LINDA LINGLE
GOVERNOR

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

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

December 29, 2003

HWY-DS 2.2703

TO MS. GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: for RODNEY K. HARAGA
DIRECTOR OF TRANSPORTATION

SUBJECT: WAIAHOLE BRIDGE REPLACEMENT
FEDERAL AID PROJECT NO. BR-083-1 (37)
KAMEHAMEHA HIGHWAY
ISLAND OF OAHU
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

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OFFICE OF ENVIRONMENTAL QUALITY CONTROL

The Department of Transportation has reviewed the comments received during the 30-day public comment period, which began on March 23, 2001, and after thorough research and deliberation, has determined that this project will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI) for this action. Please publish this notice in the January 8, 2004 issue of the OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. Please call Mr. Craig Watanabe, Project Manager at 692-7551 or Mr. Taeyong Kim, Project Environmental Consultant at 528-4661, if you have any questions.

c: Environmental Communications, Inc.

2004-01-08 FONSI
WAIAHOLE BRIDGE REPLACEMENT

FINAL ENVIRONMENTAL ASSESSMENT

for

KAMEHAMEHA HIGHWAY
WAIAHOLE BRIDGE REPLACEMENT

District of Koolaupoko, Island of Oahu
Federal Aid Project No. BR-083-1(37)

Prepared Pursuant to Chapter 343,
Hawaii Revised Statutes (HRS)

by the

State Of Hawaii Department Of Transportation
Highways Division

January 2004

Kamehameha Higway
Waiahole Bridge Replacement

Final Environmental Assessment

Prepared Pursuant to Chapter 343, Hawaii Revised Statutes (HRS)
for the State of Hawaii Department of Transportation Highways Division

12.23.03
Date of Approval

for Rodney Haraga
Director of Transportation

For additional information concerning this document please call:

Mr. Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707
Phone: (808) 692-7551

The proposed improvements that are the subject of this Environmental Assessment include the construction of a replacement bridge and a temporary detour road on Kamehameha Highway. The existing bridge will be demolished in favor of an improved permanent bridge in the same location. During construction, a temporary detour road and culvert will be used. The Hawaii Department of Transportation has determined that a Finding of No Significant Impact (FONSI) is warranted for this project.

TABLE OF CONTENTS

LIST OF FIGURES

I. PROJECT SUMMARY

PROPOSING AGENCY:	State of Hawaii Department of Transportation Highways Division
PROJECT NAME:	Kamehameha Highway Waiahole Bridge Replacement Project No. BR-083-1 (37)
PROJECT LOCATION:	The project site is located on the Kamehameha Highway in the Waiahole Valley, Koolaupoko District, Island of Oahu, State of Hawaii. The bridge lies south of Waiahole Valley Road.
NATURE OF DEVELOPMENT:	The proposed improvements, which are the subject of this Environmental Assessment, include the construction of a replacement bridge in the same location as the existing Waiahole Bridge. The new bridge will be approximately 106-feet in length and will consist of two travel lanes of 12-foot width and 11-foot shoulders on each side. A bypass road and culvert will be required during the construction of the permanent bridge to maintain traffic flow along this major arterial.
SCOPE OF PROJECT:	The project proposes to construction of a new bridge that meets current seismic and bridge construction standards. Permanent highway right-of-way acquisition is not anticipated.
ESTIMATED COST:	Approximately $6,000,000 to $7,000,000.
PROJECT SCHEDULE:	The project is anticipated to be completed by the end of 2005.

II. PURPOSE AND NEED

The project proposes to replace the existing Waiahole Bridge with a new bridge in new bridge in the same location as the existing bridge. The purpose and the respective need are described below:

Purpose — The proposed project will replace the existing 66-foot long, 26-foot wide two span reinforced concrete deck girder structure. The replacement bridge will be 66-feet in length between abutments and 50-feet wide. The replacement bridge will consist of two 12-foot travel lanes and two 11-foot shoulders. The addition of road shoulders and new bridge railings will improve safety for public traffic, including vehicles, bicycles, and pedestrians, traveling upon the bridge. The improvements will be in conformance with Federal ASHTO LRFD Bridge Design Specification 1998.

Need — The existing bridge was constructed in 1922 and is functionally obsolete. The Federal and State Departments of Transportation have determined that the replacement of this bridge is a priority need. The existing bridge is not in conformance with current design standards and does not support the high traffic volumes using the Kamehameha Highway arterial. Lane width is inadequate and load capacity is compromised due to the age of the structure.

The lack of road shoulders compromises traffic safety upon the bridge. The absence of road shoulders precludes motorists from turning out of the highway lane(s) in times of emergencies, evasive maneuvers, or for stalled vehicles or other mechanical problems.

The absence of road shoulders also causes safety hazards as bicycles share the highway lanes with automobiles. Since the automobiles are traveling at highway speeds which are much greater than the bicycle speeds, this forced sharing of the vehicle lanes causes safety hazards for both motorists and bicyclists. The addition of the new road shoulders would allow the bicyclists to travel within those shoulders and would eliminate the forced lane sharing and attendant hazards.

The existing bridge provides a wooden pedestrian sidewalk on the mauka (upstream) side of the bridge. Pedestrians were observed both mauka and makai of the highway but are limited to the mauka wooden bridge crossing necessitating the need to cross the highway at Waiahole Stream. Bus stops are located on both sides of the highway within the vicinity of the bridge. In crossing the highway lanes and/or standing upon the bridge, the pedestrians' actions cause a significant potential for pedestrian-automobile accidents. The addition of new road shoulders along both the mauka and the makai sides of the bridge will reduce the potential for such pedestrian-automobile accidents.

The expanded bridge width between abutments will also improve stream flow under the bridge resulting in decreased potential for property damage and pedestrian safety during heavy runoff periods.

III. PROJECT DESCRIPTION

A. Project Location

The Waiahole Bridge is located immediately south of intersection of Kamehameha Highway (Route 83) and Waiahole Valley Road in the Koolaupoko District, Island of Oahu, State of Hawaii. The project is located entirely on State owned right-of-way. During the construction period, a temporary detour road and culvert will be constructed approximately 40-feet makai (east and downstream) of the existing bridge. The temporary road will be located on portions of Tax Map Key Parcels: 4-8-002: 001 to the north and 4-8-001: 010 to the south. Both construction related parcels are owned by the City and County of Honolulu. Refer to accompanying Figures 1 to 4 on pages 5 to 8 for the project location.

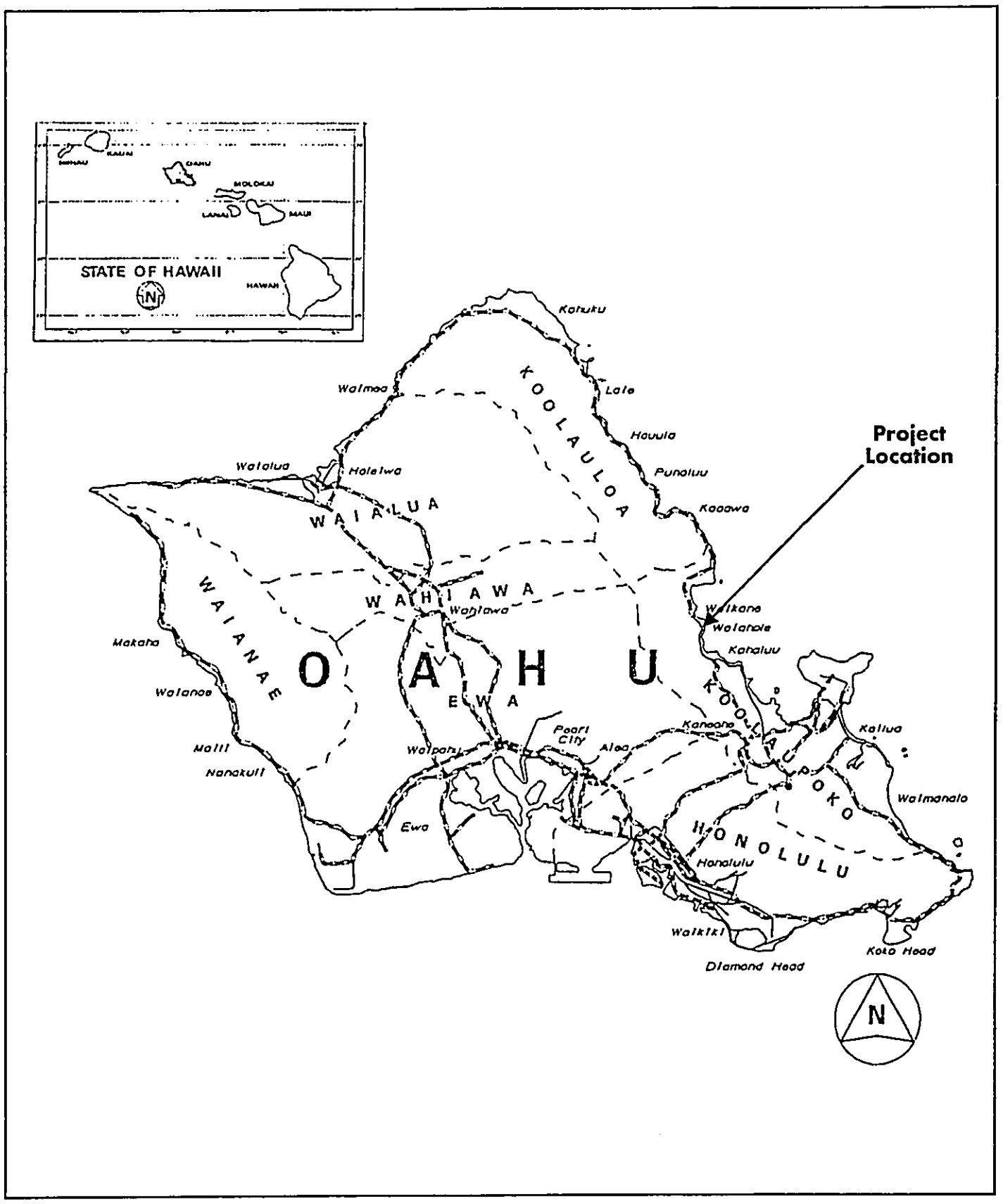
B. Description of the Proposed Action

The existing Waiahole Bridge is a two-span structure crossing over the perennial Waiahole Stream. The structure consists of a reinforced concrete deck girder structure 66-feet in length and 26-feet wide with a design load capacity of H-10. The abutments and parapets are made of reinforced concrete with molded concrete railings. A wooden walkway with railings attached to the mauka side (Figure 5). The existing bridge was built in 1922. The bridge deck stands approximately 5-feet above stream level and approximately 7-feet above the streambed (Figure 6).

The existing bridge is planned for demolition and replacement by a new bridge of approximately 106-feet in length between abutments and 50-feet in width. The bridge will support two travel lanes of 12-feet with 11-foot shoulders for pedestrian and emergency use. Bridge approaches of 20-feet would be located on both sides with a 50-foot shoulder transition on the southern end. Metal railings of 1-foot 10-inches would be installed on concrete railings 2-feet 8-inches high for a total barrier height extending 4-feet 6-inches above the bridge deck to conform to bicycle traffic requirements. Footings for the replacement bridge would be located outside of the streambed (Figures 7 to 9).

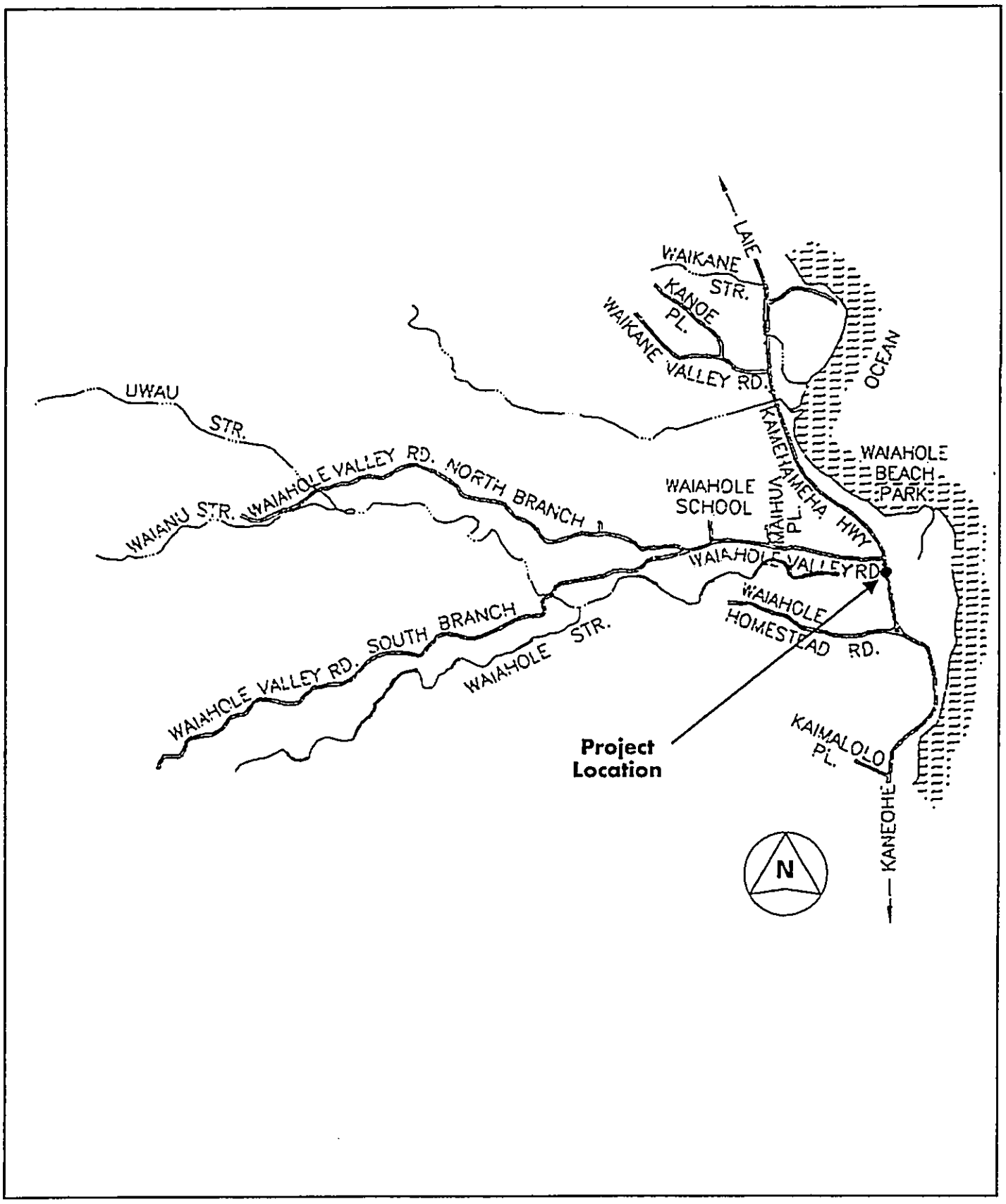
The proposed bridge will be designed in accordance with the 1998 American Association of State Highway and Transportation Officials (AASHTO LRFD) Bridge Design Specifications and subsequent interim standards. The bridge and approaches will have a design speed of 30 miles per hour and have a posted speed limit of 25 miles per hour.

The existing water line will be replaced under the new bridge with the addition of a reserve line for future use. Stormwater collected on the bridge will be diverted off the bridge to the approach areas. New lighting, signage and quadguard system end treatments will be incorporated into the bridge plan.



Kamehameha Highway
Waiahole Bridge Replacement

Figure 1
Map of Oahu



Kamehameha Highway
Waiahole Bridge Replacement

Figure 2
Vicinity Map

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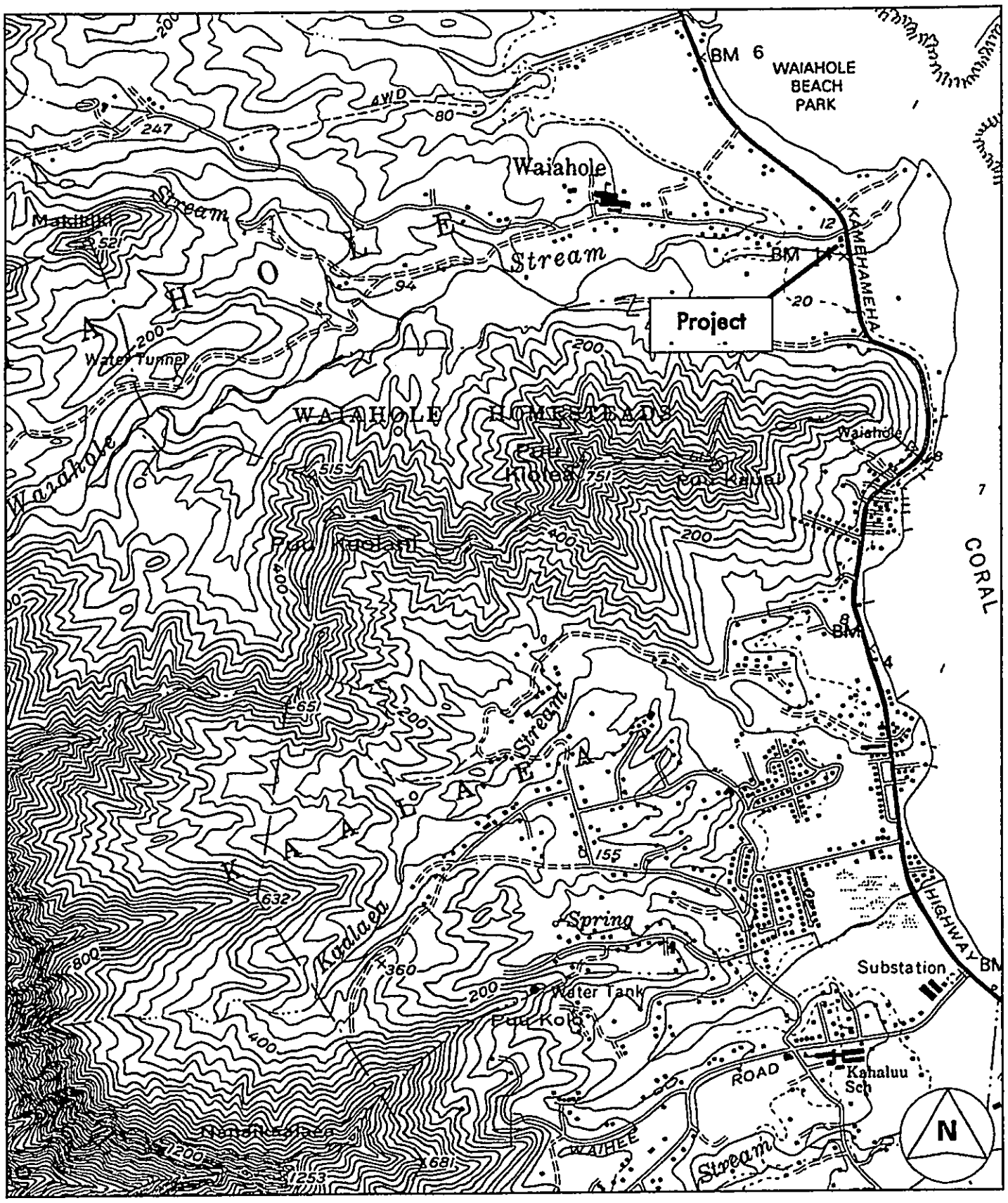

Kamehameha Highway
Waiahole Bridge Replacement

Figure 3
USGS Map
Source: U.S. Geological Survey

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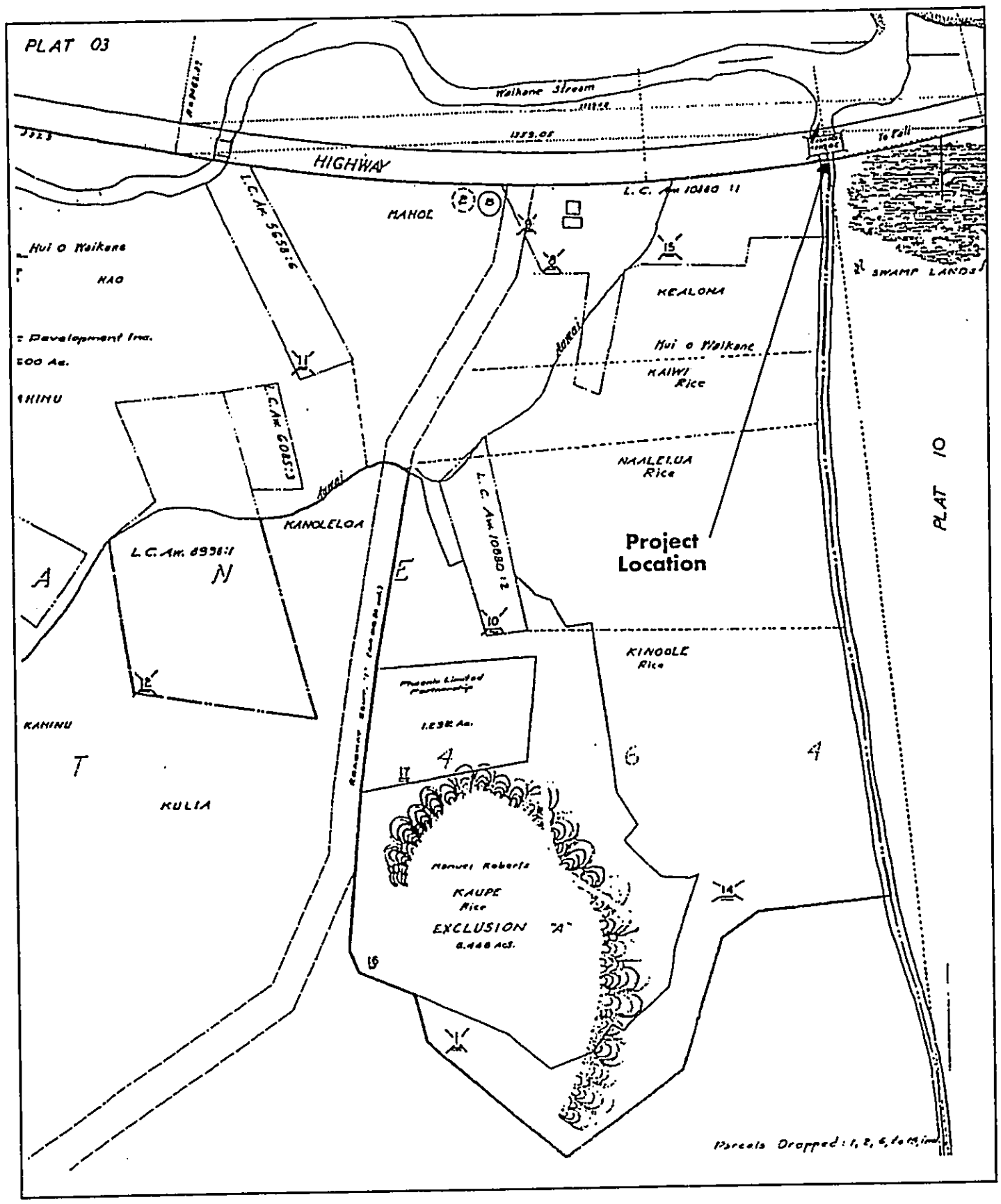


Kamehameha Highway
Waiahole Bridge Replacement

Figure 4
Tax Parcel Map

A detour road with a culvert will be used during the replacement bridge construction period. The detour road alignment will be located approximately 40-feet downstream from the existing alignment. The detour road will be approximately 560-feet in length. The portion crossing the stream will consist of a stream culvert approximately 60-feet across. The crossing will use eight 54" diameter pipe culverts placed on a gravel bed to maintain storm stream flow. Portable concrete barriers will be placed on both sides of the detour road except at a dirt road access point located east of Kamehameha Highway. The detour road will include two travel lanes 11-feet wide with shoulders of 4-feet and a pedestrian walkway of 6-feet on the downstream side (Figures 11 to 13).

The proposed modifications affect current drainage patterns for Waiahole Stream during the construction period but will not restrict or redirect stream flow. As stated earlier, the culvert pipes have been designed to accommodate peak storm events. Mitigation measures will be evaluated to prevent debris and pollutants from entering the streambed. Upon project completion, no long-term impacts are expected to result from the bridge replacement.

1. Structural Improvements

   Profiles and a cross section of the existing bridge and the proposed improvements are provided in Figures 5 to 13. In conformance with the current AASHTO design specifications the bridge abutments will be designed to meet appropriate seismic design criteria.

2. Roadway Improvements

   New 50-foot shoulder transitions and 20-foot approaches will be included within the scope of the bridge replacement to ensure appropriate traffic geometrics are maintained along the bridge crossing.

3. Electrical and Signage Improvements

   Lighting and signage improvements will be provided for both the replacement bridge and detour roads. The location of these components are shown in figure 14. During the construction period, electrical and cable lines may need to be relocated however services will not be interrupted.

4. Construction Methodology and Access

   Construction activities will likely extend outside of the existing right-of-way so that construction equipment can access areas affected by the new work. Two parcels for the right-of-way construction have been planned for use during the construction of the bridge improvements. These areas are located on both ends of the road and bridge to the north and south on the makai side. Preliminary plans for these construction areas are shown in Figure 15.

Demolition and excavation within the right-of-way will be by hand or machine.

Existing traffic patterns will be slightly altered throughout the duration of the construction but are not expected to have a significant impact on traffic along Kamehameha Highway. However, the speed limit through the construction zone will be reduced and occasionally traffic may be stropped for the movement of construction equipment and/or construction activities. Traffic is anticipated to be open to both lanes after construction hours.

D. Estimated Schedule and Costs

The schedule for construction of the project is subject to the availability of construction funding and is preliminarily estimated to be:

Tentative start of construction	2004
Tentative duration of construction	12 months

The construction cost is estimated to be between $6 million and $7 million.

E. List of Permits and Approvals

A comprehensive list of agencies having jurisdiction over this project's planning, environmental documentation, design, construction and post-construction aspects was consulted for permitting and/or approval requirements. In many cases, these agencies were consulted with early in this project's conceptual development stage to facilitate a smooth permit approval process. The following major permits and the status of each permit are as follows:

Federal Permits

- Department of the Army Permit, U.S. Army Corps of Engineers
  Status: Required.

State of Hawaii Permits

- Water Quality Certification, Department of Health, Clean Water Branch
  Status: Required.

- Stream Channel Alteration Permit, Department of Land and Natural Resources, Commission on Water Resource Management
  Status: Required.

- National Pollutant Discharge Elimination System (NPDES), Department of Health, Clean Water Branch.
  Status: Required

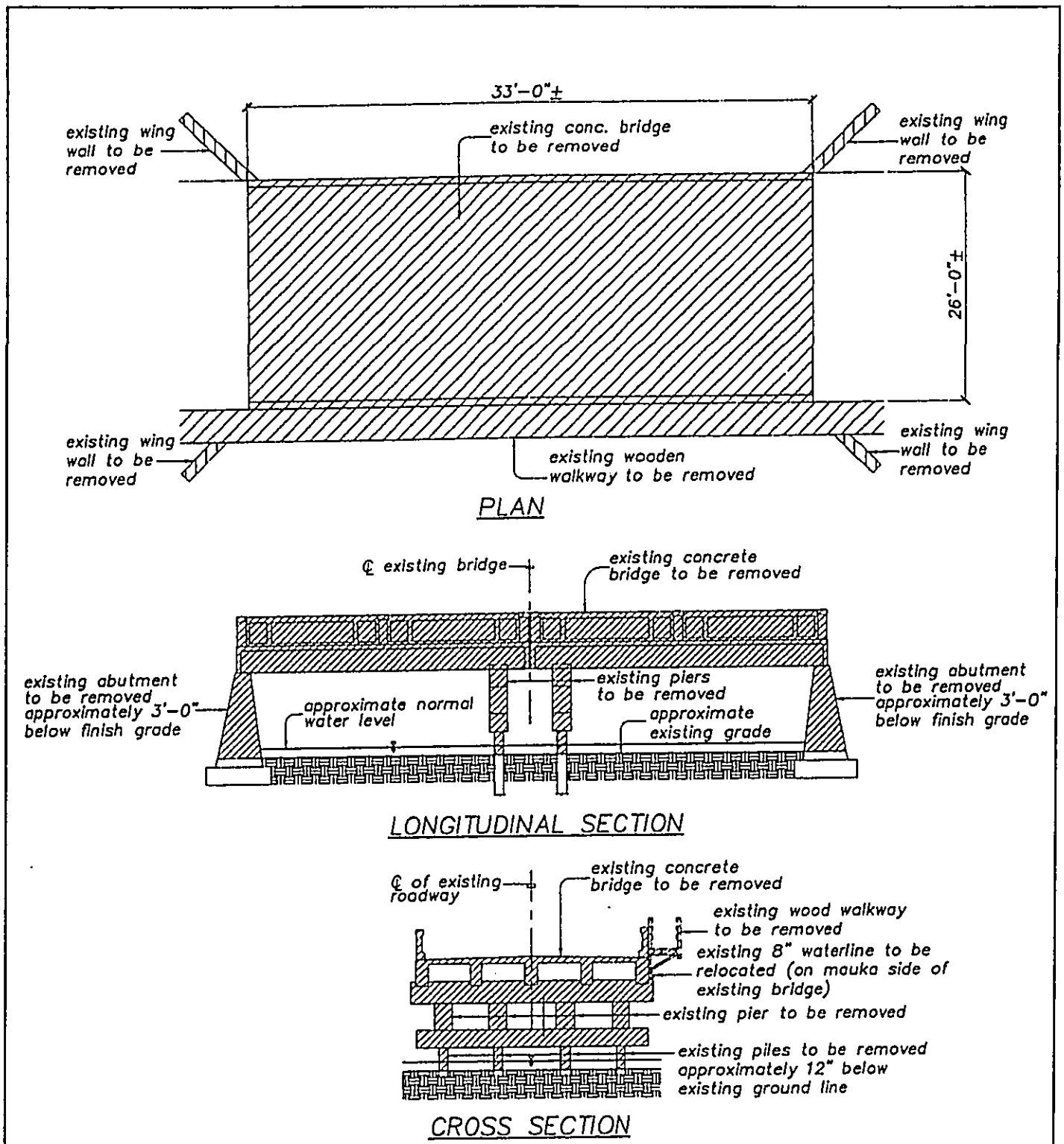
- Hawaii Coastal Zone Management Program Federal Consistency Certificate, Department of Business, Economic Development & Tourism, Office of Planning
  Status: Required.

City and County of Honolulu Permits

- Special Management Permit, Department of Planning and Permitting
  Status: Required

- Building Permit, Department of Planning and Permitting
  Status: Permit required prior to construction.

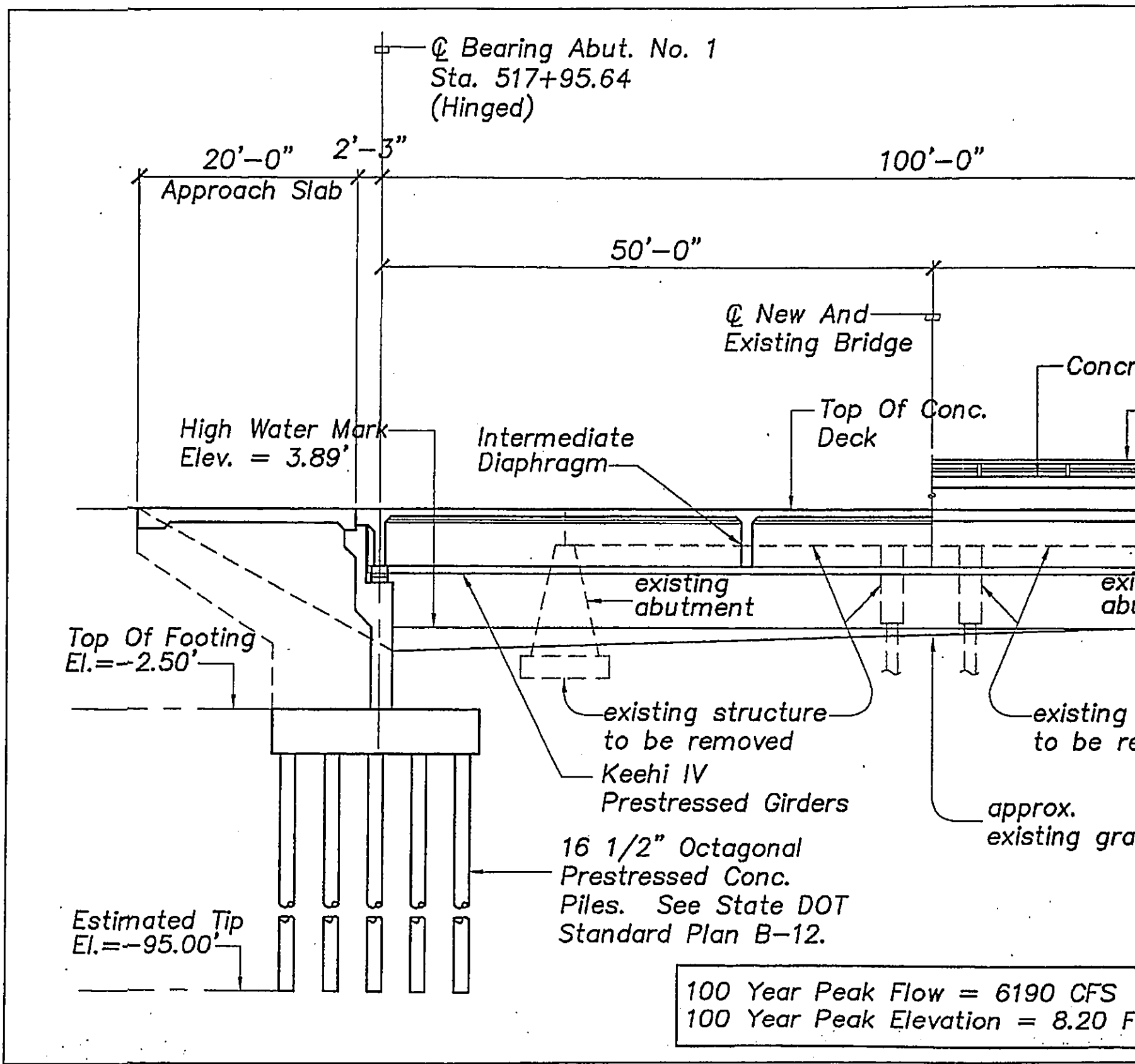
- Grubbing, Grading and Trenching, Department of Planning and Permitting
  Status: Permit required prior to site clearing and construction.



Kamehameha Highway
Waiahole Bridge Replacement

Figure 5
Existing Bridge Demolition Plan

Source: State of Hawaii DOT; Highways Division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existing structure
to be removed
existing
to be re
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approx.
existing gra
16 1/2" Octagonal
Prestressed Conc.
Piles. See State DOT
Standard Plan B–12.
Estimated Tip
El.=–95.00'
100 Year Peak Flow = 6190 CFS
100 Year Peak Elevation = 8.20 F

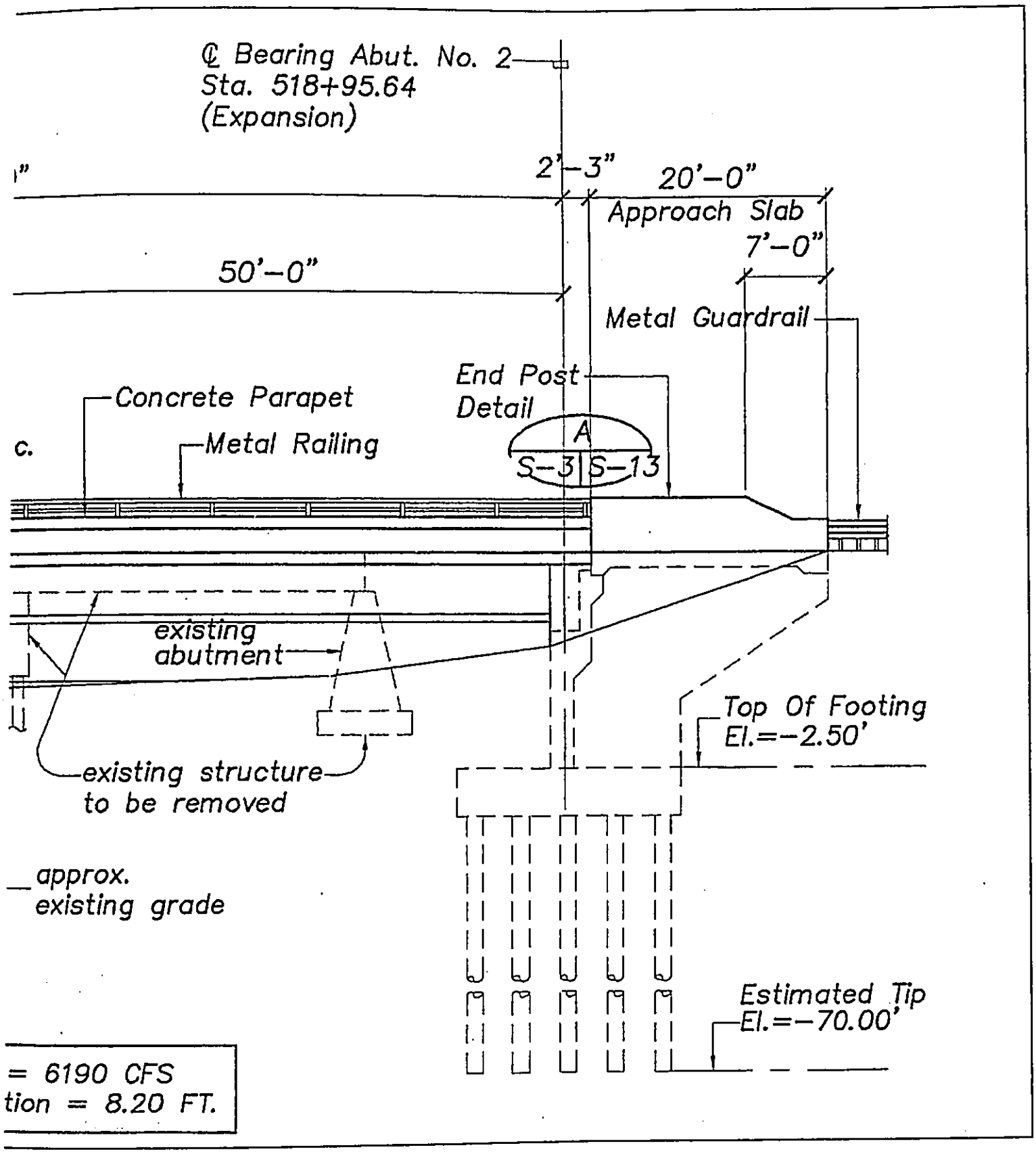
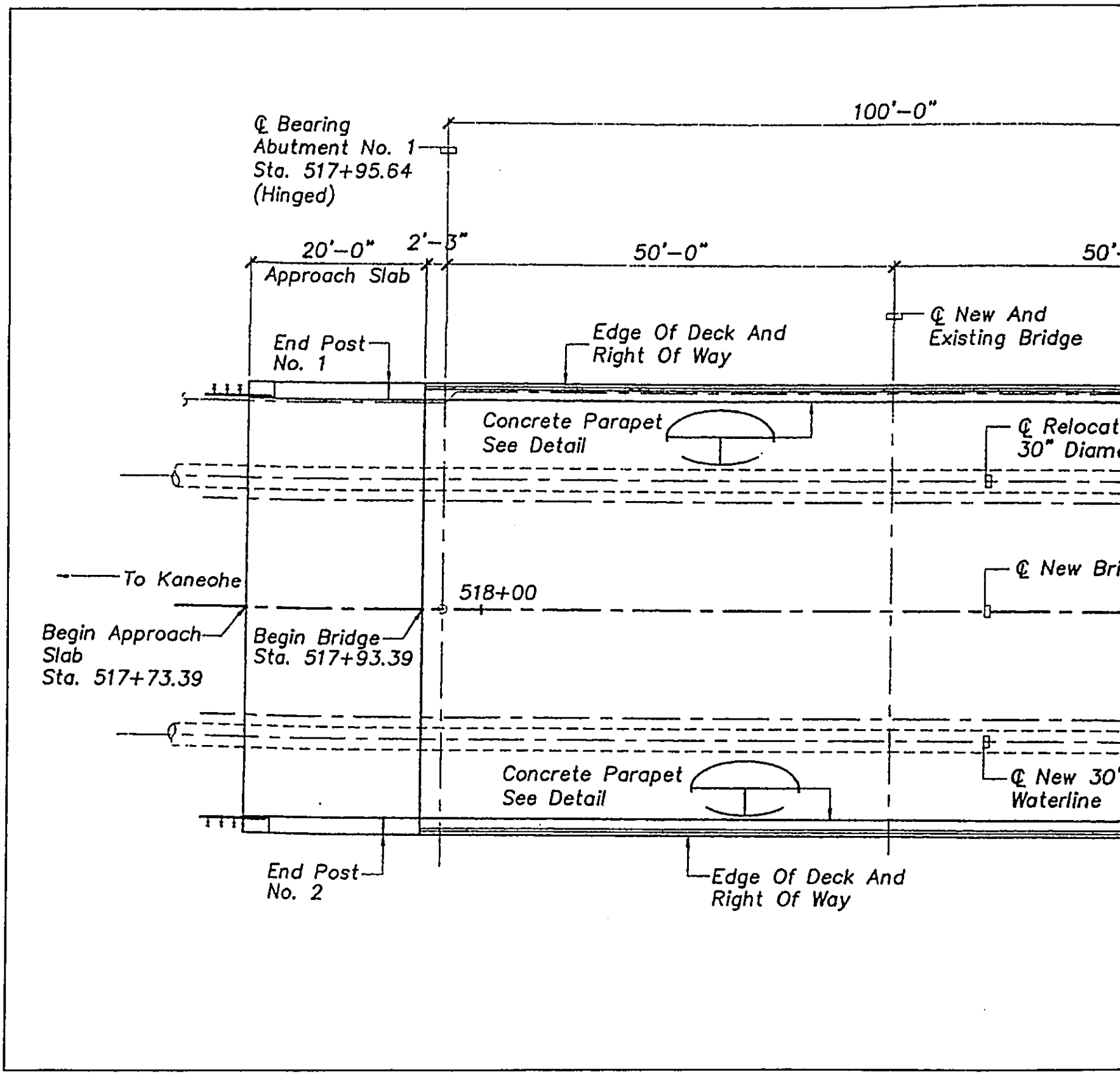


