Attachment G

Final Environmental Assessment

Appendix A	**Traditional Cultural Practices Assessment**
Appendix B	**Botanical Resources Study**
Appendix C	**Noise Impact Assessment**
Appendix D	**Water Quality and Biological Reconnaissance Surveys of Lower Kaipapaʻu Stream**
Appendix E	**SHPD Correspondence**
Appendix F	**Public Consultation**

LINDA LINGLE
GOVERNOR

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INTERIM DIRECTOR

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

IN REPLY REFER TO:

HWY-DD 2.3695

FEB 23 2007

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

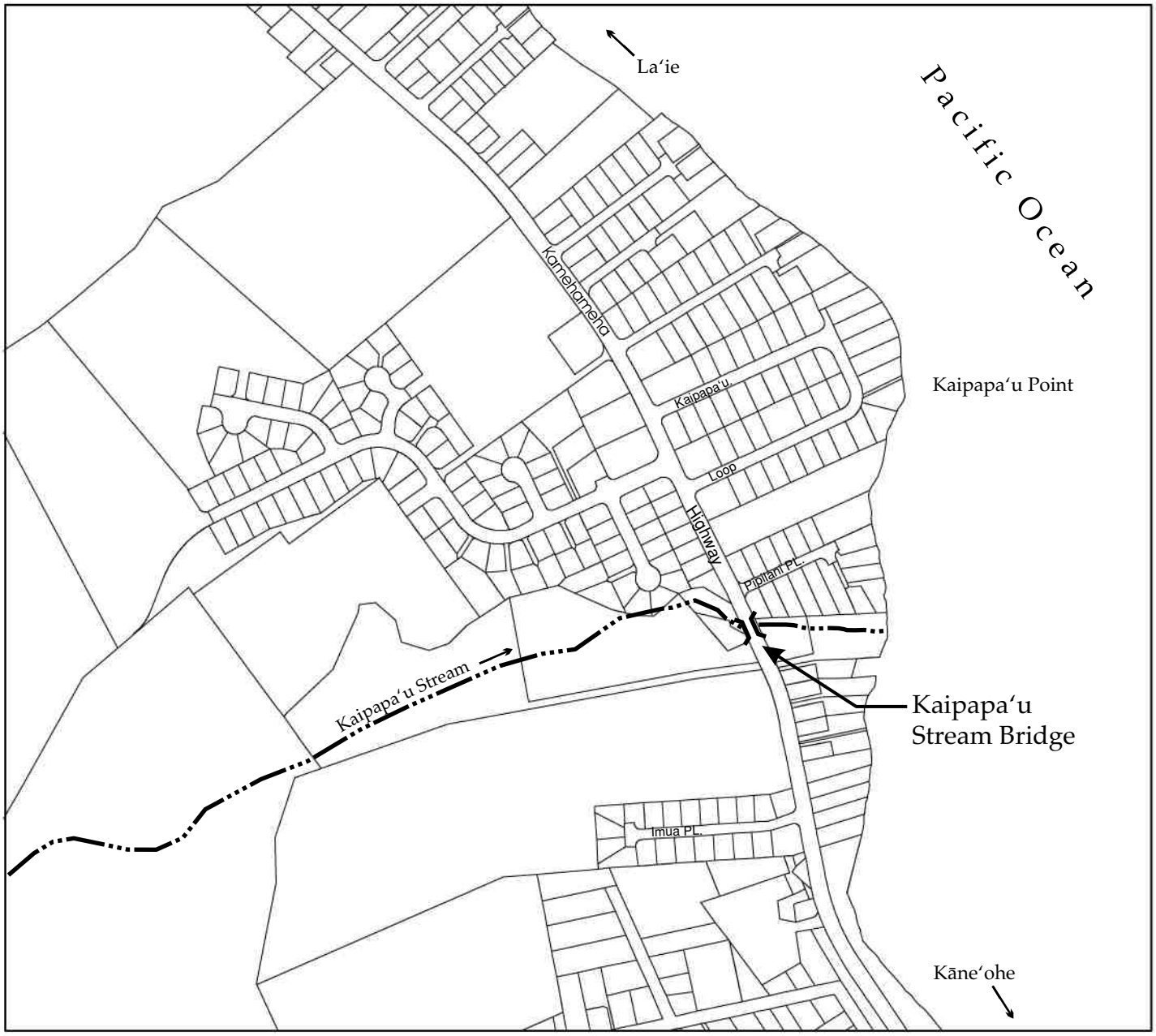
INTRODUCTION

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.



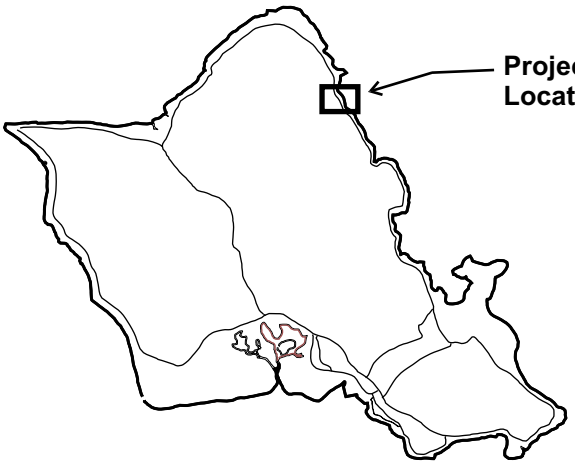


FIGURE 1
PROJECT LOCATION & VICINITY MAP
Kaipapa'u Stream Bridge Replacement
Ko'olauloa District, O'ahu, Hawai'i

0 500 1000 Feet

R. M. TOWILL CORPORATION February 2007

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-Kāneʻohe 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-Kāneʻohe side of bridge)
- TMK: 5-4-18:02 (mauka-Kāneʻohe 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.*

