing will accommodate the line of sight from this existing driveway.
8	Bridge Replacement - Two-Lane Detour Road (Makai)	During construction, there are no potential sight distance conflicts for cars entering the highway from driveways and side streets. After construction, there is potential sight distance conflict with the new bridge railing from the driveway for the property at TMK: 5-4-18:60, as shown on Figure 6. The design of the new bridge railing will accommodate the line of sight from this existing driveway.

2.9 CONSTRUCTION DURATION

Construction will be the longest for Alternative 6, one-lane detour road on the mauka side and shortest for Alternative 4, no detour road.

Table 4
Construction Duration

Alternative		Duration (Estimate)
4	Bridge Replacement and Widening - No Detour Road	16 months
5	Bridge Rehabilitation and Widening - No Detour Road	18 months
6	Bridge Replacement - One-Lane Detour Road (Mauka)	22 months
7	Bridge Replacement - Two-Lane Detour Road (Mauka)	17 months
8	Bridge Replacement - Two-Lane Detour Road (Makai)	17 months

2.10 PEDESTRIAN ACCESS DURING CONSTRUCTION

During Phase 1 of Alternative 4, pedestrians will continue to use the existing wooden bridge. During Phase 2, a 5-foot temporary pedestrian walkway will be provided on the existing bridge. A temporary pedestrian walkway will be built on the mauka side of the bridge during phase 3. The temporary pedestrian walkway will be removed in Phase 4.

During Phase 1 of Alternative 5, pedestrians will continue to use the existing wooden walkway. During Phase 2, a 5-foot temporary pedestrian bridge will be built mauka of the work area. This pedestrian access will be maintained during phase 3 and then shifted to the makai side of the bridge during Phase 4. In Phases 5 & 6, pedestrian access will be shifted temporarily to the mauka side of the bridge. The temporary pedestrian walkway will be removed in Phase 7.

Pedestrian access during construction is the same for Alternatives 6, 7 and 8: a 4-foot wide sidewalk will be provided on the mauka side of the detour road.

2.11 ALTERNATIVE COMPARISON

A summary comparison of the advantages and disadvantages between the alternatives are presented in Table 5. Costs associated with each alternative are also presented.

Table 5
Alternative Comparison

Alt	Advantages	Disadvantages	Est. Cost	ROW Cost	Vehicular User Cost*
4	<ul style="list-style-type: none"> - Requires the least ROW acquisition - Second lowest construction cost - Shortest construction time - Lowest vehicular user cost 		\$11.55 mil.	\$0.33 mil	\$0.59

5	- Less ROW acquisition than Alts. 6, 7 & 8 - Lowest construction cost - Second lowest vehicular user cost	- Longer construction time	\$10.9 mil.	\$0.73 mil.	\$0.66 mil.
6	- Less ROW acquisition than Alt. 8	- Highest Vehicle User Cost - Highest construction cost - Longest construction time	\$13.0 mil.	\$1.7 mil.	\$1.0 mil.
7	- Lower vehicular user cost than for Alt. 6 - Second shortest construction time - Bridge construction less difficult and challenging than Alts. 4, 5 & 6	- Requires the most ROW acquisition - Longer construction time	\$12.9 mil.	\$2.3 mil.	\$0.74 mil.
8	- Third lowest construction cost - Second shortest construction time - Less ROW acquisition required than Alt. 7	- Second highest ROW cost	\$12.1 mil.	\$1.9 mil.	\$0.67 mil.

* Vehicular User Cost was determined by using FHWA's Real Cost Program - a measure of cost to vehicular users based on number of vehicles, speed, average traffic, length of detour and duration.

2.12 PREFERRED ALTERNATIVE

Based on the comparison presented in Table 5 and evaluation of the information presented in Sections 2.7 through 2.11, Alternative 4 is the preferred alternative for the following reasons:

- Lowest vehicle user cost of all the alternatives
- Least ROW acquisition required of all the alternatives
- Least land disturbance

CHAPTER 3

PROJECT DESCRIPTION

3.1 EXISTING CONDITIONS

The Kaipapa‘u Stream Bridge carries inbound and outbound traffic on Kamehameha Highway near milepost 20.99. At the existing bridge, Kamehameha Highway has 12-foot approach lanes with paved shoulders in both directions and a current speed limit of 35 miles per hour.

The existing bridge was constructed in 1932 and is 82 feet long by 28.4 feet wide. The bridge is a historical structure, although it is not listed on the State Draft Historic Bridge Inventory and Evaluation, dated May 1996. The bridge serves northbound traffic (toward Kahuku) and southbound traffic (toward Kāne‘ohe) on Kamehameha Highway. The bridge structure has two 40-foot spans and is constructed from reinforced concrete with a wooden pedestrian walkway attached to the mauka (west) side of the bridge.

Lands surrounding the bridge are single family residential and commercial in character and are privately owned. Several blocks to the north of the site is the Hau‘ula Shopping Center, a strip mall with retail space and a parking lot. Parcels immediately surrounding Kaipapa‘u Stream Bridge are single family residential.

3.2 TECHNICAL CHARACTERISTICS

The proposed replacement and widened bridge will measure approximately 110 feet long by 57 feet wide that will meet and State and Federal roadway, bridge and seismic standards. The structure will utilize prestressed concrete planks with cast-in-place deck topping with separated bikeway / pedestrian walkways on both sides.

The proposed design includes two 12-foot travel lanes plus two 8.5-foot shoulders, two 5-foot pedestrian walkways / bicycle lanes, reinforced guardrails, and drainage features. The approach and trailing guardrails will comply with the current standards of the State Department of

Transportation, Highways Division, Design Branch. Rip-rap or CRM will be installed on the banks of the stream beneath the bridge abutments to stabilize the embankment. The bridge and approach roads shall conform to AASHTO and SDOT-H design criteria for roadway widths and safety features.

The new ROW will be 63 feet, 4 inches wide. Acquisition of additional property is required to allow for waterlines to be supported on the outside edges of the new bridge. In all, four new drilled shafts will be constructed in the stream channel for the replacement bridge foundation. The existing concrete center wall pier will be removed.

3.3 CONSTRUCTION SEQUENCE

The proposed project will involve the following actions.

- 3.3.1 Mobilization
- 3.3.2 Installation of Discharge Pollution Prevention Measures
- 3.3.3 Temporary Realignment of Approach Roads During Construction
- 3.3.4 Bridge Replacement and Widening (including, construction of makai new bridge section, construction of mauka new bridge section and dismantling and reconstruction of new bridge)
- 3.3.5 Demobilization and Restoration

3.3.1 Mobilization

Mobilization of equipment, materials, and workforce shall occur on an as needed basis, in schedule with the phases of construction. Construction activities will also be conducted from the deck of the existing Kaipapa'u Stream Bridge and within the gulch at the foot of the bridge pilings.

As this project will require the acquisition and demolition of a property adjacent to the project site, the subject property may also serve as staging and stockpiling areas for construction equipment and material.

Staging and stockpile areas shall be prepared as necessary with appropriate discharge pollution prevention features, refuse containment, parking areas for workers, and clearly marked transit paths for heavy equipment. During mobilization, ground disturbance shall be held to the minimum area necessary to accommodate the heavy equipment and materials required for construction activities.

3.3.2 Installation of Discharge Pollution Prevention Measures

Discharge pollution prevention measures will be installed for each project action as required by the construction activities and project scheduling. Measures to prevent runoff and the release of sediment into Kaipapa‘u Stream during construction will be in place and functional before project activities begin and will be maintained throughout the construction period. Runoff and discharge pollution prevention measures will be incorporated into a site-specific Best Management Practices (BMPs) plan by the project contractor. The contractor shall include, the following control measures in the BMPs:

- A silt screen shall be installed across the stream channel approximately ten feet downstream of the project site. The silt screen shall consist of a filter fabric combined with a layer of polyester netting for support. The screen shall remain in place for the duration of project activities.
- Sediment retention berms lined with silt screen shall be placed along the down-slope edge of active construction areas, and staging and stockpile areas. In particular, sediment retention berms shall be in place during installation of the pier footings and rip-rap or CRM bank stabilization features. These berms shall function to prevent sediment captured in storm runoff from entering Kaipapa‘u Stream. They shall be shaped to retain runoff and trap sediment before it leaves the construction site, and shall be sized to accommodate the volume of runoff generated by a one-inch storm. When construction is complete, the berms and all of their components shall be removed.

All discharge pollution controls shall be regularly monitored and maintained by the project contractor. In the event of rainfall of 1 inch or greater within a 24 hour period, discharge pollution control measures should be checked within 24 hours of the event. During prolonged rainfall, control measures should be checked daily. If a severe storm event such as a 100-year storm occurs, then construction activities shall stop, equipment and materials will be stored, relocated, or otherwise secured against storm impacts, and any discharge control features installed within the stream channel removed. The contractor shall be responsible for recovering any materials or equipment washed away by stream flow.

3.3.3 Temporary Realignment of Approach Roads During Construction

During replacement of the existing bridge, temporary roadway alignments will be constructed within shoulders of the ROW in both directions of approach to the bridge to accommodate temporary traffic lanes located on the new widened portions of the bridge. The temporary traffic lanes will be designed to have a posted speed limit of 25 miles per hour.

Upon completion of the bridge replacement and widening, approach roads will revert to an alignment similar to existing conditions. The improved shoulders will be maintained to service bicycle and pedestrian traffic on both sides of the bridge. **See Figure 2, Alternative 4, Site Plan.**

3.3.4 Bridge Replacement and Widening

Detailed information of activities during the bridge replacement and widening is specified in Section 2.6.1 **Construction Sequence and Traffic Control Requirements** for *Alternative 4, Bridge Replacement and Widening - No Detour Road*.

3.3.5 Demobilization and Restoration

Upon completion of the proposed improvements, the contractor shall restore the project site as much as possible to pre-project conditions. The following shall be undertaken:

- All construction-related material, including excavated material, fill material, and refuse shall be removed from the project site and disposed of properly by the contractor.
- All construction equipment shall be removed from the project site promptly after construction is complete.
- Any modifications to existing utilities, such as power lines or water sources, shall be repaired to their pre-existing condition.
- Roadways providing access to the site shall be cleared of construction debris and any damage from construction traffic will be repaired. Gates and/or fencing removed to provide access to the site shall be replaced and/or repaired. If necessary, the service road extension shall be realigned around the pier footings.
- All areas damaged by construction staging shall be restored. Impacted pasturage, lawns, driveways or vegetated areas shall be replanted and restored. Exposed ground areas shall be seeded or hydro-mulched as appropriate.

3.4 PUBLIC PARTICIPATION

The SDOT consulted with neighborhood groups, organizations and individuals prior to finalizing plans (see **Chapter 9**). Additionally, SDOT shall make available, during all phases of construction, a public outreach person to provide the general public with information about the project activities and to answer and/or resolve concerns regarding the project construction from the general public. The SDOT shall publicize and maintain a telephone “hotline” to facilitate this process.

3.5 PROJECT SCHEDULE AND COST

The entire project will take approximately seven years, as follows:

Design Phase	2003 - 2007
Advertisement, Bid Opening and Contract Award Phase:	2007
Construction Phase:	2008 - 2009

The preliminary construction cost estimate for this project is \$11.55 million. Funding for this project will be provided by the Department of Transportation, State of Hawai'i, and the Federal Highway Administration. The federal government will contribute approximately 80 percent of the construction cost toward completion of the project. The State of Hawai'i will provide the remaining 20 percent of funding. ROW acquisition cost is estimated at \$330,000.

An alternative design for the proposed stream wall (see **Figure 2, Alternative 4, Site Plan**) is being considered in order to: 1) widen the north opening to the bridge making it less prone to capturing debris; and 2) lessen the skew angle of the wall within the stream to address concerns of residents on the south side of the stream. This stream wall alignment alternative will involve construction of a longer wall structure, removal of the existing north abutment and strengthening of a new north abutment.

This alternative will require acquiring approximately 675 square feet of additional land from Lot 54 (TMK: 1-5-4-011:020). The overall phasing of construction would not change with this revised stream wall location. The hydraulics with the new bridge and the revised stream wall location will not change significantly. Overall, if chosen, this alternative will increase the project cost by approximately \$ 1 million (order of magnitude).

CHAPTER 4

ENVIRONMENTAL SETTING, POTENTIAL IMPACTS AND MITIGATION

This chapter assesses the environmental consequences of the proposed action described in Chapter 3. The information serves as a baseline for identifying environmental changes resulting from the project. Potential impacts are described and evaluated, and mitigation measures that would minimize and/or reduce potential adverse impacts are identified.

4.1 TOPOGRAPHY

The topography in the vicinity of the existing bridge is relatively flat. Ground elevations along the deck and rails of the existing bridge and roadway range from approximately 10 to 14 feet mean sea level (msl). The stream bed beneath the bridge ranges in elevation from approximately 0.4 to 4 feet msl. Kaipapa'u Stream flows perennially into the Pacific Ocean immediately to the east of the project site. The shoreline topography is relatively flat. The most significant topographical feature in the vicinity of the project site is Kaipapa'u Point, which rises toward the ocean to the northeast of the bridge.

Potential Impacts and Mitigation

The elevation of the top of bridge deck upon completion of the project will be approximately the same as before construction. Erosion effects of storm water will require adherence to BMPs proposed for this project.

4.2 CLIMATE

Hau'ula is located on the windward coast on the northeastern portion of O'ahu (**Figure 1, Project Location and Vicinity Map**). The climate of the Hau'ula area is comfortably uniform. The area is characterized by abundant sunshine, persistent northeast tradewinds, relatively constant temperatures, moderate humidity, and the infrequency of severe storms. Average wind velocity in the area varies from 10 to 15 mph. Monthly temperatures in the project area are within the range

of 76 degrees Fahrenheit mean temperature in August and 70 degrees Fahrenheit mean temperature in December. Temperatures of 80 degrees and higher are not uncommon throughout the year.

Average annual rainfall recorded at Hau'ula was 59.2 inches (4.9 inches/month) for the period from 1968 to 1991. The dryer months of June through September average 3-4 inches per month. The wetter months of October through April average 5-6.5 inches per month (World Climate, 2003).

Potential Impacts and Mitigation

The proposed project is not expected to have a significant impact on climatic conditions therefore no mitigative measures are proposed. Potential impacts to air quality are discussed in **Section 4.3** below.

4.3 AIR QUALITY

Presently, air quality in the vicinity of the project is good. The primary sources of air pollution are from auto emissions and agricultural activities. Agricultural sources of air pollution include burning of vegetation, spraying of insecticides and herbicides, and equipment emissions. To a lesser and occasional extent, air quality is impacted by natural pollution sources. Natural sources of air pollution that may affect the air quality of the site include the ocean, plants, wind-blown dust and distant volcanoes.

Potential Impacts and Mitigation

Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, and from workers' vehicles may also affect air quality during the period of construction.

Long-term air quality impacts will result from the continued use of the bridge by automobile traffic on the Kamehameha Highway. Air quality impacts from automobiles

traversing the proposed improved bridge will not be measurably lesser or greater than those incurred from the continued use of the existing bridge. The new Kaipapa‘u Stream Bridge will not, in and of itself, result in increased long-term air quality impacts.

The present ambient air quality in the project area is considered good due to the prevailing northeasterly tradewinds and the absence of “heavy” industries. The air quality is mostly affected by air pollutants from natural and / or vehicular sources. Natural sources include ocean spray, wind-blown dust, possible distant volcanic emissions from the Island of Hawai‘i, and vehicular emissions from motorists traveling on Kamehameha Highway and local roads.

The proposed project is not expected to have a significant impact on air quality. Construction activities may result in short-term air quality impacts from fugitive dust and equipment emissions. However, construction related impacts to air quality will be temporary and will cease when construction is completed.

Both federal and state standards have been established to maintain ambient air quality at healthy levels. At present, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone, and lead. In most cases, the State of Hawai‘i’s air quality standards are more stringent than the comparable federal limits.

State air pollution control regulations require that there be no visible fugitive dust emissions at the project boundary. Therefore, an effective dust control plan will be implemented by the project contractor to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using dust screens, keeping adjacent paved roads clean, and by covering open-bodied trucks. Exhaust emissions will be mitigated by ensuring that project contractors properly maintain their internal combustion engines and comply with DOH Rules Title 11, Chapter 59 and 60, regarding Air Pollution Control.

Due to the predicted minimal impact of the project, it appears that mitigation of any long-term impacts is unwarranted.

4.4 SOILS

The area surrounding Kaipapa'u Stream as it empties into the Pacific Ocean belongs to four soil series: Jaucas, Kawaihapai, Lolekaa, and Waikane. See **Figure 8, Soils Map**.

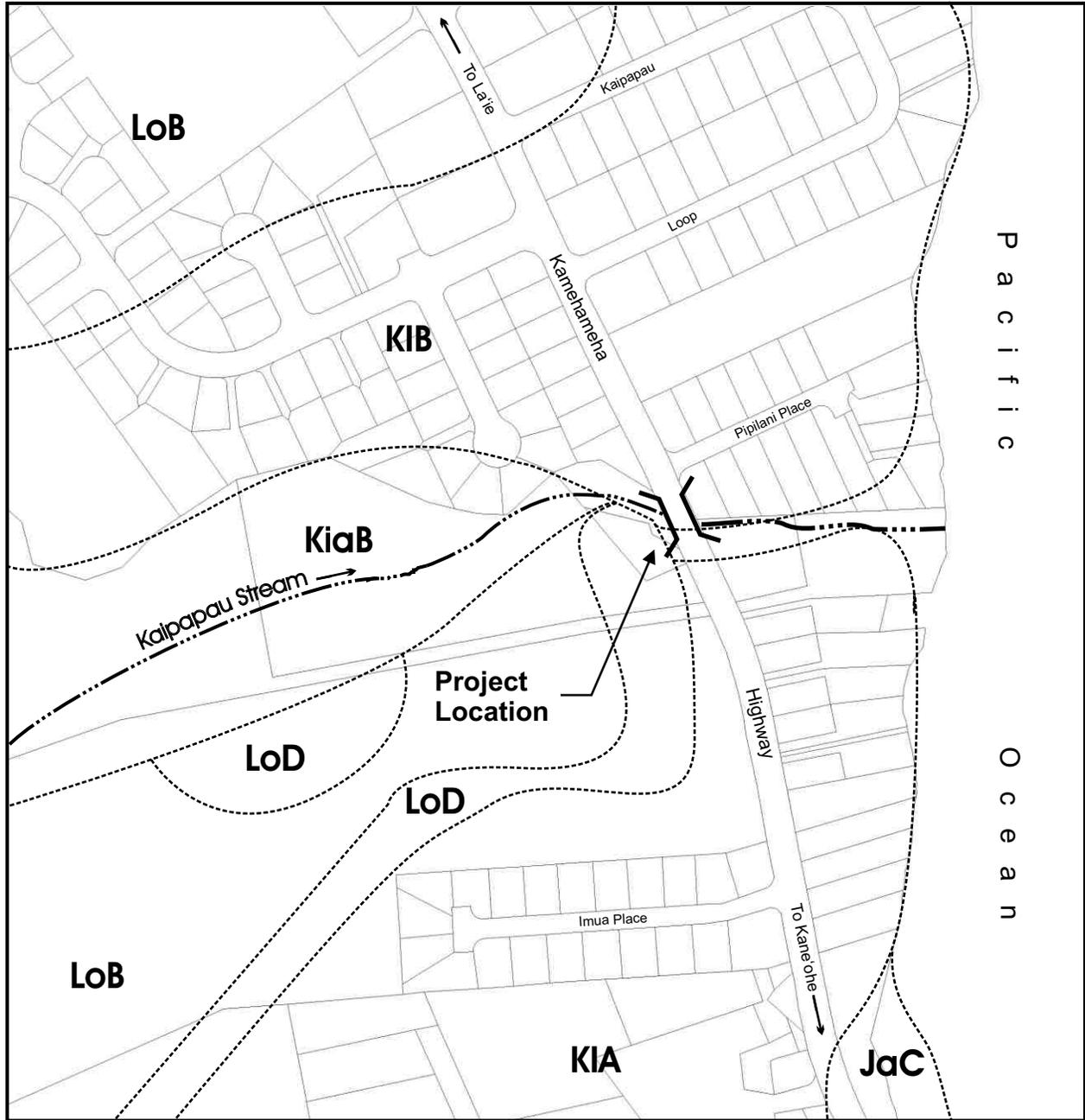
The Jaucas series consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. The area immediately south of Kaipapa'u Stream Bridge is Jaucas Sand.

JaC Jaucas Sand, 0 to 15 percent slopes - Jaucas sand consists of excessively drained, calcareous soils. In most places the slope does not exceed 7%. Permeability is rapid. Runoff is slow to very slow. The hazard of water erosion is slight, however wind erosion is a severe hazard where vegetation has been removed. Jaucas sand deposits are associated with traditional Hawaiian burial practices and are commonly found to contain archaeological deposits.

The Kawaihapai series consists of well-drained soils in drainageways and on alluvial fans on the coastal plains of O'ahu. These soils formed the alluvium derived from basic igneous rock in humid uplands.

KIA Kawaihapai clay loam, 0 to 2 percent slopes - Kawaihapai soils consist of well-drained soils in drainageways and on alluvial fans on the coastal plains. Permeability in this soil type is moderate, runoff is slow, and the erosion hazard is no more than slight.

KiaB Kawaihapai stony clay loam, 0 to 2 percent slopes - runoff is slow and erosion hazard is slight. This soil type is prevalent on the banks of the Kaipapa'u Stream.



LEGEND

- JaC** – Jaucas Sand, 0-15% slopes.
- KIA** – Kawaihapai clay loam, 0-2% slopes.
- KiaB** – Kawaihapai stony clay loam.
- KIB** – Kawaihapai clay loam, 2-6% slopes.
- LoB** – Lolekaa silty clay, 3-8% slopes.
- LoD** – Lolekaa silty clay, 15-25% slopes.

FIGURE 8
SOILS MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olaupua District, O'ahu, Hawai'i



KIB Kawaihapai clay loam, 2 to 6 percent slopes - Kawaihapai soils consists of soils where runoff is slow and the erosion hazard is slight. This soil type is found to the north of the Kaipapa'u Bridge, between Kamehameha Highway and the Pacific Ocean.

The Lolekaa series consists of well-drained soils on fans and terraces on the windward side of the island of O'ahu. These soils developed in old, gravelly colluvium and alluvium.

LoB Lolekaa silty clay, 3 to 8 percent slopes - This soil is found in terraces and fans. Runoff is slow, and erosion hazard is slight.

LoD Lolekaa silty clay, 15 to 25 percent slopes - This soil is on side slopes of terraces and along drainageways. Runoff is medium, and the erosion hazard is moderate. This soil type is found in one area along the shoulder of Kaipapa'u Stream.

The Waikane series consists of well-drained soils on the island of O'ahu. These soils developed in alluvium and colluvium derived from igneous rock.

WpB Waikane silty clay, 3 to 8 percent slopes - Runoff is slow and erosion hazard is slight.

WpC Waikane silty clay, 8 to 15 percent slopes - On this soil, runoff is slow to medium and the erosion hazard is slight to moderate.

Potential Impacts and Mitigation

No significant impacts to soils are anticipated as a result from this project.

Soil erosion will be minimized through the installation of erosion and sediment control measures in compliance with HAR, Chapter 11-55 and construction BMPs proposed for this project.

4.5 WATER QUALITY

The various gulches in the Hau'ula community collect runoff from urban, agricultural, and vacant natural areas. Runoff constituents are carried downhill, and are discharged into the ocean during peak precipitation periods, thereby periodically degrading ocean water quality. Runoff constituents include silt, organic material, debris, trash, terrigenous bacteria, and dissolved runoff constituents. Potential impacts to surface water, groundwater, and wetlands are discussed below. Overall mitigation measures to address potential impacts to water quality is discussed in **Section 4.5.4**.

4.5.1 Surface Water

Kaipapa'u Stream is assigned the code number 3-1-10 in the Hawai'i Stream Assessment. It is generally described as a perennial stream. At the project site, Kaipapa'u Stream is characterized as perennial. The amount of water flow depends on seasonal rainfall conditions.

Coastal marine waters, located approximately 300 feet downstream of the project site, are designated as "Class A" by the DOH-Clean Water Branch. Waters designated as "Class A" are to be protected for recreational uses, aesthetic enjoyment, and protection and propagation of marine life.

Potential Impacts

Because the proposed project involves construction activities within the stream channel and extensive work in proximity to the stream, the potential for negative effects to the stream and near-shore environments does exist. Negative effects include pollution discharge into the stream which empties into the ocean nearby. In-stream activity includes installation of temporary sediment retention features, drilled shafts for bridge pilings and staging and maneuvering of heavy equipment. Potential for pollutant discharge into surface waters of Kaipapa'u Stream during construction would primarily result from release of silt and suspended sediments during excavation and grading activities or during extreme storm conditions.

Dewatering activities are anticipated during the installation of the drilled shafts within the stream channel. If the dewatering effluent were discharged into Kaipapa'u Stream, it will pose a potential source of sediment pollution if not filtered first. Additionally, debris dropped during demolition of the existing bridge is a potential source of discharge pollution. Materials to be placed temporarily in State waters include silt fencing with reinforcement netting, water monitoring devices, and heavy equipment used during bridge dismantlement.

4.5.2 Groundwater

The Hau'ula plain is underlain by two aquifers: a shallow "caprock" aquifer and a deeper basalt aquifer. The caprock aquifer is composed of coral, sand, silt, lithified dunes, and clay. Sedimentary materials such as clay strata and limestone within the caprock interferes with the movement of groundwater. Groundwater within the cap rock moves toward the ocean, however, local variations may affect the flow direction. This underlying groundwater is not considered a drinking water source.

The deeper basalt aquifer underlies the cap rock aquifer and extends thousands of feet into the subsurface. The basalt aquifer consists of thin bedded lava flows of very high permeability. The upper portion of the basalt aquifer is comprised of weathered volcanics that normally have a lower permeability than the underlying unweathered basalt. The basalt aquifer, like the cap rock aquifer is also recharged predominantly by rainfall, primarily from the mountains mauka of Hau'ula.

Potential Impacts

The project is not expected to have significant impacts to the underlying groundwater. The project will involve installation of drilled shafts with depths between 30 and 50 feet. However, once construction of the shafts is complete, no further construction involving deep excavations are required.

4.5.3 Wetlands

There are no wetlands in the immediate vicinity of the project area. The closest wetland designated by the U.S. fish and Wildlife Service is approximately 0.25 miles mauka of the project site.

Potential Impacts

The project is not expected to have any significant impacts to wetlands in the area, therefore no mitigation is proposed.

4.5.4 Mitigation Measures

No adverse impacts to water quality are anticipated from construction activities associated with this project. Through the following proposed measures and practices, anticipated impacts should be adequately addressed.

Runoff from construction areas will be regulated under NPDES permit conditions. BMPs will be employed to prevent soil loss and sediment discharges from work sites. Project activities and operation of the system following project completion will comply with DOH regulations as set forth in Hawai'i Administrative Rules, Title 11 Chapter 54 - Water Quality Standards, and Chapter 55 - Water Pollution Controls.

Due to the high groundwater level and the close proximity to the ocean and residential dwellings, detailed dewatering and shoring design recommendations will be provided by geotechnical consultants and integrated into the construction plans.

Pursuant to Section 14-12.22 Revised Ordinances of Honolulu 1990, as amended, and Section 401 of the Clean Water Act of 1977, SDOT-H will obtain Water Quality Certification from DOH in conjunction with the Department of the Army Nationwide Permit. During all phases of the project, the stream will be monitored for water quality as outlined in a DOH-approved Water Quality Monitoring Plan.

Discharge pollution prevention measures will be employed in all phases of the project. Control measures will be in place and functional before construction activities begin, and will be

maintained throughout the construction period. A site-specific plan to prevent runoff and discharge of other pollutants into State waters, including removal procedures for the construction site BMPs, will be prepared by the project contractor as part of the project construction plan. The construction plan will be submitted to the Director of the DOH-Clean Water Branch for review.

A site-specific BMPs plan will be prepared by the project contractor as part of the project construction plan. The BMPs will include guidelines and mitigation measures to prevent runoff, discharge pollution, and other detrimental impacts related to construction activities. BMPs will be designed and implemented for normal stream flow conditions at the project site and will include contingency plans to respond to heavy rainfall conditions.

Regional and special conditions outlined by the Army Corps of Engineers (ACOE) and DOH per requirements of Section 404 and 401 permits will also be addressed in the site-specific BMPs.

Mitigation measures, in addition to the discharge pollution controls described above, shall include, but not be limited to the following:

- Clearing and excavation shall be held to a minimum necessary to meet project design and construction plan requirements.
- Construction shall be phased to minimize the exposure time of cleared or excavated areas. Existing ground cover shall not be destroyed, removed or disturbed more than 20 calendar days prior to the start of construction.
- Stabilization shall be accomplished by temporarily or permanently protecting the disturbed surface from rainfall impacts and runoff.
- Storm water flowing toward active project areas shall be diverted as much as practicable using the appropriate controls, including berms and silt fences, as determined by the contractor according to site conditions.
- Areas that remain unfinished for more than 30 calendar days shall be hydro-mulched or seeded to provide temporary soil stabilization.

- The project contractor will select locations for stockpiling construction material. Stockpile sites will be identified in the site-specific BMPs and construction plans. A sediment retention berm or silt fence will be installed around the down-slope side of stockpile sites to retain sediment discharge during heavy rainfall.
- No fuel will be stored on the project site. Fueling of construction equipment will only be performed off-site or within an area designated by the contractor. Any site designated for refueling shall be located away from the stream, enclosed by a containment berm and constructed to contain spills and seepage and prevent storm water runoff from carrying pollutants into state coastal waters.
- Dewatering effluent water will be filtered before being discharged into Kaipapa‘u Stream. The filtration system will consist of an enclosed box containing at least two filter screens comprised of a geotextile filter fabric that allows water to flow through while capturing soil particles. The project contractor will monitor the filtration system for clogging or failure and immediately repair or replace any damaged or ineffective components.
- In the event of a severe storm event that may result in flooding of the work site within the stream bed, all construction equipment and materials, including discharge pollution prevention and dewatering measures, will be removed from the project site to a secure staging area above the potential flood level.
- During demolition of the old bridge, care will be taken to prevent bridge debris from falling into Kaipapa‘u Stream. Measures may include safety nets and screens installed under areas of active demolition to capture falling materials.

The contractor, based on professional experience and expertise, may modify the proposed BMP mitigation measures as necessary to account for unanticipated or changed site conditions.

4.6 NATURAL HAZARDS

4.6.1 Earthquakes

The Uniform Building Code (UBC) provides minimum design criteria to address potential for damage due to seismic disturbances. Range of seismic risk varies from Zone 0, indicating no damage, to Zone 4, indicating major damage. The island of O’ahu is in Seismic Zone 2, as established by the UBC, indicating a moderate risk of damage from earthquake.

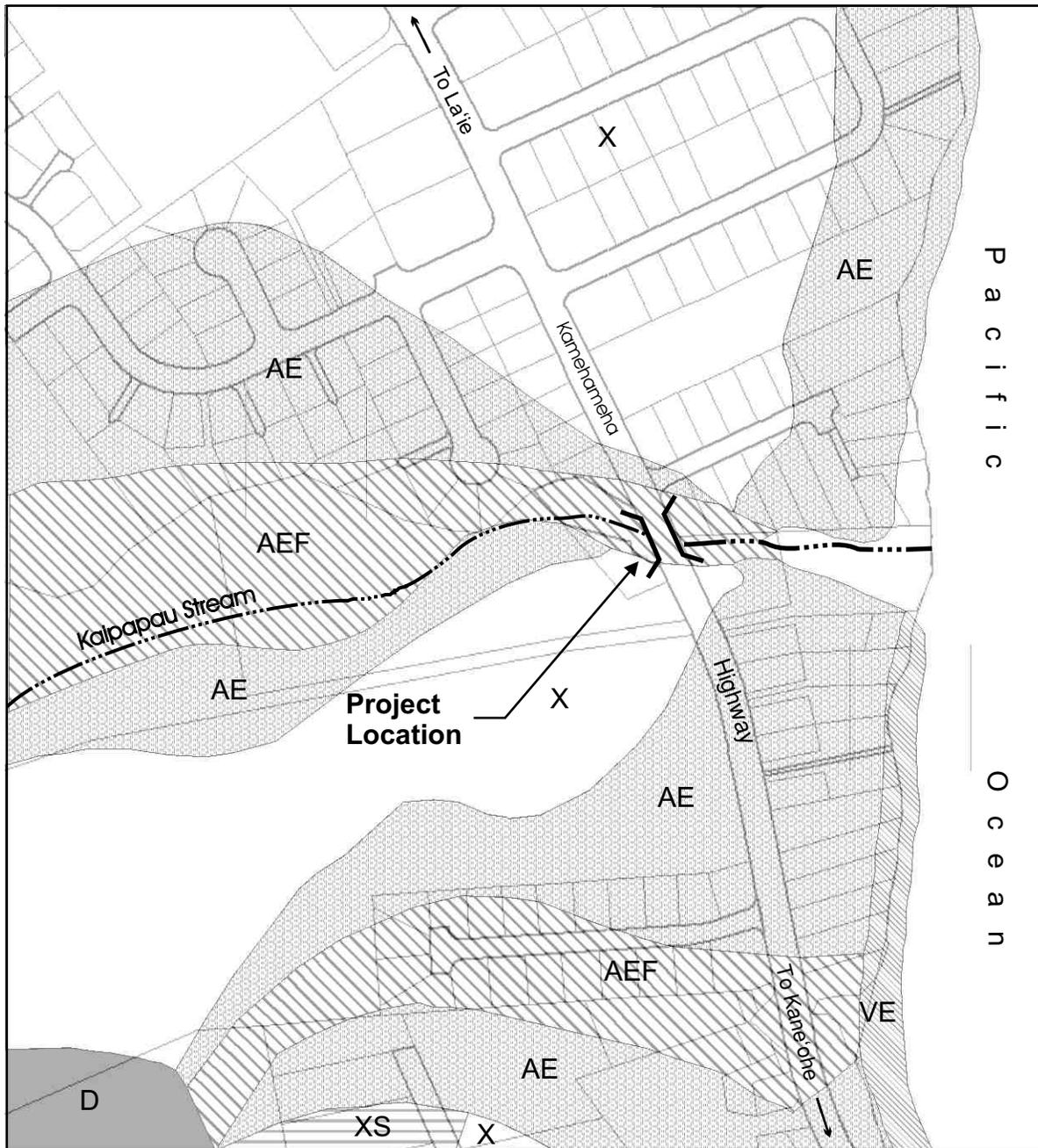
Potential Impacts and Mitigation

A seismic event could affect bridge integrity. SDOT-H will ensure that bridge design is compliant with current seismic parameters for bridge design. All structures proposed for this project will be built, at a minimum, according to standards for UBC Seismic Zone 2.

4.6.2 Flood Zones

The majority of the Kaipapa’u Stream Bridge area is subject to flooding. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) of November 20, 2000 identifies the Kaipapa’u Stream Bridge project site as lying within Zone AE – areas within the 100-year flood inundation zone in which base flood elevations are between 10 and 14 feet. **See Figure 9, Flood Zone Map.**

The FEMA flood profile for the existing stream conditions show that during the 100-year storm, the existing bridge is overtopped by about 3 feet. A conceptual hydrology and hydraulics study was prepared for the proposed project. A comparison of the flow profiles for the existing and proposed condition shows that the water surface elevation over the proposed bridge is higher than the existing condition by 0.8 to 1.0 feet. The proposed bridge would increase the base flood elevation in the bridge area by no more than 1.0 feet. During a 100-year storm event, the flow profile for the proposed bridge shows that the stream would overtop the new bridge by between 2.3 to 3.2 feet.



LEGEND

- X Areas outside the 1% annual chance flood plain.
- XS Areas with 1% annual chance of flooding with average depths of less than 1 foot with drainage areas of less than 1 square mile.
- D Areas in which flood hazards are undetermined.
- VE 1% annual chance of flooding that also have storm wave hazards.
- AE Areas with 1% annual chance of flooding.
- AEF The watercourse or portion of the flood plain which must be reserved in order to carry or discharge the regulatory flood without cumulatively increasing the flood elevation of the flood plain more than a foot at any given point.

FIGURE 9
FLOOD ZONE MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i



Potential Impacts and Mitigation

Designing the proposed bridge to avoid overtopping would require raising of the bridge by more than 5 feet, which would be unacceptable as it would cut off access from adjacent properties and nearby roadways onto the Kamehameha Highway.

Potential impacts will be mitigated by the design of the new bridge that will withstand the effects of overtopping of the bridge from 100-year flooding events. The center pier and abutments will be designed to withstand the effects of scour. The design and construction of the replacement bridge shall comply with all applicable FEMA requirements, including filing of a Conditional Letter of Map Revision (CLOMR) if required.

4.6.3 Hurricanes

In Hawai'i, northeast trade winds predominate throughout most of the year and generally range in velocity between 10 and 20 mph. Trade winds of 40-60 mph periodically occur. Damaging winds, in addition to severe flooding events on Oahu are most commonly associated with passing tropical storms or hurricanes.

Potential Impacts and Mitigation

To mitigate for the potential effects of hurricanes, the replaced and widened bridge will be designed in accordance with the latest AASHTO Load and Resistance Factor Design (LRFD) specifications.

4.6.4 Tsunami

The project involves the replacement and widening of an existing bridge along Kamehameha Highway. Kamehameha Highway at the Kaipapa'u Stream Bridge is within the tsunami evacuation area based on information provided by the Civil Defense. The bridge is also within an area affected by coastal flooding.

Potential Impacts and Mitigation

To mitigate for the potential effects of tsunami and coastal flooding events, the improved bridge will be designed in accordance with the latest Federal and State bridge and roadway standards.

4.7 NOISE

Ambient noise levels in the area are currently dominated by traffic on the Kamehameha Highway, with an occasional overflight by aircraft. Additional noise sources result from the use of agricultural equipment in the area, including tractors, compressors, and hand-held gas-powered tools. A study to assess noise impacts was conducted by D.L. Adams and Associates. Their findings are summarized below and re-printed in the Appendix.

Potential Impacts and Mitigation

Construction of the proposed bridge will involve excavating, grading, concrete casting, the placement of pre-cast structural components, and paving. The various construction phases will likely generate noise which could impact nearby areas. The actual noise levels produced are dependent on the construction methods employed during each phase of the construction process. Earth moving equipment, such as diesel engine powered bulldozers, trucks, backhoes, front-end loaders, graders, etc., will probably be the noisiest equipment used during construction. However, as the noise will be temporary, no lasting impact from the proposed project is expected.

Long-term noise impacts from automobiles traversing the proposed replacement bridge will not be measurably lesser or greater than those generated from the continued use of the existing bridge. The replaced Kaipapa'u Stream Bridge will not, in and of itself, result in increased long-term noise impacts.

Ambient noise conditions in the proposed project area are generally low due to the rural location. The dominant noise is from vehicular traffic along Kamehameha Highway and

the local roadways, and from wind. Local residences are generally exposed to sound levels ranging from 70 dB to 60 dB or lower (Day-Night average sound levels). Other normal daytime sources of noise include lawn mowers, barking dogs, and power tools.

Short-term noise impacts are related primarily to construction activities. A majority of the noise will be generated during mobilization and operation of heavy construction equipment. Construction equipment noise is expected to be in the range of 55 and 90 dBA in close proximity to the site. To mitigate short-term construction related impacts, the contractor will ensure that project activities are in compliance with the provisions of HAR, Chapter 11-46, "Community Noise Control".

No long-term noise impacts are expected to result from the replacement and widening of the Kaipapa'u Stream Bridge . Use of the completed bridge will result in vehicular noise comparable to the traffic level at the present time, as the bridge will remain a two-lane facility.

In order to mitigate noise impacts, contractors will muffle all construction vehicles and machinery and maintain all noise attenuation equipment in good operating condition. Faulty equipment will be repaired or replaced. Additionally, construction activities and use of heavy equipment will be scheduled as much as possible during daylight hours to avoid disturbing area residents during the evening.