Figure 6

Longitudinal Section of Existing and Replacement Bridges

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

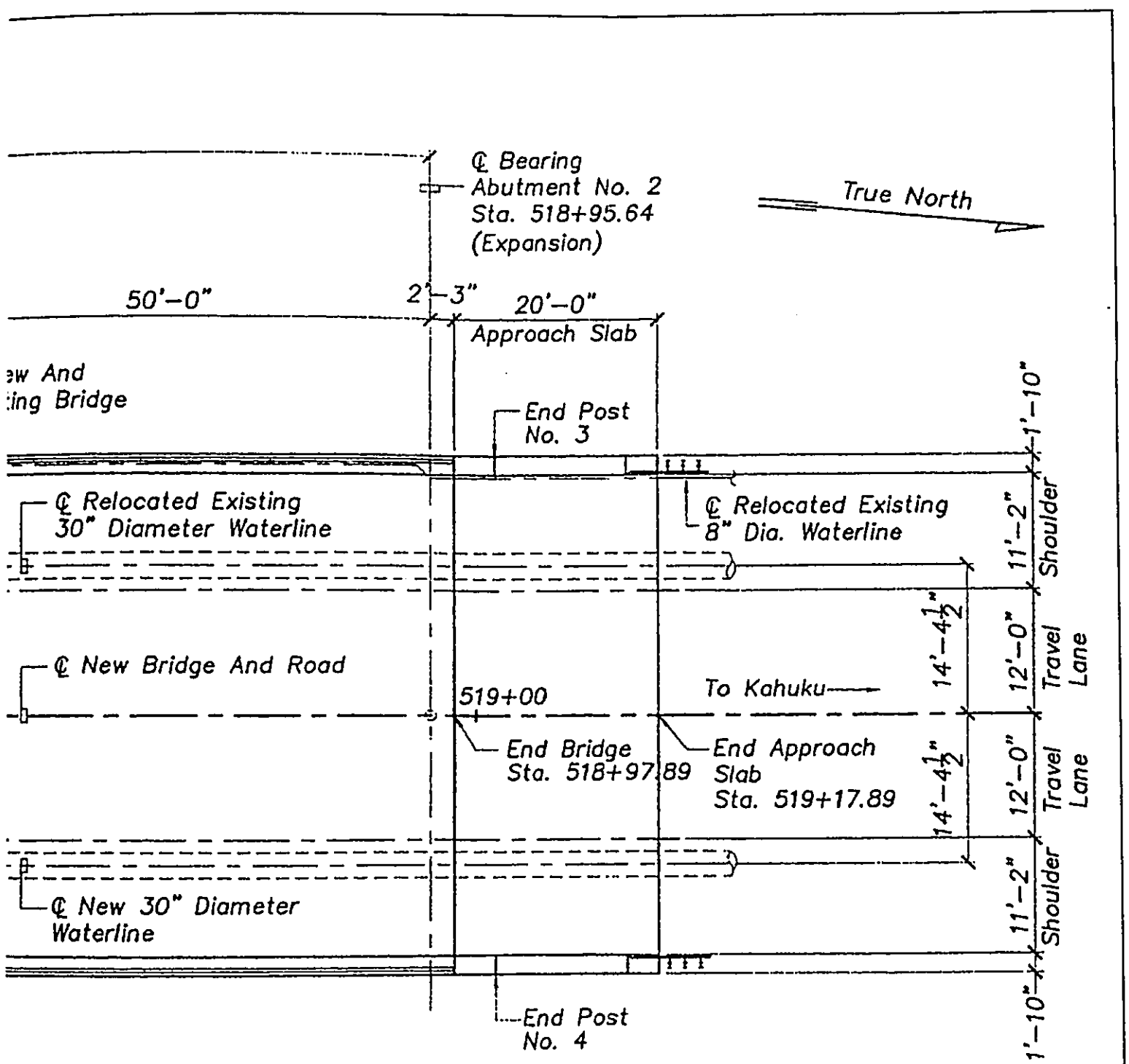
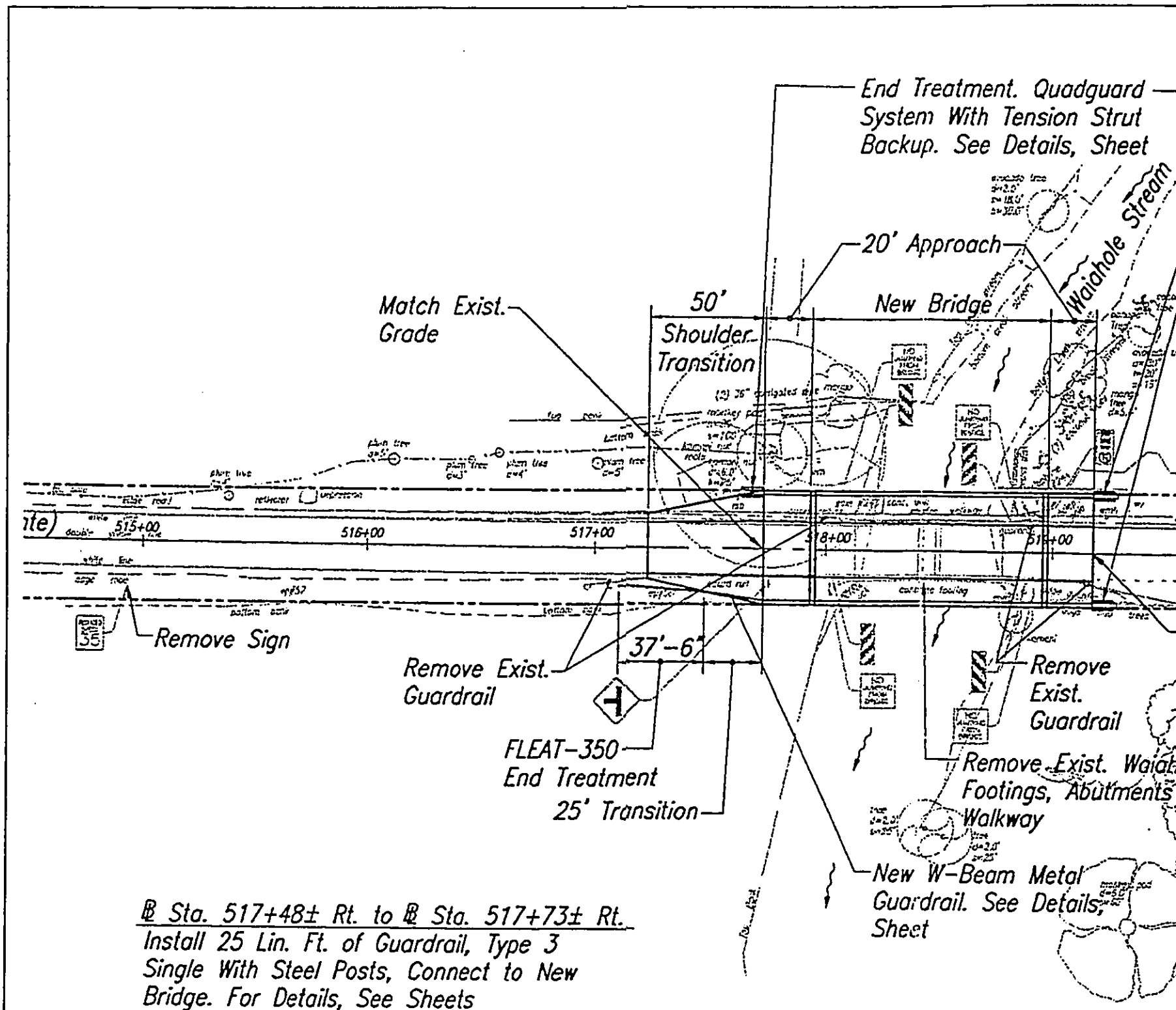


Figure 7
Replacement Bridge Plan

Source: State of Hawaii DOT; Highways Division



℄ Sta. 517+48± Rt. to ℄ Sta. 517+73± Rt.
Install 25 Lin. Ft. of Guardrail, Type 3 Single With Steel Posts, Connect to New Bridge. For Details, See Sheets

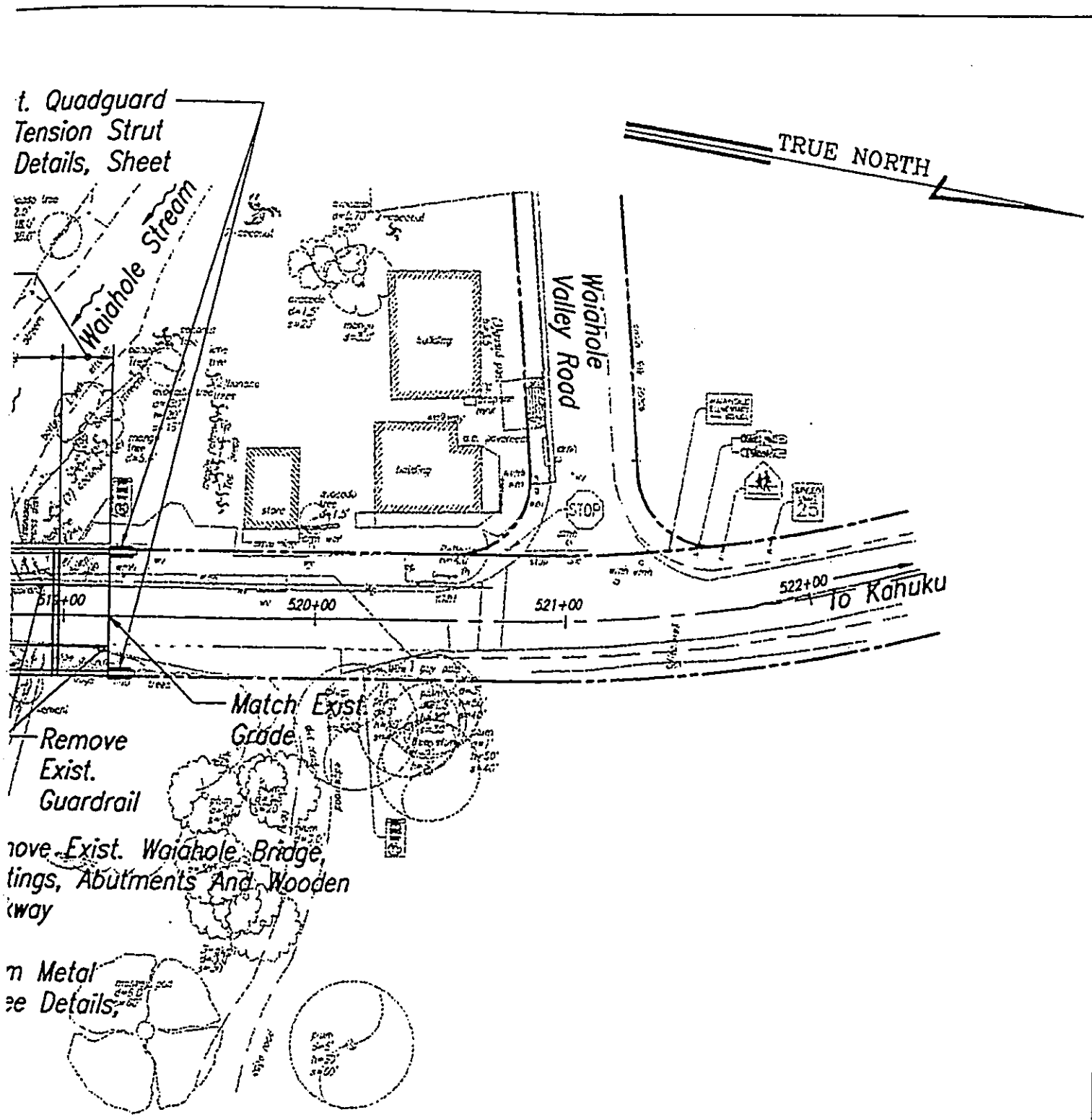
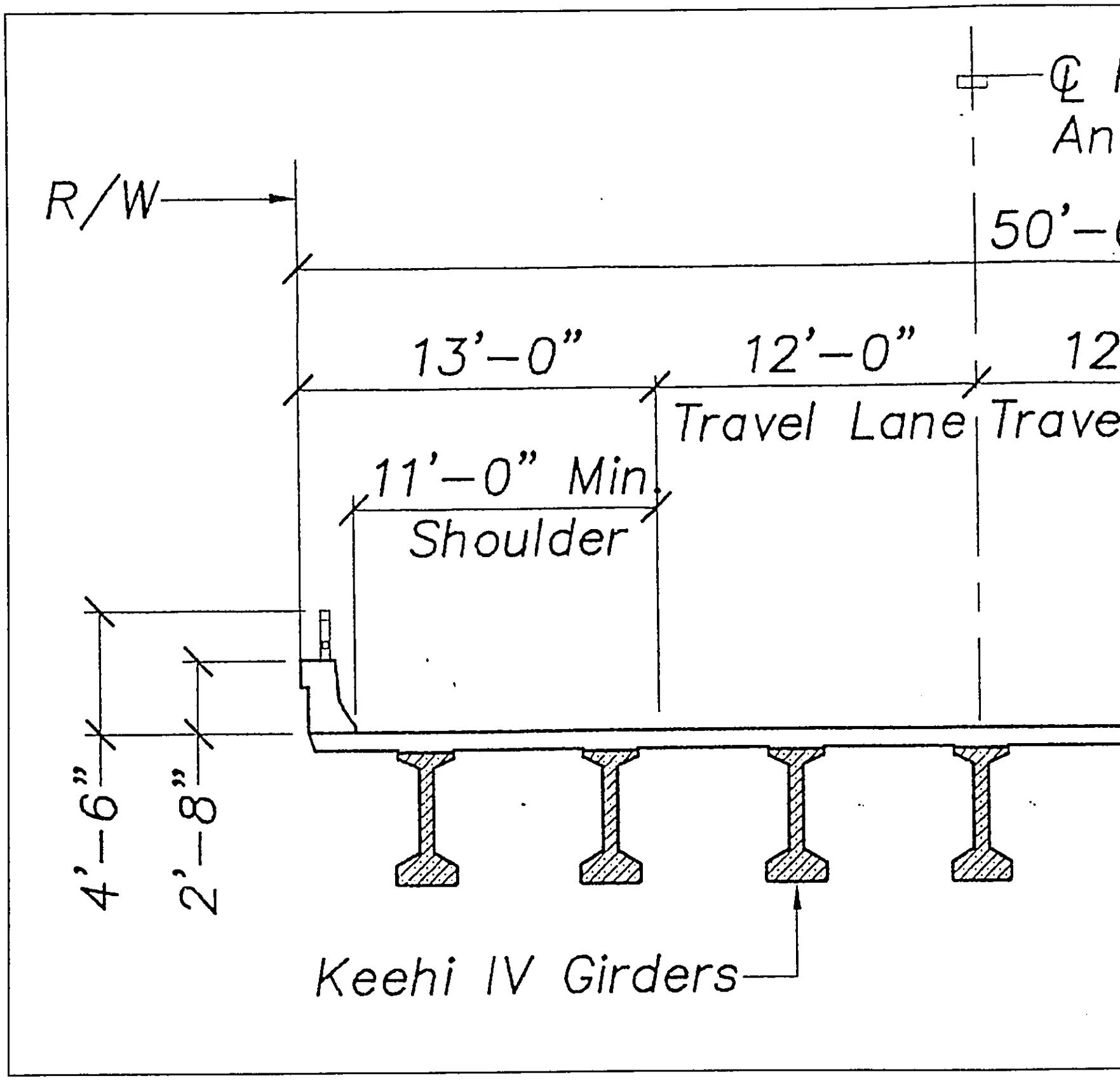


Figure 8
Replacement Bridge Alignment

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

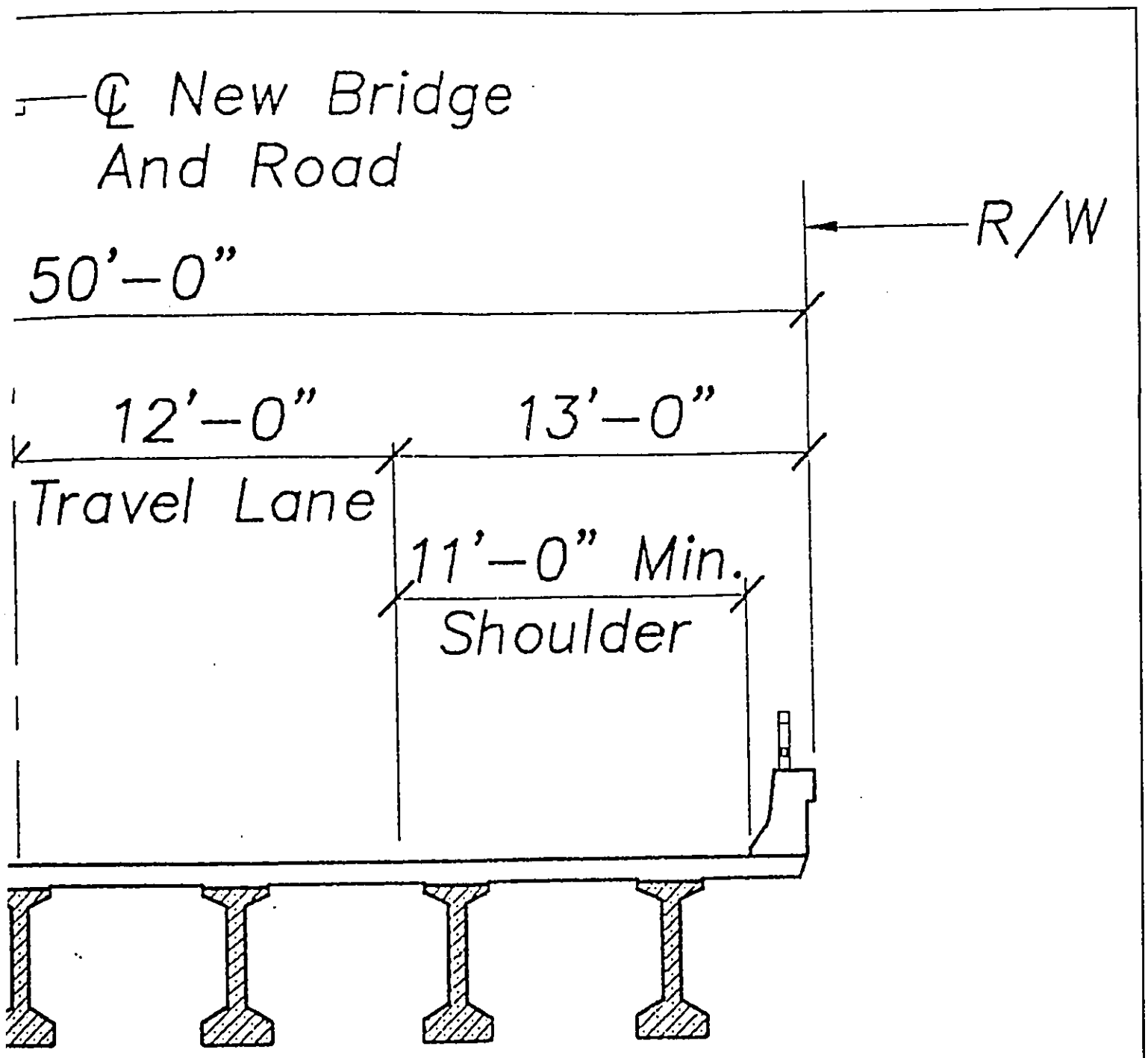
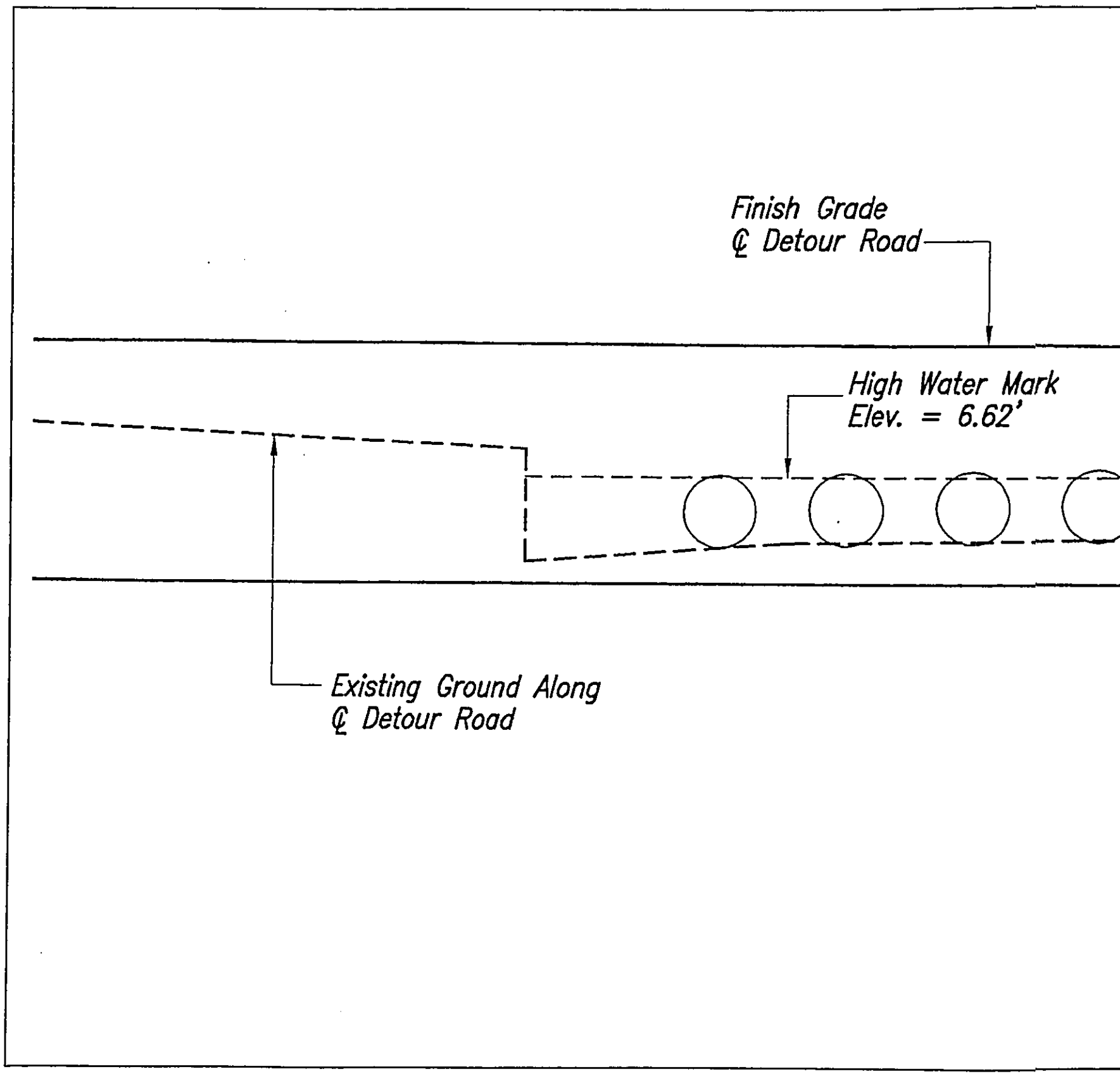


Figure 9
Replacement Bridge Section

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

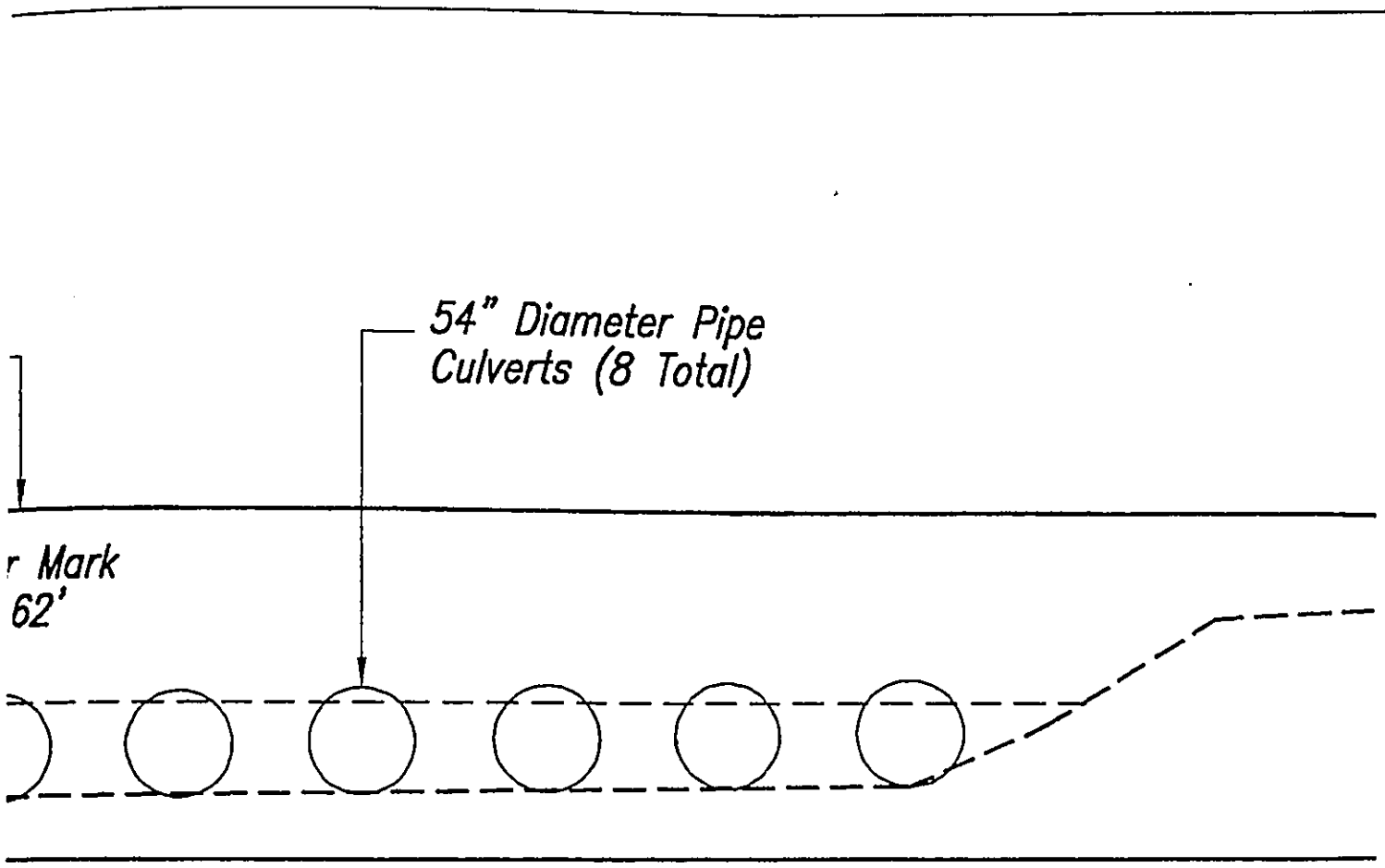
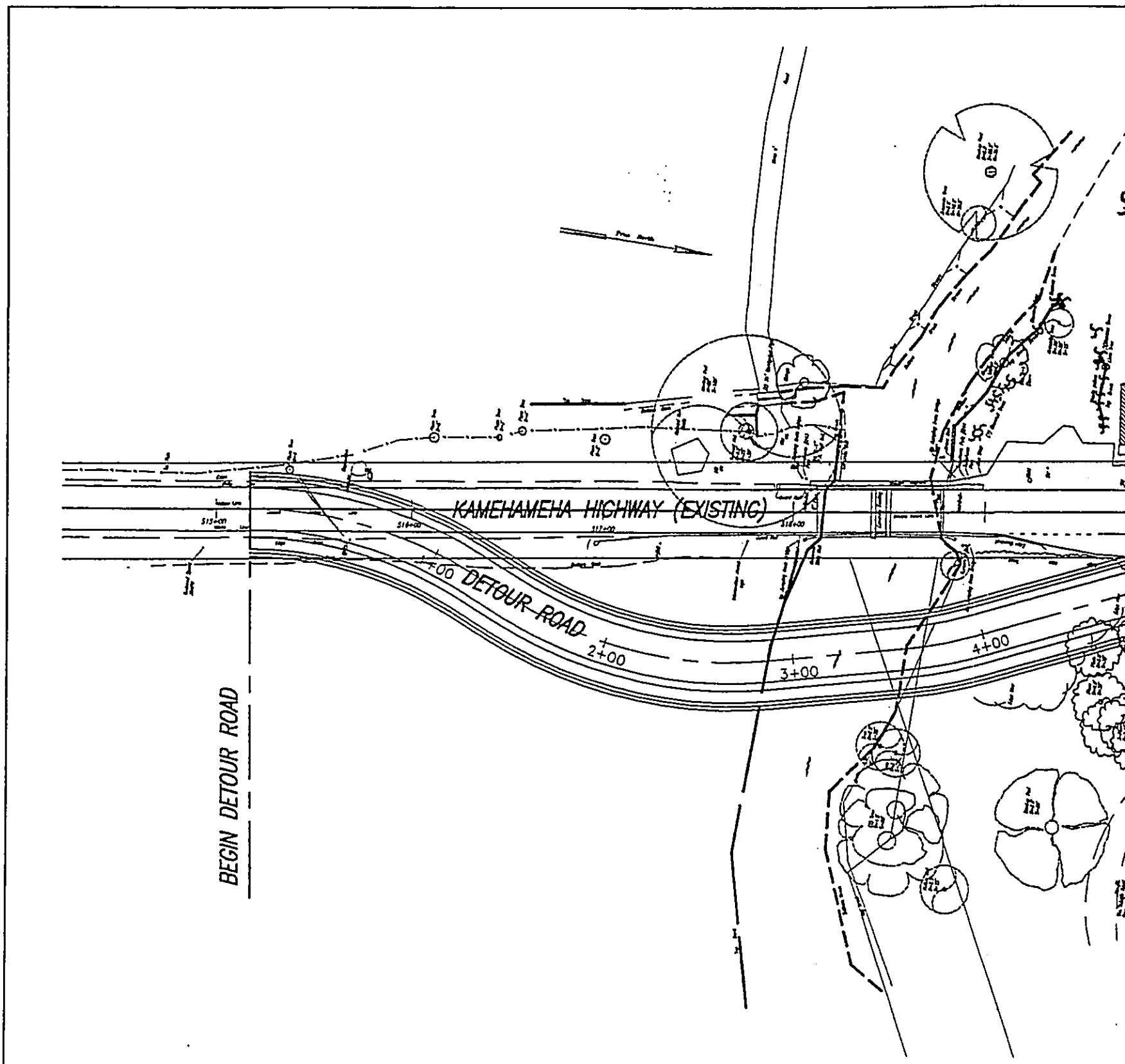


Figure 10
Detour Road Elevation

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

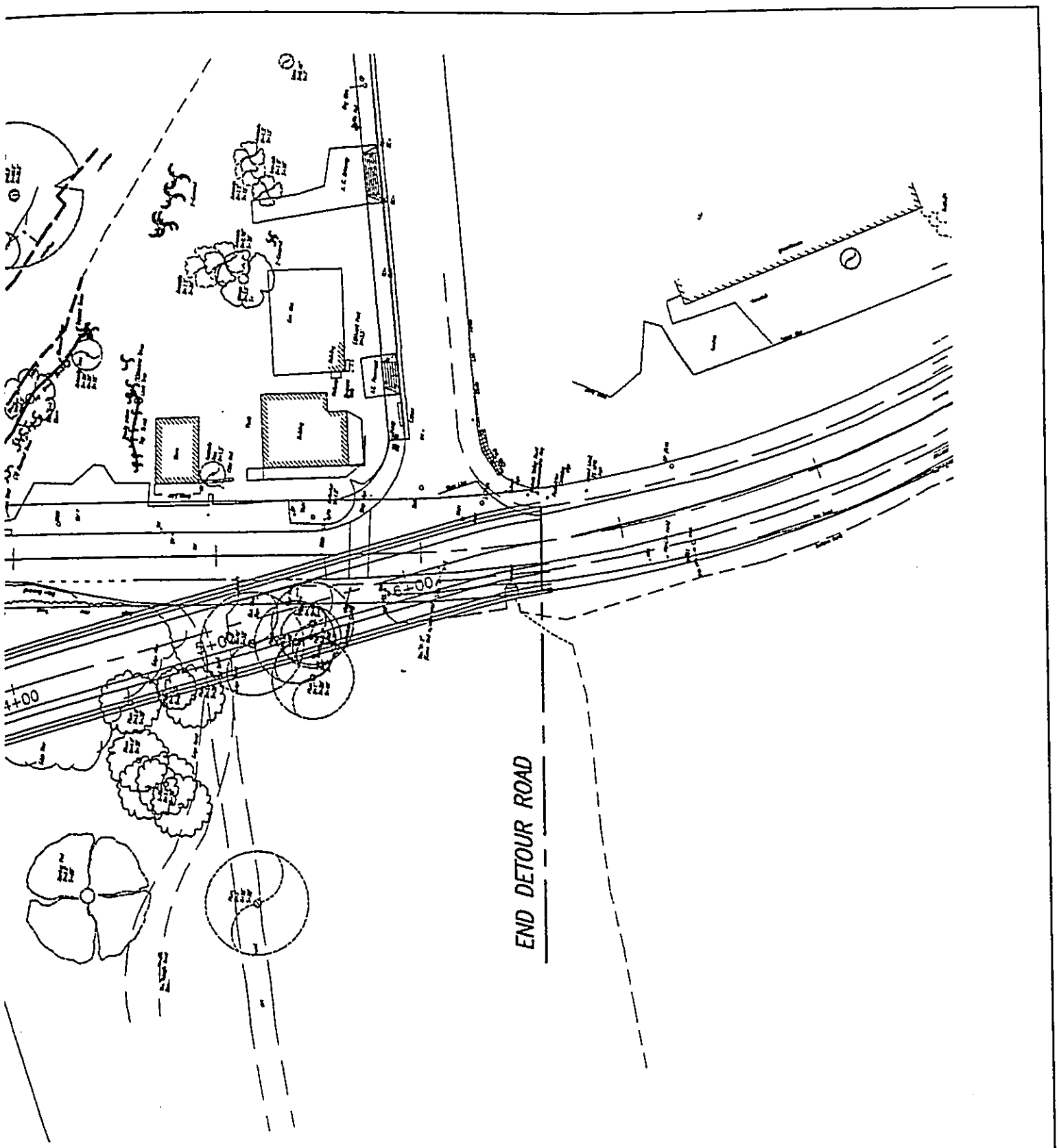
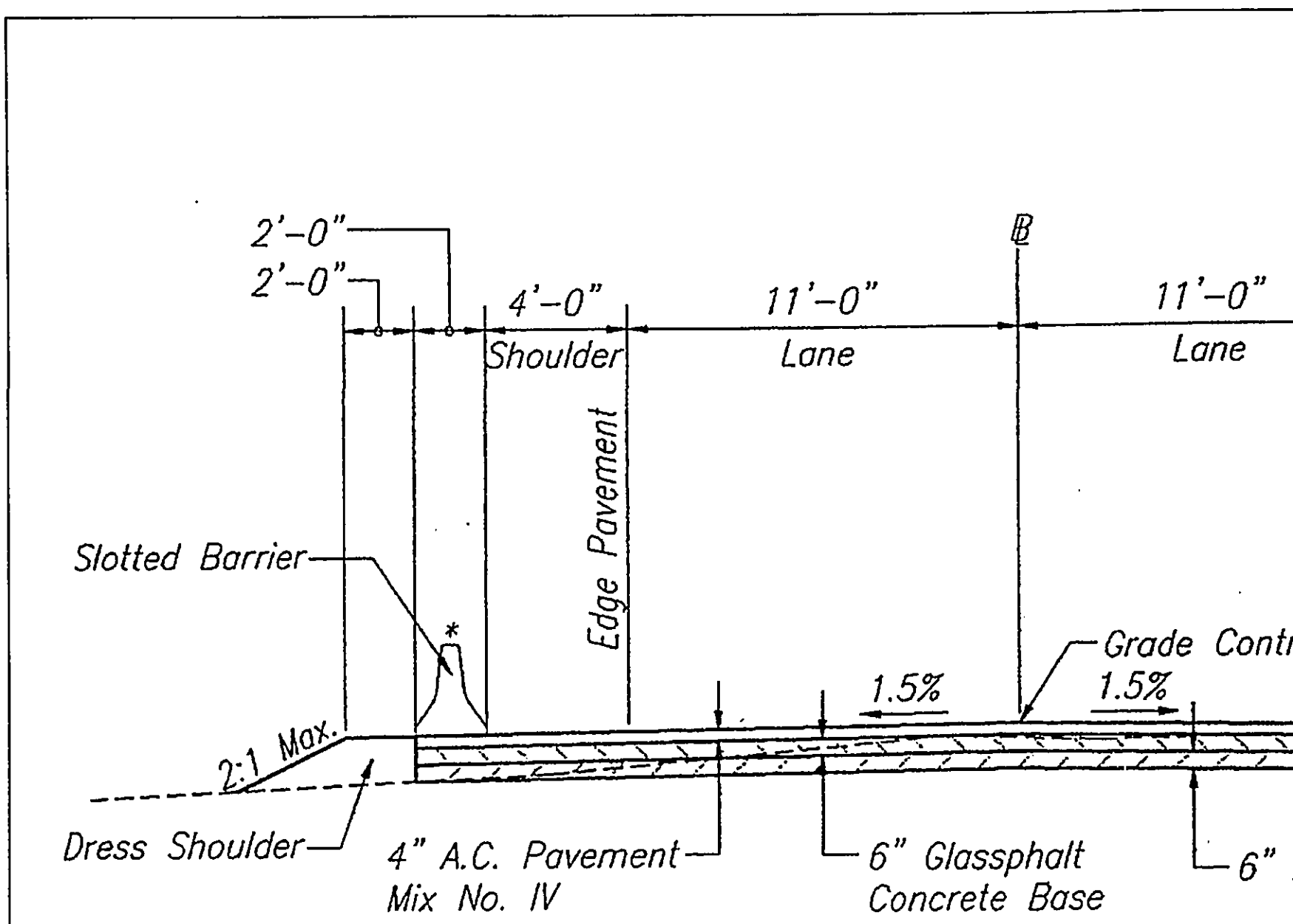


Figure 11
Detour Road Plan

Source: State of Hawaii DOT; Highways Division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2'-0"
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1.5%
2:1 Max.
Dress Shoulder
4" A.C. Pavement
Mix No. IV
6" Glassphalt
Concrete Base
6"

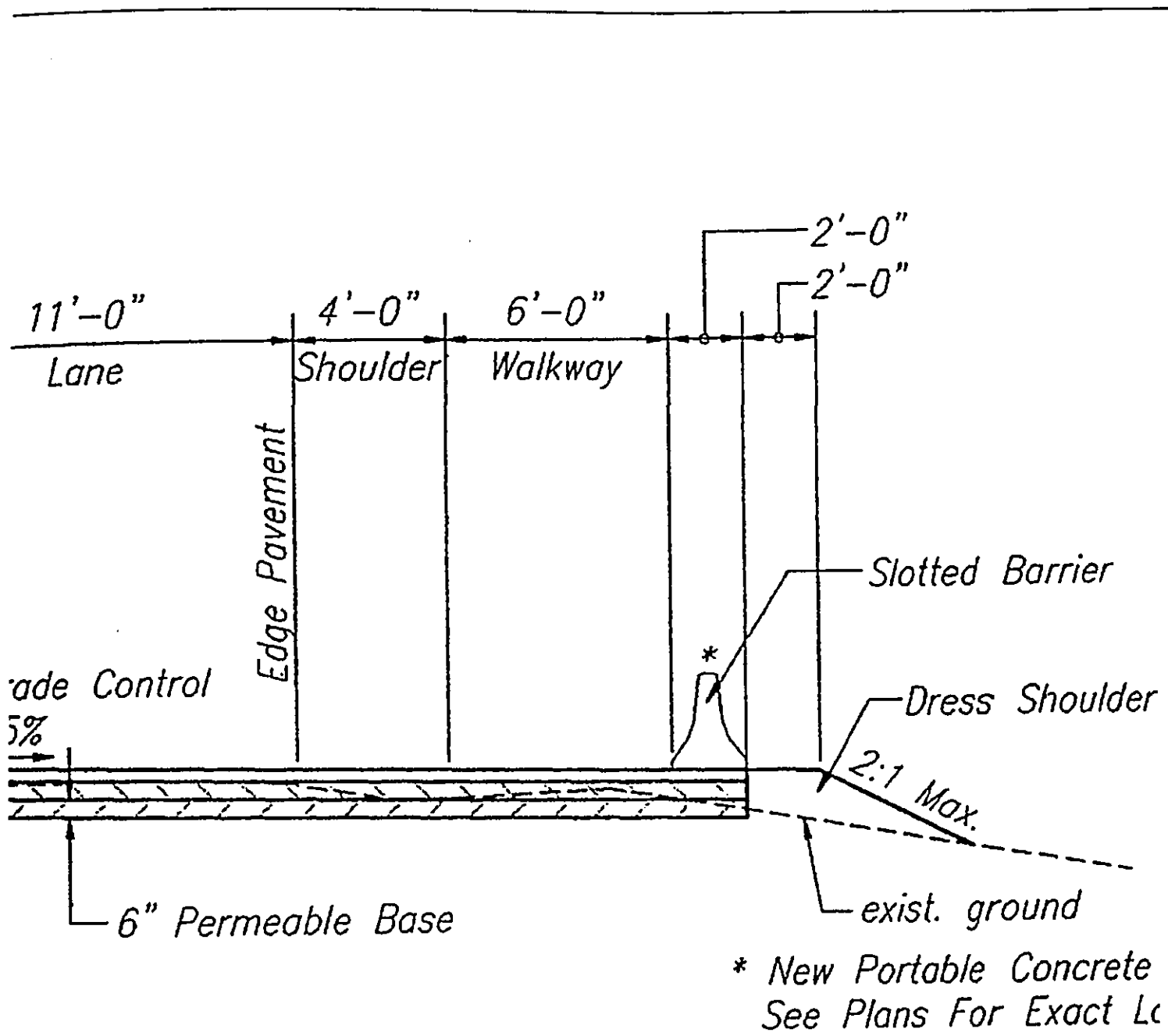
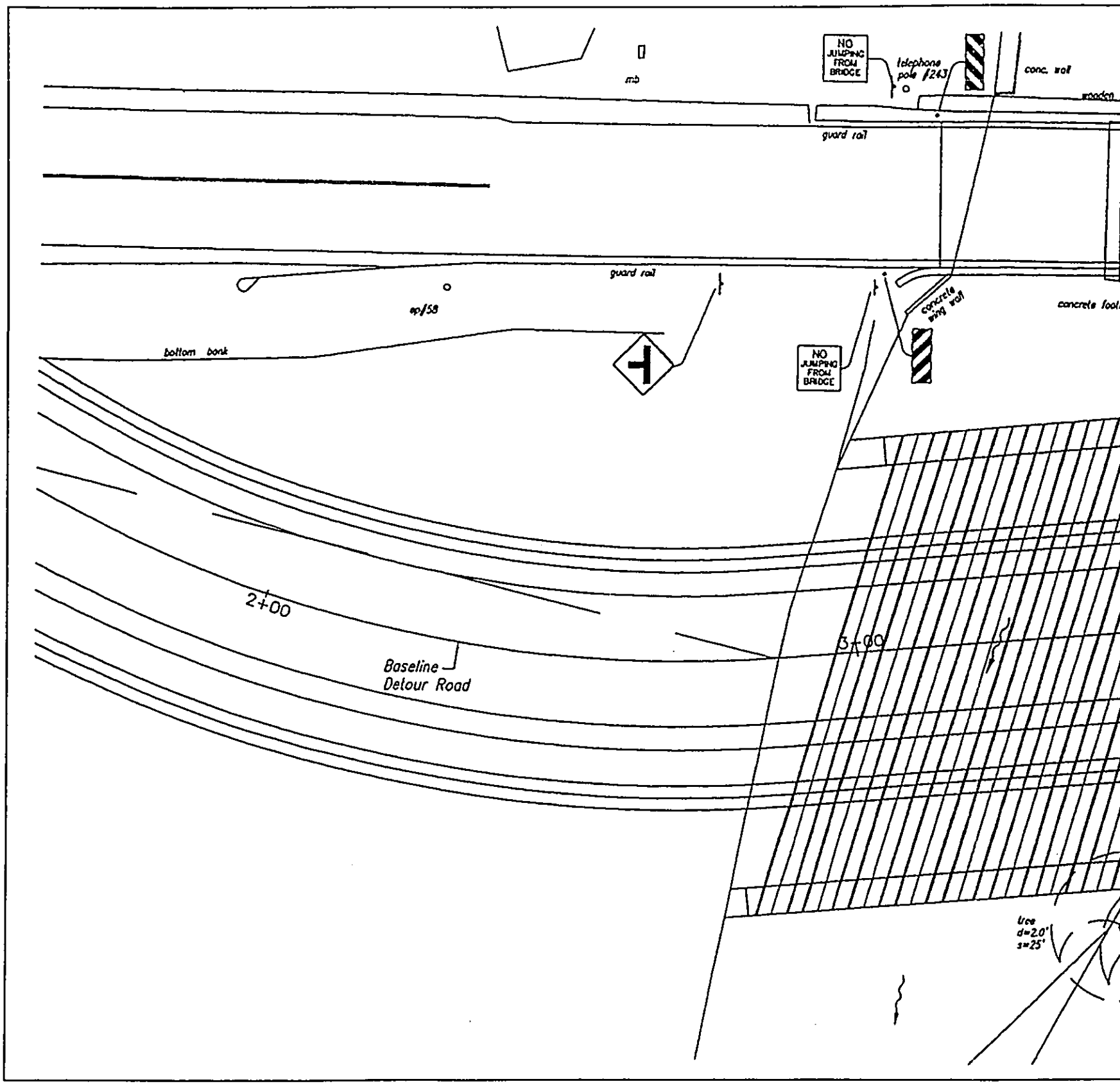


