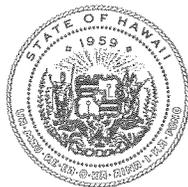


LINDA LINGLE  
GOVERNOR



MICHAEL D. FORMBY  
INTERIM DIRECTOR

Deputy Directors  
FRANCIS PAUL KEENO  
JIRO A. SUMIDA

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

IN REPLY REFER TO:  
HWY-M 2.594-10

NOV 22 2010

TO: THE HONORABLE KATHERINE KEALOHA, DIRECTOR  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: MICHAEL D. FORMBY   
INTERIM DIRECTOR OF TRANSPORTATION

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT (FEA) FOR HANA HIGHWAY  
IMPROVEMENTS, UAKEA ROAD TO KEAWA PLACE,  
NEAR INTERSECTION WITH UAKEA ROAD AT MILEPOST (MP) 33.88,  
HANA, MAUI, HAWAII  
PROJECT NO. 360B-01-03  
TMK: (2) 1-4-006:999

The State of Hawaii, Department of Transportation, Highways Division, has reviewed the final environmental assessment for the subject project, has determined that the project will not have significant environmental effects, and has issued a FONSI. Please publish this notice in the November 23, 2010 OEQC Environmental Notice.

An advanced FEA hard copy and one PDF disk copy of the FEA and OEQC Publication Form have been sent to your office.

If you have any questions, please call Ms. Charlene Shibuya, Maui District Construction Engineer, at (808) 873-3535.

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# Final Environmental Assessment Hana Highway Improvements, Uakea Road to Keawa Place

Hana, Island of Maui, Hawaii  
Project No. 360B-01-03

**OCTOBER 2010**

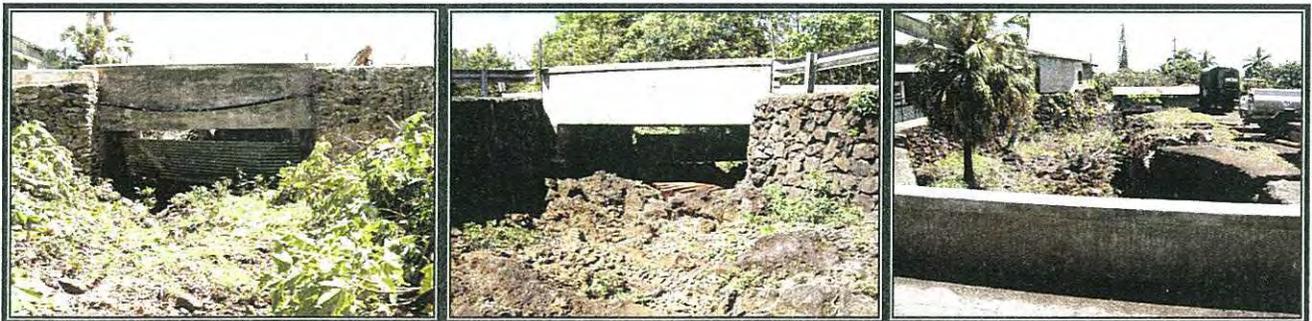
*Prepared for:*

State of Hawai'i  
Department of Transportation  
Highways Division

*Prepared by:*

**AZCOM**

1001 Bishop Street, Suite 1600  
Honolulu, Hawai'i 96813



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**SECTION 1****PROJECT SUMMARY**

**Project Name:** Hana Highway Improvements  
Uakea Road to Keawa Place  
Project No. 360B-01-03

**Applicant:** State of Hawaii  
Department of Transportation – Highways Division  
650 Palapala Drive  
Kahului, HI 96732  
Contact: Ms. Charlene Shibuya, P.E., Project Manager  
Phone: (808) 873-3535, Fax: (808) 873-3544  
Email: Charlene.Shibuya@Hawaii.Gov

**Approving Agency:** State of Hawaii  
Department of Transportation – Highways Division  
650 Palapala Drive  
Kahului, HI 96732  
Contact: Ms. Charlene Shibuya, P.E., Project Manager  
Phone: (808) 873-3535, Fax: (808) 873-3544  
Email: Charlene.Shibuya@Hawaii.Gov

**Applicant Agent:** AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813  
Contact: Ms. Diane Kodama, P.E.  
Phone: (808) 521-3051 Fax: (808) 524-0246

**Location:** Hana Highway  
Uakea Road (MP 33.88)

**TMK Designation:** Within Right-of-Way, parcel  
2<sup>nd</sup> Div 1-4-006:999

**Properties Owner:** State of Hawaii  
**State Land Use Classification:** Agricultural  
**County Zoning:** Not Zoned  
**Special Designation:** SMA

**Proposed Action:** This project proposes to widen the roadway at the bridge/box culvert adjacent to the County Highways Baseyard on Route 360 Hana Highway near the intersection with Uakea Road (MP 33.88). These improvements will provide for clear two way traffic flow to facilitate emergency vehicles responding from the Hana Fire Station located about 200 feet east of this roadway constriction and minimize vehicle collisions with the concrete parapet walls and guardrail approaches.

**Determination:** Finding of No Significant Impact (FONSI)

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**SECTION 2****CONSULTATION LIST****2.1 FEDERAL**

U.S. Army Corps of Engineers  
U.S. Department of the Interior, U.S. Fish and Wildlife Service (FWS)

**2.2 STATE OF HAWAII**

Department of Business, Economic Development and Tourism, (DBEDT)  
Department of Health, Environmental Planning Office  
Department of Land and Natural Resources, Historic Preservation Division  
Department of Land and Natural Resources, Land Division  
Department of Transportation, Highways Division  
Office of Hawaiian Affairs (OHA)  
University of Hawaii at Manoa Environmental Center  
University of Hawaii at Manoa Hawaii Natural Heritage Program

**2.3 COUNTY OF MAUI**

Councilmember Bill Kauakea Medeiros  
Department of Environmental Management  
Department of Fire and Public Safety, Fire Prevention Bureau  
Department of Parks and Recreation  
Department of Public Works, Highways Division  
Department of Water Supply  
Planning Department  
Planning Department, Cultural Resources Commission  
Police Department  
Office of the Mayor, Environmental Coordinator

**2.4 COMMUNITY ORGANIZATIONS**

Alliance for the Heritage of East Maui  
Hana Community Association  
Historic Hawaii Foundation  
Maui Visitors Bureau  
Native Hawaiian Legal Corporation  
Sierra Club, Maui Group

**2.5 CONTACT INFORMATION AND SUMMARY**

U.S. Army Corps of Engineers	
Contact:	George Young, Chief
Address:	Regulatory Branch CEPOH-EC-R US Army District of Honolulu Building 230 Fort Shafter, HI 96858
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
June 17, 2008	U.S. Army COE letter response received.
Summary:	The draft EA should address whether any US waters are in, adjacent to, or flow through the project area. The EA should also disclose whether any streams or other aquatic resources that may occur within the land parcel have an existing direct or indirect surface water connection to the Pacific Ocean.
February 10, 2009	Response letter to comments and copy of the DEA sent.

U.S. Department of the Interior, U.S. Fish and Wildlife Service (FWS)	
Contact:	Mr. Patrick Leonard, Field Supervisor
Address:	300 Ala Moana Boulevard, #3-122 Honolulu, HI 96850
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
June 16, 2008	U.S. DOI, FWS letter response received.
Summary:	The federally threatened Newell's shearwater and federally endangered Hawaiian petrel are known to occur within the vicinity of the proposed project site. The U.S. FWS is concerned that construction equipment and other structures associated with the project that protrude above the vegetation line could pose a flight obstacle to night-flying birds. The U.S. FWS is also concerned that night-time lighting, could result in seabird disorientation or injury. The U.S. FWS suggests that lighting associated with the improvements be shielded so the bulb can be seen only from below. Use of lights at night during the peak fallout period of September 15 through December 15 should be avoided. Additionally, because the proposed project is road widening at a bridge/box culvert area, the U.S. FWS recommends that Standard Best Management Practices for aquatic resources be incorporated into the project's plan in order to minimize erosion, sedimentation, and other adverse impacts to aquatic resources and nearby coral reef ecosystems.
February 10, 2009	Response letter to comments and copy of the DEA sent.

Department of Business, Economic Development and Tourism (DBEDT), Office of Planning	
Contact:	Mr. Theodore Liu, Director
Address:	P.O. Box 2359 Honolulu, HI 96804
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

Department of Health, Environmental Planning Office	
Contact:	Director
Address:	919 Ala Moana Boulevard, Room 312 Honolulu, HI 96814
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.
March 26, 2009	State of Hawaii, Department of Health letter response received.
Summary	Any project and its potential impacts to State waters must meet the following criteria: a) antidegradation policy, b) designated uses, and c) water quality criteria. An NPDES Permit may need to be obtained from the DOH, and a copy submitted it to the SHPD. Contact the Army Corps of Engineers to determine whether a DA permit is necessary. If a DA permit is required, a Section 401 Water Quality Certification (WQC) from the DOH is required. All project-related discharges must comply with the Water Quality Standards, regardless of permit coverage requirements. The EA should specify if any impacted State waters are listed in the Clean Water Act, Section 303 (d) list of impaired water bodies.
October 25, 2010	Response letter to comments sent.

Department of Land and Natural Resources (DLNR), Historic Preservation Division (SHPD)	
Contact:	Ms. Nancy McMahon
Address:	Kakuhihewa Building, Room 555 601 Kamokila Boulevard Kapolei, HI 96707
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
July 21, 2008	SHPD letter response received.
Summary:	SHPD believes that historic archaeological properties and/or previously disturbed historic archaeological properties may be present in the subject area. In order to determine the effect of the proposed project on historic sites, SHPD recommends that no construction activities occur until an Archaeological Inventory Survey (AIS) has been conducted of the subject area to determine whether significant historic properties are present.
February 10, 2009	Response letter to comments and copy of the DEA sent.
May 26, 2009	SHPD letter response to DEA received.
Summary	SHPD cannot agree that the proposed project will have no adverse effect on culturally significant historic or archaeological properties because the historic preservation process has not yet been completed. SHPD is still awaiting a revised copy of the AIS for final review. Formal comments will be withheld until the report has resubmitted and accepted.
June 12, 2009	Final AIS submitted to SHPD.
June 25, 2009	SHPD letter response received.
Summary:	The survey area as described in the report consists of a 300 square meter area of the Hana Highway which is proposed for road widening. The TMK of the area included in the inventory survey has been corrected to 1-4-006:999. The AIS contains the required information as specified in HAR §13-276-5 and is acceptable. The bridge and basalt lined culvert in the subject area are considered significant for their association with engineering, social history, transportation and commerce between ca. 1900 and 1947. However, the work proposed may be considered necessary maintenance to a public roadway under the jurisdiction of the State of Hawaii, with appropriate current (inventory survey) and future mitigation (precautionary archaeological monitoring) underway. An appropriately prepared archaeological monitoring plan will need to be submitted to the SHPD for review and acceptance prior to proposed work taking place.

Department of Land and Natural Resources (DLNR), Land Division	
Address:	54 High Street, Room 101 Wailuku, HI 96793
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

Department of Transportation, Highways Division (State DOT-Highways) Planning Office	
Contact:	Mr. Edwin Smithen
Address:	Hale Awa Ku Moku Building 869 Punchbowl Street, Room 513 Honolulu, HI 96813
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

Office of Hawaiian Affairs (OHA)	
Contact:	Mr. Clyde Namuo, Administrator
Address:	Office of Hawaiian Affairs 711 Kapiolani Boulevard, Suite 500 Honolulu, HI 96813
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
June 18, 2008	State of Hawaii, Office of Hawaiian Affairs letter response received. The Draft EA should include a Cultural Impact Assessment (CIA) which includes information relating to the practices and beliefs of the Native Hawaiians who once inhabited this area. The community should be involved in this assessment. The proposed project is in close proximity to known historic sites located within TMK (2) 1-4-006:001, owned by Hana Ranch, Inc. The applicant assurances are requested that should historical artifacts be found during the construction of the project, work will cease, and the appropriate agencies will be contacted.
Summary:	
February 10, 2009	Response letter to comments and copy of the DEA sent.
April 9, 2009	State of Hawaii, Office of Hawaiian Affairs letter response received. OHA is concerned about the effects of storm water runoff and ask that Best Management Practices (BMPs) be implemented to mitigate these impacts, and ask that unpaved, disturbed areas of the project site be re-vegetated with native plants once construction is finished. OHA appreciates that the applicant will adopt the U.S. fish and Wildlife Services' recommendations to protect native seabirds. OHA will rely on the applicant's assurances that should historical artifacts be found during the construction of the project, work will cease, and the appropriate agencies will be contacted.
Summary	
October 25, 2010	Response letter to comments sent.

University of Hawaii at Manoa Environmental Center	
Contact:	Dr. John T. Harrison, Ph.D., Environmental Coordinator
Address:	2500 Dole Street, Krauss Annex 19 Honolulu, HI 96822
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

UH Manoa Center for Conservation Research and Training Hawaii Natural Heritage Program	
Contact:	Mr. Roy Kam, Database Manager
Address:	Hawaii Biodiversity and Mapping Program 3050 Maile Way, Gilmore Hall #406 Honolulu, HI 96822
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
May 23, 2008	HBMP letter response received.
Summary:	There have been no recordings of rare species in the vicinity of your project site.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

County Council, County of Maui	
Contact:	Councilmember Bill Kauakea Medeiros
Address:	Kalana O Maui Building, 8 <sup>th</sup> Floor 200 South High Street Wailuku, HI 96793
May 14, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

County of Maui Department of Environmental Management (DEM)	
Contact:	Ms. Cheryl K. Okuma
Address:	One Main Plaza 2200 Main Street, Suite 175 Wailuku, HI 96793
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
May 28, 2008	COM DEM letter response received.
Summary:	The project was reviewed as a pre-application consultation. There are no comments from either Wastewater Reclamation Division or Solid Waste Division
February 10, 2009	Response letter to comments and copy of the DEA sent.
February 26, 2009	COM DEM letter response received.
Summary:	The project was reviewed as a pre-application consultation. There are no comments from either Wastewater Reclamation Division or Solid Waste Division

County of Maui Department of Fire and Public Safety, Fire Prevention Bureau	
Contact:	Valeriano F. Martin, Captain
Address:	780 Alua Street Wailuku, HI 96793
May 14, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
May 22, 2008	COM Dept of Fire and Public Safety – Fire Prevention Bureau letter response received
Summary:	The bridge widening is much appreciated, however the intermittent closure of the roadway fronting the police and fire station will impact the timely response of emergency vehicles heading north. Communication between the construction company and emergency personnel must be consistent and frequent. The contractor should notify the fire department personnel whenever the decision to close the road is made.
February 10, 2009	Response letter to comments and copy of the DEA sent.