Residents of three (3) adjacent properties will be temporarily relocated due to noise impacts and safety concerns during construction. See **Section 5.2** for the specific properties. The residents will be allowed to move back into their houses after the construction is complete.

4.8 BIOLOGICAL RESOURCES

4.8.1 Flora

A botanical survey of the area proposed for the new bridge structure, the realigned approach roadways, and the area adjacent to and underneath the existing bridge was conducted by Winona Char, in April 2004. The vegetation at the proposed project site is dominated by introduced species

such as Elephant Grass and Guinea grass (See **Appendix B, Botanical Resources Study, Kaipapa’u Stream Bridge Replacement Project, Ko’olauloa District, O’ahu**).

Potential Impacts and Mitigation

The proposed project is not expected to have any impact to vegetation within or adjacent to the project. Project activities which include clearing vegetation from construction and staging areas will not impact any rare, threatened or endangered plant species.

After construction completion, all disturbed soils within the project area will be stabilized with ground vegetation or landscaping. As much as possible, disturbed soils will be replanted with native plants.

4.8.2 Fauna

Terrestrial fauna resources were assessed during a site visit. During the visit, no terrestrial animals were observed. Sounds of birds were heard in the distance. Aquatic biota in and around the project site is abundant due to good water quality in Kaipapa’u Stream. Several endemic, indigenous and naturalized aquatic species were observed. A possible sighting of the relatively rare (on O’ahu) O’opu nopili (*Sicyopterus stimpsoni*) was made near the project site. See **Appendix D, Water Quality and Biological Reconnaissance Surveys of Lower Kaipapa’u Stream Near Hau’ula, O’ahu**. The O’opu nopili is considered lower risk/near threatened by the World Conservation Union. The categories that the O’opu nopili is listed in is defined below:

LOWER RISK (LR) - A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:

Conservation Dependent (cd). Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.

Near Threatened (nt). Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

Least Concern (lc). Taxa which do not qualify for Conservation Dependent or Near Threatened.

(Source: http://www.iucnredlist.org/info/categories_criteria1994.html)

Potential Impacts and Mitigation

Noise from heavy equipment and other construction activities might disturb domestic animals and livestock grazing in nearby pastures. Project activities also might alter the local distribution of birds presently visiting the site, but will not impact the overall abundance of these species on O'ahu.

To minimize the possibility that seabirds may become disoriented and harmed by the lighting, the proposed project will incorporate shielded lighting. This lighting shall be specified on the building permit plans.

Aquatic biota is vulnerable to discharge pollution resulting from construction activities, however water quality monitoring and best management practices will be incorporated into the construction plans to minimize discharge sources. Additionally, no construction activities requiring significant disturbance to the stream bed or stream flow will be conducted during the spawning season (i.e., August through October) of native fishes inhabiting the Kaipapa'u Stream. During in-stream construction periods, stream flow will be routed around the work area. Stream flow will remain uninterrupted during the entire construction period.

Given the above findings, the proposed project is not anticipated to have a significant negative impact on faunal resources.

4.9 SCENIC RESOURCES

The State and City and County of Honolulu have identified no view planes or scenic vistas in the project vicinity. The bridge is located in a rural gulch setting that offers limited views of the surrounding countryside. The view towards the ocean consists primarily of nearby residences and vegetated slopes rising out of the gulch. Towards the mountains, sight distance is limited by thick vegetation and the rise of gulch topography.

Potential Impacts and Mitigation

Scenic impacts associated with the construction and use of the proposed bridge replacement and widening are discussed in terms of short-term and long-term effects.

Short-term visual impacts associated with the project primarily relate to construction activities. Temporary signage, nighttime lighting, the presence of heavy construction equipment and ongoing modifications to the existing landscape will all create short-term impacts on the visual setting surrounding the project site. Construction activities will be apparent from the Kamehameha Highway corridor and from several homes in the vicinity. Visual impacts related to construction activities are temporary in nature, however, and not considered significant.

The proposed project will result in long-term visual impacts in the form of a new bridge structure that is larger in scale and more modern in appearance than the existing bridge. On close inspection, the existing timber bridge retains a rustic appearance, with weathered beams, rusting girders, and trestle superstructure adorned with accumulated plant growth that blends into the surrounding vegetation. By contrast, the new bridge will be constructed with prestressed planks, cast-in-place deck topping and approach slabs and drilled shaft supported abutments, supported by four five-foot diameter drilled shaft piers anchored in the streambed. The new bridge will be most noticeable from a few surrounding residences, but will not intrude on any existing view planes.

To minimize the visual impact of construction activities, the project contractor will ensure that work crews, heavy equipment, signage and lighting will be utilized only to the extent

required for project operations. Additionally, nighttime lighting shall be focused on work areas and shielded from adjacent areas as much as possible.

4.10 AGRICULTURAL ACTIVITY

No farmlands exist within the project area. Therefore, there are no anticipated impacts to, or mitigation measures proposed for farmlands.

CHAPTER 5
THE SOCIAL ENVIRONMENT:
EXISTING CONDITIONS, IMPACTS AND MITIGATION MEASURES

5.1 RESIDENT POPULATION

Hau'ula is a small settlement within the Ko'olauloa Census Division, which comprises an area stretching from Ka'a'awa to Waimea Bay. Hau'ula is a Census Designated Place. Between 1990 and 2000, Hau'ula's resident population increased from 3,381 to 3,651, or 7.4 percent or less than one percent per year. This represents a stable population base.

Kaipapa'u Stream Bridge is located in the Hau'ula-Ka'a'awa Census Tract 102.01, in Ko'olauloa District, O'ahu. According to the U.S. Census (DBEDT 2000), the residential population of the island of O'ahu increased by 4.8% between 1990 and 2000, from 836,231 to 876,156 residents. Over the same period, the Ko'olauloa District population increased by 2.5%, from 18,443 to 18,899 residents. In 1990, Hau'ula contained 3,479 people as compared to 3,651 people in 2000; an increase of 4.9 %.

Housing in the vicinity of the bridge is rural in character. Area residences are primarily associated with agricultural activities. Over the past ten years, most of the residential growth in the area is a result of new subdivisions developed on agricultural lands.

Potential Impacts and Mitigation

The proposed project is not anticipated to impact the population or housing conditions within the Hau'ula area. The proposed bridge is designed to maintain the same level of service as the existing bridge with the added benefit of improved safety features. The new bridge will not, in itself, be an impetus to increased development or population growth. No mitigation measures are proposed.

5.2 DEMOLITION OF RESIDENCES AND RELOCATION REQUIREMENTS

In order to accommodate the bridge replacement and widening, the proposed project will require both temporary and permanent relocation of property owners.

Acquisition of residential properties will require the relocation of impacted families. Where the new construction will result in demolition of dwelling structures or substandard lot sizes, or will otherwise negatively impact the function or safety of the property for residential use, permanent relocation of the household will be necessary. For reasons of safety, all of the impacted households will be relocated prior to the period of construction. The State will obtain title to the land required by the widened ROW.

Property owners whose real property is to be acquired, and residents who will be displaced by the proposed project will be eligible for compensation and relocation assistance under the terms and rules of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (The Uniform Act), and the Uniform Relocation Act Amendments of 1987. These acts provide for the fair and equitable treatment of persons whose property will be acquired or who will be displaced because of programs or projects financed with federal funds.

Policies and provisions regarding the acquisition of real property, relocation assistance advisory services, and relocation payments are published in the Federal Register of March 2, 1989, and reprinted each year in the Code of Federal Regulations, Title 49, Part 24. Hawai'i Revised Statutes, Title 15, Chapter 264, Part 2, Federal Aid Highways, defers to federal rules and regulations regarding compensation and assistance for displaced families.

Relocation advisory services and payments will be administered by the State Department of Transportation. These services will assist displaced residents in relocating to comparable replacement housing that meets the criteria of "decent, safe, and sanitary," conforming to applicable housing and occupancy codes as established by federal regulations.

Any aggrieved person may file a written appeal with SDOT-H if the person believes SDOT-H has failed to properly determine his or her eligibility for relocation assistance advisory services, or the

amount of the relocation payment. The person making the appeal has the right to be represented by legal counsel or other representative, but solely at their own expense. SDOT-H will reply with a written determination and explanation of the decision. If SDOT-H's position is still considered to be unsatisfactory, the aggrieved person may seek a judicial review.

Potential Impacts and Mitigation

The proposed project will result in the temporary relocation of residents on three (3) properties adjacent to the project site. The residents will be allowed to move back into their houses after the construction is complete. The project will also necessitate the demolition of one (1) dwelling due to its close proximity to the project site.

Resident Relocation

TMK: 5-4-11:04 (makai-Kāne'ohe side of bridge, mauka dwelling only)

TMK 5-4-18:01 (mauka-Kāne'ohe side of bridge)

TMK: 5-4-18:03 (mauka-Kahuku side of bridge)

Dwelling Demolition

TMK: 5-4-11: 21 (makai-Kahuku side of bridge)

Prior to construction, the SDOT-H will meet and communicate with affected property owners to reach agreements on the acquisition of lands required for the bridge replacement and widening. Property will not be acquired without just compensation that is fair and equitable to both the property owner and to the public. Just compensation will be determined through a property appraisal conducted by an independent, certified appraiser with the participation of the property owner.

Temporary relocation arrangements will be negotiated with affected property owners and costs borne by SDOT.

5.3 EMPLOYMENT

Employment opportunities within the Hau'ula community are limited. However, the neighborhood is close to Brigham Young University-Hawai'i, Polynesian Cultural Center (PCC), and other commercial and retail establishments. PCC, a tourist attraction, employs a majority of the area residents while BYU-H also employs a considerable number of Hau'ula residents. Additional employment is provided by a shopping center, grocery stores, restaurants, and other retail-sales stores. Due to projected population growth increases as anticipated by the City and County's resident and visitor population, the Hau'ula area will continue to experience an economic surge. Along with new economic opportunities, both resident population and visitor population will continue to grow.

The primary economic activity in the Hau'ula area is agriculture. Taro, banana and other diversified crops and nursery operations are the predominant activities. Cattle ranching, other livestock including chickens and swine, are typically raised on a much smaller scale. (City and County of Honolulu, 1995).

Service and retail activities along the Kamehameha Highway and in the commercial nodes comprise the next most significant source of employment. These enterprises primarily service residents and visitors that travel on Kamehameha Highway.

Potential Impacts and Mitigation

The proposed project is not expected to have significant adverse economic impacts. The proposed infrastructure improvements provide one of the basic services needed to support projected development in the area. Economic impacts from the proposed project will result from construction jobs, services, and procurement in the form of construction supplies and equipment. These benefits will be temporary however, and will cease when the project is complete.

The proposed Kaipapa'u Stream Bridge replacement and widening project is an integral component of SDOT's ongoing program to modify or replace functionally and structurally

deficient bridges. The purpose and primary impact of the bridge replacement and widening will be to improve traffic safety conditions for vehicles and pedestrians crossing Kaipapa‘u Stream on the Kamehameha Highway. Additionally, federal funding available for the project will save the State the increasing costs of maintenance to prolong the bridge’s useful life and the eventual cost of bridge replacement.

The proposed bridge replacement and widening will help maintain a level of service that supports social and economic activities in the area. Short-term economic impacts from the proposed project will result from construction jobs, services, and procurement in the form of construction supplies and equipment, however these benefits will be primarily realized outside of the local community.

No mitigation measures are required or recommended.

5.4 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

5.4.1 Historic Resources

The existing bridge is a timber structure built in 1932. It is not rated as a historic bridge in the 1996 *State of Hawai‘i, Historic Bridge Inventory and Evaluation* (Spencer Mason Architects), because of its lack of unique architectural properties and the absence of significant historical events associated with the bridge. A traditional cultural practices assessment was conducted by Cultural Surveys Hawai‘i in March 2003 and includes an assessment of the bridge. Their findings have been re-printed in **Appendix A** and are summarized below.

Built in 1932, the bridge is technically a historic structure although it is not listed in the State of Hawai‘i “Draft Bridge Inventory and Evaluation” dated May 1996. The Kaipapa‘u Stream Bridge is listed in the National Bridge Inventory (#0033000830302099).

5.4.2 Archaeological Resources

There are no known archaeological sites within the proposed bridge replacement and widening project site. An investigation of the project area included a historic background research on historic properties in the area.

Background data indicates that six kuleana parcels were awarded in Kaipapa'u in the mid-1800s, two of which formerly existed in the project area at the bridge location. Additionally, two historic sites exist close to the bridge, State Site # 50-80-06-4795 (approximately 350 ft. south) and State Site # 50-80-06-4796 (approximately 120 ft. north).

Burial Sites

Coastal Hau'ula is well known for having been the site of many traditional and early historic Hawaiian burials. The vast majority of these burials have been within or seaward of Kamehameha Highway. Jaucas sand deposits likely to contain burials are likely to exist within or near the present project area. Burials have been encountered immediately to the north and south of the bridge (i.e. Sites - 4795 & 4796).

5.4.3 Cultural Impacts and Traditional Cultural Practices

Since the bridge exists in an urbanized zone of Hau'ula / Kaipapa'u, ongoing cultural practices were not expected to be prominent. Although the urban nature of the project argues against ongoing cultural practices, it still seems appropriate to briefly summarize potential cultural impacts, as they may be discerned from the historic records and the previous research in the vicinity.

Fishing

Fishing for freshwater resources (e.g. 'opae, o'opu) occurred in the stream previous to its urbanization, based on informant information. Undoubtedly, fishing still occurs for similar species though on a much reduced basis. Fishing will not be stopped due to any proposed bridge improvements.

Gathering

The project area has been heavily modified and the only plants present are several palm trees, landscaping foliage near houses, and tall grasses within the stream. At the point of urbanization that the bridge and its surrounding land is at now, no gathering practices are apparent within the project area.

Hunting

Hunting, specifically pig hunting, does not take place within the project area, although hunting does occur further up many of the surrounding valleys.

Sacred Sites

The Hau'ula area was well-known for its many important heiau (including Kaunihokahi, Kaipapa'u, and Lau'ali'i). None of these is understood as having been in or near the present project area.

Trails and Access

No trails or accessways would be inhibited in any way by the replacement of the Kaipapa'u Stream Bridge. The 'modern trail' (Kamehameha Highway) will continue to provide access for pedestrians and two travel lanes for vehicles.

Wahi Pana (Storied Places)

No storied places (wahi pana) are known within the present project area other than the qualities adhering to Kaipapa'u in general.

Conclusions

This effort to evaluate the potential cultural impacts of the proposed project area on the basis of historical data, archaeological data, and informant information, concludes that there may be a possibility of encountering cultural layers and/or human burials during excavation associated with the replacement of the Kaipapa'u Stream Bridge. The entire project area was extensively modified in the past during construction of the former railroad bridge, the Kaipapa'u Stream Bridge, and Kamehameha Highway, and the urbanization of the surrounding land. No traditional cultural

practices have been identified within the project area that would be stopped by proposed bridge improvements. See **Appendix A, Traditional Cultural Practices Assessment**.

Potential Impacts and Mitigation

The State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources (DLNR), State of Hawai'i, was contacted for information regarding any significant historic or archaeological features within the project area. DLNR specialists in architecture and archaeology reviewed project plans and a map of the project site to assess the potential for project-related impacts to any cultural resources at or near the site.

Under consultation with SHPD, it has been determined that the proposed project design will have “no adverse effect” on any historic or cultural resources. SHPD concluded that the proposed project will have no adverse effect with the condition that the existing bridge be photographed before demolition. See **Appendix E, SHPD Correspondence**.

In regards to archaeological resources, there is always the possibility that previously unknown or unexpected subsurface cultural features, deposits, or burials may be encountered. To ensure that no subsurface cultural features will be destroyed during project construction, work within the project area will be monitored by the project contractor. In the unlikely event that archaeologically significant remains are encountered, work will cease in the immediate area and the DLNR, State Historic Preservation Division would be notified at (808) 692-8015 to determine significance and treatment of any findings.

CHAPTER 6

PUBLIC UTILITIES AND SERVICES:

EXISTING CONDITIONS, IMPACTS AND MITIGATION MEASURES

6.1 FIRE, POLICE AND MEDICAL SERVICES

Fire protection service is provided through the Honolulu Fire Department's (HFD) Kahuku and Hau'ula Fire Stations. Each fire station has one fire truck and is able to provide engine and medical services. Police protection services are provided by the Honolulu Police Department's (HPD) Kahuku Substation. The Kahuku Hospital is located approximately five to ten minutes drive by car from La'ie and provides health care services.

Potential Impacts and Mitigation

The proposed project is not expected to have an adverse impact on fire, police and medical services (See correspondence with HFD and HPD in **Appendix F, Public Consultation**). Fire apparatus access will be maintained throughout the construction site for the duration of the project. The Fire Communication Center will be notified of any interruption in the existing fire hydrant system during the project.

6.2 POTABLE WATER

The Honolulu Board of Water Supply (BWS) has two waterlines crossing Kaipapa'u Stream: a 12-inch waterline located mauka (west) of the bridge and a 16-inch waterline located makai (east) of the bridge. Both waterlines cross beneath Kaipapa'u Stream and are off-set from the bridge but, based on BWS as-builts, appear to be within the 50-foot road ROW. The 12-inch waterline was constructed in 1969 and the 16-inch waterline was constructed in 1995. A 6-inch waterline which had been attached to the makai side of the bridge structure was removed in 1999. Both lines will be replaced during replacement of the bridge.

Potential Impacts and Mitigation

The proposed bridge work will be coordinated with BWS to minimize service disruptions. Construction plans will be submitted to BWS for approval prior to initiation of project activities.

6.3 ELECTRICITY, CABLE AND TELEPHONE UTILITIES

A preliminary inventory of the overhead electrical utilities at the project site is as follows:

The joint use pole lines on the makai side of Kamehameha Highway appear to consist of 46 kV, 12kV, secondary (120/240 volt), telephone and cable television (CATV) lines. Transformers and highway lights are also mounted on these poles.

The telephone pole lines on the mauka side of Kamehameha Highway appear to consist of approximately 10 major telephone trunk cables, fiber optic cables, and miscellaneous smaller cables. Secondary power lines are located on a few of these poles where required for service drops to residences on the mauka side of Kamehameha Highway.

A joint use pole line extends to each secondary road (Ikea Loop, Kaipapa'u Stream Loop, Kawaipuna Street, etc.) off Kamehameha Highway. These laterals generally consist of 12 kV, secondary (120/240 volt), telephone, and CATV lines. Transformers and street lights are mounted on some of these poles.

The preliminary inventory of the electrical overhead utilities will be confirmed with the appropriate utility companies: power (HECO), telephone (Hawaiian Telecommunications, Inc., formerly Verizon Hawai'i), and CATV (Oceanic Cablevision).

Potential Impacts and Mitigation

The proposed bridge work will be coordinated with HECO to minimize service disruptions. As required, other utility service providers will be contacted and arrangements made for review and approval of work that may require relocation of facilities.

6.4 TRAFFIC AND ROADWAYS

6.4.1 Site Access

The Kamehameha Highway is the only major arterial road crossing Kaipapa‘u Stream. Residential roads immediately adjacent to the project site are Pipilani Place, Kaipapa‘u Loop, and Ikea Loop. Access to the project site and staging areas will be primarily via the Kamehameha Highway, but may require a right of entry permit from certain residences. See **Figure 9, Roadway and Community Map**.

The main transportation corridor through Hau‘ula is Kamehameha Highway, State Road 83, which is classified as a major arterial. This roadway provides one lane in each direction and is the only access to the Windward coastline of O‘ahu from Kāne‘ohe to Haleiwa. Average daily traffic along Kamehameha Highway within the project limits was as follows between 1994 and 1998. See **Table 6, Average Daily Traffic**.

Table 6
Average Daily Traffic, Kamehameha Highway, Route 83

AVERAGE DAILY TRAFFIC (Vehicles per Day)	
Year	Total (vpd)
1994	10,756
1995	11,323
1996	11,588
1997	10,971
1998	11,909
2003	13,500
2026	15,700 (proj.)

Throughout the project area, residential driveways, cul-de-sacs, and collector streets access directly onto Kamehameha Highway. Major residential collector roads that intersect Kamehameha Highway in the vicinity include Imua Place, Pipilani Place, Kawaipuna Street, and Kaipapa'u Loop. See **Figure 10, Roadway and Community Map**.

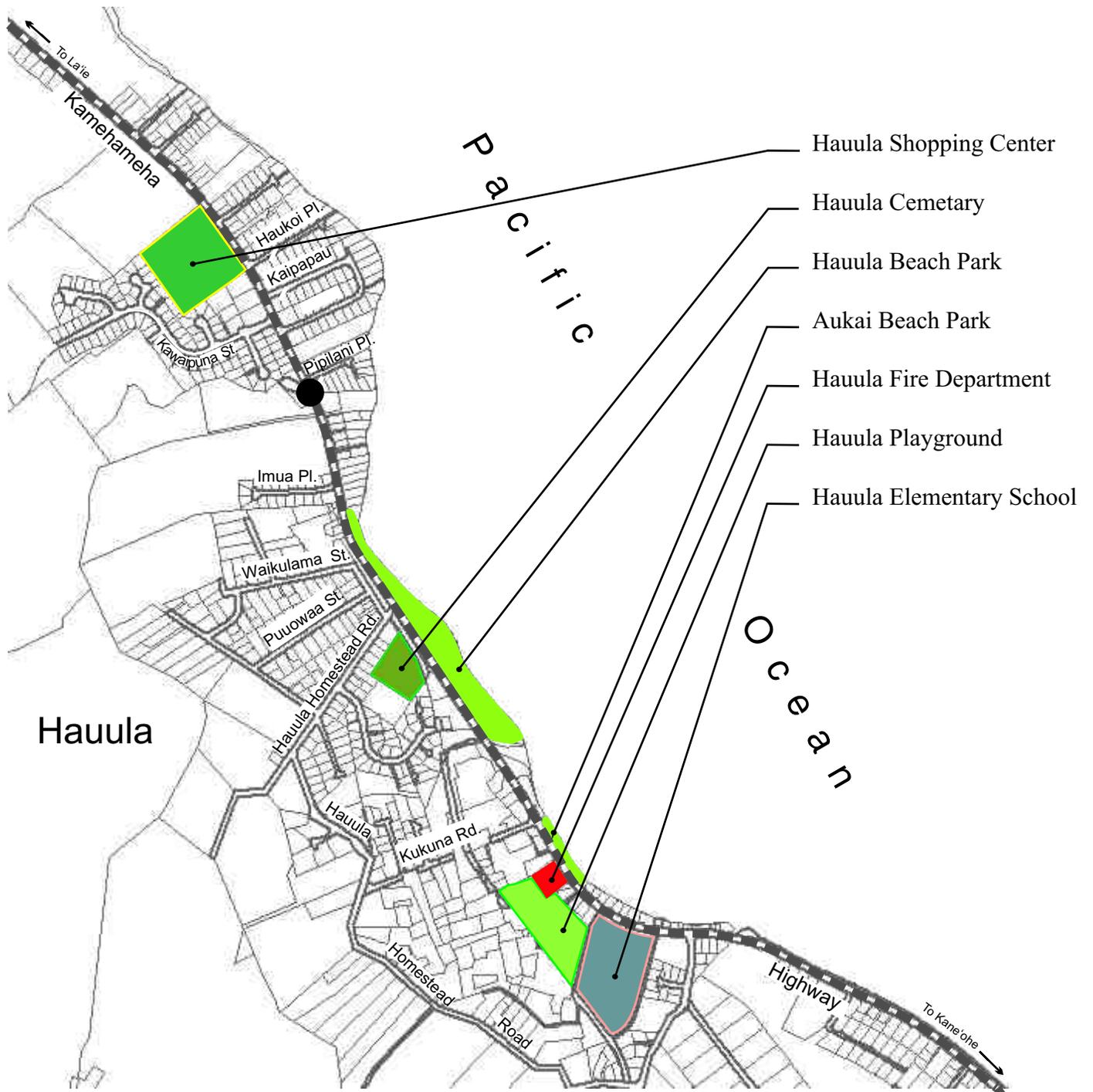
Access to the project site and staging areas will be primarily via Kamehameha Highway.

Potential Impacts and Mitigation

Work on Kaipapa'u Stream will result in a temporary rise in heavy traffic, particularly during mobilization and demobilization of the construction area. Heavy equipment operations during grading and bridge replacement will result in additional temporary impacts to traffic on Kamehameha Highway. Construction traffic on Kamehameha Highway will include movement of heavy equipment between staging areas and the active construction site, transportation of work crews, and truck traffic during removal of excavation spoils and replacement of the existing bridge. These activities are expected to impact regular traffic on the Kamehameha Highway with temporary delays and the presence of large, slow-moving vehicles on the main roadway.

No significant or long-term impacts to Pipilani Place, Imua Road, Kaipapa'u Loop or Kawaipuna Street are expected from this project. Mitigation measures will be required to maintain access for area residents during construction.

Construction staging and work activities will take place immediately adjacent to Kamehameha Highway and other roadways, and may result in traffic slow downs from temporary detours and the presence of large slow-moving vehicles and heavy equipment. On affected residential streets, excavation may occur within the travel lane, thus requiring temporary detours for motor vehicle, bicycle and pedestrian traffic. Detours can be accommodated within the existing street widths, and will not require re-routing of traffic. Traffic control barricades, cones, signage and lighting will be used as necessary to alert drivers and delineate construction boundaries. Approach signs and a flag person will be positioned to direct traffic through temporary traffic control zones as necessary.



LEGEND



FIGURE 10
ROADWAY AND COMMUNITY MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i



To minimize traffic impacts to nearby residents, the contractor will schedule heavy truck activity as much as possible between the hours of 9:00 a.m. and 3:00 p.m. on weekdays. Work on weekends will also be avoided to minimize traffic disruptions. The HPD will be notified prior to periods of heavy truck activity or during transport and operation of heavy equipment.

The proposed project is expected to have short-term impacts in the form of traffic slowdowns as previously described. The project will also result in a temporary increase in vehicle trips attributable to workers traveling to and from the work site, and the use of construction vehicles during the course of work. All construction-related traffic impacts are temporary, however, and will cease upon project completion.

Short-term construction-related impacts will be mitigated by restricting the hours of construction vehicle activity to non-peak traffic periods, and by use of traffic control measures as previously described. All traffic control measures will be designed to minimize impacts on continued traffic flow. With the proposed mitigation measures in place, significant short-term adverse impacts to traffic are not anticipated.

To minimize traffic impacts to nearby residents, the contractor will schedule heavy equipment activity between the hours of 9:00 a.m. and 3:00 p.m. on weekdays and will suspend activity on weekends and State holidays. If necessary, HPD will be notified prior to periods of heavy equipment activity or during transport and operation of heavy equipment. Approach signs will be installed to direct traffic. Two-lane traffic will be maintained during the course of the project.

6.4.2 PEDESTRIAN AND BICYCLE ACCESS

The rural setting, beautiful scenery, and mild climate of the Hau'ula area make it well suited for walking and bicycling. Kamehameha Highway provides the primary transportation corridor in the area and, as the only direct route around the windward side of O'ahu, is used daily by local residents, commuters, and visitors. Though traffic on the Kamehameha Highway consists

primarily of automobiles and tour buses, area residents also transit the route on foot, bicycle, and occasionally by horse. The route is also popular among bicyclists.

In the vicinity of the project site, the Kamehameha Highway has six-foot wide striped, paved shoulders going in both directions, however, the existing bridge crossing has no shoulder or sidewalk area. To safely accommodate pedestrian and bicycle traffic, the proposed bridge will provide two five-foot wide sidewalks/ bike lanes.

Potential Impacts and Mitigation

During construction, the existing pedestrian access will be demolished. Temporary pedestrian and bicycle access will be provided during the duration of construction. With the proposed mitigation measures in place, significant short-term adverse impacts to pedestrian and bicycle traffic are not anticipated.

CHAPTER 7
RELATIONSHIP TO LAND USE POLICIES
AND CONTROLS OF THE AFFECTED AREA

7.1 OVERVIEW

Federal, State and County policy plans and land use plans and controls are established to guide development in a manner that enhances the overall living environment of Hawai'i, and ensure that the long-term social, economic, environmental, and land use needs of the people of Hawai'i are met.

The use of the site to replace the existing bridge is in accordance with State and County land use plans and policies, as discussed below.

7.2 NATIONAL HISTORIC PRESERVATION ACT (NHPA), SECTION 106 REVIEW AND CONSULTATION

The use of Federal funds and the requirement of Federal permits for the project triggers the need for NHPA Section 106 compliance; Federal involvement in the project subjects the project to the NHPA Section 106 process. The purpose of the NHPA Section 106 review process is to evaluate the potential for effects on existing historic sites, if any, resulting from the project. Findings relating to historic properties were discussed previously in **Section 5.4**.

The NHPA Section 106 review process encompasses a "good faith effort" in ascertaining the existence and location of historic properties near and within the project site, establishing an Area of Potential Effects (APE) of the project, identifying whether a potential for "adverse effects" on historic properties by the project exists, and developing a reasonable and acceptable resolution in the monitoring and treatment of any historic sites that is agreed upon by the agency, Hawai'i State Historic Preservation Officer (SHPO) (State of Hawai'i, Department of Land and Natural Resources, (SHPD), and consulting government agencies, community associations, and native Hawaiian

organizations and families. The APE of the project is an area approximately 40 feet offset from the existing bridge structure and a 15-foot corridor following the alignment of the new stream wall location.

A Section 106 Consultation was undertaken for the proposed project. The SHPO concluded that the project will have no adverse effect to historic properties provided that the existing bridge be photographed before demolition. See **Appendix E, State Historic Preservation Division Correspondence**. A list of individuals and organizations contacted during the Section 106 process is also included in **Appendix E**.

Should historical or cultural materials be discovered during ground disturbing activities, work in the area will cease immediately and the SHPD will be notified of the discovery and consulted as to the appropriate course of action. Burial finds will be treated in accordance with HAR, 12-300 and HRS 6E-43.6. The SHPD will determine the appropriate treatment of the remains and any associated historical or cultural material in consultation with recognized descendants, if any, and the O'ahu Island Burial Council.

7.3 ENVIRONMENTAL JUSTICE

This aspect of environmental activism and regulation broadens the scope of the traditional Environmental Movement, in general, and redefines the term "environment" to include places where people live, work, pray, play, and go to school. A significant federal response to ongoing advocacy and organizing efforts is former President Clinton's Executive Order 12898, issued in 1994. Because communities that have large populations of people of color are the ones most impacted by disproportionate environmental problems, the Executive Order aimed to prevent environmental racism under Title VI of the 1964 Civil Rights Act. Title VI prohibits discrimination on the basis of race, color or national origin. It also prohibits recipients of federal funds, including federal and state agencies, from discriminatory actions.

The federal Environmental Protection Agency (EPA) states that environmental justice means "fair treatment." As defined by the EPA, "Fair treatment means that no groups of people, including

racial, ethnic or socioeconomic groups, should bear a disproportionate share of negative environmental consequences from industrial, municipal, and commercial operations, or the execution of federal, state, local, and tribal programs and policies.”

The proposed bridge replacement and widening project is considered an improvement to a regional facility and will benefit a large segment of the population. The decision to replace this bridge was not biased by race or income, rather, the decision was made based on the fact that the bridge currently does not meet roadway standards. As part of the environmental review process, the SDOT consulted with neighborhood groups, organizations and individuals prior to finalizing plans.

7.4 SECTION 4(f)

The purpose of Section 4(f) of the Department of Transportation Act (49 U.S.C. 303 and 23 U.S.C. 138) is to preserve parkland, recreation areas, wildlife refuges, and historic sites by limiting the circumstances under which such land can be used for transportation programs or projects. Section 4(f) permits the use of land for a transportation project from a significant publicly owned park, recreation lands, wildlife or waterfowl refuge, or any significant historic site only when FHWA and the Urban Mass Transportation Administration has determined that (1) there is no feasible and prudent alternative to such use, and (2) the project includes all possible planning to minimize harm to the property resulting from such use.

The proposed project does not impact sites within the jurisdictional authority of Section 4(f).

7.5 STATE OF HAWAII

7.5.1 State Plan

The State Plan, adopted in 1978, consists of three parts:

- (1) an overall theme together with broad goals, objectives, and policies;
- (2) a system designed to coordinate public planning to implement the goals, objectives, and policies of the State Plan; and

- (3) priority guidelines which are statements of Statewide interrelated problems deserving immediate attention.

Three broad goals in the areas of the economy, the physical environment, and the physical, social and economic well-being of the people express the ideal end-states of the State Plan.

The bridge replacement and widening project supports the State Plan's general objectives and policies for a modern, statewide transportation system.

The proposed bridge replacement and widening will be financed under the Federal Aid Highway Program with 80 percent of the funds contributed by the Federal Department of Transportation and 20 percent contributed by the State of Hawai'i. Community needs, environmental concerns and cultural resources are considered in the Environmental Assessment and design process.

7.5.2 State Functional Plans

The State functional plans are intended to provide more detail to the State Plan. They serve to guide State and County actions under specific functional topics of governance. The functional plans relevant to the bridge replacement and widening project are the Transportation Plan and Tourism Plan. Applicable objectives and policies from these plans are discussed below.

Transportation

Objective I.A: Expansion of the transportation system.

Policy I.A.1: Increase transportation capacity and modernize transportation infrastructure in accordance with existing master plans.

The bridge replacement and widening is being proposed to upgrade the transportation infrastructure standards on the Kamehameha Highway and improve roadway safety. The project is being conducted in compliance with existing state and county master plans and land use ordinances.

Tourism

Objective II.A: Development and maintenance of well-designed visitor facilities and related developments which are sensitive to the environment, sensitive to neighboring communities and activities, and adequately serviced by infrastructure and support services.

The Bridge replacement and widening is consistent with this objective in ensuring a safe transportation infrastructure for visitors traveling on the Kamehameha Highway. Potential social and environmental impacts are being addressed through the environmental assessment process.

7.5.3 State Land Use Commission

The State Land Use Commission classifies all lands in the State of Hawai‘i into one of four land use designations: Urban, Rural, Agricultural, and Conservation. The Kaipapa‘u Stream Bridge is located within the State Urban District. **See Figure 11, State Land Use**

7.5.4 Coastal Zone Management Program Assessment and Federal Consistency Determination

A project needing any federal permit or license may require an assessment and review for consistency with Hawai‘i’s CZM Program. A project requiring a permit specifically from the Army Corps of Engineers requires this assessment and review for consistency. Federal activities, including projects financially-assisted by the federal government, that directly affect Hawai‘i’s coastal zone, including all land, waters and marine waters, require reviews for consistency with Hawai‘i’s CZM Program.

The CZM program assessment and federal consistency determination is regulated under Section 307 (§ 1456) – *Coordination and Cooperation* of the National Coastal Zone Management Act (NCZMA) of 1972, as amended (16 USC 1451, et seq); HRS Section 205A-3(3), “the lead agency shall review federal programs, federal permits, federal licenses and federal development proposals for consistency with the coastal zone management program;” and Code of Federal Regulations (CFR), Title 15, Part 930 – *Federal Consistency with Approved Coastal Management Programs*, U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA).

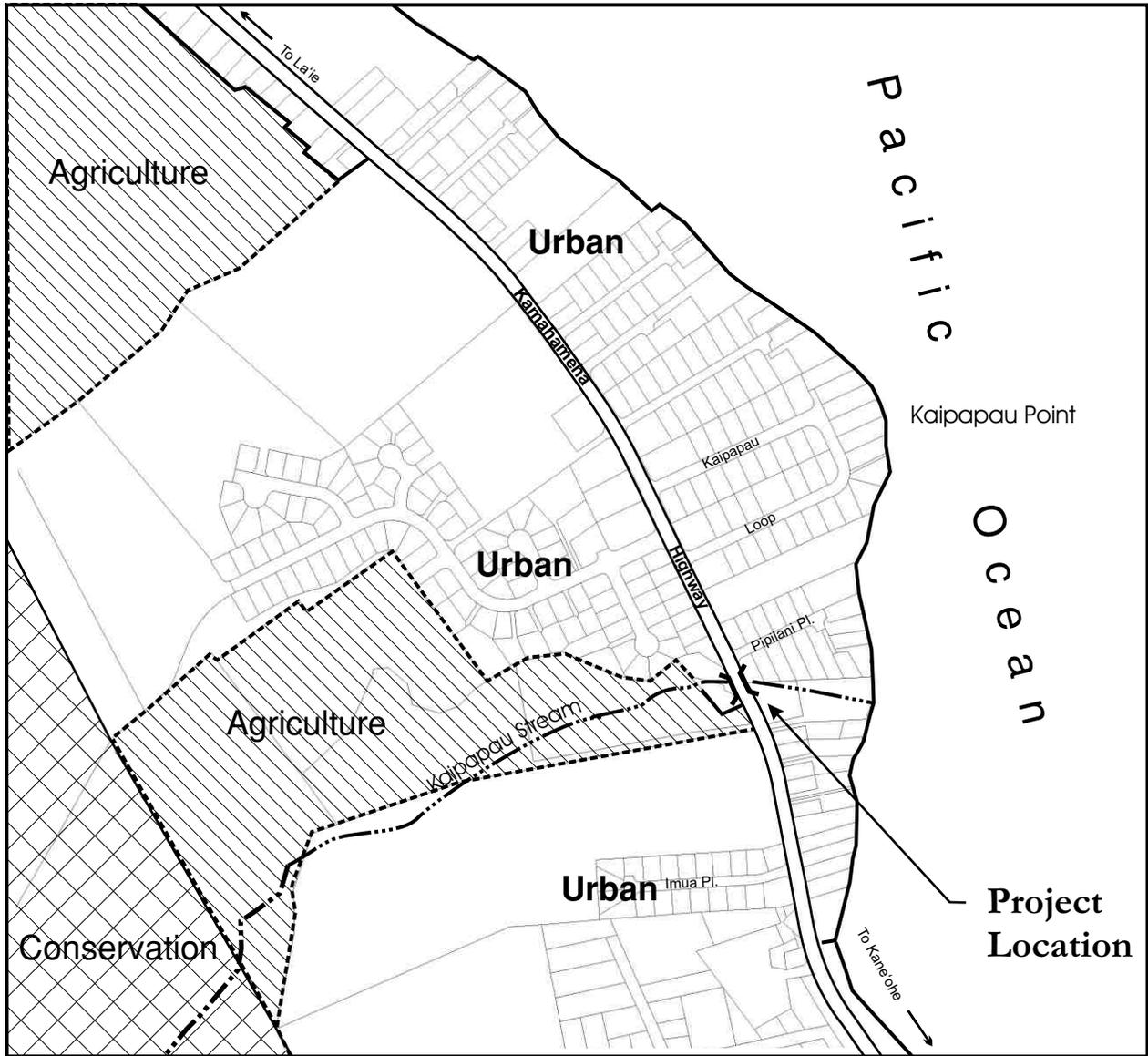


FIGURE 11
 STATE LAND USE MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i



This project occurs in a coastal zone and is partially funded by the federal government – Federal Highway Administration (FHWA); thus, a review of project work for its consistency with Hawai‘i’s CZM Program will be conducted. NCZMA Section 307(C) requires a determination of consistency with CZM Act for this project before project approval. Therefore, the responsible agency – SDOT-H – will make the consistency determination and request concurrence from the State CZM Program administered by DLNR – OP – CZM.

Pursuant to Chapter 205A, Hawai‘i Revised Statutes, actions proposed within the SMA are evaluated with respect to SMA objectives, policies and guidelines. This section addresses the proposed action as related to applicable coastal zone management considerations, as set forth in HRS, Chapter 205A.

7.5.4.1 Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

- (A) Improve coordination and funding for coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
 - (ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
 - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
 - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
 - (v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

- (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
- (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
- (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project is not anticipated to adversely impact existing shoreline recreational activities or coastal access ways.