Figure 12
Detour Road Section

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

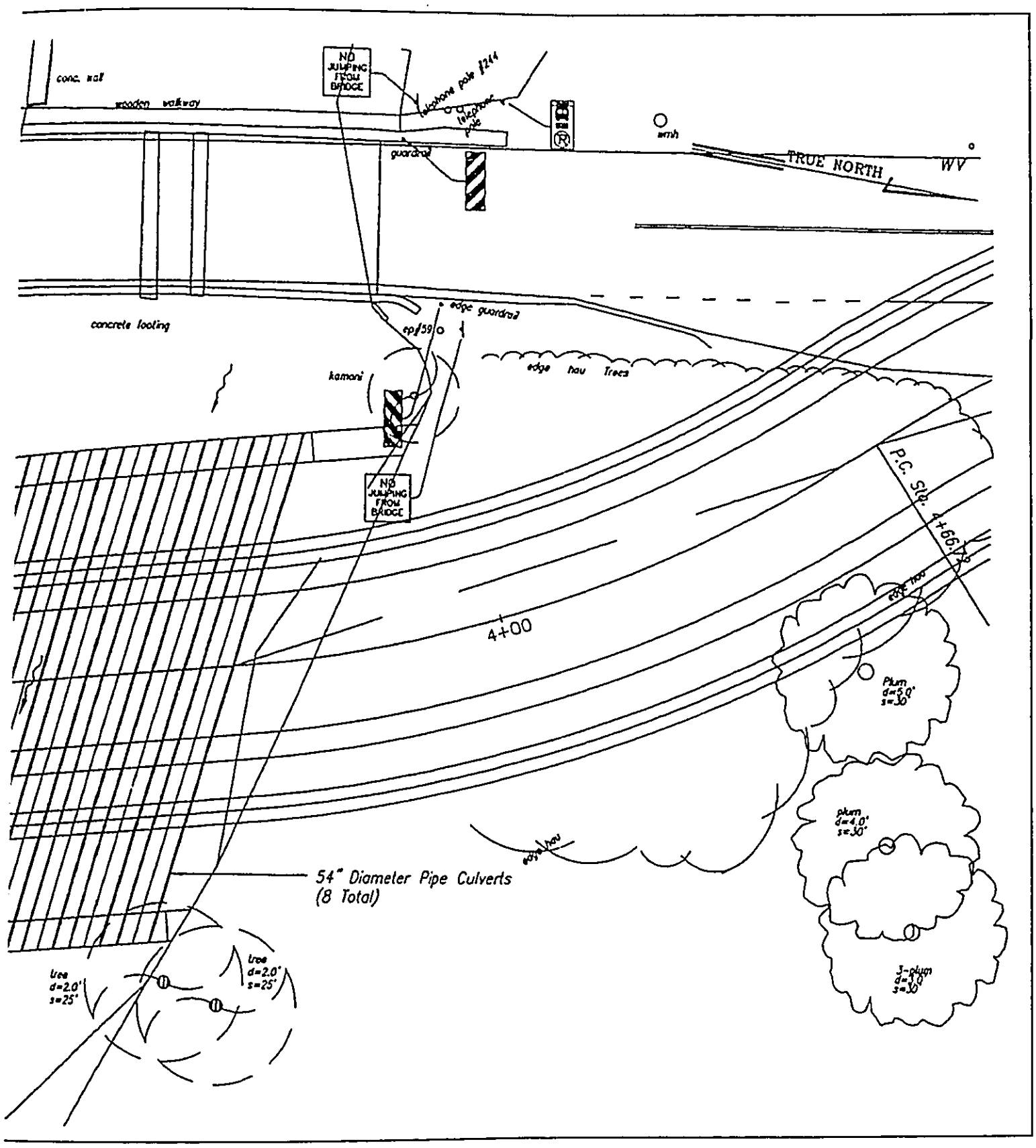
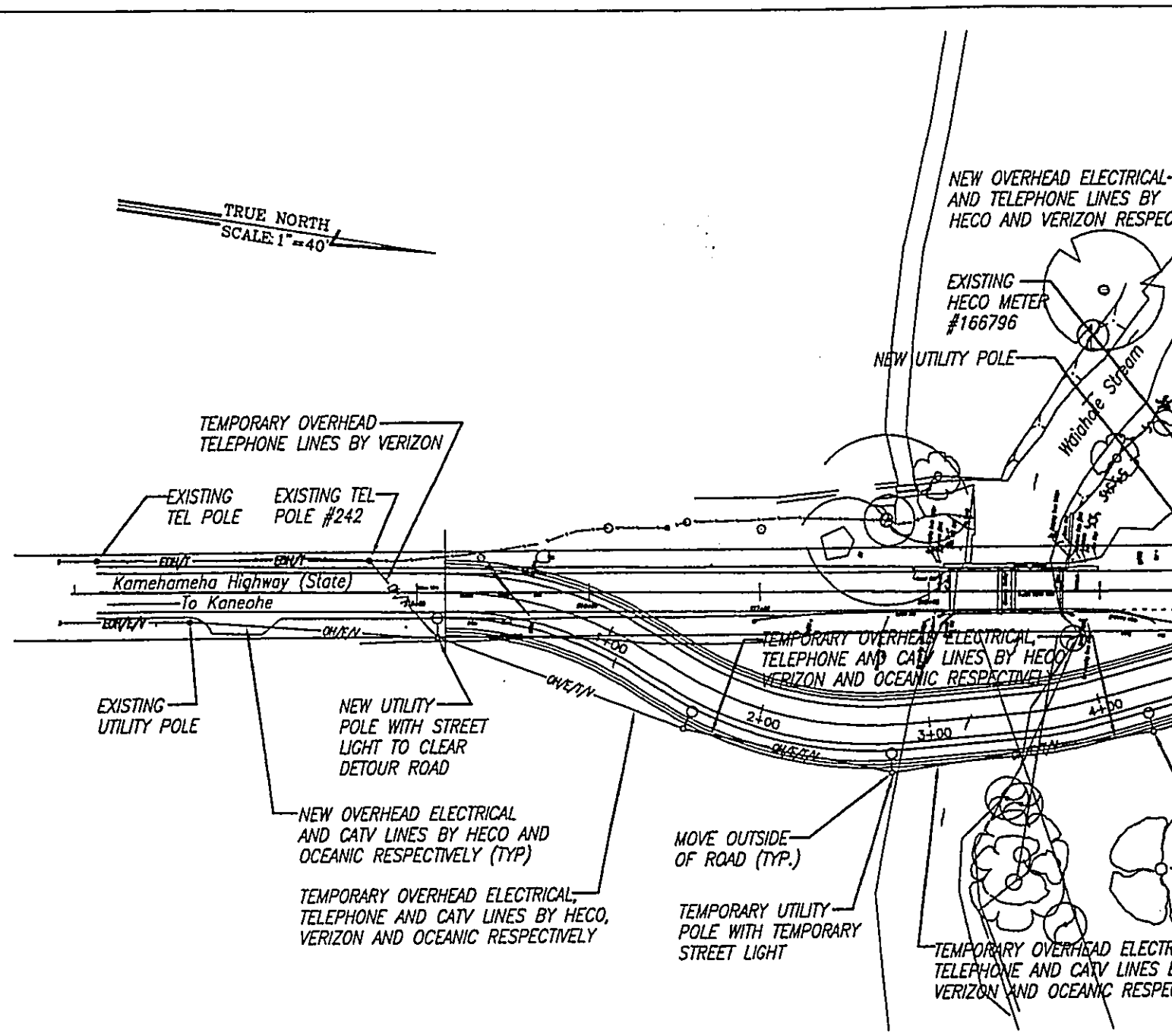


Figure 13
Stream Culvert Plan

Source: State of Hawaii DOT; Highways Division

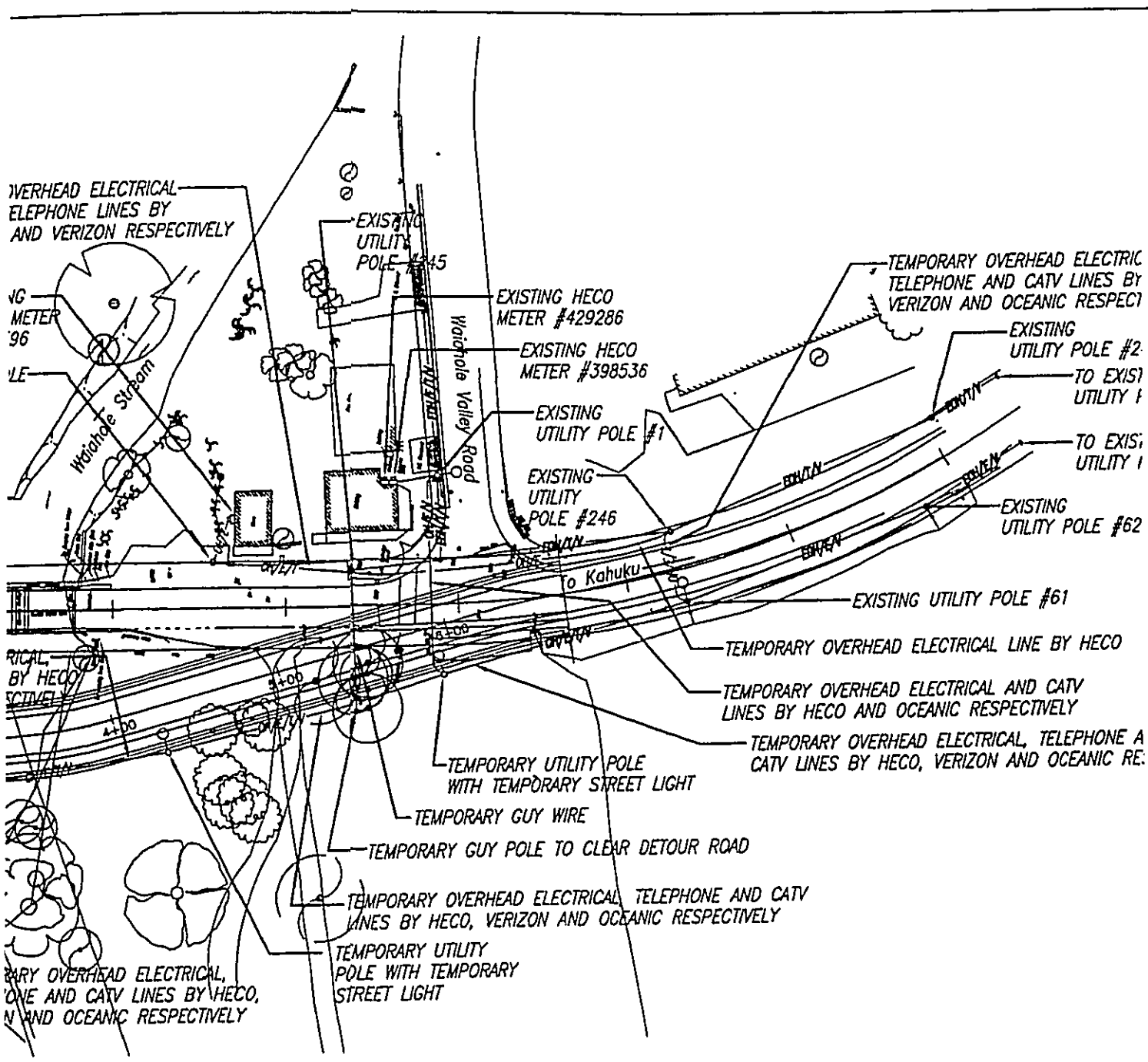


NOTES:

1. AFTER CONSTRUCTION OF BRIDGE IS COMPLETE, ALL TEMPORARY LINES SHALL BE REMOVED.
2. SEE SHEET E-4 FOR FINAL CONDITION OF ALL UTILITY LINES.

ELECTRICAL SITE PLAN - NEW WORK (PHASE

Not To Scale



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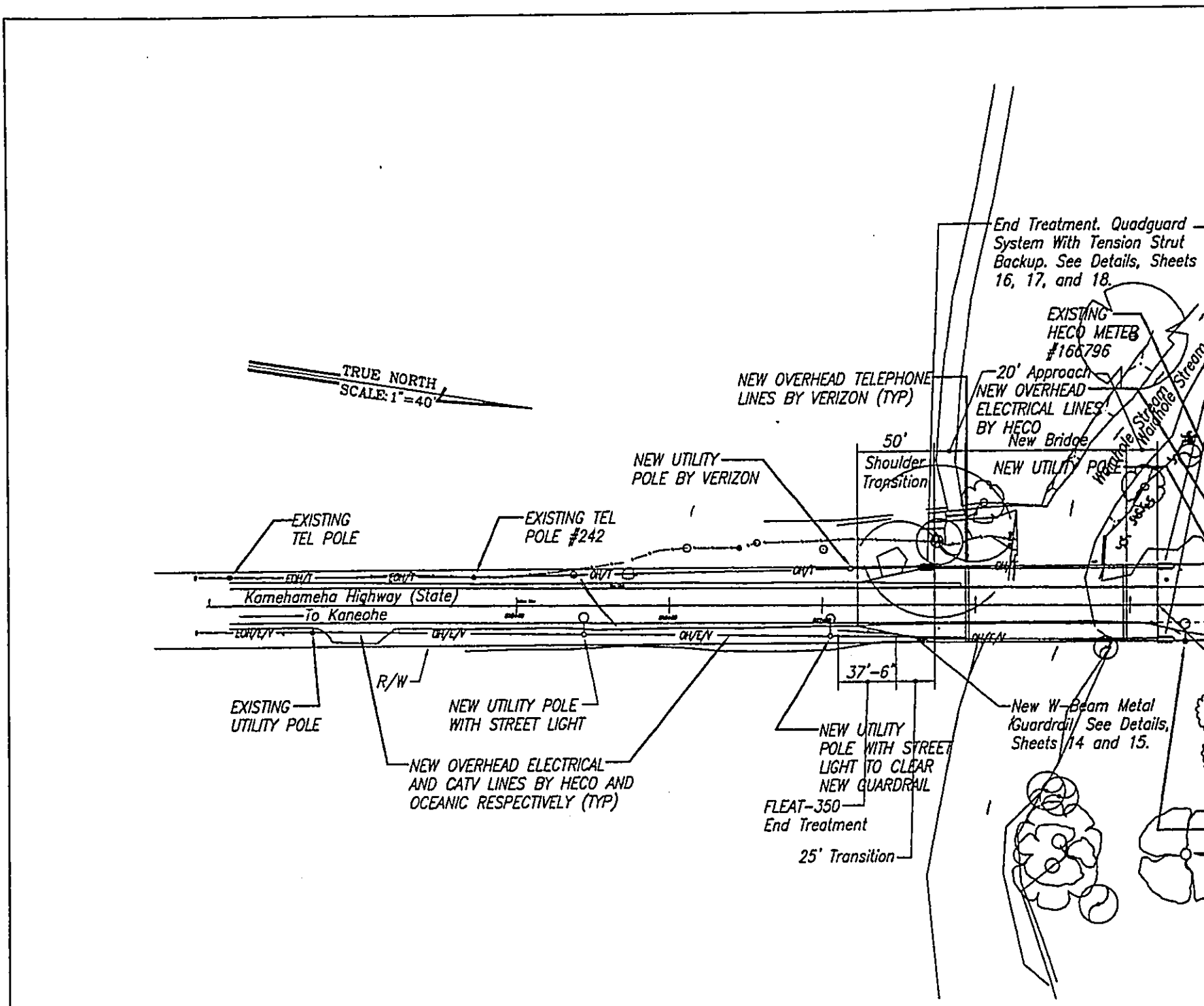
EMOVED.
TION OF ALL

W WORK (PHASE 1)

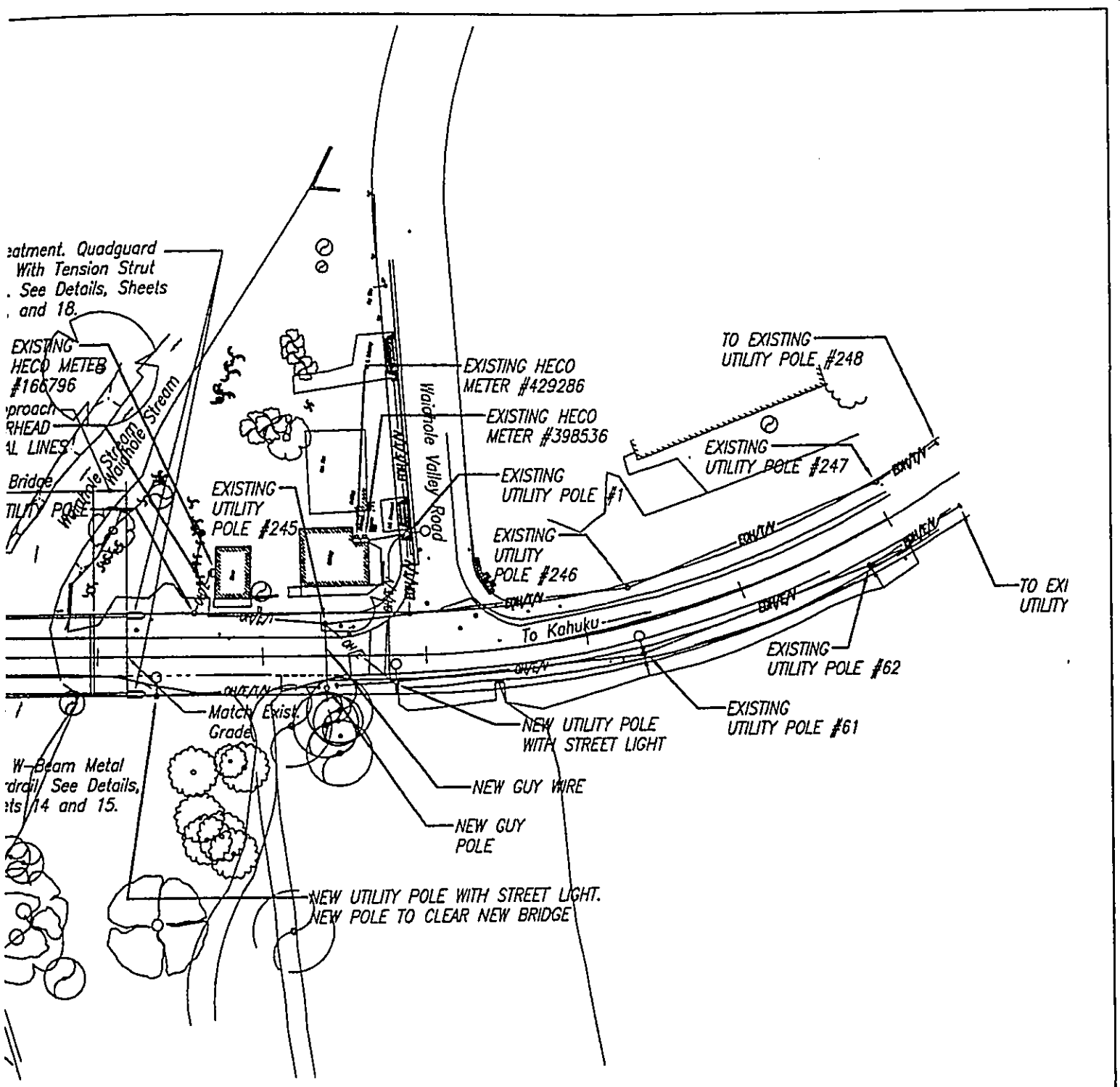
Figure 14
Electrical Plan: Phase One

Source: State of Hawaii DOT; Highways Division



ELECTRICAL SITE PLAN - NEW WORK (PHASE

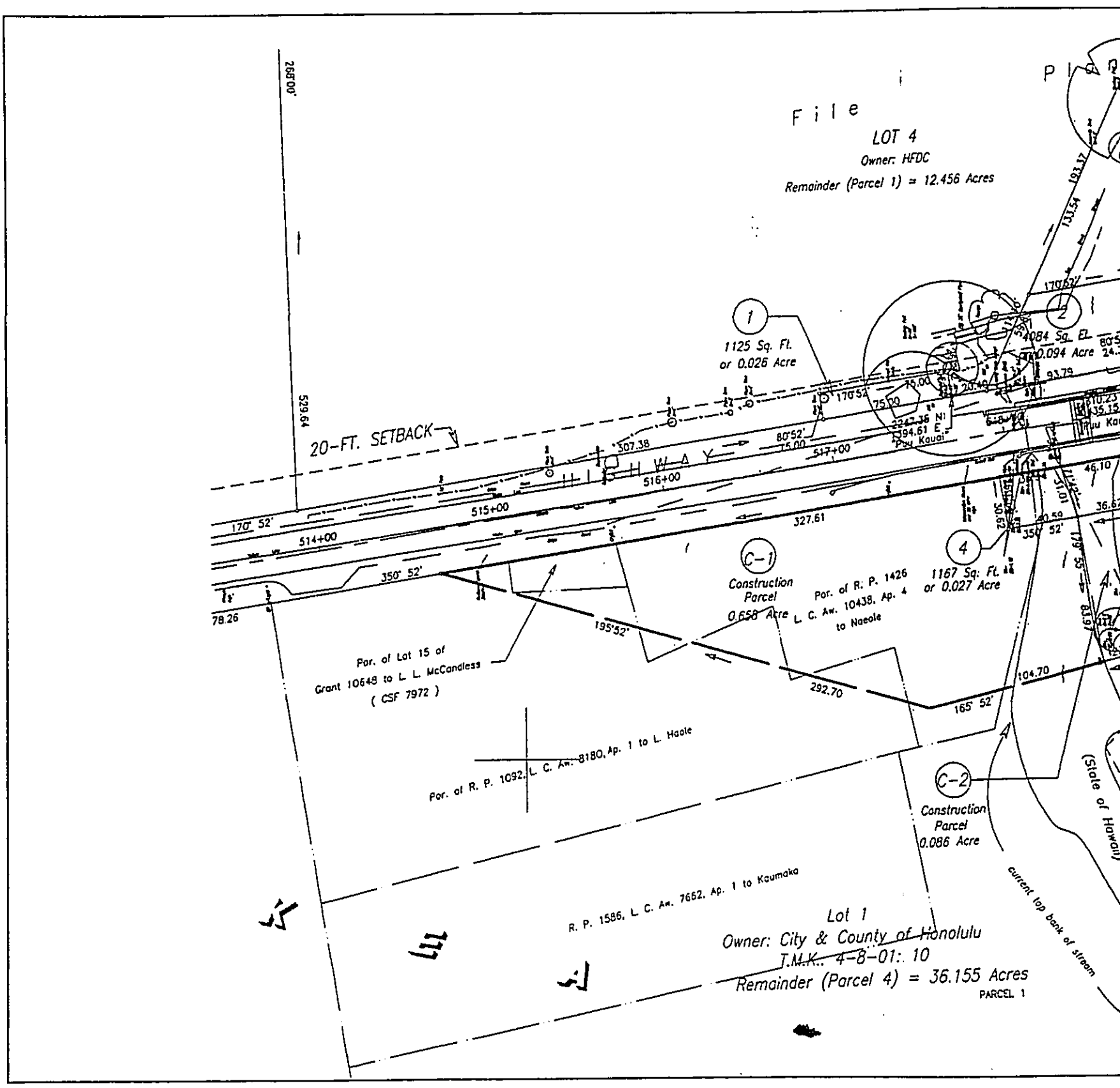
Not To Scale



W WORK (PHASE 2)

Figure 15
Electrical Plan: Phase Two

Source: State of Hawaii DOT; Highways Division



Kamehameha Highway
Waiahole Bridge Replacement

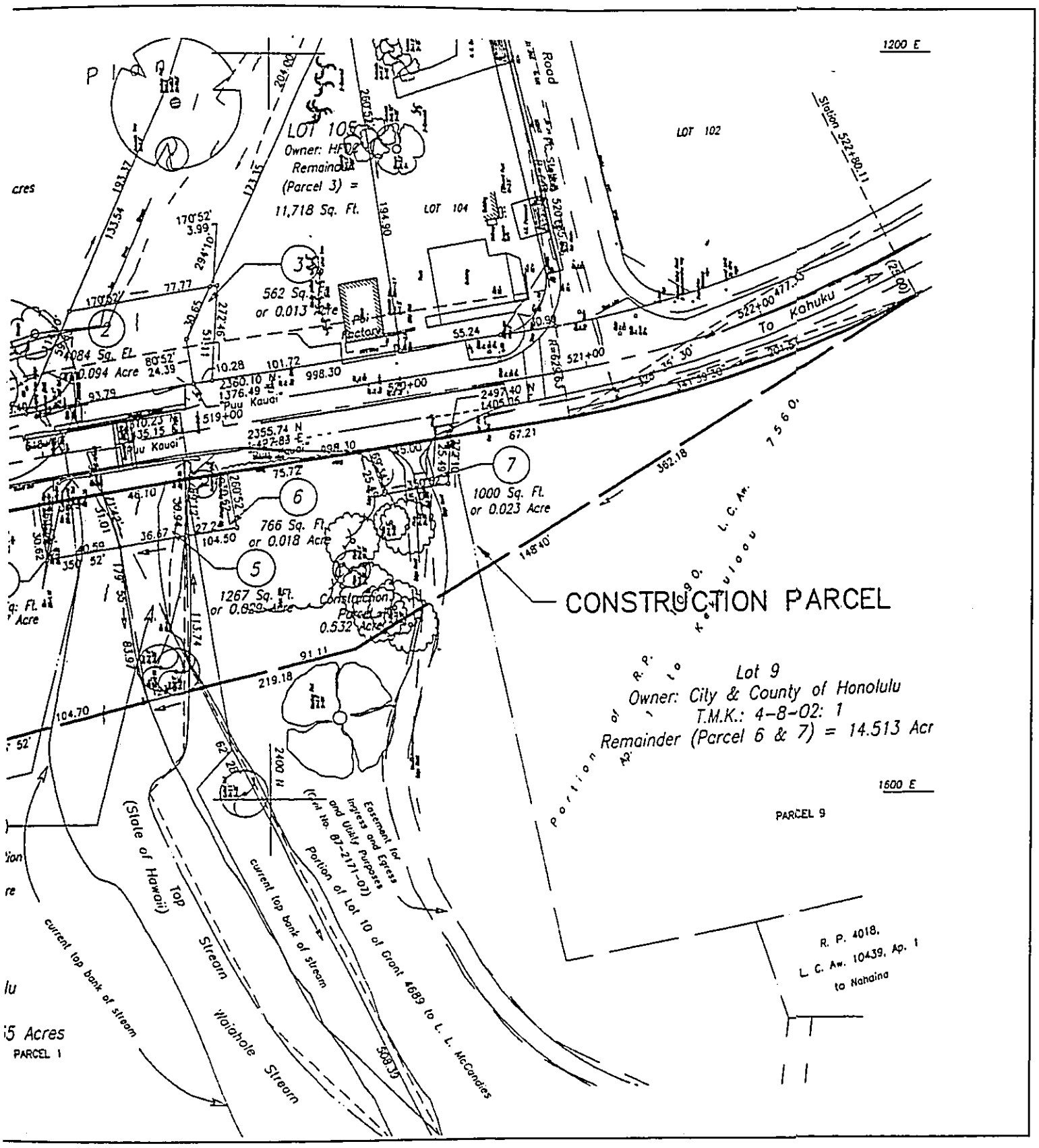


Figure 16
Construction Parcel Plan

Source: State of Hawaii DOT; Highways Division

IV. AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATIVE MEASURES

A. Impacts to the Physical Environment

1. Surrounding Land Uses

The proposed project site is located along the Kamehameha Highway (Route 83) along the east coast of the island of Oahu.

No significant long-term impacts to the surrounding area will result from the implementation of the proposed project. Temporary impacts will occur to access and staging areas during the construction period. These impacts will not have and social or economic impact. Physical alterations resulting from construction such as clearing of shrubbery are expected to return to their natural condition after construction is completed.

No residential uses are located within the immediate area. Agricultural uses are located within the vicinity including a poi factory located on the northern up-stream side of the bridge. The agricultural factory use, which is not located on a parcel affected by the new bridge, utilizes an area along the northwestern corner of the bridge for parking. This use may be precluded by the construction activities but will not be affected in the long term by the proposed replacement bridge.

2. Topography and Geology

The existing two-lane bridge crosses over the perennial Waiahole Stream. The sides of the stream slope down steeply to the heavily vegetated streambed. The surrounding area consists of fallowed agriculturally zoned lands. No trees are located within the streambed but a number of small to medium sized trees were observed in the upstream area. No impacts to the topography and geology beyond the new bridge and temporary bypass road culvert are expected in the long-term. The detour road and culvert will be removed upon completion of the replacement bridge and are expected to revert back to their present condition.

3. Soils

According to the *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* by the United States Department of Agriculture Soil Conservation Service, Sheet 58, the project site consists land classification Ph Pearl Harbor clay. This soil series consists of very poorly drained soils on nearly level coastal plains adjacent to the ocean. Permeability of the soil is very slow and runoff is very slow to ponded with very slight erosion hazard.

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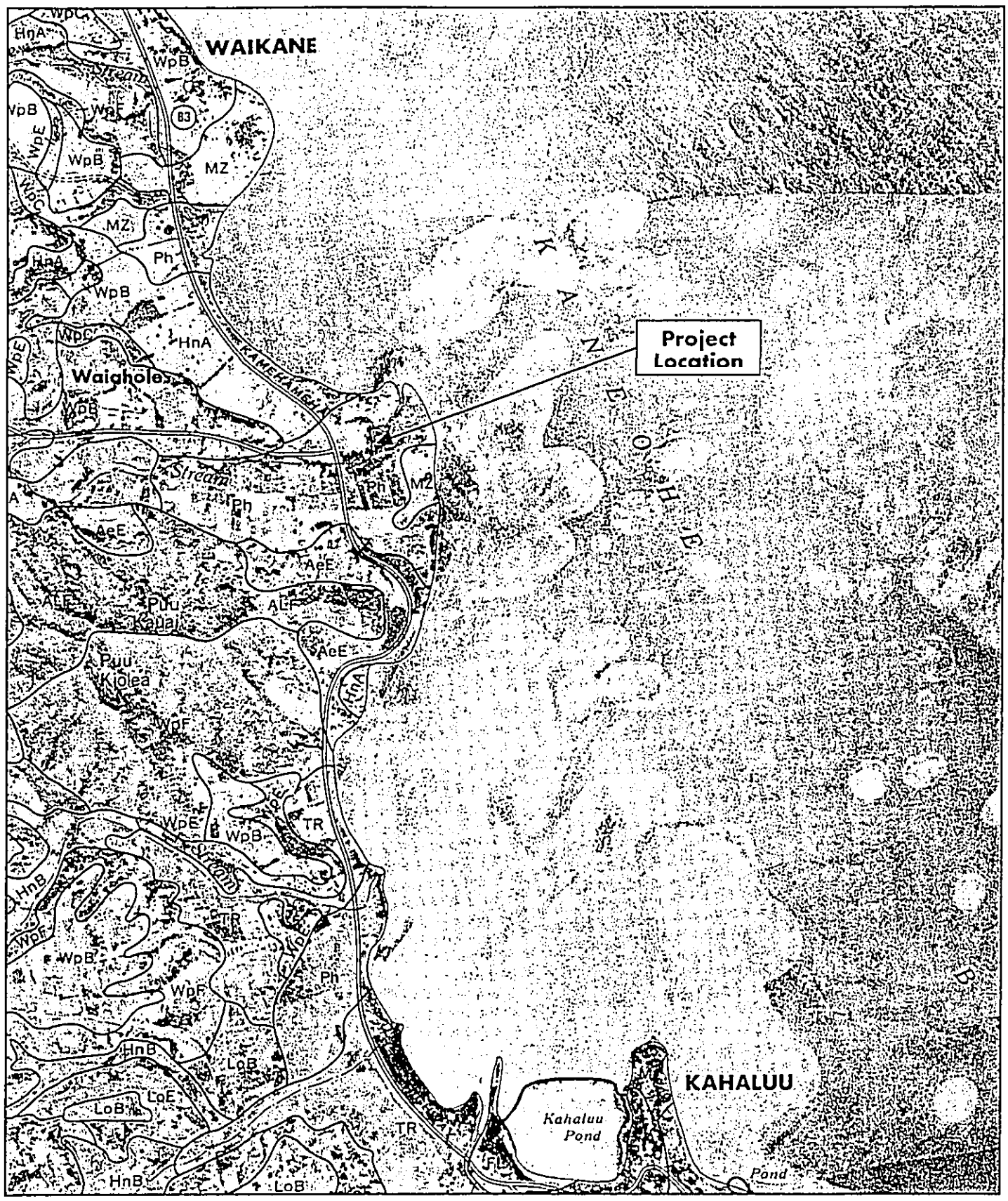

Kamehameha Highway
Waiahole Bridge Replacement

Figure 17
Soils Map

Source: U.S. Dept. of Agriculture Soil Survey

4. Hydrology and Flood Zone

According the National Flood Insurance Program *Flood Insurance Rate Map* Community – Panel Number 150001 0055 B, the project site is located in Zone AE 15, a special flood hazard area subject to 100-year flooding. The base flood elevation for the replacement bridge area is 15 feet above mean sea level (Figure 17).

The bypass road will require the use of culvert pipes to maintain stream flow. Installation and removal of the culvert pipes will impact the downstream area temporarily. During the installation, downstream areas are likely to become turbid however stream flow should not be affected. This impact will only occur during the installation and removal process. While the detour road in use, stream quality should be maintained and no restriction in stream flow is expected.

The replacement bridge will lie entirely outside of the Waiahole Stream. Footings for the structure will be located out of the streambed. During excavation for the footings, potential for excavated material will be mitigated by the use of Best Management Practices to ensure that stream water quality is maintained.

5. Wetlands

A known wetland as defined by soil and vegetation types is located south of the existing bridge. This wetland is area is not within the project bounds. Best Management Practices will be implemented to ensure that no impacts resulting from construction of the replacement bridge will affect the wetland.

The project site is also located within the Special Management Area (SMA) boundary. A Special Management Permit will be required for the project.

6. Flora and Fauna

A botanical resources assessment was conducted for the project by Char & Associates during August 1998 (Appendix A). The summary of this study follows:

> The vegetation on the Waiahole Bridge project site is dominated by introduced plants such as elephant grass, California grass, Java plum, Guinea grass, etc. Introduced or alien species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's discovery of the Hawaiian Islands in 1778. The only native species found during the survey was hau. Hau is indigenous, that is, it is native to Hawaii and also throughout the Pacific and tropics.

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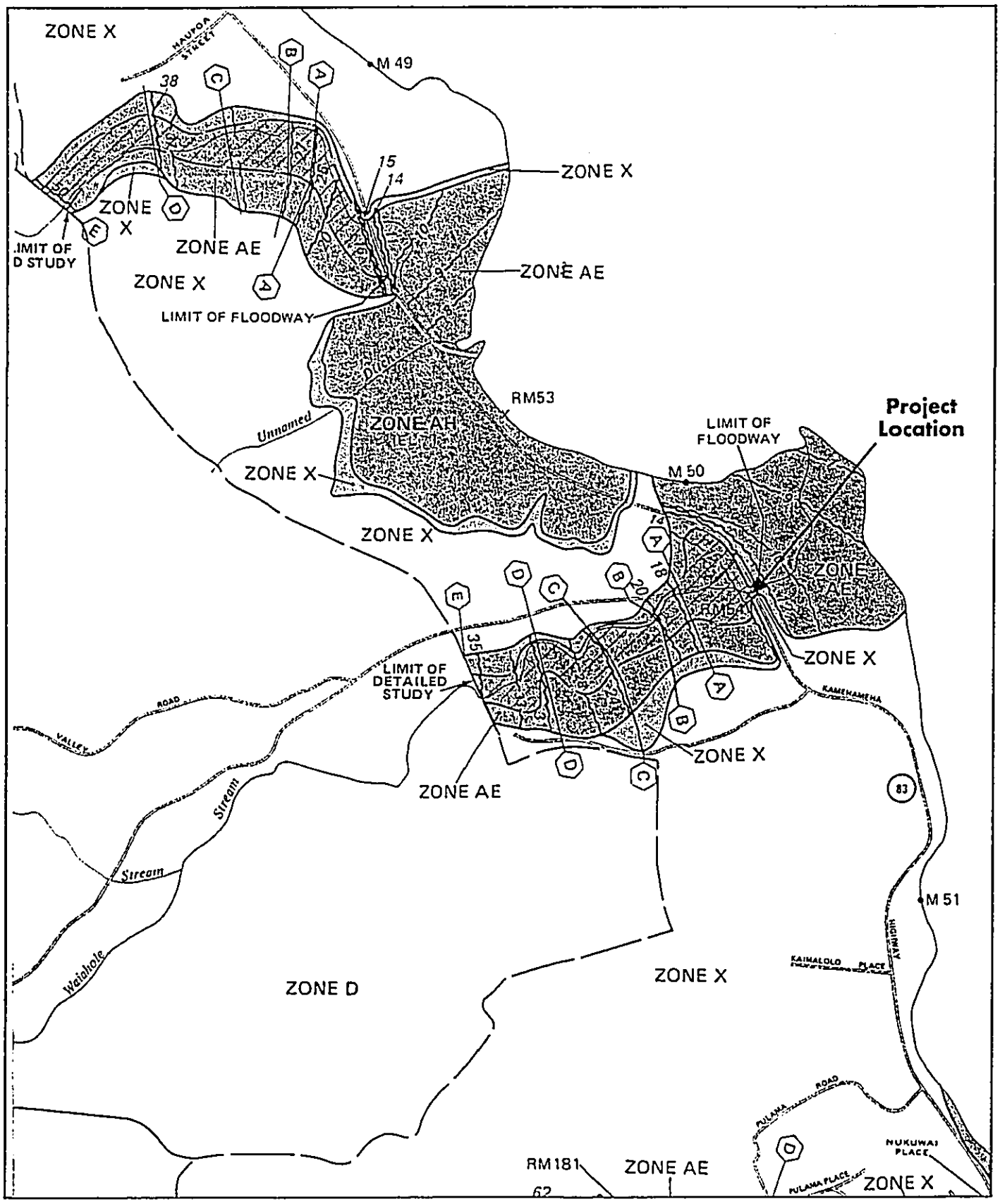

Kamehameha Highway
Waiahole Bridge Replacement

Figure 18
Flood Insurance Rate Map

None of the plants found during the field studies is threatened or endangered species; nor is any plant species of concern (U.S. Fish and Wildlife Service 1996, 1997). All of the plants can be found in similar environmental habitats throughout the Hawaiian Islands. The findings above were not surprising as most of the lowland areas in the islands have been greatly modified by humans and agricultural activities (Cuddihy and Stone 1990).

The proposed bridge replacement and widening is not expected to have a significant negative impact on the botanical resources as the vegetation on the site is dominated by introduced plants. If possible, it is recommended that the stand of very large, old trees on the mauka, Kaneohe side of the bridge be avoided. Areas cleared of vegetation should be grassed over as soon as possible to prevent soil loss and discharge of sediments into the stream. California grass, which forms a dense mat and is already on the project site, can be used.

Vegetation along the stream banks will be disturbed during the course of construction however these typical stream grasses are considered weedy species and no mitigation for wetland plants will be required.

Pacific Aquatic Environmental, Inc. (PAE) was contracted to conduct an aquatic and avian species assessment for the project. This study, which was completed in June 1998 is attached as Appendix B. The summary of this study follows.

No adverse impacts are anticipated to occur to native Hawaiian birds due to the small scale and temporary nature of impacts resulting from the Waiahole Bridge construction project. Native waterbirds no not appear to use this section of the Waiahole Stream on a regular basis. At most, Hawaiian Stilts might occasionally visit brackish areas near the mouth of the stream, but the fast-flowing section of stream does not provide favored habitat for Hawaiian Coots or Moorhen. Native forest birds are not found in this highly disturbed, low-elevation site. Migratory shorebirds do occur in the stream mouth area, but only in small numbers, and this area does not appear to be an important site for migratory birds.

Lower Waiahole Steam in the area of the proposed bridge replacement project currently contains nursery habitat for juvenile fish and native fish species. Important native fish such as aholehole, "ama'ama (striped mullet), and 'o'opu nakea are seasonally abundant in the area of the proposed project. Candidate endangered damselflies were not observed in the lower Waiahole Stream, and are unlikely to inhabit this area. Potential impacts resulting from this project include short-term sediment input into Waiahole Stream (and Kaneohe Bay) downstream of the Kamehameha Highway Bridge. Short-term increased sediment input will likely be

unavoidable during some aspect of the bridge replacement project. However, it is unlikely that these short-term and very localized impacts will cause long or short-term damage, especially when compared to acute and long-term impacts such as the current practice of agricultural cultivation occurring next to Waiahole Stream. Impacts from this bridge replacement project will be much less than long-term, past and current chronic land use impacts in the Waiahole Stream watershed. However, as much as possible, best management practices should be employed during construction to reduce and minimize soil erosion into nearshore ocean areas.

7. Historic and Archaeological Resources

The Waiahole Bridge as listed in the *1983 Historic Bridge Inventory Island of Oahu* prepared by Bethany Thompson. The inventory stated that the bridge was designed engineered by R. W. Mowry with Fred Ohrt acting as the City and County Engineer. The inventory concluded that while the bridge serves as an important transportation link between Windward communities, the bridge does not provide public access vantage points, does not have a view, and is rated aesthetically poor.

While no burial sites have been listed in the immediate project area, there exists the possibility of uncovering habitation or human remains during the demolition and construction process. In the event that any remains are found during construction, all work will cease and the State Historic Preservation Division will be notified for further action.

8. Air Quality

Presently, the traffic volume on the Kamehameha Highway in the vicinity of project site consists primarily of residents, some commercial traffic and tour buses. Traffic was not observed to be heavy and the impact from vehicular emissions is not considered major in terms of negative air quality values.

During the construction phase, the air quality from construction equipment, i.e. generators, front-end loaders, material delivery trucks and miscellaneous onsite equipment will create some additional air quality degradation from construction equipment emissions and from fugitive dust. These impacts are temporary in nature and should cease upon completion of the proposed improvements.

9. Noise Environment

Negative impact from noise generation due to construction will not be major in terms of impact. There are no residential areas located in the immediate proximity of the proposed project site. Pockets of residential units are in the

general vicinity, but are not close enough to be adversely affect by construction noise.

10. Scenic and Open Space Resources

Due to the nature of the proposed bridge design, there will be a minimal and insignificant impact on scenic and open space resources. No significant views are available from the bridge nor are any view opportunities impaired by the addition of the replacement bridge. No designated scenic view locations are located in the project area.

B. Social and Community Impacts

1. Population

Population within the project vicinity is limited to a few residential properties along the oceanfront and by residents in Waiahole Valley. The proposed action is not expected to contribute to any population change within the vicinity.

2. Economy

The project will contribute positively to the economy in terms of construction-related employment and the sale of goods and services. Wages, sales taxes, secondary and tertiary spending will also positively affect the economy.

3. Police, Fire and Medical Services

Police service for the project area is provided by patrols from the Kaneohe Station and Fire Protection Service is provided by the Kahaluu Station #37. Both Police and Fire Departments indicated that emergency service response times would not be affected by the proposed improvements.

4. Recreational Resources

Recreational services will not be affected by the proposed project.

5. Educational Resources

No impacts on educational resources are expected due to the implementation of this proposed project.

6. Cultural Resources

A Cultural Impact Assessment for the project was conducted by Cultural Surveys Hawaii, Inc. in August of 2003. The reported, titled *Cultural Impact*

Assessment for the Waiahole Bridge Replacement Project, Waiahole Ahaupuaa, Koolaupoko District, Island of Oahu, is attached as Appendix C. The report interviewed knowledgeable community member of the cultural importance of the existing Waiahole Stream and Bridge. Three general concerns were expressed: preservation of the adjacent loi and auwai, integrity of Waiahole Stream, and integration of the replacement bridge into the existing setting.

The adjacent loi area and auwai will not be affected by the proposed project. The adjacent auwai located mauka of Kamehameha Highway flows through a pipe culvert, beneath Kamehameha Highway, to makai loi area. This pipe culvert will be extended to ensure that any roadway work will not affect stream flow.

Wildlife within the stream is addressed in Section IV.A.6 of this report. While no significant wildlife was observed during the study period, monitoring of the stream is recommended during the course of construction.

The possibility of realigning the bridge makai of the existing location was considered and rejected. This realignment would require extensive highway realignment that would be create more environmental impact than the proposed alternative as well as require the acquisition of extensive rights-of-way.