County of Maui Department of Parks and Recreation	
Contact:	Ms. Tamara Horcajo
Address:	700 Halia Nakoa Street, Unit 2 Wailuku, HI 96793
February 10, 2009	Letter informing agency of the DEA publication sent.
February 26, 2009	COM Dept of Parks and Recreation letter response received
Summary	The Department of Parks and Recreation has reviewed the project and has no comments or objections to submit at this time.

County of Maui Department of Public Works, Highways Division	
Contact:	Mr. James Perry, District Supervisor
Address:	200 South High Street Wailuku, HI 96793
May 14, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
June 5, 2008	COM Dept of Public Works letter response received
Summary:	This project is located next to the county garage and equipment baseyard. In the last 40 years, the project area has overflowed and flooded the interior of the garage and equipment parking lot a number of times. I would like to request that it be built a little wider and deeper than the existing grade. Hopefully that solves the overflow problem. Another concern is that the bridge is part of the Historic road and it has the date it was built, 1915, inscribed on the side. Will that be saved?
February 10, 2009	Response letter to comments and copy of the DEA sent.

County of Maui Department of Water Supply	
Contact:	Mr. Jeffrey K. Eng
Address:	200 South High Street Wailuku, HI 96793
February 10, 2009	Letter informing agency of the DEA publication sent.

County of Maui Planning Department	
Contact:	Mr. Jeffrey S. Hunt
Address:	250 South High Street Wailuku, HI 96793
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
May 22, 2008	COM Dept of Planning letter response received
July 3, 2008	The land use designations for the project area are: State Land Use - Agricultural, Community Plan - Agricultural, County Zoning - Not Zoned, Other - Located within the Special Management area. The Special Management Area (SMA) for this portion of Hana Highway is located on the <i>mauka</i> side of the existing highway right-of-way. A SMA Permit may be required for the proposed project. This portion of Hana Highway is listed on both the National and State Register of Historic Places. The Maui County Cultural Resources Commission should be consulted on the proposed project. The proposed improvements should retain the rural character of the roadway.
February 10, 2009	Response letter to comments and copy of the DEA sent.
April 9, 2009	COM Dept of Planning letter response received
Summary	The proposed project is located within the SMA. An SMA Use Permit will be required for the proposed action. This determination was based upon the potential for adverse impacts to the Hana Belt Road, a historical resource. Also known as Hana Highway, the portion of the Road from Hoalua Bridge in Huelo to Koukouai Bridge in Kipahulu is listed on both the State of Hawaii and National Register of Historic Places. The Department will schedule the proposed project with the Maui County Cultural Resources Commission. The Final EA should include the construction drawings for the proposed project.
October 25, 2010	Response letter to comments sent.

County of Maui Planning Department, Cultural Resources Commission	
Contact:	Mr. Samuel Kalalau III
Address:	250 South High Street Wailuku, HI 96793
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

County of Maui Police Department	
Contact:	Mr. Thomas Phillips, Police Chief
Address:	55 Mahalani Street Wailuku, HI 96793
May 14, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication and copy of the DEA sent.

Office of the Mayor, Environmental Coordinator	
Contact:	Kuheia Paracuelles, Environmental Coordinator
Address:	200 South High Street, 9 <sup>th</sup> Floor Wailuku, HI 96793
July 1, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

Alliance for the Heritage of East Maui	
Address:	PO Box 455 Hana, HI 96713
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

Hana Community Association	
Address:	PO Box 202 Hana, HI 96713
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

Historic Hawaii Foundation	
Contact:	Ms. Kiersten Faulkner, Executive Director
Address:	680 Iwilei Road, Suite 690 Honolulu, HI 96817
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence.
May 27, 2008	Historic Hawaii Foundation letter response received
Summary:	What, if any, of the character-defining features of the historic road would be impacted by the widening at the bridge/box culvert? Does the project include demolition or replacement of the existing bridge and culvert? Will the widening impact other resources? Will the alignment of the road change? Will view sheds be impacted? Is the design of the proposed project consistent with context-sensitive design principles? In order to review and comment on the proposal, HHF requests that additional information be provided, including: 1. A description of the undertaking, including drawings or photographs, as necessary to describe it; 2. A description of the historic property and area of potential effect; 3. A description of the potential effect on historic properties; and 4. Proposed avoidance or mitigation of the potential effect, if any.
February 10, 2009	Response letter to comments and copy of the DEA sent.
March 11, 2009	Historic Hawaii Foundation letter response received
Summary:	HHF continues to be concerned that the project is not treating the bridge itself as a historic resource. HHF would like to ensure that the bridge is treated as contributing to the historic character of Hana Highway. Please rectify the discrepancy between the statements in the DEA, that this is a historic bridge and that no historic properties are anticipated to be encountered, by acknowledging that the project will affect a historic property. How much of the existing bridge will remain? And how much of the historic bridge will be demolished? How much of the project will be new construction? Please provide both drawings and a narrative description to clarify the level of demolition anticipated. HHF feels that it would be inappropriate to make the new bridge railings identical to the existing railings and stamp the date '1915' on the new parapet wall, as it would convey a false sense of history by making it appear as if the new bridge is historic. It would be more appropriate to design the new bridge railing in a style that is compatible with, but not identical to, the remaining historic bridges along the Hana Highway. HHF feels that additional alternatives should be explored that may allow for the preservation of this bridge and keeping the historic character of the roadway more intact. Widening the bridge would negatively impact the Hana Highway, a Hawaii Register-listed property. Should you choose to proceed with the project in its current form, appropriate mitigation measures should be explored that would contribute to preserving the character of the roadway, such as a commitment to preserve other historic bridges along the route.
March 12, 2009	Response letter to comments sent.

Maui Visitors Bureau	
Contact:	Ms. Marsha Weinert
Address:	1727 Wili Pa Loop Wailuku, HI 96793
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

Native Hawaiian Legal Corporation	
Contact:	Ms. Mahealani Wendt, Executive Director
Address:	1164 Bishop Street, Suite 1205 Honolulu, HI 96813
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

Sierra Club, Maui Group	
Contact:	Mr. Daniel Grantham
Address:	PO Box 791180 Paia, HI 96779
May 13, 2008	Consultation Request Letter sent, refer to <b>Appendix A</b> for all correspondence. Response not received by the 30-day deadline.
February 10, 2009	Letter informing agency of the DEA publication sent.

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## SECTION 3

### PROJECT DESCRIPTION

#### 3.1 PROJECT NEED AND OBJECTIVE

Hana Highway winds through mountainous regions of the island of Maui in relatively narrow cuts with steep slopes on either side of the roadway. The road is typically 16 feet wide, consisting of two 8-foot opposing travel lanes. The bridge/box culvert within the project limits is one-lane, with an 11-foot wide travel way.

This Environmental Assessment (EA) discusses planned strategies to widen the existing bridge/box culvert located on Hana Highway near Milepost (MP) 33.88 (Figure 1).

#### 3.2 PROJECT OVERVIEW AND DESCRIPTION

Hana Highway is a major collector road. This highway is the only developed roadway providing service between Hana and Kahului on the island of Maui. It is constructed of asphaltic concrete (AC) pavement and is of varying width along its length. The highway is predominantly a two-lane highway that provides for one lane of vehicular travel in each direction. The roadway reduces to a single lane at each of its numerous bridges and at locations where the existing pavement width is not adequate for two lanes of traffic.

Within the project limits, the single-lane bridge/box culvert is approximately 11 feet in width. There is insufficient room for two lanes, so all traffic in one direction must yield to let cars going in the other direction pass (Figure 3).

This project proposes to widen the travel way of a one-lane bridge/box culvert on Route 360 Hana Highway, near the intersection of Uakea Road and Hana Highway. Design features will include restriping and relocation of existing safety features and widening of the existing bridge to increase the travel way width. Implementation of these design features will increase the safety of the highway users. No landscaping improvements are proposed for this project.

#### 3.3 PROJECT COST AND DURATION

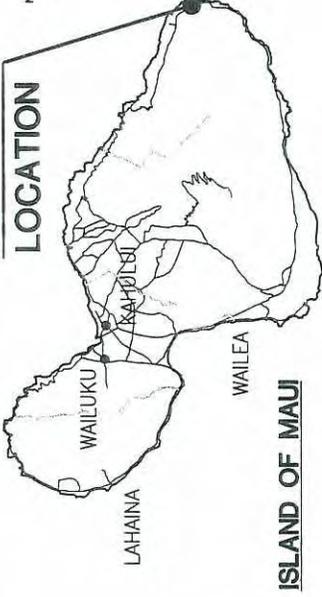
The State DOT budgeted \$2.5 million to provide for highway improvements at the project site. Costs will be funded from State monies. Project start date is anticipated to occur in April 2011, during fiscal year 2010 (July 2010 to June 2011), and continue through fiscal year 2011 (July 2011 to June 2012), with an estimated construction period of six to eight months.

#### 3.4 PURPOSE OF ENVIRONMENTAL ASSESSMENT

This EA results from the use of State land and monies. No federal funding or permitting is involved. In accordance with Chapter 343, Hawaii Revised Statutes and the Department of Health's Hawaii Administrative Rules Title 11-200, this EA provides a written evaluation of technical, environmental, social and economic aspects of the proposed Hana Highway Improvement project located near the intersection of the highway with Uakea Road (MP 33.88). It identifies potential project impacts and their significance and develops strategies to mitigate those impacts. This EA then compares all aspects and impacts against 13 significance criteria listed in §11-200-12 to provide a determination as to whether an Environmental Impact Statement is required or not.

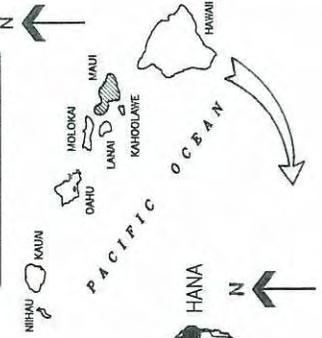
**PROJECT LOCATION**

**LOCATION**



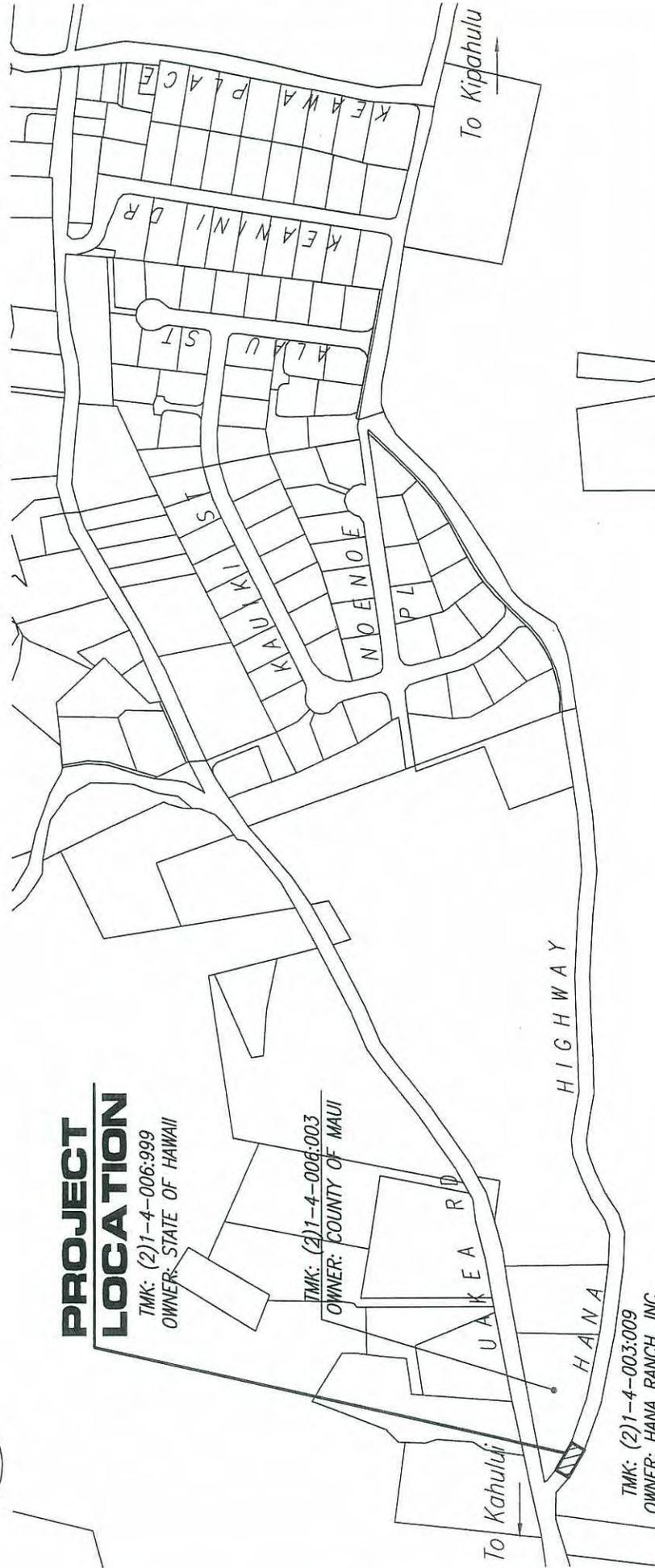
**ISLAND OF MAUI**

**STATE OF HAWAII**



**VICINITY MAP**

NOT TO SCALE



**PROJECT LOCATION**

TMK: (2)1-4-006:999  
OWNER: STATE OF HAWAII

TMK: (2)1-4-006:003  
OWNER: COUNTY OF MAUI

TMK: (2)1-4-003:009  
OWNER: HANA RANCH, INC.