7.5.4.2 **Historic Resources**

Objective: Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- (A) Identify and analyze significant archaeological resources;
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: The proposed reconstruction of the Kaipapa‘u Stream Bridge structure will be completed in keeping with the guidelines and objectives of the aforementioned objective and policies. Plans for reconstruction of the bridge have been designed to improve public safety while preserving the historic nature of the area.

7.5.4.3 **Scenic and Open Space Resources**

Objectives: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
- (D) Encourage those developments that are not coastal dependent to locate in inland areas.

Response: The proposed project will not impact shoreline views or open space resources. Shoreline open space and scenic resources will be preserved.

7.5.4.4 Coastal Ecosystems

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Improve the technical basis for natural resource management;
- (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.

Response: The proposed project will be limited to the reconstruction of an existing bridge structure. Appropriate BMPs will be implemented in order to preserve the integrity of the nearby coastal ecosystems.

7.5.4.5 Economic Uses

Objectives: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- (A) Concentrate coastal dependent development in appropriate areas;
- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - (i) Use of presently designated locations is not feasible;
 - (ii) Adverse environmental effects are minimized; and
 - (iii) The development is important to the State's economy.

Response: The proposed reconstruction of Kaipapa'u Stream Bridge will have a short-term beneficial impact on the economy during construction by providing construction-related employment. In the long-term, the project will improve the stability of the roadway facility, limiting the potential for a bridge washout or structural failure.

7.5.4.6 Coastal Hazards

Objectives: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- (D) Prevent coastal flooding from inland projects.

Response: No short-term impacts are anticipated during construction-related activities. Appropriate erosion control measures designed to minimize soil loss and erosion will be utilized, and proposed improvements will be designed to conform with all applicable flood requirements. The new bridge will be designed to withstand the effects of flooding during 100-year storm events.

7.5.4.7 **Managing Development**

Objectives: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: In compliance with the requirements of Chapter 343, Hawai'i Revised Statutes, this Environmental Assessment has been prepared to facilitate public understanding and involvement with the proposed project. In addition, all applicable State and County requirements will be adhered in the design and replacement of the bridge structure.

7.5.4.8 **Public Participation**

Objectives: Stimulate public awareness, education, and participation in coastal management.

Policies:

- (A) Promote public involvement in coastal zone management processes;
- (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
- (C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.

Response: As previously noted, public awareness of the project is being promoted through the Environmental Assessment process, as well as the County's SMA permitting and review process.

Copies of the Preliminary Draft EA were sent to individuals and organizations in the area to solicit comments regarding the project (see **Section 9.4**). In addition, a public information meeting was held at Hau'ula Elementary School on August 15, 2006 to discuss the proposed project with area residents. A presentation of the project was also made to the Ko'olauloa Neighborhood Board meeting on September 14, 2006. See **Appendix F, Public Consultation**.

The SDOT shall make available, during all phases of construction, a public outreach person to provide the general public with information about the project activities and to answer and/or resolve concerns regarding the project construction from the general public. The SDOT shall publicize and maintain a telephone "hotline" to facilitate this process. The proposed project is not contrary to the objectives of public awareness, education and participation.

7.5.4.9 Beach Protection

Objectives: Protect beaches for public use and recreation.

Policies:

- (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
- (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: During construction activities, appropriate BMPs will be utilized to ensure the downstream coastal environment is not adversely impacted.

7.5.4.10 Marine Resources

Objectives: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean and coastal resources; and
- (E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed bridge reconstruction is not anticipated to adversely impact coastal marine resources.

7.5.5 National Pollutant Discharge Elimination System Permit

DOH is delegated by the EPA to administer the NPDES Permit program in Hawai'i. The NPDES permit program is described in and administered through HAR, Chapter 11-55 – *Water Pollution Control*.

The SDOT-H will submit Notice of Intent (NOI) forms for review approval by DOH in order to obtain a Notice of General Permit Coverage (NGPC) prior to the commencement of project construction work. Different types of discharges will require different NOI forms.

The NPDES Permit is regulated under CWA et seq, HRS Chapter 342D, 40 CFR Parts 122 to 125 and HAR, 11-55.

7.5.6 CWA Section 401 Water Quality Certification

Water Quality Certification (WQC) pursuant to the Federal Clean Water Act of 1977 et seq, Section 401 is required of any applicant for a federal license or permit to conduct any activity in state waters that would include, but not be limited to, the construction or operation of facilities that may result in any discharge into the navigable waters. The applicant must provide the licensing or permitting agency with a certification from the state in which the discharge originates or will originate.

Section 401 WQC is regulated under the CWA, HRS Chapter 342D – *Water Pollution* and HAR, Chapter 11-54 – *Water Quality Standards*.

The project involves work in state waters and in a coastal area adjacent to federal navigable waters below the mean high water mark, and requires a 404 CWA federal permit; thus, the project requires a 401 WQC. An application for 401 WQC will be prepared for this project.

7.5.7 Stream Channel Alteration Permit (SCAP)

Stream channels are protected by law from alteration, whenever practicable, to provide for fishery, wildlife, recreational, aesthetic, scenic and other beneficial in-stream uses. No stream channel can be altered until an application for a SCAP to undertake the work has been filed and a permit has been issued by the Commission on Water Resource Management (CWRM).

The SCAP is regulated by HAR, Title 13, Subtitle 7, Chapter 169 – *Protection of Instream Uses of Water* and HRS 174C – *State Water Code*.

The project involves a number of tasks that affect the condition of the stream; thus, a SCAP is required by the project.

7.6 CITY AND COUNTY OF HONOLULU

7.6.1 General Plan

The General Plan for the City and County of Honolulu, updated in 1994, provides a statement of the long-range social, economic, environmental, and design objectives for the general welfare and prosperity of the people of O’ahu. Using a 20-year time horizon, broad policies are also specified to facilitate attainment of the objectives of the Plan. The proposed Kaipapa’u Stream Bridge replacement and widening will be consistent with the following policy of the General Plan:

Transportation

Objective: To support an advanced and environmentally sensitive transportation system, which will enable people and goods to move safely, efficiently, and economically.

The proposed bridge replacement and widening will provide a safe highway crossing over Kaipapa’u Stream and mitigate maintenance and safety concerns attributable to the substandard and declining condition of the existing bridge.

Objective: To maintain transportation and utility systems which will help O'ahu. continue to be a desirable place to live and visit.

The proposed bridge replacement and widening will result in upgraded transportation systems for the Hau'ula region and will be used tourists visiting this part of the island, such as the Polynesian Cultural Center.

7.6.2 Special Management Area

The SMA is land extending inland from the shoreline, as established in Revised Ordinance of Honolulu (ROH) Chapter 25 – *Special Management Area*, and delineated on the SMA maps adopted by the City and County of Honolulu, City Council. The SMA maps are located at the Honolulu City Council and Department of Planning and Permitting (DPP) offices. The SMA Permit covers any uses, activities or operations that are defined as being part of “development” within the SMA. Uses, activities and operations not considered to be associated with “development” are exempt from SMA requirements. The definition of “development” and exemptions are contained in ROH Chapter 25.

Any “development” - related uses, activities or operations within the SMA requires either an SMA *Minor* Permit or an SMA Use Permit (SMP), depending on the total cost and environmental impact of the proposed project. Generally, an SMA Minor Permit may be processed if the total cost of the proposed development is less than \$125,000 and will have no substantial adverse environmental or ecological impacts. If the project has a total value that exceeds \$125,000 and/or results in substantial adverse impacts, including potential cumulative impacts, on the environment, and SMP (SMA *Major* Permit) is required.

The SMA Use Permit is regulated under HRS Chapters 205A and 343; ROH Chapter 25; and the DPP document, *Rules Relating to Shoreline Setbacks and the Special Management Area* et seq.

An SMA map of the region encompassing the project site is attached for reference as **Figure 12, Special Management Area.**

7.6.3 Ko'olauloa Sustainable Communities Plan

The development plans and sustainable community plans for the City and County of Honolulu are mandated by the General Plan to address the goals, objectives and policies of the County General Plan for each of O'ahu's districts. Hau'ula is in the Ko'olauloa district and is therefore included in the Ko'olauloa Sustainable Communities Plan, which was updated in 1999 and adopted by the Honolulu City Council as Ordinance 99-72.

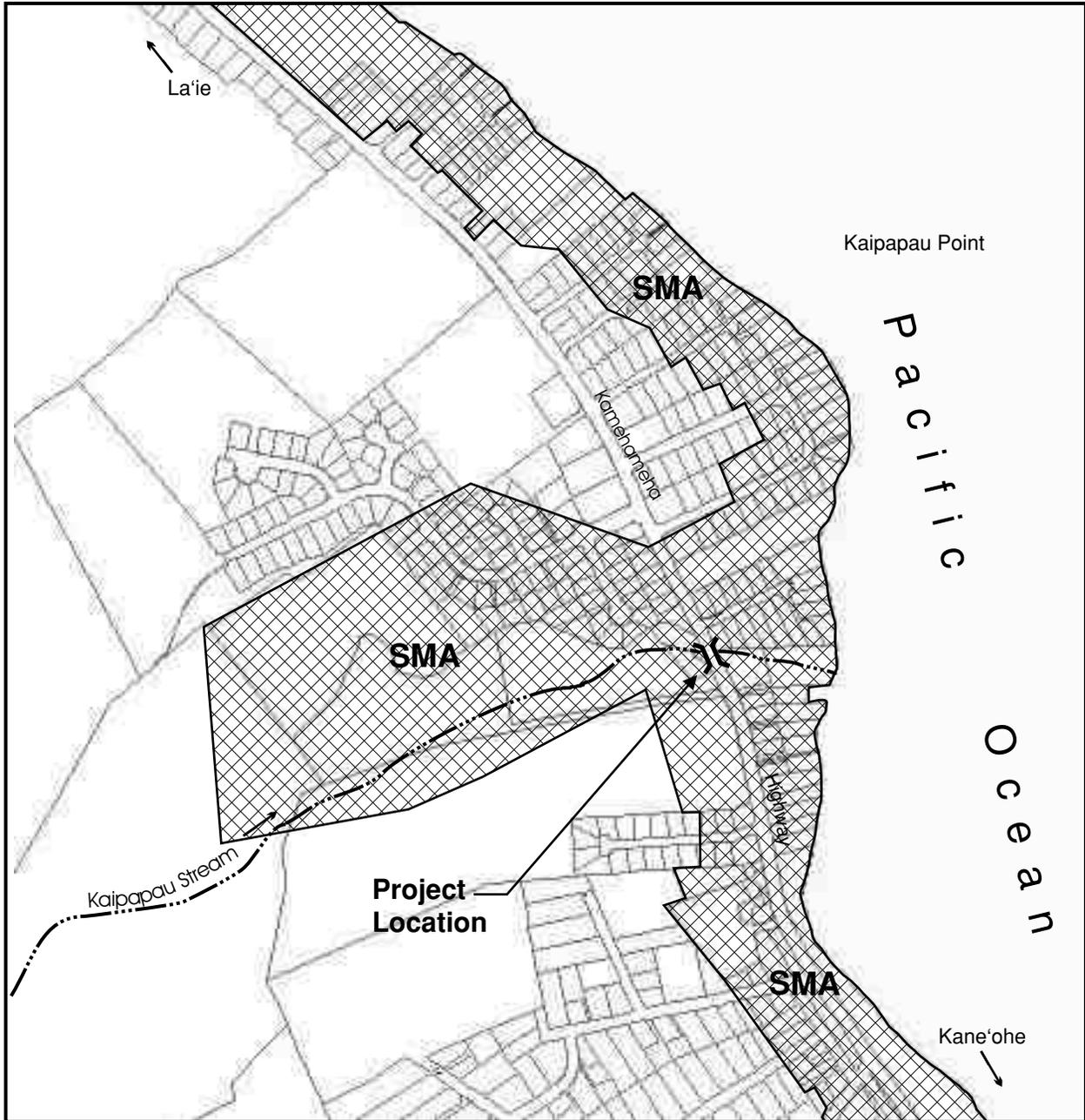
The project location is shown in the Ko'olauloa Sustainable Communities Plan Land Use Map as contained within a single family residential neighborhood and nearby a commercial area. This is consistent with zoning for the surrounding area. See **Figure 13, Ko'olauloa Sustainable Communities Plan.**

The proposed Kaipapa'u Stream Bridge replacement and widening will be consistent with the following general policy of the Ko'olauloa Sustainable Communities Plan:

To retain Ko'olau Loa as a predominantly rural area with limited future growth, its transportation should provide:

1. Adequate access for all communities, shopping and recreation areas in Ko'olau Loa.
2. Roadway improvements, developed in consultation with Ko'olau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences.
3. Adequate capacity for peak travel to and from community centers.

The SDOT consulted with neighborhood groups, organizations and individuals prior to finalizing plans. The proposed project will improve an existing facility in need of replacement. The new bridge will promote increased highway safety for vehicular and pedestrian users.



LEGEND

 SMA Boundary

Source: HOLIS, City and County of Honolulu
Geographic Information System, 2003

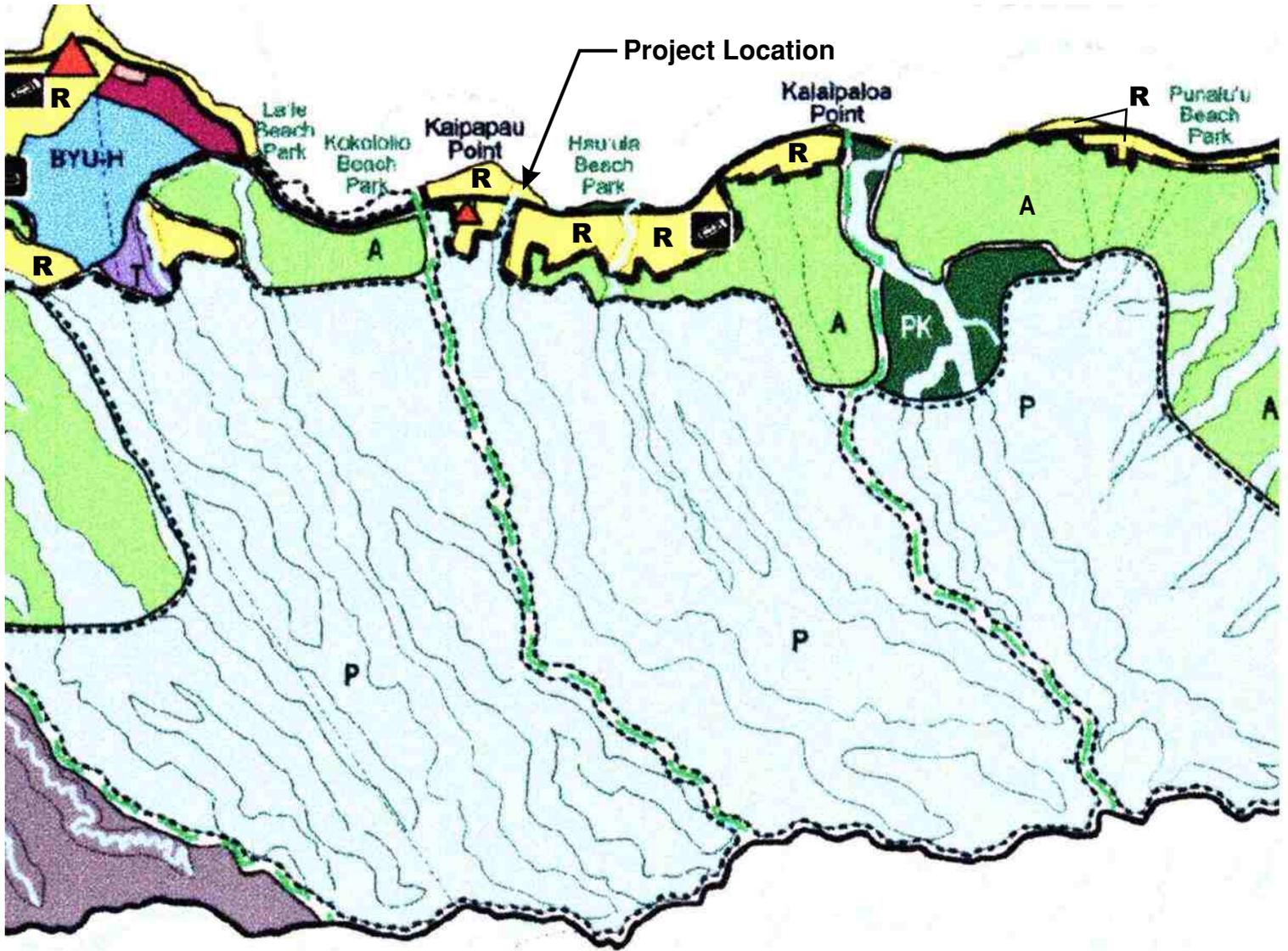
FIGURE 12
SPECIAL MANAGEMENT AREA
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i



0 1000 Feet 2000

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February 2007



LEGEND

- A AGRICULTURE
- P PRESERVATION
- PK PARK
- R** RURAL RESIDENTIAL

FIGURE 13
 Ko'olauloa Sustainable Community Plan
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i

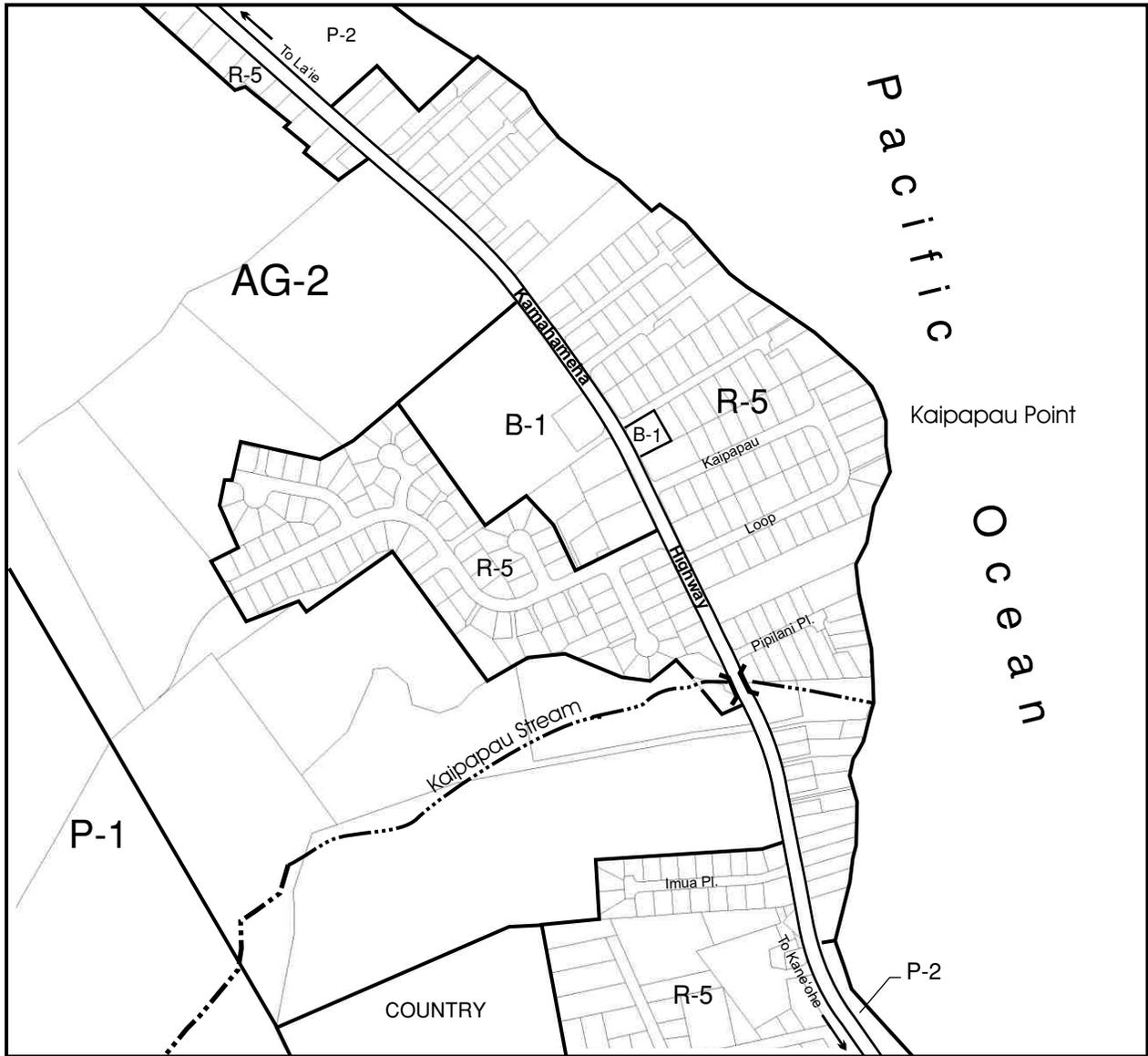


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7.6.4 Zoning

The predominant land use in the area is agriculture, consisting mainly of cattle ranching, taro production and other diversified farming activities. Agricultural zoning standards have also permitted the subdivision of agricultural lands.

The land surrounding the project site is a patchwork of privately-owned parcels zoned R-5 residential by the City and County of Honolulu. See **Figure 14, Zoning Map**.



LEGEND

- AG-2** – General Agricultural District.
- B-1** – Business, 5,000 sf min. Lot area.
- P-1** – Restricted Preservation District.
- P-2** – General Preservation District.
- R-5** – Residential District, 5,000 sf min. Lot area.

FIGURE 14
ZONING MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i



CHAPTER 8

NECESSARY PERMITS AND APPROVALS

8.1 FEDERAL

- Department of the Army Nationwide Permit, No. 33 - Temporary Construction, Access, and Dewatering

Required under Section 404 of the Clean Water Act, as construction of the improved bridge will require construction activities below the high water mark as defined by the Corps of Engineers.

8.2 STATE OF HAWAI'I

8.2.1 Department of Health

- Water Quality Certification, Section 401 of the Clean Water Act

Required for potential discharges into waters of the United States. The DOH-Clean Water Branch will coordinate this permit with the Department of the Army's Nationwide Permit.

- National Pollution Discharge Elimination System (NPDES)

DOH is delegated by the EPA to administer the NPDES Permit program in Hawai'i. The NPDES permit program is described in and administered through HAR, Chapter 11-55 – *Water Pollution Control*. The SDOT-H will submit Notice of Intent forms Construction Storm Water (NOI, Form C), Hydrotesting Discharge (NOI, Form F) and Construction Dewatering (NOI, Form G) for review and approval by DOH in order to obtain a Notice of General Permit Coverage (NGPC) prior to the commencement of project construction work.

8.2.2 Department of Land and Natural Resources (DLNR)

- Stream Channel Alteration Permit (SCAP)

The SCAP will be required for the project according to DLNR, Commission on Water Resource Management. A permit application will be filed with the Commission.

· Section 106 of the National Historic Preservation Act, Consultation

Section 106 requires consultation with the SHPD, Native Hawaiian Organizations and the public to determine if historic properties will be impacted by the project. Further, if historic properties are encountered, appropriate mitigation shall be proposed in consultation with identified parties. Also see **Appendix E, State Historic Preservation Division Correspondence.**

8.2.3 State of Hawai'i, Office of Planning

· Federal Coastal Zone Management (CZM) Consistency Review

Review from the Office of State Planning is required in conjunction with the Department of the Army Section 404 Permit.

8.3 CITY AND COUNTY OF HONOLULU

The City and County of Honolulu, Department of Planning and Permitting, was contacted for guidance regarding zoning issues. On the Ko'olauloa Sustainable Communities Plan Land Use Map, the Kaipapa'u Stream Bridge is located within lands designated as Urban. County zoning in the area is Residential (R-5).

· Special Management Area Major Permit

Required under the Revised Ordinance of Honolulu (ROH) Chapter 25. A SMA Major permit application will be filed with the Department of Planning and Permitting.

8.4 PRIVATE ENTITIES

The State Department of Transportation, Highways Division and project contractor will obtain a right-of-entry from the surrounding land owners prior to conducting any site reconnaissance or construction activities.

CHAPTER 9

ORGANIZATIONS, AGENCIES AND STAKEHOLDERS CONSULTED OR TO BE CONSULTED DURING PREPARATION OF THE DRAFT EA

9.1 FEDERAL AGENCIES

U.S. Department of Transportation - Federal Highway Administration

U.S. Army Corps of Engineers, Honolulu Engineer District

U.S. Department of Agriculture - Natural Resource Conservation Service

U.S. Department of the Interior - Fish and Wildlife Service

National Oceanic and Atmospheric Administration - National Marine Fisheries Service

9.2 STATE AGENCIES

Department of Accounting and General Services

Department of Business, Economic Development, & Tourism

Hawai'i Coastal Zone Management Program

Department of Health

Clean Water Branch

Environmental Planning Office

Noise and Radiation Branch

Office of Environmental Quality Control

Department of Land and Natural Resources

Commission on Water Resource Management

Division of Aquatic Resources

Division of State Parks

State Historic Preservation Division

Land Division

Department of Transportation - Highways Division

Hawaiian Homes Commission

Office of Environmental Quality Control

Office of Hawaiian Affairs

University of Hawai'i

Environmental Center

Ethnic Studies Department

9.3 CITY AND COUNTY OF HONOLULU

Board of Water Supply
Department of Design and Construction
Department of Environmental Services
Department of Planning and Permitting
Honolulu Fire Department
Honolulu Police Department
Ko'olaupia Neighborhood Board

9.4 INDIVIDUALS AND PRIVATE ORGANIZATIONS

Ahahui Ka'ahumanu Society
Association of Hawai'i Civic Clubs
Hau'ula Community Association
Hawaiian Electric Company
Hawaiian Historical Society
Historic Hawai'i Foundation
Hui Malama I Na Kupuna O Hawai'i Nei
Ka'a'awa Community Association
King Kamehameha Hawaiian Civic Club
Ko'olaupia Hawaiian Civic Club
Ko'olaupia Interagency Community Council
Native Hawaiian Advisory Council
Native Hawaiian Protocol & Consultant Service
Punalu'u Community Association
Royal Order of Kamehameha
State Council on Hawaiian Heritage
The Friends of Iolani Palace
The Outdoor Circle
Afalava/Tanoai Family
Mr. & Mrs. Bangert
Ms. Elizabeth Buckle
Mr. Glen Christensen
Mr. Chris Guerrero
Mr. & Mrs. Mervyn Kotake

Mr. & Mrs. Bruce Nichol
Mr. Nick Pao

9.5 ELECTED OFFICIALS

State Senator Clayton Hee
State Representative Colleen Meyer
City Council Member Donovan Dela Cruz

CHAPTER 10

DETERMINATION

10.1 OVERVIEW

In accordance with the provisions set forth in Chapter 343, Hawai'i Revised Statutes, and in Section 11-200-12 of Title 11, Chapter 200, Hawai'i Administrative Rules, the proposed Kaipapa'u Stream Bridge replacement and widening has been assessed for short- and long-term and cumulative effects on the environment.

Based on this Environmental Assessment, it is anticipated that the project will not have a significant effect on the environment, as defined by HAR, Section 11-200-12.

The proposed project has been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Hawai'i Administrative Rules. Based on the following analysis, the proposed project is not anticipated to result in any significant impacts. Discussion of project conformance to the criteria is noted in the following section:

10.2 SIGNIFICANCE CRITERIA

Significance criteria set forth in Section 11-200-12 of Title 11, Chapter 200 HAR were used to evaluate the potential impacts of the proposed project on the environment. The thirteen criteria are listed below along with the determination of significance.

Criterion 1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

An assessment of flora and fauna, and historic and archaeological sites at and near the project area found no presence of natural or cultural resources that would be jeopardized by the proposed bridge improvement.

From an archaeological standpoint, the proposed project will be limited to the roadway ROW and immediate adjacent areas, and is not anticipated to adversely impact archaeological or cultural materials. However, should significant materials be encountered during construction, work in the immediate vicinity of the find will cease and the SHPD will be notified to ensure compliance with Chapter 6E.

Criterion 2. Curtails the range of beneficial uses of the environment;

The proposed project site is located primarily within the existing traffic corridor. Some encroachment on adjoining land will not displace any structures or activities and would not detract from the function or use of the remaining area of those parcels. The improved bridge would not significantly alter the existing use of the environment. The commitment of land necessary for the bridge replacement and widening is not anticipated to curtail the range of beneficial uses of the environment.

Criterion 3. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS;

The project proposal has been prepared according to State and County guidelines, plans, and policies and has been found to be in compliance with all relevant provisions.

Criterion 4. Substantially affects the economic or social welfare of the community or State;

The proposed bridge replacement and widening is expected to have little effect on the social and economic environment. In general, the expansion will serve to meet level of service needs and safety standards for transportation infrastructure required by area residents, businesses, and visitors. There are no adverse long-term economic or social welfare impacts anticipated as a result of project implementation.

Criterion 5. Substantially affects the public health;

Factors affecting public health, including air quality, water quality, and noise levels were assessed according to various project scenarios and determined to be only minimally affected or unaffected by the construction and use of the replacement bridge. Appropriate mitigation measures for short-term impacts are expressed in Best Management Practices to be followed by the project contractor.

Criterion 6. Involves substantial secondary impacts, such as population changes or effects on public facilities;

The proposed project will not, itself, stimulate unexpected change in the population, but will accommodate current and future vehicle use associated with economic and social activities in the area.

Criterion 7. Involves a substantial degradation of environmental quality;

Analysis of air and water quality, noise levels, and land use associated with the construction and use of the improved bridge has determined that the proposed project will not substantially degrade environmental quality. During project implementation, appropriate environmental mitigation measures will be utilized to ensure that potential adverse environmental effects are mitigated.

Criterion 8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

The proposed project is being developed as part of the State's ongoing effort to modify or replace structurally deficient bridges to meet current standards for roadway safety and design.

The proposed replacement and widening is a component of the State's commitment to maintain a safe and efficient transportation infrastructure, but will not, of itself, involve a commitment for larger actions. The proposed project is not anticipated to create or contribute to any significant long-term environmental effects.

Criterion 9. Substantially affects a rare, threatened, or endangered species, or its habitat;

An investigation of flora and fauna in the project vicinity discovered no species that are listed as threatened or endangered by the State or Federal government. Due to its rural location, Kaipapa'u Stream has relatively clean water and native aquatic species are known to inhabit the stream. Appropriate Best Management Practices will be implemented to mitigate possible negative effect of the proposed bridge replacement. The stream bed and banks adjacent to the project site have been overgrown with introduced grass species. The proposed project will provide the opportunity to remove the growth within the stream. Given the scale and location of the bridge reconstruction, the existing habitat or natural environment within the project site is not anticipated to be adversely affected by the proposed project.

Criterion 10. Detrimentially affects air or water quality or ambient noise levels;

Analysis of air and water quality, and ambient noise levels associated with the construction and use of the new bridge have determined that effects to these environmental measures will be minimal or temporary. Appropriate environmental mitigation measures will be implemented during project construction to ensure that potential for adverse environmental impacts on air quality and ambient noise levels are minimized.

Criterion 11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

The project site is located inland from any coastal waters within an area determined by the Federal Emergency Management Agency to be at risk of flooding. The proposed replacement bridge will be designed to withstand effects of flooding from 100-year storm events. All structures proposed for this project will be built according to standards for seismic zone 2, as established by the Uniform Building Code. The project is not anticipated to affect or suffer damage from natural forces.

Prior to construction activities, a Department of the Army Section 404 permit will be required. In addition, a Stream Channel Alteration Permit (SCAP) from the DLNR, Commission on Water Resource Management will be required, as will a Water Quality Certification from DOH. Through governmental guidance and implementation of said permitting requirements, parameters of the proposed project will be such that the potential for adverse impacts is minimized. Further, use of appropriate BMP's during construction will also reduce potential for adverse impacts to water quality.

Criterion 12. Substantially affects scenic vistas and view planes identified in County or State plans or studies;

The project site is not located within any scenic vista or view plane identified in County or State Plans. The appearance of the new bridge would differ in appearance from the existing bridge in the materials used and in its wider dimensions. The difference would be noticeable to drivers in the form of a visually broader roadway and sturdier bridge railings. The supporting structure would be visible only to those on foot or on adjacent government roads and would not detract significantly from existing views. Visual impacts associated with construction activities will be temporary.

The proposed project is not anticipated to adversely impact scenic vistas or view planes in the project vicinity. In addition, the reconstruction designs are intended to preserve the visual character of the Kaipapa'u Stream Bridge.

Criterion 13. Requires substantial energy consumption.

Construction activities associated with the bridge replacement and widening would require high, short-term energy use, however, the project would prevent energy consumption associated with ongoing maintenance activities necessary to sustain the useful life of the existing bridge.

The short-term energy demand is not considered substantive or excessive within the context of the region's overall energy consumption. In the long-term, the project is not anticipated to create additional demands for energy consumption.

10.3 FINDINGS

In accordance with the provisions set forth in Chapter 343, Hawai'i Revised Statutes, and the significance criteria in Section 11-200-12 of Title 11, Chapter 200, this assessment has determined that the project will have no significant adverse impact to water quality, air quality, existing utilities, noise levels, social welfare, archaeological sites, or wildlife habitat. All anticipated impacts will be temporary and will not adversely impact the environmental quality of the area.

It has been determined that an Environmental Impact Statement (EIS) will not be required, and that a Finding of No Significant Impact (FONSI) has been issued for this project.

REFERENCES

AECOS, Inc., *Kaipapa' u Stream Bridge Replacement Application for Section 401 Water Quality Certification, TMK 2-7-13:8 (por.) and 31 (por.)*, Hau'ula, O'ahu, Hawai'i, 2003.

City and County of Honolulu, 1999. *Ko'olaupia Sustainable Communities Plan, City and County of Honolulu*. Honolulu, Hawai'i.

City and County of Honolulu, Department of Planning and Permitting, Zoning Map.

Spencer Mason Architects, Inc. 1996. *State of Hawai'i, Historic Bridge Inventory and Evaluation*. Honolulu, Hawai'i.

State of Hawai'i, Department of Transportation, Highways Division, Bridge Design Section, Unit "B" Design Branch. May 2000. *Project Assessment Report, Kamehameha Highway, Kaipapa'u Stream Bridge Replacement, M.P. 20.99*. Honolulu, Hawai'i.

State of Hawai'i, Department of Transportation - Highways Division, October 1997, *Bridge Inspection Report*.

State of Hawai'i, Department of Transportation, 2000. *Kamehameha Highway, Kaipapa'u Stream Bridge Replacement, M.P. 20.99*. Honolulu, Hawai'i.

State of Hawai'i, Department of Transportation, October 2005. *Kamehameha Highway, Kaipapa'u Stream Bridge Replacement, Pre-Conceptual Design Report*. Honolulu, Hawai'i.

State of Hawai'i, Department of Business, Economic Development and Tourism, Land Use Commission.

State of Hawai'i, Department of Business, Economic Development & Tourism (DBEDT), *The State of Hawai'i Data Book, 2000*, Honolulu, Hawai'i. <http://www.hawaii.gov/dbedt/db00/sec01.html>

U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Islands of Kauai, O'ahu, Maui, Molokai, and Lana'i, State of Hawai'i*, with University of Hawai'i Agricultural Experiment Station, August 1972.

U.S. Department of Commerce, Bureau of the Census, *2000 Census of Population and Housing, Hawai'i*, Washington, D.C., 2001.

U.S. National Park Service Western Region Natural Resources and Research Division Hawai'i Cooperative Park Service Unit, *Hawai'i Stream Assessment - A Preliminary Appraisal of Hawai'i's Stream Resources Report R84*, Prepared for the State of Hawai'i Department of Land and Natural Resources Commission on Water Resource Management, December 1990.

U.S. Department of Commerce, Bureau of the Census. 2001. *2000 Census of Population and Housing, Hawai'i*, Washington, D.C.

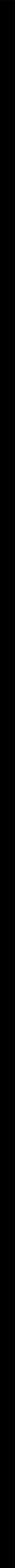
U.S. Department of Agriculture, Soil Conservation Service, with University of Hawai'i Agricultural Experiment Station. August 1972. *Soil Survey of Islands of Kauai, O'ahu, Maui, Molokai, and Lana'i, State of Hawai'i*. Honolulu, Hawai'i.

World Climate, Hau'ula Weather Station

<http://www.worldclimate.com/cgi-bin/data.pl?ref=N21W157+2200+511271C>

World Conservation Union, The IUCN Red List of Threatened Species. 2005.

<http://www.iucnredlist.org/search/details.php?species=44167>



Appendix A

Traditional Cultural Practices Assessment
for the Kaipapa‘u Bridge Replacement,
Kaipapa‘u Ahupua‘a, Ko‘olauloa District, O‘ahu

Cultural Surveys Hawai‘i

**TRADITIONAL CULTURAL PRACTICES ASSESSMENT
FOR THE
KAIPAPA‘U BRIDGE REPLACEMENT,
KAIPAPA‘U *AHUPUA*’A, KO‘OLAULOA DISTRICT, O‘AHU
(TMK: 5-4-14 and Adjacent Parcels 1, 2, 3, 4 & 21)**

by
Tony Bush, B.Ed.
and
Hallett Hammatt, Ph.D.

Prepared for

B. M. Towill Corporation, O‘ahu

Cultural Surveys Hawaii, Inc.

March 2003

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I. INTRODUCTION

A. Project Background

Cultural Surveys Hawaii Inc., has conducted a cultural practices assessment for the proposed Kaipapa'u Bridge replacement project in Kaipapa'u *Ahupua'a*, Ko'olauloa, Island of O'ahu (TMK 5-4-14 and adjoining parcels 1, 2, 3, 4 & 21) (Figures 1-2). The Kaipapa'u Bridge is 0.014 of a mile southeast of the intersection of Pipilani Place and Kamehameha Highway (State Route 83) (Thompson 1983).

The bridge improvements will include repairs and reconstruction to the *mauka* side of the bridge, while traffic still utilizes the *makai* side of the bridge. Upon completion of the *mauka* side, the *makai* side will be repaired and reconstructed, while traffic utilizes the *mauka* side.

State Site #'s 50-80-06-4795 (Buried Cultural Deposit with associated Human Burial), and -4796 (Human Burial) exist in close proximity to the current bridge replacement, with Site -4795 approximately 350 ft. south of the bridge, along Kamehameha Highway and extending *mauka*, and with Site -4796 approximately 120 ft. north of the bridge, immediately under the highway.

B. Project Area Description

The project area is the Kaipapau Bridge and its existing banks along the Kaipapau Stream, in Kaipapa'u *Ahupua'a*, Ko'olauloa, Island of O'ahu (TMK) (Figures 1- 2). The area surrounding the bridge and stream is fully urbanized. Residences exist along both sides of the stream, at all four corners of the bridge. The bridge foundations extend into natural soils on each side of the stream, underneath Kamehameha Highway. The stream in this area is completely channelized with concrete and stone walls, as a flood control measure. The stream bed is completely overgrown with tall grasses. The land owner is the State of Hawai'i.

The project area lies at the mouth of the Kaipapa'u Valley gulch. The geology of Kaipapa'u *Ahupua'a* consists of coastline with back shore sand deposits, and Kaipapa'u Stream. The soils of the project area are about evenly divided between Waialua stony silty clay, 3 to 8% slopes (WIB) soils on the west (*mauka* side) and Kawaihapai stony clay loam, 0-2% slopes (KlaA) soils on the east (*makai*) side (Foote et al. 1973). The Waialua series consists of moderately well-drained soils of alluvial fans with the Waialua stony silty clay having slightly difficult workability. The Kawaihapai soils are well-drained but workability is also slightly difficult because of stoniness (Foote et al. 1973). Rainfall within the project area is approximately 1500mm (60 in.) per year (Giambelluca 1986:73).