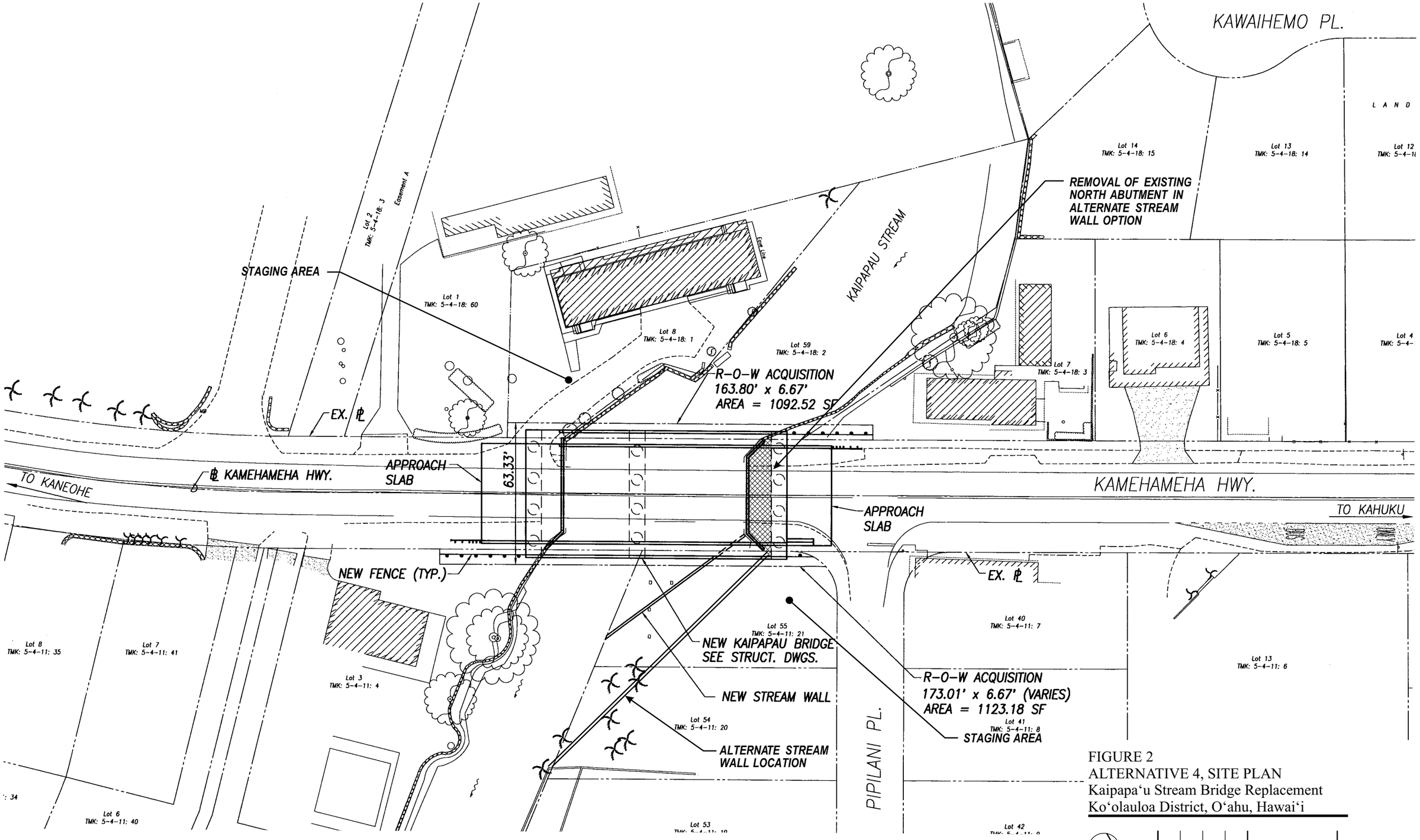


FIGURE 2
ALTERNATIVE 4, SITE PLAN
Kaipapa‘u Stream Bridge Replacement
Ko‘olauloa District, O‘ahu, Hawai‘i

Note:
See Table 3 for Sight Distance Concerns

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- 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.

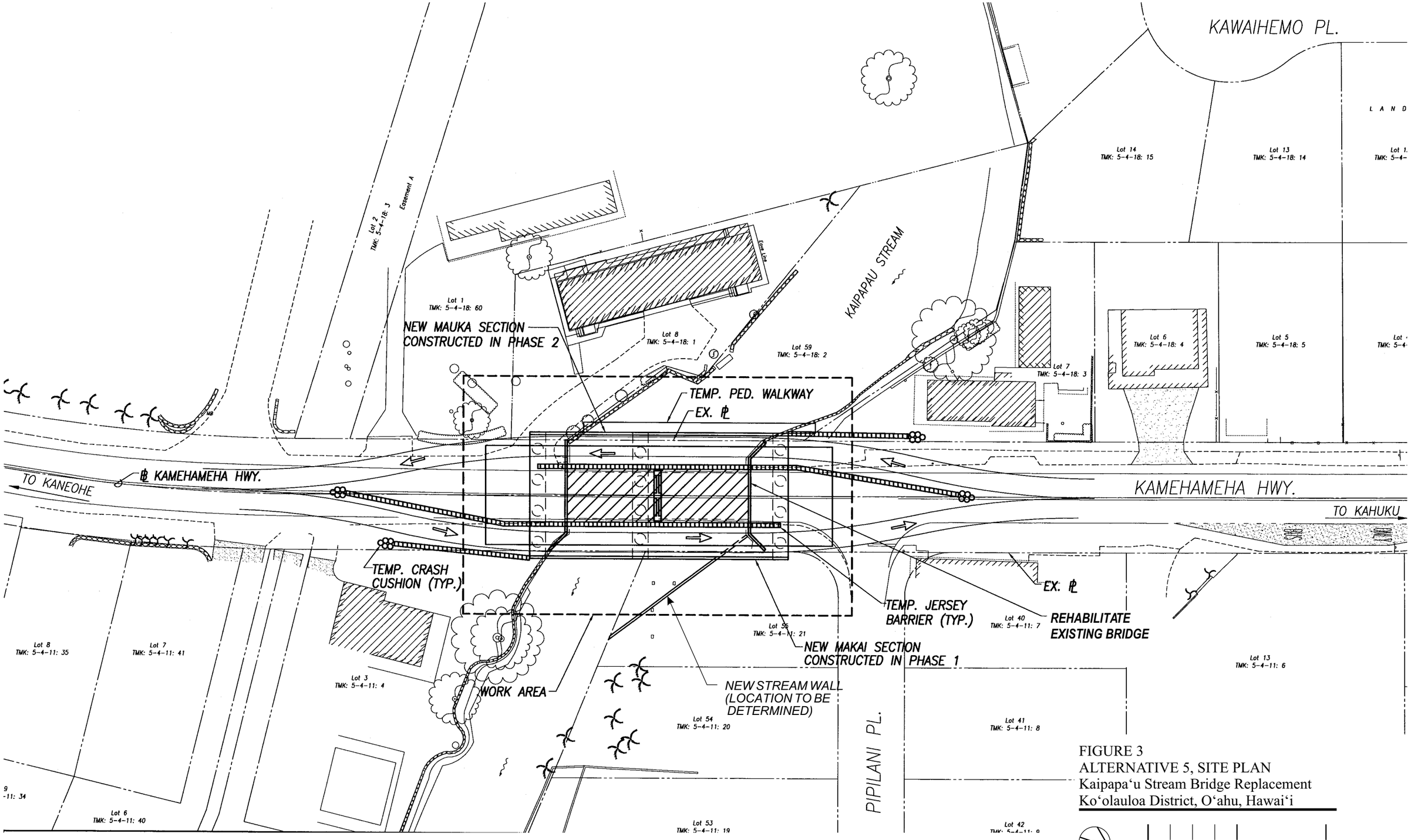

FIGURE 3
ALTERNATIVE 5, SITE PLAN
Kaipapa‘u Stream Bridge Replacement
Ko‘olauloa District, O‘ahu, Hawai‘i

0 40 Feet 80

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Note:
See Table 3 for Sight Distance Concerns