**FIGURE 1**  
**LOCATION MAP**  
HANA HIGHWAY IMPROVEMENTS - UA'AKEA ROAD TO KEAWA PLACE  
STATE DOT - HIGHWAYS DIVISION  
PROJECT NO. 360B-01-03  
Hana, Island of Maui, Hawaii  
OCTOBER 2010

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1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813



PLUT DATE: October 24, 2010 @ 07:26:48 pm

LAST UPDATE: June 17, 2010 @ 02:44:29 pm

PATH/FILENAME: F:\Projects\Main\DOT Home Ukaea\400 Report\EA\Fpa\Figures 02-03\_PHOTOS.dwg

# AECOM

1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

**FIGURE 2**  
**VIEWS OF BRIDGE/BOX CULVERT**  
HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
STATE DOT - HIGHWAYS DIVISION  
PROJECT NO. 360B-01-03  
Hana, Island of Maui, Hawaii  
OCTOBER 2010



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**FIGURE 3**  
**VIEWS OF BRIDGE/BOX CULVERT**  
HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
STATE DOT - HIGHWAYS DIVISION  
PROJECT NO. 360B-01-03  
Hana, Island of Maui, Hawaii  
OCTOBER 2010

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## SECTION 4

### DESCRIPTION OF ACTION'S TECHNICAL, ECONOMIC, SOCIAL AND ENVIRONMENTAL CHARACTERISTICS

#### 4.1 TECHNICAL

The project scope of work includes widening of the existing one-span bridge to allow for two lanes of traffic. One criterion for the design of the new (downstream) bridge is that it has to visually and structurally match the existing (upstream) bridge as much as possible. To accomplish this, the concrete railing for the new bridge will be constructed to be the same in shape and size as the existing bridge railing (Figures 4 and 5).

The clear span for the new bridge is 23'-0"; 9'-0" longer than the existing bridge (Figure 6). The new bridge requires a longer span because the stream channel embankment flares outward at the downstream end of the existing bridge, forcing the new abutments to be further apart. The two distinctly different span lengths present challenges to the design. The most significant challenge is that with two dissimilar span lengths, the stiffness of the new bridge will be different than that of the existing bridge. This difference means that there will be a slightly different deflection in the two bridge decks with respect to each other as vehicles pass across. Because of this differential in the vertical movement, the two bridge decks must be separate and independent from each other. There must be a slight gap between the new bridge deck slab and the existing bridge deck slab.

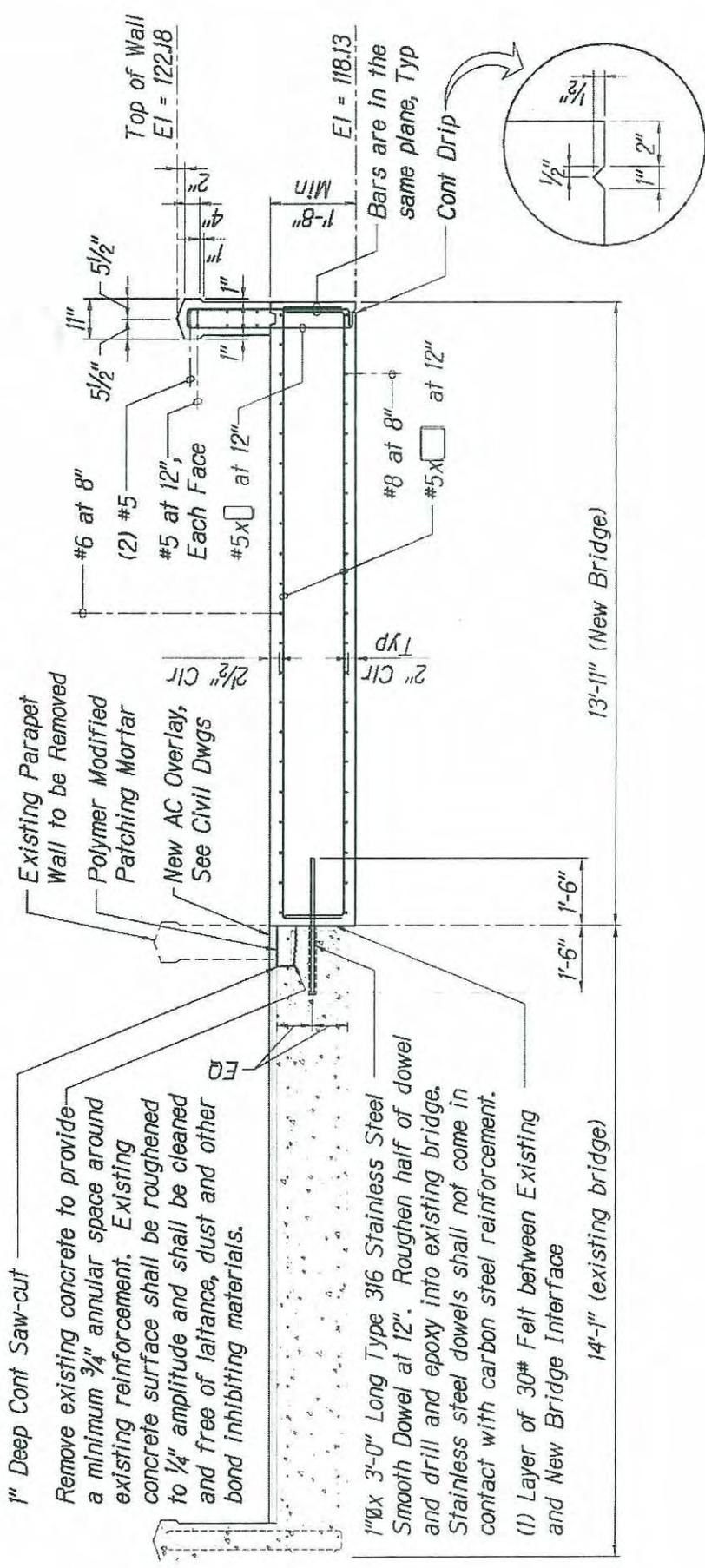
In order to expedite the construction of the new bridge, precast concrete deck planks will be used. This will allow the deck to be installed significantly faster than if the new deck were completely cast-in-place.

Because the new abutment wall will be located 9' behind the existing abutment wall, an end wall is necessary to connect the two abutments. This end wall serves as a retaining wall to keep the structural fill from escaping from beneath the roadway.

Continued traffic flow is a concern to the State DOT-Hwy. The design of the new bridge allows for the existing bridge to remain open at times during construction with a minimum 10'-wide traffic lane. Portable jersey barriers will be needed to serve as a temporary bridge railing along one side of the bridge.

The existing bridge has an AC wear surface that is in poor condition. The new bridge will have an AC overlay surface that will be poured to match the existing top of bridge deck elevation. The existing AC wear surface will be cold planed down and overlaid with a new AC wear surface that matches the new AC overlay for the concrete bridge deck.

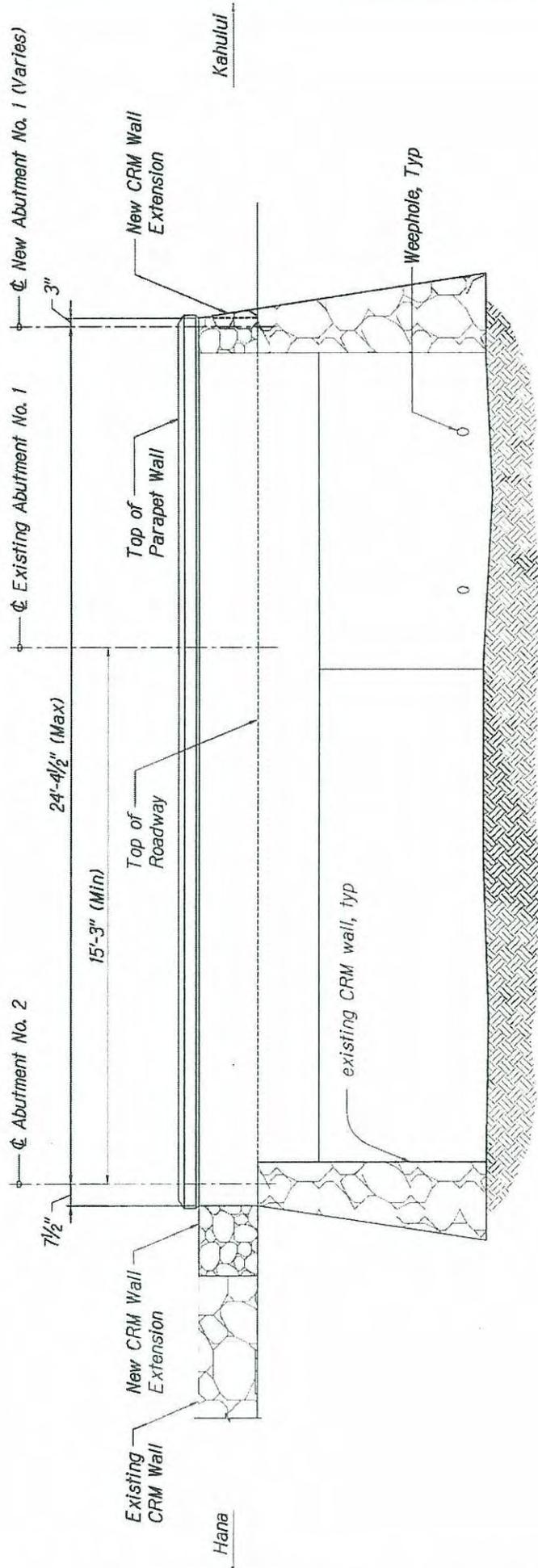
The roadway striping will be changed to accommodate the widening of the bridge/box culvert from one-lane to two-lanes. The existing stop bars and yield signs on either side of the bridge will be removed, and the center line will be realigned and painted to connect the two sides of the bridge/box culvert.



**FIGURE 4**  
**TYPICAL BRIDGE SECTION**  
 HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010



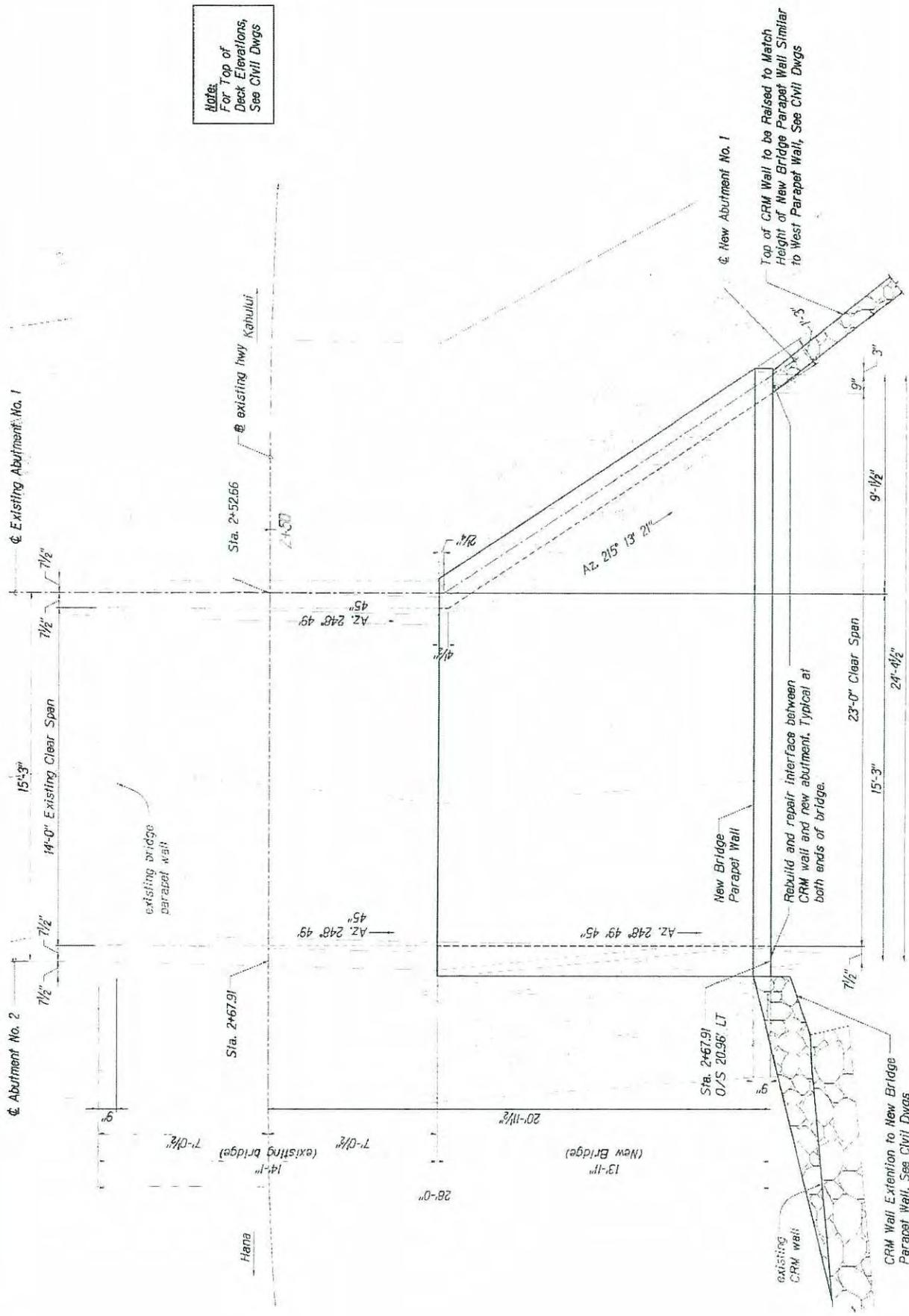
1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813



**FIGURE 5**  
**LONGITUDINAL BRIDGE ELEVATION**  
 HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010



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**Notes:**  
 For Top of Deck Elevations, See Civil Dwg's

**FIGURE 6**  
**BRIDGE DECK PLAN**  
 HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010

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#### **4.2 ECONOMIC**

Project funding will be 100% by the State DOT-Hwy. Federal funding will not be used for the project.

#### **4.3 SOCIAL**

Hana Highway is the only developed roadway and main thoroughfare leading between Kahului and Hana. It is used primarily by residents commuting to jobs in Makawao, Kahului and Wailuku and by visitors traveling to and from Hana.