C. Infrastructure and Utilities Impacts

1. Roadways

Roadways will be impacted during the construction phase with intermittent lane closures anticipated due to transport of materials, heavy equipment and required work areas. Typical work zone traffic controls will be employed to minimize traffic impact.

2. Bicycle and Pedestrian Access

The existing bridge provides a single pedestrian sidewalk along the upstream side of the bridge. This separate wooden walkway along with the low non-conforming rail results in a dangerous walkway condition.

Two 11-foot wide shoulders are proposed for the replacement bridge. This will allow bicyclist and pedestrians to travel in both directions without sharing the same travel lane with automobiles. Extended railings will further improve safety. The additional shoulder also provides a pullover area when necessary in emergency situations.

3. Drainage

Drainage will not be significantly impacted on a long-term basis, but could experience temporary construction related impacts. Work will be required within the streambed beneath the replacement bridge as will temporary stream alteration resulting from the bypass culvert that will be required while the bridge is replaced. The replacement bridge and detour culvert are not expected to impact drainage and may result in improved upstream drainage upon completion. During the construction period, culvert pipes located in the detour road are also expected to provide proper drainage. The detour road surface will be naturally drained.

Other construction related impacts will be experienced when the existing bridge is demolished and when piles are driven for the replacement bridge. These impacts, such as increased sedimentation, are unavoidable and will last only for the duration of construction. These disturbances to the marine environment are not expected to significantly impact stream wildlife (Appendix B). The implementation of Best Management Practices (BMPs) are recommended to mitigate construction related impacts to the immediate and down stream environment.

4. Existing Utility Systems

Presently an 8-inch waterline is located on the existing bridge. This waterline will be relocated while the existing bridge is demolished. Water service will then be transferred to a 30-inch waterline that will be located beneath the replacement bridge. An additional 30-inch reserve transmission main will also be located under the bridge. No impacts to water service will occur during the construction period.

Electrical power, telephone and cable television lines presently located along Kamehameha Highway will be relocated on the downstream side of the replacement bridge. Lighting will be provided for both the new bridge and the detour road.

D. Construction Mitigation Measures

Construction impacts will occur in the short term but can be minimized and mitigated by the implementation of Best Management Practices (BMPs). These construction specific practices are placed under the responsibility of the selected contractor. Examples of BMPs that may be implemented include silt fences, stabilized construction entrances, inlet protection, surface covering, vegetative stabilization and hydromulching, filter berms, sediment traps and sediment basins. All waste materials will be securely contained and appropriately disposed.

V. RELATIONSHIP TO GOVERNMENTAL PLANS AND POLICIES

The proposed project is located within a rural area that is generally lightly developed and predominantly in agricultural use. Policy and land use plans for the vicinity call for general agricultural uses.

A. State Land Use

The project area is designed as "Urban" on the upstream side and "Agriculture" on the downstream side of the State Land Use *Commission Land Use Boundary Map* (Figure 18).

B. Coastal Zone Management and Special Management Areas

The project site is located within the Special Management Area according the Department of Planning and Permitting land use maps (Figure 19).

C. City and County of Honolulu Land Use Ordinance

The Land Use Ordinance has zoned the parcels immediately downstream of the replacement bridge Ag-2 Restricted. The parcel immediately upstream of the bridge is zoned C County.

D. Applicable Governmental Permits and Approvals

This document is prepared in compliance with Chapter 343 Hawaii Revised Statutes and Title 200 Administrative Rules which require that any Agency Action that involves the use of State Lands or Funds shall be subject to the Environmental Assessment or Environmental Impact Statement Regulations. The proposed action involves the use of both State lands and funds.

Several discretionary permits will be required for the proposed project since the site lies in a Special Management Area and the detour road will encroach on the streambed. The following permits will be required.

1. U.S. Army Corps of Engineers - Sec. 404 Clean Water Act Permit
2. State Dept. of Health - Section 401 Clean Water Act Permit
3. State Dept. of Land & Natural Resources - Stream Channel Alteration Permit (SCAP)
4. Office of State Planning - Coastal Zone Management Certification (CZM)
5. Department of Planning and Permitting – Special Management Permit (SMP)

Prior to construction, various administrative permits will also be required. These will include but will not be limited to Building Permit, Grubbing and Grading Permit and traffic plan review. These are generally the responsibility of the contractor and do not require discretionary approval processes.

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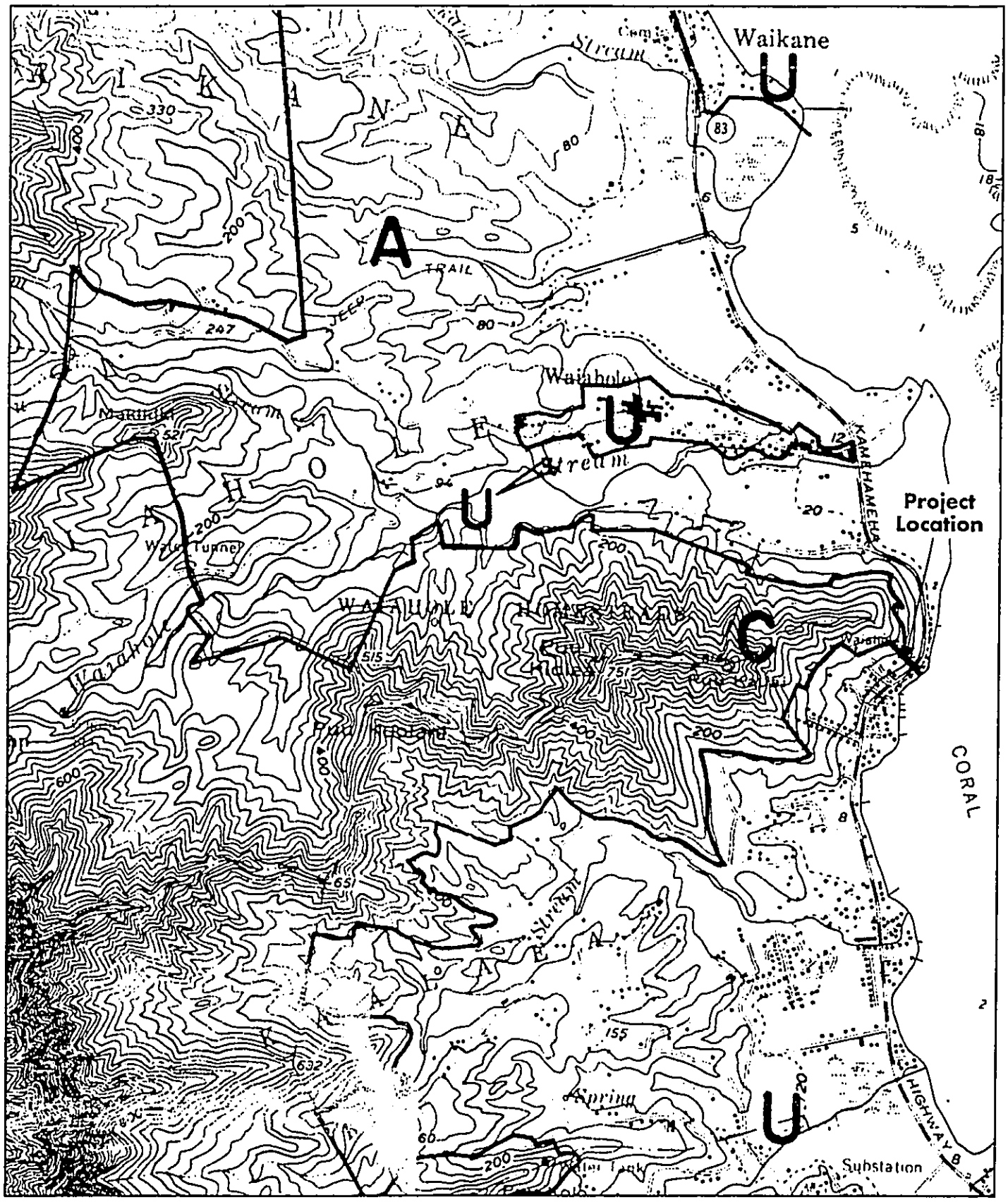

Kamehameha Highway
Waiahole Bridge Replacement

Figure 19
State Land Use Boundary Map

Source: U.S. Geological Survey

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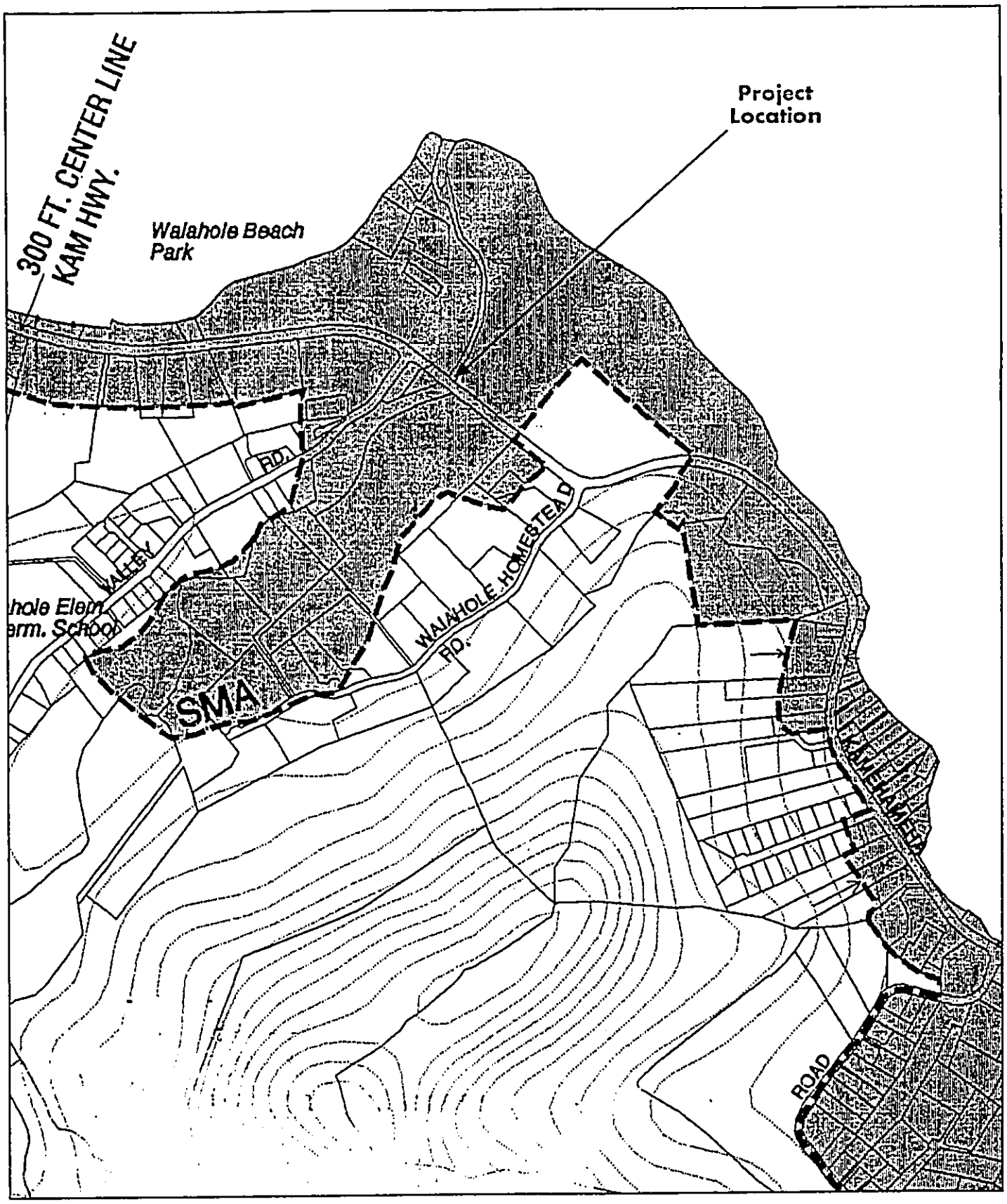


Kamehameha Highway
Waiahole Bridge Replacement

Figure 20
Special Management Area
Boundary Map

VI. ALTERNATIVES CONSIDERED

The following alternatives were considered in determining the best course of action to replace or rehabilitate the Waiahole Stream crossing. These alternatives consist of the No Action Alternative, a Rehabilitate and Widen Alternative, Acrow Bridge, and the Proposed Alternative. These are described in greater detail below.

A. No Action Alternative

The retrofit or replacement of Waiahole Bridge is considered essential to the safe and efficient use of Kamehameha Highway. The age and design criterion of the existing bridge requires remedial design and construction to bring the bridge up to current construction standards. No Action, which will leave the bridge is in its present condition is not considered a viable alternative and consequently, was not selected.

B. Rehabilitate and Widen Existing Bridge

This alternative was immediately dismissed due to the condition of the existing bridge. The existing foundation structure was deemed unsuitable for any improvement and in all scenarios would require complete demolition and replacement of the foundation and piers. Subsequently, this was not deemed a viable alternative.

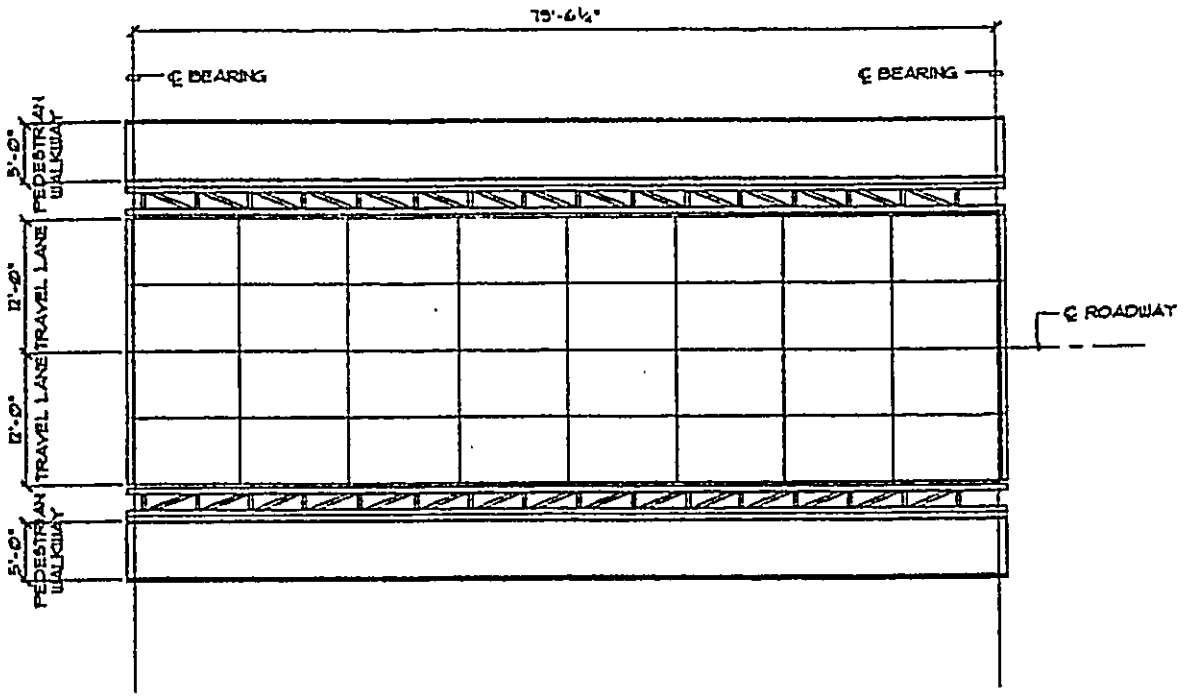
C. Replacement Bridge with Detour Road Using Acrow Panel Bridge

This alternative would entail the replacement of the existing bridge with a new bridge. To enable the replacement of the bridge on the existing alignment, a detour road would be required downstream. Since a stream crossing would be required, a component steel member bridge was considered for the duration of construction. This Acrow panel system would consist of two 12-foot travel lanes with 5-foot pedestrian walkways on both sides (Figure 20).

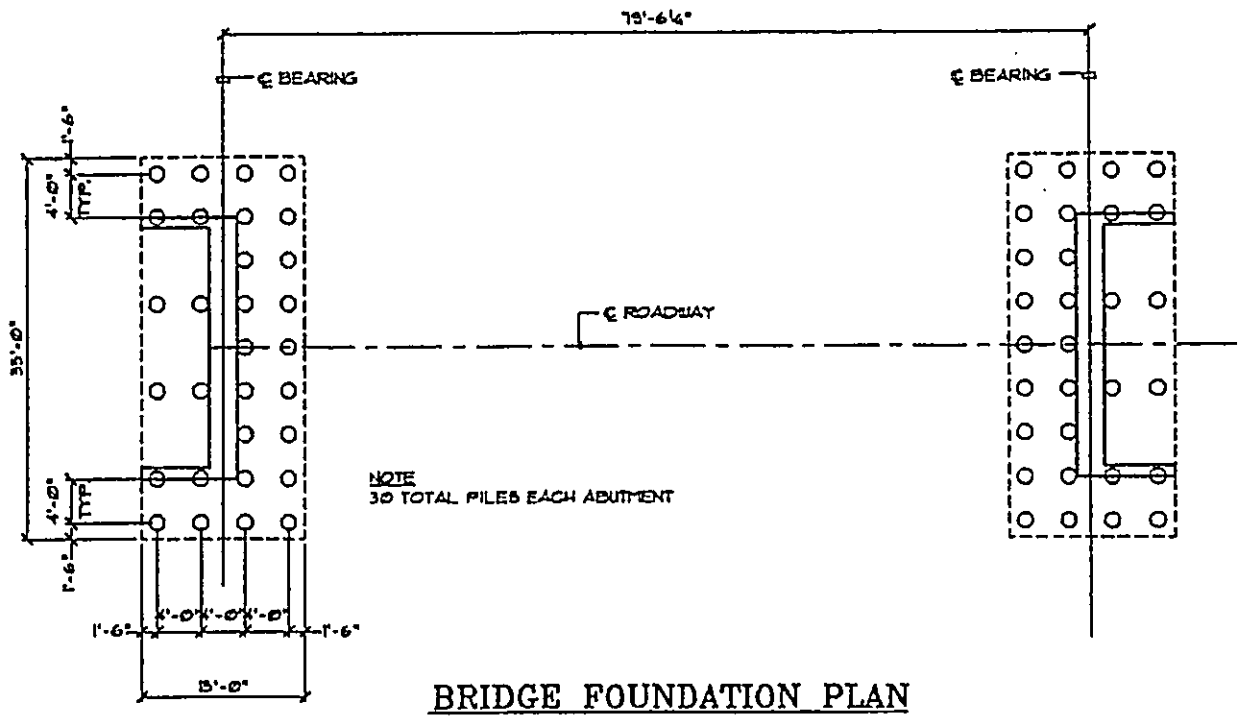
Cost analysis found this alternative to be prohibitively expensive (in excess of $1,000,000) and environmentally undesirable since piles and foundation work required for the structure would remain downstream of the replacement bridge. Subsequently, this alternative was rejected in favor of the proposed project.

D. Replacement Bridge with Detour Road and Stream Culvert (Selected Alternative)

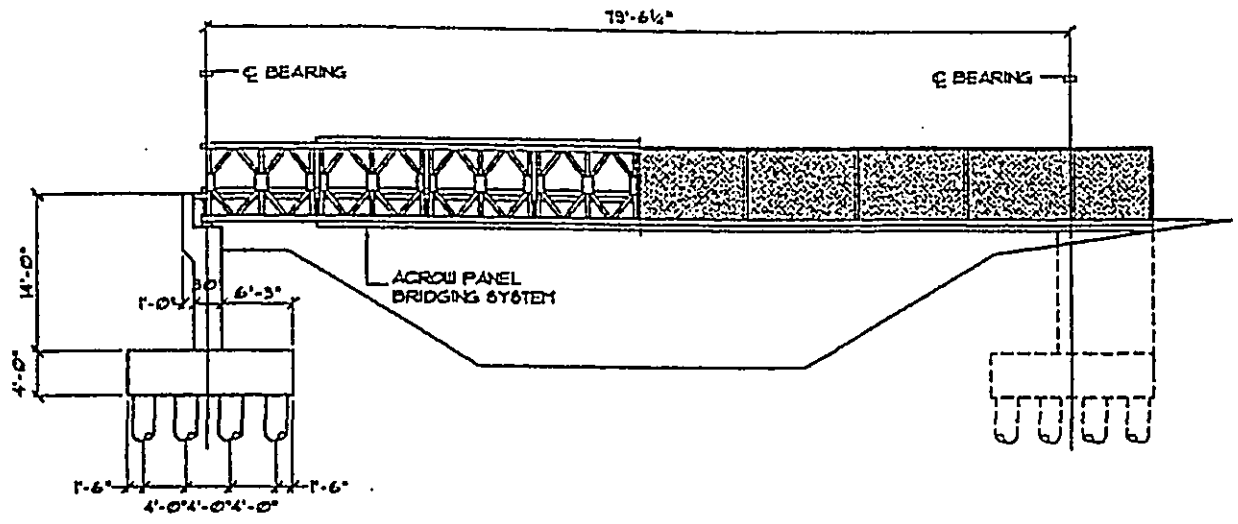
This proposed alternative consists of a replacement bridge and a detour road that uses pipe culverts for the stream crossing. This alternative was selected since upon completion of the replacement bridge, the detour road and stream culvert will be removed entirely allowing the area to revert back to its original condition. This alternative is also the most cost effective, hence its selection as the preferred alternative.



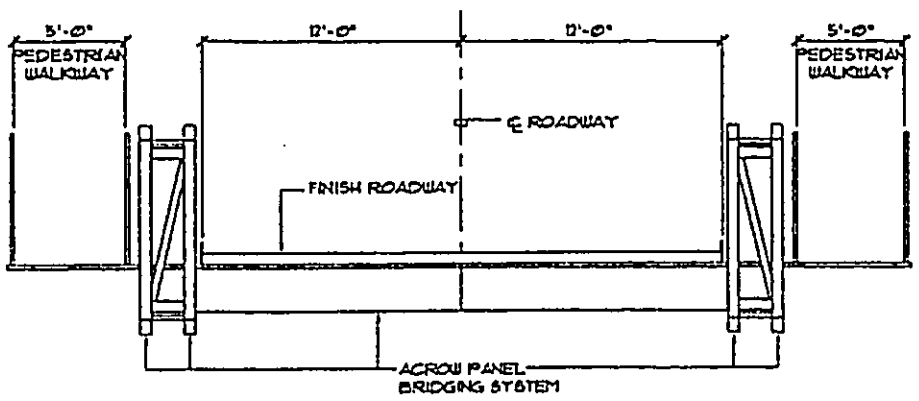
BRIDGE PLAN



BRIDGE FOUNDATION PLAN



BRIDGE SECTION / ELEVATION



NORMAL DECK SECTION

Figure 21
Acrow Panel Bridge Plan

Source: State of Hawaii DOT; Highways Division

VII. LIST OF PARTIES CONSULTED DURING THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT

Federal Agencies

- U.S. Department of Agriculture
  Natural Resources Conservation Service
- U.S. Army Corps of Engineers
- U.S Department of the Interior
  Fish and Wildlife Service
- United States Coast Guard

State of Hawaii

- Department of Land and Natural Resources
- State Historic Preservation Division, DLNR
- Office of Planning

City and County of Honolulu

- Board of Water Supply
- Department of Environmental Services
- Department of Facilities Maintenance
- Department of Planning and Permitting
- Department of Transportation Services
- Planning Department

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.O. Box 50004
lonolulu, HI
6850

USDA

Our People...Our Islands...In Harmony

December 10, 1998

Mr. Emilio Barroga, Jr.
Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Barroga:

Subject: Draft Environmental Assessment (DEA) - Kamehameha Highway, Replacement of Waiahole Bridge, Koolaupoko, Oahu

We have reviewed the above mentioned document and have no comments to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

cc:
Mr. Fred Rodriguez, Environmental Communications, 81 S. Hotel St., #211, Honolulu, HI 96813

U.S. Department of Transportation
United States Coast Guard

Commander
Fourteenth Coast Guard

300 Ala Moana Blvd
Honolulu, HI 96850-4982
Staff Symbol: (oan)
Phone: (808)541-2315
FAX: (808)541-2309

16590
Serial 32086
18 SEP 1998

Mr. Fred Rodriguez
Environmental Communications
P. O. Box 536
Honolulu, HI 96809

Dear Mr. Rodriguez:

Thank you for personally meeting with my bridge representative and submitting the proposal for the Waiahole Stream Bridge project.

The Waiahole Stream Bridge is exempt from a Coast Guard bridge permit under the Coast Guard Authorization (CGA) Act of 1982 as set forth in the following paragraph.

> Section 107 of the CGA Act of 1982, Public Law 97-322, exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used or susceptible to be used as a highway for interstate or foreign commerce and can not be used for transportation or commerce with reasonable improvements.

The CGA Act, however, does not exclude such bridges from Coast Guard jurisdiction for purposes other than approval of location and plans of bridges. The requirements under 14 U.S.C. 85 for lights and signals on structures including bridges and other Coast Guard responsibilities under the Ports and Waterways Safety Act of 1972, as amended by the Port and Tanker Safety Act of 1978, are still applied.

If you have any further questions on this matter please contact my bridge administrator, LTJG Dan Stulack, at (808) 541-2319.

Sincerely,

T. D. Hooper

T. D. HOOPER
Commander, U. S. Coast Guard
Chief, Aids to Navigation Branch
By direction of the District Commander

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

August 14, 1998

Mr. F.J. Rodriguez
Environmental Communications
81 South Hotel Street
Honolulu, Hawaii 96813

LOG NO:22063
DOC NO:9808co09

Dear Mr. Rodriguez:

SUBJECT: Proposed Waiahole Bridge Replacement
Project No. BR 083-1(37)
TMK 5-1-03, Kaaawa, Oahu

Thank you for the letter dated August 6, 1998 for the proposed Waiahole bridge replacement. Since the bridge is not cited as a historically significant bridge in the (Draft) State of Hawaii, Historic Bridge Inventory and Evaluation report dated May 1996, we concur with the replacement project should have 'no effect' on any known historic resources.

Should any historic sites, including burials be found during routine construction activities: stop activity in immediate area; leave remains in place: contact the State Department of Land & Natural Resources, Historic Preservation Division at 587-0047 (947-4000).

Thank you for the opportunity to comment, should you have any questions, please contact Carol Ogata at 587-0004.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

CO:je

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
RICK EGGED
DIRECTOR, OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-7844

December 10, 1998

MEMORANDUM

TO: Kazu Hayashida, Director
Department of Transportation

ATTN: Emilio Barroga, Jr.
Highways Division

FROM: Bradley J. Mossman
Director, Office of Planning

SUBJECT: Draft Environmental Assessment for Kamehameha Highway, Replacement of Waiahole Bridge, Oahu, Project No. BR083-1(37)

This is in response to your Draft Environmental Assessment (DEA) for the proposed bridge replacement over Waiahole Stream on Kamehameha Highway. Since the project is situated in the Coastal Zone Management (CZM) Special Management Area, we recommend that an assessment of the proposed project's compliance with the CZM objectives and policies, Chapter 205A, Hawaii Revised Statutes, be included in the Environmental Assessment (EA) document in conformance with the Office of Environmental Quality Control's administrative rules.

In addition, since soil erosion and other polluted runoff would likely occur during and after construction, the mitigation measures to control them should also be described in the EA document.

The listing of our agency's name and address on page 11 of the DEA is outdated and should be corrected. Also, item 6, Office of Planning, on page 11, should specify CZM Federal consistency.

If you have any questions, please contact Charles Carole of our CZM Program at 587-2804.

cc: Mr. Fred Rodriguez, Environmental Communications

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843
PHONE (808) 527-6180
FAX (808) 533-2714

December 28, 1998

Mr. Fred Rodriguez
Environmental Communications
81 South Hotel Street, Suite 211
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Your Transmittal of November 1998 Regarding the Draft Environmental Assessment for the Proposed Replacement of Waiahole Bridge, Koolaupoko, Oahu

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) for the proposed bridge replacement project.

We have the following comments to offer:

1. There are existing 30-inch and 8-inch water mains which cross the existing bridge.

2. The Draft EA should discuss the relocation and reconnection of the existing 30-inch and 8-inch water mains.

3. A new parallel 30-inch water main is presently under design and will be installed in the near future.

4. We are investigating the possibility of having the new 30-inch main installed with the new bridge within the bridge limits.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

CLIFFORD S. JAMILE
Manager and Chief Engineer

JAN 5 1999

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 527-6663 • FAX: (808) 527-6675

JEREMY HARRIS
Mayor

KENNETH E. SPRAGUE, P.E., Ph.D.
Director

CHERYL K. OKUMA-SEPE, ESQ.
Deputy Director

ENV 98-209

November 27, 1998

Mr. Fred Rodriguez
Environmental Communications
81 South Hotel Street, #211
Honolulu, HI 96813

Dear Mr. Rodgriguez:

Subject: Draft Environmental Assessment (DEA)
Replacement of Waiahole Bridge
TMK: 4-8-04

We have reviewed the subject DEA and have the following comments:

1. During construction, best management practices (BMPs) should be employed to reduce and control the discharge of pollutants to the State receiving waters.

2. Should dewatering activities be considered, the construction dewatering permits will be required from the State Department of Health and the Department of Planning and Permitting, City and County of Honolulu.

Should you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Sincerely,

Cheryl K. Okuma-Sepe

KENNETH E. SPRAGUE
Director

cc: SOH-DOT (Emilio Barroga, Jr.)

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAII 96813
Phone: (808) 523-4341 • Fax: (808) 527-5857

JEREMY HARRIS
MAYOR

JONATHAN K. SHIMADA, PhD
DIRECTOR AND CHIEF ENGINEER

ISIDRO M. BAQUILAR
DEPUTY DIRECTOR

IN REPLY REFER TO:
PRO 98-226

December 7, 1998

Mr. Fred Rodriguez
Environmental Communications
81 S. Hotel Street, #211
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Draft Environmental Assessment
Kamehameha Highway, Replacement of Waiahole Bridge

Thank you for letting us review the Environmental Assessment, however we do not have any comments.

If you have any questions, please call Laverne Higa at 527-6246.

Very truly yours,

Jonathan K. Shimada, PhD
Director and Chief Engineer

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

1998/CLOG-311(DT)
'98 EA Comments Zone 4

January 6, 1999

Mr. Fred Rodriguez
Environmental Communications
81 South Hotel Street, #211
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Draft Environmental Assessment (EA)
Replacement of Waiahole Stream Bridge
Tax Map Key: 4-8-4

We have reviewed the above-referenced Draft EA and have the following comments:

1. The final EA should indicate the amount (in cubic yards) of grading and filling that will be performed on the site.

2. Page 3 of the EA mentions that there is a wetland area on the Kaneohe side of the bridge. What types of Best Management Practices (BMPs) will be implemented to prevent construction runoff from entering the stream?

3. The estimated project cost and start/completion date for the project should be mentioned in the final EA.

4. Please double check the Table of Contents to the appropriate page numbers. Some of the page numbers and contents do not correlate.

5. The second page of the EA states (next page after the cover page) that "No by-pass road will be considered." Alternative D on page 2 of the EA also states that this is the preferred alternative in which a detour road will not be required. It appears these statements are contradictory with Figure 4, which shows the construction of a by-pass road.

JAN 7 1999

6. The Table of Contents, Item IX, List of Figures, lists that Figure 5 should be the "Proposed Bridge Section." However, Figure 5 was not shown in the EA.

7. The "Description of The Proposed Action" on page 1 should state that the temporary bridge should have an equivalent or more flow capacity than the existing bridge.

8. A section on flood hazards should be included in the "Impacts to the Physical Environment" section of the EA. The project site is within the floodway. The impacts to the 100-year water surface elevation should be addressed. A "No-Rise Certification" will be required.

Thank you for the opportunity to comment. If you have any questions regarding comments 1 through 4, please call Ms. Dana Teramoto of our Coastal Lands Branch at 523-4648. Questions regarding comments 5 through 8 can be addressed to Mr. Scott Nakamatsu of our Civil Engineering Branch at 527-6247.

Very truly yours,

for JAN NAOE SULLIVAN
Director of Planning
and Permitting

JNS:am

cc: Emilio Barroga, Jr., State Department
of Transportation

posse doc no. 1259

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4529 • FAX: (808) 523-4730

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

December 21, 1998

TPD11/98-06730R

Mr. Emilio Barroga, Jr.
Highways Division
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Barroga:

Subject: Kamehameha Highway, Replacement of Waiahole Bridge

In response to the letter from Environmental Communications, the draft environmental assessment for the subject project was reviewed. Although we have no comments to offer on the document prepared, we ask that this department be notified when construction commences. We can then alert Oahu Transit Services of the construction activity.

Should you have any questions regarding this matter, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

Cheryl D Soon

CHERYL D. SOON
Director

cc: Mr. Fred Rodriguez,
Environmental Communications

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 8TH FLOOR • HONOLULU, HAWAII 96813-3017
PHONE: (808) 523-4533 • FAX: (808) 523-4950

JEREMY HARRIS
MAYOR

PATRICK T. ONISHI
CHIEF PLANNING OFFICER

DONA L. HANAIKE
DEPUTY CHIEF PLANNING OFFICER

RR 11/98-2243

November 24, 1998

Department of Transportation
Highways Division
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Attention: Mr. Emilio Barroga, Jr.

Gentlemen:

Draft Environmental Assessment (DEA) for
Kamehameha Highway, Replacement of
Waiahole Bridge, Oahu Project No. BR 083-1(37)

In response to your agency's request dated November, 1998, we have reviewed the draft EA with regard to the proposed project's impact on the City and County of Honolulu's General Plan and the Koolaupoko Development Plan and find the proposed project consistent with these Plans' objectives and provisions.

Should you have any questions, please contact Robert Reed of my staff at 523-4402.

Yours very truly,

PATRICK T. ONISHI
Chief Planning Officer

PTO:ft

c: OEQC
Environmental Communications

VII. COMMENTS FROM PARTIES CONSULTED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT PROCESS

Federal Agencies	Comment Date
• U.S. Department of Agriculture Natural Resources Conservation Service	
• U.S. Army Corps of Engineers	April 10, 2001
• U.S Department of the Interior Fish and Wildlife Service	
• United States Coast Guard	
State of Hawaii	
• Department of Business, Economic Development and Tourism	
• Department of Health	
• Department of Land and Natural Resources	
• State Historic Preservation Division, DLNR	May 18, 2001
• Office of Environmental Quality Control	April 18, 2001
• Office of Hawaiian Affairs	April 23, 2001
• Office of Planning	
City and County of Honolulu	
• Board of Water Supply	April 19, 2001
• Department of Design and Construction	April 16, 2001
• Department of Environmental Services	May 7, 2001
• Department of Facilities Maintenance	April 5, 2001
• Department of Parks and Recreation	
• Department of Planning and Permitting	May 1, 2001
• Department of Transportation Services	April 27, 2001
• Police Department	April 18, 2001
Organizations and Individuals	
• Councilmember Steve Holmes	
• Hawaiian Electric Company	April 30, 2001
• Kaneohe Regional Library	
• Neighborhood Board No. 29	
• Representative Colleen Meyer	
• Senator Bob Nakata	
• Waiahole-Waikane Community Association	April 23, 2001

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

April 10, 2001

Regulatory Branch

Mr. Craig Watanabe
Design Branch, Highways Division
State of Hawaii Department of Transportation
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Watanabe:

This letter responds to your request for comments on the draft Environmental Assessment for the Kamehameha Highway Waiahole Bridge Replacement project, dated March 23, 2001. Based on the information you provided I have determined that a Department of the Army (DA) permit will likely be required for this project.

If you have any questions concerning this matter, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200100184.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Copy furnished:

Taeyong Kim, Environmental Communications, Inc., 1188 Bishop Street, Suite 2210, Honolulu, HI 96813

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:

HWY-DS 2.2088

December 12, 2003

Mr. George P. Young, P.E
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comment of April 10, 2001 regarding the subject project. It is our understanding that Department of the Army (DA) permit will likely be required for this project. An application for the DA permit is forthcoming and we will coordinate this process with your office.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LAWRENCE MIIKE

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

May 18, 2001

Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

LOG NO: 27494
DOC NO: 0105EJ14

Dear Mr. Watanabe:

SUBJECT: National Historic Preservation Act Section 106 Review – Draft Environmental Assessment for the Kamehameha Highway Waiahole Bridge Replacement Federal Aid Project No. BR-083-1(37)
Waiahole, Ko`olaupoko, O`ahu
TMK: 4-8-002:001 to 4-8-001:010

Thank you for the opportunity to comment on the DEA for the Waiahole Bridge Replacement project. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas. We received notification of this undertaking from Environmental Communications on April 2, 2001, and apologize for the delay in our response.

The project proposes the replacement of the existing Waiahole Bridge which was constructed in 1922 and was determined to be "not significant" in 1996. The replacement project will increase the length and width of the existing bridge and will also require the construction of a bypass road and culvert to be used during construction of the permanent bridge. The SHPD has reviewed an archaeological monitoring plan for the Kamehameha Highway resurfacing project from Waiahole Valley to Crouching Lion Inn in Kaaawa. No archaeological sites have been identified along this area of Kamehameha Highway. Although there were extensive wet land agriculture and Land Commission Awards (LCA) in close proximity to the bridge location, we concur that the impact of land alteration associated with road and bridge construction and with historic rice cultivation in this area suggest that intact cultural deposits are unlikely to remain. Therefore, we believe that the Waiahole Bridge replacement will have "no effect" on significant historic sites.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

Gilbert Coloma-Agaran
State Historic Preservation Officer

EJ:jk

c: Taeyong M. Kim, Environmental Communications, 1188 Bishop Street, Suite 2210, Honolulu, HI 96813

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:
HWY-DS 2.2092

December 12, 2003

TO: MR. PETER Y. YOUNG
STATE HISTORIC PRESERVATION OFFICER
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

FROM: RODNEY K. HARAGA
DIRECTOR OF TRANSPORTATION

SUBJECT: WAIAHOLE BRIDGE REPLACEMENT DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your comment of May 18, 2001, regarding the subject project. It is our understanding that based on your department's review of the subject bridge and project area, the proposed action will have "no effect" on significant historic sites. This information will be included in the Final Environmental Assessment for the project.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

c: Environmental Communications, Inc. ✓

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GENEVIEVE SALMONSON
DIRECTOR

April 18, 2001

Mr. Brian Minaai, Director
State Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Minaai:

Subject: Draft Environmental Assessment for Kamehameha Highway Waiahole Bridge Replacement, Oahu

Thank you for the opportunity to review the subject document. We have the following comments.

1. The expanded bridge width between abutments will improve stream flow. What is the likelihood of this potential increase in water flow causing flooding or more flooding downstream of the bridge?

2. Please consider the alternative of placing the footings of the replacement bridge outside of the streambanks. Also, please include drawings that show the footings in relationship to the streambed and streambanks.

3. Please ensure that the staging area for the construction would not impact any adjacent wetland areas.

4. Any activity that would increase the turbidity of the stream water could negatively impact the aquatic life of the stream. Best management practices must be in place at all times to avoid or minimize water quality impacts.

5. Please consult with the State Water Commission, DLNR Division of Aquatic Resources, Department of Health and the Neighborhood Board concerning stream alterations, aquatic life, water quality and community issues related to this project.

6. Please provide your findings and reasons for supporting the finding of no significant impact. Please see the enclosed example.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

LINDA LINGLE
GOVERNOR

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

December 12, 2003

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:

HWY-DS 2.2097

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

FROM: RODNEY K. HARAGA
DIRECTOR OF TRANSPORTATION

SUBJECT: WAIAHOLE BRIDGE REPLACEMENT DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your comments of April 18, 2001, regarding the subject project. In response to your comments, we offer the following:

1. The expanded bridge width will improve stream flow and consequently will contribute to the flooding potential downstream. It should be noted however that the downstream areas are all within the established AE flood zone. The increased downstream volumes will in effect, alleviate greater upstream flooding potential, which are more heavily populated area.

2. The planned replacement bridge is initiated to conform with Federal ASHTO LRFD Bridge Design Specifications adopted in 1998. While it may be possible to place the bridge footings outside of the stream banks, this would require the addition of a central support within the stream thereby affecting the stream environment with possibly greater effect. A single span bridge is possible however the engineering required for this single span is prohibitively expensive and is not anticipated to significantly improve the aquatic environment.

   The drawings will be revised to clearly show the relationship between the new footing locations and the streambed and stream banks.

3. Construction staging areas will be selected to eliminate or minimize any impact to adjacent wetland areas. A graphic showing all construction parcels will be included in the Final EA.

5. The Commission on Water Resource Management, Department of Health and the Neighborhood Board will be consulted during the Special Management Permit process. The DLNR Division of Aquatic Resources was consulted during the preparation of the aquatic survey appended to the Draft Environmental Assessment.

6. The findings and reasons supporting the finding of no significant impact will be included in the Final Environmental Assessment.

If you have any questions or comments, please call Mr. Craig Watanabe at 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

c: Environmental Communications, Inc.

PHONE (808) 594-1838

STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

FAX (808) 594-1865

April 23, 2001

Mr. Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Blvd.
Kapolei, HI 96707

Dear Mr. Watanabe:

Subject: Kamehameha Highway, Waiahole Bridge Replacement, District of Koolaupoko, Island of Oahu Federal Aid Project No. BR-083-1 (37)

This is in response to the materials of March 23, 2001, within which you had requested the Office of Hawaiian Affairs to review and comment on the Draft Environmental Assessment for the above referenced project. Upon review of the enclosed materials, the Office of Hawaiian Affairs recommends that the final environmental assessment contain reference to the cultural impact assessment which was completed for the project, as required by the chapter which this draft EA was prepared pursuant to.

With respect to historical or archaeological resources, OHA relies on the assurance that proper mitigation and consultation will occur should any unidentified cultural, historic, or burial sites and/or resources be encountered during project development.

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:
HWY-DS 2.1991

December 12, 2003

Mr. Ronald Mun
Deputy Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Mun:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of May 1, 2001, regarding the subject project. In response to your comments, we offer the following:

1. A cultural impact assessment for the project is presently under development and will be included in the Final Environmental Assessment for the proposed project.

2. Appropriate consultation and mitigation measures will be used when work commences for the proposed project. In the event that any historic or archaeological artifacts are uncovered during the course of construction, all work will cease and the State Historic Preservation Office will be notified for appropriate action.

If you have any questions or comments, please call Mr. Craig Watanabe at 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

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

April 19, 2001

COPY

Mr. Craig Watanabe
Design Branch, Highways Division
Department of Transportation
State of Hawaii
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Watanabe:

Subject: Your Transmittal of March 23, 2001 of the Draft Environmental Assessment for the Kamehameha Highway Waiahole Bridge Replacement, Waiahole, Oahu, Hawaii

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the proposed bridge replacement project.

We have no objections to the proposed project. The construction plans should be submitted for our review and approval.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

FOR CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Taeyong Kim, Environmental Communications

Pure Water . . . our greatest need – use it wisely

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

December 12, 2003

IN REPLY REFER TO:

HWY-DS 2.2098

Mr. Clifford S. Jamile
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Jamile:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of April 19, 2001, regarding the subject project. We understand that you have no objections to the proposed project. Per your request, construction plans will be submitted to your office for your review and approval.

If you have any questions or comments, please call Mr. Craig Watanabe at 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
PHONE: (808) 523-4564 • FAX: (808) 523-4567
WEB SITE ADDRESS: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

RAE M. LOUI, P.E.
DIRECTOR

GEORGE T. TAMASHIRO, P.E.
DEPUTY DIRECTOR

ERIC G. CRISPIN, AIA
ASSISTANT DIRECTOR

April 16, 2001

CDED-BS 01-0019

Mr. Brian K. Minaai, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Attention: Mr. Craig Watanabe, Highways Division

Dear Mr. Minaai:

Subject: Draft Environmental Assessment (DEA) for Kamehameha Highway
Waiahole Bridge Replacement

We have reviewed the subject DEA and have the following comments:

1. Discuss scour at the bridge.

2. Correct maps that show an incorrect project location.

We are returning the copy of the DEA with our comments noted thereon. If you have any questions, please call Ray Nakahara of the Civil Design and Engineering Division at 523-4041.