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

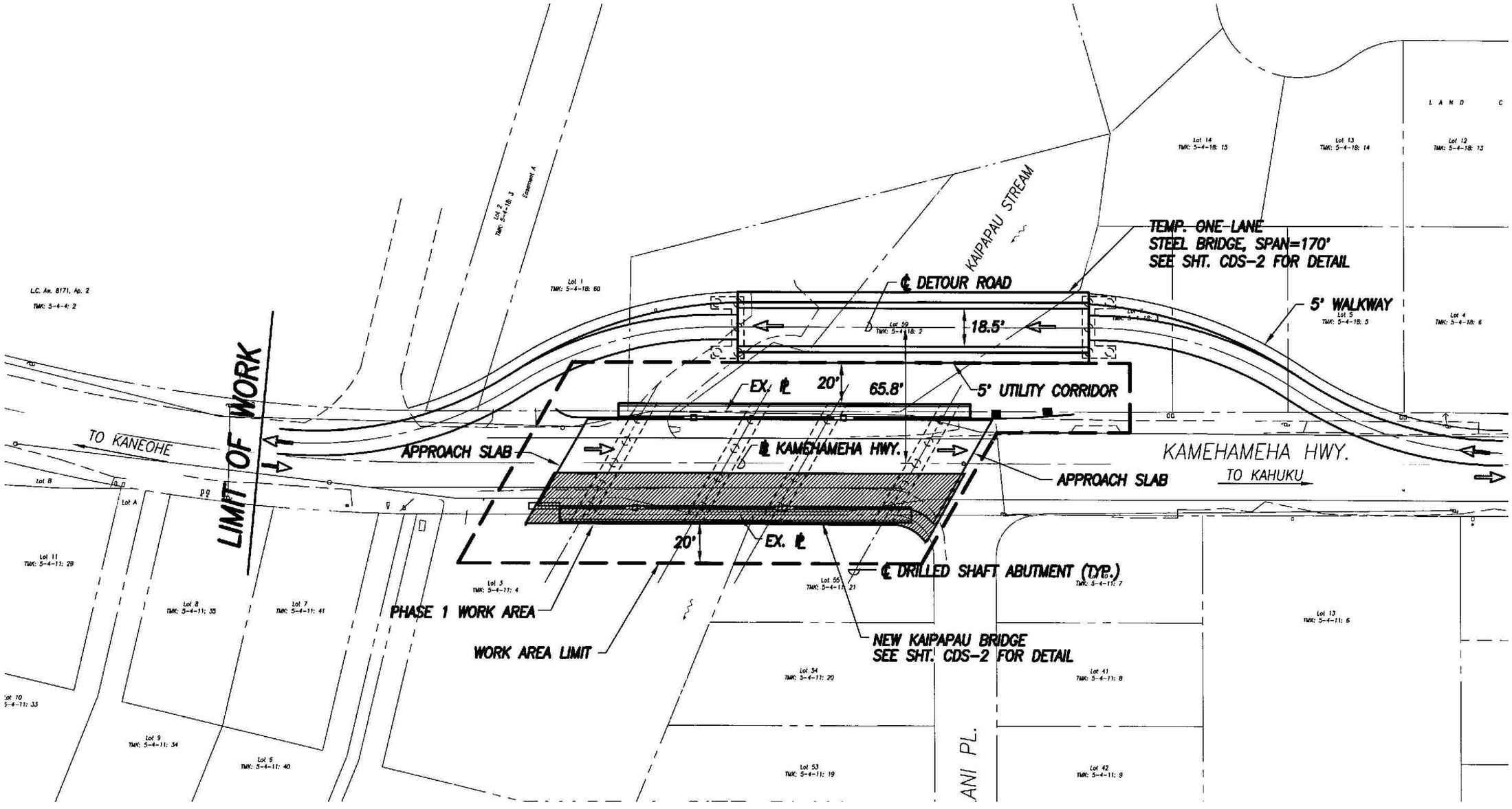
This phase allows for the construction of the mauka detour road and the demolition and reconstruction of the makai side of the bridge. Work includes:

- *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

0 50 Feet 100

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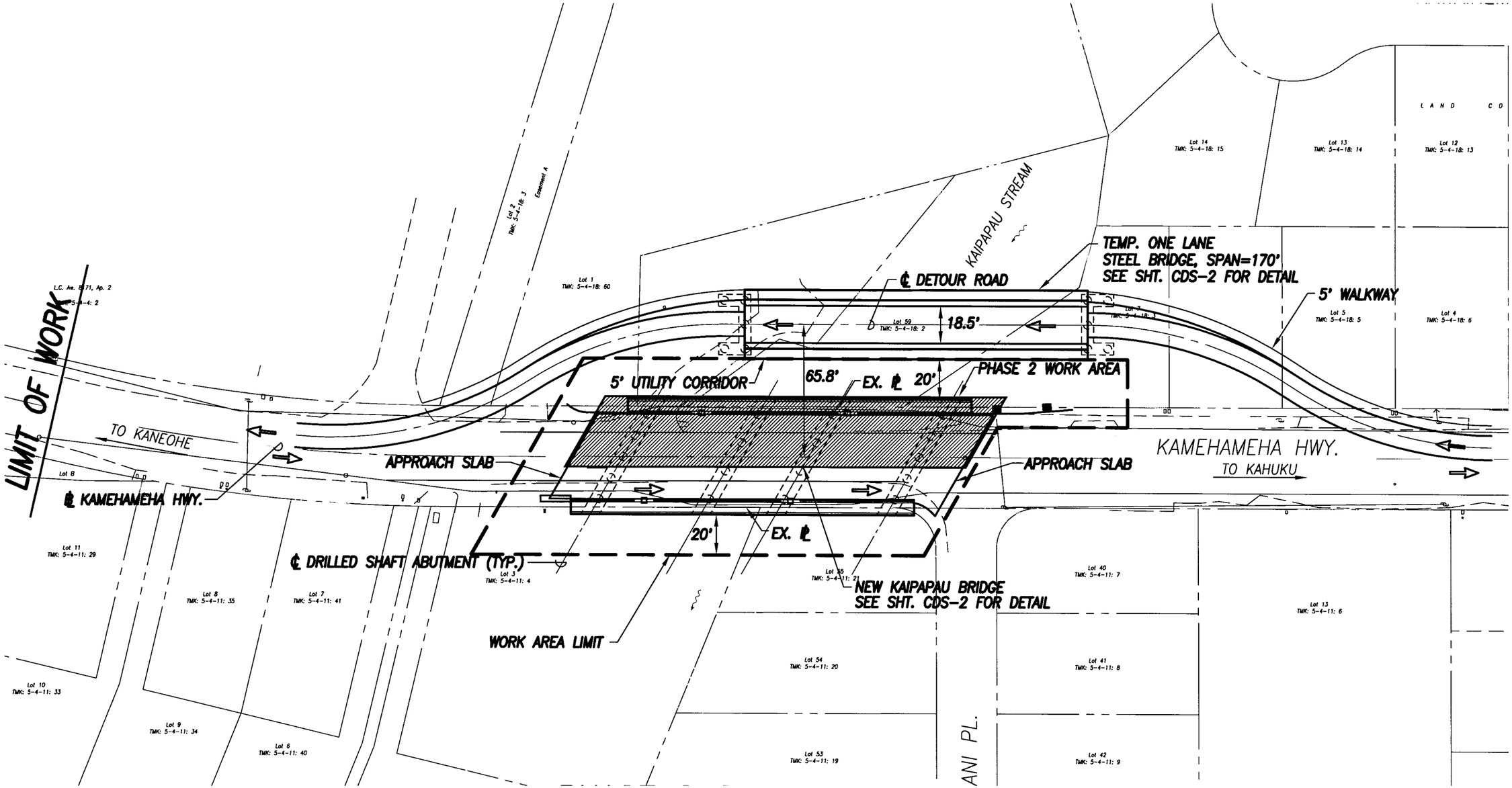

Note:
See Table 3 for Sight Distance Concerns

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

0 50 Feet 100

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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:

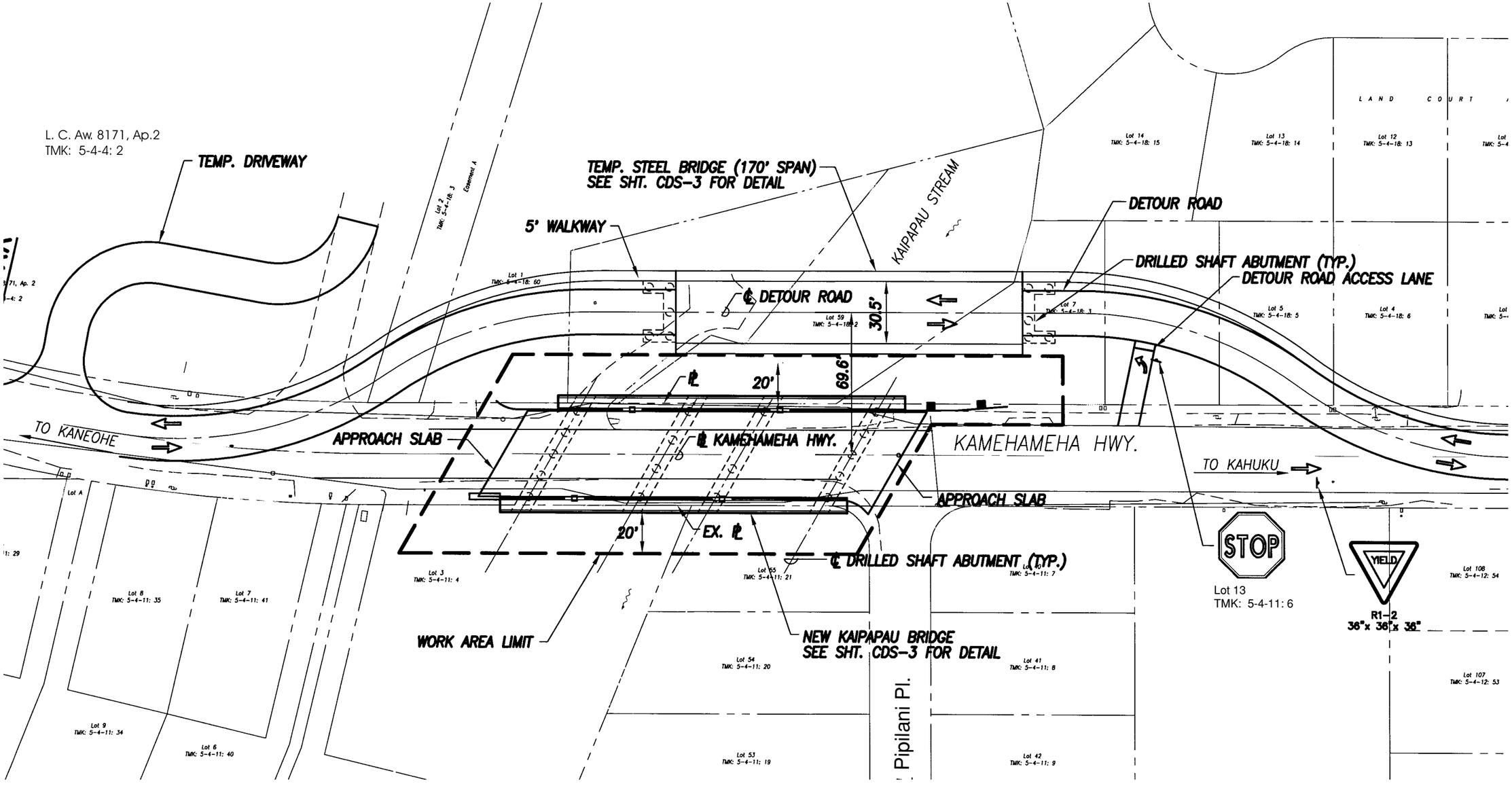
- *Prior to demolition of the existing bridge, construct a two-lane detour road on the mauka side of the existing bridge.* Locate the detour road to provide a minimum of 20 feet of horizontal clearance between the detour road and the new bridge.
- *Divert all through-traffic to the detour road to provide 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

0 50 Feet 100

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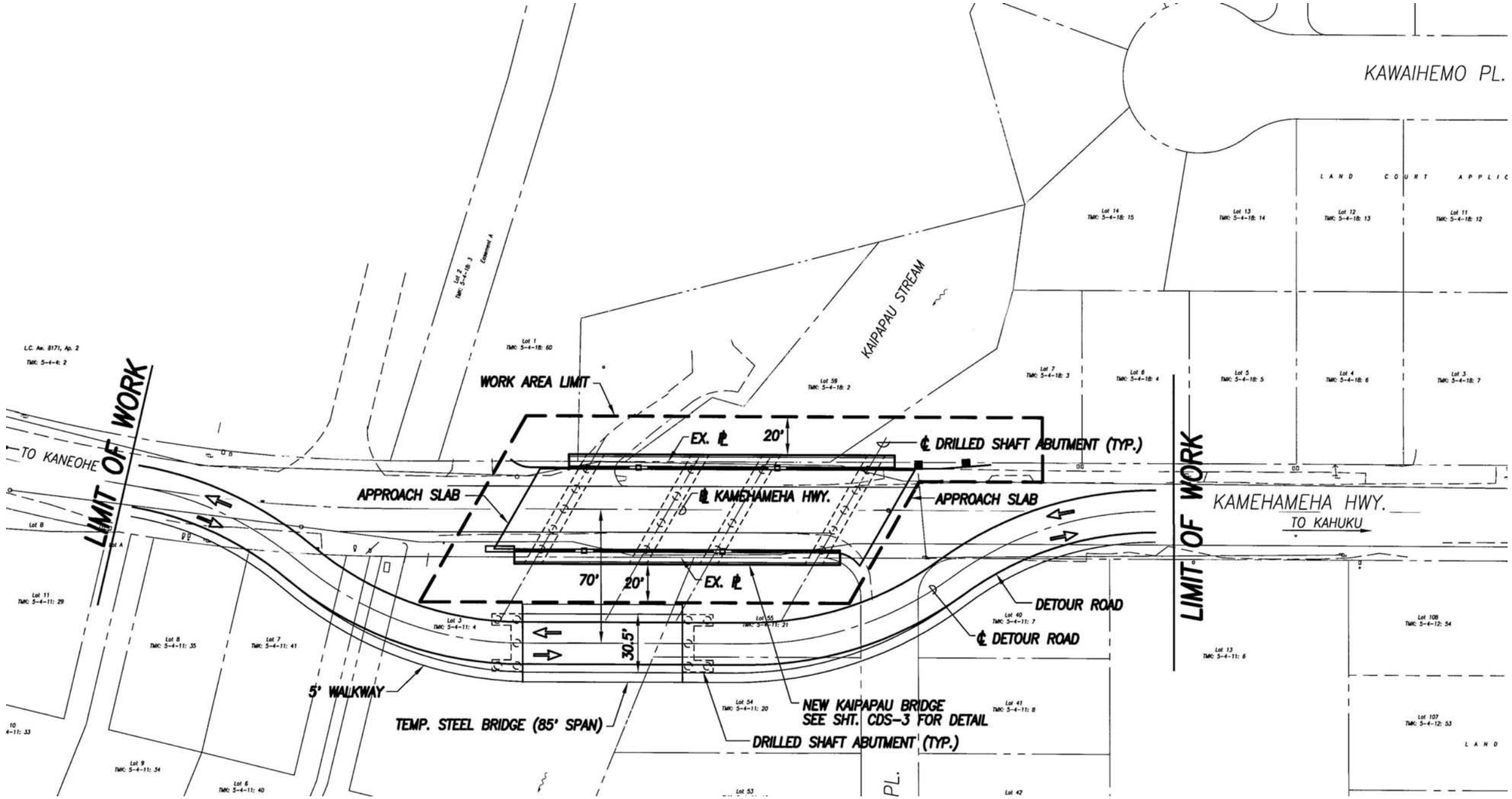

Note:
See Table 3 for Sight Distance Concerns

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

0 50 Feet 100

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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	Temporarily relocate existing 16" diameter water line (in the streambed, makai of the existing bridge) to the mauka underside of existing bridge. (Phase 1) Temporarily relocate existing 12" diameter waterline (currently in the streambed, mauka of the existing bridge) to the mauka underside of existing bridge. (Phase 2) Temporarily relocate the existing overhead electrical utilities on both mauka and makai sides of the work area.	Relocate 16" diameter waterline from mauka underside of existing bridge to the makai underside of the Phase 1 portion of the bridge. (Phase 2) 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)
5	Bridge Rehabilitation and Widening - No Detour Road	Relocate existing 16" diameter water line (currently in the streambed, makai of the existing bridge) to the mauka underside of existing bridge. Temporarily relocate the existing overhead electrical utilities on both mauka and makai sides of the work area.	Relocate existing 12" diameter waterline (in the streambed, mauka of the existing bridge) to the makai underside of existing bridge. 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.