C. Scope of Work

The scope of work is modest and was designed to be appropriate to the perceived likelihood of cultural impact issues in the project area *per se*. The study does not fulfill OEQC guidelines for Cultural Impact Assessments, and will ask that if someone knows of some traditional Hawaiian cultural practices in the project area *per se* to please come

forward. Additionally, the following Scope of Work was proposed for satisfying requirements as outlined by OEQC:

1. A brief field inspection by a recognized expert in cultural impact assessment to assess the likelihood of traditional Hawaiian cultural practices in the area of impact.
2. A brief review of the implications of any botanical study (or the botanists verbal synopsis if either is available) for the likelihood of traditional Hawaiian cultural practices in the area of impact.
3. Examination of historical documents, Land Commission Awards, historic maps, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
4. A reviews of the existing archaeological information pertaining to the property as this may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices, and beliefs associated with the parcel and identify present uses, if appropriate.
5. A modest attempt through letters and/or telephone calls (approximately 12), and face-to-face conversations with parties easily reachable in the area during the field check to assess the likelihood of traditional Hawaiian cultural practices in the area of impact.
6. A written report, not anticipated to exceed ten pages of text summarizing the methodology and results of Points 1 - 5 above and presenting our finding and conclusions based on work carried out.

D. Methods

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; a review of geology and cultural history documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and a study of historic maps at the Survey Office/Department of Accounting and General Services; and research on mid-1800's Land Commission Award documents (Waihona Aina).

Those who did respond and conducted interviews with CSH are listed on Table 2. Interviews were planned to include a face to face interview so as to photograph the interviewee's and tape the interview. In the case of this Cultural Practices Assessment, three individuals were sought for interviews. Interviews were conducted with Mr. Cy Bridges, Mr. Ben Nihipali, and Mr. Roland Logan. Interviews conducted for the Cultural

Practices Assessment were informal in nature, with one interview taking place during work (Mr. Logan), and two interviews being conducted over the phone (Mr. Nhipali and Mr. Bridges). Interview notes were then placed in full in the Interviews Section of this report.

Following insertion of interviews, a copy of the Cultural Practices Assessment was given to each interviewee for perusal and verification. Upon verification with interviewees, the report is complete and will be sent to SHPD for their review.

Additionally, pictures of Kaipapa`u Bridge in its present state were taken and are presented in Appendix A of this report.

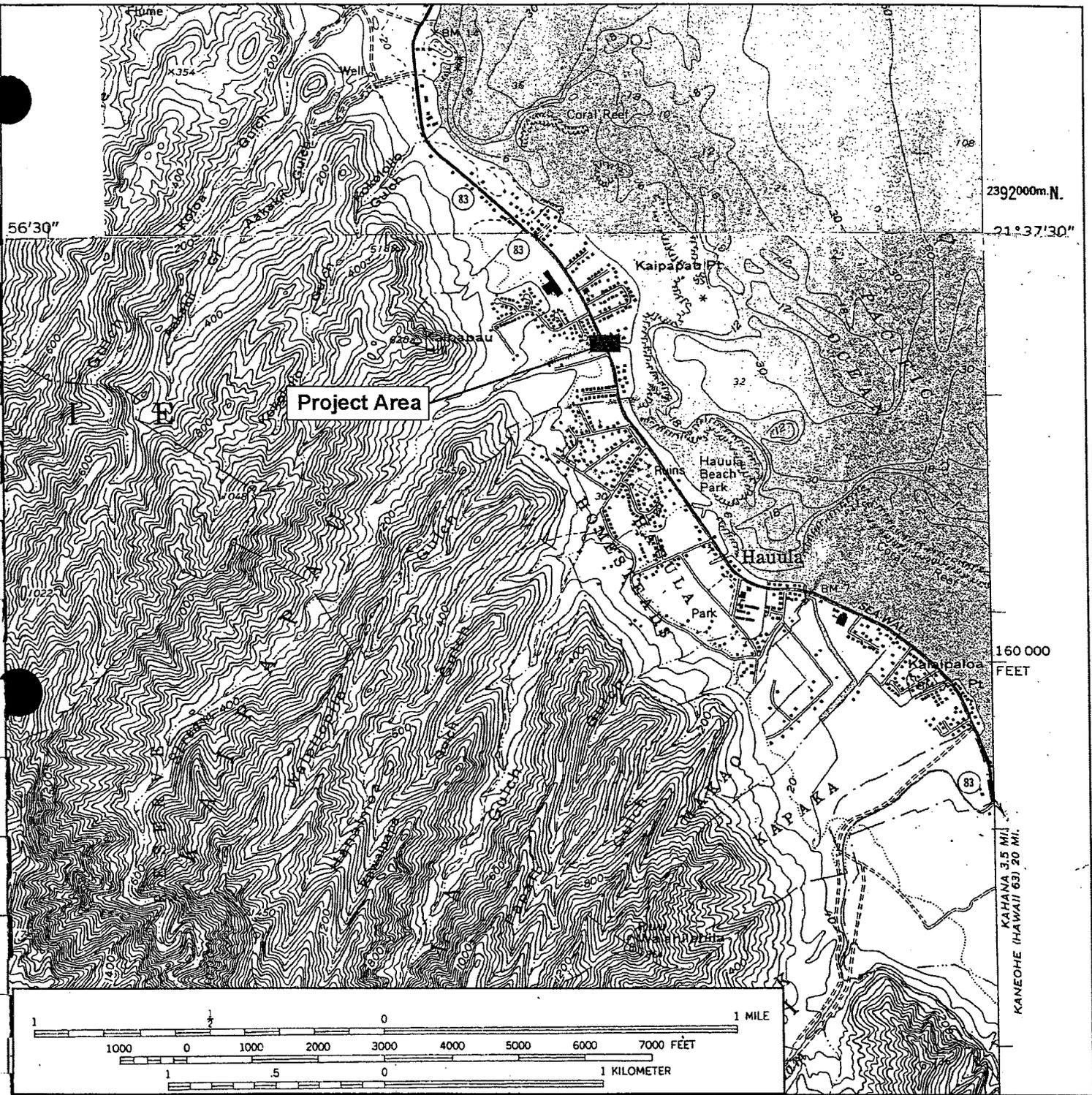


Figure 1 Portion of USGS Hau'ula Quadrangle Showing Project Location.

II. KAIPAPA`U: CULTURAL AND HISTORICAL DOCUMENTATION

Cultural and historical documentation is provided here to provide a general background for Kaipapa`u, so that the specific project area parcel can be put in to a settlement pattern context for the reader. As Kaipapa`u *Ahupua`a* had a limited population (e.g. 6 total *kuleana* awards), additional information is listed here regarding cultural and historical documentation of Hau`ula *Ahupua`a*, neighboring Kaipapa`u to the south.

A. Mythological and Traditional Accounts

There are many legends associated with the *ahupua`a* of Kaipapa`u in the district of Ko`olauloa. Two specifically have to do with Kaipapa`u or Kaipapa`u Stream and are included here.

Several legends concerning this region of Ko`olauloa center on the theme of fishing lore. There is a legend about the *ulua* fish which takes place in Kaipapa`u (Westervelt version in Sterling and Summers 1978:160). The gods Kāne and Kanaloa threw dried fish into the sea where it came to life as the *ulua*. The fish then swam up the Kaipapa`u river (northwest of the present project area) to a place where the two gods were worshiped by a *kahuna* (Makuakaumana, see the story of *Makuakaumana*), a journey the *ulua* would continue to make whenever the river was accessible.

A legend concerning the *hilu* fish takes place in Hau`ula (Titcomb 1972:75-76). Two brothers, Kaululena and Ma`i`o, traveled to O`ahu in the form of the *hilu*, one going along the *kona* (leeward) side of the island and the other along the *ko`olau* (windward). Ma`i`o was caught and divided by fishermen in Hau`ula. Kaululena then assumed his human form, collected the pieces of his brother's body, and threw them into the ocean. He then went upland, dammed a stream with his body (Kaipapa`u Stream according to Titcomb, Ma`akua Stream according to Clark 1977:147), and then moved away, allowing the water to flood the land and flow into the sea where his brother Ma`i`o's body rejoined as the striped *hilu* fish. The only people of the valley to survive the flooding was an old man (the keeper of the two brother demi-gods, according to Titcomb) and his family who resided on a hill thereafter called Lanakila, meaning "to rise to a high place" or "victory" (Clark 1977:147).

These particular myths and traditional accounts were included for their representation of natural formations and phenomena as well as religious and historical occurrences specific to the *ahupua`a* of Hau`ula. The myths regarding landmarks account for place names and describe particular formations in the area. The legends regarding fishing lore tell of the origin, migration routes, and a method of catching certain fish in these areas and indicate the richness and importance of the local marine resources.

B. Mid-1800's (*Māhele*)

The *ahupua`a* of Kaipapa`u was seemingly not as densely populated during the time of the *Māhele* (mid-1800's) as neighboring Hau`ula. This is evidenced by the relatively few claims (6 total) within the *ahupua`a*, while numerous claims were made in the *ahupua`a* of Hau`ula (Waihona `Aina 2002).

Two LCA's existed along the banks of Kaipapa`u Stream, in the vicinity of the Kaipapa`u Bridge (LCA #s 8171 & 8167). LCA 8171 (R.P. 1319) awarded to Hoopalahe, was a large award of c. 22 acres. The parcel was located on the south side of the stream, with sections bordering the upper bank of the stream:

Koekoe, sworn, says he knows the kalo land claimed by Hoopalahe in Hau`ula. There are two patches forming one piece, Bounded on the North by the stream...Witness knows the house lot claimed by Hoopalahe in Kaipapa`u, the stones are prepared for building a wall around it. It is bounded on the North by a stream...

LCA 8167 (R.P. 4768) awarded to Hikiau, encompasses the stream for approximately 700 ft from Kamehameha Highway extending *mauka* (west). It was a large award (8.75 ac.) and bounds against LCA 8171 on its' south side:

Maiiahi, sworn, says he knows the kula land claimed by Hikiau in Kaipapa`u (a Government Land). There is but one piece which is cultivated in potatoes, melons, and it is bounded...South by the land of Hoopalahe...Witness knows the House Lot of Claimant. It is not enclosed. It is bounded on the Waialua side by a stream...

Additionally, other LCAs exist just south of LCA 8171, including LCA 8340 (R.P. 2050):ap. 1 & 2 (awarded to Kaiwinui and heir Makaiopulani), LCA 8416 (R.P. 8159) (awarded to Koaniani), and LCA 3700 (R.P. 1312):ap. 3 & 4 (awarded to Mokulama). Land use for these *kuleana* awards was similar (*i.e.* habitation and agricultural use within the same parcel) to that of LCA 8167 and 8171, discussed above.

Settlement Pattern as shown by LCAs

Kaipapa`u *Ahupua`a*, directly north of Hau`ula *Ahupua`a*, did have a small clustering of native Hawaiians living along the shore. More *mauka*, there were no individual *kuleana* parcels. In Hau`ula *Ahupua`a* there were three times as many LCA *kuleana* awards. Possibly, acreage of useable land, or resources on the land prevented the population from getting larger within Kaipapa`u. Two LCAs (8167 and 8171) bordered Kaipapa`u Stream on both sides from the shore to inland of the present day Kaipapa`u Bridge. Land use associated with the two LCA included habitation (*i.e.* houselot) and agriculture within relatively large parcels.

C. 1850-1900

The second half of the nineteenth century in Ko`olauloa was characterized by the influx of immigrant workers and the establishment of the Mormon presence in Lā`ie,

L A I E
Section 5

M A K A O
Section 3



(See insert)

ADVANCE SHEET
SUBJECT TO CHANGE

FIRST DIVISION	
ZONE	SEC.
5	4
CONTAINING	PLATS
Scale: as noted	

Figure 3 Portion of Tax Map Key 5-4, Showing Location of Kuleana Claims Near Kaipapa`u Bridge.

northwest of Hau`ula. Both communities were intensively involved in the agricultural activities of Ko`olauloa which would continue to be important elements of society in the years to come.

Immigrant Labor

Hawaiians made up the majority of the labor force on sugar plantations through the 1870s, but the combination of an expansion of this labor-intensive industry and a decrease in the Hawaiian population resulted in the need for a larger labor resource (Glick 1980:4-6). The importation of foreign labor from China and Japan, initiated by the Caucasian-owned plantations, fulfilled this need.

In 1852, the Chinese became the first group of imported contract laborers (Schmitt 1977:327). In rural windward Oahu, most Chinese worked on the sugar and rice plantations or had their own farms or stores. Chinese immigration reached its heaviest during the late 1800's, particularly the 1880's (Glick 1980:127). This increase in immigration occurred at the same time (mainly the 1880's, 1890's, and the early 1900's) that agricultural workers, dissatisfied with living conditions and the lack of job mobility, left the sugar plantations for other occupations (*ibid.*:39-41).

The Mormons

The Church of Jesus Christ of Latter Day Saints (Mormon Church) acquired its first holdings in Lā`ie in 1865, fifteen years after the initial ten missionaries arrived in the area (Sterling and Summers 1978:157). This acquisition, consisting of 6000 acres of plantation land in Lā`ie, served as the foundation for what would become a religious, agricultural, and financial stronghold. The first Hawaiian convert to the Mormon faith, baptized in 1869, was a man of royal lineage named J.H. Napela (Na-pela-kapu-o-Namahanaikaleleonalani), who was formerly active in the Congregational Church. The mission strengthened and in 1920 the Mormon temple was dedicated.

D. Early 1900's To Present

Major developments in Ko`olauloa during the 20th century include the growth of railroads in conjunction with the sugar industry, the construction of Kamehameha Highway, the construction of several hiking trails and a ranger cabin in the Ko`olau mountains, and the expansion of Mormon enterprises.

Railroad Companies

The three railroad companies in operation in Ko`olauloa during the early 1900's were the Kahuku Plantation Company, the Ko`olau Railway Company, and the Waiāhole Water Company. The operations of these companies improved the logistics of the sugar industry and provided a cultural and social connection for the various peoples inhabiting windward Oahu.

The creation of the Ko`olau Railway Company in 1905 by the Hawaiian Development Company, Ltd. (a conglomeration of businesses), under the impetus of James B. Castle, resulted not only in the improvement of agricultural transport but the

unification of the windward community (Condè and Best 1974:308). The railway functioned in cooperation with the Ko`olau Agricultural Company, both of which were owned by the Zion Securities Corporation. This railway was envisioned as the connecting link between Kahuku (the Oahu Railway), Kāne`ohe, and Honolulu. However, its construction culminated with the initial section from Kahuku to Kahana, running past Kaipapa`u along the Kamehameha Highway alignment, which was completed by the end of 1907. In 1931, the Ko`olau Railway Company was purchased by the Kahuku Plantation Company which operated portions of the line until its dissolution in 1955 (Condè and Best 1974:298,300).

Although the Ko`olau Railway Company's line did not reach its ultimate destination of Honolulu, its presence on the windward side proved to be, if only for a limited time, a beneficial stimulus to the agricultural and ethnic community. As noted in a January 1908 issue of the *Pacific Commercial Advertiser* (Condè and Best 1974:308):

From here [Kahuku] two trains run daily, connecting with the noon train from Honolulu and one reaching Kahuku in the late afternoon. Passengers and freight are carried as far as Kahuna and the traffic so far developed has been such as to encourage the promoters. The trip over the line is interesting and the fare is five cents a mile. Running rights over the line between Kahuku Mill and Lā`ie Plantation are given the Kahuku Plantation for the transportation of the Lā`ie cane crop...This, during the grinding season, makes the end of the line a busy one. The crop at Lā`ie this season is a good one too and the Mormon Settlement is a prosperous and busy one.

The main train station for the area was in Hau`ula, just south of the Kaipapa`u Bridge. The use of the railway by passengers is further related in an article in Thrum's 1911 *Hawaiian Annual* (128-133) which describes a leisurely train ride from Hale`iwa to Kahana, including a brief stop in Hau`ula, "a station of growing importance." Passengers on this excursion represented several nationalities including Chinese, "haole", and Hawaiian (who were the most numerous). In their study of rural Chinese of O`ahu, Char and Char (1988:114) indicate that the completion of the Kahana to Kahuku route, through improved transportation and produce exchange, strengthened ties between these district communities. The tracks ran *mauka* of the present project area (Figures 4 & 5).

Kamehameha Highway

The construction of Kamehameha Highway in 1932 (Figure 6) by the Department of Public Works, City and County of Honolulu reflected a major shift in transportation and resulted in the restructuring of the local community. By providing easier access to all parts of the island, the highway increased mobility and fostered urbanization. In the early to mid-1900's, the agricultural industry's switch from railway to truck transport rendered train hauling obsolete and the introduction of automobiles to Hawai`i marked an increase in individualized mobility, all of which furthered the development of an upgraded roadway.

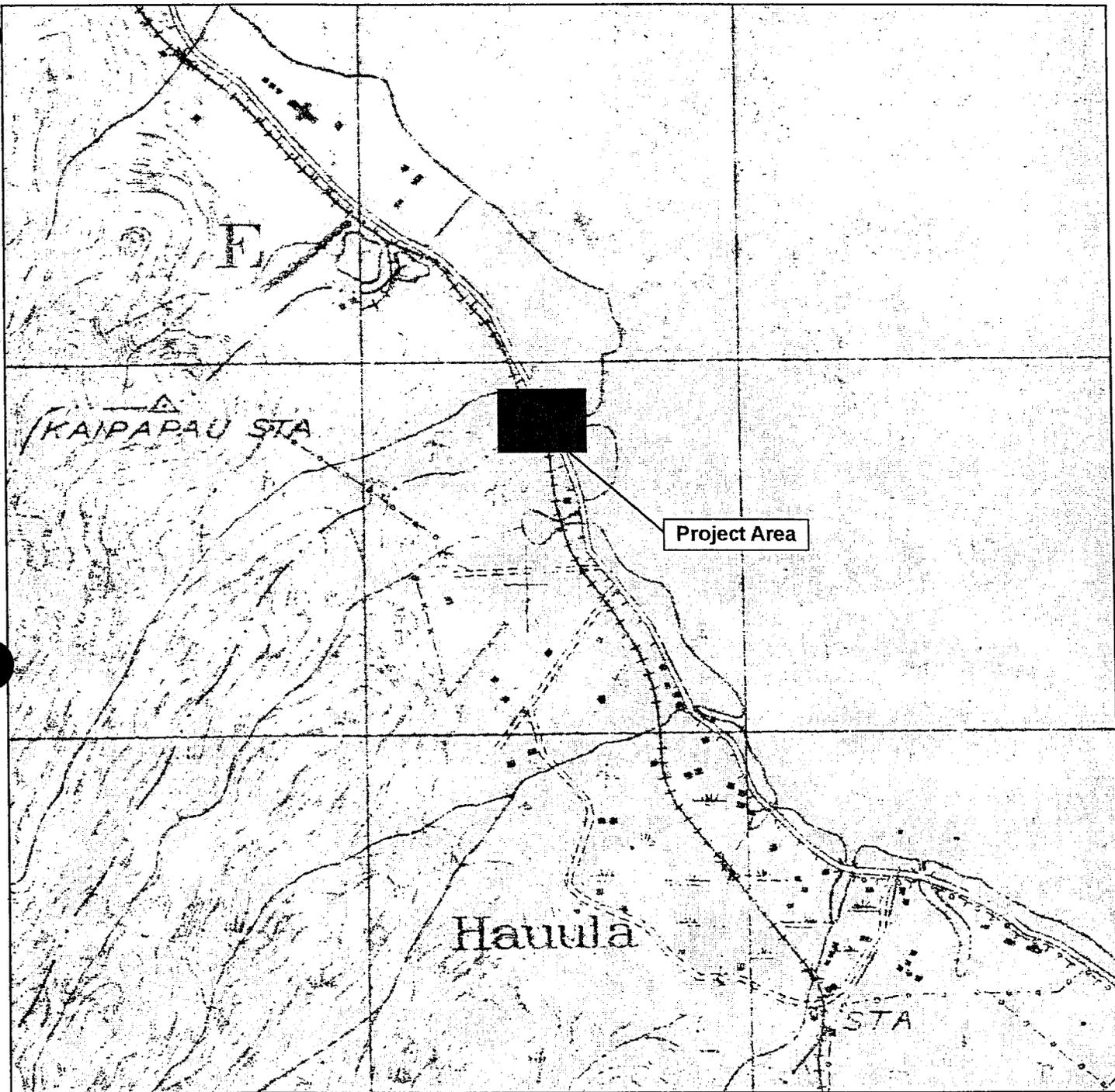


Figure 4 War Department Fire Control Map (1918) Showing Roads, Houses, and Fences in the Vicinity of the Project Area.

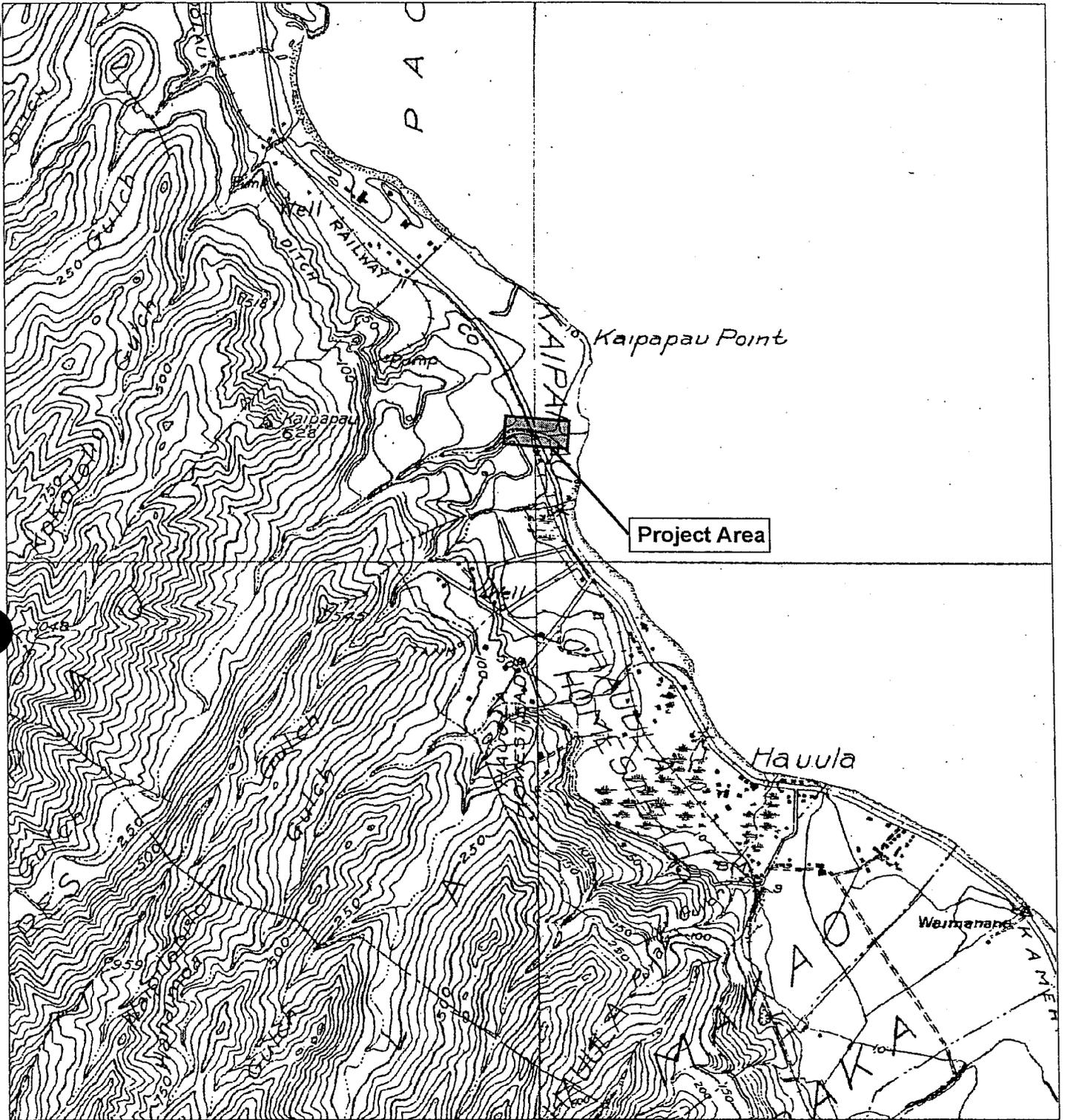


Figure 5 1924-1930 USGS Topographic 7.5 Minute Series Map, Kaipapau and Kahana Quads, Showing Infrastructure in the Vicinity of the Project Area.

Kaipapa`u Bridge

The Kaipapa`u Bridge was originally built in 1932 as part of the Kamehameha Highway project (Thompson 1983)(Figure 6). The bridge and the section of roadway immediately associated with it were constructed by contractor L. L. McCandles:

The bridge is a two span reinforced concrete deck girder structure, 82' in total length, 28.4' wide, and 12' in height. It has a design load capacity of H-15. The abutments and parapets are constructed of reinforced concrete. There is a wooden railing and walkway on the right. The design integrity is not intact.

The bridge is an important transportation link for Windward communities and it is associated with one of Honolulu's prominent builders (*Ibid.*).

At present, there appears to be some structural damage to the bridge (Figures 11 & 12). But sections of the bridge have been recently repainted, including the wooden pedestrian walk along the *mauka* side.

Modern Land Usage

The Kaipapa`u Bridge now exists within a fully urbanized setting, with residential units at all four corners of the bridge, and houses extending further up and down the stream on all sides (Figures 9-16). The former railroad bridge and tracks have long been dismantled. During an interview with Mr. Roland 'Ahi' Logan, he revealed that the railroad bridge and tracks were removed at the same time the shopping center to the north of the Kaipapa`u Stream was built; year not known.

E. Summary

Hau`ula has been an important place for traditional Hawaiians since early times. Several legends exist mentioning the locale of Kaipapa`u. By the Māhele, and most likely before it, while Hau`ula, directly to the south was densely populated (as evidenced by LCA data), the *ahupua`a* of Kaipapa`u only contained a few LCAs. Two of these (LCA 8167 & 8171) were located at the mouth of the stream. Both of these larger than average sized *kuleana* awards also had combined agricultural and habitational uses.

The coastline area of Kaipapa`u has long been a major transportation route. The sugar cane era (*ca.* early 1900's) brought the advent of the railroad to the area (Figures 4, 5, & 6). The railroad tracks and bridge were just *mauka* of the present-day Kaipapa`u Bridge. These tracks and the associated bridge over Kaipapa`u Stream were later dismantled; 'when the shopping center came in', according to Mr. Roland 'Ahi' Logan (Interviews section of this report). As automobiles became the main transportation choice in Hawai'i, the Kamehameha Highway was constructed (*ca.* 1932), much along the route of its' predecessor. Along with the Kamehameha Highway, Kaipapa`u Bridge was constructed (also 1932).

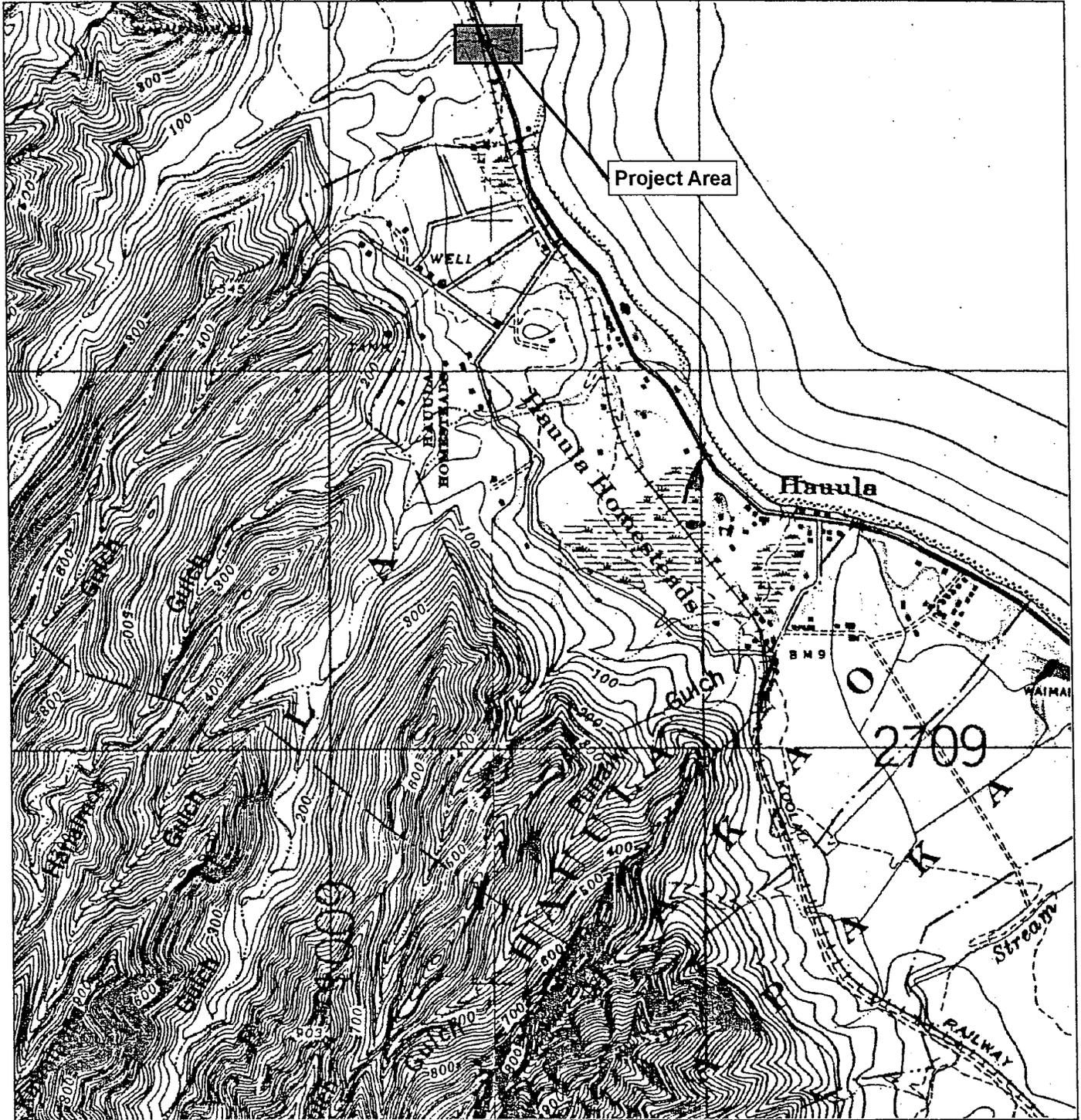


Figure 6 War Department 1943 Kahana Quad Map, Showing Infrastructure in the Vicinity of the Project Area.

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological research in Kaipapa`u *Ahupua`a* is very limited. Adjoining Kaipapa`u *Ahupua`a* to the south is Hau`ula *Ahupua`a*. As a multitude of archaeological research has been completed within Hau`ula, thought to be fairly similar to Kaipapa`u. Previous archaeological studies in Hau`ula *Ahupua`a* and vicinity are summarized in Table 1 and Figure 7 and are briefly summarized below. Sites previously designated in Hau`ula *Ahupua`a* and vicinity are located in Figure 8. As a generalization, previous archaeological studies have basically identified two types of sites: A) Cultural layers and burials near the coast, and B) Structural sites at the toe of the foot hills and in the valleys.

Table 1: Previous Archaeological Studies Hau`ula *Ahupua`a*

Source	Location	Study Type	Findings
McAllister 1933	Island-wide	Archaeological Reconnaissance	Identified 4 sites in vicinity: - 286 Kaunihokahi Heiau, -287 Maunawila Heiau, -288 Inclosures & -289 Luaali`i Heiau
Hawaii Register of Historic Places Nomination Form for Site - 1056	Kaipapau Valley	Historic Places Nomination Form	One platform in "Upper Kaipapau Stream" site
Steer & Morin 1978	Ma`akua Gulch	Site Survey	Identify 2 features, animal pens?
Connolly III 1980	Hau`ula Playground just W. of school	Archaeological Reconnaissance	No surface remains
Barrera 1981	<i>Makai</i> of Kam. Hwy. N. Kaipapau	Archaeological Reconnaissance	Extensive subsurface site, no site # given
Barrera 1984	Kaipapau Valley	Archaeological Reconnaissance	Viewed project area from ridge to south
Riford 1984	The 7-11 property in Hau`ula, situated <i>mauka</i> of Hau`ula Beach Park	Archaeological Reconnaissance	No significant finds

Smith 1987	Kaipapau Loop, Kaipapau Point	Archaeological Testing	No significant finds
McMahon 1988	Back of central Hau`ula Town	Field check	Identified Kaunihokahi Heiau
Walker & Rosendahl 1988a	Back of central Hau`ula Town	Archaeological Test Excavation	Report historic glass and branch coral in double enclosure Site -3394
Walker & Rosendahl 1988b	Kaipapau Exploratory Well, Kaipapau Valley	Archaeological Reconnaissance	Identified a wall and a ditch associated with Site -1056
Shun and Dies 1991	Mouth of Ma`akua Gulch	Archaeological Monitoring	Monitoring was to avoid impact to Site -3394. They identified Site-4227 further <i>mauka</i>
Landrum 1992	Mouth of Ma`akua Gulch	Archaeological Site Evaluation	Evaluates and recommends preservation measures for Sites -3394 and -4227
Bordner 1994	N. side Kaipapau Stream	Archaeological Assessment	Historic boundary walls and clearings noted. No sites designated.
Masterson <i>et al.</i> 1997	Kamehameha Hwy. Kapaka to Lā`ie Waterline	Archaeological Monitoring Report	Identifies cultural layer & burial Sites -4792 to -4798 in Hau`ula area
Wolforth 1997	Kukuna Road Central Hau`ula Town	Description of Sites	Briefly describes 5 sites: -5449, 5450, -5451, -5452 & -5453
Masterson <i>et al.</i> 1998	Hau`ula Beach Park	Archaeological Inventory Survey	Minimal findings
Elmore & Kennedy 1999	Hau`ula Elementary School	Burial Recovery	Burial (1) Site -5765 and probable cultural layer
Perzinski <i>et al.</i> 2000	Hau`ula Community Park	Archaeological Monitoring Plan	Plan for park
Bush & Hammatt 2001b	Hau`ula Baseyard, Kamehameha Hwy. & Hau`ula Homestead Road	Archaeological Monitoring Report	No significant Findings

Elmore & Kennedy 2001	Hau`ula Elementary School	Archaeological Monitoring Report	Burial (1) Site -5917
Bush & Hammatt 2001a	Hau`ula Beach Park Improvements	Archaeological Monitoring Report	Burial (1) Site -5801
Bush <i>et al</i> 2002	Dept. of Transportation Hau`ula Baseyard	Archaeological Monitoring Report	No evidence of any cultural material.

A. Cultural Layers and Burials Near the Coast

Coastal pre-contact sub-surface deposits have been shown to be common but spotty in distribution. Barrera (1981) encountered cultural deposits north of Kaipapau Point at a property immediately *makai* of the Hau`ula Kai Shopping Center. Although no surface sites were present, a coral concentration, historic and indigenous artifacts were recovered during testing which revealed an extensive cultural deposit. Eroding from the storm berm along the *makai* perimeter of the property a human burial was present. The subsurface feature and a human burial were assigned State Site #50-80-05-1430. At the point itself, Smith (1987) however, identified nothing of significance. An inventory survey at Hau`ula Beach Park (Masterson *et al.* 1998) found no cultural deposits but monitoring at the Beach Park (Bush & Hammatt 2002) encountered a single burial. The continuous transect of the archaeologically monitored Hau`ula Waterline project (Masterson *et al.* 1997) identified numerous sites (-4792 to -4798) but there were also long gaps. Work at Hau`ula Elementary School (Elmore and Kennedy, 1999 & 2001) encountered two burials. Other coastal studies may have encountered nothing either because of previous land disturbance (Riford 1984, Bush and Hammatt 2001) or because of an absence of subsurface testing. (Connolly III 1980). The report of numerous burials, *imu*, pre- and post-contact cultural layers at a small project area on Kukuna Road in central Hau`ula Town (Wolforth 1997) underscores the possibility of significant finds in seaward areas.

B. Sites Near the Project Area

State Site #'s 50-80-06-4795 (Buried Cultural Deposit with associated Human Burial), and -4796 (Human Burial) exist in close proximity to the current bridge replacement. Site -4795 is approximately 350 ft. south of the bridge, immediately underneath the highway and extending *mauka*. Site -4796 is approximately 120 ft. north of the bridge, immediately under the highway.

These two state sites may be associated with nearby LCAs. These same LCAs border the proposed bridge improvements project area on both sides.

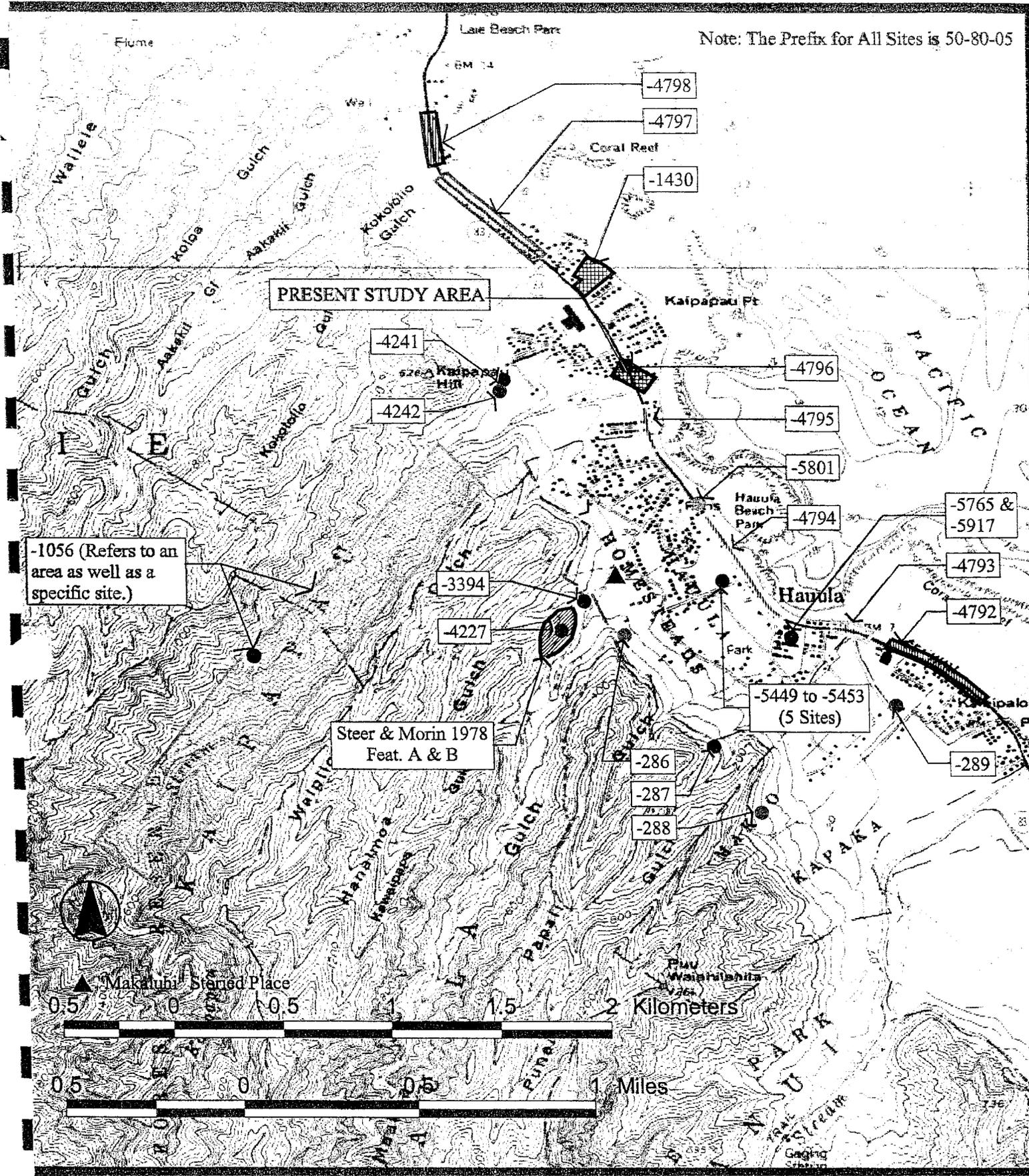


Figure 8 Portion of the USGS Hau'ula Quad Showing Archaeological Sites Near the Project Area

Mr. Cy Bridges

Cultural Surveys Hawai'i has interviewed Mr. Cy Bridges several times regarding a variety of different projects within the Lā'ie to Punalu'u area. As a long-time resident, a *kumu hula*, and the Cultural Advisor for the Polynesian Cultural Center, he is very familiar with the area, traditional customs that may be associated with certain areas, and knows many of the areas resident families.