Highway improvement measures will improve road safety. Increasing the bridge and travelway widths, restriping and relocation of existing guardrails will increase the safety of the motorists and roadway usability.

Road closures will be necessary for certain construction phases during bridge construction, restriping and travelway widening. A traffic detour will be required to minimize the impact on resident and tourist travel around the project area. Closures are discussed further in Section 6 of this EA.

#### **4.4 ENVIRONMENTAL**

Short-term construction related impacts are expected from this project. These impacts and procedures to mitigate their effects are discussed in Section 6 of this EA.

Few long-term impacts due to bridge construction and travelway widening are expected. All proposed structures shall be contained in the existing right-of-way. Acquisition of private lands or granting of an easement across private lands in favor of the State DOT for maintenance purposes will not be required.

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## SECTION 5

### DESCRIPTION OF AFFECTED ENVIRONMENT

#### 5.1 PHYSICAL

##### 5.1.1 LOCATION

The island of Maui is comprised of two major volcanoes, the older West Maui and the newer East Maui, also known as Haleakala. A narrow isthmus connects these two mountains. The proposed project site is located in the Hana District of the island of Maui along the Hana Highway (Route 360). Hana Highway lies along the northern flank of Haleakala and runs between the towns of Kahului and Hana.

The project site is located near MP 33.88 in the town of Hana. It lies to the southeast of Hana Airport near Hana Bay. The project area is a bridge/box culvert on Hana Highway and is located in TMK: (2)1-4-006:999. The project site lies adjacent to portions of TMKs: (2)1-4-003:009 and (2)1-4-006: 003. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

The general characteristics of the areas adjacent to the project site range from heavily to moderately vegetated, and from undeveloped to rural (Figures 2 and 3).

##### 5.1.2 CLIMATE

Equable temperatures, moderate humidity and persistent breezes characterize Hawaii's climate. These climatic conditions occur at the project site. According to the Soil Conservation Service (USDA, 1972), the average temperature in nearby Kailua, Maui is 71°F with average minimum and maximum monthly temperatures ranging from 64°F and 77°F, respectively.

Northeasterly trade winds prevail much of the time throughout the state of Hawaii. These trade winds vary in frequency and duration, lasting for weeks on occasions while being virtually absent at other times. This is the general result of the location of the North Pacific high- pressure system. During the summer months, this system is larger, shifts farther to the north, and produces stronger, more persistent trade winds. In the winter months, this high-pressure system declines and shifts to the southeast. This results in generally weaker and more variable wind patterns.

The project site is located on the windward-facing, lower slopes of Haleakala mountain. Rainfall on these windward slopes is orographic and results from the cooling of moisture-laden trade winds as they rise up the mountain slopes. Annual rainfall at the project site approaches 80 inches (Atlas of Hawaii, 1998).

##### 5.1.3 AIR QUALITY

Ambient air quality refers to the state of purity of the general outdoor atmosphere. Ambient air quality is regulated under the Clean Air Act. The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants as a measure of ambient air quality. These six criteria pollutants include carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone and particulate matter less than or equal to 10 micrometers (PM<sub>10</sub>). In addition, the State of Hawaii established standards for carbon monoxide and nitrogen dioxide that are more stringent than federal standards as well as an additional ambient air standard for hydrogen sulfide (HIAAQS). Table 5.1 below summarizes the federal and state air quality standards.

**TABLE 5.1  
 NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS**

<b>Air Pollutant</b>	<b>Hawaii Standard</b>	<b>Federal Primary Standard</b>	<b>Federal Secondary Standard</b>
<b>Carbon Monoxide</b> 1-hour average 8-hour average	9 ppm 4.4 ppm	35 ppm 9 ppm	No Standard No Standard
<b>Nitrogen Dioxide</b> 1-hour average Annual Average	No Standard 0.04 ppm	0.100 ppm 0.053 ppm	Same as primary Same as primary
<b>Sulfur Dioxide</b> 3-hour block average 24-hour block average Annual average	0.5 ppm 0.14 ppm 0.03 ppm	No Standard 0.14 ppm 0.03 ppm	0.5 ppm No Standard No Standard
<b>Lead</b> 3-month average	1.5 ( $\mu\text{g}/\text{m}^3$ ) (calendar quarter)	0.15 ( $\mu\text{g}/\text{m}^3$ ) (rolling 3-month)	Same as primary
<b>Ozone</b> 8-hour rolling average	0.08 ppm	0.075 ppm	Same as primary
<b>PM<sub>10</sub></b> 24-hour block average Annual average	150 ( $\mu\text{g}/\text{m}^3$ ) 50 ( $\mu\text{g}/\text{m}^3$ )	150 ( $\mu\text{g}/\text{m}^3$ ) No Standard	Same as primary No Standard
<b>PM<sub>2.5</sub></b> 24-hour block average Annual average	No Standard No Standard	35 ( $\mu\text{g}/\text{m}^3$ ) 15 ( $\mu\text{g}/\text{m}^3$ )	Same as primary Same as primary
<b>Hydrogen Sulfide</b> 1-hour average	0.025 ppm	No Standard	No Standard

Source: Hawaii Department of Health, February 2010

Of the fourteen air monitoring sites located in the state of Hawaii, most are found on the Big Island, with one station located on Maui in Kihei (south west of the project site). No monitoring stations are located in the vicinity of the project site. The Kihei air monitoring station monitors only atmospheric PM<sub>10</sub> and PM<sub>2.5</sub> concentrations resulting from nearby agricultural and sugar mill operations.

In general, the air quality at the project site is good. The general area around the project site is rural in character and absent of heavy industry. The monitoring station at Kihei, although located on the opposite side of the island in a suburban area, reported no exceedances of state or federal PM<sub>10</sub> and PM<sub>2.5</sub> standards during the year 2008.

In March 2008, a second vent opened at the Kilauea volcano, causing the SO<sub>2</sub> emissions to double. Higher levels of SO<sub>2</sub> and PM<sub>2.5</sub>, with occasional exceedances of the NAAQS for these pollutants, were recorded by monitoring stations in communities near the volcano. The state is requesting exclusion of these NAAQS exceedances from attainment/non-attainment

determination due to the EPA's consideration of the volcano as a natural, uncontrollable event. Excluding the exceedances due to the volcano, the state of Hawaii was in attainment of all federal ambient air quality standards in 2008.

#### **5.1.4 TOPOLOGY AND GEOLOGY**

The elevation at the project site is approximately 120 feet above Mean Sea Level (MSL) (Figure 7). Slopes in this area average about 15H:1V.

Geotechnical explorations were conducted at the culvert near MP 33.88 by Geolabs, Inc. in September of 2008 in order to obtain an overview of the subsurface conditions so that geotechnical recommendations for the bridge/box culvert design could be made. The soils report described the underlying soil matrix as about one foot of very stiff clayey silt with gravel over approximately 6 feet of medium density silty sands and cobbles with gravel. Moderately fractured, very hard basalt formations were encountered at depths ranging from 7 to 19.5 feet. Clinker, with medium density basaltic gravel and cobbles, was encountered at depths from 19.5 to 22 feet. The exploratory borings extended to a maximum depth of approximately 22 feet below ground surface. Groundwater was not encountered in the boring at the time of the exploration (Geolabs, 2008).

#### **5.1.5 SOILS**

The Soil Conservation Service of the U.S. Department of Agriculture (USDA, 1972) classifies soils at the project site as Hana extremely stony silty clay loam (HKOC) (Figure 8). Hana extremely stony silty clay loam (HKOC), 3 to 15 percent slopes, is moderately deep with stones covering 3 to 15 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. This soil is used for pasture and homesites.

#### **5.1.6 WATER RESOURCES AND HYDROLOGY**

The bridge/box culvert at the project site spans a natural, unlined rock bottom which is normally dry (Figure 3). A perennial stream flowing through Kawaipapa Gulch exists near the project site (Figure 7). The project site is located approximately 1000' south and west of the perennial Kawaipapa Stream at its nearest point. This inland freshwater stream is classified by the Department of Health as a Class 2 stream. The State DOH Water Quality Maps indicates that Kawaipapa Gulch leads to Class AA marine waters surrounding the island.

#### **5.1.7 NATURAL HAZARDS**

##### **LANDSLIDES**

The stretch of Hana Highway included in the project site has not been designated by the State DOT as being in a high hazard area for landslides.

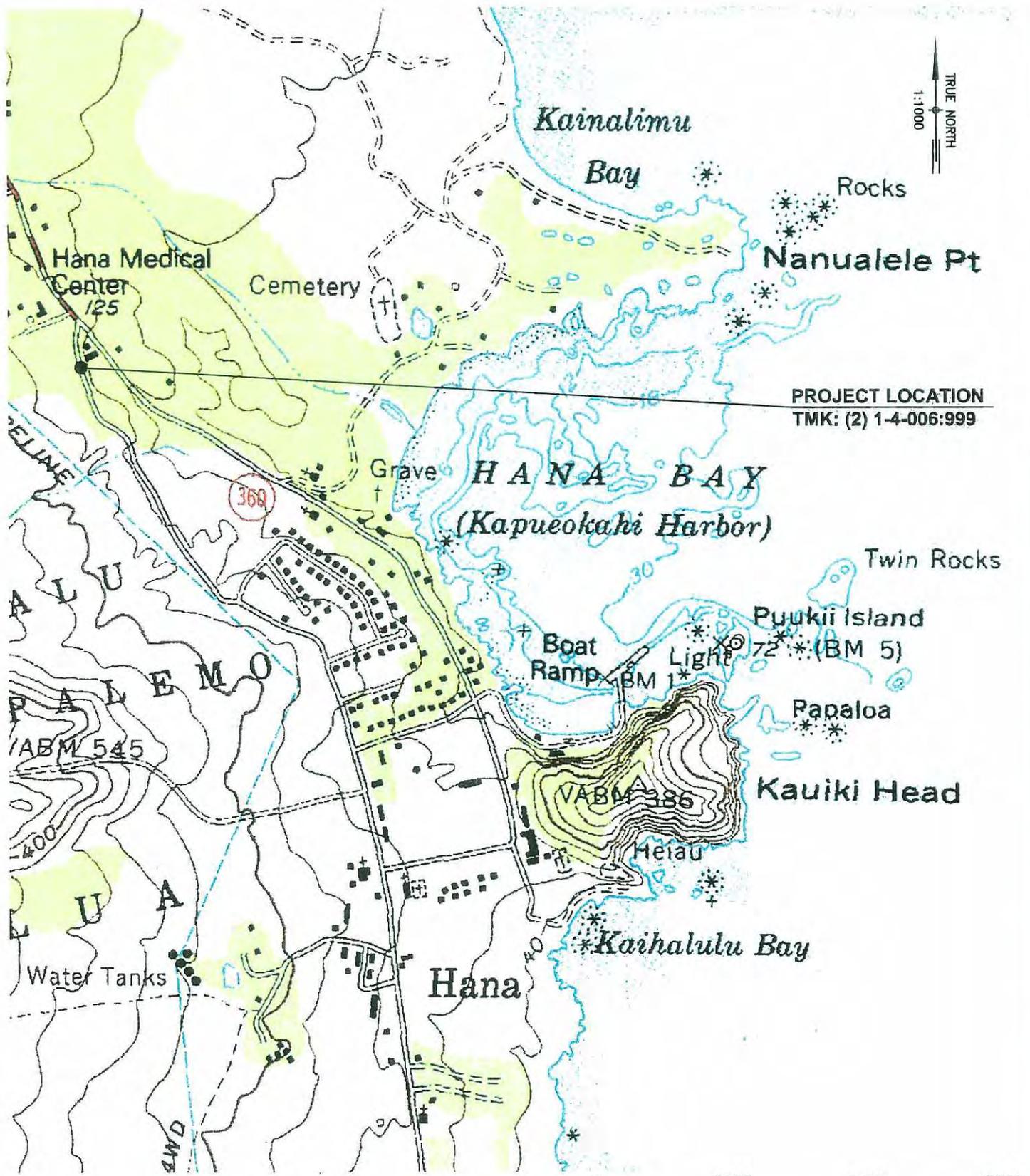
##### **FLOODS**

The US FEMA Flood Insurance Rate Map (FIRM) (Community Panel 150003 0670E) designates the project site as being in Zone X - areas of minimal flood hazard. A designation of Zone X means that the project area is determined to be outside the 500-year flood (Figure 9).

##### **HURRICANES**

The first hurricane officially recorded in Hawaii (Hiki) occurred in 1950. Newspaper accounts and meteorological data collection indicate that storm systems occur more frequently in Hawaiian waters than previously thought (Atlas of Hawaii, 1998). More recently, Hurricanes Iwa (1982) and Iniki (1992) struck the Hawaiian Islands.

Hawaii remains vulnerable to hurricanes, although hurricanes are rare events. These storms bring very heavy rains that may contribute to soil and slope instability.