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	- 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**.

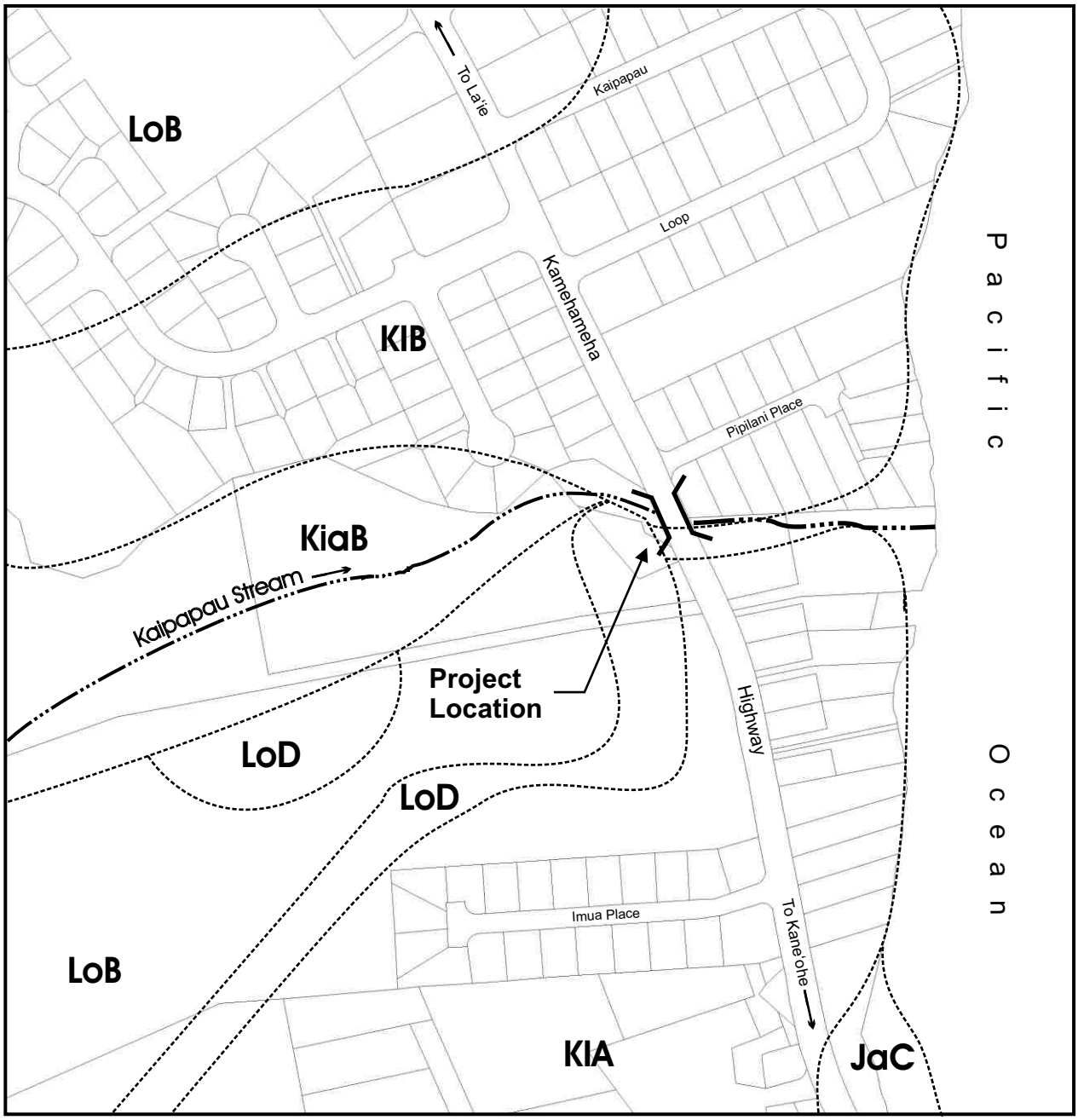
The Jaucas series consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. The area immediately south of Kaipapa'u Stream Bridge is Jaucas Sand.

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‘olauloa District, O‘ahu, Hawai‘i

0 300 Feet 600

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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.