When questioned about the Kaipapa'u Bridge, Mr. Bridges revealed what he knows about the bridge and Kaipapa'u *ahupua'a* in general. He remembers the former land owners, the 'Iseke (Izeki?)' family. They owned a large portion of land, including the land that holds the Kaipapa'u Bridge and much of the stream itself. The family was so prominent for the area that Mr. Iseke was informally called 'Mr. Kaipapa'u'.

Up *mauka* from the Kaipapa'u Bridge was the Iseke's piggery. The piggery was wiped out during the Tsunami of 1946. But people who now live in that area can still notice a remnant smell of the piggery. Mr. Bridges recommended contacting the granddaughter of the Iseke family, Laura Stoke?, but does not know how to contact her. Mr. Bridges does not recall the date that the Kaipapa'u Bridge was completed. Mr. Bridges did not mention any specific cultural concerns regarding proposed improvements to Kaipapa'u Bridge.

Mr. Benjamin Nihipali

Mr. Nihipali is a longtime resident of the area. After the interview, the only relevant information regarding the Kaipapa'u Bridge was about the *tsunami* (of 1946?). He remembers the water coming up the stream adjacent to his house, as well as Kaipapa'u Stream, surging up the valley, coming up on their lawn fronting their house, but not enough to inundate the house. Mr. Nihipali did not mention any specific cultural concerns regarding the proposed improvements to Kaipapa'u Bridge.

Mr. Roland 'Ahi' Logan

Mr. Logan is a longtime resident of the Hau'ula-to-Lā'ie area. He is 73 years old. He has shared a wealth of knowledge about the area with CSH regarding other projects in the area. Although unable to conduct an interview that could be recorded, Mr. Logan went over some important details he remembers over the years, regarding Kaipapa'u Bridge.

Firstly, Mr. Logan translated the name Kaipapa'u for me. Kai literally means 'water'. Papa means reef, and Papa'u translates to 'exposed reef'. Together, Mr. Logan translated the name Kaipapa'u as 'when the waters recede, the reef is exposed.'

Mr. Logan recalls that old-timers utilized the stream for fresh water fishing, for both *o'opu* and *'opae*. Of all the streams in the area, Mr. Logan recalls that the Kaipapa'u Stream has always had the strongest and most steady flow.

He recalls when the entire land *mauka* of the bridge was still in sugar cane. The sugar cane companies maintained the Kaipapa'u Stream very well. The sugar cane railroad had a bridge over the Kaipapa'u Stream, just *mauka* of the Kamehameha

Highway bridge. When the City and County took over the land, the stream was never again maintained as well as when the sugar cane company maintained it. At present, the stream is completely clogged with tall grasses and weeds.

On April 1, 1946, Mr. Logan recalls witnessing the *tsunami*, perched up in a *kamani* tree right along the shore line, somewhere between Hau`ula and Lā`ie. He was 15 years old at the time and felt the tree would be a good vantage point to watch the wave come ashore. The first wave came up gradually, and seeped its way inland. The waters then receded to what Mr. Logan calls '1 mile out'. The entire reef was exposed. People who lived around ran out and grabbed as much fish as they could. The second wave came ashore, this time going 200 ft. or more up all streams, and coming up past the highway. Large boulders were pushed back and forth across the land. The receding waters took two houses back into the ocean with it. The third and final large wave took more houses out. Surprisingly, according to Mr. Logan, only one person died during the ordeal, in the immediate community.

Through the *tsunami* of 1946, both the highway and railroad bridges survived with minimal damage. When the nearby shopping center, immediately northwest of the Kaipapa`u Bridge, was constructed (year not known), the old railroad bridge, which had already been abandoned for quite some time, was torn down. In 1988, heavy rains that drenched the entire island of O`ahu, and caused further damage to the highway bridge, mainly from flood debris flowing underneath and striking it.

Additionally, Mr. Logan informed me that there is a *heiau* further up Kaipapa`u Stream. He is unclear of the location but claims that one of the social workers at the nearby Queen Lili`uokalani Children's Center knows the location of the *heiau*.

V. CULTURAL PRACTICES

Because the bridge exists in an urbanized zone of Hau`ula/Kaipapa`u, ongoing cultural practices were not expected to be prominent. Although the urban nature of the project argues against ongoing cultural practices, it still seems appropriate to briefly summarize potential cultural impacts, as they may be discerned from the historic records and the previous research in the vicinity.

A. Archaeological Sites

There are no historic properties (other than Kaipapa`u Bridge) within the project area. A survey of the parcel included a complete surface survey in, around, and under the bridge, and historic background research on the bridge.

Background data indicates six mid-1800's awarded *kuleana* parcels were awarded in Kaipapa`u, two of which formerly existed in the project area at the bridge location. Additionally, two historic sites exist in close proximity to the bridge, State Site # 50-80-06-4795 (approximately 350 ft. south) and State Site # 50-80-06-4796 (approximately 120 ft. north).

B. Burial Sites

Coastal Hau`ula is well-known for having been the site of many traditional and early historic Hawaiian burials. The vast majority of these burial finds have been within or seaward of Kamehameha Highway. Jaucas sand deposits likely to contain burials are likely to exist within or near the present project area. Burials have been encountered immediately to the north and south of the bridge (*i.e.* Sites -4795 & -4796).

C. Fishing

Fishing for freshwater resources (*e.g.* `opae, o`opu) occurred in the stream previous to its urbanization, based on informant information. Undoubtedly, fishing still occurs for similar species though on a much reduced basis. Fishing will not be stopped due to any proposed bridge improvements.

D. Gathering

The project area has been heavily modified and the only plants present are several palm trees, landscaping foliage near houses, and tall grasses within the stream. At the point of urbanization that the bridge and its surrounding land is at now, no gathering practices are apparent within the project area.

E. Hunting

Hunting, specifically pig hunting, does not take place within the project area, although hunting does occur further up many of the surrounding valleys.

F. Sacred Sites

The Hau`ula area was well-known for its many important *heiau* (including Kaunihokahi, Kaipapa`u, and Lua`ali`i). None of these is understood as having been in or near the present project area.

F. Trails and Access

No trails or accessways would be inhibited in any way by the re-construction and repairs to the Kaipapa`u Bridge. The 'modern trail' (the Kamehameha Highway) will be pushed into one-lane access during the construction to the bridge.

G. *Wahi Pana* (storied places)

No storied places (*wahi pana*) are known within the present project area other than the qualities adhering to Kaipapa`u in general.

H. Conclusions

This good-faith attempt to evaluate the potential cultural impacts of the proposed project area on the basis of historical data, archaeological data, and informant information, concludes that there may be a possibility of encountering cultural layers and/or human burials during excavation associated with repairs to the Kaipapa`u Bridge. The entire project area was extensively modified in the past during construction of the former railroad bridge, the Kaipapa`u Bridge, and Kamehameha Highway, and the urbanization of the surrounding land. No traditional cultural practices have been identified within the project area that would be stopped by proposed bridge improvements.

A total of 3 persons were contacted for their input on and knowledge about the project parcel. Contacts included Mr. Ben Nihipali, Mr. Roland 'Ahi' Logan, and Mr. Cy Bridges.

There were no major concerns regarding the repairs to the Kaipapa`u Bridge voiced by area residents. Interviewee's were happy to share their experiences with and about the bridge, and seem to have no opposition to repairs being initiated on an important travelway of the immediate area.

In compliance with standard SHPD/DLNR requirements, CSH recommends archaeological monitoring of the planned bridge improvements due to known significant subsurface sites, both north and south of Kaipapa`u Bridge.

VI. REFERENCES

- Armstrong, R. Warwick, Editor and Project Director
1973 *Atlas of Hawaii*, Department of Geography, University of Hawaii, University of Hawaii Press, Honolulu, HI.
- Barrera, Jr., William M.
1981 *Hauula, Oahu: Archaeological Survey*, Chiniago, Honolulu, HI.
- Beckwith, Martha W.
1970 *Hawaiian Mythology*, Archaeological Research Center Hawaii, Inc., University of Hawaii Press, Honolulu, HI.
- Board of Water Supply, City and County of Honolulu
1991 *Environmental Assessment for a 16-Inch Transmission Main From Hauula to Kaipapau, Island of Oahu, Hawaii*, Prepared by Wilson Okamoto & Associates, Inc., Honolulu, HI.
- Bordner, Richard M.
1992 Archaeological Inventory Survey for Kaipapau Exploratory Well, Hau`ula '180' Reservoir and Access Road, Appendix B in *Final Environmental Impact Statement, Hauula 180 Reservoir and Booster Station (TMK 5-4-4:4 and TMK 5-4-19:54)*, Ahupua`a of Kaipapa`u, Prepared for Board of Water Supply, City and County of Honolulu, by Engineering Design Group, Inc., Honolulu, HI.
- Bryan, E. H. Jr.
1933 "A Nature Trail at Hauula", *The Mid-Pacific Magazine*, Volume 46:pp. 133 - 138.
- Bryan, E. H. Jr.
1991 Bryan's Sectional Map Book, Honolulu, HI.
- Bush, Tony, and Hallett H. Hammatt
2001a *Archaeological Monitoring Report for the Hau`ula Beach Park Improvements, Ko`olauloa, O`ahu (TMK: 5-4-02:22)*, Cultural Surveys Hawaii, Inc., Kailua HI.
- Bush, Tony, and Hallett H. Hammatt
2001b *Archaeological Monitoring Report for the Hau`ula Base Yard Improvements, Project No. HWY-0-03-98, 54-310 Hau`ula Homestead Road, Hau`ula, Ko`olauloa, O`ahu (TMK: 5-4-02:12)*, Cultural Surveys Hawaii, Inc. Kailua HI.

- Char, Tin-Yuke and Wai Jane Char
 1988 *Chinese Historic Sites and Pioneer Families of Rural Oahu*, Hawaii Chinese History Center, Inc., Honolulu, HI.
- Chun, James H.
 1983 *The Early Chinese in Punaluu*, Yin Sit Sha, ???.
- Clark, John R. K.
 1977 *The Beaches of O`ahu*. A Kolowalu Book, University Press of Hawaii, Honolulu, HI.
- Condè, Jesse C. and Gerald M. Best
 1974 *Sugar Trains, Narrow Gauge Rails of Hawaii*, Glenwood Publishers, Felton, CA.
- Connolly, Robert D.
 1980 *Archaeological Reconnaissance Survey at the Hauula Playground Site*, Archaeological Resource Associates, Honolulu, HI.
- Elbert, Samuel H.
 1959 *Selections from Fornander's Hawaiian Antiquities and Folklore*, University of Hawaii Press, Honolulu, HI.
- Elmore, Michelle and Joseph Kennedy
 1999 *A Report Concerning the Inadvertent Discovery of Human Remains at Hau`ula Elementary School TMK: (1) 5-4-06:4 in Hau`ula Ahupua`a, Ko`olauloa District, Island of O`ahu* Archaeological Consultants of the Pacific, Inc., Hale`iwa, HI.
- Foote, Donald E., E.L. Hill, S. Nakamura and F. Stephens
 1972 *Soil Survey of the Islands of Kaua`i, Oahu, Maui, Molokai and Lanai, State of Hawaii*, U.S. Dept. of Agriculture, U.S. Government Printing Office, Washington, D.C.
- Free, David
 1994 *Vignettes of Old Hawaii*, Crossroads Press, Inc., Honolulu, HI.
- Glick, Clarence E.
 1980 *Sojourners and Settlers: Chinese Migrants in Hawaii*. Hawaii Chinese History Center and The University Press of Hawaii, Honolulu, HI.
- Handy, E.S. Craighill and Elizabeth G. Handy
 1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*, Bishop Museum Bulletin 233, Honolulu, HI.

- Haraguchi, Karol
1987 *Rice in Hawaii: A Guide to Historical Resources*, Hanalei, HI.
- Judd, Charles S.
1933 *Report on Kaipapau Cabin*, Territory of Hawaii, HI.
- Kaua'i Historical Society
1991 *The Kauai Papers*, A Kauai Historical Society Publication, Lihu'e, Kaua'i, HI.
- Kennedy, Joseph
1992 *An Archaeological Data Recovery Report for the Proposed Kokololio Beach Park Located at TMK 5-5-1:54 La'iemalo'o Ahupua'a, Koolauloa District, Island of Oahu, Hale'iwa*, Rev. Dec. 1992.
- Kugle, Scott
1991 "Lanakila-Hau'ula Congregational Church," *Historic Hawaii*, March issue, 14-15, Honolulu, HI.
- Masterson, Ian, Tom Devereux and Hallett H. Hammatt
1998 *Archaeological Inventory Survey and Subsurface Testing Report for the Proposed Expansion of Hau'ula Beach Park, Ko'olauloa, O'ahu (TMK5-4-02:22) Draft*, Cultural Surveys Hawaii, Kailua, HI.
- Masterson, Ian, Melody Heidel, Leilani Pyle, David Shideler and Hallett H. Hammatt
1997 *An Archaeological Monitoring Report for the Kapaka to La'ie Waterline*, Prepared for the Board of Water Supply, Cultural Surveys Hawaii, Kailua, HI.
- McAllister, J.G.
1933 *Archaeology of O'ahu*, Bishop Museum, Bulletin 104, Honolulu, HI.
- Perzinski, David, David W. Shideler and Hallett H. Hammatt
2001 *Archaeological Monitoring Plan for Hau'ula Community Park, Hau'ula Ahupua'a, Ko'olauloa District, O'ahu (TMK: 5-4-01, 5-4-08 and 5-4-09; Various Parcels)*, Cultural Surveys Hawaii, Kailua, HI.
- Pukui, Mary Kawena
1983 *Olelo No'eau: Hawaiian Proverbs and Poetical Sayings*, Bishop Museum Special Publication No.71, Bishop Museum Press, Honolulu, HI.
- Pukui, Mary K., Samuel H. Elbert and Esther Mookini
1974 *Place Names of Hawaii*, University of Hawaii Press, Honolulu, HI.

- Rice, William Hyde
1923 "Hawaiian Legends," *Bernice P. Bishop Museum Bulletin 3*, Honolulu, HI.
- Riford, Mary F.
1984 *Archaeological Reconnaissance of Shell Oil Company Property*, Bishop Museum, Honolulu, HI.
- Schmitt, Robert C.
1977 *Historical Statistics of Hawaii*, The University of Hawaii Press, Honolulu, HI.
- State of Hawaii, Department of Land and Natural Resources (DLNR)
1991 *Na Ala Hele, Hawai'i Trail & Access System Program Plan*, DLNR, Honolulu, HI.
- State of Hawaii, DLNR and The National Park Service
1990 Draft, *Hawaii Stream Assessment, Hawaii's Streams and their Instream and Riparian Resources*, Honolulu, HI.
- Steer, D. and J. Morin
1978 *Ma`akua Gulch, Hau`ula, Oahu, Site Survey*, University of Hawaii Hamilton Library, Honolulu, HI.
- Sterling, Elspeth P. and Catherine C. Summers
1978 *Sites of O`ahu*, Dept. of Anthropology, B.P. Bishop Museum, Honolulu, HI.
- Thompson, Bethany
1983 *Historic Bridge Inventory: Island of Oahu*, prepared for the State of Hawaii, Department of Transportation, Highways Division, Honolulu, HI.
- Thrum, Thomas G.
1911 "For Kahuku and Beyond. Narrative of a Day's Outing by Train," *Hawaiian Annual for 1911*, pp. 128-133.
- Titcomb, Margaret
1972 *Native Use of Fish in Hawaii*, University of Hawaii Press, Honolulu, HI.
- Wagner, Warren L., Derral R. Herbst and S.H. Sohmer
1990 *Manual of the Flowering Plants of Hawai'i*, 2 vols., University of Hawaii Press, Honolulu, HI.
- Walker, Alan T. and Paul Rosendahl
1988 *Archaeological Reconnaissance Survey of the Proposed Kaipapau Exploratory Well Site and Access Road Project Area. Report 418-111088(K)*. Paul H. Rosendahl, PhD, Inc. ms for Belt Collins & Assoc., Hilo, HI.

Ziegler, Alan
1996

Hau'ula to Laie Technical Report.

APPENDIX A: PHOTOGRAPHS

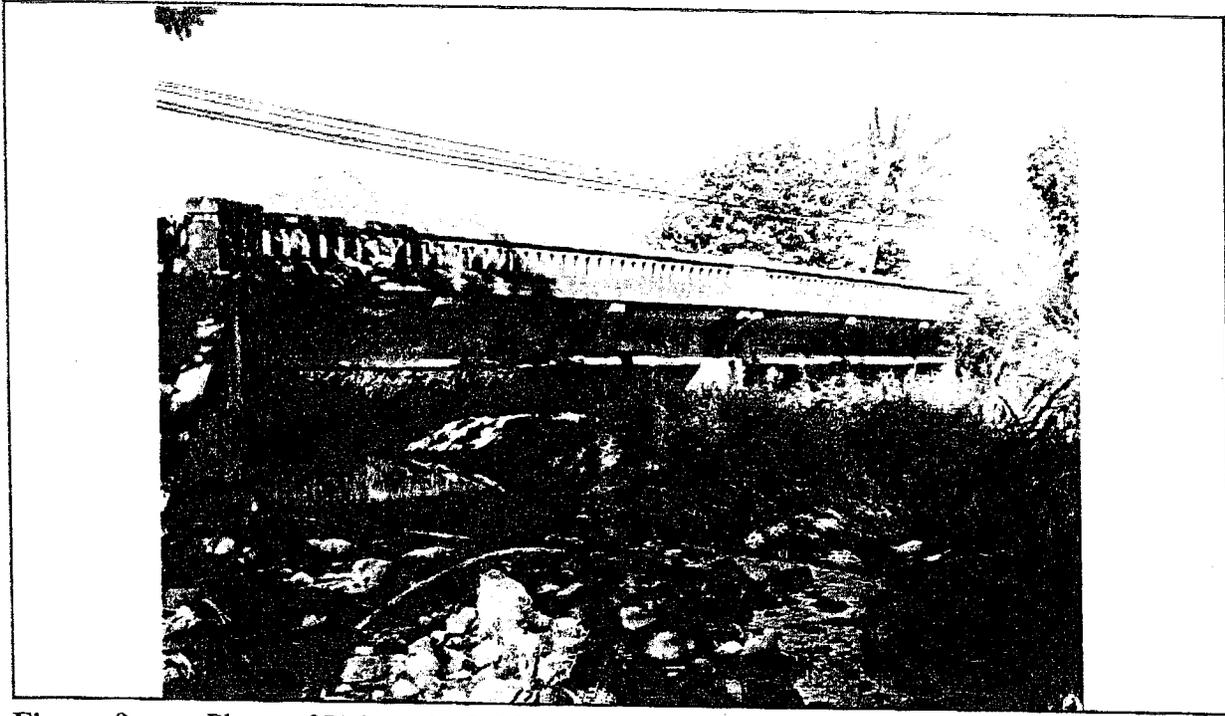


Figure 9 Photo of Kaipapa`u Bridge and Stream, taken to west.

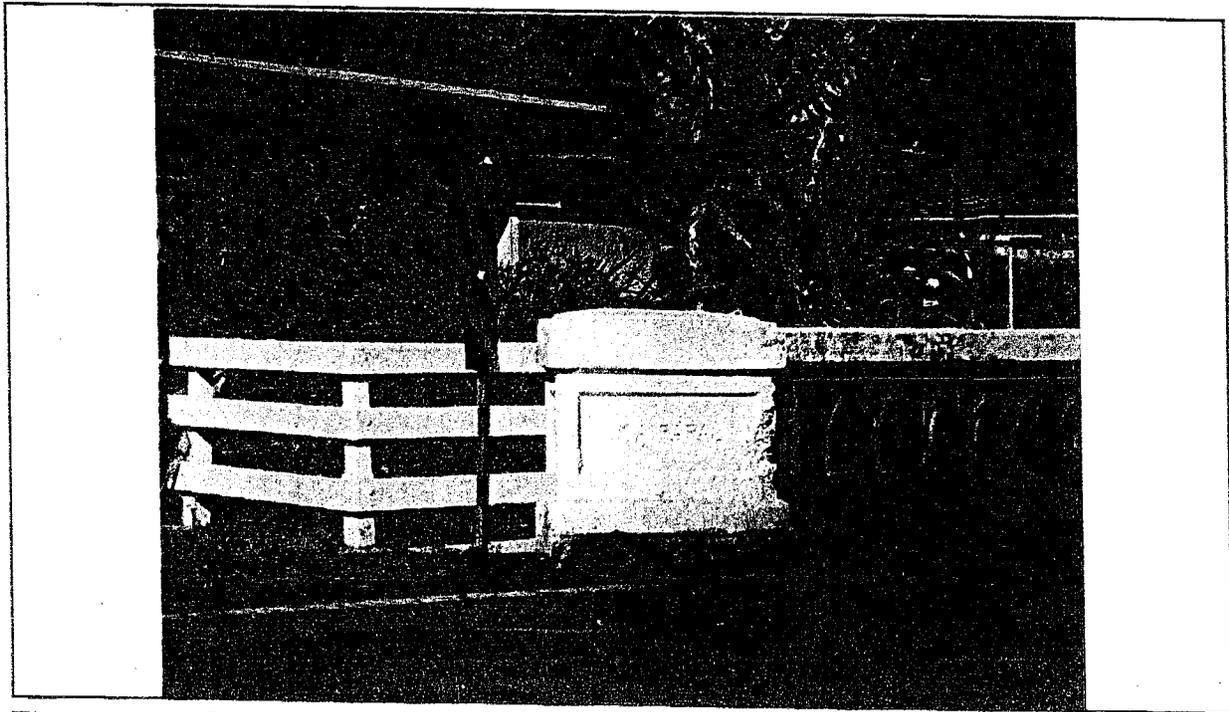


Figure 10 Photo of Kaipapa`u Bridge, showing 'KAIPAPAU' emblem on mauka south bridge corner, taken to west/northwest.

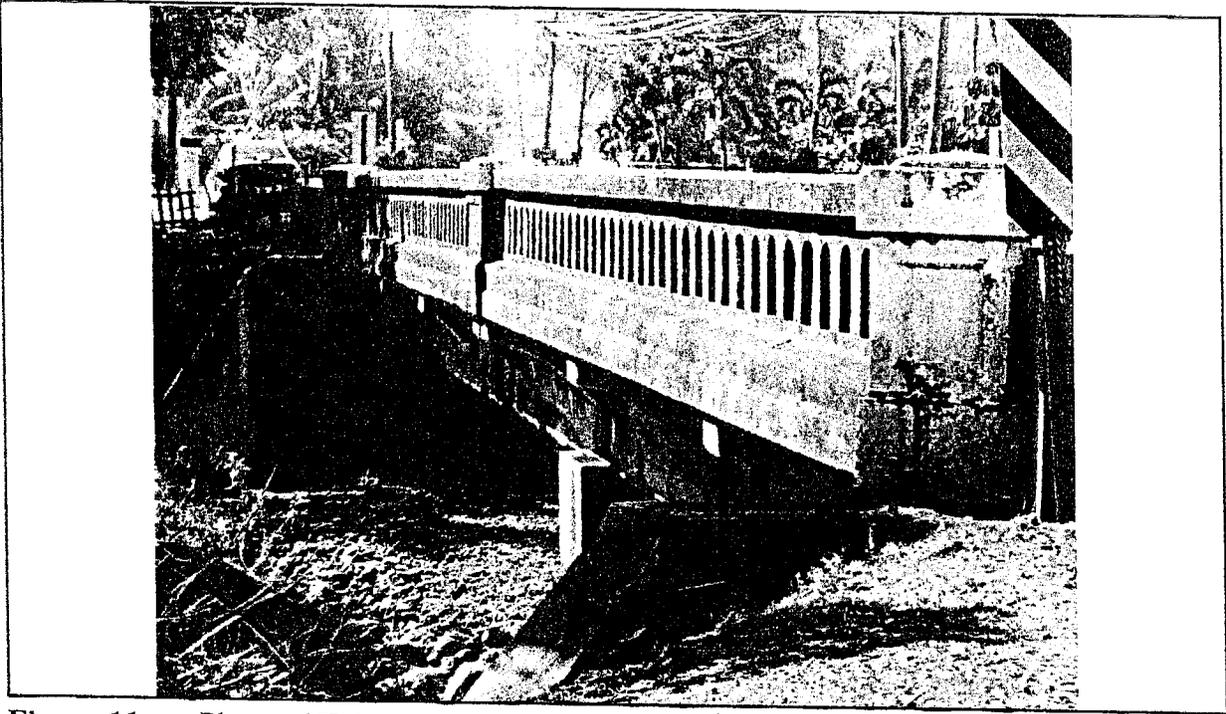


Figure 11 Photo of Kaipapa`u Bridge, Makai Side, Taken to South.

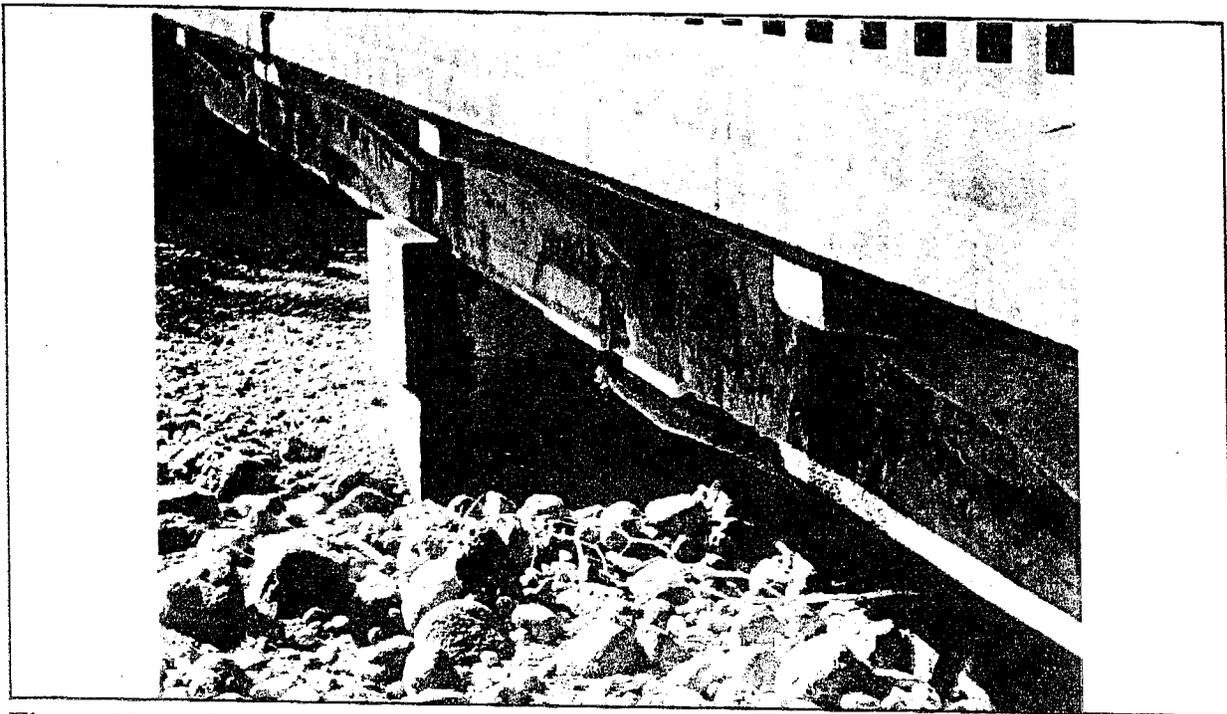


Figure 12 Photo of Kaipapa`u Bridge, Makai Side, Showing Structural Damage, Taken to South/Southwest.

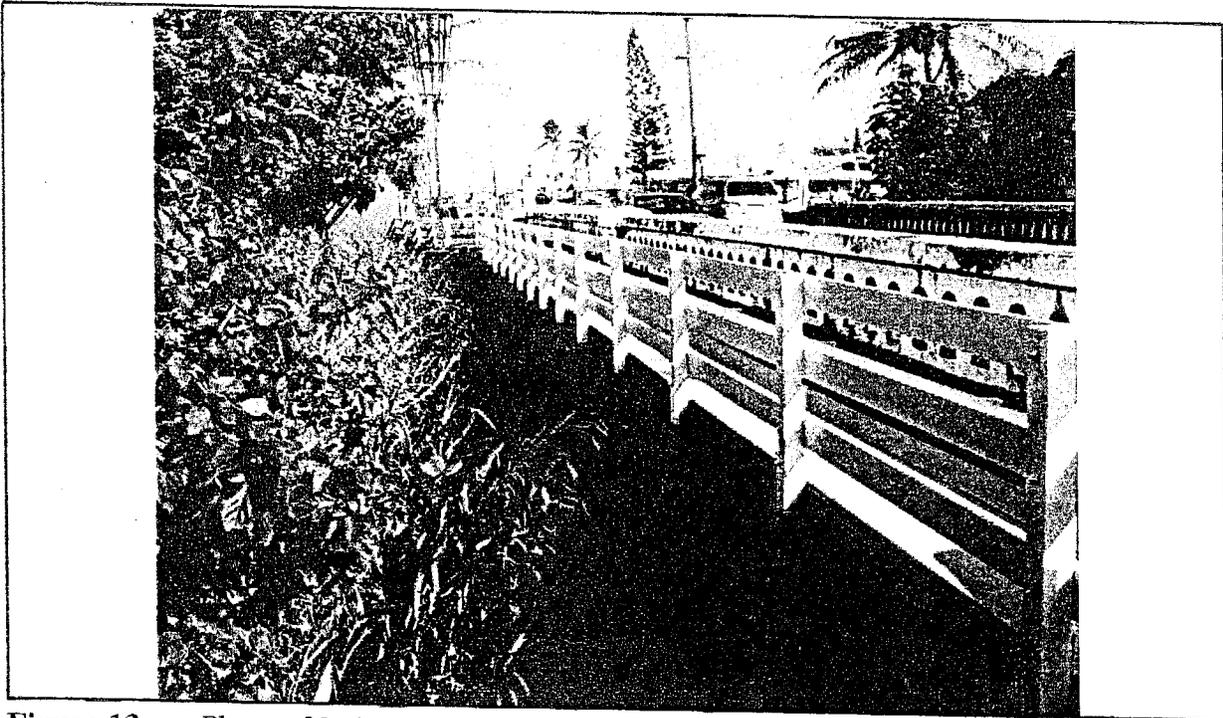


Figure 13 Photo of Kaipapa`u Bridge and Accompanying Pedestrian Walkway, Taken to North.

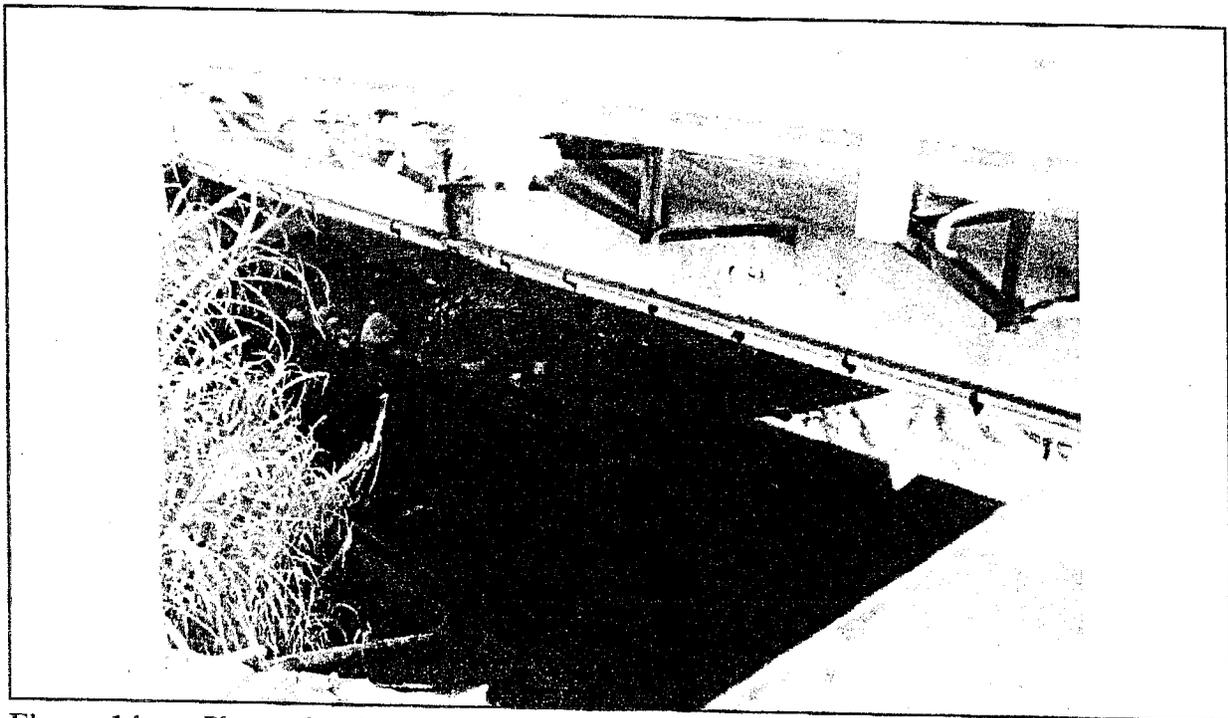


Figure 14 Photo of Kaipapa`u Bridge, Mauka Side, Showing Kaipapa`u Stream and Underneath the Pedestrian Walkway.

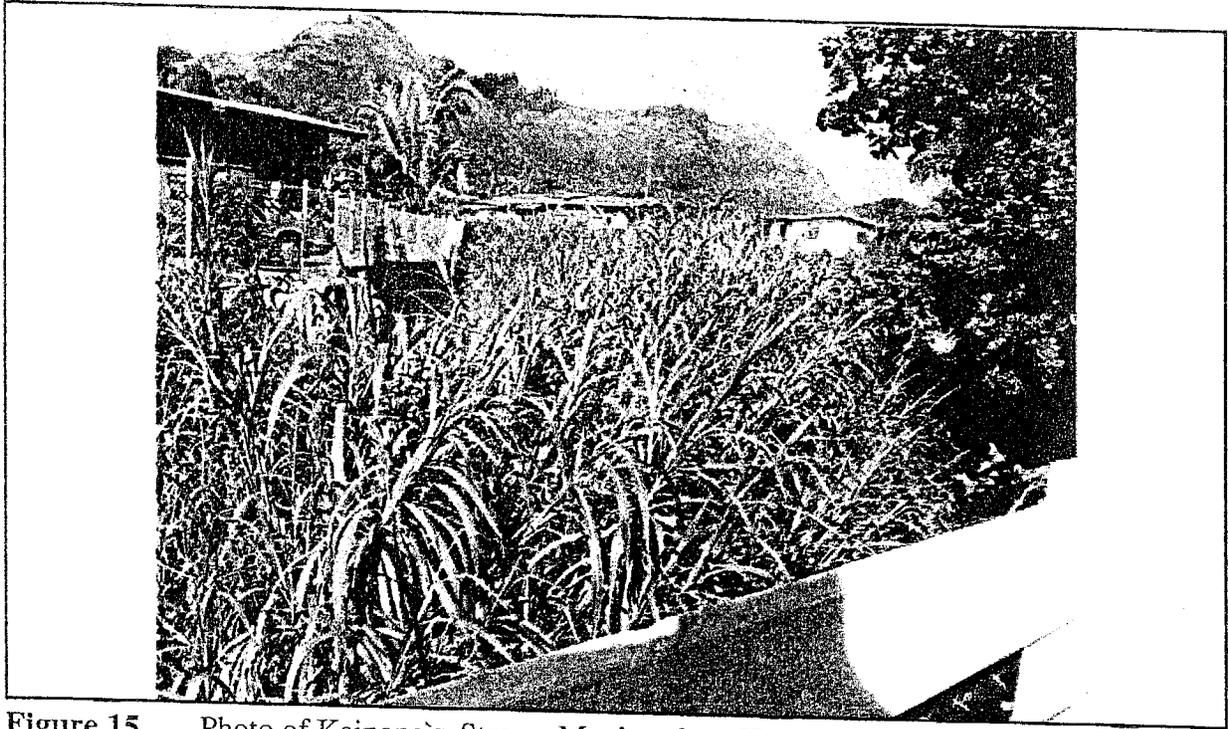


Figure 15 Photo of Kaipapa`u Stream Mauka of the Kaipapa`u Bridge, Currently Completely Overgrown With Tall Grasses.

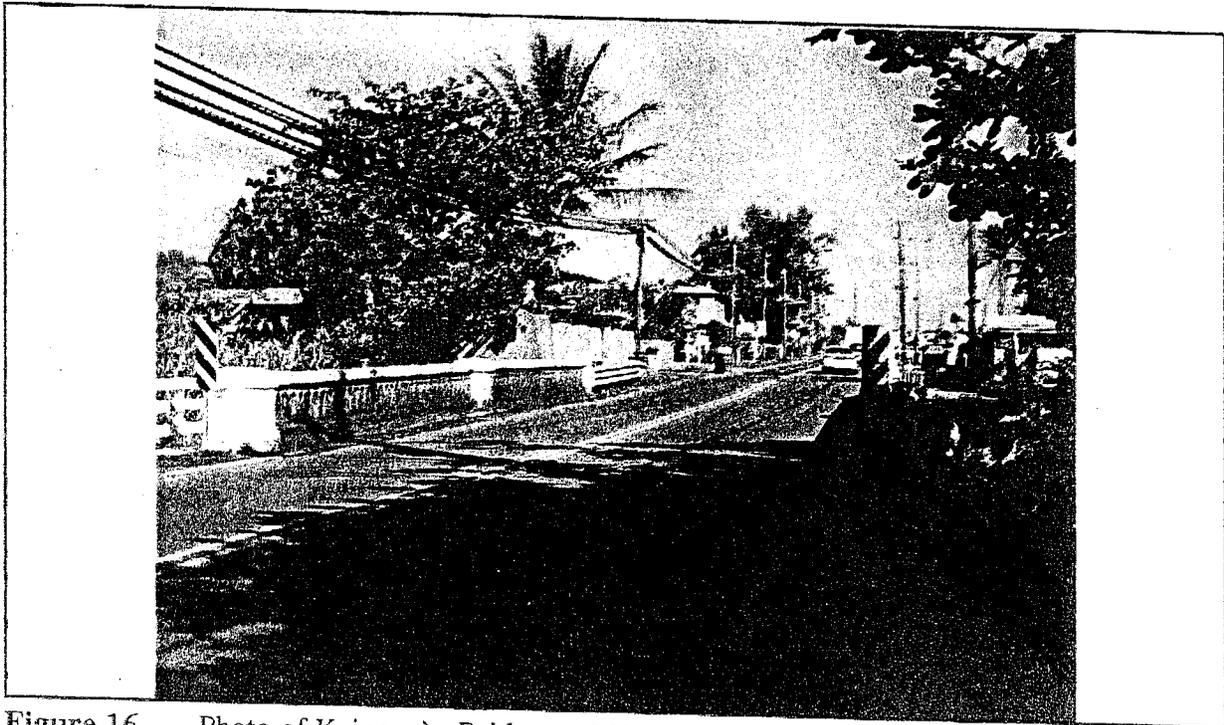


Figure 16 Photo of Kaipapa`u Bridge and Kamehameha Highway, Taken to North.