PROJECT LOCATION  
 TMK: (2) 1-4-006:999

SOURCE: USGS

1" = 1000'



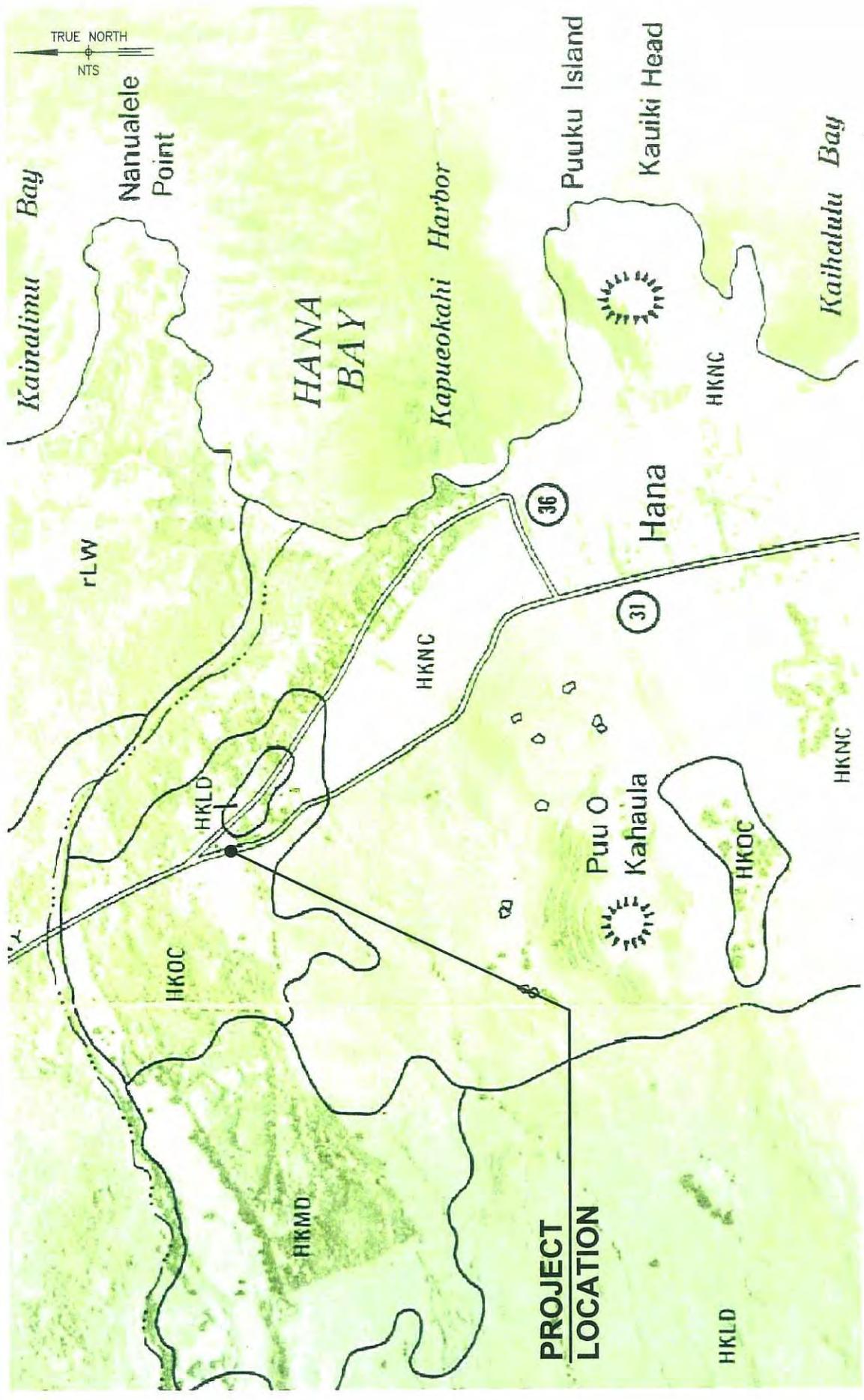
**AECOM**

1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

**FIGURE 7  
 USGS MAP**

HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010

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 LAST UPDATE: July 14, 2010 @ 03:33:05 pm  
 PLOT DATE: October 21, 2010 @ 07:28:55 pm



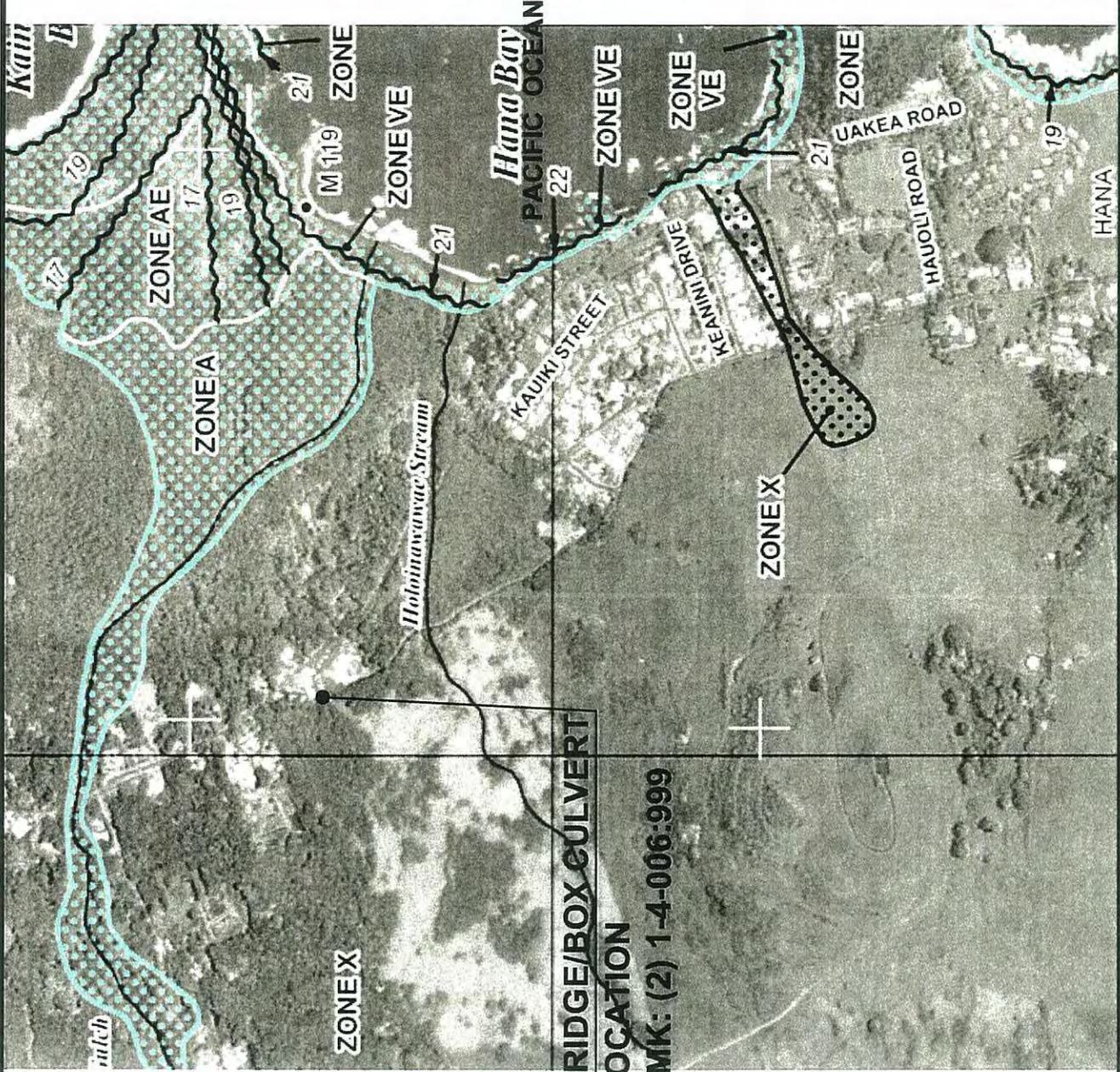
P:\M\PL\B\MAE: P:\Projects\Maui\DOT Hana Update to Keene\400 Reports\400\Figures\400\_Soils.dwg LAST UPDATE: August 27, 2010 @ 09:35:55 am PLOT DATE: October 24, 2010 @ 07:30:54 pm

SOURCE: US Dept. of Agriculture, Soil Conservation Service

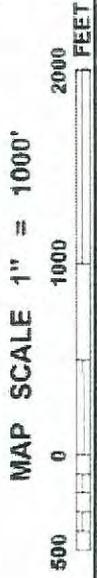
**FIGURE 8**  
**SOILS MAP**  
 HANA HIGHWAY IMPROVEMENTS - JAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010



1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813



**BRIDGE/BOX CULVERT  
LOCATION**  
**TMK: (2) 1-4-006-999**



**NFIP**  
**NATIONAL FLOOD INSURANCE PROGRAM**

PANEL 0670E  
**FIRM**  
 FLOOD INSURANCE RATE MAP  
 MAUI COUNTY,  
 HAWAII

**PANEL 670 OF 825**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)  
 COUNTY: IF  
 COMMUNITY: HAWAII  
 NUMBER: 1500030670E



**MAP NUMBER**  
 1500030670E  
**MAP REVISED**  
 SEPTEMBER 25, 2009  
 Federal Emergency Management Agency

**FIGURE 9**  
**FIRM MAP**  
 HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 OCTOBER 2010

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## EARTHQUAKES

Earthquakes in Hawaii typically result from magmatic migration underground. Haleakala is a dormant volcano that is believed to have erupted last in the 1700's. As this volcano is not extinct, it could erupt again in the future and therefore earthquakes associated with underground lava movements are possible. The entire island of Maui is designated as Seismic Zone 2B based upon the Uniform Building Code's (UBC) seismic zone criteria that range from 0 to 4.

### 5.1.8 FLORA AND FAUNA

The gently sloping to moderately steep land described in Section 5.1.5 supports varied types of vegetation such as California grass, guava, kaimi clover, koa and sedges (USDA, 1972).

The Hawaii Biodiversity and Mapping Program (HBMP) was consulted, and a review of their database records determined that no threatened or endangered species have been recorded within the project site (Refer to HBMP response email dated May 23, 2008, **Appendix B**).

Consultation with the United States Department of the Interior Fish and Wildlife Service (FWS) revealed that the federally threatened Newell's shearwater (*Puffinus auricularis newelli*) and federally endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), collectively referred to as seabirds, are known to occur within the vicinity of the proposed project. The FWS raised concerns that construction equipment, poles, and other structures associated with the project that protrude above the vegetation line could pose a flight obstacle to the night-flying seabirds during the breeding season. Additionally, the FWS is concerned that an increase in the use of night-time lighting could result in seabird disorientation, fallout, injury, or mortality.

### 5.1.9 VISUAL

The project site is generally rural. The project site is adjacent to a County-owned property which contains a baseyard, fire station and police station. Heavily vegetated slopes are located *mauka* of the project site, while the *makai* side was developed (Figures 2 and 3). Both sides have a moderate slope.

## 5.2 SOCIAL

### 5.2.1 SECTION 106 AND CULTURAL RESOURCES

Formal consultation for Section 106 of the National Historic Preservation Act (NHPA) is a requirement for projects that receive federal funding. As no federal monies will be utilized for this project, no formal consultation was undertaken to comply with Section 106 of the NHPA.

Consultation was initiated with the State Department of Land and Natural Resources' Historic Preservation Division (SHPD) to determine the presence, if any, of cultural resources. The letter requesting determination was sent to SHPD on May 13, 2008 (**Appendix A-1**). An Archaeological Inventory Survey (AIS) (**Appendix E**) was performed by Scientific Consultant Services, Inc. on January 13, 2009 and was determined "acceptable" by the SHPD on June 20, 2009 (**Appendix A-2**). According to the SHPD's Hawai'i National Register of Historic Places, two significant historical features of the Historic Hana Highway are located within the project area [Hana Belt Road, State Inventory of Historic Places (SIHP) # 50-50-06-1638]. The two features: Feature A: an unnamed bridge "Crossing #60" and Feature B: basalt lined culvert "Culvert #9" will be modified as part of the project.

SHPD stated that the two features have been evaluated for significance according to the criteria established for the State and National Register of Historic Places and are considered significant under Criteria A: Site is associated with events that have made a significant contribution to the broad patterns of our history, and Criteria C: Site embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high

artistic value, or represents a significant or distinguishable entity whose components may lack individual distinction.

The SHPD acknowledged in its June 20, 2009 letter that “the work proposed for the portion of SIHP #50-50-06-1638 subject to the inventory survey may be considered necessary maintenance.”

The Archaeological Inventory Survey states that all of the features of Hana Belt Road, including the bridge and box culvert at the project site, are historic features. The bridge and box culvert are listed as site number 50-50-06-1636 in the SIHP. The inventory survey included a 100% pedestrian survey and limited shovel testing. A shovel test unit was performed on the southwestern side of the bridge to a depth of 70 cm below surface. No cultural layers or traditional Hawaiian materials were encountered and it is likely that this layer represents previously disturbed natural sediments (SCS, 2009). The AIS noted that the northwest and southwest flanks of the bridge have been modified as recently as 2007, while the eastern face retains the number “1915,” the date of the original bridge construction. The AIS also stated that,

Based on plans regarding the preservation of the character of the existing bridge, construction of the new bridge will either not effect or retain many characteristics of the old bridge. The new concrete bridge parapet on the downstream (eastern) side of the bridge will closely match the existing parapets. The parapet at the upstream end will remain. On the downstream (eastern) side, the bridge face and approximately 14 feet of the basalt- and concrete-lined culvert walls will be removed to make room for an additional lane of traffic.

In 2001, a Final Preservation Plan for County of Maui Bridges within the Hana Highway Historic District was prepared to address preservation issues for County of Maui Bridges. Because Culvert #9 is under the jurisdiction of the State of Hawaii, it is not covered by this plan.

Should the Contractor uncover any additional cultural resources or human remains during his construction activities, he will be required to stop work immediately and notify the SHPD of his finds. SHPD will then determine the appropriate treatment of these new finds.

Copies of the SHPD consultation requests and responses received are provided in **Appendix A-1** and **Appendix A-2**. A copy of the AIS is provided in **Appendix E**.

### 5.2.2 PUBLIC SERVICES/INFRASTRUCTURE

The project site is a bridge/box culvert. A county baseyard, police station and fire station are located on the property adjacent to the project site. No utilities will be disrupted as a result of the project activities. Drainage is the only utility located in the project area. Temporary Best Management Practices (BMPs) may alter drainage flow in the localized project area for the short-term, but drainage flow will remain unchanged in the long-term.

### 5.2.3 NOISE

The project site is located in a rural area. No industrial or commercial activities occur near the project site. Ambient noise levels are derived primarily from passing traffic or other natural sources.

## **5.2.4 TRAFFIC**

Hana Highway is the sole paved link between Hana District and the rest of the island. This roadway is utilized by residents and visitors alike. However, the results of a survey described in the following paragraph indicate that the majority of users are Hana District residents traveling to and from work in Wailuku during normal business hours.

The State DOT conducted a one-day traffic survey in the vicinity of Kailua Bridge along the Hana Highway on April 24-25, 2001. Travel in both directions during the 24-hour period totaled 1,517 vehicles. During the peak A.M. hour, 200 vehicles were counted and 90% of these vehicles were traveling in the Wailuku direction. During the peak P.M. hour, 162 vehicles were counted and over 80% were traveling in the Hana direction.