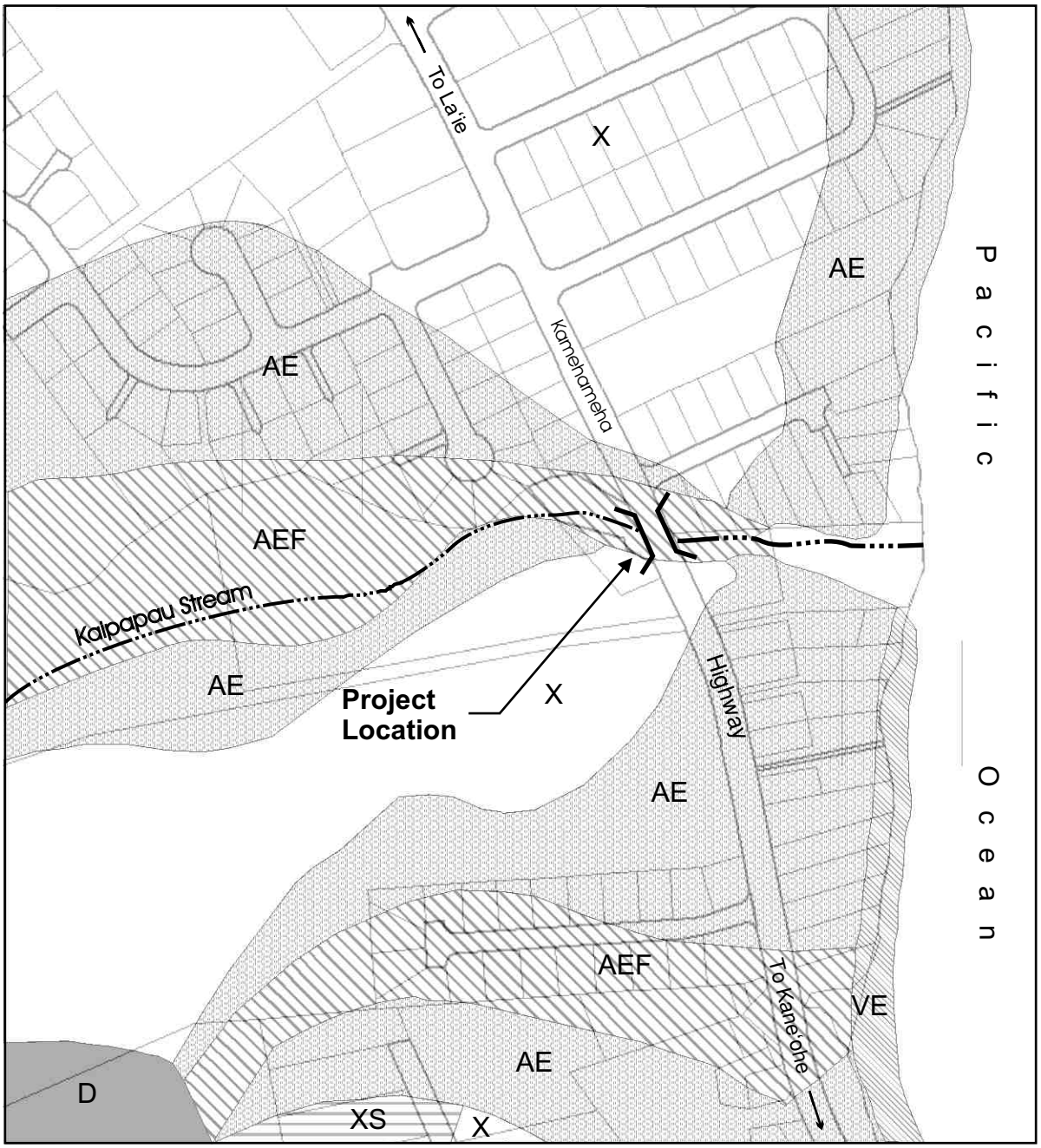
Potential Impacts and Mitigation

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

0 300 Feet 600

R. M. TOWILL CORPORATION February 2007

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 (*Sicypoterus 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 Oʻahu.

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 Kaipapaʻu 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-Kāneʻohe side of bridge, mauka dwelling only)

TMK 5–4-18:01 (mauka-Kāneʻohe 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.

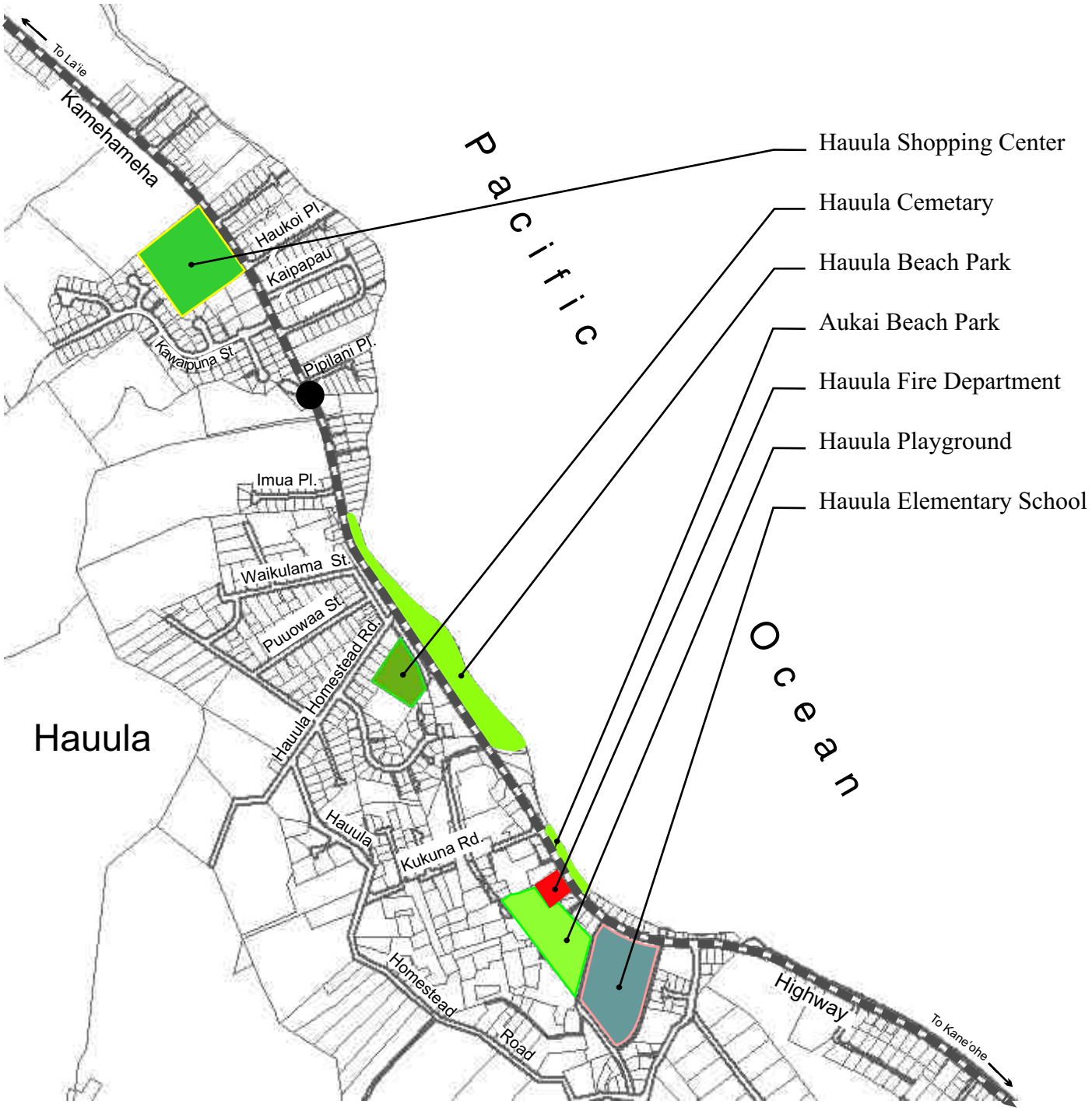
Potential Impacts and Mitigation

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

● PROJECT LOCATION

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

0 1000 2000 Feet

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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 slow-downs 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 HAWAI'I

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).