Appendix B

Botanical Resources Study,
Kaipapa'u Stream Bridge Replacement Project,
Ko'olauloa District, O'ahu

Winona Char and Associates

CHAR & ASSOCIATES

Botanical/Environmental Consultants

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24 April 2004

Mr. Chester Koga
R.M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817-4941

**SUBJECT KAIPAPA'U STREAM BRIDGE REPLACEMENT
BOTANICAL RESOURCES ASSESSMENT STUDY**

Dear Mr. Koga:

Field studies to assess the botanical resources on the Kaipapa'u Stream Bridge project site were made on 03 March 2004 by Char & Associates. The primary objectives of the survey were to:

- 1) provide a general description of the vegetation on the project site;
- 2) search for threatened and endangered species as well as species of concern; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

The Kaipapa'u Stream Bridge is located along Kamehameha Highway in Hau'ula, O'ahu, near the Hau'ula Kai Shopping Center. Along this portion of the highway, it passes through a residential area; Pipilani Street is located on the north end of the study area. The existing bridge as well as the approach area, 200 feet on either side of the bridge, was surveyed. The bridge replacement work will be within the existing right-of-way.

Description of the Vegetation

The plant names used in this report follow Wagner *et al.* (1990) and Wagner and Herbst (1999). The few recent name changes are those reported in the Hawaii Biological Survey series (Evenhuis and Eldredge, eds., 1999-2002).

Within the approach area along the right-of-way, there are asphalt-covered walkways and grassy mowed lawns. The grassy strips along the highway are primarily Bermuda grass or manienie (*Cynodon dactylon*) with smaller mats of wiregrass (*Eleusine indica*) and Hilo grass (*Paspalum conjugatum*). Landscaping on the residential lots fronting the highway consists of an assortment of ornamental species which include spider lily (*Pancratium maritimum*), beach naupaka or naupaka kahakai (*Scaevola sericea*), false kamani (*Terminalia catappa*), croton (*Codiaeum variegatum*), *Hibiscus* cultivars, coconut trees

(Cocos nucifera), etc. A few weedy patches are found here and there. These support mostly annual, herbaceous species such as white-flowered beggar's tick (Bidens alba), sensitive plant or puahilahila (Mimosa pudica), nutgrass (Cyperus rotundus), field bindweed (Ipomoea alba), Chinese violet (Asystasia gangetica), Guinea grass (Panicum maximum), broad-leaved plantain (Plantago major), and false mallow (Malvastrum coromandelianum).

On the bridge itself, there are a few clumps of swollen fingergrass (Chloris barbata) and white-flowered beggar's tick. These plants occur in cracks with pockets of soil between the edge of the pavement and the concrete railings.

Upstream (mauka side) of the bridge, the stream banks are lined with dense elephant or Napier grass (Pennisetum purpureum), 7 to 8 feet tall. On the top banks, it is largely Guinea grass with a few scattered koa haole (Leucaena leucocephala) shrubs. On the downstream (makai) side of the bridge, the vegetation is open with patches of elephant grass and a few tall false kamani trees border the house lots. The stream bottom is rocky in this area.

Discussion and Recommendations

The Kaipapa'u Stream Bridge is located in a residential area along Kamehameha Highway in Hau'ula Town. Landscape plantings and mowed grassy lawns border either side of the bridge. A few weedy patches occur within the right-of-way.

Only two native plant species, beach naupaka and popolo (Solanum americanum), were observed within the project site. Both are indigenous species, that is, they are native to the Hawaiian Islands and elsewhere. Beach naupaka is a common coastal species and is also often used in landscaping, often for hedges. Popolo is often found in disturbed habitats; it prefers open, sunny areas. None of the plants found during the field studies is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Service 1999a, 1999b; Wagner et al. 1999). This is not surprising given the location of the project site.

The proposed replacement of the bridge at Kaipapa'u Stream in Hau'ula is not expected to have a significant negative impact on the botanical resources. However, areas cleared of vegetation should be grassed over as soon as possible to prevent excessive dust and runoff of sediment into the stream. Bermuda grass or Hilo grass, which are already used on nearby lawns and on the grassy strip along the highway, should be used.

Please do not hesitate to contact me should you have any questions regarding the report.

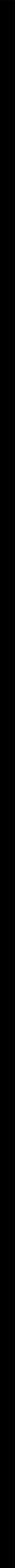
Sincerely,



Winona P. Char

References

- Evenhuis, N.L. and L.G. Eldredge, editors. 1999-2002. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 58-70.
- U.S. Fish and Wildlife Service. 1999a. U.S. Fish and Wildlife Service species list, plants. March 23, 1999. Pacific Islands Office, Honolulu, HI.
- U.S. Fish and Wildlife Service. 1999b. Endangered and threatened wildlife and plants. 50 CFR 17.11 and 17.12. December 31, 1999.
- Wagner, W.L., M.M. Brueggmann, D.R. Herbst, and J. Q.C. Lau. 1999. Hawaiian vascular plants at risk: 1999. Bishop Museum Occasional Papers 60.
- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i Press and Bishop Museum Press, Honolulu. Bishop Museum Special Publication 83.
- Wagner, W.L. and D.R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawai'i, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawaii Press and Bishop Museum Press, Honolulu.



Appendix C

Noise Impact Assessment

D.L. Adams and Associates



D. L. ADAMS ASSOCIATES, LTD.

Consultants in Acoustics and Performing Arts Technologies

Project No. 03-45

ENVIRONMENTAL NOISE REPORT
KAIPAPAU STREAM BRIDGE REPLACEMENT
KAMEHAMEHA HIGHWAY
O'AHU, HAWAII

April 2004

Prepared for
R. M. Towill Corporation
Honolulu, Hawaii

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Tables

1	FHWA Recommended Equivalent Hourly Sound Levels Based on Land Use
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Figures

1	Map of Project Area and Noise Measurement Locations
2	Maximum Permissible Sound Levels for Various Zoning Districts
3	Graph of Noise Measurements
4	Typical Sound Levels From Construction Equipment

1.0 EXECUTIVE SUMMARY

- 1.1 The Kaipapau Stream Bridge Replacement project is proposed to replace the existing bridge structure with a new bridge. The new bridge will keep the same number of vehicle lanes but will be much wider to accommodate pedestrian and bicycle traffic paths on both sides of the new bridge.
- 1.2 At a distance of 15 feet from the edge-of-pavement of Kamehameha Highway, the existing noise levels range from approximately 70 dBA during the daytime hours to approximately 60 dBA during the night. Any residence within 60 feet of the Kamehameha Highway currently exceeds the FHWA guidelines of 67 dBA (maximum) at the exterior of a residence. The dominant noise source is vehicular traffic on Kamehameha Highway, but other noises include wind, birds, and an occasional small aircraft flyover.
- 1.3 The dominant noise sources during project construction will probably be earth moving equipment, such as bulldozers and diesel powered trucks. Typical road construction equipment, such as asphalt paving machines will also be required. Pile driving equipment may be required for the new bridge foundation. Noise from construction activities will occur on the project site. Noise from construction activities should be short term and must comply with State Department of Health noise regulations.
- 1.4 Traffic on Kamehameha Highway is not expected to increase or decrease as a result of the bridge replacement project. Therefore, traffic noise as a result of the project is also not expected to increase or decrease after the work is complete. Future traffic projections show an approximate 16% increase the number of vehicles in the year 2026. This results in less than 1 dB increase in traffic noise over the existing noise levels. A 1 dB increase is not perceptible to most listeners.

2.0 PROJECT DESCRIPTION

The Kaipapau Stream Bridge is part of the Kamehameha Highway near the north shores of O'ahu, Hawaii. The project site is near single and multi-family residential housing. A map of the area is shown in Figure 1.

The bridge will be completed in stages, so that half of the bridge will be open at all times. When one side of the bridge is complete, the remaining side will be demolished and rebuilt. Although vehicular traffic on the Kamehameha Highway will be modified during construction of the new bridge, an alternate detour route is not planned. During construction only one lane of traffic may be open, so traffic on both sides of the bridge will have to stop and obey traffic signals. The speed of traffic through the construction site will be slower than the existing traffic speeds.

Typical road construction equipment will be on-site throughout the construction of the new bridge. The proposed bridge will be wider than the existing bridge and will carry a total of 2 vehicular traffic lanes and 2 bicycle/pedestrian paths.

3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

3.1 State of Hawaii, Department of Health, Community Noise Control

The State of Hawaii Department of Health Community Noise Control Statute [Reference 1] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc., and equipment related to agricultural, construction, and industrial activities. These levels are enforced by the State Department of Health (DOH) for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 2. With respect to mixed zoning districts, the statute specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level.

3.2 U.S. Environmental Protection Agency (EPA)

The U.S. EPA has identified a range of yearly day-night equivalent sound levels, L_{dn} , sufficient to protect public health and welfare from the effects of environmental noise [Reference 2]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

3.3 U.S. Federal Highway Administration (FHWA)

The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, L_{eq} , for traffic noise exposure [Reference 3], which are listed in Table 1. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior L_{eq} of 67dBA and a maximum interior L_{eq} of 52 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

3.4 Hawaii Department of Transportation (HDOT)

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 4]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1 dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15 dB.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Ambient noise level measurements were conducted from March 31, 2004 to April 5, 2004, at the locations shown on Figure 1 (see "1" and "2"). Both measurement locations are approximately 15 feet from the edge-of-pavement of Kamehameha Highway, which is the approximate distance of the nearest house to the highway. The purpose of these measurements was to assess the existing acoustical environment at the proposed project site. These measurements were taken with a Larson-Davis Laboratories, Model 820, Type-1 Sound Level Meter (S/N 0774) together with a Larson-Davis, Model 2560 Type-1 Microphone (S/N 2231).

The results are graphically presented in Figure 3, which shows the measured equivalent sound levels, L_{eq} , in A-weighted decibels (dBA). The graph shows that the sound levels range from approximately 70 dBA during the daytime hours to approximately 60 dBA during the night. Therefore, the existing daytime noise levels at 15 feet from the edge of the highway exceed the FHWA guidelines of 67 dBA (maximum) at the exterior of the nearest residences. Our noise predictions indicate that any residence within 60 feet of the edge of Kamehameha Highway currently exceeds the FHWA guidelines.

Weather conditions can adversely affect noise measurements. Periods of rain and high winds are typical factors that can skew the noise measurement results. Printouts of the weather conditions reported from the Kaneohe Bay MCBH are available upon request, or can be downloaded from the www.wunderground.com website. The Kaneohe Bay MCBH is approximately 20 miles south east of the project site. The weather conditions show periods of light rain in the morning hours of April 2nd and April 3rd, and in the early morning hours of April 4th. These periods of potential rain are shown in "gray" on the graph in Figure 3.

Presently, traffic is the dominant noise source at the measurement locations. Other noise sources include wind, birds, and small aircrafts.

5.0 POTENTIAL NOISE IMPACT DUE TO THE PROJECT AND NOISE MITIGATION

5.1 Project Construction Noise

Development of project areas will involve excavation, grading, and construction of the new bridge. The various construction phases of the project may generate significant amounts of noise. The surrounding residential properties may be impacted by the project construction noise due to their proximity. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 4.

In cases where construction noise exceeds, or is expected to exceed the State's "maximum permissible" property line noise levels [Reference 1], a permit must be obtained from the DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels. In the State of Hawaii, noise permits are required for construction projects. Specific permit restrictions for construction activities are:

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels . . . before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels . . . before 9:00 a.m. and after 6:00 p.m. on Saturday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

The use of pile drivers, hoe rams, jack hammers 25 lbs. or larger, high pressure sprayers, and chain saws may be restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday.

5.2 Project Generated Traffic Noise

Measured traffic noise levels along with traffic volume and vehicle mix counts obtained during the measurements were used to calibrate the FHWA's Traffic Noise Prediction Model [Reference 5]. Although the traffic patterns and flow will be altered during construction, the traffic counts will not change after construction of the bridge is complete. Therefore, the predicted noise levels after the project is complete are the same as the existing noise levels prior to construction.

The predicted traffic counts for the year 2026 show an approximate 16% increase over the traffic counts in 2003. Assuming the traffic mix remains the same a 16% increase in traffic will result in a noise increase of less than 1 dB. This increase is small and generally not perceptible to most listeners.

Since the existing traffic noise at the project site currently exceeds FHWA guidelines for residences within 60 feet of Kamehameha Highway, the traffic noise after the new bridge is complete will also likely exceed the FHWA guidelines. However, since the traffic noise will not increase after the new bridge is complete, the impact of the project on traffic noise is not considered significant.

5.4 On-Site Equipment

Noise from pumps, air handling units, compressors, condensing units, and other on-site equipment must be addressed during the design phase of the project. Noise at the property line from on-site equipment must be within the State's maximum permissible sound limits for daytime and nighttime hours according to the applicable zoning district class as determined by the primary land use designation. If on-site equipment exceeds this limit, mitigation in the form of barriers, enclosures, silencers, etc. should be included in the design. Noise permits will also be required if noise from on site equipment exceeds the State noise limits.

6.0 REFERENCES:

1. Chapter 46, *Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.
2. *Toward a National Strategy for Noise Control*, U.S. Environmental Protection Agency, April 1977.
3. *Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.
4. *Noise Analysis and Abatement Policy*, Department of Transportation, Highways Division, State of Hawaii, June 1977.
5. *Federal Highway Administration's Traffic Noise Model*, FHWA-RD-77-108; U.S. Department of Transportation, December 1978

APPENDIX A

ACOUSTICAL TERMINOLOGY

Sound Pressure Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured in terms of decibels (dB) using precision instruments known as sound level meters. Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$\text{SPL} = 20 \log (P/\text{Pref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and Pref is the reference pressure, 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. For example, if P is 20 micropascals, then SPL = 0 dB, or if P is 200 micropascals, then SPL = 20 dB. The relation between sound pressure in micropascals and sound pressure level in decibels (dB) is shown in Figure A-1.

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound levels, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined level of 53 dB, not 100 dB; two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of a sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 5 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

The human ear is more sensitive to sound in the frequency range of 250 Hertz (Hz) and higher, than in frequencies below 250 Hz. Due to this type of frequency response, a frequency weighting system, was developed to emulate the frequency response of the human ear. This system expresses sound levels in units of A-weighted decibels (dBA). A-weighted sound levels de-emphasizes the low frequency portion of the spectrum of a signal. The A-weighted level of a sound is a good measure of the loudness of that sound. Different sounds having the same A-weighted sound level are perceived as being about equally loud. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

Appendix A Acoustical Terminology (Continued)

Statistical Sound Levels

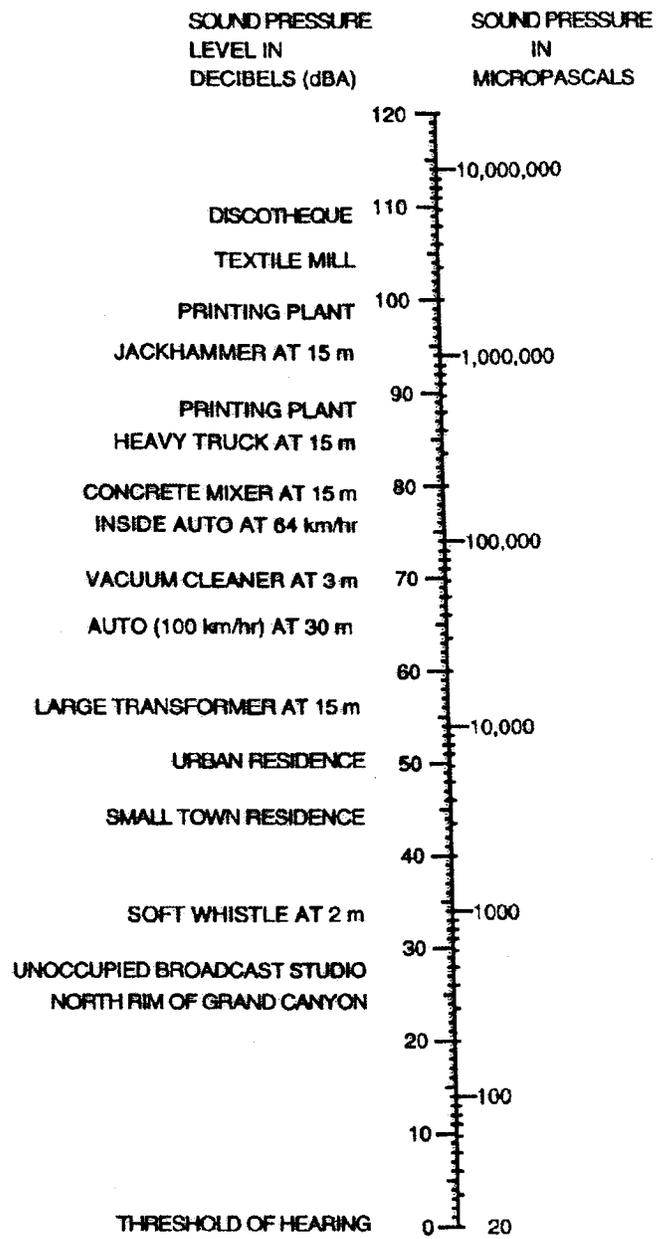
The sound levels of long-term noise producing activities, such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels developed. It is known as the Exceedence Level, L_n . The Exceedence Level, L_n , represents the sound level which is exceeded for n% of the measurement time period. For example, $L_{10} = 60$ dBA indicates that for the duration at the measurement period, the sound level exceeded 60 dBA 10% of the time. Commonly used Exceedence Levels include L_1 , L_{10} , L_{50} , and L_{90} , which are widely used to assess community and environmental noise. Figure A-2 illustrates the relationship between selected statistical noise levels.

Equivalent Sound Level

The Equivalent Sound Level, L_{eq} , represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound being measured over a specific time period. L_{eq} is commonly used to describe community noise, traffic noise, and hearing damage potential. It has units of dBA and is illustrated in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn} , is the Equivalent Sound Level, L_{eq} , measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations. Qualitative descriptions, as well as local examples of L_{dn} , are shown in Figure A-3.

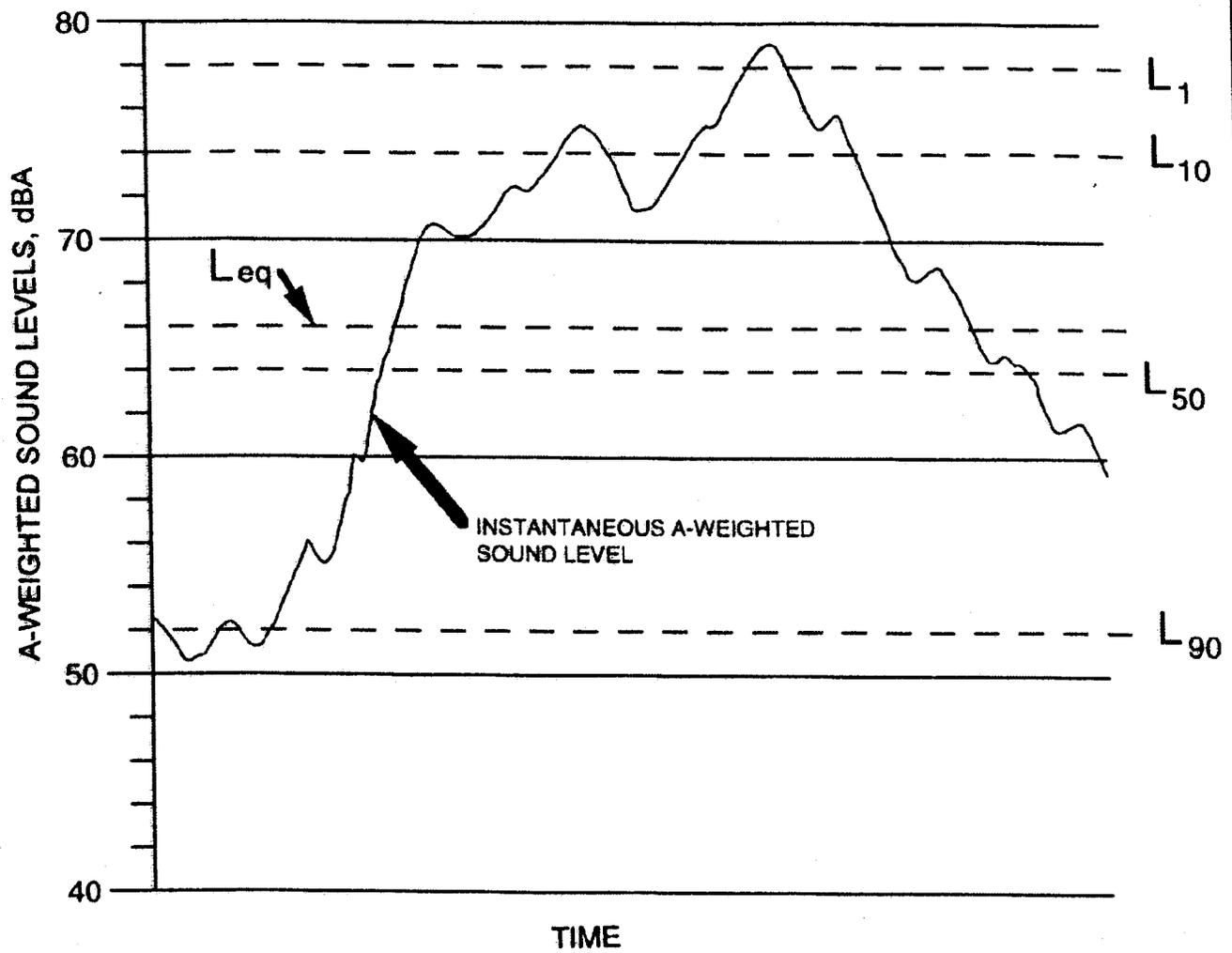


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FIGURE A-1 - THE RELATION BETWEEN SOUND PRESSURE, P, AND SOUND PRESSURE LEVEL, SPL. ALSO SHOWN ARE TYPICAL VALUES OF A-WEIGHTED SOUND LEVELS OF VARIOUS NOISE SOURCES.

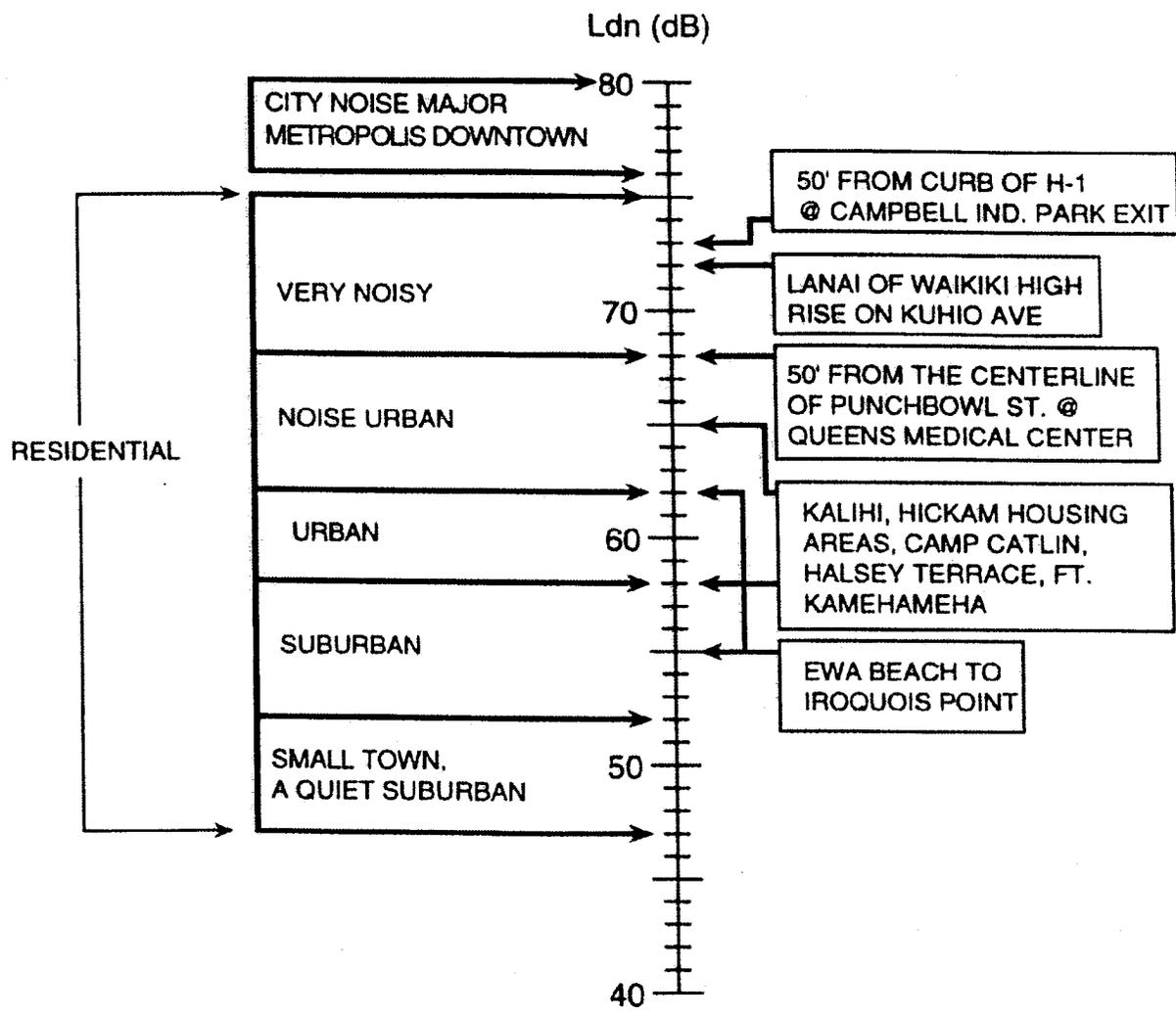


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FIGURE A-2 - COMPARISON OF AN INSTANTANEOUS SOUND LEVEL AND THE CORRESPONDING STATISTICAL SOUND LEVELS



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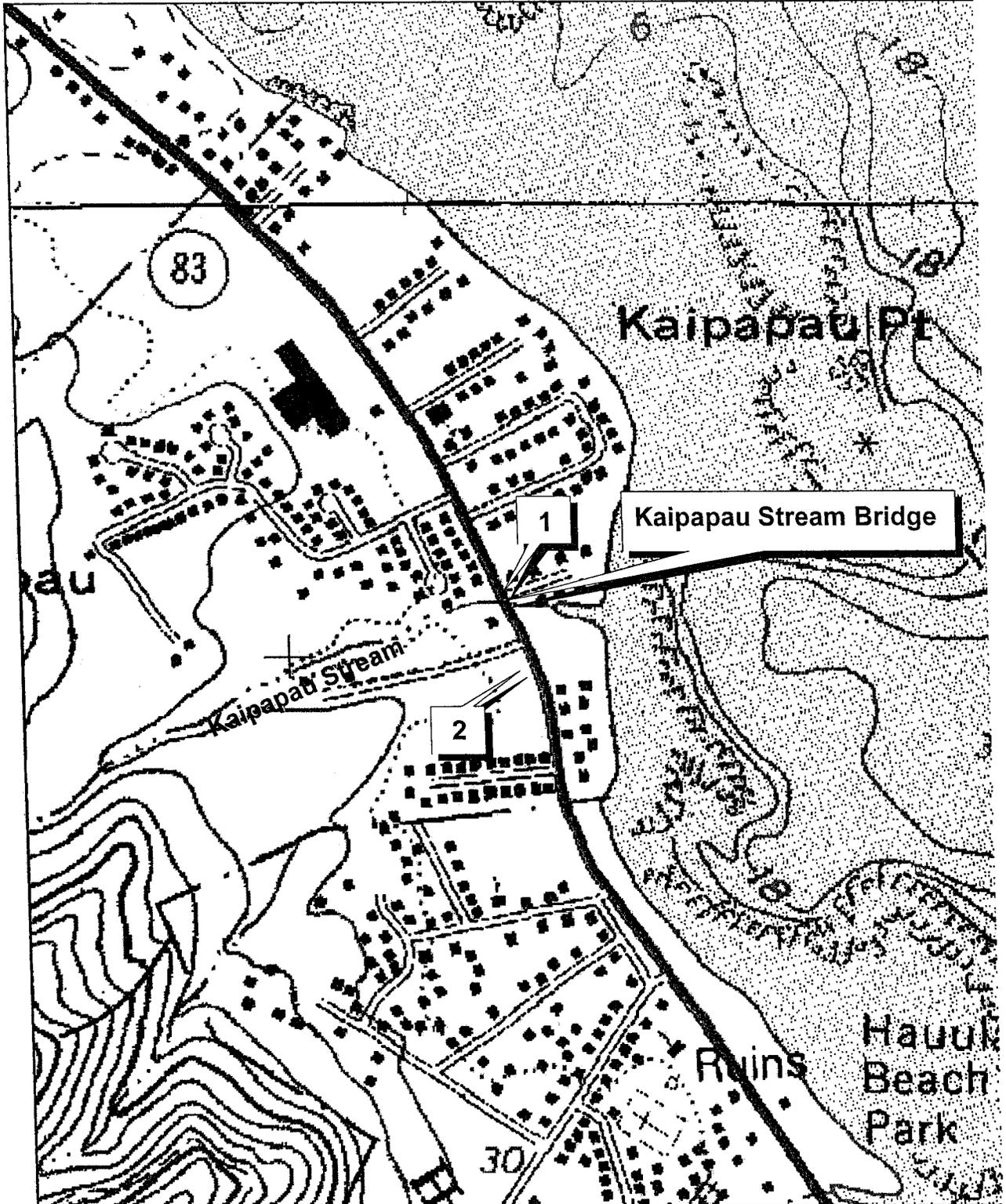
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FIGURE A-3 - QUALITATIVE DESCRIPTION OF THE DAY-NIGHT EQUIVALENT SOUND LEVELS (Ldn) AND EXAMPLE Ldn's AT SELECTED LOCATIONS ON OAHU

TABLE 1
Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based
On Land Use [Reference 3]

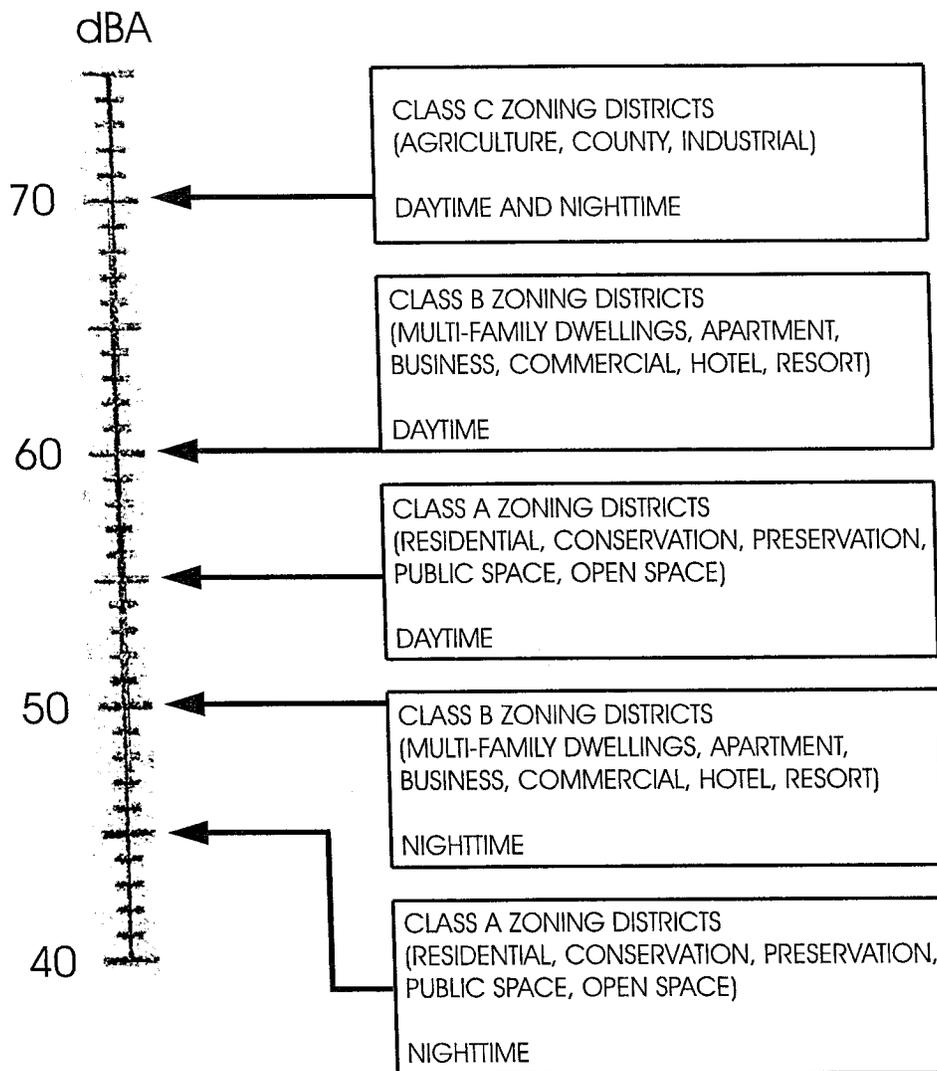
Activity Category	$L_{eq(h)}$	Noise Reduction Exterior-to-Interior
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped Land
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04094 Source Data: USGS 150 ft Scale: 1:6,400 Detail: 15:0 Datum: WGS84

1 Measurement Location

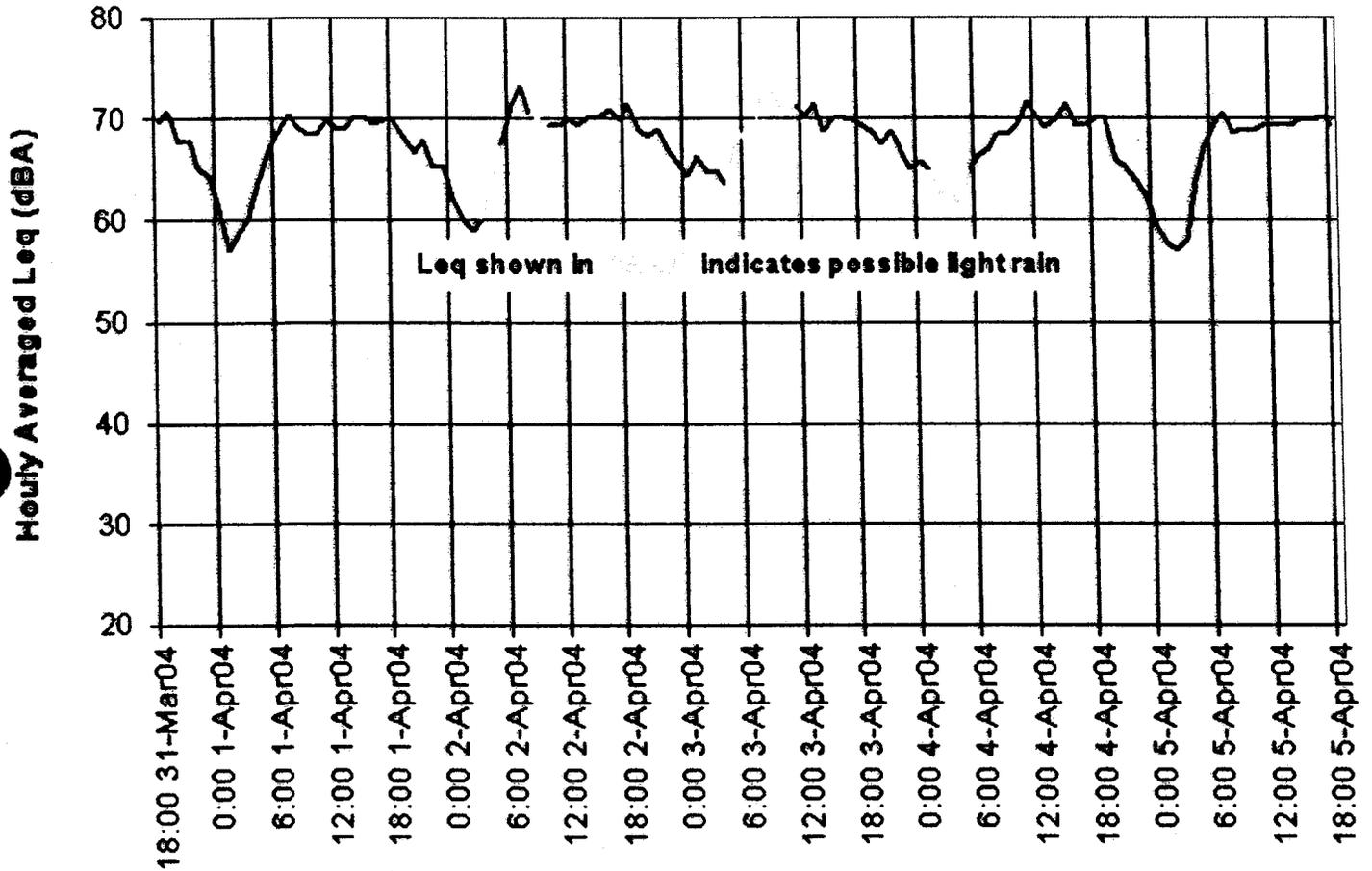
 <p>D. L. ADAMS ASSOCIATES, LTD. Consultants in Acoustics and Performing Arts Technologies 970 N. KALAHEO AVE. • SUITE A311 • KAILUA, HAWAII 96734 808/254-3318 • FAX 808/254-5295 www.dlaa.com • hawaii@dlaa.com</p>	Map of Project Location		Figure No. 1
	Kaipapau Stream Bridge Replacement		
	not to scale		
	Date April 6, 2004	Drawn By trb	



NOTE: SOUND LEVELS INDICATED BY ZONING DISTRICT ARE THE "MAXIMUM PERMISSIBLE" SOUND LEVELS DUE TO EXCESSIVE NOISE SOURCES SUCH AS STATIONARY MECHANICAL EQUIPMENT AND EQUIPMENT RELATED TO AGRICULTURAL, CONSTRUCTION AND INDUSTRIAL ACTIVITIES THAT SHALL NOT BE EXCEEDED FOR MORE THAN 10% OF THE TIME WITHIN ANY 20-MINUTE PERIOD DURING THE TIME PERIOD SHOWN.

(DAYTIME: 7:00 A.M. TO 10:00 P.M., NIGHTTIME: 10:00 P.M. TO 7:00 A.M.)