## **5.2.5 RECREATIONAL FACILITIES**

No recreational facilities exist immediately adjacent to the proposed project site. Hana Community Center, District Center, Ball Park, Hana Bay Beach Park, Kapueokahi Beach and Kaihalulu Beach all lie within one mile of the project site. Waianapanapa State Park and Campgrounds are located 2.5 miles from the project site. Access to these recreational facilities will be maintained throughout the project duration. The project site can be bypassed by using Uakea Road, which runs roughly parallel to Hana Highway. The use of Uakea Road will provide access to the recreation facilities to people traveling from the north or south along Hana Highway, and from within Hana Town.

## **5.3 SOCIO-ECONOMIC**

### **5.3.1 DEMOGRAPHICS**

The district of Hana is located on the northeast section of the island of Maui. It encompasses 180 square miles. Within this district lies the much smaller Hana Census Designated Place (CDP) or Hana town. While the entire district encompasses 180 square miles, the CDP covers only 2.2 square miles.

Hana district is very sparsely populated. The 2000 Census lists 1,855 people as living in the district. The district density is 10.3 people per square mile. This same census notes that 709 people reside in the Hana CDP resulting in a population density of 326. In contrast, the population density of the town of Wailuku is 2,411 (where 12,296 people reside on 5.1 square miles) while that of the entire island of Maui is 152 (as 117,644 people residing on 772 square miles).

In general, the population density of Hana district is much lower than that of either Wailuku or the island of Maui. However, a large portion of the district's population resides in the relatively compact Hana CDP. If the population of Hana CDP and its land area are excluded from density calculations, the population density in the Hana district is reduced to 6.4 people per square mile. The project site lies in Hana town.

### **5.3.2 SOCIO-ECONOMIC ENVIRONMENT**

Tourism is the primary business of Maui County. Agriculture is another prime business. Historically, suitable lands in the Hana district have been utilized for agricultural purposes. No heavy industry exists near the project site or within the district.

The 2000 Census provided a profile of the general demographic and socio-economic environment of the Hana CDP. While this may not apply to the entire district, it does provide a glimpse of the social environment in the vicinity of the project site. The median age of the Hana district resident is 30.7 years old. Of the population 16 years and over, two-thirds are employed while one-third is either unemployed or not in the labor force (retired, disabled, etc.) Typical

occupations include management, service, sales and construction. Median household annual income is \$50,833. Most households earn between \$25,000 and \$99,999 annually.

### 5.3.3 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898 regarding Environmental Justice requires that federal agencies take appropriate steps to identify and avoid disproportionately high and adverse effects of federal projects on the health and welfare of minority and low-income populations. As there is no federal participation by way of funding or sponsorship for this project, compliance with EO 12898 is not required for this EA.

However, highway improvement strategies proposed for the project site will not affect either low-income or minority populations. Strategies, discussed in Section 6 of this EA, will alleviate both short-term and long-term impacts of the projects.

### 5.3.4 CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as impacts on the environment which result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

Secondary impacts are those which have the potential to occur later in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of the project.

### 5.3.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS TO RESOURCES

The design and implementation of the proposed project will involve the commitment of certain material and fiscal resources required to construct and maintain the improvements. Impacts relating to the use of these resources should be weighed against the expected positive benefits to be derived from the project versus the consequences of taking no action.

### 5.3.6 SUMMARY OF ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

An assessment of construction-related impacts, noise and air quality impacts, and potential impacts on the physical and socio-economic was carried out as part of the environmental assessment documentation process. The proposed development will have a limited, unavoidable construction-related impact on the environment, as described in Section 6, Summary of Environmental Impacts and Mitigation Measures.

## 5.4 LAND USES AND OWNERSHIP

### 5.4.1 LAND USE DESIGNATIONS

The land use designations for the project site are as follows:

State Land Use –	Agricultural
Community Plan –	Agricultural
County Zoning –	Not Zoned
Other –	Located within the Special Management Area

### 5.4.2 HAWAII STATE PLAN

Long-range planning for the State is provided by Chapter 226, HRS, also known as the Hawaii State Plan. This plan is a policy statement for an array of economic, physical and social development issues. The specific portion of the Hawaii State Plan related to proposed improvement at the project site is as follows:

**Section 226-12 Objectives and policies for the physical environment – scenic, natural beauty, and historic resources.**

**(b)(1):** “Promote the preservation and restoration of significant natural and historical resources.”

**5.4.3 STATE LAND USE LAW**

The State Land Use Law, Chapter 205 of the HRS, classifies all state lands in one of four categories: urban, rural, agricultural and conservational. Permitted uses for each category are defined in statute. The state assumes sole management responsibility in the conservation district; county governments assume sole responsibility in the urban district, and both share responsibilities in the rural and agricultural districts.

Specifically, the Land Use Law relates to the proposed project site as follows:

**Section 205-4.5 Permissible uses within the agricultural districts.**

**(a)(7):** “Public, private, and quasi-public utility lines and roadways, transformer stations, communications equipment buildings, solid waste transfer stations, major water storage tanks, and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, or treatment plants, or corporation yards, or other like structures.”

**Section 205-5 Permissible uses within rural districts.**

**(c)(4):** “Public, private, and quasi-public utility facilities.”

**5.4.4 STATEWIDE TRANSPORTATION PLAN**

The Hawaii Statewide Transportation Plan (HSTP) is a guidance document for implementation of a statewide transportation process. The HSTP, with a planning horizon to 2025, intends to provide policy-level direction to the Hawaii Department of Transportation (HDOT) and each of the county transportation agencies. The mission of HSTP is *to provide for the safe, economic, efficient, and convenient movement of people and goods.*

The portions of the HSTP which specifically relate to the project are as follows:

**MOBILITY AND ACCESSIBILITY**

**GOAL 1:** Achieve an integrated multi-modal transportation system that provides mobility and accessibility for people and goods.

**Objective 1:** To preserve, maintain, and improve the air, land, and water transportation system infrastructure and programs with regard to each community's unique characteristics.

C. Pursue the maintenance and rehabilitation of the transportation system.

**Objective 2:** To increase the efficiency of the air, land, and water transportation systems' operations.

C. Enhance performance of transportation systems affecting all modes of transportation used by people.

**ENVIRONMENT AND QUALITY OF LIFE**

**GOAL 3:** Protect and enhance Hawaii's unique environment and improve its quality of life.

Objective 1: To provide an air, land, and water transportation system that is environmentally compatible and sensitive to cultural, historic, and natural resources.

A. Provide an infrastructure and facilities that are environmentally friendly, safe, and appropriate to each community's character and scale.

Objective 2: To ensure that the statewide air, land and, water transportation system supports comprehensive land use policies and livability in urban and rural areas.

A. Provide a transportation system that supports and enhances quality of life.

#### **5.4.5 COUNTY OF MAUI**

The Countywide Policy Plan (CPP), adopted in March 2010, provides a vision for the County, a statement of core themes and principles for the county, and a list of countrywide objectives and policies for population, land use, the environment, the economy, and housing. The goals are conditions to be achieved by the year 2030, the objectives are milestones to achieving the goals, and the policies are guidelines toward the attainment of goals and objectives.

The CPP specifically applies to the project as follows:

**Goal 1:** Maui County will foster a spirit of *pono* and protect, perpetuate, and reinvigorate its residents' multi-cultural values and traditions to ensure that current and future generations will enjoy the benefits of their rich island heritage.

**Goal 2:** Maui County's economy will be diverse, sustainable, and supportive of community values.

**Goal 3:** Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.

**Goal 4:** Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

#### **5.4.6 COASTAL ZONE MANAGEMENT**

The Hawaii Coastal Zone Management Program (HCZMP) establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaii's coastal zone. The County of Maui utilizes its Special Management Area (SMA) regulatory mechanism to implement the HCZMP. The project area is within the SMA, and will require an SMA use Permit from the County of Maui. The ten (10) policy objectives as described under the CZM Management Program are discussed below.

##### **RECREATIONAL RESOURCES**

**Objective:** to provide coastal recreational opportunities accessible to the public.

**Policies:**

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

**HISTORIC RESOURCES**

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

Policies:

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

**SCENIC AND OPEN SPACE RESOURCES**

Objective: to protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

**COASTAL ECOSYSTEMS**

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

Policies:

- (A) Improve the technical basis for natural resource management;
- (B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

**ECONOMIC USES**

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

Policies:

- (A) Concentrate coastal dependent development in appropriate areas;

**COASTAL HAZARDS**

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

Policies:

(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

**MANAGING DEVELOPMENT**

Objective: to improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

**PUBLIC PARTICIPATION**

Objective: to stimulate public awareness, education, and participation in coastal management.

Policies:

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

**BEACH PROTECTION**

Objective: to protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

**MARINE RESOURCES**

Objective: to implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

**SMA PERMIT REVIEW CRITERIA**

In addition to the aforementioned objectives and policies, SMA permit review criteria, pursuant to Act 224 (2005) provides that: *No special management areas use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights or spotlights used for decorative or aesthetic purposes when the light:*

- (1) *Directly illuminates the shoreline and ocean waters; or*
- (2) *Is directed to travel across property boundaries toward the shoreline and ocean waters.*

**5.4.7 PROPERTY OWNERSHIP**

Two properties lie adjacent to the project site. They are identified as TMK: 1-4-003: parcel 009, owned by the County of Maui, and TMK 1-4-006: parcel 003, owned by Hana Ranch, Inc.

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## SECTION 6

### SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 6.1 INTRODUCTION

Chapter 343, HRS requires EAs to present a summary of the potential project impacts and mitigation measures. These impacts, both detrimental and beneficial, include primary, secondary and cumulative effects. Primary effects are those directly caused by undertaking the proposed action and occur at the same time and place. Secondary effects are those that directly result from the proposed action but occur at a later date and time, or are further removed in distance but still are foreseeable. Cumulative impacts result from the direct incremental impacts of the proposed project that add to impacts of other past present and reasonable foreseeable future projects.

#### 6.2 PHYSICAL

##### 6.2.1 CLIMATE

No short-term or long-term adverse impacts to the climate are anticipated in the project area. Therefore no mitigative measures are required.

##### 6.2.2 AIR QUALITY

The principal sources of air pollution associated with this project will be fugitive dust emissions resulting from excavation and drilling and vehicular emissions resulting from the operation of construction equipment and vehicles. These effects are short-term in nature and will cease upon completion of the proposed projects. No long-term effects on air quality due to the operation of construction equipment or vehicles are anticipated as their presence and use will be temporary. While future highway projects may occur in the vicinity, no cumulative effects on air quality are anticipated due to the temporary nature of the construction activity.

Bridge widening at the project site is not expected to generate increased emissions due to domestic vehicular traffic. The Hana Highway is an existing roadway. The proposed projects will alter travelway widths at one location only and will not open a new travel corridor.

Construction activities will incorporate dust control measures and BMPs such as a regular dust-watering program and covering of trucks during the transport and storage of soils. Areas graded and cleared of vegetation will be paved or revegetated as soon as possible to reduce dust emissions as well.

##### 6.2.3 TOPOLOGY AND GEOLOGY

No short-term or long-term effects on topology are anticipated. The existing road grade will continue to be used. No landscaping improvements are proposed for this project. Therefore no mitigative measures are required.

##### 6.2.4 SOILS

No short-term or long-term adverse impacts to the climate are anticipated in the project area. Therefore, no mitigative measures are required.

##### 6.2.5 WATER RESOURCES

The Hawaii Administrative Rules (HAR), Title 11 Chapter 54 – Water Quality Standards defines Class 2 streams as those whose uses are to be protected for recreational purposes, propagation of fish and aquatic life, promotion of agricultural and industrial water supplies, shipping navigation and propagation of shellfish. These waters are not to receive any

discharges that have not received the best degree of treatment of control compatible with criteria established for this class of waters. HAR §11-54 establishes an objective for Class AA waters such that they remain in their natural pristine state as nearly as possible with a minimum of pollution or alteration of water quality due to human caused source or actions.

Construction activities at the project site may temporarily affect these two water resources. Stormwater runoff from the construction site or any groundwater that must be discharged during drilling and excavation have the potential to carry silt into the nearby streams. Environmental effects are expected to be short-term and last only for the life of the project. No long-term effects are anticipated.

It is not anticipated that a National Pollution Discharge Elimination System (NPDES) General Permit, regarding stormwater associated with construction activities, will be required. Temporary water pollution control measures to eliminate siltation of the adjacent drainage ditch will be implemented during construction. Potential controls include (but are not limited to) construction berms, sedimentation traps, detention ponds and the use of mulching or regressing exposed areas.

### **6.2.6 NATURAL HAZARDS**

#### **ROCKSLIDES**

The area surrounding the project site is slightly sloping, but is not located in a rockslide hazard area. There is no anticipated effect on rockslide-prone areas. No adverse impacts are anticipated for the long-term. Therefore no mitigation measures are required.

#### **FLOODS**

The project site is not located in a flood zone. Drainage occurs in a sheet-flow manner. Bridge widening will not alter this sheet-flow drainage. Temporary BMPs may alter drainage flow in the localized project area for the short-term. BMPs are not expected to exert an adverse impact on the overall drainage area during the construction period. For the long-term, there is no anticipated effect on overall area drainage flow patterns. No adverse impacts are anticipated for the long-term. Therefore no mitigation measures are required.

#### **HURRICANES**

Implementation of highway improvement measures will not affect the climate in the vicinity of the project areas. Nor will these projects impart any short-term or long-term adverse effects on the local environment. Therefore, no mitigative measures are required.

#### **EARTHQUAKES**

Earthquakes are an ever-present threat, for both the short-term and the long-term. Roadway failure due to earthquakes could impact public safety in both the short-term and the long-term. In order to mitigate the threat of roadway failure due to seismic activity, recommendations from a qualified structural engineer and a qualified geotechnical engineer will be incorporated into the design of the bridge and its appurtenances.

### **6.2.7 FLORA AND FAUNA**

Widening of the Hana Highway to accommodate two lanes of opposing traffic on the bridge near MP 33.88 will result in short-term adverse impacts on local vegetation. Various areas will be disturbed during construction activities such as wing wall demolition, excavation, and grading. Nearly all of the excavation work for the bridge /box culvert at the project site will be done within the existing pavement limits of the roadway. The anticipated project durations are short and are not expected to impose long-term negative effects. Unpaved disturbed areas will be revegetated upon completion of construction activities to mitigate the short-term effects.