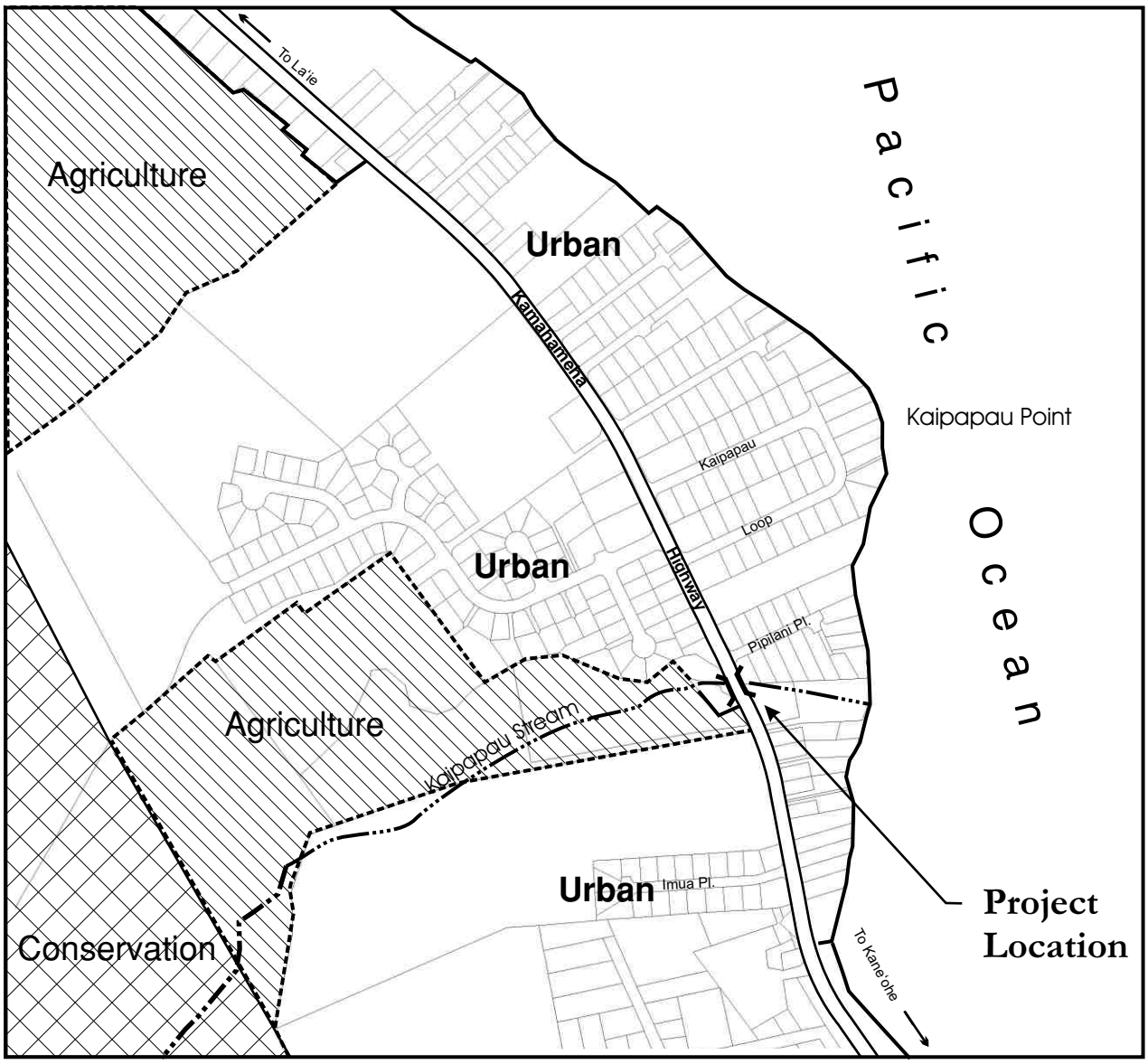

FIGURE 11
STATE LAND USE MAP
Kaipapa‘u Stream Bridge Replacement
Ko‘olauloa District, O‘ahu, Hawai‘i

0 1000 Feet 2000

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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

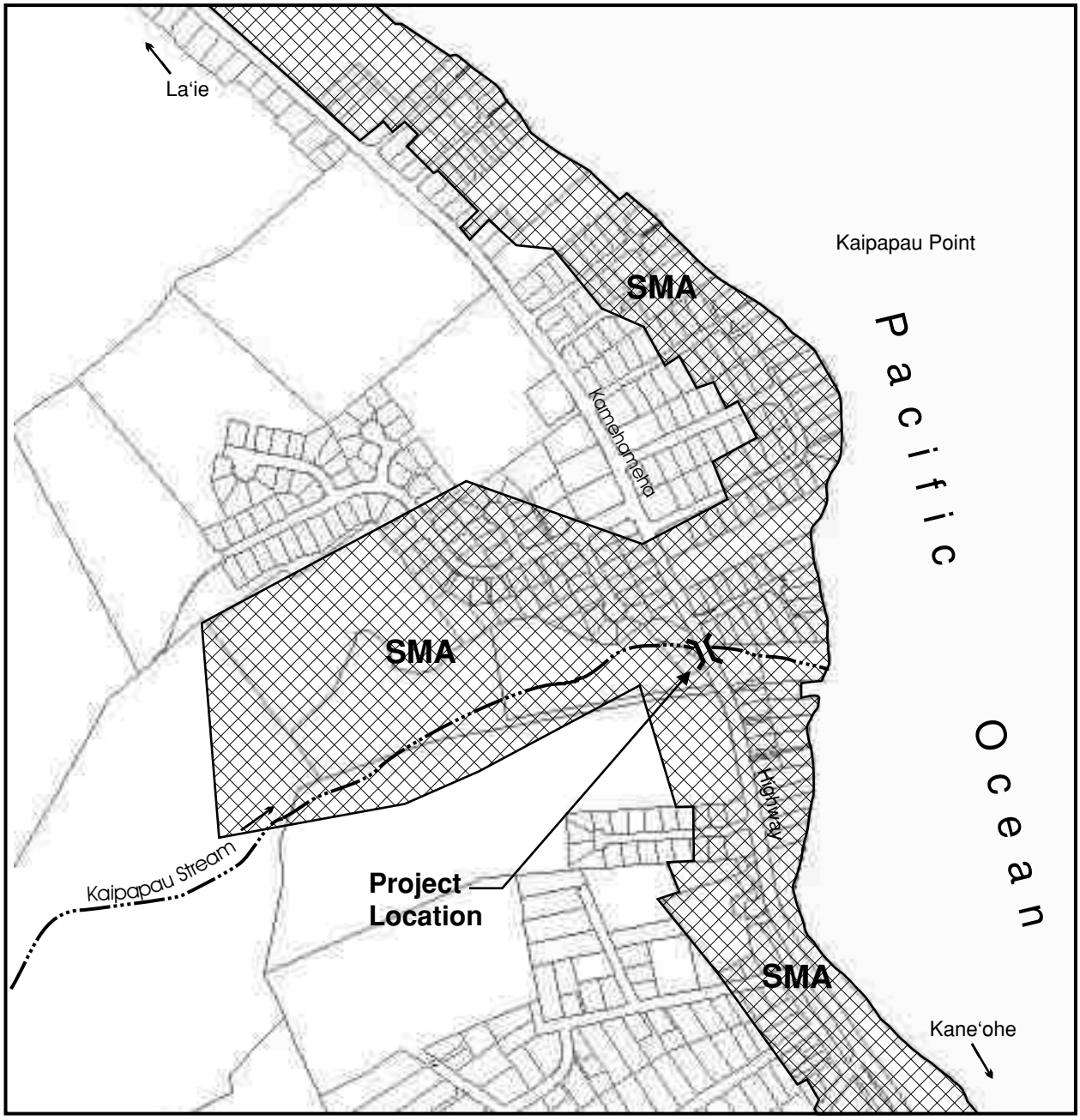
The development plans and sustainable community plans for the City and County of Honolulu are mandated by the General Plan to address the goals, objectives and policies of the County General Plan for each of O'ahu's districts. Hau'ula is in the Ko'olauloa district and is therefore included in the Ko'olauloa 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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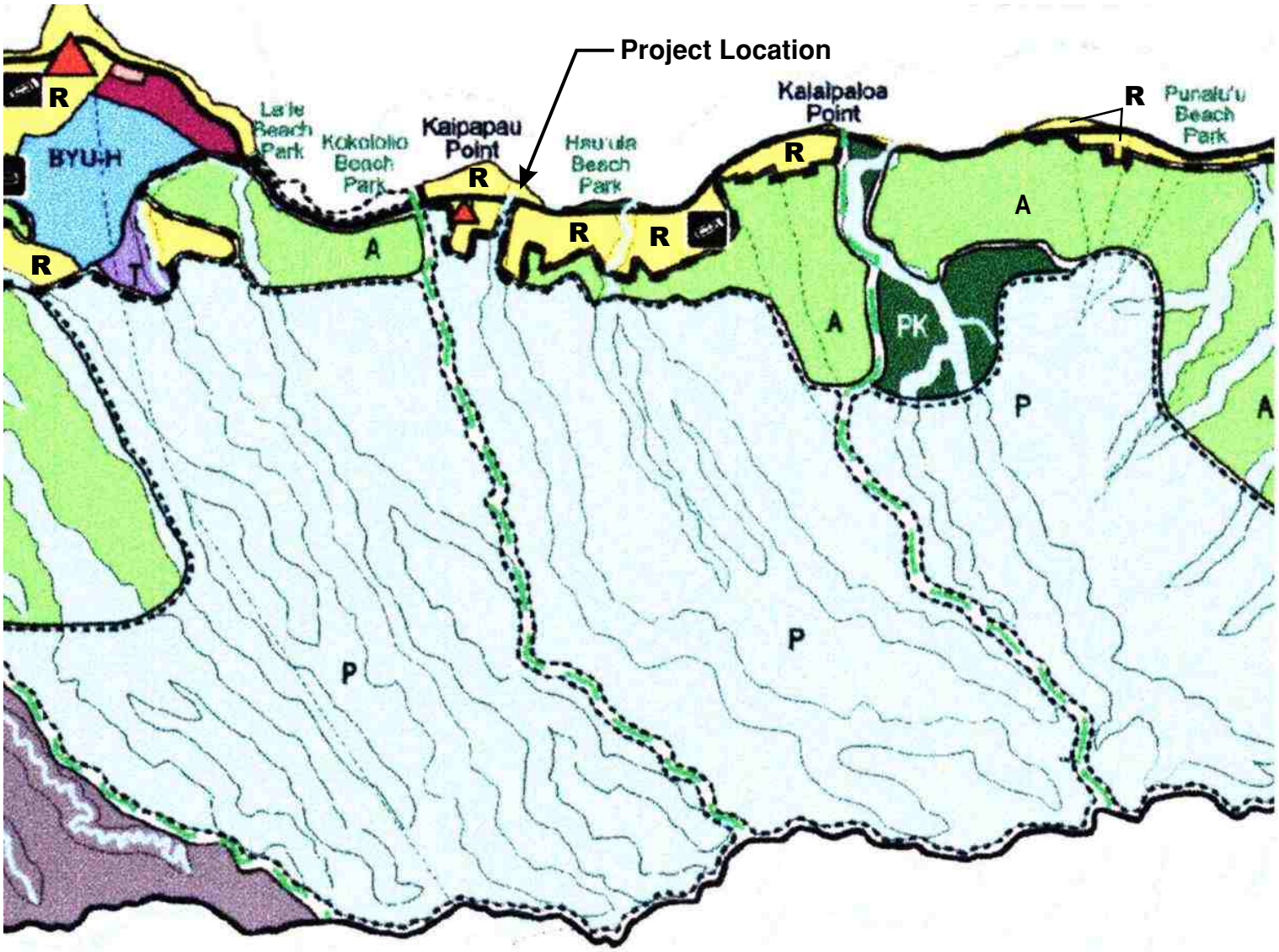