Very truly yours,

RAE M. LOUI, P.E.
Director

cc: Environmental Communications, Inc. (Mr. Taeyong M. Kim)

LINDA LINGLE
GOVERNOR

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

December 12, 2003

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINCOLN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:
HWY-DS 2.2089

Mr. Tim Steinberger P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street, 11th Floor
Honolulu, Hawaii 96813

Dear Mr. Steinberger:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of April 16, 2001, regarding the subject project.

The scour elevation for the new Waiahole Bridge was estimated to be approximately 1.16 feet. The existing stream bed elevation is approximately 4.0 feet. Therefore, the estimated scour depth for a 100-year flood event is about 2.84 feet. Te prevent scour around the new bridge footings, the top of footing will be placed at elevation -2.50 feet.

Thank you for your comment regarding the incorrect placement of the location arrow on the USGS map. This will be corrected in the Final Environmental Assessment.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813

JEREMY HARRIS
Mayor

TIMOTHY E. STEINBERGER, P.E.
Acting Director

IN REPLY, REFER TO:
EST 00 048

May 7, 2001

Mr. Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Watanabe:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA) KAMEHAMEHA HIGHWAY
WAIAHOLE BRIDGE REPLACEMENT PROJECT NO. BR-083-1 (37)

Thank you for the opportunity to again review and comment on the above subject. Our concerns were addressed in a letter (ENV 98-209) from our department to your branch dated November 27, 1998, which you have included in this DEA. Our comments are essentially the same:

- During construction, best management practices (BMPs) should be employed to reduce and control the discharge of pollutants to the State receiving waters.
- If construction dewatering is planned, a State of Hawaii, Department of Health (DOH) National Pollutant Discharge Elimination Systems (NPDES) discharge permit will be required. An effluent discharge permit from the City and County of Honolulu, Department of Planning and Permitting will also be required if the discharge is to a City-owned stream or drainage system.

For further information on this review, please call Jack Pobuk, Program Coordinator at 527-6696.

Sincerely,

TIMOTHY E. STEINBERGER, P.E.
Acting Director

√ CC: Mr. Taeyong Kim, Environmental Communications, Inc.

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATEJI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:
HWY-DS 2.2090

December 12, 2003

Mr. Frank J. Doyle , Director
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Doyle:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of May 7, 2001, regarding the subject project. In response to your comments, we offer the following:

1. Best Management Practices (BMPs) will be employed during the construction of the subject project to reduce and control discharge of pollutants into the receiving waters. A narrative discussion of the BMPs will be included in the Final Environmental Assessment.

2. In the event that construction dewatering is required, a National Pollutant Discharge Elimination Systems (NPDES) discharge permit will be obtained from the State Department of Health. The Waiahole Stream is not City-owned nor is it a City-controlled drainage system. A Department of Planning and Permitting effluent discharge permit will not be required.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

01-0489
To: PRD

[illegible]

March 23, 2001

RECEIVED
DEPARTMENT OF
FACILITY MAINTENANCE
APR 3 5 05 PM '01

Mr. Ross Sasamura, Director
Department of Facilities Maintenance
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Sasamura,

Enclosed for your review is a copy of the Draft Environmental Assessment for Kamehameha Highway Waiahole Bridge Replacement project proposed by the State of Hawaii Department of Transportation. Notice of availability of this document will be made in the March 23, 2001 issue of The Environmental Notice published by the Office of Environmental Quality Control.

Please review this document and submit your comments, if any, to:

Mr. Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

With a copy to the environmental consultant:

Taeyong Kim
Environmental Communications, Inc.
1188 Bishop Street, Suite 2210
Honolulu, Hawaii 96813

The deadline for comments regarding this document is April 23, 2001. If you have any questions, please call me at (808) 528-4661.

Sincerely,

April 5, 2001
We do not have any comments. If you have any questions, please call Laverne Higa at 527-6245.

ROSS S. SASAMURA, Director and Chief Engineer
Department of Facility Maintenance

Taeyong M. Kim
Environmental Communications, Inc.

Enclosure

[illegible]

LINDA LINGLE
GOVERNOR

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

December 12, 2003

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DS 2.2091

Mr. Larry J. Leopardi, Director
Department of Facilities Maintenance
1000 Uluohia Street, Suite 215
Kapolei, Hawaii 96707

Dear Mr. Leopardi:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of April 5, 2001, regarding the subject project. We understand that your department does not have any comments regarding the subject project. We appreciate your review of the project.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

2001/CLOG-1419 (DF)

May 1, 2001

Mr. Taeyong M. Kim
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Kim:

Draft Environmental Assessment (EA) for Kamehameha Highway Waiahole Bridge Replacement, TMK: 4-8-004

Pursuant to your March 23, 2001 letter, we have the following comments to offer:

1. The replacement bridge should be designed according to the City's "Rules Relating to Storm Drainage Standards", dated January 2000.

2. A map showing the location of the wetland with respect to the project should be included in the EA. In addition, the EA should indicate whether any wetland type vegetation will be disturbed during construction and mitigative measures, if any, that will be implemented.

3. The EA should describe the types of Best Management Practices (BMPs) that will be implemented to control erosion and the transport of sediments and other pollutants.

4. The EA should indicate the amount (in cubic yards) of grading and filling that will be required.

Thank you for providing us the opportunity to comment. If you have any questions regarding Comment 1, please call Mr. Scott Nakamatsu of our Civil Engineering Branch at 527-6247. Questions regarding Comments 2 through 4 can be addressed to Ms. Dana Teramoto of our Zoning Regulations and Permits Branch at 523-4648.

Sincerely yours,

RANDALL K. FUJIKI, AIA
Director of Planning and Permitting

RKF:ky
Doc 93342 rev 1

01-00094

LINDA LINGLE
GOVERNOR

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

December 12, 2003

ROCKEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DS 2.2093

Mr. Eric G. Crispin, Director
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Crispin:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of May 1, 2001, regarding the subject project. In response to your comments, we offer the following:

1. We understand that the replacement bridge should be designed to the City's "Rules Relating to Storm Drainage Standards", dated January 2000. The project will be reviewed for conformance with these standards.

2. A map depicting wetlands in the project area will be included in the Final Environmental Assessment. The document narrative will also state that wetland vegetation will be disturbed during the construction period. Based on our examination of the site, typical streambed grasses line the stream. These weedy species will not be significantly impacted during the construction phase and no mitigation will be required for wetland plants.

3. Best Management Practices (BMPs) will be employed during the construction of the subject project to reduce and control discharge of pollutants into the receiving waters. The Final Environmental Assessment will state that site specific BMPs will be placed under the responsibility of the selected contractor.

4. The amount of earthwork required for the project consists of the following:
Detour Road: 14 cubic yard excavation, 94 cubic yards fill
New Road: 697 cubic yards excavation, 7 cubic yards fill

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
TELEPHONE (808) 523-4529 • FAX (808) 523-4730 • INTERNET www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "REDOY" MIYAMOTO
DEPUTY DIRECTOR

April 27, 2001

TPD4/01-01460R

Mr. Craig Watanabe
State of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Watanabe:

Subject: Kamehameha Highway Waiahole Bridge Replacement

In response to the March 23, 2001 letter from Environmental Communications, Inc., the draft environmental assessment for the subject project was reviewed. The following comments are the result of this review:

1. An existing bus stop on the mauka side of Kamehameha Highway, farside of Waiahole Valley Road, at the Waiahole Poi Factory, will be impacted during the use of the proposed detour road. This department requires a minimum two weeks advance notice of the dates when the bus stop will be unusable. The Contractor shall inform Oahu Transit Services, Inc. (OTS - TheBus contractor) Ed Sniffen (848-4571) or Lowell Tom (848-4578), of the location, scope or work, proposed closure of any street or traffic lanes, and the need to relocate any bus stops. At the same time, Arthur Loebl (848-5085) of OTS-Paratransit Services shall also be notified of the dates the detour road will be operational.

2. Kamehameha Highway in the project area falls under the jurisdiction of the State Department of Transportation. As long as traffic flow is provided in both directions along Kamehameha Highway, the project should have minimal impact on roadways under City jurisdiction.

3. In order to improve traffic safety during the construction phase of the subject project, it is recommended that the typical roadway section shown in Figure 12, Detour Road Section, be revised as follows: Jersey barrier/4' walkway/4' shoulder/10' lane/10' lane/4' shoulder/4' walkway/Jersey barrier. These revisions would provide the following benefits:

   - The lane reduction from 11' to 10' should calm traffic somewhat.
   - Pedestrian safety would be improved by having walkways along both sides of Kamehameha Highway.
   - Vehicular safety during emergencies would improve as an 8-foot wide shoulder would get stalled vehicles totally off of the travelway.
   - Bicyclists would be able to ride more safely in the shoulder area, away from vehicles.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

CHERYL D. SOON
Director

cc: Mr. Taeyong Kim
Environmental Communications, Inc.

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATTOS
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-DS 2.2094

December 12, 2003

Ms. Cheryl D. Soon, Director
Department of Transportation Services
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of April 27, 2001, regarding the subject project. In response to your comments, we offer the following:

1. We understand that the detour road will have impact the existing bus stop. We will ensure that all applicable agencies are notified in excess of the required two-week period regarding implementation of the detour road or if any activities affect the bus stop location.

2. We concur that the project area falls under the jurisdiction of the State Department of Transportation. We also understand that your department does not feel that the project will have any impact on City roads if traffic flow is maintained in both directions.

3. Thank you for your input regarding the configuration of the detour road shown in Figure 12 of the Draft Environmental Assessment. Your comment has been forwarded to the project engineers and will be taken into advisement.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 • AREA CODE (808) 529-3111
http://www.honolulupd.org
www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

LEE D. DONOHUE
CHIEF

MICHAEL CARVALHO
ROBERT AU
DEPUTY CHIEFS

OUR REFERENCE CS-LS

April 18, 2001

Mr. Craig Watanabe
Design Branch, Highways Division
Department of Transportation
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Watanabe:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Kamehameha Highway Waiahole Bridge Replacement project.

We believe that this project will have minimal impact on the services provided by the Honolulu Police Department.

If there are any questions, please call Carol Sodetani of the Support Services Bureau at 529-3658.

Sincerely,

LEE D. DONOHUE
Chief of Police

By Eugene Uemura
EUGENE UEMURA, Assistant Chief
Support Services Bureau

cc: District 4
Mr. Taeyong Kim, Environmental
Communications, Inc.

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097
December 12, 2003

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:

HWY-DS 2.2096

Mr. Lee Donohue, Chief of Police
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Chief Donohue:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comment of April 18, 2001, regarding the subject project. We understand that your department believes that the proposed project will have minimal impact on the services provided by the Honolulu Police Department. We appreciate your review of this document.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu HI 96840-0001

GEN-6 (EA/EIS)

April 30, 2001

State Of Hawaii Department of Transportation
Design Branch, Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Mr. Craig Watanabe

Subject: Waiahole Bridge Replacement

Thank you for the opportunity to comment on your March 2001 Draft EA for the Kamehameha Highway Waiahole Bridge Replacement. We have reviewed the subject document and would like to mention that Hawaiian Electric and the State DOT will have to negotiate a utility agreement for the temporary and permanent pole relocations as noted on Figures 14 & 15.

Our point of contact for this project, and the originator of these comments, is Francis Hirakami (543-7536) principal engineer. I suggest your staff and consultants deal directly with Francis to coordinate HECO's continuing input on this project.

Sincerely,

Kirk Tomita
Senior Environmental Scientist

cc:

F. Hirakami

Environmental Communications, Inc.

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:

HWY-DS 2.2095

December 12, 2003

Mr. Kirk Tomita
Senior Environmental Scientist
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Tomita:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comment of April 30, 2001, regarding the subject project. We understand that a negotiated utility agreement will be required for the temporary and permanent pole relocations depicted in Figures 14 and 15 of the subject document. The project management and consultant team will be in contact with HEI as the project plans progress. We will forward any future correspondence to HEI's principal engineer per your recommendation.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

c: Environmental Communications, Inc.

By Fax 692-7555

April 23, 2001

Urgent Memo to:
1. Mr. Craig Watanabe, Dept of Transportation
601 Kamokila Blvd.
Kapolei, Hawaii 96707

2. OEQC (Fax # 586-4186)

From: David Chinen, President, Waiahole-Waikane Community Association (48-441 Kamehameha Highway, Waikane, O'ahu, Hawaii) [per Dr. Jim Anthony]

Subject: Kamehameha Highway: Waiahole Bridge Replacement—Draft Environmental Assessment

Further to my telephone conversation with Mr. Watanabe this afternoon I set out the following comments on the above mentioned matter:

1. An EA under Chapter 343 is fundamentally an instrument of disclosure. Where disclosure is incomplete or truncated or inadequate an EA does not meet the requirements of the law and ought therefore not be given a Finding of No Significant Impact ("FONSI"). This EA fails to meet the disclosure test and the applicants ought, therefore, not be given a FONSI and must be required to do a full EIS.

    - The need for this bridge to be replaced and enlarged in the ways set out in the EA is not clear and convincing. We understand on the basis of good authority that the Dept of Transportation keeps a comprehensive list of bridges rated according to specific factors. That information is not disclosed in the EA.
    - The improvement of stream flow argument (p. 3) is unsupported by any evidence.
    - The property damage argument is also unsupported by any evidence (p. 3).
    - There is no supporting evidence that pedestrian safety "during heavy runoff periods" has been imperilled in the past (p. 3).
    - The "significant potential for pedestrian-automobile accidents" (p. 2) is merely an assertion without any supporting evidence.

- The statement (p. 2): "The existing bridge does not support the high traffic volumes using Kamehameha Highway arterial" is once again merely and assertion—in this case one that does not make sense—the bridge continues to support traffic—that fact stares you in the face.
- There is no evidence to support the contention (p. 2) that "lane width is inadequate and load capacity is compromised dues to age of the structure.
- *If the foregoing two arguments had any merit every bridge almost from Waiahole all the way around O'ahu to at least Haleiwa ought to be replaced immediately. We suspect that many of these arguments for this project are window dressing (shibai) only—the underlying driving factor appears to be pork barrel politics.*
- *The functional obsolesence argument is unsupported by any evidence (p. 2).*
- *The need* for this project is unsupported by any real evidence.
- Any time you beef up a new bridge or build a new one in a rural area (particularly on a 600 sq. mile island) you open the doors for more development, more growth, more and bigger concrete carrying trucks. There is no disclosure about these 'flow on' impacts.

We oppose this project on the grounds that disclosures set out above, as well as on other related issues, are woefully inadequate. The law requires, therefore, that you be denied a FONSI and that applicants do a full EIS. Mahalo.

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI

IN REPLY REFER TO:
HWY-DS 2.2087

December 12, 2003

Mr. David Chinen, President
Waihole-Waikane Community Association
48-441 Kamehameha Highway
Kaneohe, Hawaii 96744

Dear Mr. Chinen:

Subject: Waiahole Bridge Replacement Draft Environmental Assessment

Thank you for your comments of April 23, 2001, regarding the subject project. We understand you have a number of concerns regarding the proposed Finding of No Significant Impact and would like to address your concerns reiterating the purpose and need for the project.

Rationale for Replacement
The proposed replacement project is required under Federal AASHTO LRFD Bridge Design Standards, which were adopted in 1998. This project will receive Federal funding; however, this is not the driving criterion for this replacement. The Bridge Inspection Report that you refer to stated that, "Settlement of the bridge's abutments are about six (6) inches at the North end and 12 inches at the South end, based on the height difference between railing ends." This settlement is very significant and a replacement is required to ensure the safe operation of this roadway segment.

Stream Flow and Flooding
A drainage report for the Waiahole Bridge Replacement was prepared in February 2001. The findings of the report states that, "The new bridge will provide equal or greater clear waterway area than the existing bridge. This is not to increase the potential flood hazard at the bridge. Clear waterway areas are calculated by superimposing the existing and proposed bridges onto the cross section. The areas are then digitized to compute the clear(s) waterway areas." The bridge improvements will allow water to flow under the bridge more effectively without approaching the deck level.

Safety Improvements
The new bridge will improve automobile and pedestrian safety by providing pedestrian and bikeways on both sides of the road. This allows non-vehicular traffic the option of traveling on either side of Kamehameha Highway without the need to cross the highway. This improvement is valuable in both wet and dry conditions.

Traffic Volume
You are correct that the existing bridge accommodates existing traffic volumes. This will be restated to read that the bridge does not accommodate existing traffic volumes safely in conformance with Federal Bridge Design Standards. Existing lane widths are inadequate according to Federal AASHTO Federal Bridge Design Standards as are the existing bridge load capacity.

Functional Obsolescence
"Functional Obsolescence" is a technical designation that is used in the Bridge Inspection Report. The technical criteria that are used in this determination serve as the basis for this bridge replacement. The proposed improvement is not driven by political objectives other than the safe conveyance of traffic along this State highway.

Population Growth
It is not the intent of the replacement bridge to encourage further development. The bridge is not the limiting factor in population growth in the area. It is however a safety hazard and is detrimental to the long-term use of both local area residents and overall regional highway traffic. It is this Department's responsibility and obligation to ensure that all roads and highways under its jurisdiction are maintained for the safety of all residents in the State of Hawaii. The replacement of the Waiahole Bridge is simply a function of this mission.

If you have any questions or comments, please call Mr. Craig Watanabe 692-7551 or Mr. Taeyong Kim, the project environmental consultant at 528-4661.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

Appendix A

Botanical Resources Assessment

BOTANICAL RESOURCES ASSESSMENT
WAIAHOLE BRIDGE PROJECT
KO'OLAU POKO DISTRICT, O'AHU

by

Winona P. Char

CHAR & ASSOCIATES
Botanical Consultants
Honolulu, Hawai'i

Prepared for: ENVIRONMENTAL COMMUNICATIONS

August 1998

BOTANICAL RESOURCES ASSESSMENT
WAIAHOLE BRIDGE PROJECT
KO'OLAU POKO DISTRICT, O'AHU

INTRODUCTION

The Waiahole Stream Bridge is located on Kamehameha Highway (Route 83) a short distance south of Waiahole Valley Road, the main road which services the Waiahole community. A local landmark, the Waiahole Poi Factory building, is found nearby. Elevation around the bridge project site is roughly 12 feet above mean sea level. The project site is located within the Special Management Area (SMA).

The proposed project will replace the existing bridge built in the 1920's with a new, wider bridge structure. The new bridge structure will be built as close as possible to the existing bridge to reduce the difficulty of constructing the new approach roadway.

Field studies of the project site were conducted on 24 July 1998. The primary objectives of the survey were to:

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

SURVEY METHODS

Prior to the field studies, topographic maps and soil maps (Foote et al. 1972) were examined. In the field, a survey area roughly 100 feet wide on each side of the existing bridge was made; the vegetation along the approach roadway was also examined.

A walk-through survey method was used. Notes were made on plant associations and distribution, substrate types, drainage, exposure, disturbances, topography, etc. Plant identifications were made in the field.

DESCRIPTION OF THE VEGETATION

The flowering plant names used in the discussion below follow the most recent treatment of the Hawaiian flora by Wagner et al. (1990) and Wagner and Herbst (1995). The names of the ferns are in accordance with Lamoureux (1988).

Stream Area

The steep, well-defined banks of the Waiahole Stream are covered by dense clumps of elephant grass (Pennisetum purpureum), up to 12 feet tall; elephant grass is native to tropical Africa. Along the streamside, other plants which form localized mats among the elephant grass are Job's tears (Coix lachryma-jobi), native to Asia; umbrella sedge or 'ahu'awa haole (Cyperus alternifolius), native to tropical Africa; moon flower or koali pehu (Ipomoea alba), a member of the morning glory family native to Mexico; and honohono (Commelina diffusa), a succulent herb native to the Old World tropics. A thicket of hau (Hibiscus tiliaceus), a native species, is found on the makai, north side of the bridge. A few ho'i'o ferns (Diplazium esculentum) are also found here.

Just under the bridge and in the stream is a small dirt and gravel mound which supports a few plants of Crassocephalum crepidioides, kamole (Polygonum glabrum), honohono, and California grass (Brachiaria mutica).

Approach Highways

South (Kane'ohe side) of the existing bridge and mauka of the highway, there is a stand of very large, 50 to 70 feet tall, and very old trees; these are tropical almond or false kamani (Terminalia catappa), monkeypod (Samanea saman), and a banyan species (Ficus rubiginosa?). There is also a row of tall Java plum trees (Syzygium cumini) on this side of the highway. On the makai side of the highway, across from the stand of large trees, the vegetation bordering the highway consists of thick mats of elephant grass, California grass, and Guinea grass (Panicum maximum). Behind the grassy strip, koa haole shrubs (Leucaena leucocephala), 12 to 15 feet tall, form an open scrub along with vines of maile pilau (Paederia foetida) and scattered banana plants (Musa X paradisiaca).

North (La'ie side) of the existing bridge, on the mauka side, is the parking lot and Waiahole Poi Factory building and a small fruit stand. This area supports a few landscape plantings and large mango trees (Mangifera indica). Makai of the poi factory, across the highway, are large trees of Java plum, monkeypod, and the hau thicket. Beneath the hau thicket, the vegetation is sparse because of the heavy shade; barren soil predominates. Under the other trees, the ground cover consists of Guinea grass with scattered clumps of 'ape (Alocasia macrorrhiza), Chinese or Tahitian taro (Alocasia cucullata), white thunbergia (Thunbergia fragrans), honohono, Wedelia trilobata, kili'o'opu (Kyllinga brevifolia), etc.

DISCUSSION AND RECOMMENDATIONS

The vegetation on the Waiahole Bridge project site is dominated by introduced plants such as elephant grass, California grass, Java plum, Guinea grass, etc. Introduced or alien species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's discovery of the Hawaiian Islands in 1778. The only native species found during the survey was hau. Hau is indigenous, that is, it is native to Hawai'i and also throughout the Pacific and tropics.

None of the plants found during the field studies is a threatened or endangered species; nor is any plant a species of concern (U.S. Fish and Wildlife Service 1996, 1997). All of the plants can be found in similar environmental habitats throughout the Hawaiian Islands. The findings above are not surprising as most of the lowland areas in the islands have been greatly modified by humans and agricultural activities (Cuddihy and Stone 1990).

The proposed bridge replacement and widening is not expected to have a significant negative impact on the botanical resources as the vegetation on the site is dominated by introduced plants. If possible, it is recommended that the stand of very large, old trees on the mauka, Kane'ohe side of the bridge be avoided. Areas cleared of vegetation should be grassed over as soon as possible to prevent soil loss and discharge of sediments into the stream. California grass, which forms a dense mat and is already on the project site, can be used.

LITERATURE CITED

Cuddihy, L.W. and C.P. Stone. 1990. Alteration of native Hawaiian vegetation: effects of humans, their activities and introductions. Cooperative National Park Resources Studies Unit, University of Hawai'i, Manoa.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. Soil survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

Lamoureux, C.H. 1988. Draft checklist of Hawaiian pteridophytes, "Kupukupu O Hawai'i Ne'i". Lyon Arboretum, University of Hawai'i, Manoa.

U.S. Fish and Wildlife Service. 1996. Endangered and threatened wildlife and plants; Determination of endangered status for twenty-five plant species from the island of Oahu, Hawaii. Federal Register 61(198): 53089-53108.

_____ . 1997. U.S. Fish and Wildlife Service species list, plants. September 25, 1997. Pacific Islands Ecoregion Office, Honolulu, HI.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i Press and B.P. Bishop Museum Press, Honolulu. B.P. Bishop Museum Special Publication 83.

Wagner, W.L. and D.R. Herbst. 1995. Contributions to the flora of Hawai'i. IV. New records and name changes. B.P. Bishop Museum Occasional Papers 42: 13-27.

Appendix B

Aquatic and Avian Species Assessment

AQUATIC AND AVIAN SPECIES ASSESSMENT FOR THE WAIAHOLE HIGHWAY BRIDGE CONSTRUCTION PROJECT

Prepared for:
State Department of Transportation Highways Division
for Environmental Communications

Prepared by:
Ron Englund and Eric Vanderwerf
Pacific Aquatic Environmental, Inc.
758 Kapahulu Ave
Honolulu, Hawaii 96816

22 June 1998

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

EXECUTIVE SUMMARY

Pacific Aquatic Environmental, Inc. (PAE) conducted a biological assessment of the aquatic macrofauna and birds in and adjacent to lower Waiahole Stream. This assessment was conducted as part of the Waiahole Highway Bridge Environmental Assessment. Surveys were conducted for sensitive native biota that might be potentially affected by construction in and around the Waiahole Stream Channel.

No adverse impacts are anticipated to occur to native Hawaiian birds due to the small scale and temporary nature of impacts resulting from the Waiahole Highway Bridge construction project. Native waterbirds no do not appear to use this section of Waiahole Stream on a regular basis. At most, Hawaiian Stilts might occasionally visit brackish areas near the mouth of the stream, but the fast-flowing section of stream does not provide favored habitat for Hawaiian Coots or Moorhen. Native forest birds are not found in this highly-disturbed, low-elevation site. Migratory shorebirds do occur in the stream mouth area, but only in small numbers, and this area does not appear to be an important site for migratory shorebirds.

Lower Waiahole Stream in the area of the proposed bridge replacement project currently contains nursery habitat for juvenile fish and native fish species. Important native fish such as aholehole, 'ama'ama (striped mullet), and 'o'opu nakea are seasonally abundant in the area of the proposed project. Candidate endangered damselflies were not observed in the lower Waiahole Stream, and are unlikely to inhabit this area. Potential impacts resulting from this project include short-term sediment input into Waiahole Stream (and Kaneohe Bay) downstream of the Kamehameha Highway Bridge. Short-term increased sediment input will likely be unavoidable during some aspects of the bridge replacement project. However, it is unlikely that these short-term and very localized impacts will cause long or short-term damage, especially when compared to acute and long-term impacts such as the current practice of agricultural cultivation occuring next to Waiahole Stream. Impacts from this bridge replacement project will be much less than long-term, past and current chronic land use impacts in the Waiahole Stream watershed. However, as much as possible, best management practices should be employed during construction to reduce and minimize soil erosion into nearshore ocean areas

INTRODUCTION

PAE personnel conducted a biological assessment of Waiahole Stream for the Waiahole Highway Bridge Environmental Assessment. These surveys assessed native aquatic and endangered bird species that may occur in areas potentially affected by the Waiahole Bridge construction project. This report is divided into two sections: one for the avian survey and one for the aquatic survey.

The objectives of the fish and aquatic invertebrate assessment of Waiahole Stream were to 1) describe distribution and abundance of native and introduced fish species, crustaceans, mollusks, and aquatic insects, as well as introduced amphibians,

2) evaluate habitat quality for aquatic biota, and 3) evaluate potential environmental impacts associated with the completion of the Waiahole Bridge construction project.

The objectives of the avian species assessment were to 1) determine species composition of native and introduced birds, with an emphasis on Threatened and Endangered species, 2) evaluate habitat quality for native birds, and 3) evaluate potential consequences associated with the completion of the Waiahole Bridge construction project.

STUDY AREA

Fish/Aquatic Invertebrates:

Sampling stations are shown in Figure 1.

Waiahole Stream Estuary/Station 1: 0 ft elevation

The Waiahole Stream estuary extends from Kaneohe Bay to about 0.25 mi downstream of the Kamehameha Highway bridge. Riparian vegetation in this area consisted almost entirely of hau (*Hisbiscus tiliaceus*) and mangrove (*Bruguiera gymnorhiza*). Mangrove is more abundant near the bay. Substrate consisted mostly of sand, silt and decomposing organic matter.

Waiahole Station 2: 5 ft elevation

This site was located in the area upstream of Kamehameha Highway Bridge. Habitat in this area was comprised of runs and riffles with a few small eddies. Riparian vegetation was Job's tears (*Coix lachryma-jobi*) and cultivated banana (*Musa* sp.). Numerous freshly tilled agricultural fields were observed immediately adjacent to Waiahole Stream in May, 1998, slightly upstream of this station.

Birds:

Station 1a

This location comprised the mouth of Waiahole stream and the adjacent shoreline. The area was accessed from the beach park north of the stream mouth, and was surveyed by walking along the shore from the park to the mouth. The tide was high on the first visit on 19 May, and falling on the second visit on 22 May.

Station 1b

The station included portions of the stream below the bridge and above the stream mouth. This area was accessed from the dirt road starting near the bridge, and was surveyed by walking down the road and along the stream wherever possible.

RECEIVED AS FOLLOWS

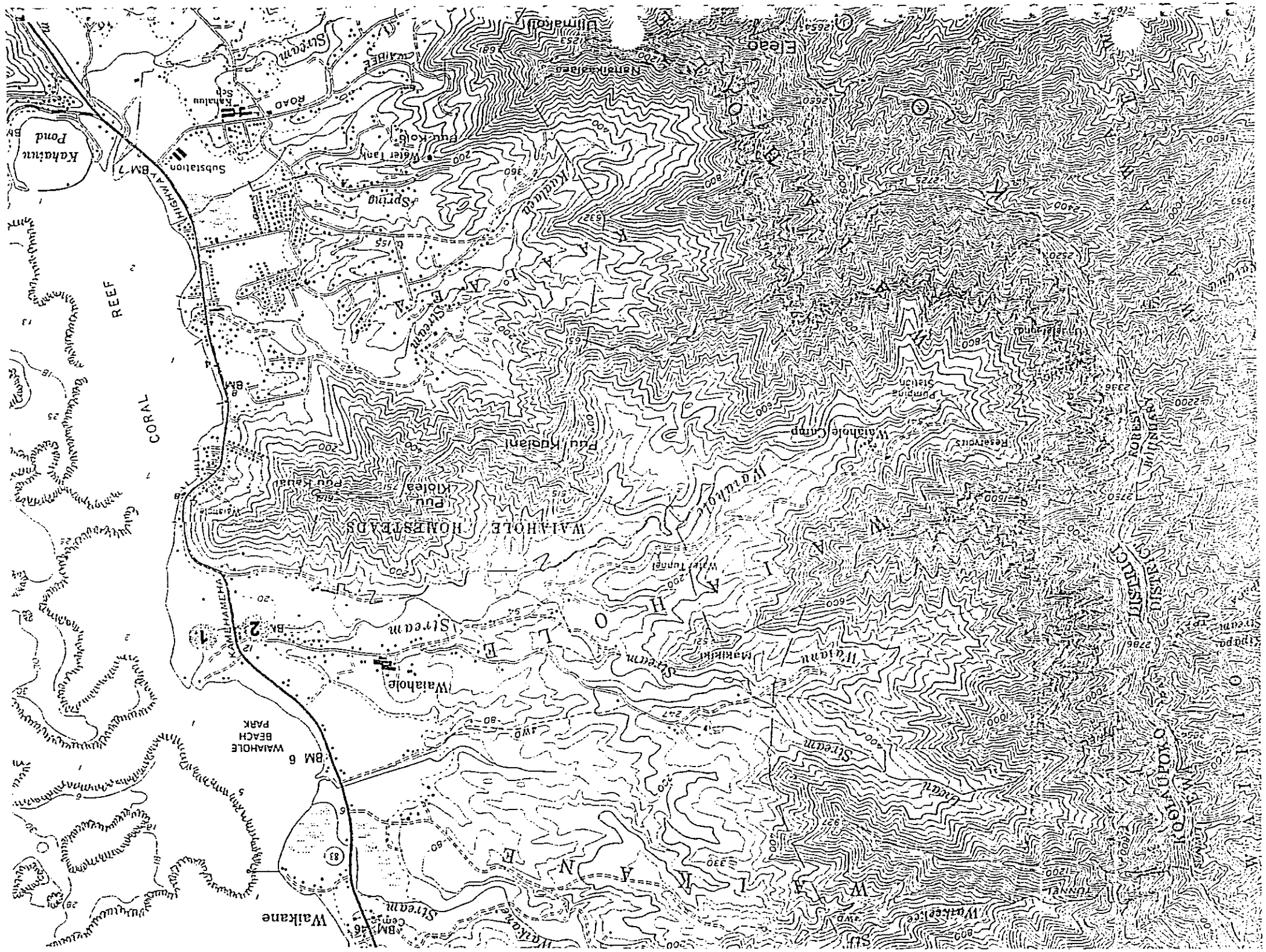

Figure 1. Sampling stations on Waiahole Stream, Oahu, May 1998.

Station 2

The first location surveyed was the area around the Waiahole stream bridge itself. This area was surveyed from the bridge and the adjacent banks, and counts of birds were made in both upstream and downstream directions.

METHODS

Avian Surveys

Representative sampling stations for native birds (see STUDY AREA) were established on Waiahole Stream in areas previously extensively sampled during 1995 (Filbert and Englund 1995). To assess the impacts on the avifauna of replacing and enlarging the Waiahole stream bridge, three locations were surveyed. Each location was visited on two occasions, 19 and 22 May 1998. The total number of each species of bird seen or heard at each location was tallied. Special effort was made to search for endangered native waterbirds, including the Hawaiian Coot (*Fulica alai*), the Hawaiian Moorhen (*Gallinula chloropus sandvicensis*), the Hawaiian Stilt (*Himantopus mexicanus knudseni*), and the Koloa or Hawaiian Duck (*Anas wyvilliana*).

Fish and Aquatic Invertebrates

Sampling stations (see STUDY AREA) were established on Waiahole Stream in areas also sampled in 1995 (Filbert and Englund 1995). By sampling the same stations it is possible to evaluate the stability of the fauna in the study area. The species composition and abundance of fish, crustaceans, mollusks, and amphibians were assessed at each station (upstream and downstream of Kamehameha Highway Bridge). The entire stream was snorkeled from upstream of the Waiahole Poi factory to the estuary.

Habitat condition for native stream animals was evaluated within sampling stations in Waiahole Stream. Because the Kamehameha Highway Bridge is so close to Kaneohe Bay, elevation at each sampling station was determined by estimating the height of the streambed above sea-level.

Aquatic insect sampling was conducted according to Polhemus (1995) and Englund et al. (1998). Collections of both immature and adult specimens were made with aerial nets and dip nets. Visual observations of aquatic insects were made between sampling stations.

Our insect sampling emphasized damselflies and dragonflies (Odonata). Damselflies in the genus *Megalagrion* are currently being studied by the U.S. Fish and Wildlife Service and personnel from the Smithsonian Institution. Six species of *Megalagrion* are candidate threatened or endangered species, or species of concern on the Federal

Register. At least three of these species occur in streams on the island of Oahu. Moreover, these damselflies give an indication of the relative 'health' of a stream system; they do not typically occur in highly disturbed areas.

RESULTS AND DISCUSSION

Avian Surveys

No endangered native water birds were observed at any of the locations on either day of the survey. In this area Waiahole Stream is relatively narrow, deep, and fast-flowing, has little aquatic vegetation, and steeply-sloping banks. The mouth of the stream is brackish, and the surrounding vegetation is dominated by mangroves. Hawaiian Moorhen do occur in taro fields on Waiahole stream upstream from the bridge, and Hawaiian Coots occur in Heeia wetland to the south (Filbert and Englund 1995), but these species generally prefer slower-moving areas of fresh water with much aquatic vegetation for cover and food (Engilis and Pratt 1993). Therefore in this location Waiahole Stream does not appear to provide suitable habitat for coots or moorhen. Hawaiian Ducks are sometimes found on streams similar to Waiahole, and it is possible that Hawaiian Ducks do occasionally use this section of stream, although none were found during this survey. Hawaiian Stilts generally require areas of shallow water for foraging. Although no Hawaiian Stilts were observed during this survey, they are very mobile and do sometimes use brackish, coastal areas for foraging (Engilis and Pratt 1993). Stilts usually are present in the fishpond at Kualoa Point and are sometimes found in the Mariculture Research and Training Center (E. VanderWerf unpublished field notes), which are less than 2 miles away. It is possible that stilts from these areas may occasionally visit the Waiahole stream mouth.

Three species of indigenous water birds were found at Station 1a near the mouth of Waiahole stream (Table 1). These species are native, but not endemic, to Hawaii, and none are endangered or threatened. The Black-crowned Night-Heron (*Nycticorax nycticorax*) was observed roosting in mangroves near the stream mouth. Night-herons are common residents in many types of wetlands in Hawaii, both fresh and saltwater. It is likely that more night-herons inhabit the grove of mangroves at the stream mouth, but they are difficult to observe during the day because they are secretive and hide in dense vegetation. The Pacific Golden Plover (*Pluvialis fulva*) and the Wandering Tattler (*Heteroscelus incanus*) are both migratory shorebirds that leave Hawaii in the summer. Both species are common in coastal areas, plovers also frequent lawns and parks, and tattlers move inland along estuaries and streams.

No native landbirds were found during the surveys. Native lands birds on O'ahu, such as the O'ahu 'Amakihi (*Hemignathus chloris*), 'Apapane (*Himatione sanguinea*), and 'Elepaio (*Chasimepis sandwichensis ibidis*), are found only in less disturbed areas at higher elevations (Hawaii Audubon Society 1992). All three of these species occur at higher elevations in Waiahole Valley, primarily above 400 feet (Filbert and Englund 1995). None of these species are expected to occur at this site.

A variety of introduced landbirds were found at each location (Table 1). Many species of introduced landbirds occur on O'ahu, and it is likely that additional species would be found if more visits were made to the site. This section of Waiahole Stream does not appear to be regularly used by endangered waterbirds, although the stream itself occasionally might be used by Hawaiian Ducks, and the stream mouth could be visited by Hawaiian Stilts. The stream mouth area is used by small numbers of migratory shorebirds, which occur in Hawaii in the Winter, Spring, and Fall. This area has many species of introduced landbirds, which is typical of lowland areas on O'ahu.

Table 1. Numbers of each bird species observed at each of the three sampling locations on each day.

		Location		
Bird species	Date	1a	1b	2
Black-crowned Night-Heron (*Nycticorax nycticorax*)	19 May	1	0	0
	22 May	1	0	0
Pacific Golden Plover (*Pluvialis fulva*)	19 May	1	0	0
	22 May	0	0	0
Wandering Tattler (*Heteroscelus incanus*)	19 May	1	0	0
	22 May	0	0	0
Spotted Dove (*Streptopelia chinensis*)	19 May	0	3	1
	22 May	0	3	1
Zebra Dove (*Geopelia striata*)	19 May	0	2	0
	22 May	0	4	0
Red-vented Bulbul (*Pycnonotus cafer*)	19 May	0	4	2
	22 May	0	3	3
Japanese Bush-Warbler (*Cettia diphone*)	19 May	0	0	2
	22 May	0	0	2
White-rumped Shama (*Copsychus malabaricus*)	19 May	0	0	2
	22 May	0	0	3
Common Myna (*Acridotheres tristis*)	19 May	0	3	3
	22 May	0	2	4
Japanese White-eye (*Zosterops japonicus*)	19 May	2	3	4
	22 May	2	4	6
Northern Cardinal (*Cardinalis cardinalis*)	19 May	0	0	2
	22 May	0	0	1
House Finch (*Carpodacus mexicanus*)	19 May	0	2	0
	22 May	0	2	0
House Sparrow (*Passer domesticus*)	19 May	0	2	0
	22 May	0	3	0

Fish and Aquatic Invertebrate Surveys

Comparing 1995 to the 1998 surveys, similar numbers species were encountered. In 1995 a total of 23 species were found at Stations 1 and 2, while 25 aquatic species were found in this area in 1998 (Table 2). No candidate endangered or native *Megalagrion* damselflies were captured or observed at any time during this study or in 1995. All five native 'o'opu species are found within the entire length of Waiahole Stream (Filbert and Englund 1995), but only three species were observed at Sites 1 and 2 during this study and in 1995. 'O'opu nakea (*Awaous guamensis*), 'o'opu naniha (*Stenogobious hawaiiensis*), and 'o'opu akupa (*Eleotris sandwicensis*) were common throughout the current study area. Additionally, native fish such as 'ama'ama or striped mullet (*Mugil cephalus*), and aholehole (*Kuhlia sandvicensis*) were also common from above the Kamehameha Highway Bridge downstream to the estuary. An introduced mullet species, *Moolgarda (*formerly *Valamugil) engeli* was also common in the lower reaches of Waiahole estuary. 'Ama'ama were more common in less saline areas further upstream of the estuary.

Introduced fish in the Poeciliidae family were also common in this area. Large mollies (*P. mexicana*) predominated, but guppies (*P. reticulata*) and green swordtails (*Xiphophorus helleri*) were abundant in lower Waiahole Stream both in 1995 and in 1998. Tilapia (*Sarotherodon melanotheron*) were probably the most abundant species in lower Waiahole Stream estuary and lower stream area both in 1995 and 1998.

The native mollusk, hapawai (*Neritina vespertina*) was collected on the first and second riffles upstream of Kaneohe Bay both in 1995 and 1998. This species was found in no other part of Waiahole Stream. Hapawai were depositing eggs on the cobbles in these areas indicating that reproduction continues to occur downstream of Waiahole bridge.

The majority of fish captured in the estuary were 'ama'ama (*Mugil cephalus* and *Moolgarda engeli*) and aholehole (*Kuhlia sandvicensis*), as tilapia are often more difficult to capture with our sampling gear (seines). Above the influence of saltwater, the ichthyofauna was dominated by the introduced poeciliids, *Poecilia mexicana*, *P. reticulata*, and *Xiphophorus helleri*.

Table 2. Distribution of native and introduced aquatic biota in Waiahole Stream, Oahu from 1995-1998 (Includes current survey; and data from Filbert and Englund 1995).

Taxon	Elevation (ft) 1995 0-5 ft	Elevation (ft) 1998 0-5 ft	Threatened and Endangered Status	Geographic Status
Fish				
'O'opu nakea (*Awaous guamensis*)	X	X	None	Indigenous
'O'opu naniha (*Stenogobius hawaiiensis*)	X	X	None	Native Endemic
'O'opu akupa (*Eleotris sandwicensis*)	X	X	None	Native Endemic
Aholehole (*Kuhlia sandvicensis*)	X	X	None	Native Endemic
'Ama'ama (*Mugil cephalus*)	X	X	None	Indigenous
Mullet (*Moolgarda engeli*)	X	X	None	Introduced
Guppy (*Poecilia reticulata*)	X	X	None	Introduced
Liberty molly (*P. mexicana*)	X	X	None	Introduced
Green swordtail (*Xiphorphous helleri*)	X	X	None	Introduced
Blackchin tilapia (*Sarotherodon melanotheron*)	X	X	None	Introduced
Crustaceans				
'Opae 'oeha'a (*Macrobrachium grandimanus*)	X	X	None	Native Endemic
Tahitian Prawn (*M. lar*)	X	X	None	Introduced
Crayfish (*Procambarus clarki*)	X	X	None	Introduced
Crenulated blue crab (*Thalamita crenata*)	X	X	None	Native
Haole crab (*Portunus sanguinolentus*)	X	X	None	Introduced
Mollusks				
Hapawai (*Neritina vespertina*)	X	X	None	Native Endemic
Snail (Thiaridae)	X	X	None	Introduced
Insects				
Damselflies/dragonflies (Odonata)				
Damselfly (*I. ramburi*)	X	X	None	Introduced
Dragonfly (*Pantala flavescens*)		X	None	Indigenous
Dragonfly (*Orthemis ferruginea*)	X	X	None	Introduced
True flies (Diptera)				
Aedes albopictus	X	X	None	Introduced
Shore fly (Dolichopodidae)		X	None	prob. Native
Caddisflies (Trichoptera)				
Cheumatopsyche pettiti	X	X	None	Introduced
Amphibians				
Bullfrog (*Rana catesbeiana*)	X	X	None	Introduced
Giant marine toad (*Bufo marinus*)	X	X	None	Introduced

ENVIRONMENTAL CONSEQUENCES

Avian Species (Native Birds):

No adverse impacts are anticipated to occur to native Hawaiian birds due to the small scale and temporary nature of impacts resulting from the Waiahole Highway Bridge construction project. Native waterbirds no do not appear to use this section of Waiahole Stream on a regular basis. At most, Hawaiian Stilts might occasionally visit

brackish areas near the mouth of the stream, but the fast-flowing section of stream does not provide favored habitat for Hawaiian Coots or Moorhen. Native forest birds are not found in this highly-disturbed, low-elevation site. Migratory shorebirds do occur in the stream mouth area, but only in small numbers, and this area does not appear to be an important site for migratory shorebirds.