 <p>D. L. ADAMS ASSOCIATES, LTD. Consultants in Acoustics and Performing Arts Technologies 970 N. KALAHEO AVE. • SUITE A311 • KAILUA, HAWAII 96734 808/254-3318 • FAX 808/254-5295 www.dlaa.com • hawaii@dlaa.com</p>	State of Hawaii Maximum Permissible Sound Levels for Various Zoning Districts			Figure No. 2
	Kaipapau Stream Bridge Replacement			
	not to scale			
	Date April 6, 2004		Drawn By trb	



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Measured Sound Levels

Kaipapau Stream Bridge Replacement

no scale

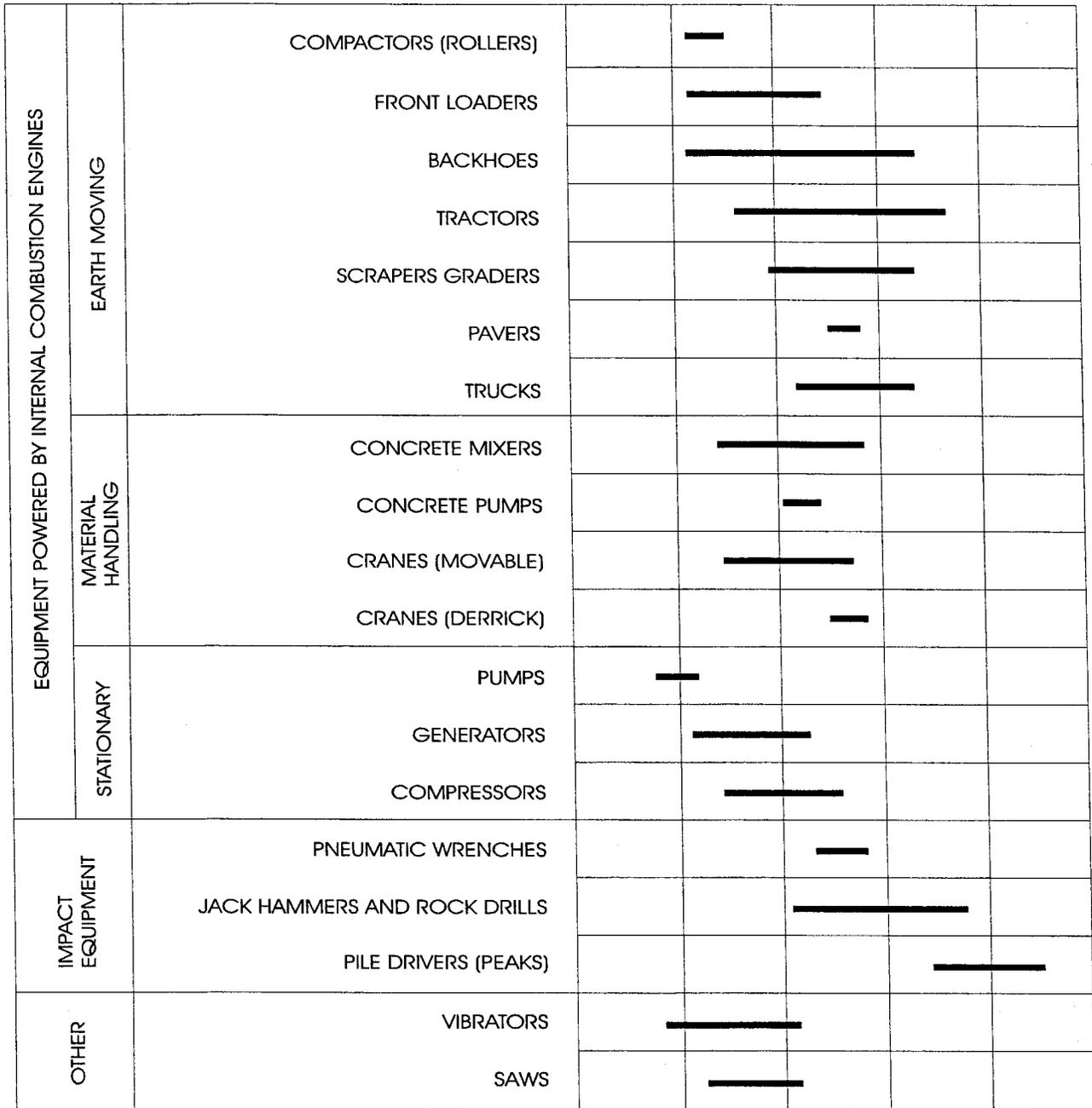
Date
April 6, 2004

Drawn By
trb

Figure No.
3

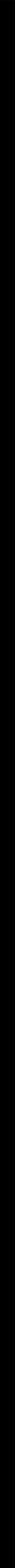
NOISE LEVEL IN dBA AT 50 FEET

60 70 80 90 100 110



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

 <p>D. L. ADAMS ASSOCIATES, LTD. Consultants in Acoustics and Performing Arts Technologies 970 N. KALAEHO AVE. • SUITE A311 • KAILUA, HAWAII 96734 808/254-3318 • FAX 808/254-5295 www.dlaa.com • hawaii@dlaa.com</p>	Typical Sound Levels from Construction Equipment		Figure No. 4
	Kaipapau Stream Bridge Replacement		
	no scale		
	Date April 6, 2004	Drawn By trb	



Appendix D

Water Quality and Biological Reconnaissance Surveys
of Lower Kaipapa‘u Stream
Near Hau‘ula, O‘ahu

AECOS, Inc.

Water quality and biological reconnaissance surveys of lower Kaipapa`u Stream near Hau`ula, O`ahu¹

October 1, 2004

AECOS No. 1060

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Introduction

The Hawaii Department of Transportation is planning to replace the Kaipapa`u Stream bridge on Kamehameha Highway in Hau`ula, along the windward coast of O`ahu. It is proposed that the bridge will be replaced within the highway right-of-way ~~and without a need to build structures in the stream channel.~~ Please see note in Reference.

On May 14, 2004, two AECOS biologists conducted a reconnaissance survey of Kaipapa`u Stream at Kamehameha Highway on the windward coast of O`ahu (Figure 1). The purpose of the survey was to ascertain biological resources found around the Kamehameha Highway Bridge. This report presents the findings of that survey.

General Site Description

Kaipapa`u Stream, State Perennial Stream ID No. 3-1-10, is an interrupted perennial stream that originates in the northern section of the Ko`olau Mountain and descends from an elevation of around 2600 ft (792 m). An interrupted perennial stream is one that flows year-round in the upper reaches and only intermittently at lower elevations. Kaipapa`u Stream flows under Kamehameha Highway and discharges at the shore between Kaipapa`u Point and Hau`ula Beach Park. A fringing coral reef lies offshore.

In the vicinity of Kamehameha Highway, Kaipapa`u Stream is channelized and the banks are hardened in most places. Upstream from the bridge, the left bank of the stream is hardened and yards of neighboring houses abut the wall. The right bank of the stream is an eroding soil bank vegetated with elephant grass (*Pennisetum purpureum*). Further upstream, the boulder-bottom stream narrows as it climbs up into the valley. Immediately upstream from the bridge, the stream widens as it flows

¹ This report was prepared for use by RM Towill Corporation in an Environmental Assessment to replace the bridge along Kamehameha Highway in Hau`ula, O`ahu. The EA will become part of the public record.

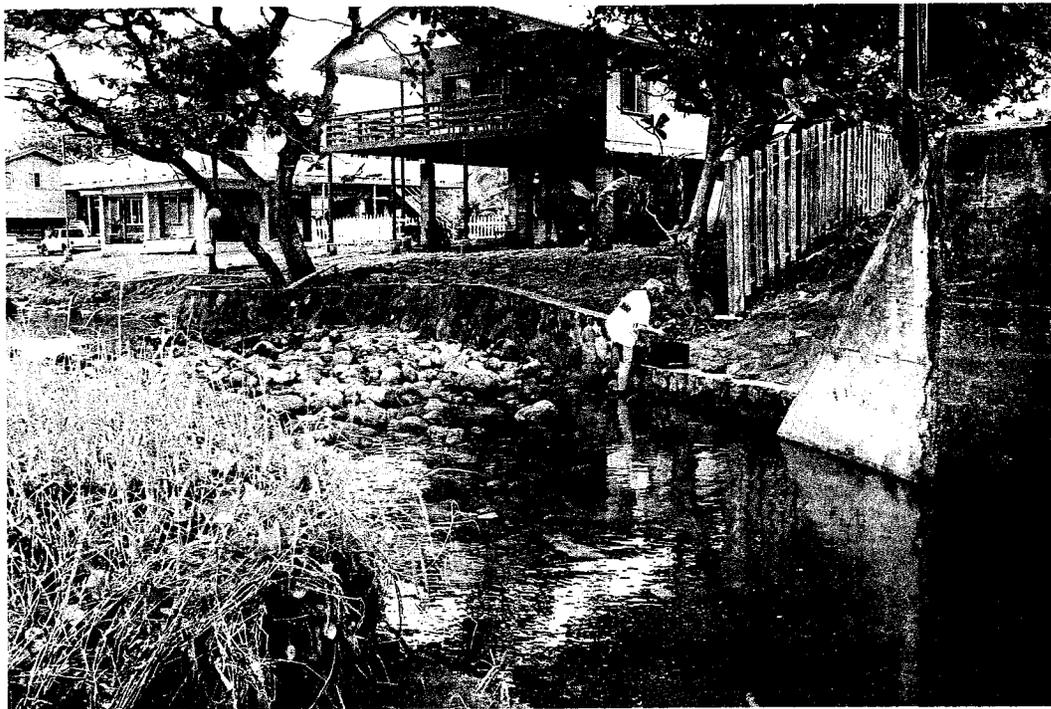


Figure 2. Kaipapa`u Stream upstream from Kamehameha Highway Bridge.
Note the significant log jam on the left side of the bridge.
Figure 3. Kaipapa`u Stream at water quality sampling Station 1, downstream
from Kamehameha Highway Bridge.

banks and on a sandbar just downstream from the bridge. *Naupaka kahakai* (*Scaevola sericea*), wedelia (*Sphagneticola trilobata*), seashore rushgrass (*Sporobolus virginicus*), and beach morning glory (*Ipomoea pes-caprae*), along with several common ornamental plants were growing throughout the project area. None of these species is listed as threatened or endangered, or otherwise would be considered rare or special by the State or Federal governments (DLNR, 1998; Federal Register, 1999a, b, 2001) and can be replanted when the construction is completed.

Water Quality

On May 14, 2004, AECOS biologists collected water samples from three sites around the Kamehameha Bridge on Kaipapa`u Stream. Station 1 was located approximately 12 m downstream from the bridge, Station 2 was located approximately 10 m upstream from the bridge, and Station 3 was located near the shoreline even with the *makai* end of the left bank rock wall. Some parameters were measured by field meter and others in water samples collected in appropriate containers and taken to the AECOS Laboratory in Kane`ohe (laboratory Log No. 18741). Table 1 lists field instruments and analytical methods used with these samples.

Stations 1 and 2 were located in the freshwater section of the stream and Station 3 was located near the coast where stream flow and coastal marine waters can mix. The parameters measured at Station 3 can be expected to vary over time as the tide rises and falls and as stream flow increases and decreases dependent upon rainfall in the watershed. The results for the morning of May 14, 2004 correspond in time with a flooding tide, with the a low tide of 0.2 ft (lower low water or LLW) at 05:47 am and a high tide of 1.6 ft (lower high water or LHW) at 13:30 (NOAA, 2004) and heavy rainfall near the headwaters of the stream in the mountains. The water quality of the stream in the project area is dominated by outflow from Kaipapa`u Stream.

The primary purpose of the May 14, 2004 water quality measurements was to characterize the existing aquatic environment, not to set baseline values or determine compliance with Hawaii's Water Quality Standards. In fact, the State criteria for all nutrient measurements, turbidity, and total suspended solids are based upon geometric mean values and a minimum of three separate samples per location would be needed to compute a geometric mean (HDOH, 2000). Nonetheless, our results can be evaluated against the water quality criteria for streams (Table 2) as long as limitations regarding a possible lack of representativeness are realized.

The analyses of the water quality samples collected from Kaipapa`u Stream on May 14, 2004 (Table 3) show normal temperature and pH values, with relatively low percent saturation of dissolved oxygen. Turbidity levels and TSS concentrations were very low. Ammonia and total phosphorus levels were low, but high nitrate+nitrite levels elevated the total nitrogen levels as well.

Table 1. Analytical methods and instruments used for the May 14, 2004 water quality sampling of Kaipapa`u Stream near Hau`ula, O`ahu.

Analysis	Method	Reference	Instrument
Dissolved Oxygen	EPA 360.1	EPA (1979)	YSI Model 550 DO meter
Nitrate + Nitrite	EPA 353.2	EPA (1993)	Technicon AutoAnalyzer II
Temperature	thermister calibrated to NBS cert. thermometer (EPA 170.1)	EPA (1979)	YSI Model 550 DO meter
Total Nitrogen	persulfate digestion/EPA 353.2	D'Elia et al. (1977) / EPA (1993)	Technicon AutoAnalyzer II
Total Phosphorus	persulfate digestion/EPA 365.1	Koroleff in Grasshoff et al. (1986)/EPA (1993)	Technicon AutoAnalyzer II
Total Suspended Solids	Method 2540D (EPA 160.2)	Standard Methods 18th Edition (1992); EPA (1979)	Mettler H31 balance
Turbidity	Method 2130B (EPA 180.1)	Standard Methods 18th Edition (1992); EPA (1993)	Hach 2100P Turbidimeter

D'Elia, C.F., P.A. Stendler, & N. Corwin. 1977. *Limnol. Oceanogr.* 22(4): 760-764.

EPA. 1979. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency, EPA 600/4-79-020.

EPA. 1993. Methods for the Determination of Inorganic Substances in Environmental Samples. EPA 600/R-93/100.

EPA. 1994. Methods for Determination of Metals in Environmental Samples, Supplement 1. EPA/600/R-94/111. May 1994.

Grasshoff, K., M. Ehrhardt, & K. Kremling (eds). 1986. Methods of Seawater Analysis (2nd ed). Verlag Chemie, GmbH, Weinheim.

Standard Methods. 1992. Standard Methods for the Examination of Water and Wastewater. 18th Edition. 1992. (Greenberg, Clesceri, and Eaton, eds.). APHA, AWWA, & WEF. 1100 p.

Despite the fairly rapid stream flow, the water was not well saturated with dissolved oxygen (70 - 76 %), falling short of the percent saturation of dissolved oxygen criterion established by the State Department of Health (> 80%) (HIDOH, 2000). This result is somewhat unusual considering the water was fresh and moving. Values recorded for turbidity (1.98 - 2.02 ntu) and TSS concentrations (0.3 - 8 mg/l) were very low, demonstrating the value of an intact forest in the upper watershed in maintaining good water quality. Although ammonia levels were low (5 µg/l at Station 2 and not

detected in the other two samples), concentrations of the other component of inorganic nitrogen, nitrate + nitrite, were high (246 - 319 µg/L) and accounted for the majority of the total nitrogen concentrations (284 - 403 µg/L). Total phosphorus levels were low (17 - 23 µg/L).

Table 2. State of Hawaii geometric mean criteria for streams
(HAR §11-54-05.2(b)(1)).

Total Nitrogen (µg N/l)	Nitrate + Nitrite Nitrogen (µg N/l)	Total Phosphorus (µg P/l)	Total Suspended Solids (mg/l)	Turbidity NTU
250.0*	70.0*	50.0*	20.0*	5.0*
180.0**	30.0**	30.0**	10.0**	2.0**

* wet season - November 1 through April 30.

** dry season - May 1 through October 31

- pH - not vary more than 0.5 units from ambient and not be lower than 5.5 nor higher than 8.0.
- Dissolved oxygen - not less than 80% saturation.
- Temperature - not vary more than 1 °C from ambient.
- Specific conductance - not more than 300 µmhos/cm.

Table 3. Water quality characteristics of Kaipapa `u Stream from samples taken on March 14, 2004.

	Time	Temp. (°C)	DO (mg/l)	DO % sat	pH (pH units)	Salinity (ppt)
Station 1	0950	22.0	6.11	70	7.06	<1
Station 2	1100	22.7	6.34	74	7.52	<1
Station 3	1010	23.3	6.43	76	7.42	<1

	Turbidity (ntu)	TSS (mg/l)	Ammonia (µg N/l)	Nitrate + nitrite (µg N/l)	Total N (µg N/l)	Total P (µg P/l)
Station 1	1.98	0.3	<1	304	335	20
Station 2	2.12	8	5	319	403	23
Station 3	2.02	0.7	<1	246	284	17

Aquatic Biota

Observations during this survey were limited to the vicinity of the Kamehameha Highway Bridge and a short distance upstream and downstream of the bridge. Even though the Hawaii Stream Assessment ranks Kaipapa `u Stream as having "limited" aquatic resources (Hawaii Cooperative Park Service Unit, 1990), recent studies have found the stream to be one of the best in this regard on O`ahu (Englund, 2000). The upper watershed of Kaipapa `u Stream is largely undeveloped and consists of native

forest. The riparian vegetation, aquatic habitats, and assemblages of native aquatic insects are of the highest quality on O`ahu and the stream should be considered one of the best remaining in the Hawaiian archipelago (Englund, 2000).

Our brief survey revealed quite a few aquatic species in the lower reach (Table 4). The prawn and goboid fishes are anadromous, meaning that they migrate to and from the ocean. The estuary is a gathering point for the juvenile `o`opu, which then migrate upstream as they grow larger. `Opae `oeha`a are common native residents (remain as adults) in the estuarine environment, and the `ama `ama and *aholehole* reside in the estuary as juveniles and migrate into the ocean as they grow. A large school of tilapia resides in the deep pool under the right side of the bridge. We made a possible sighting of the relatively rare (on O`ahu) `o`opu *nopili* (*Sicyopterus stimpsoni*), although we were unable to make a definitive species determination.

Table 4. Checklist of aquatic biota observed in the lower reach of Kaipapa `u Stream at the Kamehameha Highway Bridge.

INVERTEBRATES					
MOLLUSCA, GASTROPODA	(mollusks)				
NERITIDAE					
<i>Neritina vespertina</i> Sowerby	<i>hapawai</i> (adults & eggs)	end	10		U
ARTHROPODA, CRUSTACEA	(crustaceans)				
PALIEMONIDAE					
<i>Macrobranchium grandimanus</i> (Randall)	<i>`opae `oeha`a</i>	end	10		U
VERTEBRATES					
VERTEBRATA, PISCES	(fishes)				
CICHLIDAE					
<i>Sarotherodon</i> sp.	tilapia	nat	10		C
GOBIIDAE					
<i>Awaous guamensis</i> (Valenciennes)	<i>`o`opu nakea</i>	ind	10		O
<i>Stenogobius hawaiiensis</i> Watson	<i>`o`opu naniha</i>	end	10		C
? <i>Sicyopterus stimpsoni</i> (Gill)	<i>`o`opu nopili</i>	end	10		R
KUHLIIDAE					
<i>Kuhlia sandvicensis</i> (Steindachner)	<i>aholehole</i>	end	10		C
MUGILIDAE					
<i>Mugil cephalus</i> L.	<i>`ama `ama</i>	ind	10		C
POECILIIDAE					
<i>Gambusia affinis</i> (Baird & Girard)	mosquitofish	nat	10		U
<i>Poecilia mexicana</i> (Steindachner)	Mexican molly	nat	10		O

KEY TO SYMBOLS USED IN TABLE 4:

Status:

nat - naturalized. An introduced or exotic species.

ind - indigenous. A native species also found elsewhere in the Pacific.

end - endemic - A native species found only in the Hawaiian Islands.

QC Code:

10 - Observed in the field by aquatic biologist on May 14, 2004.

20 - Collected; identified in the laboratory; specimen(s) not saved.

Abundance categories:

- R - Rare - only one or two individuals seen.
 - U - Uncommon - several to a dozen individuals observed.
 - O - Occasional - regularly encountered, but in small numbers.
 - C - Common - Seen everywhere, although generally not in large numbers.
 - A - Abundant - found in large numbers and widely distributed.
 - P - Present - noted as occurring, but quantitative information lacking.
-

Typical intertidal and subtidal invertebrates (mussels and oysters, *Theodoxus cariosus*, *Nerita picea*, and *Littoraria pintado*) were observed close to the shore, but a fair distance from the project area. *Scylla serrata* (Samoan crab), `o`io or bonefish (Albulidae), and a *Trachemys scripta elegans* (red-eared slider turtle) were reported by neighbors as being present downstream from the bridge close to the shore.

Discussion

The bridge proposed for this site will be replaced within the highway right-of-way and ~~without needing to build structures in the stream*~~ therefore, water quality impacts to the stream and nearshore environment can be largely avoided. None of the area vegetation is threatened or endangered and this construction project provides the opportunity to replace some of the non-native vegetation with more desirable strand trees and shrubs, such as *naupaka* (*Scaevola sericea*), *kamani* (*Calophyllum inophyllum*), *hala* (*Pandanus tectorius*), and *niu* or coconut.

The new bridge design should consider enlarging the openings under the bridge to prevent "log jams," which can result in erosion elsewhere along the stream. Elimination of potential log jams will likely also enhance habitat and passage for some of the native animals such as the `opae `oeha `a, `o`opu *nopili*, and other gobies and minimize the habitat for tilapia.

Some fishing and possibly limu collection occurs just off the shore in this area. It will be important to this user group that the quality of the water in Kaipapa`u Stream is maintained and does not affect their activities.

* See Reference section below.

References Cited

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

Englund, R.A. 2000. Report on aquatic insect monitoring of 17 September 2000 in Kaipapa`u Stream, O`ahu, Hawai`i. Prep. for Oceanit Laboratories, Inc.

Contribution No. 2000-020 to the Hawaii Biological Survey. 7 pp.
(<http://hbs.bishopmuseum.org/pdf/kaipapau.pdf>)

Federal Register. 1999a. Department of the Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants. 50CFR 17:11 and 17:12 - December 3, 1999.

----- 1999b. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Recycled Petitions, and Annual Description of Progress on Listing Actions. *Federal Register*, 64 (205 (Monday, October 25, 1999)): 57534-57547.

----- 2001. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Notice of Findings on Recycled Petitions. *Federal Register*, 66 No. 5 (Monday, January 8, 2001): 1295 - 1300.

Hawaii Cooperative Park Service Unit. 1990. Hawaii stream assessment. A preliminary appraisal of Hawaii's stream resources. Prep. for State of Hawaii, Commission on Water Resource Management. National Park Service, Hawaii Cooperative Park Service Unit, Rept. No. R84: 294 pp.

National Oceanographic and Atmospheric Administration (NOAA). 2004. Tide predictions. Website URL: <http://co-ops.nos.noaa.gov/tides04/tab2wc3.html#167>.

NOTE:

* Since initial study, plans include the construction of piers in the stream.

Water quality and biological reconnaissance surveys of lower Kaipapa`u Stream near Hau`ula, O`ahu¹

October 1, 2004

AECOS No. 1060

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Introduction

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General Site Description

Kaipapa`u Stream, State Perennial Stream ID No. 3-1-10, is an interrupted perennial stream that originates in the northern section of the Ko`olau Mountain and descends from an elevation of around 2600 ft (792 m). An interrupted perennial stream is one that flows year-round in the upper reaches and only intermittently at lower elevations. Kaipapa`u Stream flows under Kamehameha Highway and discharges at the shore between Kaipapa`u Point and Hau`ula Beach Park. A fringing coral reef lies offshore.

In the vicinity of Kamehameha Highway, Kaipapa`u Stream is channelized and the banks are hardened in most places. Upstream from the bridge, the left bank of the stream is hardened and yards of neighboring houses abut the wall. The right bank of the stream is an eroding soil bank vegetated with elephant grass (*Pennisetum purpureum*). Further upstream, the boulder-bottom stream narrows as it climbs up into the valley. Immediately upstream from the bridge, the stream widens as it flows

¹ This report was prepared for use by RM Towill Corporation in an Environmental Assessment to replace the bridge along Kamehameha Highway in Hau`ula, O`ahu. The EA will become part of the public record.

Abundance categories:

- R - Rare - only one or two individuals seen.
 - U - Uncommon - several to a dozen individuals observed.
 - O - Occasional - regularly encountered, but in small numbers.
 - C - Common - Seen everywhere, although generally not in large numbers.
 - A - Abundant - found in large numbers and widely distributed.
 - P - Present - noted as occurring, but quantitative information lacking.
-

Typical intertidal and subtidal invertebrates (mussels and oysters, *Theodoxus cariosus*, *Nerita picea*, and *Littoraria pintado*) were observed close to the shore, but a fair distance from the project area. *Scylla serrata* (Samoan crab), `o`io or bonefish (Albulidae), and a *Trachemys scripta elegans* (red-eared slider turtle) were reported by neighbors as being present downstream from the bridge close to the shore.

Discussion

The bridge proposed for this site will be replaced within the highway right-of-way and without needing to build structures in the stream; therefore, water quality impacts to the stream and nearshore environment can be largely avoided. None of the area vegetation is threatened or endangered and this construction project provides the opportunity to replace some of the non-native vegetation with more desirable strand trees and shrubs, such as *naupaka* (*Scaevola sericea*), *kamani* (*Calophyllum inophyllum*), *hala* (*Pandanus tectorius*), and *niu* or coconut.

The new bridge design should consider enlarging the openings under the bridge to prevent "log jams," which can result in erosion elsewhere along the stream. Elimination of potential log jams will likely also enhance habitat and passage for some of the native animals such as the `opae `oeha `a, `o`opu *nopili*, and other gobies and minimize the habitat for tilapia.

Some fishing and possibly limu collection occurs just off the shore in this area. It will be important to this user group that the quality of the water in Kaipapa`u Stream is maintained and does not affect their activities.

References Cited

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

Englund, R.A. 2000. Report on aquatic insect monitoring of 17 September 2000 in Kaipapa`u Stream, O`ahu, Hawai`i. Prep. for Oceanit Laboratories, Inc.

Contribution No. 2000-020 to the Hawaii Biological Survey. 7 pp.
(<http://hbs.bishopmuseum.org/pdf/kaipapau.pdf>)

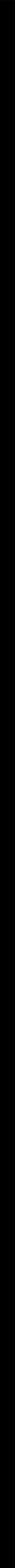
Federal Register. 1999a. Department of the Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants. 50CFR 17:11 and 17:12 - December 3, 1999.

----- 1999b. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Recycled Petitions, and Annual Description of Progress on Listing Actions. *Federal Register*, 64 (205 (Monday, October 25, 1999)): 57534-57547.

----- 2001. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Notice of Findings on Recycled Petitions. *Federal Register*, 66 No. 5 (Monday, January 8, 2001): 1295 - 1300.

Hawaii Cooperative Park Service Unit. 1990. Hawaii stream assessment. A preliminary appraisal of Hawaii's stream resources. Prep. for State of Hawaii, Commission on Water Resource Management. National Park Service, Hawaii Cooperative Park Service Unit, Rept. No. R84: 294 pp.

National Oceanographic and Atmospheric Administration (NOAA). 2004. Tide predictions. Website URL: <http://co-ops.nos.noaa.gov/tides04/tab2wc3.html#167>.



Appendix E

State Historic Preservation Division
Correspondence

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

'06 JUL 13 P 6:06



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AGUAYE PEABODY
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCE
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING

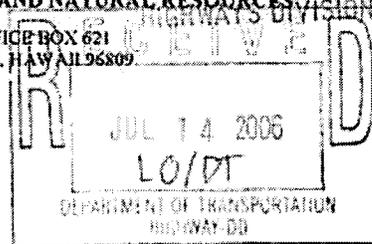
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAOIOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

DESIGN BRANCH
HIGHWAYS DIVISION
DEPT. OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

2006 JUL 12 A 9:03

POST OFFICE BOX 621
HONOLULU, HAWAII 96809



July 6, 2006

Glenn M Yasui, Administrator
Department of Transportation - Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

LOG NO: 2006.2157
DOC NO: 0607BF09
Architecture

Dear Mr. Yasui:

SUBJECT: Section 106 (NHPA) Review
RE: Kaipapau Stream Bridge Replacement HWY - DB 2.0785
Project Location: Kamehameha Highway, Oahu
Hauula Ahupuaa, Koolauloa District, Oahu
TMK: (1) 5-4-11

This letter is in response to your letter dated April 25, 2006 which we received on April 24, 2006.

The SHPD has reviewed your letter initiating the Section 106 process for the proposed replacement of the Kaipapau Stream Bridge. The proposed project entails the demolition of the extant Kaipapau Stream Bridge and replacing it with a 100 - foot long by 57 - foot wide, pre - stressed concrete plank bridge with a cast-in-place bridge deck.

The 1983 *Historic Bridge Inventory, Island of Oahu* identified this particular bridge as having poor aesthetics and poor integrity. However, the inventory identified the bridge as significant due for its transportation link of the Windward communities and because of it was built by one of Honolulu's prominent builders, L. L. McCandless.

The SHPD concludes that the proposed project will have no adverse effect with the condition that the bridge be photographed before demolition. These photographs may be in digital or print format.

Thank you for the opportunity to comment. Should you have any questions regarding architectural concerns please call Bryan Flower at our Oahu office at (808) 692-8028.

Sincerely,

Peter T. Young, Chairperson
State Historic Preservation Officer

BF:jen

HWY 1018

LINDA LINGLE
GOVERNOR OF HAWAII



DEPT OF TRANSPORTATION

2006 MAR -6 P 3:38

HIGHWAYS DIVISION

LO/DT
DIVISION OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED

06 MAR -9 P3:03

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR, LAND

DEAN NAKANO
ASSISTANT DIRECTOR, WATER

AQUATIC RESOURCES
BOATING AND CLEAN DECEPTION
BUREAU OF COUNSELING
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENGINEERING
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
NATIONAL BIRD RESERVE COMMISSION
LAND
STATE PARKS

MAR - 3 2006

Mr. Glenn M. Yasui, Administrator
Highways Division, State of Hawaii, Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813

LOG NO: 2006.0371
DOC NO: 0602ST16
Architecture

Dear Mr. Yasui:

**SUBJECT: Section 106 (NHPA) Review
Kamehameha Highway – Kaipapa'u Stream Bridge Replacement
State Route 83
Federal Aid Project No. BR-083-1(48)
HWY-DD 2.9944
Hauula, Koolauoa District, Oahu, Hawai'i,
TMK (1) 5-4-018:001 and :002, 5-4-011:004 and :021**

Thank you for your submittal received February 10, 2006 informing us of the proposed project for the replacement of the Kaipapa'u Stream Bridge with improved roadway shoulders, guardrails, and drainage features. The Bridge is located on Kamehameha Highway, State Route 83, in Hauula, Oahu. The project intends to replace the Bridge to ensure that the new structure meets Federal and State bridge and roadway standards.

The Kaipapa'u Stream Bridge, constructed in 1932, has a National Bridge Inventory rating of 37. It is not listed on the State of Hawai'i, Draft Historic Bridge Inventory and Evaluation (May 1996). It is listed on the Historic Bridge Inventory, Island of Oahu (June 1983), and is significant as an important transportation link for Windward communities. It is associated with one of Honolulu's prominent builders, L. L. McCandless. As a prolific builder, he constructed five miles of road and seven bridges from Hau'ula to Kahuku. The seven bridges are Laiewai, Laiemaloo, Kaipapa'u, Waipitopilo, Muliwai, Hauula, and Waipuhi Bridges.

Before a determination can be made, we request submittal to SHPD that all options have been explored. We request a structural report for the Bridge's condition, photographs of the Bridge, and conditions of the other six bridges built by L. L. McCandless for an assessment of the best examples of his work.

Thank you for the opportunity to comment. Should you have any questions regarding architectural concerns please call Susan Tasaki at our Oahu office at (808) 692-8032.

Sincerely,

Peter T. Young, Chair
State Historic Preservation Officer

ST:jen

420 Waiakamilo Road
Suite 411
Honolulu Hawaii 96817-4941
Telephone 808 842 1133
Fax 808 842 1937
rmtowill@hawaii.rr.com



R. M. TOWILL CORPORATION
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Construction Management

Letter of Transmittal

To State Historic Preservation Division Date 2-9-06
Address 601 Kamokila Boulevard, Suite 555 Fax Number
Kapolei, Hawaii 96707 Project Section 106 Consultation,
Kaipapapu Stream Bridge
Replacement
Attention Melanie Chinen, Administrator RMTC Project Number 1-19548-00

Sending	
<input checked="" type="checkbox"/> Attached	<input type="checkbox"/> Under Separate Cover
<input type="checkbox"/> Drawing Prints	<input type="checkbox"/> Drawing Originals
<input type="checkbox"/> Cost Estimate	<input type="checkbox"/> Change/Field Order
<input type="checkbox"/> Specifications	<input type="checkbox"/> Other
<input type="checkbox"/> Digital Files	<input type="checkbox"/> Bound Material
<input type="checkbox"/> Via Facsimile	Pages sent including cover sheet
<input type="checkbox"/> Originals will be mailed	

Number of Copies	Description
1	Section 106 Consultation Letter from the State Department of Transportation, Kamehameha Highway, Kaipapa'u Stream Bridge Replacement, Ko'olauloa, Oahu, Hawaii

Action
<input type="checkbox"/> Approval
<input type="checkbox"/> Signature and Return To This Office
<input checked="" type="checkbox"/> Review and Comment
<input type="checkbox"/> As Requested
<input type="checkbox"/> Your Use
<input type="checkbox"/> Appropriate Action

Remarks

Dear Ms. Chinen:

Attached please find the Section 106 Consultation letter from the State Department of Transportation (SDOT) to your office.

The letter asks for written comments to be submitted to SDOT 30 days from the date of the letter. It is dated January 19, 2006; There was a delay in sending out this letter.

Please submit your written comments to SDOT by Friday, MARCH 10, 2006.

Should you have any questions, please contact me at 842-1133.

Thank you.

Copies to RMTC
cc SDOT

By Chester Koga

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:
HWY-DD 2.9944

January 19, 2006

TO: MELANIE CHINEN, ADMINISTRATOR
HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: DAVID LAWRENCE BROWN, CHIEF
CULTURE AND HISTORY BRANCH

FROM: GLENN M. YASUI 
ADMINISTRATOR, HIGHWAYS DIVISION

SUBJECT: KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)
SECTION 106 CONSULTATION

The State of Hawaii, Department of Transportation, Highways Division, in cooperation with the Federal Highway Administration, proposes to replace the Kaipapau Stream Bridge with improved roadway shoulders, guardrails, and drainage features to meet American Association of State Highway and Transportation Officials (AASHTO) bridge standards. The project is located on Kamehameha Highway, State Route 83, in Hauula, Koolauloa District. See enclosed location map.

The purpose of this project is to fulfill a mandate to maintain the functional and structural integrity of bridges on State roadways. In fulfillment of this mandate, it is recommended that this bridge be replaced to meet current standards for roadway widths and safety features as specified by AASHTO and current design criteria. The Kaipapau Stream Bridge has a rating of 37 (based on a scale of 1-100) on the National Bridge Inventory and warranted a replacement. Current standards for highway speed, loading, sight distances, guardrails, and other safety measures will be used in the design of the project. Construction is anticipated to start in early 2008, with completion in 2009.

As part of the overall planning effort, we are soliciting comments in accordance with Section 106 of the National Historic Preservation Act (NHPA) to ascertain if there are historic properties that will be impacted by this proposed project. We request your comments, if any, on the proposed bridge replacement work. It is our preliminary determination that this project will have no adverse impacts on archaeological or historic resources. Please submit any written comments to us within 30 days from the date of this letter.

Melanie Chinen
Page 2
January 19, 2006

HWY-DD 2.9944

We appreciate your review of the subject materials. Please contact Li Nah Okita at 692-7581 or Duane Taniguchi at 692-7582 of our Highways Division, Design Section if there are any questions.

Enclosure

PROJECT SUMMARY
Kaipapa‘u Stream Bridge Replacement Project
Hau‘ula, Ko‘olauloa District, O‘ahu
December 5, 2005

PROJECT OVERVIEW

The Kaipapa‘u Stream Bridge is located on Kamehameha Highway, State Route 83, Hau‘ula, Ko‘olauloa, O‘ahu (**Figure 1, Project Location and Vicinity Map**). This project is one in a series of bridge replacements being implemented by the State Department of Transportation (SDOT-H) and Federal Highway Administration (FHWA) along the windward coast of O‘ahu. Replacement of the bridge will ensure that the structure meets Federal and State bridge and roadway standards.

Proposed work includes construction of a 110-foot long by 57-foot wide, pre-stressed concrete plank bridge with cast-in-place bridge deck (**Figure 2, Project Plan**). The replacement bridge will also include bicycle and pedestrian facilities. Current standards for highway speed, loading, sight distances, guard railings, and other safety measures will be used in the design of the project. Construction is schedule to begin in early 2008.

Because State of Hawai‘i and Federal (FHWA) funds will be used for development, this project is subject to preparation of environmental documentation in compliance with requirements of Chapter 200, Title 11, Hawai‘i Administrative Rules (HAR), Chapter 343, Hawai‘i Revised Statutes (HRS), and the National Environmental Policy Act (NEPA). In addition, consultation in accordance with Section 106, National Historic Preservation Act, is also being conducted to ascertain if there are historic properties being impacted by the proposed project.

PURPOSE AND NEED FOR PROJECT

SDOT-H is mandated to maintain the functional and structural integrity of bridges on State roadways. Based on the current bridge replacement program of SDOT-H, the Kaipapa‘u Stream Bridge facility has a National Bridge Inventory (NBI) rating of 37 based on a scale of 1-100. This NBI rating warrants rehabilitation or replacement of the bridge. The bridge replacement is needed to mitigate bridge maintenance concerns, increase traffic safety (for motorists and pedestrians) and meet the projected vehicle usage of the Kamehameha Highway.

EXISTING CONDITIONS

The Kaipapa‘u Stream Bridge carries inbound and outbound traffic on Kamehameha Highway near milepost 20.99. The existing bridge was constructed in 1932 and is 82 feet long by 28.4 feet wide. The bridge is considered a historical structure because of its age, although it is not listed on the State

Draft Historic Bridge Inventory and Evaluation, dated May 1996. The existing bridge has two 40-foot spans and is constructed from reinforced concrete with a wooden pedestrian walkway attached to the mauka (west) side of the bridge. At the existing bridge, Kamehameha Highway has 12-foot approach lanes with paved shoulders in both directions and a current speed limit of 35 miles per hour.

Lands surrounding the bridge are single family residential and commercial and are privately owned. Several blocks to the north of the bridge is the Hau'ula Shopping Center, a strip mall with retail space and a parking lot. Parcels immediately surrounding Kaipapa'u Stream Bridge are single family residences.

TECHNICAL CHARACTERISTICS

The proposed replacement and widened bridge will measure approximately 110 feet long by 57 feet wide that will meet and State and Federal roadway, bridge and seismic standards. The structure will utilize pre-stressed concrete planks with cast-in-place deck topping with separated bikeway/pedestrian walkways on both sides.

The proposed design includes two 12-foot travel lanes plus two 8.5-foot shoulders, two 5-foot pedestrian walkways/bicycle lanes, reinforced guardrails, and drainage features. The approach and trailing guardrails will comply with the current standards of the State Department of Transportation, Highways Division, Design Branch. Rip-rap or CRM will be installed on the banks of the stream beneath the bridge abutments to stabilize the embankment. The bridge and approach roads shall conform to AASHTO and SDOT-H design criteria for roadway widths and safety features.

The new ROW will be 63 feet, 4 inches wide. Acquisition of additional property is required to allow for waterlines to be supported on the outer edges of the new bridge. In all, four new drilled shafts will be constructed in the stream channel for the replacement bridge foundation. The existing concrete center wall pier will be removed.

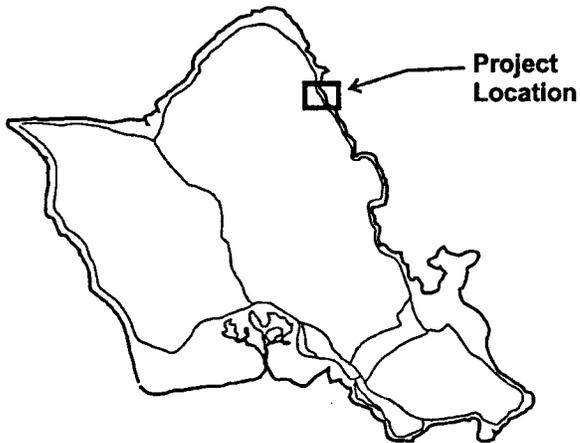
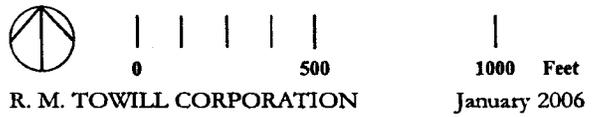


FIGURE 1
PROJECT LOCATION & VICINITY MAP
 Kaipapa'u Stream Bridge Replacement
 Ko'olauloa District, O'ahu, Hawai'i



Questions, comments and concerns:

1. Heath questioned if Council Chair Donovan Dela Cruz's office was assisting the village with their efforts and Warren reported that the legislation was being held in Council member Romy Cachola's committee. Heath questioned if they could help and write to the City and State.
2. Choon questioned how important is the Kahuku Golf Course is worth to the public. Chair Letts asked Ben Henderson if he would look into the State and see what was available for assistance since this was the only beach left with sand dunes.
3. Elkington commented on a petition that was signed by many of those who use the Kahuku Golf Course and passed around at the club house to save it and hoped that the community would find that petition and hopefully use to their benefit. Chair Letts commented that she will have the Planning and Land Use Committee look into this information and provide an update at the next Board meeting.
4. Resident commented that 5,000 houses will be built in the next 10 years and recreation areas will be needed.