LEGEND

A	AGRICULTURE
P	PRESERVATION
PK	PARK
R	RURAL RESIDENTIAL

FIGURE 13
Koʻolauloa Sustainable Community Plan
Kaipapaʻu Stream Bridge Replacement
Koʻolauloa District, Oʻahu, Hawaiʻi

0 1000 Feet 2000

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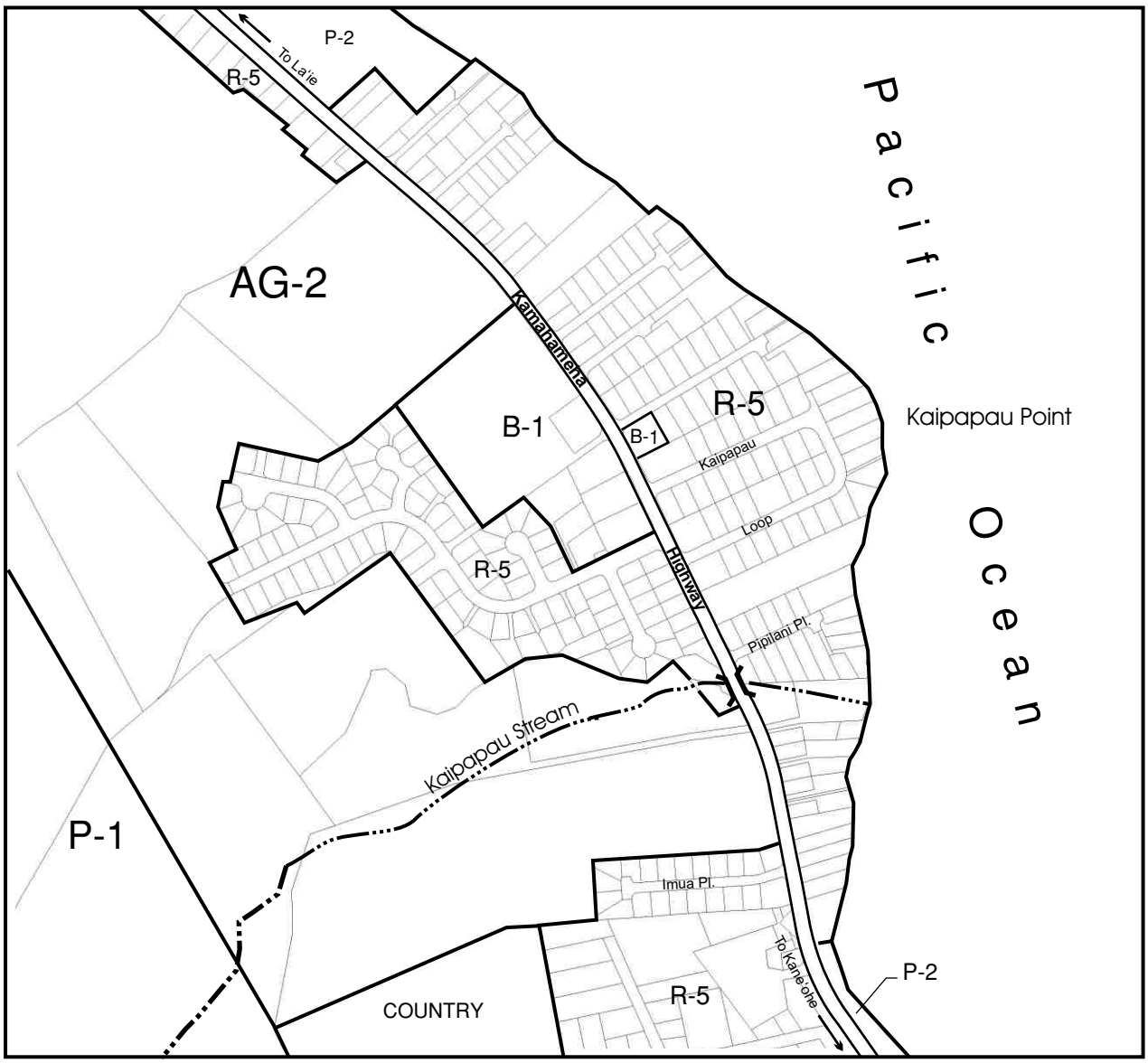
7.6.4 Zoning

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

0 1000 Feet 2000

R. M. TOWILL CORPORATION February 2007

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 Koʻolauloa Sustainable Communities Plan Land Use Map, the Kaipapaʻu 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 if 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
Koʻolauloa Neighborhood Board

9.4 INDIVIDUALS AND PRIVATE ORGANIZATIONS

Ahahui Kaʻahumanu Society
Association of Hawaiʻi Civic Clubs
Hauʻula Community Association
Hawaiian Electric Company
Hawaiian Historical Society
Historic Hawaiʻi Foundation
Hui Malama I Na Kupuna O Hawaiʻi Nei
Kaʻaʻawa Community Association
King Kamehameha Hawaiian Civic Club
Koʻolauloa Hawaiian Civic Club
Koʻolauloa Interagency Community Council
Native Hawaiian Advisory Council
Native Hawaiian Protocol & Consultant Service
Punaluʻu 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. Detrimentally 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'olauloa 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, 200*0, 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, Mau'i, 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, Mau'i, 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