Fish and Aquatic Invertebrates

Lower Waiahole Stream in the area of the proposed bridge replacement project currently contains nursery habitat and important native fish species. Native fish such as aholehole, 'ama'ama, and 'o'opu nakea are seasonally abundant in the area of the proposed project. Candidate endangered damselflies were not observed in the lower Waiahole Stream, and are unlikely to inhabit this area. Potential impacts resulting from this project include increases in short-term sediment input into Waiahole Stream (and Kaneohe Bay) downstream of the Kamehameha Highway Bridge. Short-term increased sediment input will likely be unavoidable during some aspects of the bridge replacement project. As much as possible, best management practices (BMP's) should be employed. Some BMP's could include sediment retention cloths and minimizing the amount of time heavy equipment is in the stream channel during construction.

However, it is unlikely that these short-term and very localized impacts will cause long-term damage, especially when compared to acute and long-term impacts such as agriculture next to Waiahole Stream. For example, in May 1998, many acres of freshly tilled agricultural land were observed next to Waiahole Stream opposite Waiahole Elementary School. Substantial precipitation would have displaced much of this bare soil as sediment into Waiahole Stream. Other potential agricultural impacts include increased nutrient input due to fertilizer use, and runoff of pesticides and herbicides into the stream and Kaneohe Bay. Impacts from this bridge replacement project will likely be much less than long-term, past and current chronic land use impacts in the Waiahole Stream watershed.

By itself the Waiahole bridge construction project should have few short-term adverse impacts if BMP's are implemented adequately. If there is additional sediment input into Waiahole Stream due to the bridge replacement project, then this will add to existing sediment input occurring from current land-use practices. It is unfortunate for aquatic biota in Waiahole Stream and in Kaneohe Bay that buffer zones are not maintained around agricultural activities. Cumulative impacts are currently adding to the sediment load in Waiahole Stream, and include livestock grazing (see Photo 1) on the banks of Waianu Stream (a Waiahole tributary). This creates an obvious increase in erosion of the streambanks, and increases sedimentation in the important lower reaches of Waiahole Stream. Other cumulative impacts in Waiahole Valley include agricultural cultivation (e.g., banana fields, ginger farms, etc.) with bare soil next to the streambanks, and such activities as caterpillar tractors crossing the stream channel just below the junction of Waiahole and Waianu Streams. In December 1994, grading and stream channel alterations by caterpillar tractors were also observed just downstream of Waiahole bridge. All these past and current land-use practices increase sediment input into Waiahole Stream and Kaneohe Bay.

However, any increase in sediment input due to the bridge replacement project would not be beneficial to stream or Kaneohe Bay biota and should be avoided. As mentioned previously, the lower Waiahole Stream area contains significant aquatic biota and this area serves as juvenile nursery habitat for economically and recreationally important fish species. Additionally, a healthy population of the native stream mollusk, hapawai, are found in this area. Hapawai appear to be sensitive to environmental disturbance as remnant populations are found in only a few Oahu streams. Thus, as much as possible, additional sediment inputs into Waiahole Stream should be avoided.

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PHOTOGRAPHIC RECORD

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Photo 1: Waianu (Tributary to Waiahole) Stream with eroding banks (1995)

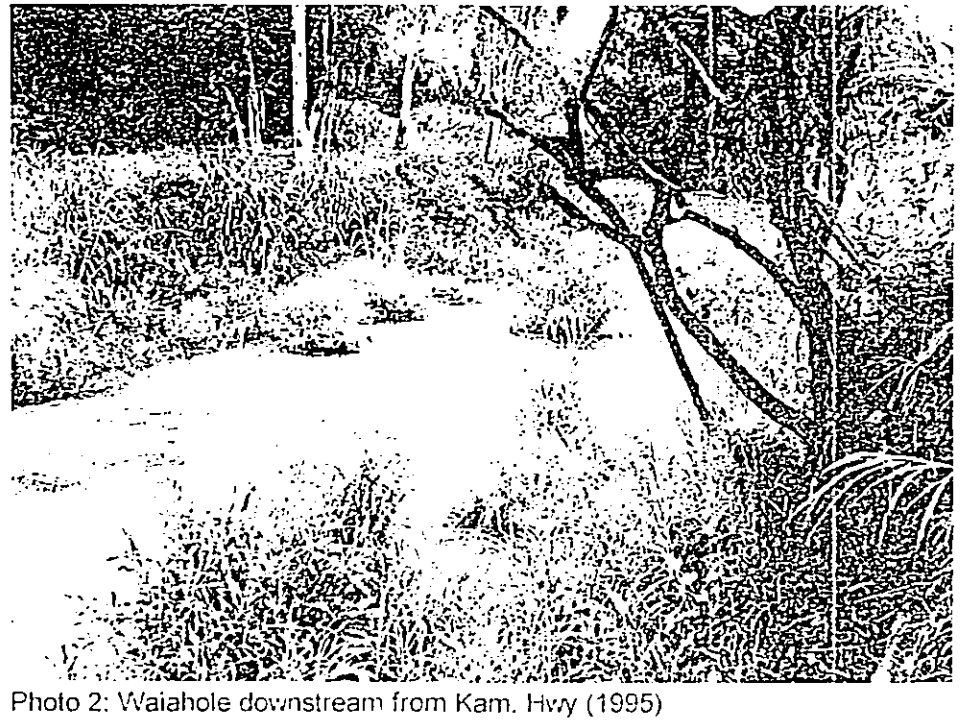

Photo 2: Waiahole downstream from Kam. Hwy (1995)

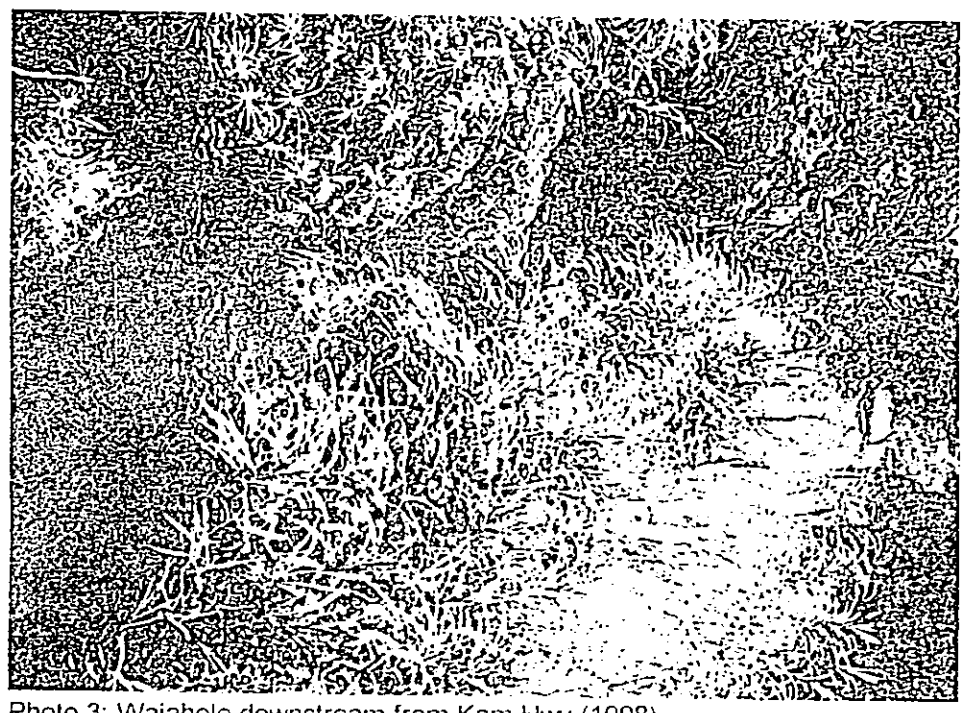

Photo 3: Waiahole downstream from Kam Hwy (1998)

Photo 4: Waiahole upstream from Kam Hwy (1998)

Appendix C

Cultural Impact Assessment

CULTURAL IMPACT ASSESSMENT FOR THE WAIĀHOLE BRIDGE REPLACEMENT PROJECT, WAIĀHOLE *AHUPUA'A*, KO'OLAUPOKO DISTRICT, ISLAND OF O'AHU

TMK 4-8-01

by

Rodney Chiogioji, B.A.
Kristina W. Bushnell, B.A.
and
Hallett H. Hammatt, PhD

Prepared for
Environmental Communications, Inc.

Cultural Surveys Hawai'i, Inc.
August 2003

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I. INTRODUCTION

A. Background

At the request of Environmental Communications Inc., Cultural Surveys Hawai'i, Inc. has conducted a cultural impact assessment of a proposed Waiāhole Stream bridge replacement project in the *ahupua'a* of Waiāhole, Ko'olaupoko District, on the island of O'ahu (Figures 1 & 2).

The existing Waiāhole Bridge was built in 1922 (Figures 3&4). It is planned for demolition and replacement by a new bridge of approximately 106-feet in length. The bridge will support two travel lanes of 12-feet with 11-foot shoulders for pedestrian and emergency use. During construction of the new bridge, a temporary detour road and culvert will be constructed approximately 40-feet makai (east and downstream) of the existing bridge.

The purpose of this cultural impact assessment is to consider the effects the bridge replacement project may have on native Hawaiians, their culture and their right to practice traditional customs. The Hawai'i State Constitution, Article XII, Section 7 protects "all rights" of native Hawaiians that are "customarily and traditionally exercised for subsistence, cultural and religious purposes."

The suggested "Guidelines for Assessing Cultural Impacts" issued by the Office of Environmental and Quality Control (OEQC) discuss the types of cultural resources, practices and beliefs that might be assessed. The Guidelines read:

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man-made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The primary focus of this assessment is the Waiāhole Bridge project area. However, the assessment also considers cultural resources, practices and beliefs within the broader context of Waiāhole *ahupua'a* that are relevant to assessing the role of the project area within the *ahupua'a*.

B. Scope of Work

The following Scope of Work (SOW) was followed to satisfy requirements related to Hawaiian customary and traditional rights and their applicability to the Waiāhole Bridge replacement project area:

1. Examination of historical documents, Land Commission Awards, historic maps, and oral histories with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2. A review of the existing archaeological information pertaining to the sites in the vicinity as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the project area and identify present uses, if appropriate.

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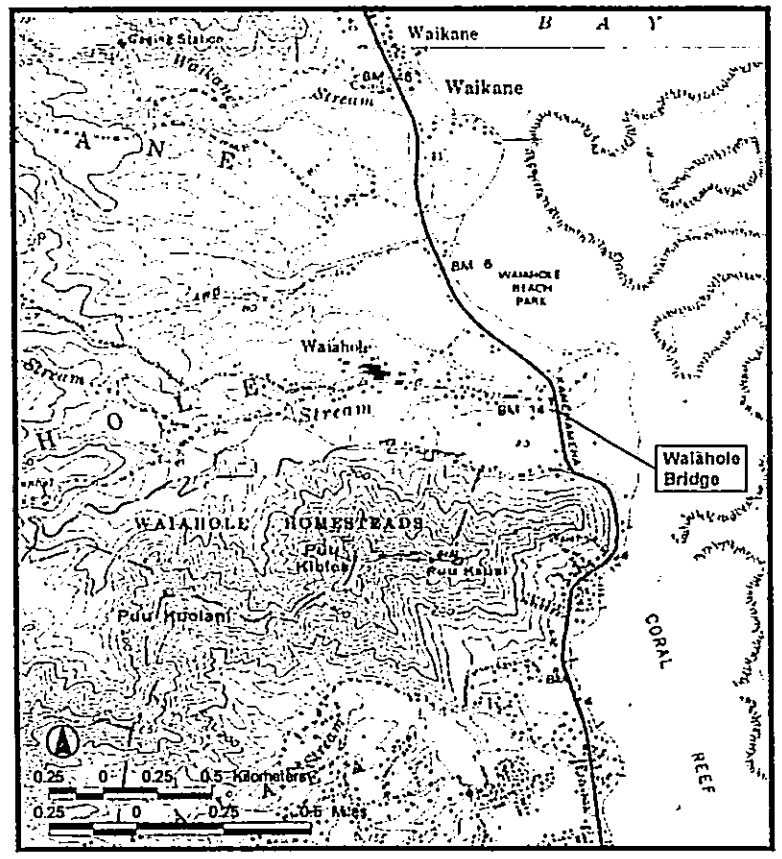

Figure 1 USGS Topographic Map, Kaneohe Quad, Showing the Location of the Waiāhole Bridge Project Area

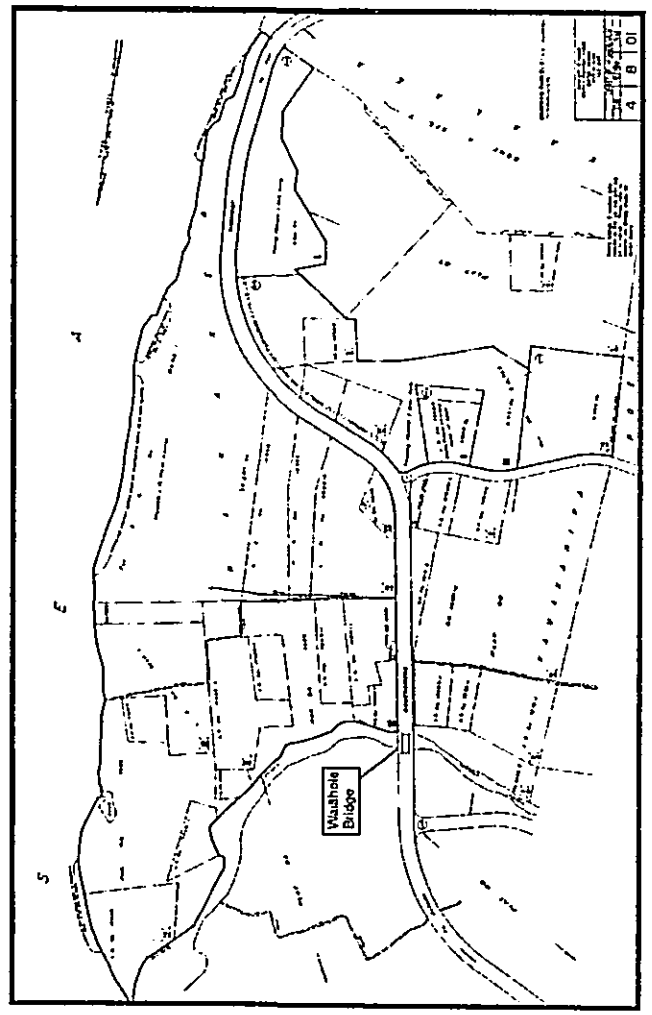

Figure 2 TMK 4-8-01 Showing the Location of the Waiāhole Bridge Project Area

Figure 3 **Present Waiāhole Bridge, view to southeast**

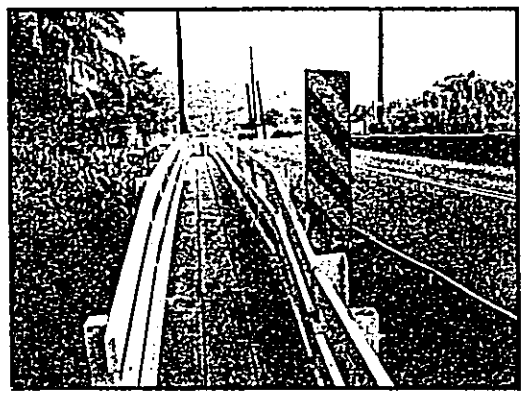

Figure 4 **Present Waiāhole Bridge, view to northwest**

3. Conduct oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region.
4. Preparation of a report on items 1-3 summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified.

C. Methodology

Historical documents, maps, and photographs were researched at: the Hawai'i State Archives; the Survey Office of the Department of Accounting and General Services; the Hawai'i State Library; the Bernice Pauahi Bishop Museum archives and library; Hamilton Library at the University of Hawai'i at Mānoa; the Mission Houses Museum Library; the State Historic Preservation Division (SHPD) library; and the library of Cultural Surveys Hawai'i.

Hawaiian organizations, government agencies, community members and cultural and lineal descendants with ties to Waiāhole *ahupua'a* were contacted to: (1) identify potentially knowledgeable individuals with cultural expertise and knowledge of the project area and the surrounding vicinity, and (2) identify cultural concerns and potential impacts within the project area. A discussion of the community contact process is found below in Section V of this report.

D. Identification of Knowledgeable Interview Informants

Based on recommendations from organizations and the community, four *kama'āina* were identified with whom interviews were conducted. The four interviewees were: Kaipo Faris, Calvin Hoe, Richard Paglinawan, and John Reppun. All of the interviewees except Mr. Faris are current or former residents of Waiāhole. All of the interviewees have knowledge of the Waiāhole bridge project area through cultural or professional contact.

Interview summaries and excerpts are presented below in Section VI of this report. Full transcripts of the interviews may be found in the appendices to this report.

E. The Interview Process

Once potential participants were identified, they were contacted by telephone or in person. If the individual expressed a willingness to participate, an appointment was scheduled at a location of the individual's choosing. Following the interview's completion, it was transcribed. The interviewees were given the opportunity to review the typed transcript for corrections, editing and additions. No interview material was used in this study without an "Authorization for Release" form signed by the interviewee.

II. WAIĀHOLE TRADITIONS AND LEGENDS

Traditions and legends focused on Waiāhole have been preserved by pioneering Hawaiian historians and cultural preservationists. These traditions and legends suggest that Waiāhole *ahupua'a* was well-established and well-known in the consciousness of the Hawaiian people in pre-contact times. The *āhupua'a*'s taro cultivation is especially highlighted in the legends and traditions.

Mary Kawena Pukui (1983:180) relates a poetical saying referring to the demi-god Maui at Waiāhole, probably drawing upon Samuel M. Kamakau's 1869 account also presented below:

> *Ke ala kike'eke'e a Maui.*
>
> The winding trails of Maui.

She explains:

> Trails made by Maui when he was pursued by those who wished to destroy him. One trail was at Waiāhole, O'ahu, one at Ke̔ka'a between Lahaina and Kā'anapali, and the third at Kealakahakaha, Kahakuloa, Maui.
>
> Samuel M. Kamakau relates that:
>
> *Ua 'ōlelo ia o Maui a Kalana kekāhi ali'i kahiko loa i hana i nā alanui i ka wā he iwakalua a keu keneturia mamua, akā, ma kona ano mo'olelo, ua hanaia nā alanui a pololei loa. Ua ma'a nā kānaka i ka hele ma ka pololei o ke alanui, akā i ke alualu ana o kekāhi po'e e pepehi ia Maui, ua hele kike'eke'e 'oia i ke alanui, a ua kapaia o "ke alanui kike'eke'e a Maui," aia ma Waikāne me Waiāhole ma Ko'olaupoko i O'ahu...* (Ke Au 'Oko'a October 14, 1869).
>
> Maui, son of Kalana, was one of the ancient chiefs of Maui who made roads twenty centuries ago. The roads in his day were straight, and the people were accustomed to running along straight roads; so when certain persons ran after Maui to kill him he made the road go zigzag and it was called "the zigzag road of Maui." (ka alanui kike'eke'e a Maui). One is at Waikāne and Waiāhole in Ko'olaupoko on O'ahu...

This myth may account for some of the winding roads in Waiāhole. It might be the explanation as to why the path is in a certain location or has a certain configuration such as switch-backs. Alternatively this may be a traditional explanation associated with the stream named Wai-ke'eke'e (lit. "crooked water") in the adjacent *ahupua'a* Waikāne.

Another poetical saying (Pukui 1983:186) was:

> *Ke kalo pa'a o Waiāhole.*
>
> The hard taro of Waiāhole.

She explains, probably drawing upon the 1865 account of Kaehuaea given below:

> A reminder not to treat others badly. One day, a man went to Waiāhole, O'ahu, to visit his sister, whom he had not seen for many years. She was absent, and her husband neither asked the stranger in nor offered him any food. When hunger possessed the visitor he asked if he might have some taro to eat. His brother-in-law directed him to his taro patches and told him to get some from there. The man went to the patches and then continued on his way. When the woman returned she was told of the visitor, and by her husband's description she knew that it was her brother. She rebuked him for his lack of hospitality. When they went to their taro patches they found all the taro pulled up and hacked to pieces.

Kachuaea (1865) relates the following account in his "Na mea Kaulana o Waiahole" (The famous things of Waiahole):

Ma ka'u mea i lohe ai, i na kama'āina o keia 'āina no na mea kaulana i hanaia i ka wā kahiko.

Ka mua o kahi i hānau ai o Kuali'i; ka hope o ki'i kalu-pa'a i Waiāhole

Ua haiia ma ka Papa Kuhikuhi makahiki o nā mea kaulana o Hawai'i nei. "Helu 1., ma Kalapawai i Kailua kona wahi i hānau ai." 'A'ole pela ka pololei, eia noia. O kona wahi i hānau ai, ma Waimuku i Waiāhole; a o kahi i hanai ia'a o Mokoli'i; a o kahi i noho ai i ke kapu ali'i & ke kapu Heiau, 'oia o Kalapawai i Kailua; o kahi i ao ai i ke kukini ma Alele, he kula loa, a laula no hoi no ka mea, 'a'ole i ike pono ia kahi i hanau ai keia ali'i. Manuli o ke mele i ho'omaopopoia'i, no ka mea, i nā ali'i a pau a 'ākoakoa ana ma Kalapawai i Kailua, maloko hoi o kekahi hale nui; a o Kūali'i pu kekahi e noho ana. Ho'oho like ae la ka leo o nā'li'i, penei: "I hea kou wahi i hānau ai, nau-ā?" 'Elua a 'ekolu ho'oho ana pela, ekemu mai la o Kūali'i ma ka leo mele penei: "I Waiomuku 'āina kahakai, nau-ā." A lohe nā'li'i i ka leo o ke Ali'i, pilihua iho la lākou, me ka no'ono'o nui, me ka nīnau ana iho, "Aia la i hea ia wahi?" Eia ka i Waiāhole nei. Nolaila ina paewaewa ka'u, e pane ma no mai ohumu. E hoi ae au e kamailio ia ki'i kalo-pa'a i Waiāhole.

Ua kaulana o ki'i kalo-pa'a i Waiāhole me ka mana'o paha o ka lehulehu, he paakiki maoli io no ke kalo. 'A'ole pēlā eia wale no, ua kaulana o ki'i kalo-pa'a i Waiāhole mamauli o ka hana kupanaha a kekahi kanaka, 'oia o Kuapunohu, he kanaka koaia, e hele huli hoa paio ana ia nona ma Ko'olaupoko; aia hoi e noho ana kona kaikuahine ilaila me kana kāne o Imaole. Ua hele nae kona kaikuahine i ka lawaia, a o ke kaikoeke wale no ko ka hale. Pane aku la ka malihini i ke kama'āina, "'A'ohe nae paha a oulua ai?" Kama'āina "He ai no, aia la iwaena (kaika). No'ono'o iho la ka malihini, e pilikia ana ia no ka pololei, ninau hou aku la ka malihini i ke kama'āina "Auhea i kou 'olua waena?" Kuhikuhi pololei aku la ke kama'āina, o ko ianei hele no ia a hiki ma kuauna o ka loi, o ko ianei uhaki ae la no ia i ka welau o ka ihe aia nei, a ho'olilo iho la ia mea i hea-a, lalau aku la ia elua kalo kalikoli a li'ili'i, ho'ouka maluna o ke ahi. Pēlā kana hana ana a lilo i mea nui, a pau loa ka loi okoa & ka (Eka okoa) a pupuhi aku la kela i ke kai o Ukoa, akola, wahi a Kuapunohu, ke heo la kela.

'Oia iho la nā wahi mea kaulana ma Waiāhole ma ka'u ike & ko'u lohe. Pau aku la ka'u o ka 'oukou koe. Owau no me ka mahalo. B. Kaehuaea, Waiāhole.

The solid taro of Waiāhole, according to the opinion of the public, was a very hard taro. It was not so, it became famous because of the strange deeds of a man, Kuapunohu, a warrior. He went about Ko'olaupoko to find some one to challenge.

> His sister was living there with her husband Imaole. She went fishing while he remained at home. The stranger said to the native son, "Have you two any food?" The native son answered, "We have food but standing in the patch." The stranger thought that he was going to have to suffer with hunger so he asked the native, "Where is your patch?" The native gave him specific directions and he went 'til he came to the border of the taro patch. Here he broke off the tip of his spear and used it as a prod. He reached out for two taros, cut them into small pieces and laid them on the fire. He continued doing this until he made a big work, clearing up the whole patch of four acres and burning it up like the blowing away of the sea of 'Uko'a. "Serves him right." said Kuapunohu as he went off. (Na Mea Kaulana o Waiāhole, Ku'oko'a Sept. 16, 1865)

This myth describes land usage, and the attitude and values of the people previously living in the Waiāhole region. Waiāhole has fertile soil, and was renowned for the cultivation of taro. The saying would appear to be a rebuke to the attitudes of the residents once living there who may have had a reputation as not being very accommodating and hospitable towards strangers. When a resident fails to offer food and accommodations to a stranger on his land (his brother-in-law), his wife later finds out and rebukes him for his lack of hospitality towards his brother-in-law. When the man allows the stranger to help himself to some taro, and doesn't bother to help the stranger, he eventually pays for his laziness and unaccommodating attitude. He learned his lesson later when he saw that all his taro was pulled up and wasted by his brother-in-law.

In the legend of Halemano (Fornander,1919 Vol. V, Part II), Halemano [the romantic anti-hero of O'ahu] met up with the heroine of this tale, Kamalālāwalu (a Fickle Puna, Hawai'i Island princess) in Wailua, O'ahu. There, they resumed living together but their living situation wasn't as harmonious as it was before. With her sad and unfulfilled heart, Kamalālāwalu set out and journeyed:

> *Holo mai la o Kamalālāwalu... a Kualoa. Loa'a o Waiāhole, he 'li'i no laila e noho ana, a'ohe ana wahine; lawe a'e la ia ia Kamalālāwalu i wahine nana, a noho iho la lāua ma laila.*
>
> She journeyed to ... Kualoa where she met Waiāhole, a chief of that place who was a single man. He took Kamalālāwalu as his wife and they resided there [near Kualoa] together.

When Hua'a the King of Puna received word that Kamalālāwalu was residing on O'ahu with another chief he said:

> *Ae, ua lilo ka kaua waiwai ia ia no kona kino, aka, aole i loaa ia kaua kona kino, nolaila, e holo kaua e kaua i kona wahi i noho ai.*
>
> Yes, we have given her our properties with the idea of getting her to be our wife, but we did not succeed. Let us therefore go and make war on those with whom she is now living.

King Hua'a did just that. He sent a massive fleet of men in about eight thousand canoes (he mau man wa'a) to make war with chief Waiāhole's people. King Hua'a's men landed at Makapu'u.

> *...a makaukau lākou, hele mai la lākou mauka a hiki i Kāne'ohe. Ho'omaka ke kaua, ma ia kaua ana, ua he'e honua o O'ahu nei, a ua luku ia o Waiāhole.*

> ...they advanced overland, going by way of Kāne'ohe. At Kāne'ohe proper they met the enemy and the fighting began. Early in the battle O'ahu was routed and a great slaughter took place at Waiāhole.

After the battle, Kamalālāwalu was found alive and taken by the Kings of Hawai'i, Hua'a and Kulukulua, back to Hawai'i Island.

This tale presents the idea of a massive slaughtering of Hawaiians in the Waiāhole area (or of the forces of the chief Waiāhole) during a battle over possession of a princess, but the historical accuracy of this tale remains uncertain. If there was such a great slaughter of the forces of Waiāhole it could have been elsewhere at Luluku (Lit. "Destruction") in upland Kāne'ohe for example.

Fornander (1919, Vol. V, Number I, pp. 214-225) relates the legend of Kapunohu which has many motifs similar to both Kaehuaea's account of Kuapunohu (magic spear, strife with brother-in-law as a result of a perceived slight over food) and the legend of Halemano (a big island chief comes to visit an O'ahu woman, lands at Makapu'u, and slays the forces of O'ahu) and explains the proverb of the hard taro of Waiāhole. In this legend the strife with a brother-in-law as a result of a perceived insult over food is clearly set in Kohala, Hawai'i Island. After many adventures, Kuapunohu visits his sister named Konahuanui in Ko'olaupoko, O'ahu and harvests fabulous quantities of taro to eat. For reasons unexplained:

> *...a mai la ke ahi, pela no kana hana mau ana, a lilo iho la ke kalo i wahie no ke ahi. Nolaila, ma kēia hana ana a Kapunohu, ua kapaia "kalo pa'a o Waiāhole," he 'ōlelo kaulana loa ia mai Hawai'i a Ni'ihau.*
>
> When the fire lit, he took some of the taro and cut it up and threw the pieces into the fire and in this way used the taro for firewood. Because of this action of Kapunohu, the saying "the hard taro of Waiāhole" is known from Hawai'i to Ni'ihau.

In the legend of Kapunohu the hero's fabulous strength in pulling taro (presumably from Waiāhole) recommends him to his brother-in-law Olopana. Olopana makes Kapunohu his commander in battle (*'alihikaua*); Kapunohu goes on to kill the ruling chief of O'ahu, Kākuhihewa; and Olopana rules all of O'ahu.

Raphaelson (1929:24) reported Waiāhole's fame as the place "where hard taro grows, taro so hard that *'hoi kalopa'a i Waiāhole'* is a catchword that means an obstinate man."

Raphaelson (1929:24) goes on to relate: "There is a beautiful tale about Waiāhole and Waikāne, a place beyond. These two were man and wife, it is said. They loved each other for many years, and even today their mists embrace in the upper clouds."

Waiāhole was clearly considered a desirable and well-watered land. Samuel Kamakau relates that:

> *I ka lilo ana o ke aupuni i ke au o ke aupuni ia Kamapua'a o O'ahu, ua lilo ka nui o na 'āina inoa wai i ke kahuna ia Lonoawohi, aka nae, mahope iho, ua ho'oponopono la ka 'āina e Kahikiula a me na kaikua'ana o Kamapua'a, no ka pau loa o na 'āina inoa wai i ke kahuna, a no ka mana'o ia no hoi o pili pa'a loa ka 'āina pelā i ka papa kahuna, nolaila, ua ha'awi pa'a ia na 'āina o ka papa kahuna, oia o Waimea, Pūpūkea, Waiāhole a me Hakipu'u, a ua pili pa'a ia mau*

ʻāina i ka papa kahuna mai kahiko loa mai a hiki i ke au o Kahahana. I ke ao hoi o Kehekili a me Kalanikūpule, ua haʻawi no i ka laua mau kahuna, a pelā no i ke au o Kamehameha I. - Ua lilo o Waimea i ka papa kahuna a Paʻao, a o Pūpūkea, no ka papa kahuna a Kaualiʻi, a o Waiāhole, no ka papa kahuna a Lonoamauki...

When O'ahu came under the rule of Kama-pua'a, he gave the land containing the word wai to the kahuna Lono-a-wohi to distribute. Later the land was redistributed by Kahiki-'ula and the older brothers of Kama-pua'a because the kahunas had a monopoly of the well-watered lands, and the kahuna class were given the lands of Waimea, Pūpūkea, Waiāhole, and Hakipu'u in perpetuity, and these were held by them until the days of Kahahana. Kahekili and Kalanikūpule confirmed this gift to the kahunas, and so did Kamehameha...Waiāhole belonged to the priests of Lono-mauki. ("Ka Nupepa Ku'oko'a" November 16, 1867)

III. CULTURAL AND HISTORICAL BACKGROUND

There have been numerous studies done on the Ko'olaupoko District of O'ahu and a great deal of primary research has been carried out on the *ahupua'a* which border Kāne'ohe Bay, including Waiāhole. The following background summary builds upon three of these studies in particular: *Land Use at Waiāhole Valley Oahu* by Michihiro Miyagi (1963), *Sites of Oahu* by Sterling, and Summers (1978), and *Kane'ohe: A History of Change* by Dennis M. Devaney *et al.* (1982).

A. Traditional Land Use

The district of Ko'olaupoko was rich in many of the resources utilized by traditional Hawaiians. The exploitation of marine resources is evidenced by the many fishponds around the coastal fringe of Kāne'ohe Bay and by the presence of numerous fishing shrines. It has also been recognized that traditional land divisions within the district (*ahupua'a* and *'ili*) extended out into the sea, delineating discrete fishery areas. Inland from the coast, rich alluvial soils, an equable climate, and abundant water supply allowed the extensive cultivation of traditional crops, especially wetland taro. Handy and Handy characterized the *ahupua'a* in the region as each having

> ...a broad coastal plain which was converted by Hawaiians into an almost continuous expanse of lo'i irrigated with water from large streams flowing out of the deep valleys that cut back into the Ko'olau range. The hinterland must have produced great quantities of sweet potato, yam, banana, upland taro, wauke, olonā, and 'awa. Undoubtedly the population was large... (1972:452)

The valleys were described by early visitors to the region as "in a high state of cultivation". Evidence of prehistoric field systems (*lo'i*) and irrigation channels (*'auwai*) has been found throughout the valley floors. The upland forests and ridges that divide the valleys undoubtedly contained a wide variety of valuable resources as well, one of which is known to have been a high-quality basalt that was quarried and used in the manufacture of stone tools.

Archaeological sites identified within Waiāhole reflect many of the traditional activities associated with the utilization of these resources, including agriculture, habitation, tool manufacture, and religious observance. Irrigated taro fields have been identified along the stream beds from the upper reaches of the valleys to where the streams meet the sea. Adze quarries have been identified on the ridges between the valleys, and evidence of the manufacture of stone tools has been found throughout the valley floors. The quarry sites that comprise the Waiāhole Quarry Complex, have been recommended for inclusion in the National and State Registers.

Dating analyses from archaeological studies suggest that occupation of Waiāhole Valley may have begun around AD 1200 (Tomonari-Tuggle and Tuggle 1984:1-16), while the bulk of activities probably occurred in late prehistoric and early historic times (Shapiro *et al.* 1988:36; Dunn *et al.* 1990:14). Early census data indicate that in 1831-32, a total of 419 persons lived within the two valleys of Waiāhole/Waikāne (Schmitt 1973:19). The population was probably considerably higher at the time of European contact though, since by the 1830s, the native Hawaiian population had already been severely diminished by contact with western diseases. Also, many of the native inhabitants from these outlying districts had begun moving to the newly burgeoning population centers, such as Honolulu.

Many researchers believe that the Hawaiian population reached its maximum at around the time of western contact. In his study of land use at Waiāhole, Michihiro Miyagi noted that

> ...in the later period of Hawaiian occupance... all the land in the valley suitable for the cultivation of taro was probably so utilized. The intensive use of the land is indicated by the existence of kuleana on small strips of stony land along the tributaries in the valley head. Remains of taro-patch dikes can still be seen in the rough areas above the forest reserve boundary. If such unfavorable areas were utilized for taro, it can be concluded that there was some measure of pressure on the resources of the valley. (1963:78)

In his analysis of land holding patterns based on land claims made at Waiāhole during the *Māhele*, Miyagi found that the majority of *kuleana*, lands granted to commoners, were used for the cultivation of taro and were located in the lowlands "in relation to high water table and the possibility of water diversion from streams" (1963:76). A small number of holdings were located in kula, or open pasture areas, "but their numbers and size is small as compared with lowland plots... they were probably utilized for house lots and gardens" (*Ibid*: 76-77).

B. Māhele Records

The Organic Acts of 1845 and 1846 initiated the process of the *Māhele* – the division of Hawaiian lands – which introduced private property into Hawaiian society. In 1848 the crown and the *ali'i* (royalty) received their land titles; the common people received their *kuleana* (individual parcels) in 1850. It is through records of Land Commission Awards (LCAs) generated at the *Māhele* that the first specific documentation of life in Waiāhole, as it had evolved up to the mid-19th century, come to light.

Two *'ili* at Waiāhole (Hopeka and Makawai) were kept as "Crown Lands". Six *'ili* at Waiāhole – Apua, I, Makanilua, Poahamai, Poea and Uau – were taken as "Government Lands". There were a total of fifty-three small (less than 10 acre) LCA (*kuleana*) awards at Waiāhole for a total of 106.89 acres. The average size of these awards was 2.02 acres and the range was 0.47 to 5.6 acres. There were, however, four larger awards at Waiāhole: LCA 105 to William Walker (81.6 acres), LCA 5936 to Pu'uiki (225 acres), LCA 7137 to Kaho'ohanohano (93 acres), and LCA 8603 to Kaniau (57.2 acres). Subsequently there were three large grants of land: grants 702 and 703 (total 264.68 acres) to Kekakeiki in 1860 and grant 874 (113.33 acres) to Kaopulupulu in 1862.

A portion of an 1878 Hawaiian government survey map by J.F. Brown (upon which the approximate location of the present Waiāhole Bridge has been indicated) shows the profusion of *kuleana* parcels of taro *lo'i* on both side of Waiāhole Stream in the *makai* reaches of Waiāhole *ahupua'a* (Figure 5). The map suggests that the lands immediately surrounding the present Waiāhole Bridge project area

C. Historic Land Use

The amount of land in Waiāhole under cultivation appears to have decreased throughout early historic times, as it had throughout the Kāne'ohe Bay region. This period saw a steady decline in the native population and an increasing amount of land left fallow or converted to pasture for cattle grazing.

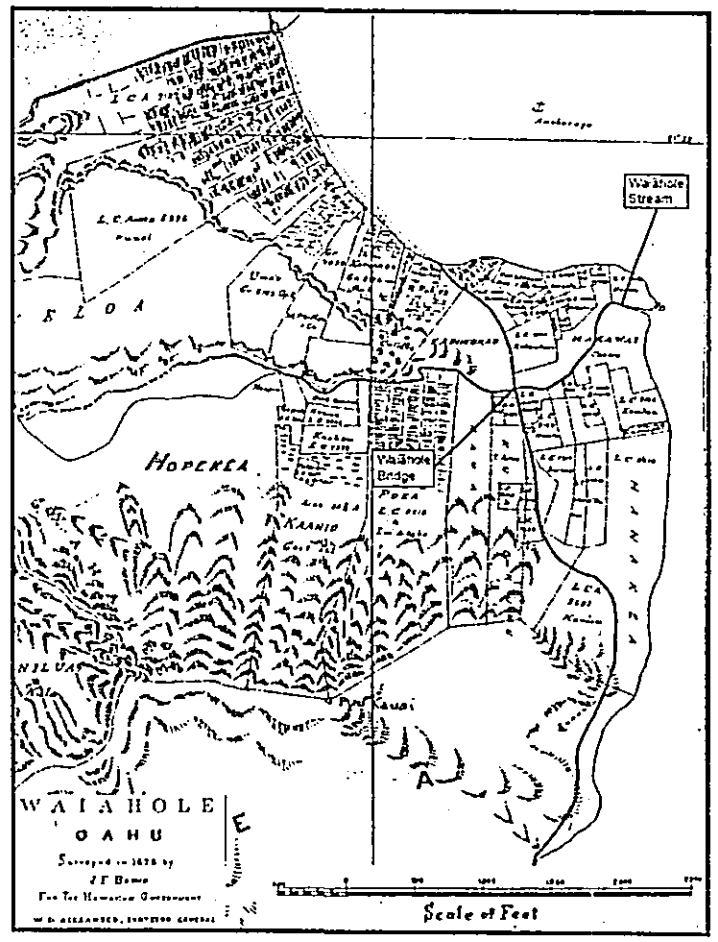

Figure 5 **1878 Alexander Map, Showing Land Commission Awards in the Vicinity of the Waiāhole Bridge Project Area**

It can safely be assumed that by the time the *kuleana* were awarded [around 1850] there were many parcels of land that were not being cultivated by the Hawaiians primarily because of depopulation, roaming cattle, and the requirements of the Kuleana Act (Devaney et al. 1982:12).

The rate of population decline slowed after 1849 and the population began to increase in parts of O'ahu in 1853, but the population of Ko'olaupoko continued to decline until 1872 (Kittelson 1972, cited in Devaney *et al.* 1982:13). The population increase outside of Ko'olaupoko reflected the emergence of the sugar cane industry and the development of Honolulu as a port city. Ko'olaupoko was not directly affected by these developments because the land was not suited to the cultivation of sugar cane and it was geographically removed from the growing population center of Honolulu.

D. Period of Chinese Rice Cultivation at Waiāhole

Population increase in Ko'olaupoko began in the 1870s, and seems to have been directly related to the development of a rice growing industry in the region which began in the late 1860s or early 1870s. Rice production throughout the islands was undertaken by Chinese immigrants. Having first been brought to the islands to serve as sugar plantation laborers, many remained in the islands following the completion of their contracts. Their accumulation of capital enabled them to rent land and turn to rice cultivation utilizing their traditional knowledge of methods of production which they had brought from China (Miyagi 1963:106).

Citing Bowser, Miyagi noted that by 1879 "there were at least six rice plantations, seven rice planters and one rice mill operated by a water wheel at Waiāhole. The lowlands formerly utilized for taro were ideal for planting and Waiāhole stream provided an abundance of water for irrigation" (Miyagi 1963:106).

Lum Pui Young's memoirs (1975) of his childhood in Waikāne relate that rice cultivation in the period of ca. 1906-1926 amounted to some 250 acres with approximately 150 of those acres grown by Sing Tai Wai. Young's map indicates extensive rice cultivation on the north side of the Waiāhole Stream mouth seaward of Kamehameha Highway. Sing Tai Wai employed 20-25 year-round workers and 15 to 25 more itinerant laborers during planting and harvesting time. The rice mill at Waiāhole was known as the Lansing Mill. The proprietor, Theodore F. Lansing, grew rice but also milled the rice of other growers. Young notes that the major transportation link to Honolulu during this time period was a daily round-trip by stagecoach owned by Chinese living in Ka'alaea with a terminus at the Wing Wo Tai Mill in Waikāne. Most of the activities in the region were centered in Waikāne. Later transportation was served by a passenger truck owned by Hung Yew Yuen of Waikāne.

Young relates that during the period from 1913 to 1917 a contingent of 50 to 60 Chinese males was recruited to work on the Waiāhole Tunnel Project. They were used to build the railroad bed and trails from the seashore to the tunnel site. The actual tunneling was done by Japanese laborers. Young notes that during this period there were as many Chinese as native Hawaiians living in this region. The rice industry reached it peak in Hawaii about 1910 then rapidly declined. Practically all of the Chinese rice fields were idled by 1925.

While rice cultivation came to dominate the landscape at Waiāhole, taro cultivation remained common and other crops such as introduced vegetables and fruits were grown. These

included cabbage, radishes, onions, turnips, beans, lotus root, litchi, mango, lungan, pomelo, and banana (Devaney *et al.* 1982:53). Citing an informant, Miyagi notes that "the farmers of the valley sent their taro and other products to Honolulu by way of the Pali Road as late as 1910" (*Ibid.*:108).

Pineapple planting also occurred for a brief time "by individual Chinese and Japanese farmers on moderately sloped hill land where rice and taro could not be grown" (*Ibid.*:115).

The pineapples were hauled from Waiāhole to the Waikāne landing by train, and from Waikāne were sent by boat to the Libby Cannery at Wailau... there are still railroad tracks under the heavy brush at Waiāhole (Ferreira 1940:9, cited in Miyagi 1963:115).

The train track used to transport pineapples is likely the same that was constructed by the Waiāhole Water Company in 1913. Condé and Best note that "ten miles of railroad were built, including an ocean pier. One portion of the railroad was laid at the landing at Waikāne..." (1973:337). The railroad was built to transport supplies during the construction of "an engineering feat of epic proportions": a system of tunnels through the Ko'olau Mountains that supplied water to the O'ahu sugar plantations on the leeward side of the island. Once the tunnel system was complete and operational in 1916, the railroad was removed.

The pineapple industry proved to be very short-lived in the region and the Libby Cannery at Wailau was moved to Honolulu in the early 1920s. It is believed that many of the agricultural fields and, perhaps, houses were abandoned at this time (Miyagi 1963:116). Since the decline in rice production, land use in the valley may best be characterized as "diversified agriculture." Writing in 1963, Miyagi characterized this as the "Japanese Period" because in Waiāhole, Japanese farmers gradually replaced Chinese farmers and dominated land use through the 1930s and 1940s (*Ibid.*:132). By 1961, the four major land uses at Waiāhole were identified as diversified agriculture (consisting primarily of bananas, papaya and taro), grazing (primarily dairy, but also beef cattle), residential use (as of September, 1962, 453 persons resided in Waiāhole), and forest (including the pali with no trees, wooded areas, waste land, and shrub land). Miyagi concluded that in the 1960s, land use was in a general state of decline in Waiāhole and "will probably continue to follow its trend of decline while the area awaits the development of the future" (*Ibid.*:163).