As no endangered wildlife habitats have been noted by either the Hawaii Biodiversity and Mapping Program or the U.S. Fish and Wildlife Service, no endangered wildlife habitats are anticipated to exist in the vicinity of the proposed project site. However, the US FWS has raised concerns that equipment that protrudes above the vegetation line could pose a flight obstacle to night-flying seabirds, especially the federally threatened and federally endangered Newell's shearwater and Hawaiian petrel, respectively, during breeding season. Additionally, the FWS is concerned that the use of night-time lighting could result in seabird disorientation, fallout, and injury or mortality. To minimize the potential effect on the birds, the lights and equipment are not to protrude above the vegetation line, and outdoor lights associated with the project will be shielded downward so that the bulb can be seen only from below. Hana Highway is not a lit roadway, so lighting of the project area will only be necessary for the length of the project.

Construction activities are expected to be localized and of short-term duration. Long-term effects of the highway widening are not anticipated, and therefore no mitigative measures are required.

### **6.2.8 VISUAL**

Construction activities will disrupt aesthetic qualities temporarily. Disruptions will be minor and short-term and primarily will result from activities such as grading, pouring of concrete and paving. No significant short-term impacts are anticipated and therefore no mitigation measures are required.

Erection of a wider bridge structure will exert long-term adverse impacts on the visual resources in the vicinity of the project area. The new bridge will be permanent. To minimize the impact of this new structure and to preserve the visual nature of the project site, specifications within the contract documents will require that the new bridge be similar in appearance to the existing one. The bridge will be flat, and will not alter the visual planes for motorists, pedestrians, or residents.

Attempts will be made to maintain the original character of the highway. As the original bridge utilized concrete rails, new concrete rails will be constructed. If existing rockwalls are present, new rock walls or concrete walls with a textured and stained finish will be installed to match the area.

## **6.3 SOCIAL**

### **6.3.1 CHAPTER 6E-42 HISTORIC PRESERVATION AND CULTURAL RESOURCES**

Construction activities have the potential to exert short-term, long-term and cumulative impacts on cultural resources existing at the proposed project site. The Hana area is designated a National Historic Preservation Area, and the existing bridge at the project site is an historic property. The Office of Hawaiian Affairs has stated that historic sites are located in very close proximity to the project site, within TMK (2) 1-4-006:001, owned by Hana Ranch, Inc (Figure 1). Based on a review of the SHPD's Inventory of Historic Properties website, Kaiapuni Koa, a site on the National and State Register of Historic Places, is within a one-half mile radius of the project location. It is unlikely that significant historic sites exist within the Hana Highway right-of-way due to prior road construction activities. However, work outside of the existing right-of-way potentially could uncover historic resources.

In order to mitigate the impact of construction activities on the existing bridge and any additional potential resources, a letter was sent to SHPD requesting review of the proposed work area. The area has been previously altered and disturbed and the proposed undertaking will be located primarily within the previously disturbed areas of the existing right-of-way.

Although no significant historic sites are anticipated to be encountered, the State DOT is cognizant that Route 360 Hana Highway is listed on the Hawaii State Register of Historic Places and that it has been designated as a Millennium Legacy Trail, and agrees that efforts must be made to preserve the original character of the highway. The new bridge has been designed to be similar in appearance to the existing structure to preserve the visual nature of the existing conditions.

### **6.3.2 PUBLIC SERVICES/INFRASTRUCTURE**

A police station, fire station and DPW Highways Division baseyard are located immediately adjacent to the project site. Short term adverse impacts will involve the temporary closure of the bridge area and the highway in the immediate vicinity of the bridge. These temporary impacts will be mitigated by the detouring of traffic around the project site during construction. Bridge construction will be expedited to minimize the duration of time that the bridge will be closed. A long-term impact of the bridge widening measure will be that emergency vehicles from the adjacent property will be able to cross the bridge at any time, without causing oncoming traffic to yield, and without endangering drivers coming from the opposite direction. The widened bridge will also allow for a smoother flow of traffic into the Hana Town Area, and improve the safety of the roadway by increasing the width of the travelway. No long-term adverse impacts are anticipated, therefore no long-term mitigative measures are required.

### **6.3.3 NOISE**

Construction activities will result in elevated noise levels. Typical heavy construction equipment will include but may not be limited to bulldozers, backhoes, drilling rigs, front loaders, concrete trucks, asphalt spreaders, pavers, rollers, flat bed trucks, cranes, etc. Typical noise levels generated by this equipment will range from 80-90 decibels (dBA). These will be short-term and minor. Noise generated by construction activities will comply with noise provisions established by the State Department of Health and no further measures are required to mitigate short-term impacts. Construction activities are short-term and localized in nature, therefore no long-term or cumulative impacts are anticipated due to the proposed projects and no other mitigative measures are required.

Widening of the existing bridge will expand an existing roadway. It will not open up a new highway and will not increase existing traffic loads on the Hana Highway. As traffic counts are not expected to increase as a result of the proposed improvements, noise levels due to traffic are not expected to increase relative to that of preconstruction conditions. Therefore, no traffic study or noise study is required and no short-term, long-term or cumulative adverse impacts are anticipated that would require mitigative measures.

### **6.3.4 TRAFFIC**

There will be impacts to traffic during construction. Due to the extremely constricted work area, for construction and public safety reasons, it is not feasible to keep the roadway partially open at all times. Certain work activities will require complete road closures so that the work can be done in a safe manner. Such activities would include: demolition and removal of the existing guardrail and CRM wing wall, and construction of the new bridge. To reduce traffic impacts, complete road closures will be allowed to these activities:

1. Demolition of downstream bridge railing (4 days).
2. Excavation of abutments (15 days).
3. Pouring of new bridge deck slab (10 days).

Incentive and disincentive clauses in the construction contract to minimize closures are being considered by the State DOT. The construction contractor would be paid a sum of money for every day he can shorten the daytime road closure. Conversely, a disincentive clause would

penalize the construction contractor an amount for every day he lengthens the daytime closure. By including these provisions, the construction contractor will make attempts to keep the daytime road closures as short as possible and thus reducing construction impact on the affected communities and traveling public.

Once construction work for the bridge is completed, complete road closures will not be allowed and this requirement will be stated in the construction contract.

Traffic control and construction hour limitations will be accompanied by signs, public notices, 24-hour telephone information line, and media releases.

The State DOT will attempt to schedule construction of this project to avoid the peak summer tourist season between the months of June to September. Since complete closures may be required for other County of Maui bridge replacement projects, The State DOT will also attempt to schedule construction of this project to avoid concurrent complete road closures with the other County bridge projects.

### **6.3.5 RECREATIONAL FACILITIES**

No recreational facilities exist in the immediate vicinity of the proposed project area. Hana Community Center, District Center, Ball Park, Hana Bay Beach Park, Kapueokahi Beach and Kaihalulu Beach all lie within one mile of the project site. Waianapanapa State Park and Campgrounds are located 2.5 miles from the project site. Access to these recreational facilities will be maintained throughout the project duration by detouring traffic to Uakea Road, which runs roughly parallel to Hana Highway. The use of Uakea Road will provide access to the recreation facilities to people traveling from the north or south along Hana Highway, and from within Hana Town. Therefore, no short-term, long-term or cumulative adverse impacts are anticipated.

Road closures are the only mitigation measures anticipated for the short-term. No mitigation measures are necessary for the long-term.

## **6.4 SOCIO-ECONOMIC**

### **6.4.1 DEMOGRAPHICS**

Implementation of the bridge widening measures will widen the existing bridge. It is not anticipated that it will induce or reduce population in the Hana district in the short-term, long-term or cumulatively in conjunction with any other projects. Therefore, no mitigation measures are required.

### **6.4.2 SOCIO-ECONOMIC ENVIRONMENT**

The project's bridge widening and its associated safety measures will replace an existing portion of the Hana Highway. The project may lead to short-term economic growth and lifestyle changes for Hana area residents in the form of construction jobs. It is not likely to induce or reduce economic growth in the Hana District in the long-term or cumulatively. Existing lifestyles in the area will not be altered for the long-term or cumulatively. A detour due to the necessary road and bridge closure will be planned to allow for vehicular traffic so that residents may travel to and from work and tourists may visit the area.

Road closures are the only mitigation measures anticipated for the short-term. No mitigation measures are necessary for the long-term.

### **6.4.3 ENVIRONMENTAL JUSTICE**

The proposed project is funded entirely by state monies and is not federally funded. Therefore the State DOT is not required to identify and avoid disproportionate adverse effects on minority or low-income populations.

In spite of the lack of requirement to determine if the proposed project is environmentally just, this EA identifies one potential impact on minority or low-income populations. That is a temporary road closure along the Hana Highway. This impact will be of short-term duration and will last only for the life of the project. A detour due to the necessary road and bridge closure will be planned to allow for vehicular traffic so that residents may travel to and from work and tourists may visit the area.

No other negative impacts, long-term or cumulative, are anticipated.

### **6.4.4 CUMULATIVE AND SECONDARY IMPACTS**

The proposed project is intended to mitigate safety issues and improve roadway access along Hana Highway, near the intersection with Uakea Road. This would improve roadway conditions for incoming and outgoing traffic in the Hana area. The proposed project is not part of a larger action, nor would it occur within the context of such actions. The project is not anticipated to have a significant adverse impact on the physical environment. Consequently, the proposed action is not anticipated to result in significant adverse cumulative or secondary impacts.

### **6.4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS TO RESOURCES**

The future commitment of resources for the project is consistent with the need to provide an appropriate level of transportation service for the Hana area. While the proposed project does involve partial demolition of an historical bridge, the project is intended to mitigate safety issues and improve roadway conditions along Hana Highway, near the intersection with Uakea Road. Therefore, the expected benefits of the proposed project deem it suitable for implementation.

### **6.4.6 SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED**

In the short term, construction associated with the proposed project will have a temporary impact on air quality from dust generation and discharge of exhaust from construction equipment during ground altering activities and site grading. Appropriate BMPs will be incorporated to mitigate adverse impacts, including watering of exposed surfaces and regular maintenance of construction equipment, to minimize construction-related impacts. These impacts will be temporary and not expected to create long-term adverse environmental impacts.

Construction of the proposed roadway repairs will also generate short-term noise impacts which will be unavoidable. The use of properly maintained construction equipment will mitigate noise impacts caused by equipment. The incorporation of State Department of Health construction noise limits and curfew times is another measure to mitigate noise impacts caused by equipment. These impacts will also be temporary and not expected to create long-term adverse environmental impacts.

The proposed project is intended to improve future roadway operating conditions on Hana Highway, near the intersection with Uakea Road. From a long term perspective, there are no significant environmental effects anticipated which cannot be mitigated as a result of the proposed roadway improvements.

## **6.5 LAND USE**

### **6.5.1 HAWAII STATE PLAN**

An objective of the Hawaii State Plan is the preservation of scenic views. The proposed actions are consistent with this objective.

The highway improvements will widen the existing bridge and adjacent roadway and will not alter scenic viewplanes along Hana Highway. Railings, abutments or other bridge adjuncts will be similar in appearance to existing structures in order to minimize the visual impact after construction and will not alter scenic vistas.

#### **6.5.1 STATE LAND USE LAW**

Proposed actions to widen the existing bridge are consistent with the Hawaii State Land Use Law. Public roadways are a permissible use of agricultural and rural lands.

#### **6.5.2 STATEWIDE TRANSPORTATION PLAN**

The proposed project is consistent with Goals 1 and 3 of the Statewide Transportation Plan. The project involves maintenance and rehabilitation of the transportation system, in keeping with Goal 1 and its objective of preserving, maintaining, and improving the air, land, and water transportation system infrastructure and programs with regard to each community's unique characteristics. The proposed bridge widening also enhances performance of transportation systems affecting all modes of transportation used by people by increasing the efficiency of the land transportation systems' operations.

The project's bridge widening for increased safety and intentional preservation of the visual properties of the bridge also meets some of the objectives of Goal 3, which are to provide an air, land, and water transportation system that is environmentally compatible and sensitive to cultural, historic, and natural resources by providing and infrastructure and facilities that are environmentally friendly, safe, and appropriate to each community's character and scale. The widened bridge will allow for unimpeded movement by emergency vehicles, and will allow for free traffic flow in both directions. This ensures that the statewide air, land, and water transportation system supports comprehensive land use policies and livability in urban and rural areas by providing a transportation system that supports and enhances quality of life.

The proposed project will meet the goals and objectives of the HSTP.

#### **6.5.3 COUNTY OF MAUI**

The proposed project helps to achieve the following goals, which were outlined in the Countywide Policy Plan:

This project meets the long-term goal to protect, perpetuate, and reinvigorate its residents' multi-cultural values and traditions by preserving and restoring the significant historic bridge structure and cultural landscape. This project promotes the rehabilitation and an adaptive reuse of the historic bridge structure which perpetuates a traditional sense of place, and also perpetuates the authentic character and historic integrity of the historic Hana Highway and Hana Town.

The proposed improvements will, for the short-term, promote an economic climate that will encourage diversification of the County's economic base and a sustainable rate of economic growth. During the construction phase of the project, the area will experience economic growth in the form of construction jobs for area residents. This will help to foster economic vitality in the historic small town of Hana in the short-term.

The proposed bridge widening will help to provide an effective, affordable, and convenient ground-transportation system that is environmentally sustainable. The new, widened bridge will retain and enhance the existing character and scenic resource of the existing bridge while improving safety, efficiency and the road condition in the area of the project site. Despite the widening, the historic and unique physical attributes of the roadway corridor which enhance the character and scenic resources of communities will be preserved.

The proposed project will meet the goal of maintaining the County's physical infrastructure in optimum condition by continuing to direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity, by capitalizing on existing infrastructure capacity as a priority over infrastructure expansion.

In summary, the proposed project is consistent with the themes and principles of the Countywide Policy Plan.

#### **6.5.4 COASTAL ZONE MANAGEMENT RECREATIONAL RESOURCES**

The concerns regarding the proposed project's impact on the coastal resources having significant recreational value are mitigated by the proposed project's location mauka of the coast. With implementation of a Best Management Practices (BMPs) program, adverse impacts to coastal recreational resources are not anticipated to result from the project.