Turtle Bay Update – Chair Letts shared the following information:

1. An email from Steven Doyle from Lauri Sunakoda from Corporation Counsel. This is regarding a question to DPP and if it would attend a public meeting for community input regarding the Kuilima resort, Corp Counsel reported that DPP declined a public meeting but welcomed written statements would be taken in for consideration. She also reported that Doyle expects an article soon in the Honolulu Advertiser and will give information as to where to send in statements for consideration.
2. Heath reported that several members of the Koolauloa Board had attended the Hawaii 2050 Task Force Kick off Conference on Sustainable Communities and listened to former Governor George Ariyoshi speak. The former Governor went ahead and spoke about working on plans from the 1970's for the future and upon review of these plans; the comment was that much of what he and his associates had not come to pass. Ariyoshi cautioned that past plans should be revisited and Heath stated that with the community and other leaders, it would be time for the community to revisit the past plans made for Turtle Bay.
3. Choon questioned what Doyle is trying to do when several Neighborhood Boards have taken stands at asking the City to revisit these plans. Choon stated that over 11,000 people through petition supported the revisiting of these plans and she is not sure what Doyle is trying to do with the information. Chair Letts commented that Doyle only wanted information to be given out and explained to the community. Choon questioned if Neighborhood Boards have any weight regarding this issue but Chair Letts commented that City Corporation Counsel stated the community has no say since City Council left the permits in question open ended with no time limits.
4. Dee dee Herron announced that October 25 at 5:00 p.m., the State Oahu Coalition will have a candle light vigil at Honolulu Hale, the same night that the City will be meeting to discuss the Turtle Bay issue. They hope to have 1,000 people attend the vigil.

Hauula Skate Park – update Chair Letts reported the following information: Meetings that have been called by Chair Dela Cruz' office has reported that there is no money ear marked for this project. The site selected was unsuitable and alternatives are going to Kokololio Beach Park and possible moves by the Hauula Beach Park. DPR is looking at the possibility of putting in a play court at the site initially set for the skate park as an alternative and will work with Chair Dela Cruz' office to have funds for that project released quickly.

NEW BUSINESS:

Kaipapau Bridge – R. M. Towill Walter Chong and Lee Taniguchi from DOT reported the following information. The Kaipapau stream bridge is located on Kamehameha Highway between Ikea loop and Pipilani place. At this time, the bridge does not meet State and Federal Standards with narrow one foot shoulders and substandard pedestrian walkways. With structural corrosion and serving beyond is service life (originally construct in 1932), the plan is to replace existing bridge with new bridge and do it in phases that will allow for sidewalks on both sides, new guard rails and end treatments. The impact of the project will delay traffic and have the temporary relocation of two households and the permanent relocation of one household that will have acquisition happen.

The project should start in March 2008 for 18 months with a proposed work hour of Monday-Friday 8:00 a.m. – 3:30 p.m. with no night or weekend work proposed. Press releases will be made along with residents in the immediate area being notified by the contractor.

Questions, comments and concerns:

1. Elkington questioned about the bridge on the other side of Hauula that is currently being worked on and asked if these will coincide. Chong reported that the project on Kaipapau Bridge will start after the completion of the Laie Bridge.
2. Hurlbut questioned if there would be bypasses put in but Chong stated it would have required more land to be acquisitioned.
3. Soh questioned the service life of the bridge and Chong reported it was 50 years. Soh also questioned the new width of the bridge versus the old bridge and Chong reported that the old bridge was only 28 feet wide while the new bridge will be 67 feet wide. His last question was if there were any penalties that will be added to the construction company in order to deter lane closures and finishing late periods and Chong reported that this could be put into the project contract.
4. Kaluhiokalani asked why the home on the makai side of Kamehameha Highway will be demolished if there are no bypasses being made. Chong stated that the home is very close to the original bridge and because of the expansion; the home would less then 10 feet away from the bridge. Chong also commented that they would need to remove the home in order to do construction on the bridge and to allow for access for the channel for maintenance purposes.
5. Macy commented that parents who drive their children to school would be stuck in construction traffic. Chair Letts commented that they can give a suggestion to DOT that the contractor be aware of this and schedule accordingly.
6. Albert commented that the school buses would be trapped by this traffic. School buses pick up Elementary School children and return back to Kahuku High School. The construction traffic would trap kids who are waiting for the school bus that is stuck in traffic. Chong reported that there will be lanes opened going both ways except for several periods where there will be a contra flow lane that is slated to be in the middle of the day. Chair Letts commented that it should be brought to the contractor's attention to schedule the periods of lane closures around the school bus hours to ensure that children are not trapped in traffic on the buses.

Heath reiterated that the contractors should understand the human consideration of children being trapped on school buses. Chong reported that he would look into the contract and possibly have the contractor face fines if they are over their time limits each day.

7. Soh questioned what land was presently owned by DOT and Chong reported that 50 feet was owned but the expansion with clear that width and the land acquisition is what is required. An additional 13 feet would be needed in order.

Proposed wind farm for Kahuku- Westwind Works (Keith Avery)

Avery reported on the proposed wind farm in Kahuku will be a \$100 project. The West Wind Works LLC would like to inform the community of their project and will not further the project without Board and community approval. The land that will be used is Agriculture zoned land 1 & 2 and is located makai and mauka of Kamehameha Highway near the Turtle Bay resort. The wind mills are approximately 300 feet tall with 90 feet wide rotators that will generate 2 ½ megawatts per day with 50 megawatts per day. The turbines that will be used are relatively quiet and have a better technology behind them in order to produce more energy and can be substantiated by similar projects already on the neighbor island that Avery had worked on. The ground area needed for the project would approximately 18 square feet and hope that the land below the wind mills will be used by agriculture farmers. A clip was shown of the three rotator wind mills Avery is proposing. Avery commented on programs that are environmentally based to ensure that the affect of the wind mills is limited.

Chair Letts took the meeting out of order to allow for questioning of Walter Chong on Kaipapau Bridge.

Questions, comments and concerns:

1. Hurlbut asked about the acquisition of the property on the makai side of Kamehameha Highway and if the property owner was aware. Chong reported that they have been in contact with the owner and they will buyout and assist in a move of the household. The temporary relocation of people will provide for a stipend that is mandated by federal guidelines.
2. Heath questioned if there was an Environmental assessment draft available and Chong stated that there was. She then asked that he provide the Board with two copies for their review.
3. Mattoon recommended that before construction begins a blessing happen for the bridge replacement and ensures that works, drivers, and all others in the area stay safe.

Questions, comments and concerns:

1. Kaluahiolani tax revenue/jobs. Tax breaks in Maui Maui paying tax, will have information at the Next Board meeting. Dedicated fund to fish and wildlife, especially the protection of the Hawaiian Stilt and bringing the Hawaiian Booby. Fuel is free at a fixed price for eternity.
2. Elkington questioned the experimental wind mills during the 1980's and 1990's and asked if the present were economically efficient. HECO's wind mill project in 1987 used Westinghouse turbines which were not made for to generate wind energy. Today, the turbines being used are a far more reliable technology.
3. Heath questioned if Avery was in contact with the developers of the Turtle Bay resort and what they had to say. Avery commented that the developers did not want to discuss the issue because if visitors believed it was windy, no one would come.
4. Soh asked about the 3 blades on the wind mills and what noise affect it would have. Avery stated that people could stand right under the wind mills and have a discussion without too much disturbance since they move fairly slowly.
5. Chair Letts asked how many wind mills Avery expects to install and has he reviewed the view plane study for the area. Avery reported that he would have 10 mauka and 10 makai of Kamehameha Highway.

A motion by and seconded by Heath was passed to postpone committee reports until next Board meeting.

COMMITTEE REPORTS: Postponed until next Board meeting.

ANNOUNCEMENTS:

ADJOURNMENT: The meeting adjourned at 9:07 p.m.

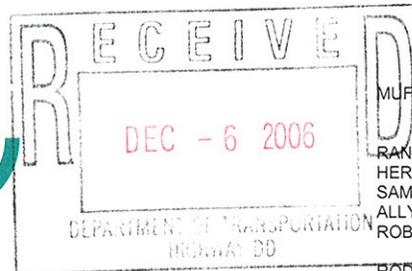
Submitted by:

Vanessa Matautia
Neighborhood Commission Office

C.
Draft EA
Consultation

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843



MURRI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman
HERBERT S. K. KAOPUA, SR.
SAMUEL T. HATA
ALLY J. PARK
ROBERT K. CUNDIFF

RODNEY K. HARAGA, Ex-Officio
LAVERNE T. HIGA, Ex-Officio

December 1, 2006

CLIFFORD P. LUM
Manager and Chief Engineer

Mr. Duane Taniguchi
State of Hawaii
Department of Transportation
Highways Division
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

Subject: Your Letter Regarding the Draft Environmental Assessment for the
Kaipapa'u Stream Bridge Replacement

Thank you for the opportunity to comment on the proposed project.

The Board of Water Supply has two water mains in the vicinity of the Kaipapa'u Bridge (12-inch and 16-inch). Construction drawings for the bridge replacement should be submitted for our review and approval.

If you have any questions, please contact Robert Chun at 748-5440.

Very truly yours,

KEITH S. SHIDA
Principal Executive
Customer Care Division

cc: Mr. Chester Koga, R.M. Towill Corporation
Office of Environmental Quality Control

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3435

FEB 6 2007

Mr. Keith S. Shida
Principal Executive
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Shida:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of December 1, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comment on the Draft Environmental (EA):

1. You are concerned about the two Board of Water Supply water mains along Kamehameha Highway in the vicinity of subject bridge. As stated in Section 6.2 of the Draft EA, HDOT will coordinate with BWS to minimize service disruptions. We will add clarifying language in the EA to note that construction drawings will be submitted to BWS for approval.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3435 as noted above.

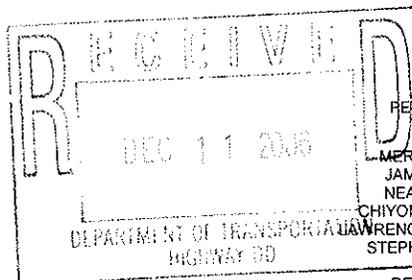
Very truly yours,

A handwritten signature in black ink, appearing to be "BT", with a long horizontal flourish extending to the right.

BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

c: Federal Highway Administration (Eric Worrell)
R. M. Towill (Walter Chong)

LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
LAWRENCE H. MIKE, M.D., J.D.
STEPHANIE A. WHALEN

DEAN A. NAKANO
ACTING DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621
HONOLULU, HAWAII 96809

December 7, 2006

REF:

Mr. Duane Taniguchi
Department of Transportation
Highways Division
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

SUBJECT: Draft Environmental Assessment for the Kaipapau Stream Bridge Replacement, Federal Aid
Project No. BR-083-1(48)

FILE NO.: N/A

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://www.hawaii.gov/dlnr/cwrm>.

Our comments related to water resources are checked off below.

- 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- 3. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM: Additional information and forms are available at www.hawaii.gov/dlnr/cwrm/forms.htm.

- 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.
- 5. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.
- 6. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

DRF-GN 03/02/2006

- 7. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 8. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 9. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.
- 10. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
- 11. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 12. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

OTHER:

Chapter 7, Section 7.5.7 (p. 84)

The acronym for the Commission on Water Resource Management should be "CWRM", instead of "CRM". The title of Hawaii Administrative Rules Title 13, Subtitle 7, Chapter 169, should read, "Protection of Instream [Instead] Uses of Water."

Chapter 9, Section 9.2 (p. 93)

Please include the Commission on Water Resource Management under the list of State Agencies consulted or to be consulted during preparation of the Draft EA.

If there are any questions, please contact Ed Sakoda at 587-0234.

Sincerely,



DEAN A. NAKANO
Acting Deputy Director

cc: Office of Environmental Quality Control
Mr. Chester Koga, R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3442

FEB 6 2007

TO: DEAN A. NAKANO, ACTING DEPUTY DIRECTOR
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS 

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

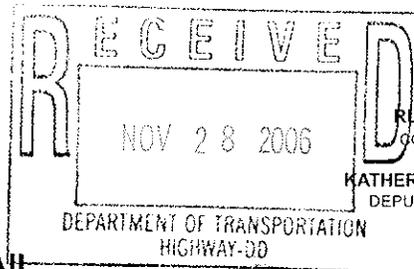
Thank you for your comment letter of December 7, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comments on the Draft Environmental Assessment (EA):

1. There may be a potential for ground or surface water degradation and that the subject project be reviewed by the Department of Health (DOH). The DOH has been consulted on the subject project and the construction contractor will be advised of his responsibility to maintain water quality.
2. A Stream Channel Alteration Permit is required. We are aware of this requirement and will be submitting our application shortly.
3. Acronym for the Commission on Water Resource Management. We will correct the citations in the Final EA.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3442 as noted above.

c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)

LINDA LINGLE
GOVERNOR



RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

NOV 22 2006

06 NOV 27 10:42 AM DEPT OF TRANSPORTATION
HONOLULU HI
EPT. OF TRANSPORTATION HIGHWAY DIVISION
2006 NOV 24 A 9:54

(P1288.6)

MEMORANDUM

TO: Mr. Glenn M. Yasui, Administrator
Division of Highways
Department of Transportation

ATTENTION: Mr. Duane Taniguchi

FROM: Ernest Y. W. Lau *EYWL*
Public Works Administrator

SUBJECT: Kaipapau Stream Bridge Replacement, Hauula, Oahu
Federal Aid Project No. BR-083-1(48)

Thank you for the opportunity to provide comments to the subject project's Draft Environmental Assessment. This project does not directly impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please have your staff call Mr. Bruce Bennett of the Planning Branch at 586-0491.

BB:vca

c: Ms. Genevieve Salmonson, DOH-OEQC
Mr. Chester Koga, R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3440

FEB 6 2007

TO: ERNEST Y. W. LAU, ADMINISTRATOR
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS 

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

Thank you for your comment letter of November 22, 2006, on the subject project, noting that the project does not directly impact project(s) or facilities of your Department.

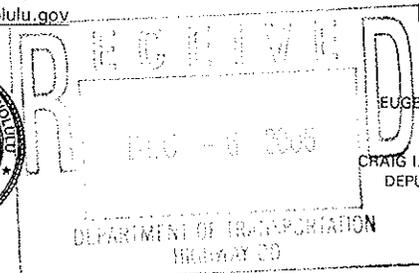
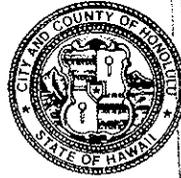
Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3440 as noted above.

c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4564 • Fax: (808) 523-4567
Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR



EUGENE C. LEE, P.E.
DIRECTOR
CRAIG I. NISHIMURA, P.E.
DEPUTY DIRECTOR

December 4, 2006

Mr. Duane Taniguchi
Department of Transportation,
Highways Division
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

Subject: Draft Environmental Assessment
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)
Oahu, Koolauloa
TMK: Roadway right-of-way adjacent to Plats (1) 5-4-011 and 018

Thank you for giving us the opportunity to comment on the above Draft Environmental Assessment (DEA).

The Department of Design and Construction has the following comment:

- The project shall comply with FEMA's "No Rise" requirement and it should be stated as such in the DEA.

Should you have any questions, please call Marvin Char, chief of our Civil Division, at 527-6381.

Very truly yours,


Eugene C. Lee, P.E.
Director

ECL:lt (181656)

c: R. M. Towill Corporation
DDC Civil Division

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3436

FEB 6 2007

Mr. Eugene C. Lee, P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of December 4, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comment on the Draft Environmental Assessment (EA):

1. You noted that the project should comply with the Federal Emergency Management Agency's "no rise" requirement. The Final EA will be clarified to include this requirement.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3436 as noted above.

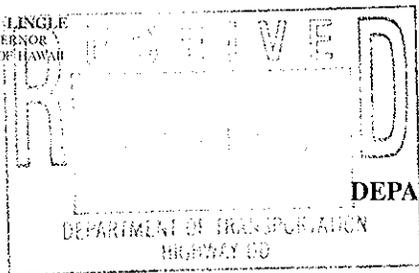
Very truly yours,

A handwritten signature in black ink, appearing to read "BT", with a horizontal line extending to the right.

BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

c: Federal Highway Administration (Eric Worrell)
R. M. Towill (Walter Chong)

LINDA LINGLE
GOVERNOR
STATE OF HAWAII



STATE OF HAWAII

DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879
HONOLULU, HAWAII 96805

MICAH A. KANE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

BEN HENDERSON
DEPUTY TO THE CHAIRMAN

KAULANA H. PARK
EXECUTIVE ASSISTANT

November 17, 2006

To: Brennon T. Morioka, Deputy Director
Department of Transportation, Highways Division

Attention: Duane Taniguchi

From: Micah A. Kane, Chairman
for Hawaiian Homes Commission *Duane Taniguchi*

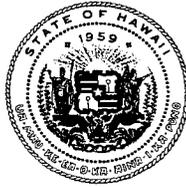
Subject: Draft Environmental Assessment Report the Kaipapa'u Stream Bridge
Replacement Project

Thank you for the opportunity to provide comments on the draft Environmental Assessment report for the Kaipapa'u Stream Bridge Replacement project along Kamehameha Highway near Hau'ula, Oahu. The Department of Hawaiian Home Lands has no comments to offer.

Should you have any questions, please call the Planning Office at 586-3836.

c: OEQC
R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3438

FFR 6 2007

TO: MICAH A. KANE, CHAIRMAN
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS 

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

Thank you for your comment letter of December 1, 2006, on the subject project, noting that your Department has no comments to offer on the subject project.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3438 as noted above.

c: Federal Highway Administration (Eric Worrell)
R. M. Towill (Walter Chong)

LINDA LINGLE
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EPO-06-192

December 7, 2006

Mr. Duane Taniguchi
State of Hawaii
Department of Transportation
Highways Division
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

SUBJECT: Draft Environmental Assessment for Kaipapau Stream Bridge Replacement for State Route 83, Kamehameha Highway, Koolauloa, Oahu, Hawaii
Adjacent to Plats (1) 5-4-011 and (1) 5-4-018

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time. We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

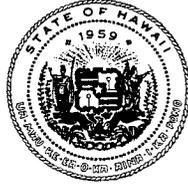
If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
Mr. Chester Koga, R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

FEB 6 2007

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3443

TO: KELVIN H. SUNADA, MANAGER
ENVIRONMENTAL PLANNING OFFICE
DEPARTMENT OF HEALTH

FROM: BRENNON T. MORIOKA, Ph.D., P.E. 
DEPUTY DIRECTOR-HIGHWAYS

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

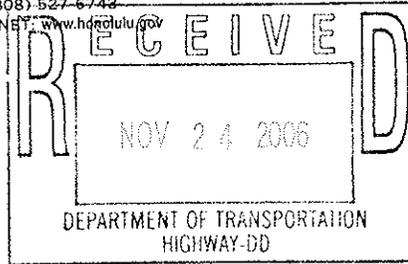
Thank you for your comment letter of December 7, 2006, on the subject project, noting that your Department has no comments to offer on the subject project at this time.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3443 as noted above.

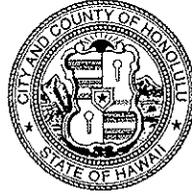
c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4432 • FAX: (808) 527-6743
DEPT. INTERNET: www.honolulu.gov • INTERNET: www.honoluludpp.org



MUFI HANNEMANN
MAYOR



HENRY ENG, FAICP
DIRECTOR

DAVID K. TANQUE
DEPUTY DIRECTOR

2006/ELOG-2802(pd)

November 22, 2006

Mr. Duane Taniguchi
Department of Transportation - Highways Division
State of Hawaii
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Subject: Comments on Draft Environmental Assessment (DEA)
Kaipapau Stream Bridge Replacement
Tax Plats 5-4-11 and 5-4-18

Thank you for the opportunity to review the above Draft Environmental Assessment (DEA). The proposal involves demolition of the existing bridge over Kaipapau Stream, and construction of a replacement bridge that will conform to current seismic/structural requirements.

We note that a Special Management Area Use Permit (SMP) is not required for work within the 50-foot wide highway right-of way. However, according to the DEA, the preferred alternative (i.e., Alternative No. 4) will involve two (2) right-of-way acquisitions as well as work within the Kaipapau Stream, including a new stream wall. Thus, an SMP is required. The following should be addressed:

- What terrestrial animals are found within the project site? Have any federally-listed endangered species been found on-site or nearby (including Koloa, Hawaiian Coot, Hawaiian Gallinule, and Hawaiian Stilt, for example)?
- The DEA discloses that four (4) new drilled shafts will be constructed within the stream channel for the new bridge foundation, to depths of between 30 - 50 feet. Will there be borings into bedrock? If so, give specific information on depth, etc., and any anticipated impact and mitigation measures of these activities on the stream and native species.
- Will fill material be required? If so, how much? Where is it to be placed? What steps will be taken to ensure that it is clean and free of alien plants or parasites to which native species are susceptible?
- The DEA states that dewatering activities are anticipated during installation of the drilled shafts within the stream channel. Will there be a settling tank, sedimentation pond, and hydro-testing containment treatment pond? If so, provide specifications, and indicate

where they will be located. (In addition to a written description, a map showing where these activities will take place should be included.)

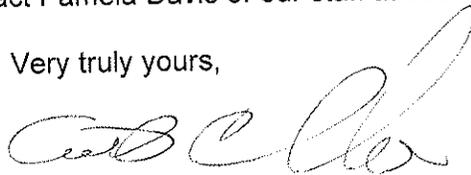
- The DEA states that "the subject property may also serve as staging and stockpiling areas for construction equipment." It also states, "In-stream activity includes (...) staging and maneuvering of heavy equipment." Please explain, and indicate where activities will take place on the site plan. In addition, show the location of the sediment retention berms. (We note that the community generally expresses interest in staging/stockpiling issues, and finds them important.)
- The DEA states that, "Any site designated for re-fueling shall be located away from the stream, enclosed by a containment berm and constructed to contain spills and seepage and prevent storm water runoff from carrying pollutants into state coastal waters." As noted above, please provide information on the location of the proposed activity, and show it on the site plan.
- Will grading occur within the stream? If so, where?
- If excavation is required to accommodate the new abutments, what will happen to the excavated material? Will it be stockpiled on-site, and if so, where? Or, will it be disposed of off-site?
- Will existing bridge abutments be cut off at the mud-line, or entirely removed?
- During demolition and new concrete work, what steps will be taken to contain debris?
- Will oil boom floats be used to extract petroleum and any hydraulic fluid which may be released? Provide specific information.
- Will additional stream bank hardening be required? If so, where?
- Will any stream widening be required? If so, where?
- The DEA notes that there are buried water lines, but does not address their precise location. The 12- and 16-inch lines (existing, temporary and permanent) should be shown on the site plan. In addition, please address all potential impacts and proposed mitigation measures pertaining to this work.
- Will existing overhead electrical, telephone and cable lines remain in place during construction?
- Will temporary street lighting be required? If so, where will it be located? If temporary lighting is utilized, will permanent lighting be returned to its original location?

Mr. Duane Taniguchi
November 22, 2006
Page 3

- Provide a proposed landscape plan for post-construction revegetation, including number, species, and height/gallon size of all plant materials.
- Under the section entitled "Other Permits and Approvals", it should be noted that building permits and a "no rise certification" will be required. Also, if grading is to occur, grading permits may be required.

Should you have any questions, please contact Pamela Davis of our staff at 523-4807.

Very truly yours,



HE Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:cs

cc: Office of Environmental Quality Control
R. M. Towill Corporation

Doc496722

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3441

FEB 6 2007

Mr. Henry Eng, Director
City and County of Honolulu
Department of Planning and Permitting
650 South Beretania Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Eng:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of November 22, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comments on the Draft Environmental Assessment (EA):

1. Are there and what types of terrestrial animals are found at the project site? We have not observed any endangered species at or near the project site. As noted in the Draft EA, however, common birds were observed.
2. Will there be boring into bedrock? As stated in the Draft EA, four new shafts will be drilled for new supports for the bridge. The shafts will be placed in the stream and will be dug to a depth of approximately 30 feet or until bedrock is encountered. The proposed drilling will be first attempted from the existing bridge or stream bank to minimize impacts to the stream. Further, the stream will be temporarily diverted to one side of the stream in order that work can be done away from the flowing stream. The construction contractor will be instructed to minimize discharges into the stream.
3. Will fill material be required? "Fill" will be required for the project in two areas: a) bridge abutments will be constructed at both ends of the stream to support the bridge decks and b) the support shafts will be installed in the stream. We will minimize impacts to the stream by creating "dry" conditions as construction of the two elements proceeds. The diversion of the stream to one-side is currently our preferred method of diverting the stream flow. The fill material will be concrete for the abutments and the backfill material will be imported gravel and rock and soil removed from the site.

4. Dewatering activities? Dewatering activities are anticipated when the support shafts are dug. The effluent from the holes (about 18 inches in diameter) will be pumped to a filtering system on the banks. The filtering system will use a combination of filter fabric and sand. The filtered water will be returned to the stream. Two parcels of land have been selected for staging of equipment and material and we will identify these sites in the Final EA. Specific methods and means will be left to the construction contractor.
5. Will grading occur in the stream? No grading is anticipated.
6. Excavation requirements and disposal of soils? Excavation is anticipated during the installation of the bridge abutments. The exact quantity has not been determined at this time. It is anticipated that the excavated soil and rocks, if not re-used as fill, will be disposed by the construction contractor at a landfill approved for such material. If the excavated material will be re-used on site, one of the two sites identified earlier will be the designated stockpile location.
7. Will the existing bridge abutments be cut off at the mud line? If the existing abutment will be removed, then they will be cut off at the mud line.
8. What steps will be used to contain debris? Construction debris will be contained in several ways that include: a) installation of low silt and debris fences to contain construction material within the work area, b) 6-8 feet dust fences, c) trap screens under the bridge to prevent material from entering the stream, and d) general house-keeping to keep the work area free of flying debris, trash and other loose objects.
9. Will oil boom floats be used to extract petroleum and any hydraulic fluid that may be released? The construction contractor will be instructed not to perform any fueling activities on the bridge or in the stream. The contractor will be required to have a contingency plan in the event of a petroleum spill.
10. Will additional stream bank hardening be required? No other stream hardening is proposed other than the wing-walls currently proposed before and after the bridge. A portion of the downstream wall will be extended to protect a home from storm flows.
11. Will any stream widening be required? No widening is currently anticipated.
12. Location of buried waterlines? We will show the location of the waterlines in the Final EA and address potential impact resulting from the replacement of the waterlines at the bridge.

FEB 6 2007

13. Will existing overhead electric, telephone and cable lines remain in-place during construction? Relocation of power, telephone and cable lines are anticipated and will occur at the time of construction.
14. Will temporary street lighting be required? No additional street lighting is currently planned.
15. Provide a proposed landscape plan for post-construction Revegetation? No additional landscaping is currently proposed, other than grassing of the staging areas.
16. Other Permits? We will note that a "no rise certification" is required or a Conditional Letter of Map Revisions will be filed with the Federal Emergency Management Agency.

We acknowledge that a Special Management Area Permit is required for the subject project.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3441 as noted above.

Very truly yours,

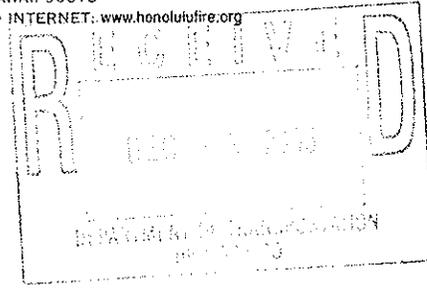


BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

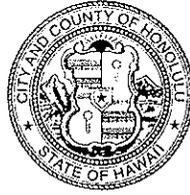
c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

636 SOUTH STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 723-7139 • FAX: (808) 723-7111 • INTERNET: www.honolulufire.org



MUFI HANNEMANN
MAYOR



KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

December 4, 2006

Mr. Duane Taniguchi, Project Engineer
Highways Division
Department of Transportation
State of Hawaii
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

Subject: Draft Environmental Assessment
Kaipapa'u Stream Bridge Replacement
Federal Aid Project Number BR-083-1(48)
Tax Map Key: Roadway Right-of-Way Adjacent to Plats (1) 5-4-011 and 018

In response to a letter from Mr. Chester Koga of R.M. Towill Corporation regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material provided and has no objections to the proposed project.

Should you have any questions, please call Battalion Chief Lloyd Rogers of our Fire Prevention Bureau at 723-7151.

KENNETH G. SILVA
Fire Chief

KGS/KT:jl

cc: Office of Environmental Quality Control
Mr. Chester Koga, R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3433

FEB 6 2007

Mr. Kenneth G. Silva
Fire Chief
Honolulu Fire Department
636 South King Street
Honolulu, Hawaii 96813-5007

Dear Chief Silva:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of December 4, 2006, on the subject project noting that the Fire Department has no objections to the project.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3433 as noted above.

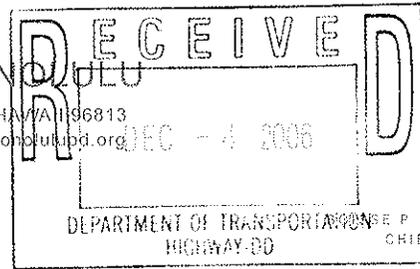
Very truly yours,

A handwritten signature in black ink, appearing to be "BT" with a flourish.

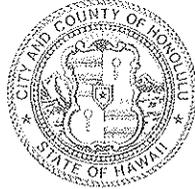
BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

c: Federal Highway Administration (Eric Worrell)
R. M. Towill (Walter Chong)

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulu.ppd.org



MUFI HANNEMANN
MAYOR



GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-DK

November 28, 2006

Mr. Duane Taniguchi
Highways Division
Department of Transportation
601 Kamokila Boulevard, Room 609
Kapolei, Hawaii 96707

Dear Mr. Taniguchi:

This is in response to the R. M. Towill Corporation's letter regarding a Draft Environmental Assessment for the Kaipapa'u Stream Bridge Replacement project in Ko'olauloa.

This project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Janna Mizuo of District 4 at 247-2166 or Mr. Brandon Stone of the Executive Office at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By


JOHN P. KERR
Assistant Chief of Police
Support Services Bureau

cc: OEQC
Mr. Chester Koga, R. M. Towill
Corporation

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

FEB 6 2007

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3439

Mr. Boisse P. Correa
Police Chief
Honolulu Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Chief Correa:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of November 28, 2006, on the subject project, noting that the project should have no impacts on facilities operations of the Honolulu Police Department.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3439 as noted above.

Very truly yours,

A handwritten signature in black ink, appearing to read "BM", with a horizontal line extending to the right.

BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)

September 4, 2006

Mr. Duane Taniguchi
Department of Transportation
Highways Division
601 Kamokila Boulevard, Room 609
Kapolei, HI 96707

Dear Mr. Taniguchi,

Chester Koga of R.M. Towill Corporation has kindly provided us with an advance copy of the Preliminary Draft Environmental Assessment (EA) relating to the Kaipapa'u Stream Bridge Replacement, Project No. BR-083-1(48) and has requested that we direct any comments to you.

We are the owners of TMK: 5-4-11: 20, shown as Lot 54 on the various figures in the EA, and are concerned about the effects that construction may have on our property. We note, specifically, that the project will involve construction of "drainage features." (Project Summary, p. 1). Drainage features apparently include "slope protection (rip-rap or CRM) at the abutment walls" (Section 2.6.2, [preferred] Alternative 4, Phase 1, p. 12) and a "new stream wall" (Figure 2, Alternative 4, Site Plan).

It appears to us that these features to be constructed will force very large amounts of runoff into our property during even moderate rains since our property is the only one in the area which retains its natural terrain and has not been protected by (illegally?) constructed walls along Kaipapa'u Stream. We would therefore like to meet with you or your representative to discuss this situation further. Please advise us when you could schedule such a meeting.

Thank you for your consideration in this matter.

Sincerely,

Bruce & Sandra Nicholl
47-365 Lulani St.,
Kaneohe, HI 96744
239-6171
Nichollb@aol.com

cc: Rodney Haraga, Director
State of Hawaii Department of Transportation

Chester Koga
Planning Project Coordinator
R.M. Towill Corporation

LINDA LINGLE
GOVERNOR



BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

HWY-DD 2.3434

FEB 6 2007

Bruce and Sandra Nichol
47-365 Laulani Street
Kaneohe, Hawaii 96744

Dear Bruce and Sandra Nichol:

Subject: Draft Environmental Assessment Comments for
Proposed Kamehameha Highway, Kaipapau Stream Bridge Replacement
Federal-Aid Project No. BR-083-1(48)

Thank you for your comment letter of September 4, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comment on the Draft Environmental Assessment (EA):

1. You are concerned that the proposed rip rap to be installed will impact your property. This matter is currently under further study and you will be contacted as we make our final decision.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3434 as noted above.

Very truly yours,

A handwritten signature in black ink, appearing to read "BT", with a long horizontal flourish extending to the right.

BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director-Highways

c: Federal Highway Administration (Eric Worrell)
R. M. Towill (Walter Chong)

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

November 20, 2006

Mr. Rodney K. Haraga, Director
State Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Mr. Haraga:

Subject: Draft EA for the Kaipapau Stream Bridge Replacement

Thank you for the opportunity to review the subject document. We have the following comment.

1. Please print on both sides of the pages in the final document to reduce bulk and save on paper. HRS 342G-44 requires double-sided copying in all state and county agencies, offices and facilities.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,


Genevieve Salmonson
Director

c: R.M Towill

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3437

FEB 6 2007

TO: GENEVIEVE K. Y. SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS 

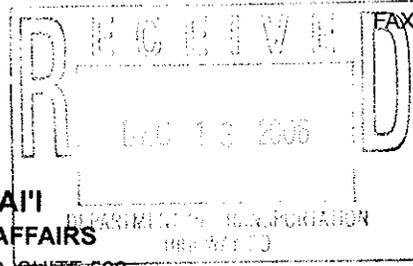
SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

Thank you for your comment letter of November 20, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comment on the Draft Environmental Assessment (EA):

1. You requested that the Final EA be printed on both sides of the page. The HDOT will comply with your request.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3437 as noted above.

c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD06/2272B

December 4, 2006

Duane Taniguchi
Department of Transportation- Highways Division
601 Kamokila Blvd., Room 609
Kapolei, HI 96707

RE: Draft Environmental Assessment for the Proposed Replacement of the Kaipapa'u Stream Bridge, Hau'ula, O'ahu, TMK (1) 5-4-011 and 018.

Dear Mr. Taniguchi,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 4, 2006 submission and offers the following comments:

Please see the attached comments to Mr. Brennan Morioka (HRD06/2272), dated March 7, 2006, as our concerns are stated within. Our staff has additional comments regarding how the Draft Environmental Assessment fulfilled OHA's comments which were drafted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

- 1) Page 62 of the Draft Environmental Assessment says "See Appendix A, Archaeological Site Assessment and Cultural Impact Assessment." Our staff can not locate either of these documents in Appendix A. Please insert the aforementioned studies and resubmit the Draft Environmental Assessment to our office for review. Page 63 of the Draft Environmental Assessment states that a complete surface survey was completed "in, around and under the bridge." Where is the document that substantiates this claim? A "Traditional Cultural Practices Assessment" included in Appendix A may suffice as a type of Cultural Impact Assessment under NHPA, but it will not suffice as an Archaeological Inventory Survey.
- 2) Page 62 of the Draft Environmental Assessment states "To ensure that no subsurface cultural features will be destroyed during project construction, work within the project area will be monitored by the project contractor." The only way to steer clear of damaging historic properties is to 1) locate them and 2) avoid them. Archaeological monitoring does not, and has never, precluded the destruction of historic properties and/or burials. Therefore, OHA does not concur with the proposed mitigation measure.

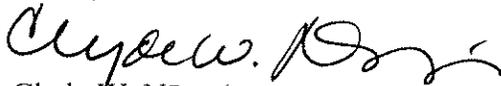
Duane Taniguchi
December 4, 2006
Page 2

- 3) As our staff requested in our March 7, 2006 comment letter to Mr. Morioka, we urge the applicant to complete a subsurface testing effort to identify potential historic properties prior to the commencement of construction related activities. Not only would this type of study take relatively little time and effort, but it is the only proper way to identify subsurface resources. Recovery during archaeological monitoring is a salvage effort at best and is not an appropriate form of protection for our kūpuna iwi. This request is in direct response to the applicants claim (P. 60, *Burial Sites*) that "Jaucas sands likely to contain burials are likely to exist within or near the present project area."

OHA urges that, in accordance with Section 6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, if the project moves forward, and if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division (SHPD/DLNR) shall be contacted.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or jessey@oha.org.

Aloha,



Clyde W. Nāmu'o
Administrator

C: Chester Koga, AICP
R.M. Towill Corporation
420 Waiakamilo Road # 411
Honolulu, HI 96817

Genevieve Salmonson
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

COPY

March 7, 2006

HRD06/2272

Brennon T. Morioka
State of Hawaii, Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

RE: Section 106 Consultation for the Proposed Replacement of Kaipapau Stream Bridge, Hau'ula, O'ahu.

Dear Mr. Morioka,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 8, 2006 request for comment on the above listed proposed project. OHA offers the following comments:

Our staff recommends that the applicant contact Roland "Ahi" Logan and Cathleen Mattoon as part of your consultation effort. Both individuals are from the area and are intimately involved in the cultural preservation of Ko'olauloa.

As a general note, OHA is concerned with the proposed project's potential effects on historic properties and human burials. Our records show that a substantial amount of iwi was encountered during a utility improvement in Hau'ula, along Kamehameha Highway, during the mid-1990s. This is in addition to the overall regional issue of disturbing iwi during ground-altering activities: 65 sets of human remains were unearthed during a recent Board of Water Supply water main replacement project in nearby Punalu'u. It is with this in mind that OHA asks the applicant to complete a subsurface testing effort, as part of an Archaeological Inventory Survey, prior to earth-disturbing activities. The results of the survey can help the applicant in considering building alternatives that satisfy engineering requirements as well as offer protection to Hawai'i's cultural resources.

OHA also asks that, in accordance with Section 6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division (SHPD/DLNR) shall be contacted.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or jessey@oha.org.

'O wau iho nō,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

Clyde W. Nāmu'o
Administrator

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DD 2.3444

FEB 6 2007

TO: CLYDE W. NAMUO, ADMINISTRATOR
OFFICE OF HAWAIIAN AFFAIRS

FROM: BRENNON T. MORIOKA, Ph.D., P.E.
DEPUTY DIRECTOR-HIGHWAYS 

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS FOR
PROPOSED KAMEHAMEHA HIGHWAY, KAIPAPAU STREAM BRIDGE
REPLACEMENT, FEDERAL-AID PROJECT NO. BR-083-1(48)

Thank you for your comment letter of December 4, 2006, on the subject project. The State of Hawaii Department of Transportation (HDOT) offers the following response to your comments on the Draft Environmental Assessment (EA):

1. We acknowledge receipt of a copy of a letter dated March 7, 2006, from your agency responding to our request for comments in accordance with Section 106 and the National Historic Preservation Act.
2. We will be transmitting the Archaeological Site Assessment and Cultural Impact Assessment to your office under separate cover.
3. The proposed action requires the replacement of an existing bridge structure in the same location, therefore pre-construction testing is not practical. We agree that on-site monitoring during demolition and construction is not entirely error free, however, we need to proceed in this manner to minimize the disruption to adjoining homeowners and the traveling public.

As stated previously, if we encounter any significant cultural deposits or human skeletal remains, we will stop work and the State Historic Preservation Division will be notified and consulted for guidance.

Should you have any questions, please contact Li Nah Okita of our Highways Division at 692-7581 or Duane Taniguchi at 692-7582 and reference HWY-DD 2.3444 as noted above.

Attachment

c: Federal Highway Administration (Eric Worrell)
R. M. Towill(Walter Chong)