Despite Miyagi's prediction of a "trend of decline", taro farming has continued in Waiāhole *ahupua'a* to the present.

E. The Waiāhole County Bridge

The Waiāhole Bridge was constructed in 1922. In an evaluation of O'ahu Island bridges conducted in 1987, it was noted that:

> The design engineer was R.W. Mowry and Fred Ohrt was the City and County Engineer. The builder is unknown.

The bridge is a two span reinforced concrete deck girder structure 66' in length and 22.2' wide. The design load capacity is H-10. The abutments and parapets are made of reinforced concrete. There is a wooden walkway with railings on the right side. The design integrity is not intact. (Thompson 1987: VII-121)

The evaluation further notes that while "the structure is an important transportation link between Windward community", the aesthetics of the bridge are "given a poor rating" (*Ibid.*).

F. Waiāhole Stream Water Issues

As was mentioned above, in the second decade of the 20th century tunnels were dug through the Ko'olau Mountains. The tunnels comprised the Waiāhole Ditch system which was designed to channel water from the Waiāhole Waikāne watershed to irrigate Central and Leeward O'ahu sugar cane fields. As the Oahu Sugar Company began shutting down in the mid-1990s, Windward O'ahu community organizations petitioned the Water Commission to restore flows to Ko'olaupoko streams, including Waiāhole Stream and its tributaries. In June 1995, the Water Commission directed that 9.4 million gallons per day would flow through the tunnels to Leeward O'ahu. The base flow in Waiāhole Stream, which had been about three million gallons per day before December 1994, increased to about 16 million gallons per day (*Environment Hawai'i*, vol. 11, no. 5 [November 2000]).

Since that 1995 Water Commission decision, further commission actions and court cases have focused on the allocation of water between the windward and leeward sides of the island. However, at present, significantly more water flows daily in Waiāhole Stream than had been the case until the mid-1990s. While studies on the effects of the restored flow on stream life are ongoing, the likely benefits were summarized by an expert witness in testimony before the Commission on Water Resource Management: "In general, it is my opinion that restoration, partial or whole, will have beneficial effects on (1) the stream ecosystem...(2) the vegetation of the basins and sub-basins (watersheds)...(3) the estuary and marine waters...and (4) specifically, the stream ecosystems, vegetation, estuary and marine waters affected by the restoration" (Robert J. Livingston cited in *Environment Hawai'i*, vol. 7 no. 3 [September 1996]).

IV. ARCHAEOLOGICAL AND HISTORICAL STUDIES OF WAIĀHOLE

Archaeological and historical studies conducted within Waiāhole *ahupua'a* provide clues to the traditional cultural resources, practices and beliefs within the *ahupua'a*. Summaries of the findings of these studies are presented below.

Handy and Handy (1972), although not archaeologists, were interested in the traditional agricultural use of the land and made observations about features that are now considered to be archaeologically significant.

There were formerly lo'i throughout the seaward lowlands of Waiāhole. Some were in swampy lands, but most of them were irrigated by the stream from which the *ahupua'a* takes its name (Handy and Handy 1972:453).

Miyagi (1963) wrote an M.A. thesis in geography on "Land Use in Waiāhole Valley, O'ahu" which has been used extensively in later studies. He documents land use during three major periods: pre-contact, 1778-1920 and 1920 to 1961.

Kikuchi (1964) observed that:

> The entire length and width of [Waiāhole] valley was once extensively terraced into taro patches, lo'i, and was irrigated by a network of ditches, auwai, of which only makai, or seaward portions of Wai-āhole are still maintained. Traces of abandoned taro plots and ditches can be readily distinguished along the paths and inland trails. (Kikuchi 1964:1)

Kikuchi also found considerable evidence of the manufacture of stone tools within the valley, including a lithic scatter in a bulldozed field (later designated site 50-80-10-2476), two adz quarries on one of the ridges along the edge of the valley (later designated sites 50-80-10-2472 and -2475). Within the seaward portion of the *ahupua'a* he identified two house sites within several large hau trees "where the stream enters the sea" (later designated site 50-80-10-1086). He described one of these sites:

> The best preserved site consisted of a high mound of dirt, 8-12 inches high, ringed with a pavement of small pebbles. Portions of the site were delineated by rows of stones marking the house site. A rectangular plot of stones with pavement within the general paved area may possibly be a grave. A wall of stones ran from the site directly into the ocean. Numerous adze chips and partial blanks were found within the two house sites. (Kikuchi 1964:2)

Griffin and Pyle's (1974) reconnaissance of the lower one-third of Waiāhole-Waikāne found a number of *lo'i* and miscellaneous walls *mauka* and *makai* of the highway. They found no evidence of the habitation sites identified by Kikuchi. They remarked that "it was evident that much of the sites within the study area have been destroyed, otherwise obliterated, or are in an advanced stage of deterioration" (1974:4). Griffin and Pyle summarized their findings:

> The results were, from an archaeologist's point of view, disappointing. The beach area revealed only a low seawall at the edge of the beach-turf line. This wall is undatable and may be of recent origin. In a few locations taro lo'i are still observable behind the beach. In general the disturbance of the various site predicted areas are bad. Pasturage of cattle seems to have eradicated even the lo'i,

> in most cases....it is as if someone has taken an eraser and wiped clean the reminders of the former Hawaiian occupation of this part of Waiāhole-Waikāne. (1974:15-16)

With the exception of Kukuianiani Heiau in Waikāne "all the sites encountered during field operations are considered marginal." (1974:4) Griffin and Pyle provide a historical overview of the area drawing heavily upon Miyagi (1963).

Lum Pui Young (1975) was born in Waikāne in 1900 and produced a memoir of his early memories of the Chinese community in Waiāhole, Waikāne, Hakipu'u circa 1906-1926.

Barrera (1982) presents the results of a brief reconnaissance and literature review in support of the Waiāhole Valley Agricultural Park project. He notes an abandoned system of taro terraces in the vicinity of LCA 10230. He concludes that "the entire valley of Waiāhole is probably eligible to the State and National Registers of Historic Places as an archaeological district" (Barrera 1982:3)

Tomonari-Tuggle (1983a & b) reports on a more in-depth archaeological reconnaissance survey in support of the Waiāhole Valley Agricultural Park project studied previously by Barrera (1982). This consisted of five discrete survey areas in the central portion of Waiāhole Valley. She documents twenty-eight sites, nineteen of which were in the area of the juncture of Waiāhole and Waianu Streams. These sites included residential areas, stone tool manufacturing work shops and agricultural features related to both traditional taro cultivation and historic rice cultivation. A brief history of settlement and land use is provided.

Dye *et al.* (n. d.) studied a Waiāhole quarry complex located on opposite slopes of a small ridge that trends north into Waiāhole Valley from Pu'u Kuolani. Quarrying activity in the area had been reported by Kikuchi (1963). This complex includes sites 50-80-10-2472 (B.M. site # 50-Oa-G2-7) and 50-80-10-2475 (B.M. site # 50-Oa-G2-8) and 50-80-10-2476 (B.M. site # 50-Oa-G2-9). The study (Dye *et al.* n.d.:65) relates that Dr. Patrick McCoy did some mapping and collecting at the complex in 1982 but there are evidently no reports of this work. The study relates that Kikuchi (1982) published descriptions by Macdonald of two thin sections from the complex. This study recommended nomination of sites 50-80-10-2472 (B.M. site # 50-Oa-G2-7) and 50-80-10-2475 (B.M. site # 50-Oa-G2-8) to State and National Registers of Historic Places

In 1984, William Barrera carried out a series of four archaeological surveys of proposed well locations in Waiāhole and Waikāne *ahupua'a*: at Uwau Stream, Waianu Stream, and two areas in central Waikāne and near Waiāhole Camp in Waiāhole. Three of these modest studies reported no sites. Only the Uwau Stream study noted a possible *'auwai*.

In 1984, Tomonari-Tuggle & Tuggle documented excavation and mapping work at sites 50-80-10–3509, -3510, -3511, -3512, -3513 and -3526 all located near the confluence of Waiāhole and Waianu Streams and previously described in their earlier work (Tomonari-Tuggle 1983a & b) . They report six c14 dates from site -3512 (the locus of most of their research) and concluded the site was used for both agriculture and habitation from the late pre-contact times into the historic period. They report some relatively early carbon date (Beta 100031) of c. A.D. 1040-1480 from site -3512.

Cultural Surveys Hawaii (Hammatt *et al.* 1987) carried out archaeological testing of a lithic workshop (site -3512) located on a low knoll overlooking the confluence of Waianu and Waiāhole Streams which was identified in a survey by Tomonari-Tuggle in 1983 and tested by

her in 1984. Both habitation and flaking activity were documented. Final stage flaking of adzes took place at the site and this is suggested to have been the single most important economic activity at the site. The one c14 date recovered was AD 1655-1950 was regarded as consistent with six of the dates reported by Tomonari-Tuggle. The earliest Tomonari-Tuggle dates are questioned because of their apparent shared stratigraphic context with later dates (Hammatt *et al.* 1987:41).

The State Historic Preservation Division conducted a field check (Kawachi & Griffin 1990) documenting several terraces in central Waiāhole Valley designated site 50-80-10-4246.

AECOS Inc. (1995) carried out a Natural Resources Inventory of two coastal areas of Waiāhole and Waikāne *ahupua'a* with descriptions of vegetation, fauna, wetlands and streams offering insights on the history of land use in this area.

Cultural Surveys Hawaii (Walsh *et al.* 1995) carried out an archaeological assessment of coastal areas of Waiāhole and Waikāne *ahupua'a*. This study notes vaguely defined fields with *lo'i* type soils and a possible *'auwai* and a possible buried cultural layer with possible water-worn basalt flakes and charcoal in the Waiāhole portion of the study area.

V. COMMUNITY CONTACT PROCESS

Throughout the course of this assessment, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge and/or concerns about traditional cultural resources, practices and beliefs specifically related to the Waiāhole Bridge project area. This effort was made by letter, e-mail, telephone or in-person contact. In the majority of cases, letters – along with a map and aerial photograph of the project area – were mailed with the following text:

> In collaboration with Environmental Communications, Cultural Surveys Hawai'i is conducting a Cultural Impact Assessment for a projected replacement of the present Waiāhole Bridge. The Waiāhole Bridge is located immediately south of the intersection of Kamehameha Highway (Route 83) and Waiāhole Valley Road in the Ko'olaupoko District on the island of O'ahu. The purpose of this assessment is to determine if there will be any possible impacts to traditional cultural practices by the Waiāhole Bridge replacement project. A map and aerial photograph indicating the location of the Waiāhole Bridge are enclosed for your reference.
>
> The existing Waiāhole Bridge was built in 1922. It is planned for demolition and replacement by a new bridge of approximately 106-feet in length. The bridge will support two travel lanes of 12-feet with 11-foot shoulders for pedestrian and emergency use. During construction of the new bridge, a temporary detour road and culvert will be constructed approximately 40-feet *makai* (east and downstream) of the existing bridge.
>
> We are seeking your *kōkua* and guidance regarding the following aspects of our study:
>
> 1. General history and present and past land use of the study area.
> 2. Knowledge of cultural sites which may be impacted by the project, for example historic sites, archaeological sites, and burials.
> 3. Knowledge of traditional gathering practices in the study area, both past and on-going.
> 4. Cultural associations with the study area through legends, traditional use or otherwise.
> 5. Referrals of *kūpuna* or anyone else who might be willing to share their general cultural knowledge of the study area.
> 6. Any other cultural concerns the community might have related to cultural practices in the nearby area.

Attempts were made to contact twenty individuals who are either residents or former residents of the area, or who represent cultural organizations and government agencies. The organizations and agencies include: the O'ahu Island Burial Council, the Queen Liliuokalani Childrens Center, the KEY Project, the Burials Program of the State Historic Preservation Division, and the Culture and History Branch of the State Historic Preservation Division.

Of those contacted, three individuals – Calvin Hoe, Richard Paglinawan, and John Reppun – were also recommended by others on the contact list as having personal knowledge and specific concerns related to traditional cultural practices in the vicinity of the Waiāhole Bridge project area. (The fourth interviewee, Kaipo Faris, was recommended by Mr. Reppun.) Apart from the interviewees, the others contacted made no claim to specific knowledge of traditional cultural resources, practices, beliefs or related concerns within the bridge project area.

VI. *KAMA'ĀINA* INTERVIEWS

Presented below are summaries and excerpts of the four *kama'āina* informant interviews conducted for this cultural impact assessment. The summaries and excerpts focus on the information in the interviews most pertinent to land uses and traditional cultural resources, practices and beliefs related to the Wai'āhole Bridge project area. Full transcripts of the interviews are located in the appendices at the end of this assessment.

Richard Paglinawan

Richard Paglinawan, born in 1936, grew up in Waiāhole where his family lived on Waiāhole Valley Road. Currently, Mr. Paglinawan is a project manager at the Queen Emma Foundation in Honolulu. He is a former administrator of the Office of Hawaiian Affairs. Mr. Paglinawan was interviewed at the Queen Emma Foundation in Honolulu on June 25, 2003.

Mr. Paglinawan recalls that, during his childhood years, the portion of Waiāhole Stream beneath the bridge was one of several popular swimming holes in the stream:

> *...we kids, from the bridge, would jump off into the stream because we dammed the water and we could jump either way. And, for fun, we'd splash water on on-coming cars. When we got cold, because the river water is cold, we'd lie down on the concrete and go to sleep. Because they hardly had any traffic at that time.*

Among the other swimming holes in the stream was one close to the Waiāhole poi shop which was also a popular community gathering place:

> *The Waiāhole poi shop one was a favorite swimming hole for the whole community, all the way from Kahalu'u to Hakipu'u. So that was a famous swimming hole. The only name we had for it was "The Dam". Let me tell you about The Dam. I was thinking about that name and finally it dawned on me. I believe the dam is really a concrete roadway that crossed over Waiāhole Stream. And what it is: water flows over it but you can drive onto it. There are three such roadways in the streambed: one right behind the poi shop, one up where Shige Sakai used to live and then one up by where the Koki family used to live – that's where the Y in the road split to north and south Waiāhole. These dam roadways would give the farms access across the stream. The reason why I say that is I suspect that one right by the poi shop used to be the old road before the bridge was constructed in 1922.*

Mr. Paglinawan remembers that kids liked the swimming hole by the poi factory because it was deep though it could get cold because of the canopy of trees shading it. But the swimming hole under the bridge was also popular because it was open to the sun and its proximity to the highway allowed for pranks:

> *So we'd go over to the bridge one, dive off, get up to mischief, splash water on cars, but then we'd like to lie on the road because it was warm...*
>
> *Mostly the boys* [gravitated toward the swimming area under the bridge] *because we'd love to splash water on cars. So we'd jump off...and do what we called "Buddha" and all that kind of stuff. We would see who could make the biggest splash.*

Fishing was another activity associated with the bridge and the stream during his childhood:

> *Of course the other thing that we did was catch 'o'opu, catfish, 'ōpae niho. Sometimes we'd throw a can with one side open in the water and the 'ōpae niho would go in and use it as a house. So when we wanted to catch 'ōpae niho we'd just go and pull up the cans.*

Mr. Paglinawan recalls that the Waiāhole Bridge was severely damaged by flooding in the 1960s:

> *Back in 1965, the Keapuka flood, also hit Waiāhole and it damaged the bridge causing the center section to collapse. And traffic couldn't go over so they stopped traffic for several days. Then, what they did, as a temporary measure, was to fill in between the collapsed middle portion of the bridge with hard top, the black top, to level it off. Eventually they straightened the alignment of the bridge by "jacking" it up and reinforcing the middle section of the bridge.*

Subsequent flood control efforts resulted in the destruction of the swimming holes – including the one under the Waiāhole Bridge – that Mr. Paglinawan knew as a child:

> *And then they bulldozed the stream, widening it all the way down to where the stream makes a right angle going towards the sea, and all the way up to Miller's home, which is about three houses away from where we lived. What they did was widen the stream but unfortunately, in the process, it destroyed several swimming holes...*
>
> *...After they bulldozed the stream, the place became all flat, shallow. So the swimming holes were gone and people stopped coming. Anyway, that disrupted – but we understood it had to be done because of the flood potential. But the social life changed.*

While recognizing the traffic safety problems that may be alleviated by the new bridge project, Mr. Paglinawan is also concerned about a new bridge's social impact on the area:

> *I'd like to see the area kept rural. What I'm afraid of: if the new bridge is widened it will bring more traffic down there which may impact the rural character of the place. Incidentally that concern is also throughout the Ko'olaupoko region. They're concerned that if the state and county widen those roads it will open more traffic. And the other problem: the highway is a death trap. Of course the road was built to 1922 specifications* [for rural conditions]. *And now modern cars* [on the highway] *are traveling so fast. When fatalities occur they interfere with the flow of traffic, especially when people are going to work. But I think the people down there they're willing to live with* [the occasional traffic stoppages]. *I think what they're afraid of is more traffic and more development that might result from that kind of* [bridge or highway widening] *project. I don't know if the* [new] *bridge is going to serve that purpose. But potentially it can.*

Mr. Paglinawan would also like to see that new bridge accommodates pedestrians and bikers:

> *The other concern, of course, is for bikers and pedestrians. I know in the old days we used to run on the road, even with the cars coming. And now more biking is encouraged. It's not only from our area but from elsewhere. So the question is whether or not the bridge should accommodate foot and bicycle* [traffic].

An additional concern is that impact to Waiāhole Stream be minimized during any new bridge construction activities:

> *Well, during the construction of the bridge there should be assurance that the water quality be maintained because, as you know, run-off may pollute the lower area, which is a good fishing ground area. So that would be a primary concern.*

Calvin Hoe

Calvin Hoe, born and raised in Hakipu'u in 1945, grew up attending Waiāhole School and currently resides with his family on Waiāhole Valley Road. His family has ties to the Ka'anana family which was awarded *kuleana* land in Waiāhole Valley. Mr. Hoe and his wife Charlene purchased the Waiāhole Poi Factory in the 1970s which they then converted into an art gallery. Mr.Hoe started growing taro in Waiāhole Valley in the 1970s and continues to he a strong figure in the taro revitalization efforts in this area. He is also involved in the Hakipu'u Learning Center. Mr. Hoe was interviewed at his home in Waiāhole on July 15, 2003.

Mr. Hoe's first recollections of the Waiāhole Bridge date to the 1950s when he attended Waiāhole School:

> *Most of what I know about the bridge is because I went to Waiāhole School. After school we used to come down to the poi factory to catch the bus to go home* [to Hakipu'u]...
>
> *I don't remember too much swimming under the bridge. We didn't go swimming under the bridge. I remember playing under the bridge and maybe there was some small dam at that time. I remember fishing over there. The aholehole used to come up the stream because it was deep enough and from the bridge to the ocean is not too far. So fish like the aholehole could swim up. I kind of remember people saying that the stuff from the poi factory, when they clean the taro, went into the stream so I think that attracted some of the fish to come up.*

The Waiāhole Stream swimming area he knew best was located further *mauka*:

> *The swimming hole that I remember going to in Waiāhole was fairly up* [*mauka* in Waiāhole Stream] *– this place called "water rats". That was the swimming place that I knew of.*

Mr. Hoe also recalls actively-farmed taro *lo'i* in the vicinity of the bridge:

> *I think there were taro patches on both sides of the road, at least the makai side of the highway, on the left side, there were taro patches over there. I don't remember taro patches makai on the right side of the stream. But I know there are taro patches over there, old taro patches over there. Mauka of the road* [also] *had taro patches...*

> *But I don't know who took care of the taro patches by the bridge. I think Shige* [who used to own the poi factory] *took care of the taro patches on the north side. Although this guy Kaya and his family, they took care of a lot of the taro patches in Waiāhole.*

He does not remember any houses or people living near the bridge in the 1950s; however:

> *...further downstream from the bridge there was a kind of a fishing camp. Angel used to live on the left side of the stream, the north side. Richard Macario, who worked at the poi factory, lived on the south side, right at the ocean, which isn't too far. Inside the hau trees – I used to go cruising around there – it looks like there are house sites.*

Mr. Hoe could not recall seeing any specific activities like fishing at the bridge during the 1970s. In later years he remembers floods that brought increased activity to the bridge:

> *In the '80s, '90s I remember we had the big floods and the water* [in Waiāhole Stream] *got deep. People were jumping off the bridge. I don't think they even had to make dams. They might have been making dams but after the big rains it was pretty deep. After that the* [warning] *signs went up. And they've still got the signs: "No Jumping." I think that was after the last big flood that made a big hole and kids were all jumping off the bridge and then the signs came up.*

Asked about the new bridge project, Mr. Hoe expressed concerns about its effect on taro *lo'i* and *'auwai* – which he considers "significant cultural places" – that are located nearby:

> *My concern is for the taro patch. My understanding is that there's going to be an alternate bridge built* [to handle traffic] *while they're building the new bridge. My understanding was that they would probably go to the makai side. Over there are taro patches that, I think, need to be preserved. A few yards from the stream, on the south side and going mauka/makai, there's a culvert. There are several culverts going across the road, I think. There's a big 'auwai system that comes off of Waiāhole Stream and it used to feed all of that area. The community, the people from the* mauka lo'i, kalo pa'a *gang, help to keep the 'auwai system running. So that – I noticed that there's water down by the Picansos' house. That's towards the south side of the valley. And that water needs to go back to the stream now. I think the 'auwai that's close to the stream needs to keep going now and, basically, forever. Because that land, the taro patch land that's all makai of the highway, on the south side of the stream, is valuable taro patch land.*

Mr. Hoe stresses the opportunities to perpetuate traditional Hawaiian agriculture that are available in the Waiāhole lands *makai* of the highway:

> *...it's so accessible. It's close to the highway. People in the community have been talking to the city about restoring some of those taro patches and making it available for educational purposes. One of the things that the* mauka lo'i kalo pa'a *people want to do is have community taro patches similar to the community garden system that the city has in some places where families could have their own small taro patches to learn how to plant taro. The nice thing about that place is that it's very close to the highway, very accessible. There aren't very many taro*

patch places on the island that students can visit. This would be a really good place.

He further emphasizes the need to protect the *lo'i* and *'auwai* during ridge construction activity – both for the new bridge and the temporary bypass route:

So, in the construction of the bridge, I think care needs to be taken to make sure that the 'auwai that's close to the stream, maybe twenty-five yards from the stream, by the Matsukawa place, and the other one by the Picanso place, there's another one that feeds the areas further south, makai side of the highway, those need to be preserved – the 'auwais and the culverts. The lo'i, the taro patches themselves, need to be preserved. I can envision the temporary bridge that's going to come. Hopefully, I guess, the city knows that that's a very old lo'i area and they will take precautions to not disturb the lo'i area. If they put rocks as a foundation for the road, it's going to be difficult to put it back into the lo'i condition that's there now. The way it is now, that's the lo'i. If they start putting rocks inside there, and even if they're going to take them out, how are they going to restore the area? There needs to be a plan for accommodating [the *lo'i*]. *I think, as a resident of the valley but also as someone whose family has lived in these valleys for centuries, I'm very concerned that the taro patches are taken care of. I don't know how they're going to do the temporary bridge but I think we need to have discussions about what would be acceptable* [in order to maintain the viability of future restoration of the *makai lo'i*].

At the same time, Mr. Hoe recognizes that the new bridge may be necessary:

Because of the flooding. [Also, the present bridge] *is kind of narrow. I've seen at least one accident over there. I don't have any opposition to building a new bridge. Just so that they take care of the concerns I've mentioned: the protection of* lo'i *and* 'auwai.

Kaipo Faris and John Reppun

Kaipo Faris is a Ko'olaupoko resident and is a consultant for water quality testing. He is involved in several cultural organizations – including the Makawai Stream Restoration Alliance and the Hihiwai Coalition – concerned with stream water issues. John Reppun is a resident of Waiāhole. He is sub-area representative for Waiāhole through Kualoa on the Kahalu'u Neighborhood Board and is a member of the Makawai Stream Restoration Alliance. Mr. Reppun works in the Community Development program at KEY Project. Mr. Faris and Mr. Reppun were interviewed at the KEY Project office on July 29, 2003.

Because of the comprehensiveness of the concerns and concepts expressed by Mr. Faris and Mr. Reppun, it is recommended that the full interview transcript be read in addition to the summary below.

Mr. Reppun recalled activities associated with the Waiāhole Bridge during his childhood:

... as a kid: come over this bridge, poi factory to your left, taro patches to the right. That was my introduction to taro, water buffaloes. It was the visible –

cultivation of taro along the highway that you first noticed. The bridge itself, there is always somebody on the bridge, for better or for worse. The kids jumping off the bridge, swimming, jumping into the stream. I've been people going under the bridge on whatever floats. Fishing, off the bridge.

Both Mr. Faris and Mr. Reppun stressed that the Waiāhole Bridge replacement project cannot be viewed in isolation. The project should take into consideration cultural and community concerns that it will affect. During the course of the interview these concerns were addressed by interviewees.

As was noted in the CULTURAL AND HISTORICAL BACKGROUND section of this assessment, since the mid-1990s, the water flow in Waiāhole Stream has increased greatly. Among the consequences has been a return of native species – most significantly, for this assessment, in the stream area near and *makai* of the bridge. Mr. Faris spoke of his efforts to monitor these species:

Life [is] *coming back. Right under the bridge, there's a lot of baby mullet, aholehole.*

Aholehole, mullet, and native stream species are coming back. And, last year, I found the first recruitments of hihiwai coming up the stream.

Here, Mr. Reppun added that *hihiwai* were reintroduced into Waiāhole Stream "during the contested case hearing about stream restoration." These *hihiwai* were tagged and numbered, and are currently monitored to see how well they have survived. Mr. Faris continued, noting that the "recruitments of *hihiwai*" he'd observed may not be from that reintroduced group:

The ones that have returned: we don't know if they're from that particular batch. Because hihiwai float as part of the plankton pool throughout the state. There's no genetic difference between an hihiwai on O'ahu and one in Hilo. But at least possibly, nobody knows, they smell the old – the hihiwai upstream – which is attracting them to come back to the stream from the ocean. But they're there. And that's where I found them, under the bridge.

Mr. Faris emphasized that plans and construction activities for the new bridge must consider the bridge's impact on the stream life in the vicinity:

As you know, all our stream animals – the five 'o'opu, the two 'ōpae, and the three mollusks – are all anadromous, all have an ocean lifecycle. So they have all have to have that up and down connection. So it's very important that that bridge area is always clean, well-aerated, and open.

Concrete brings heat. Immediately it creates heat. Heat is very detrimental to the native species, not to the introduced exotics. They can handle warm water. Our native species can't. They need cold, cold water. And they're very susceptible to sediment. So the stream needs to be clean, clear, rushing. Now construction in any form creates sediment, creates heat. All the things that are detrimental to the native species. It has to be done carefully and with care for the right-of-way of the native species.

It's very important, between the bridge and the ocean: because that's part of the estuary. That is the most important connection to the life of the

stream and to the life of the young in the estuary outside. That one section through there is the most important of the whole system.

I would rather not see any man-made bottom [in the streambed beneath a new bridge] *... And let it run as is. I've done studies in the flood control channel here. And it's bad. I'm finding native species coming up the channel but they're only living for two months. They cannot survive long enough to get into the natural parts of the stream farther up. Because the temperature rises to a 105 degrees during the day – the water temperature. And our native species can't handle that. So it is choke full of exotics. But the natives are dying. I'm finding babies coming in but not able to survive. And that's exactly what would happen there.*

Mr. Reppun spoke of the scientific studies undertaken in Waiāhole Stream and noted that the changes and improvements in the stream that have occurred in the last few years may not have been taken into account when the new bridge project was planned:

So that's a real critical habitat. The highway is less important to us than the river. That's the highway to us. This is a bridge over the highway that keeps us from driving through that river, from disturbing that necessary link between the ocean, the estuary, and the upper reaches of the stream. And Waiāhole, maybe more than just about any stream on this island, has taken on this immense importance. I would venture to say it's probably the most studied stream on this island, at this point. Because of this water case. I think this bridge project started off in the middle of the contested case hearing, or close to it. It's now a different project than it was when it was first conceived of. And this bridge project, when it was first conceived of, talked about going through the stream with a temporary culvert. That needs to be revisited.

And these were all studies that, while someone looking at this from a cultural standpoint might say: "How does that relate to culture? You're talking about the scientific studies." These studies are helping to bridge the gap between understanding by previous cultures and our understanding today. They have immense cultural significance because – A number of folks have repeatedly said: "So you restore a stream and you protect traditional and cultural practices – for fishing and gathering, and so on." Well, if there's nothing growing there to fish and gather, how are you really protecting the cultural aspects of that right. So this is a well-studied stream. It needs to be handled very carefully because it is an active study site, an intensely active study site, now on O'ahu and within the state. It's a lot harder to bridge this stream than it was when the project was conceived of – to do it right, to do it carefully without interrupting studies and interrupting on-going observation – the ability of animals like hihiwai to move up and down the stream. You've got to be really careful about that.

Mr. Reppun addressed additional issues and likely impacts of the bridge project to the stream and its environs, both *mauka* and *makai*:

One of the concerns with the lower reaches of the stream is what the base of the stream looks like: the amount of sediment, the rocks, the elements of the stream's physical structure that allow for that movement of animals. That's partly what's being studied and that needs to be paid attention to in the bridge construction. You can't just put in a box, cement, culvert-style bridge and dismiss that short distance that animal life needs to travel from top to bottom. Right now, for the most part, it's rocky bottom right through the bridge. And the stream spreads out. It's fairly wide throughout there. The other elements right in and around the bridge itself are shading – which is another issue we should probably talk about: how will this bridge affect things like the trees. There's one huge kamani tree that overhangs the bridge area on the mauka Kāne'ohe side. There was some talk that I heard earlier when talking to Environmental Communications about the need to, or the desire to, remove that tree or cut that tree. I think we need to look at that because to get that kind of shade which you get in the lower reaches of the stream where the water is naturally probably going to be a higher temperature is going to be a big concern – maintaining the temperature of the stream. So this bridge construction project needs to look at that: the removal of major shade trees.

Mr. Reppun related his concerns about the new bridge project's impact on the *'auwai* that feeds the taro *lo'i*, located on the Kāne'ohe side of Waiāhole Stream, *makai* of the highway, that are planned for restoration (as discussed by Calvin Hoe above). According to Mr. Reppun, use of the *'auwai* is registered with the state Commission on Water Resources. He notes:

This 'auwai goes way back in time, too, and it has been kept flowing for a long, long time. It's been interrupted in sections that have been reconnected. But it's flowing...Right now it goes through a pipe under the road before you get to the bridge – a little bit of a distance before you get to the bridge. It's probably a little clogged. It's not kept real clear but the opportunity is still preserved. Certainly the concept is there. Then the 'auwai makes a right angle turn on the mauka side of the highway and there's kind of a throw-away ditch that takes the water back to the stream, just on the mauka, Kāne'ohe side of the bridge. The bridge, I think, affords an opportunity in the design work in and around, and including, the bridge – an opportunity to house a pipe, a channel, a culvert that would be big enough to carry any amount of water that may go from mauka to makai. This is an opportunity to basically carry a section of the 'auwai, built it in, so that it makes for an easier route to take water to the makai side. So that future planned lo'i restoration efforts can take place.

Incorporating the *'auwai* flow into the bridge design, Mr. Reppun suggests, would work in concert with the efforts already made to acquire the land for the *lo'i* restoration:

So this is a good opportunity. And this helps to fulfill, by doing this, this helps to fulfill the intent of the use of federal monies that came from Federal Highways Administration to the state, to the county, and so on for the land acquisition on the makai side. These were some of the restoration

and protection of agriculture opportunities that were foreseen. That's why the value of it, the land acquisition on the makai side by the government was so important. So it kind of is incumbent upon projects like this to make sure that they are protective of what was foreseen in the land acquisition. And, again, going back to those coastal zone laws, so as not to preclude future planning options: the future planning option for the makai side is the restoration of lo`i. This project should not stand in the way of that. And this project is totally within the SMA. So it is bound by that responsibility. When you look at it, responsibility and opportunity, they're kind of one and the same, if you handle them right.

Mr. Faris and Mr. Reppun expressed concerns about the conception and cultural impact of the bridge replacement project. Both question the necessity to remove the present bridge. Mr. Faris sees the present bridge in the context of the adjacent poi factory and the rural character they represent:

That bridge and the poi factory, the two are one.

And it's always been there. Everybody knows that area. Everybody talks about it. They stop and take pictures. Both the bridge and the poi factory. It's one.

...how many buses do we want to go through there? Are we handling traffic now or are we looking at handling traffic in the future? Are we going to create more traffic by building bridges all the way along the coast?

Mr. Reppun seconded Mr. Faris' comments on the present bridge:

Is it structurally unsound such that it needs to be replaced or is it the desire to expand the size so that it can accommodate more traffic? The thing I like about this small bridge is that it does define the size of the roadway that heads down the coast...Keeping it to a certain size does control the amount of development that people can think about wanting to do at a later date. That's important because it's not just about accommodating more and more and more until you obliterate the landscape. So that the bridge has a constricting factor to it. And, design-wise, it's a nice bridge. It's got a nice walkway on the mauka side. Ideally, you'd have walkways on both sides of the bridge, making it a pedestrian-friendly thing like it is now. It has a certain style to it. It's not a modern style – I think the style defines the character. It's an aesthetic reading off of it. But that's important.

Mr. Reppun expressed in specific detail his concerns on the aims and design of the bridge replacement, and about its integration with the existing landscape and with future planning for the area (see full interview transcript, pp. 41-45, below). As an alternative to the level of disruption that the destruction of the old bridge and the construction of the new bridge and the bypass route would entail, Mr. Reppun suggested:

If the scope of this project looked just a little bit bigger and took into consideration this new fact of public land ownership on the makai side –

city ownership. And the city and the state spoke with one another and really worked on this, a slight re-alignment of the highway, while it may be more costly, may end up with a much safer stretch of highway, fewer [construction] steps. We'd basically build a new bridge. No new crossing. No temporary crossing. Build a new bridge immediately makai of the existing bridge...No invasion of the stream proper itself other than the buttressing walls. That would mean a slight re-aligning of the highway which could very well benefit the store and the poi factory and the intersection that's immediately to the Kahuku side of the bridge in a positive way. So, while it may look like it's more costly to look at that slight re-alignment, the spin-off effects of it that relate to the economic area, the park area makai, the stretch of highway and the safety factors, you may get a much, much bigger bang for the buck. Those are the kinds of future planning options that the Special Management Area language calls for.

Mr. Reppun stressed the need for coordinated planning among government agencies:

The state's not used to working with the county. And master plans: it's not always the practice to merge master plans. But I think this is a tremendous opportunity to do that. We really need to get at that. So, I guess if there would be one message to go back: let's make this a part of our culture. Where we sit around a round table and talk about the variety of impacts within a given community. That's culturally appropriate. We can get at this. Depending on what the plans are, particularly right there around the bridge. Immediately makai of the bridge itself and to the south... these are the areas that probably have the most potential because Waiāhole Stream goes right through them and has been restored, and there are existing 'auwai that feed that area. They have the most potential for being restored to taro production. Not just taro production like you might find in any other valley on this island. Taro production with plenty of sun, plenty of cold water – probably one of the best areas for growing taro because of that combination. The other thing too is they are visible from the highway. The whole makai side was acquired by the city. A good portion of that was with ISTEA [Intermodal Transportation and Efficiency Act] money, now called TEA-21 monies. It's federal money that comes in to mitigate the impacts of highways. Marrying these two sources of money together would make so much sense. How do you replace a bridge in a spot where the state and the feds and the city have come together to fund acquisition for scenic views, protection of agricultural areas? What a tremendous opportunity to do it right. ...Actually, all of Waiāhole is under state ownership for the most part. If the makai project includes the highway that runs through it, and we were out to design something to enhance the use of that park space, the agricultural area, the access mauka/makai, what would we do? But, instead, this project is only looking at the bridge. And right next to it is a whole other master plan. So I think that this project should incorporate by reference the planning for the makai side. And actually needs to start to dovetail. The state and the county need to get

> *together as they did with the Federal Highway Administration when they went after funds to help acquire those makai lands and get them off the speculation cycle...Again, if the bridge was slightly farther away from the poi factory you might be able to reduce congestion just by how you build this bridge, right in and around that part of Waiāhole Valley. So that's why it's a really important opportunity that we may very well miss just by too narrow a scope in project.*

Both Mr. Faris and Mr. Reppun suggested that, with the construction of a new bridge *makai*, the present bridge could be kept in place. Mr. Faris offered:

> *I think if you left it alone and used it as a bypass or parking or bus stop for the kids after school – It also has a lot of aesthetic value over there. You stop and you have lunch at the poi factory. You're eating lau laus and poi. That's why I came out to the country to stop and have lunch: to look at the rural values out here. I don't want to go look at cars racing past. And then it gets kind of nice to have the bridge, a big mango tree, and to sit down and have a nice quiet afternoon lunch right there.*

Asked to summarize his concerns about the bridge replacement project, Mr. Reppun emphasized the "cultural connection":

> *I suppose just to get that picture that this is actually a bridge two ways: it's a bridge mauka/makai as much as it's a bridge Kāne'ohe/Kahuku. That's the cultural connection, the nexus. The poi factory itself, too, we haven't really talked about. The poi factory itself is a huge piece of that. It's a bridge between the old days and now. It's actually been restored to poi production, food production. Taking products from the area. It's a gathering place. And this bridge is immediately adjacent to it. The store is one of the outlets for the valley. And, again, a gathering place and a destination point. Both of them are destination points that are immediately adjacent to the bridge. So the bridge needs to be planned in conjunction with looking at those places as destination points. They've been that way, have been accepted that way, as we've moved from the past into modern times... So things like parking, ingress, egress – all need to be addressed in relationship to this bridge project. DOT could just walk away from this and say: that's none of our concern. But the fact that they're proposing to do something within that zone makes it important for them to look at the surrounding context.*

Mr. Faris concluded:

> *If they're going to build the bridge, I'm 100 percent with John. And that's to do it immediately alongside the old bridge. Leave the old bridge as is. It's always going to be of some use, if it's structurally sound. Always going to be some use for it. It will have aesthetic value. It does now. And the new bridge should be created – if they're going to build it – to not be a big huge structure that's going to take away from the country setting. They should build it to fit in.*

VII. SUMMARY AND RECOMMENDATIONS

A. Summary

Reviewing the information provided by the elements of this cultural impact assessment – traditions, legends, historical documentation, archaeological research, and *kama'āina* interviews – there emerges a more detailed picture of Waiāhole *ahupua'a* and the Waiāhole Bridge project area through time. By the 18th century, the lands surrounding Waiāhole Stream in the vicinity of the present Waiāhole Bridge project area, comprised the *makai* extent of a network of taro *lo'i*, *'auwai*, and associated habitation sites that encompassed the breadth of Waiāhole *ahupua'a*.

Nineteenth-century documents – Land Commission Award records and maps – show that the remnants of the traditional Hawaiian settlement pattern within Waiāhole *ahupua'a* – based on extensive wetland agriculture fed by perennial streams – survived the first seven decades of western contact. However, during the second half of the 19th century, as the native Hawaiian population declined, former taro lands in Waiāhole were leased or sold for conversion to rice farming.

Taro farming, along with other crops, continued into the twentieth century, although on a greatly reduced scale.

During the second decade of the twentieth century, the construction of the Waiāhole Ditch system drastically reduced the water flow in Waiāhole Stream throughout the subsequent decades of the century. However, following mid-1990s decisions by the state Water Commission, flows to the stream have been restored to approximately half the pre-ditch volume.

Kama'āina informants interviewed for this assessment recall the present Waiāhole Bridge, which was constructed in 1922, as a swimming and fishing area for the community. Severe flood incidents in the 1960s resulted in streambed widening for flood control, making for a less viable swimming hole beneath the bridge.

Specific cultural concerns raised by the informants were: 1) the presence of taro *lo'i* and *'auwai* adjacent to the bridge; 2) the health of Waiāhole Stream; and 3) the impact of the new bridge on the rural culture of Waiāhole.

B. Recommendations

The following recommendations are suggested to mitigate cultural concerns identified during the preparation of this cultural impact assessment.

1. *Adjacent* lo'i *and* 'auwai

As noted by three of the *kama'āina* interviewed for this assessment – Kaipo Faris, John Reppun, and Calvin Hoe – the Waiāhole Bridge project area is adjacent to former *lo'i* that community members hope to restore to active taro cultivation. The *lo'i* are fed by *'auwai* running through culverts under the highway.

Because of the proximity of the *lo'i* to the highway, they represent a unique opportunity to present Hawai'i's agricultural heritage to the public. The interviewees expressed a strong

concern that future bridge construction activities do not impact the integrity of the *lo'i* and the *'auwai.*

It is recommended that future bridge construction plans and activities proceed in consultation and coordination with community members who would be involved in the *lo'i* and *'auwai* restoration project.

2. *Waiāhole Stream*

Two of the *kama'āina* interviewees – Kaipo Faris and John Reppun – who have been deeply involved in Waiāhole water issues spoke of the ongoing renewal of native species in Waiāhole Stream in recent years. Mr. Faris, who has monitored activity in the stream near the bridge, identified the area as especially critical in the successful return of these species. Both interviewees expressed a strong concern that future bridge construction activities must minimize impact to the environment of the *makai* reaches of Waiāhole Stream.

It is recommended that future bridge construction plans and activities proceed in consultation with community members knowledgeable about the evolving stream ecosystem.

3. *Integration of Bridge Replacement into Rural Waiāhole Setting*

Three of the interviewees – Richard Paglinawan, Kaipo Faris, and John Reppun – spoke of concerns related to the impact of a new bridge on the area's culture. As Mr. Paglinawan stated: "What I'm afraid of: if the new bridge is widened it will bring more traffic down there which may impact the rural character of the place." Both Mr. Faris and Mr. Reppun also suggest that the present bridge itself – and in its association with the adjacent poi factory – represents a unique element of Waiāhole's rural character. They suggest that thought should be given to retention of the present bridge and construction of the new bridge *makai* in the general area where the temporary bypass road and culvert are currently planned.

Additionally, Mr. Faris and Mr. Reppun suggest that any new bridge project must be developed in coordination with – and integrated into – other planned developments in the adjacent *makai* lands of Waiāhole.

It is recommended that future bridge construction plans and activities proceed in consultation with community members concerned about the above issues.

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APPENDIX A: KAIPO FARIS AND JOHN REPPUN TRANSCRIPT

John Reppun (identified as JR in the transcript below) and Kaipo Faris (KF) were interviewed by Cultural Surveys Hawai'i (CSH) at the KEY Project in Kahalu'u on July 29, 2003.

CSH: May we start with both of you describing your backgrounds in relation to Waiāhole Valley?

JR: I'm a resident of Waiāhole Valley, on one of the lease lots that's under the state, HCDCH [Housing and Community Development Corporation of Hawai'i]. Along with my brothers and Calvin Hoe, Tony Friola, we lease a lot that's *mauka* in Hanakea, actually, the *mauka* area just below Pu'u Makikiki. We have a farm there. We're farming taro, wetland style, and other truck crops. I've been there for twenty-five years. And, other than that, I've been a resident of the Kahalu'u area all my life. I'm the sub-area representative for Waiāhole through Kualoa on the Kahalu'u Neighborhood Board, which represents He'eia to Kualoa. Like Kaipo, I'm a member of the Makawai Stream Restoration Alliance. We've fought pretty hard for restoring the streams – not only Waiāhole and Waikane, the whole windward area around the state. I work in the Community Development program here at KEY Project, which is a community/family center.

KF: My family's had a ranch in Kahalu'u for several years. Back in '58 we lived in this area. In the last ten years, eleven years I've also been connected with the Makawai Stream Restoration alliance. And Hihiwai Coalition, as far as doing the TMDL [Total Maximum Daily Load] case for the state. And several other organizations – cultural and all pertaining to all the streams. And the Waiāhole area but not inclusive. As a business, I do water quality testing throughout the state as a sub-contractor for AECOS Laboratory which does work for the Department of Health.

CSH: Before we get into questions about the new bridge, do you have any recollections, any memories of the present Waiāhole Bridge? Any recollections of activities associated with the bridge?

JR: It's hard to just look at the bridge itself, but as a kid: come over this bridge, poi factory to your left, taro patches to the right. That was my introduction to taro, water buffaloes. It was the visible – cultivation of taro along the highway that you first noticed. The bridge itself, there is always somebody on the bridge, for better or for worse. The kids jumping off the bridge, swimming, jumping into the stream. I've been people going under the bridge on whatever floats. Fishing, off the bridge.

CSH: That's what Richard Paglinawan talked about: swimming and fishing by the bridge in the thirties and forties when he was growing up. Richard also mentioned that the Keapuka flood in the sixties changed all that.

JR: A lot changed. That was – I think it was '65, '63 – a couple of occurrences. All this area got hit very hard by those floods. And the holes in rivers where people go swimming, kids go swimming, change all the time. When one fills up another one [is created]. But always kids around the bridge, adults around the bridge, hanging out. Even if they're just looking at the fish. But certainly with more water now coming down the stream which has been going on since 1995, I think, when Waiāhole Stream got restored to the extent

that it is today, there's a lot more water than there was when we were kids growing up. So it's even more of a habitat, more interesting. It's certainly a well-studied habitat.

KF: Life [is] coming back. Right under the bridge, there's a lot of baby mullet, *aholehole*.

CSH: Perhaps you can say more about what you've noticed of stream life by the bridge.

KF: In the last four years, a lot of difference. Really coming back. Really starting to see nice schools of fish in there.

CSH: For the record what specific –

KF: *Aholehole*, mullet, and native stream species are coming back. And, last year, I found the first recruitments of *hihiwai* coming up the stream.

JR: These are *hihiwai* that got reintroduced during the Waiāhole contested case hearing about stream restoration. With the help of the Department of Land and Natural Resources Division of Aquatic Resources, we brought *hihiwai* and reintroduced [them] into the stream. Tagged them, numbered them, noted the markings for the eggs and so on. Kaipo, in particular, has been monitoring how well they've survived. They've survived well. They've reproduced.

KF: The ones that have returned: we don't know if they're from that particular batch. Because *hihiwai* float as part of the plankton pool throughout the state. There's no genetic difference between an *hihiwai* on O'ahu and one in Hilo. But at least possibly, nobody knows, they smell the old – the *hihiwai* upstream – which is attracting them to come back to the stream from the ocean. But they're there. And that's where I found them, under the bridge.

JR: So that's a real critical habitat. The highway is less important to us than the river. That's the highway to us. This is a bridge over the highway that keeps us from driving through that river, from disturbing that necessary link between the ocean, the estuary, and the upper reaches of the stream. And Waiāhole, maybe more than just about any stream on this island, has taken on this immense importance. I would venture to say it's probably the most studied stream on this island, at this point. Because of this water case. I think this bridge project started off in the middle of the contested case hearing, or close to it. It's now a different project than it was when it was first conceived of. And this bridge project, when it was first conceived of, talked about going through the stream with a temporary culvert. That needs to be revisited.

KF: The stream has also been used for all these different studies that John was talking about by several state agencies, federal agencies. NRCS [National Resources Conservation Service] when they did their visual – to write up the book for the stream visual assessment protocol, that was the study spot. They started with that to set bases how this book should be written. So it's been under scrutiny for –

JR: And these were all studies that, while someone looking at this from a cultural standpoint might say: "How does that relate to culture? You're talking about the scientific studies." These studies are helping to bridge the gap between understanding by previous cultures and our understanding today. They have immense cultural significance because – A number of folks have repeatedly said: "So you restore a stream and you protect traditional and cultural practices – for fishing and gathering, and so on." Well, if there's nothing

growing there to fish and gather, how are you really protecting the cultural aspects of that right. So this is a well-studied stream. It needs to be handled very carefully because it is an active study site, an intensely active study site, now on O'ahu and within the state. It's a lot harder to bridge this stream than it was when the project was conceived of – to do it right, to do it carefully without interrupting studies and interrupting on-going observation – the ability of animals like *hihiwai* to move up and down the stream. You've got to be really careful about that.

KF: As you know, all our stream animals – the five *ʻoʻopu*, the two *ʻōpae*, and the three mollusks – are all anadromous, all have an ocean lifecycle. So they have all have to have that up and down connection. So it's very important that that bridge area is always clean, well-aerated, and open.

JR: One of the concerns with the lower reaches of the stream is what the base of the stream looks like: the amount of sediment, the rocks, the elements of the stream's physical structure that allow for that movement of animals. That's partly what's being studied and that needs to be paid attention to in the bridge construction. You can't just put in a box, cement, culvert-style bridge and dismiss that short distance that animal life needs to travel from top to bottom. Right now, for the most part, it's rocky bottom right through the bridge. And the stream spreads out. It's fairly wide throughout there. The other elements right in and around the bridge itself are shading – which is another issue we should probably talk about: how will this bridge affect things like the trees. There's one huge kamani tree that overhangs the bridge area on the *mauka* Kāneʻohe side. There was some talk that I heard earlier when talking to Environmental Communications about the need to, or the desire to, remove that tree or cut that tree. I think we need to look at that because to get that kind of shade which you get in the lower reaches of the stream where the water is naturally probably going to be a higher temperature is going to be a big concern – maintaining the temperature of the stream. So this bridge construction project needs to look at that: the removal of major shade trees.

CSH: Before we get more deeply into the new bridge construction, touching on the old bridge itself, do you have any special feeling about that bridge? Aesthetically? Historically?

KF: That bridge and the poi factory, the two are one.

JR: There's a certain style to it.

KF: And it's always been there. Everybody knows that area. Everybody talks about it. They stop and take pictures. Both the bridge and the poi factory. It's one.

CSH: Do you, however, recognize the need for this bridge replacement?

KF: To whom?

JR: To how heavy a bus.

KF: Yeah, how heavy the bus and how many buses do we want to go through there? Are we handling traffic now or are we looking at handling traffic in the future? Are we going to create more traffic by building bridges all the way along the coast?

JR: Is it [the current bridge] structurally unsound such that it needs to be replaced or is it the desire to expand the size so that it can accommodate more traffic? The thing I like about this small bridge is that it does define the size of the roadway that heads down the coast.

Like the Kahalu'u bridge down here: originally they planned a bigger bridge, a wider bridge. Keeping it to a certain size does control the amount of development that people can think about wanting to do at a later date. That's important because it's not just about accommodating more and more and more until you obliterate the landscape. So that the bridge has a constricting factor to it. And, design-wise, it's a nice bridge. It's got a nice walkway on the *mauka* side. Ideally, you'd have walkways on both sides of the bridge, making it a pedestrian-friendly thing like it is now. It has a certain style to it. It's not a modern style – I think the style defines the character. It's an aesthetic reading off of it. But that's important. Just down the road here we've seen Noriko's go up, which has no connection to anything culturally or in terms of architecture. And we've seen a small little wedding chapel that's kind of old-style, that was a lot easier to the eye. So that kind of thing does come into play.

CSH: Getting to this bridge replacement project, perhaps we can discuss your concerns.

JR: I'll start with looking at the context. There's a huge question in my mind about what the bridge replacement is aimed at trying to accomplish. Is it to accommodate a wider, faster highway? Is it a safety issue? And how does that safety issue relate to the discussion about traffic safety issues starting from Kahalu'u where you kind of start into the country area, down towards Kahana, Lā'ie and so on? And this goes to the Department of Transportation: they have not been out in this community officially, the state DOT, to discuss the relationship of this project to the broader safety concerns down the highway. And I think that means that the scope has been sort of artificially narrow. And that's dangerous. That doesn't help us to address what needs to be addressed with the bridge replacement project. Is it simply a bridge replacement? Or what else can it be, what else will it be that relates to the community around it and traffic safety? For example, it could be a wider bridge with more room for pedestrians and bikes, rather than more room for cars. It could have a wider footprint in order to accommodate the kind of lifestyle that exists there already. Or it could be a wider bridge that just means more cars, bigger cars, faster. Because the wider it is, just like the wider the highway is, the faster the cars go. Just looking at this bridge doesn't address the speed limits that ought to be set. When this project began, the understanding from the initial consultants, and I think from DOT, was they were just replacing a bridge on a highway with private land to the *makai* side and Waiāhole ag park to the *mauka* side. That's not the case today. There is easily close to a hundred acres on the *makai* side that's now publicly owned, a good portion of which, probably fifty or sixty acres of which, is going to be active public park, access to the ocean, a destination point for both people from the area and in the valley and the adjacent *ahupua'a* and for others on the island. It has become a destination point because the view planes have been opened up. So it's really important to look at a different set of safety concerns. Are you trying to make a more efficient and faster flow of traffic through the area? Or are you actually trying to do the opposite: slow it down, use things like the bridge and other highway features to make sure that there's an understanding you're coming through a community and a nearby destination point. As you go from Homestead Road, as you enter into Waiāhole and pass Homestead Road, from there to Waiāhole Beach Park, to the first parking lot at Waiāhole Beach Park, there are a number of signs, the speed signs, miles-per-hour signs. And it goes from 25, 35, down to 25, 35. If you're trying to figure out and go the speed limit, you'd never be able to do it. Because, right before the bridge, there's a sign that says 25, there's another sign that says 35. It's a

confusion. And then right after the bridge there's Waiāhole Valley Road. There have been numerous accidents there, reported or not. You can't just go by the stats. You've gotta go by what people know. In our family alone, there have been several situations where family members have been rear-ended by somebody coming up behind them as they just crossed the bridge and make a left up Waiāhole Valley Road. There's a lot of traffic in and out. That's a destination point too. It's our small little economic zone: the store, the poi factory. It's kind of a meeting place. So it's very dangerous. So this bridge should be looked at as part of a slightly larger stretch of highway. And then the other thing too is that this bridge needs to be looked at in relationship to how people get in and out of that *makai* side. The fact that people are going a certain speed has meant that DOT is putting a stacking lane in the plans. They've called for a stacking lane in the plans for Waiāhole Beach Park, which pushes the highway wider. If, on the other hand, we were slowing down that stretch we might not need so much of the traffic features. Kualoa Park doesn't even have a stacking lane as you come into the park. But they're calling for one at Waiāhole Beach Park. That kind of looks like shades of things to come. It looks like an expanded highway. I do know that they're talking about moving poles down from here all the way to Kahana as part of highway safety. That concerns me if it's meant to be a highway expansion as opposed to safety [for] the people who are living and interacting with the features along the highway. How this bridge is designed needs to be done in consultation with the city planning department and the city park plans. Whether we're going to have an entrance into the park right before that bridge, right after that bridge? How far? And one last thing, as far as the bridge in relationship to the highway, it sounds like a three-step process. The existing bridge is there. The first step is: create a temporary crossing of the stream with culverts – on one of the major streams on the island, probably the major stream on the island, now restored with a much higher flow than when the project was conceived of. So first step is to put a temporary crossing. Second step is: removal of the existing bridge. Third step is: replace the existing. And, actually, there's a fourth step: go in and take out the [temporary] crossing. Two disturbings of the stream just for the temporary crossing alone: putting it in and taking it out on a major stream. If the scope of this project looked just a little bit bigger and took into consideration this new fact of public land ownership on the *makai* side – city ownership. And the city and the state spoke with one another and really worked on this, a slight re-alignment of the highway, while it may be more costly, may end up with a much safer stretch of highway, fewer [construction] steps. We'd basically build a new bridge. No new crossing. No temporary crossing. Build a new bridge immediately *makai* of the existing bridge and then remove the original bridge. No invasion of the stream proper itself other than the buttressing walls. That would mean a slight re-aligning of the highway which could very well benefit the store and the poi factory and the intersection that's immediately to the Kahuku side of the bridge in a positive way. So, while it may look like it's more costly to look at that slight re-alignment, the spin-off effects of it that relate to the economic area, the park area *makai*, the stretch of highway and the safety factors, you may get a much, much bigger bang for the buck. Those are the kinds of future planning options that the Special Management Area language calls for. And we've phrased that before. But it's hard to get the blinders off the state. The state's not used to working with the county. And master plans: it's not always the practice to merge master plans. But I think this is a tremendous opportunity to do that. We really need to get at that. So, I guess if there

would be one message to go back: let's make this a part of our culture. Where we sit around a round table and talk about the variety of impacts within a given community. That's culturally appropriate. We can get at this. Depending on what the plans are, particularly right there around the bridge. Immediately *makai* of the bridge itself and to the south which on the old map shows up as Makawai (with a connection *mauka*), Hanakea (with a connection *mauka*): these are the areas that probably have the most potential because Waiāhole Stream goes right through them and has been restored, and there are existing *ʻauwai* that feed that area. They have the most potential for being restored to taro production. Not just taro production like you might find in any other valley on this island. Taro production with plenty of sun, plenty of cold water – probably one of the best areas for growing taro because of that combination. The other thing too is they are visible from the highway. The whole *makai* side was acquired by the city. A good portion of that was with ISTEA [Intermodal Transportation and Efficiency Act] money, now called TEA-21 monies. It's federal money that comes in to mitigate the impacts of highways. Marrying these two sources of money together would make so much sense. How do you replace a bridge in a spot where the state and the feds and the city have come together to fund acquisition for scenic views, protection of agricultural areas? What a tremendous opportunity to do it right. If we were planning a project to restore *loʻi* on the *makai* side, as we're trying to get to: if we look at the context of what we're trying to do with our publicly owned space, starting from the highway down – Actually, all of Waiāhole is under state ownership for the most part. If the *makai* project includes the highway that runs through it, and we were out to design something to enhance the use of that park space, the agricultural area, the access *mauka/makai*, what would we do? But, instead, this project is only looking at the bridge. And right next to it is a whole other master plan. So I think that this project should incorporate by reference the planning for the *makai* side. And actually needs to start to dovetail. The state and the county need to get together as they did with the Federal Highway Administration when they went after funds to help acquire those *makai* lands and get them off the speculation cycle. So this bridge physically, by itself, you might really want to be looking at things like pedestrian ways, bikeways that connect from one side of the stream to the other on the *makai* side. Again, if the bridge was slightly farther away from the poi factory you might be able to reduce congestion just by how you build this bridge, right in and around that part of Waiāhole Valley. So that's why it's a really important opportunity that we may very well miss just by too narrow a scope in project. I actually thought the project was dead, for a while. So I was really surprised to open the mail and realize, oh, Cultural Surveys is getting involved. And Environmental Communications is still involved. We've had absolutely no contact from Environmental Communications in at least three years. And certainly haven't heard anything from the state. And yet we've asked: on the Neighborhood Board level, we've asked: what's going on with the highway safety studies? I think Wilson Okamoto & Associates are doing, or have done, a study down the coast from Kahaluʻu on out. So we've asked about this, asked about the context of this kind of project. We've also been watching as they crossed the stream out in Kahuku – much smaller stream – with a similar process: bulldoze in, bring culverts, do a temporary crossing. This is not that stream. This is a big stream. The other question that comes into play is: what about other infrastructure? Board of Water Supply lines and so on. How does this relate to that? Is this a process of bigger lines? Board of Water Supply has

assured us that they do not want to take more from down the windward coast. But every bridge that gets built is an opportunity to put in the right size pipe. They're worried about their *ʻauwai*. We're worried about ours.

KF: I went to the water commission on this. Three of us. We went to the water commission and we wanted to know what was going on. Anyhow, it boiled down to the 42-inch pipe, waterline. It ended up the water commission said they had to stop here at Waiheʻe Road, tie into the old line. And start up again in Kahana and there tie into the old line. So between Kahana and Waiheʻe, it's supposed to be kept just the old line. They're not supposed to put in that 42-inch line.

JR: Which keeps them from expanding the amount of water that they're taking. It puts a sort of a natural constraint. But adequate for what they need right now.

CSH: Can you speak to the specific concerns you have, whatever the bridge replacement plan, about the *ʻauwai* running nearby?

JR: This *ʻauwai* goes way back in time, too, and it has been kept flowing for a long, long time. It's been interrupted in sections that have been reconnected. But it's flowing. This *ʻauwai*, on the *mauka* side, used to flow across – and the evidence of that is real clear on the old maps. In the new pictures it's still there. You can go to the *makai* side and see there's still water in the *ʻauwai* on the *makai* side. Right now it goes through a pipe under the road before you get to the bridge – a little bit of a distance before you get to the bridge. It's probably a little clogged. It's not kept real clear but the opportunity is still preserved. Certainly the concept is there. Then the *ʻauwai* makes a right angle turn on the *mauka* side of the highway and there's kind of a throw-away ditch that takes the water back to the stream, just on the *mauka*, Kāneʻohe side of the bridge. The bridge, I think, affords an opportunity in the design work in and around, and including, the bridge – an opportunity to house a pipe, a channel, a culvert that would be big enough to carry any amount of water that may go from *mauka* to *makai*. This is an opportunity to basically carry a section of the *ʻauwai*, built it in, so that it makes for an easier route to take water to the *makai* side. So that future planned *loʻi* restoration efforts can take place. And those plans are kind of housed in some of the concepts that have moved forward with the *makai* side city plans that Gerald Park has worked on and AECOS has been involved in, the environmental consulting firm. And much of that plan for wetland creation, restoration, and *loʻi* restoration is a throwback to the last time when this area was really actively in taro, which is probably 1949ish. Those 1949 aerial photographs that were obtained from R.M. Towill very clearly show where the *loʻi* were and what the opportunity for restoration is.

KF: Getting back to what John was just talking about, on that *ʻauwai*, what's so important about it is the altitude it's at on the *mauka* side of the highway. Should the *loʻi*s go in at a later date and then you want to put the water into it, you've lost your altitude. You can't pump the water up out of the stream into the *loʻi* now. You need that altitude of where the *ʻauwai* is now.

JR: That's important: to make sure they've got a gravity flow at the right elevation system to carry it from *mauka* to *makai*. So this is a good opportunity. And this helps to fulfill, by doing this, this helps to fulfill the intent of the use of federal monies that came from Federal Highways Administration to the state, to the county, and so on for the land

acquisition on the *makai* side. These were some of the restoration and protection of agriculture opportunities that were foreseen. That's why the value of it, the land acquisition on the *makai* side by the government was so important. So it kind of is incumbent upon projects like this to make sure that they are protective of what was foreseen in the land acquisition. And, again, going back to those coastal zone laws, so as not to preclude future planning options: the future planning option for the *makai* side is the restoration of *lo'i*. This project should not stand in the way of that. And this project is totally within the SMA. So it is bound by that responsibility. When you look at it, responsibility and opportunity, they're kind of one and the same, if you handle them right.

CSH: How about the actual construction of the new bridge and of the bypass bridge: your concerns about impact upon the lo'i themselves?

JR: I think that the construction of a new bridge in the place or a temporary culvert – I think they're close enough to the stream in this that they probably won't affect the area that would be put into *lo'i*. The *lo'i* would be just a little bit back from the stream because of the kind of flooding that occurs. This is a flood zone. It's a major flood zone. The river will jump its bank. It has jumped its bank and gone down Waiāhole Valley Road. And it jumps its bank on either side and then the bridge itself is a little bit of a constraint. It's a little bit of a funnel right there. I think if the two are planned together, looking at *lo'i* restoration and the protection of the systems that feed it, the *'auwai* and so on: if they're done together it can be done right. Again, the ideal thing would be not to be invading the stream. Build a new bridge immediately adjacent to the old bridge and either tear down the old bridge and then a slight re-alignment of the highway. Or leave the old bridge, if its structurally sound enough for pedestrians or somebody to park a car, it could actually be a benefit to the adjacent store. It could be a place for people to sit and fish. You can kind of landscape it –

KF: I think if you left it alone and used it as a bypass or parking or bus stop for the kids after school – It also has a lot of aesthetic value over there. You stop and you have lunch at the poi factory. You're eating lau laus and poi. That's why I came out to the country to stop and have lunch: to look at the rural values out here. I don't want to go look at cars racing past. And then it gets kind of nice to have the bridge, a big mango tree, and to sit down and have a nice quiet afternoon lunch right there.

JR: That might be a place to put a pedestrian way – right where the old bridge is. Or treat it as if it's a pedestrian way. But when you go down into the stream with a culvert, you're really invading the stream proper. If you can bridge it with a new bridge and take out the temporary steps, I think that would be worth looking at. Whether the old bridge remains intact or is kept or gets transformed into a pedestrian bridge – which you could do off of the walls. You could dig out the middle and leave a section – you could do something with it. But maybe you don't need to go down into the stream to do this.

CSH: Speaking of which, you talked about the stream itself, the life of the stream: however this bridge replacement project is designed, whatever modifications might come out of your suggestions, what are your specific concerns about maintaining the integrity of the stream itself, and sustaining the stream life that you've noticed has returned in the last few years?

KF: Concrete brings heat. Immediately it creates heat. Heat is very detrimental to the native species, not to the introduced exotics. They can handle warm water. Our native species can't. They need cold, cold water. And they're very susceptible to sediment. So the stream needs to be clean, clear, rushing. Now construction in any form creates sediment, creates heat. All the things that are detrimental to the native species. It has to be done carefully and with care for the right-of-way of the native species.

CSH: And you've noticed the improvements in stream life right in the area of the bridge?

KF: It's very important, between the bridge and the ocean: because that's part of the estuary. That is the most important connection to the life of the stream and to the life of the young in the estuary outside. That one section through there is the most important of the whole system.

JR: During construction and the end product you wouldn't want just a flat concrete base to the stream. You'd probably want to have rocks imbedded in concrete. You'd want to have a textured bottom. Right?

KF: I would rather not see any man-made bottom.

JR: Just leave it natural.

KF: And let it run as is. I've done studies in the flood control channel here. And it's bad. I'm finding native species coming up the channel but they're only living for two months. They cannot survive long enough to get into the natural parts of the stream farther up. Because the temperature rises to a 105 degrees during the day – the water temperature. And our native species can't handle that. So it is choke full of exotics. But the natives are dying. I'm finding babies coming in but not able to survive. And that's exactly what would happen there.

CSH: Can any of these adverse effects be avoided during construction?

KF: I don't think the span is that great that they would have to go into the stream. Because they're talking about going from the curve straight to Manatad's point, right? They're going to straighten the road?

JR: No. They just want to replace the bridge. Well, if they're going to make a temporary crossing, then you're talking about temporarily re-aligning the highway anyway. So, yeah, they're talking about temporarily re-aligning the highway and going across a culvert crossing backfilled with gravel. I think that's what I remember the plans calling for. And come up and go pass the poi factory, head down Kahuku direction.

KF: I was under the understanding that it was going to go – Well, coming from Kualoa, just before you get to the poi factory, the road was going to go straight to the point.

JR: No. It would have to go somewhat straight to get across this temporary crossing *makai* of the existing bridge and then it would come back on the highway.

KF: Just leave the old bridge. Build a new one just downstream of it.

JR: This is what I'm saying: build a new bridge. Don't go into the stream. You've got the bridge. It works. While everybody's going back and forth across that bridge, as they do right now, build your new walls, lay your span across it, don't go into the stream. Do that slight re-alignment of the highway anyway. Coordinate that plan with the *makai* side –

entrances into the park area and so on. Use that *makai* side area as a temporary staging area for doing this new bridge, keeping in mind that while they're cleaning up to create a staging area, they're helping us to clean up as we want to do to reopen those *lo'i*.

KF: Leave their infrastructure for the community after they leave. Bathrooms or whatever. Or a construction building that they use for equipment: build it so it's pleasing to the eye and, when you're done with it, leave it for the community. Why tear it down? And work with the community to see: if we put it over here next to these trees, creating a little park around it.

JR: We're working towards doing this clean-up day on the *makai* side on August 9th, coming up a week from Saturday. One of the calls we want to make, even though it's city-owned on the *makai* side – The city and the state and the feds were all involved in the acquisition with this highway money. One of the calls we want to make is to state DOT: come in and help us clear the tall grass and open up the area and get rid of the rubbish. That's the kind of spirit we're trying to recapture there. One of: we're all in the same boat together. We're working to being good stewards together. I think there's a partnership that's much longer-term than just replacing the bridge. This is going to be DOT helping to further the plans that it also invested into.

KF: Because I sure don't want to see them do what they did in Kahuku. I mean they just went in with bulldozers right through the stream. Just moved it. Everything. Rocks. Trees. Everything.

JR: Lots of sediment.

KF: Oh, the ocean was just red for weeks and months.

JR: And God forbid we had a flood event. That river trying to go through culverts of any size less than the size of that opening under the existing bridge will get washed out. It will get absolutely washed out.

KF: And it will create all kinds of problems upstream.

JR: This is a river that comes down and has spread out over that whole delta. As you can see in the photographs, that delta where Waiāhole comes out, all this area covered with *hau* and so on, the water spreads all through that. Thank goodness that grove of *hau* is in there, and these other sort of wetland are there, to absorb and drop out sediment. But you put a culvert in there, it will overtop the culvert. It will be impassible during a flood event. We had such a flood event in May last year. I think it was May 10th. You could have a flood event like that at any time of the year and the highway would be impassible. So this isn't a realistic approach to dealing with the only highway around the island, this stretch. What will they do in an emergency? If somebody gets hurt in Waiāhole Beach Park, they won't be able to get to Castle Hospital in a flood event like that. But there is another way that's better. Build a new bridge immediately *makai* of the old bridge. When it's ready and the highway has been re-aligned, take out the original bridge. Two step process.

KF: Or leave it.

JR: Or leave it.

CSH: John, earlier you mentioned the trees along the stream bank in that area: what other concerns do you have about the landscape in that general bridge area that might be affected by this project?

JR: Again, it's partly the effects of the project coupled with the opportunities. It's really the riparian zone alongside streams that's very important. And some attention needs to be brought to bear to that. Shading the stream: critical to keeping temperatures down. Stabilizing banks. This is an opportunity to look very hard at how to stabilize the banks in that area or maintain the stability that now exists. And improve on it. And create the proper riparian zone planting. All of our areas have been overgrown by introduced species and so on. There may be an opportunity to do some planting both above and below this bridge project, in that riparian zone that's really appropriate for the stream. Bringing the right kinds of plantings, native trees and so on, could actually be very helpful.

KF: And I think between DOT and NRCS [Natural Resource Conservation Service], the state, to do the riparian zone – It's a perfect opportunity. The state has the plants and NRCS has the process and the money to do this right now. In fact they're promoting this.

JR: EPA has funds. So there's an opportunity to look at this project as being an important piece of the lower reach delta of Waiāhole Stream. Not looking Kahuku/Kāne'ohe direction, as you would with just the highway. But looking *mauka/makai* within that reach of the stream. What's to be done here? There's a need to look at the riparian zone from here right out to the ocean. Which is not a far distance. It's actually a very short distance. This should be a part of a slightly bigger project. It's a tremendous opportunity. Short of that, it needs to anticipate those next phases and activities. If it only wants to be just bridge replacement then it needs to, nonetheless, look at conceptually what is going to go on above and below, and on either side, in order to be sure that it fits right.

CSH: Is there anything else either of you would like to add to summarize your feelings about this bridge replacement project and its relationship to the cultural heritage of this community?

JR: I suppose just to get that picture that this is actually a bridge two ways: it's a bridge *mauka/makai* as much as it's a bridge Kāne'ohe/Kahuku. That's the cultural connection, the nexus. The poi factory itself, too, we haven't really talked about. The poi factory itself is a huge piece of that. It's a bridge between the old days and now. It's actually been restored to poi production, food production. Taking products from the area. It's a gathering place. And this bridge is immediately adjacent to it. The store is one of the outlets for the valley. And, again, a gathering place and a destination point. Both of them are destination points that are immediately adjacent to the bridge. So the bridge needs to be planned in conjunction with looking at those places as destination points. They've been that way, have been accepted that way, as we've moved from the past into modern times – Waiāhole ag, residential lots subdivision under a different branch of the state. So things like parking, ingress, egress – all need to be addressed in relationship to this bridge project. DOT could just walk away from this and say: that's none of our concern. But the fact that they're proposing to do something within that zone makes it important for them to look at the surrounding context.

KF: If they're going to build the bridge, I'm 100 percent with John. And that's to do it immediately alongside the old bridge. Leave the old bridge as is. It's always going to be of some use, if it's structurally sound. Always going to be some use for it. It will have aesthetic value. It does now. And the new bridge should be created – if they're going to build it – to not be a big huge structure that's going to take away from the country setting. They should build it to fit in.

JR: Do you know what the main reason is for replacing the bridge? Is it its carrying capacity in terms of tonnage, the load bearing? Are they afraid that it may collapse in? Is it sinking? It kind of looks like it may have settled a little bit. If that's the case, then there is the need to span this river with something that can carry weight that's required. They don't need to remove the supporting walls for the span. If they're not putting heavy weight on top of it, you don't need to remove it. Or, if you're going to remove it, you can still leave the walls that support that span intact as you approach a new bridge.

KF: You don't need to put pilings alongside the stream. They could put the pilings farther apart. And work farther apart. They don't need to get into the stream at all. They can cross rivers and oceans on the Mainland, why can't they cross the stream?

JR: You could build the supports for a new bridge a distance from the existing stream banks and span that distance, and never even touch the stream.

CSH: Thank you for this interview.

Mr. Reppun later added the following remarks:

JR: The *'auwai* that comes down from *mauka* to the highway and could extend across, that *'auwai* is actually registered. Its use is registered with the state Commission on Water Resources. There's a two-volume document that they have. They went out as far as they could to try and get people to register things like stream diversions, *'auwai* – if you have a pump in the river and you're using water from the streams, and so on. But it is registered under a number of parties there who are still there today. So that's an important point: this *'auwai* is within the sights of the water commission in modern times. They are well aware of what is there.

APPENDIX B: CALVIN HOE TRANSCRIPT

Calvin Hoe (identified as CH in the transcript below) was interviewed by Cultural Surveys Hawai'i (CSH) at his home in Waiāhole on July 15, 2003.

CH: Most of what I know about the bridge is because I went to Waiāhole School. After school we used to come down to the poi factory to catch the bus to go home [to Hakipu'u]. We [Calvin and his wife Charlene] bought the lease on the poi factory in 1971 and we lived behind the poi factory. Even after we moved back to Hakipu'u we still had the poi factory.

CSH: When did you go to Waiāhole School?

CH: I went to Waiāhole School from first grade to seventh grade. Then I went to Kamehameha in 1959.

CSH: So you went to Waiāhole School in the '50s?

CH: Yeah.

CSH: As I mentioned to you earlier, Richard Paglinawan recalls during his youth that there was a swimming area below the bridge and kids would jump and dive off the bridge. Do you recall that kids were still swimming and diving there during the '50s?

CH: I don't remember too much swimming under the bridge. We didn't go swimming under the bridge. I remember playing under the bridge and maybe there was some small dam at that time. I remember fishing over there. The *aholehole* used to come up the stream because it was deep enough and from the bridge to the ocean is not too far. So fish like the *aholehole* could swim up. I kind of remember people saying that the stuff from the poi factory, when they clean the taro, went into the stream so I think that attracted some of the fish to come up. The swimming hole that I remember going to in Waiāhole was fairly up [*mauka* in Waiāhole Stream] – this place called "water rats". That was the swimming place that I knew of. Everybody had swimming holes by the bridges. Definitely in Waikāne by the bridge – over there we went swimming a lot. A big gang went swimming over there. Hakipu'u – we had a dam [creating a swimming area] under the bridge, too. So probably there would have been one in Waiāhole. Waiāhole had the most water. Waikāne had some swimming holes but I think Waiāhole probably had more places [to swim in] along the stream. I didn't see too many people swimming.

In the '80s, '90s I remember we had the big floods and the water [in Waiāhole Stream] got deep. People were jumping off the bridge. I don't think they even had to make dams. They might have been making dams but after the big rains it was pretty deep. After that the [warning] signs went up. And they've still got the signs: "No Jumping." I think that was after the last big flood that made a big hole and kids were all jumping off the bridge and then the signs came up.

I think there were taro patches on both sides of the road, at least the *makai* side of the highway, on the left side, there were taro patches over there. I don't remember taro patches *makai* on the right side of the stream. But I know there are taro patches over there, old taro patches over there. *Mauka* of the road [also] had taro patches.

CSH: Were there houses with people living in them along the highway near the bridge?

CH: Not that I know of. Although further downstream from the bridge there was a kind of a fishing camp. Angel used to live on the left side of the stream, the north side. Richard Macario, who worked at the poi factory, lived on the south side, right at the ocean, which isn't too far. Inside the *hau* trees – I used to go cruising around there – it looks like there are house sites.

But I don't know who took care of the taro patches by the bridge. I think Shige [who used to own the poi factory] took care of the taro patches on the north side. Although this guy Kaya and his family, they took care of a lot of the taro patches in Waiāhole.

CSH: So when you came to the poi factory in 1971, do you have any memories of what the bridge was like then? Were people still fishing from the bridge? Or doing anything else on or around the bridge?

CH: Not too much. I don't remember people fishing at that time. I kind of remember – You mentioned Richard Paglinawan and how he talked about dredging the stream after the Keapuka flooding. They dredged in Hakipu'u too. And all of that type of dredging was evident and still is because the stream is like clear runways now.

CSH: Do you have any cultural concerns about this new bridge?

CH: My concern is for the taro patch. My understanding is that there's going to be an alternate bridge built [to handle traffic] while they're building the new bridge. My understanding was that they would probably go to the *makai* side. Over there are taro patches that, I think, need to be preserved. A few yards from the stream, on the south side and going *mauka/makai*, there's a culvert. There are several culverts going across the road, I think. There's a big *'auwai* system that comes off of Waiāhole Stream and it used to feed all of that area. The community, the people from the *mauka lo'i, kalo pa'a* gang, help to keep the *'auwai* system running. So that – I noticed that there's water down by the Picansos' house. That's towards the south side of the valley. And that water needs to go back to the stream now. I think the *'auwai* that's close to the stream needs to keep going now and, basically, forever. Because that land, the taro patch land that's all *makai* of the highway, on the south side of the stream, is valuable taro patch land. Especially good because it's so accessible. It's close to the highway. People in the community have been talking to the city about restoring some of those taro patches and making it available for educational purposes. One of the things that the *mauka lo'i kalo pa'a* people want to do is have community taro patches similar to the community garden system that the city has in some places where families could have their own small taro patches to learn how to plant taro. The nice thing about that place is that it's very close to the highway, very accessible. There aren't very many taro patch places on the island that students can visit. This would be a really good place. So, in the construction of the bridge, I think care needs to be taken to make sure that the *'auwai* that's close to the stream, maybe twenty-five yards from the stream, by the Matsukawa place, and the other one by the Picanso place, there's another one that feeds the areas further south, *makai* side of the highway, those need to be preserved – the *'auwai*s and the culverts. The *lo'i*, the taro patches themselves, need to be preserved. I can envision the temporary bridge that's going to come. Hopefully, I guess, the city knows that that's a very old *lo'i* area and they will take precautions to not disturb the *lo'i* area. If they put rocks as a foundation for the road, it's going to be difficult to put it back into the *lo'i* condition that's there now. The way it is now, that's the *lo'i*. If they

start putting rocks inside there, and even if they're going to take them out, how are they going to restore the area? There needs to be a plan for accommodating [the *lo'i*]. I think, as a resident of the valley but also as someone whose family has lived in these valleys for centuries, I'm very concerned that the taro patches are taken care of. I don't know how they're going to do the temporary bridge but I think we need to have discussions about what would be acceptable [in order to maintain the viability of future restoration of the *makai lo'i*].

CSH: So your concern is that construction of the temporary by-pass and of the new bridge itself is not going to affect the 'auwai and the lo'i area?

CH: Yes. Because we need that. I don't know what the parks department has envisioned for the lands but these *lo'i* lands need to be protected as significant cultural places. [The construction activities] can't help but impact [the *lo'i* and *'auwai*] but they need to make sure that the thing keeps flowing. And maybe this is an opportunity to improve it a little bit. The size of the pipes going underneath [the highway] now: maybe it would be good to make them bigger. But, definitely, don't make it worse.

CSH: How about the new bridge itself? Do you recognize the necessity for it?

CH: I think so. Because of the flooding. [Also, the present bridge] is kind of narrow. I've seen at least one accident over there. I don't have any opposition to building a new bridge. Just so that they take care of the concerns I've mentioned: the protection of *lo'i* and *'auwai*.

CSH: Thank you for this interview.

APPENDIX C: RICHARD PAGLINAWAN TRANSCRIPT

Richard Paglinawan (identified as RP in the transcript below) was interviewed at the Queen Emma Foundation by Cultural Surveys Hawai'i (CSH) on June 25, 2003.

CSH: The bridge was built in 1922 so it's been there all your life. Can you share your recollections of the bridge and any activities that were focused on the bridge and the bridge area?

RP: Kamehameha Highway was built in 1922 and was made of concrete leading [Hau'ula] to and going towards Kahuku. What they did, they built it in sections and had tar in between the sections. What happened, because of the heat and cold, sometimes the concrete was kind of off. As cars would come by, of course, you hear the distinct sound when they hit it: ka-tonk, ka-tonk. And we kids, from the bridge, would jump off into the stream because we dammed the water and we could jump either way. And, for fun, we'd splash water on on-coming cars. When we got cold, because the river water is cold, we'd lie down on the concrete and go to sleep. Because they hardly had any traffic at that time. But when we hear the sound – ka-tonk, ka-tonk, ka-tonk – then we got up. Back in 1965, the Keapuka flood, also hit Waiāhole and it damaged the bridge causing the center section to collapse. And traffic couldn't go over so they stopped traffic for several days. Then, what they did, as a temporary measure, was to fill in between the collapsed middle portion of the bridge with hard top, the black top, to level it off. Eventually they straightened the alignment of the bridge by "jacking" it up and reinforcing the middle section of the bridge. And then they bulldozed the stream, widening it all the way down to where the stream makes a right angle going towards the sea, and all the way up to Miller's home, which is about three houses away from where we lived. What they did was widen the stream but unfortunately, in the process, it destroyed several swimming holes. One directly behind my home. One down below where the Kupaus lived. And then one close to the Waiāhole poi shop. The Waiāhole poi shop one was a favorite swimming hole for the whole community, all the way from Kahalu'u to Hakipu'u. So that was a famous swimming hole. The only name we had for it was "The Dam". Let me tell you about The Dam. I was thinking about that name and finally it dawned on me. I believe the dam is really a concrete roadway that crossed over Waiāhole Stream. And what it is: water flows over it but you can drive onto it. There are three such roadways in the streambed: one right behind the poi shop, one up where Shige Sakai used to live and then one up by where the Koki family used to live – that's where the Y in the road split to north and south Waiāhole. These dam roadways would give the farms access across the stream. The reason why I say that is I suspect that one right by the poi shop used to be the old road before the bridge was constructed in 1922. And because the way the road is constructed, of cement, the water would splash down over it and then would dig out the stream bottom, creating the depth of the pond. So we referred to the Dam because, you know, kids assign names. Unfortunately, when the county widened the stream they leveled everything off and took the Dam away. I think the other two are still intact, further up in the valley. But the one behind the poi shop was removed.

CSH: Do you remember what year the bulldozing happened?

RP: It was right after the Keapuka flood.

CSH: Right up to that time, people were still using the pond?

RP: Oh, yes. That used to be our famous gathering spot. People all over from Kahaluu to Kualoa would come over there during the holidays, nighttime, and weekends, sometimes. Especially after church. Everybody came down there because the churches were located in Waikāne, both the Protestant church and the Catholic church. So after *pau* service and everything, all the kids would head down there and go swimming. We preferred the pool at the poi factory because it was deeper. But we'd also use the bridge one because the Dam one was covered by a canopy of trees so it would get kind of cold. So we'd go over to the bridge one, dive off, get up to mischief, splash water on cars, but then we'd like to lie on the road because it was warm. Like I said, the only warning we had [that a car was coming] was this ka-tonk, ka-tonk, ka-tonk sound.

CSH: How deep was the water below the bridge?

RP: It was deep. For us kids, if we stood up with hands raised it was way over our hands. So I would say maybe about ten feet. Because we'd dam the lower portion of the stream below the bridge. On the *makai* side we'd dam it and then pack it with *honohono* grass to seal it. The water would rise up pretty high. Of course the other thing that we did was catch *'o'opu*, catfish, *'ōpae niho*. Sometimes we'd throw a can with one side open in the water and the *'ōpae niho* would go in and use it as a house. So when we wanted to catch *'ōpae niho* we'd just go and pull up the cans. Likewise with The Dam pond. We'd use it to catch *'o'opu*, catfish, and so forth.

CSH: So kids were still playing in the water under the bridge until the '60s?

RP: Into the '60s. After they bulldozed the stream, the place became all flat, shallow. So the swimming holes were gone and people stopped coming. Anyway, that disrupted – but we understood it had to be done because of the flood potential. But the social life changed. The gathering place changed.

CSH: The gathering place was The Dam swimming hole area?

RP: Yes. But, like I said, the activities would spill over on two sides [of The Dam]. Mostly the boys [gravitated toward the swimming area under the bridge] because we'd love to splash water on cars. So we'd jump off [the bridge] and do what we called "Buddha" and all that kind of stuff. We would see who could make the biggest splash.

CSH: Do you have any concerns about the construction of the new bridge?

RP: Well, one of the concerns that I would have is an overall one. I'd like to see the area kept rural. What I'm afraid of: if the new bridge is widened it will bring more traffic down there which may impact the rural character of the place. Incidentally that concern is also throughout the Ko'olaupoko region. They're concerned that if the state and county widen those roads it will open more traffic. And the other problem: the highway is a death trap. Of course the road was built to 1922 specifications [for rural conditions]. And now modern cars [on the highway] are traveling so fast. When fatalities occur they interfere with the flow of traffic, especially when people are going to work. But I think the people down there they're willing to live with [the occasional traffic stoppages]. I think what they're afraid of is more traffic and more development that might result from that kind of [bridge or highway widening] project. I don't know if the [new] bridge is going to serve that purpose. But potentially it can. The other concern, of course, is for bikers and

pedestrians. I know in the old days we used to run on the road, even with the cars coming. And now more biking is encouraged. It's not only from our area but from elsewhere. So the question is whether or not the bridge should accommodate foot and bicycle [traffic]. That isn't to say I'm not concerned of the safety issue because the [current] bridge is old.

CSH: How about any concerns during the construction of the new bridge?

RP: Well, during the construction of the bridge there should be assurance that the water quality be maintained because, as you know, run-off may pollute the lower area, which is a good fishing ground area. So that would be a primary concern. Also, I guess they're going to have to reroute the traffic and put up a temporary [bridge]. And so the question is how that is going to be factored in. I guess in my mind the only feasible place is on the *makai* side of the bridge. Because they've already cleared the lands on the Kahuku side of the river. But on the Kāne'ohe side there's a lot of land over there that is not used. So when that temporary route is made [there's] also the same issue about maintaining the quality of the water as much as possible.

CSH: Finally, do you envision that, with the new bridge, kids will be able to do the same things that you experienced in your childhood? Or has the stream itself been so altered with the bulldozing you've mentioned?

RP: You see the [streambed] is so wide now because they've leveled it off and filled in the area. Unless [some reconfiguration and deepening of the stream below the bridge] is planned for so kids could use it again – if something like [a swimming hole area] could be considered, that would be great. I think, more and more, kids should get in tune with their environment.

CSH: I've enjoyed your reminiscences of the Dam area.

RP: It became an area where people would bring down their dinner. Or they would take a bath. It was an important area. I'll just give you an example. Gen. David Cooper is from Waikāne. Andrew Poepoe who was a councilman: he's from Waikāne. He belonged to the Protestant church. And they used to come down from [Waikane]. That's how I got to know David, the Kamaka family. They would come down to Waiāhole and we'd all play – kids and everything. So that became a real waterhole for everybody. A meeting place. A social place. Good fun. You could build a fire and stay as late as you want to. But the water does get cold.

CSH: Was this mostly on the week-ends?

RP Even during the weekdays, sometimes we'd go there and swim, after school. So it's not only during the week-ends. The week-ends, usually the families would [go to the Dam and the bridge]. But the weekdays would be mostly kids. Again, that was a focal point, not only for Waiāhole but the other areas. Because they didn't have swimming areas. Waikāne had – right by the bridge. And they had swimming areas way up in the mountain but you had to go hiking. Whereas this [the Dam and the bridge in Waiāhole] was readily available – on the way to and from school, and close to the poi shop, close to Kaya Store. So it was convenient.

CSH: Thank you for this interview.