#### **HISTORIC RESOURCES**

The proposed project adheres to the HCZMP's policies regarding historic resources. The subject property is registered as a historic site on the Hawaii State Register of Historic Places and identified as a portion of SIHP #50-50-06-1636. An Archaeological Inventory Survey (AIS) was conducted for the proposed project by Scientific Consulting Services in February 2008 and was accepted by the State Historic Preservation Division (SHPD) on June 20, 2009. See **Appendix "E"** and **Appendix "A-2"**. Two features were identified. Feature A is an unnamed bridge also known as "Crossing #60". Feature B is a basalt-lined culvert also on record as "Culvert #9". The features are considered significant for their association with engineering, social history, transportation, and commerce between 1900 and 1947. SHPD recognizes that this work may be considered necessary to a public roadway. However, SHPD recommended that an archaeological monitoring plan be submitted for their review and approval prior to construction. As such, the applicant will submit an archaeological monitoring plan for SHPD review and approval prior to construction.

Additionally, efforts to preserve the historic, visual nature of the project site have been undertaken throughout the design process of the proposed project. The bridge itself will be visually enhanced to match the existing surroundings and character of the road to Hana.

#### **SCENIC AND OPEN SPACE RESOURCES**

With regards to scenic and open space resources, the proposed action will occur within the existing State owned right-of-way. Furthermore, the bridge will be designed to visually match the existing surroundings and character of the road to Hana. Therefore, the proposed project is not anticipated to adversely affect coastal scenic and open space resources in the Hana area.

#### **COASTAL ECOSYSTEMS**

The coastal ecosystem will be protected using appropriate Best Management Practices (BMPs). Erosion control measures will be implemented to minimize the effects of stormwater runoff resulting from the proposed project and to ensure that coastal ecosystems are not adversely

impacted by construction activities. Temporary water pollution control measures, such as construction berms, will be implemented to eliminate siltation of the culvert.

### **ECONOMIC USES**

The proposed project involves the widening of an existing one-lane bridge/box culvert on Hana Highway to two (2) lanes and related improvements. The proposed project will not involve further coastal development and will not contravene the objective and policies for economic uses.

### **COASTAL HAZARDS**

The project site is located within Zone X, an area of minimal flooding. The proposed project is not anticipated to affect flood patterns. Furthermore, the project site is located outside of the tsunami inundation zone. The County of Maui Public Works has expressed concern regarding the culvert within the project site. The culvert has overflowed in the past and flooded the garage and parking lot. It was suggested that the culvert be built wider and deeper than the existing grade.

The response to the County of Maui Public Works was that the goal of the subject project is to do the least intrusive construction to this historic bridge while allowing for drainage to pass through as it has been, and that the intent is to widen the structure by extending the box culvert makai with the same look while not demolishing the existing structure. Widening and deepening of the structure would make complete demolition & replacement of this historic structure necessary.

The pre-existing adverse impacts of the drainageway downstream results from:

- 1) The sharp right-angle bend in the stream alignment with a County Baseyard building & parking lot along the makai edge of the drainageway (See Figure 2); and
- 2) The CRM-lined drainageway then transitions down to a less defined drainageway with a small pipe culvert underneath Uakea Road.

Until the downstream issues are addressed, widening the flow capacity under Hana Hwy would possibly create further adverse impacts to downstream properties since the makai side of the Uakea Road culvert crossing is quite flat and undefined. Those properties must experience large volumes of storm water sheet flowing over them.

### **MANAGING DEVELOPMENT**

Public input will be solicited in coordination with the processing of the Special Management Area (SMA) application pursuant to the rules of the SMA of the Maui Planning Commission. The SMA application process will involve review by various governmental agencies. The public is afforded the opportunity to participate in the hearing on the SMA application.

In addition, the SMA will undergo review by the Cultural Resources Commission and the Hana Advisory Committee. Review by both of these organizations allows for public participation at its meeting on the proposed project.

Prior to preparing the SMA application, early consultation was solicited from Federal, State, and County agencies as part of the environmental review process that was required for the project. The comments from the early consultation are included in the Final EA. See **Appendix "A-1"**.

After the Draft EA was published in the Office of Environmental Quality Control (OEQC) Environmental Notice on February 23, 2009, the general public was allowed the opportunity to

review the document and provide feedback during the 30-day comment period. The comments from the 30-day comment period are included in the Final EA in **Appendix "A-2"**.

Applicable Federal, State, and County requirements will be adhered to in the planning, design, and construction of the project.

### **PUBLIC PARTICIPATION**

As previously mentioned, the SMA application will be processed in accordance with the rules of the Special Management Area of the Maui Planning Commission, and opportunity for comment by agencies and the public will be provided as part of the process. The SMA application will also undergo review by the Cultural Resources Commission and the Hana Advisory Committee.

A public meeting was held on June 10, 2009, at the Helene Social Hall. At the meeting, a concern about herbicide was voiced, and a suggestion was made to have prisoners cut foliage around the project site. The State DOT, Highways Division-Maui District's Maintenance Section has no record of any specific responses to these items; however the complaint about herbicide was acknowledged. Following is the current practice of spraying herbicides along the route:

"We use as little spray as possible. Future revised landscape maintenance plans will reduce our use further. HWY-MM (State DOT, Highways Division-Maui District's Maintenance Section) uses Roundup herbicide for areas like this (Hana Hwy Route 360), mixed to the lowest suggested concentration. The coveralls and respirator are for the protection of a worker spraying the substance for an entire shift. Incidental exposure, if it occurs, is certainly a nuisance but the information available to us indicates it is not actually a hazard to a passerby. That being the case, we do all we can to avoid any accidental contact of the spray with the public in general. We do not spray adjacent to private property where we have been requested not to. In this case, any future spraying activities at this site would be adjusted to fit conditions such as wind, pedestrians, traffic, etc. If incidental exposure cannot be avoided, other means will be explored to control any growth in the area."

Hand spraying small areas is always an option and allows for much greater control of overspray. We are and will remain responsive to public input."

In addition, the Draft EA was published in the OEQC Environmental Notice which afforded the general public an opportunity to provide feedback on the proposed project.

### **BEACH PROTECTION**

The proposed project is not located nearby a beach. In addition, the proposed project will utilize appropriate BMPs during construction to manage stormwater runoff for the project area. The project site is located approximately 0.5 mile from the coast and is not anticipated to adversely affect beach resources in the Hana area.

### **MARINE RESOURCES**

Appropriate BMPs and soil erosion control measures will be implemented to ensure that coastal ecosystems are not adversely impacted by construction activities. These measures include the minimization and containment of turbidity and siltation from project-related work, and the protection of soil exposed near water from erosion. The drainage culvert is normally dry. Therefore, there is no threat of loss to special aquatic site habitats due to the proposed work.

In summary, this project is consistent with and will not negatively impact any of the ten (10) policy objectives as described under the CZM Management Program.

#### **SMA PERMIT REVIEW CRITERIA**

The proposed project is not located on or near the shoreline. There is no lighting system planned for the proposed project. For night construction and related activities, all lighting will be shielded and directed downwards, as described in Section 6.2.7.

#### **6.5.5 PROPERTY OWNERSHIP**

Hana Highway lies in a right-of-way owned by the State DOT. Land parcels adjacent to the project site are owned by the County of Maui on the *makai* side and Hana Ranch, Inc. on the *mauka* side. The proposed highway improvements will most likely not require the State DOT to acquire that land or obtain an easement in favor of the State DOT for maintenance purposes. Therefore no adverse impacts are foreseen on property ownership for the short-term, long-term or cumulatively. No mitigation measures are required.

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## SECTION 7

### ALTERNATIVES CONSIDERED

#### 7.1 NO ACTION

The “No Action” alternative entails the option to refrain from providing any type of repair, replacement, or widening improvement work on the existing bridge/culvert near MP 33.88 on Hana Highway. Therefore, this alternative will not incur any physical or social effects on the environment, and would not require further costs for planning, design, and construction by the State.

Narrow road widths along the Hana Highway create unsafe conditions. The one-lane bridges interfere with the flow of traffic, as traffic coming from one direction must yield to allow passage over the bridge from the opposite direction. Selection of a “no-action” option would not be consistent with improvements to Hana Highway now underway and therefore this option is not considered to be reasonable by the State DOT-Hwy.

#### 7.2 ALTERNATIVES

##### 7.2.1 CONSTRUCTION OF NEW BRIDGE ALTERNATIVE

One alternative is to purchase land from Hana Ranch and to construct a new road and two-lane bridge on that land. Based on the topography of the Hana Ranch property adjacent to the bridge site, a substantial amount of excavation would be required in order to provide a project site which would be appropriate for a roadway. If this alternative were pursued, the alignment of the existing road would have to be changed, so that safe driving conditions could be maintained, and winding road conditions avoided. The realignment of the roadway would likely be necessary from the intersection of Hana Highway and Uakea Road.

This alternative is not recommended because of the large investment in time and funds required. Funds and time must be allocated in order to purchase the land from Hana Ranch, design the new road and bridge, and prepare the land for construction. In addition, the alignment of the existing road would have to be changed, which may require additional acquisition of private lands, and more funds and time for design and construction.

##### 7.2.2 CONSTRUCTION TO WIDEN EXISTING BRIDGE ALTERNATIVE

The preferred alternative is to widen the travel way of the one-lane bridge/box culvert on Route 360 Hana Highway, near MP 33.88. This project proposes to widen the existing one-lane bridge to allow for two lanes of traffic, and extend the clear span of the bridge from 14'-0" to 23'-0". New end and abutment walls will be constructed in the box culvert in order to support and retain the new structure.

This is the recommended alternative as it is an action which will increase and improve the safety of the highway users, increase access to emergency vehicles, and is the most practical and expeditious of those options considered. Further discussion on the need and benefits of the proposed project are provided in the previous portions of this EA. Ultimately, widening of the existing bridge and extension of the box culvert will serve to provide the Hana Highway users a safer and more accessible crossing at the project site.

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**SECTION 8****DETERMINATION**

In accordance with Chapter 343, Hawaii Revised Statutes, this Environmental Assessment characterizes the technical, social and environmental issues related to improvements along Hana Highway from Uakea Road to Keawa Place. It identifies potential project impacts to the environment and their significance. It is anticipated that the proposed project will not exert any significant impacts to the environment. Therefore, the State of Hawaii Department of Transportation – Highways Division is issuing a Finding of No Significant Impact (FONSI) and an Environmental Impact Statement is not required.

This determination of the FONSI is based upon significance criteria listed in HRS §11-200-12 of the Environmental Impact Statement Rules. The specific criteria used in making this determination are addressed in Section 9 of this EA.

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**SECTION 9****FINDINGS AND REASONS SUPPORTING DETERMINATION OF FINDING OF NO SIGNIFICANT IMPACT**

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource:*

Implementation of highway improvement strategies involve demolishing the railing and wing walls of an existing bridge, which spans an existing box culvert. Both the existing bridge and box culvert are considered historic properties. Most of the original bridge deck and box culvert will remain. The overall aesthetic of the bridge will be preserved in the construction of the new bridge section, which will highly resemble the existing bridge's parapet walls.

The project site is located near known historic sites; however, the proposed improvements will be confined to the immediate project area and are not anticipated to affect the use of or access to the historic site. The SHPD has not identified any other resources which should be of concern. If previously unknown resources are uncovered during the course of construction, the Contractor will stop work immediately and notify the SHPD, who will determine the appropriate treatment.

2. *Curtails the range of beneficial uses of the environment:*

The proposed actions will not curtail the range of beneficial uses of the environment. Proposed actions consist of widening of an existing bridge within the existing right-of-way. As the proposed activities are consistent with the State Land Use Law, rezoning of agricultural lands will not be required.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions or executive orders:*

The proposed highway improvement strategies are consistent with the State's goals and objectives as described in Section 6.5.

4. *Substantially affects the economic or social welfare of the community or state:*

The proposed actions will not substantially affect the economic or social welfare of the community in a negative manner. Road closures during the construction periods will result in some inconvenience. These closures will be temporary and last only for the duration of construction activities. Detours around the project site will permit residents and tourists to continue to travel through the area during the construction periods. The proposed actions will improve the economic welfare of the community by providing design and construction jobs for the duration of the project, and will improve the social welfare of the affected communities by improving traffic flow and allowing uninterrupted travel in both directions, which facilitates response by the emergency vehicles stationed in the adjacent parcels.

5. *Substantially affects public health:*

The proposed activities will not substantially affect public health in a negative manner. Highway improvement measures will improve safety and ease of passage to the motoring public through the addition of a travel lane on the bridge, and facilitate response by emergency vehicles.

6. *Involves secondary impacts, such as population changes or effects on public facilities:*

Highway improvements in the form of bridge widening will not lead to secondary impacts such as population changes and effects on public facilities. The proposed actions will widen a bridge on an existing road.

7. *Involves a substantial degradation of environmental quality:*

Improvements proposed at the project site will not degrade environmental quality of the project site. The existing rural and agricultural quality of Hana District will remain. The proposed improvements will widen a portion of an existing bridge/box culvert. New structures such as the bridge and railing will be designed to be similar in appearance to the existing structures.

8. *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger action:*

The proposed bridge widening will not have a cumulative effect on the environment. The facilities constructed with this project will not require commitment for larger action.

9. *Substantially affects a rare, threatened or endangered species, or its habitat:*

The proposed project will not substantially affect any rare, threatened, or endangered species or its habitat. The project site is not a known critical or nesting habitat for rare, threatened, or endangered species.

10. *Detrimentially affects air or water quality or ambient noise levels:*

Highway improvements in the form of bridge widening will not substantially degrade environmental quality. Any notable adverse effects on air and water quality and ambient noise levels will be short-term and construction-related only. BMPs will be utilized to prevent project site runoff from affecting nearby stream water qualities. Air quality and noise levels will not exceed State DOH standards. The project will not result in long-term adverse effects. Upon completion of construction activities, air and water qualities and ambient noise levels will revert to prior levels.

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

The proposed project is not located in an environmentally sensitive zone. The proposed action will not detrimentally affect the area in or near the project area. The proposed project area is not located in a flood plain, tsunami zone, beach, geologically hazardous land, estuary, fresh water or coastal water. Widening of the bridge and relocation of the retaining structures will not affect the existing drainage.

12. *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies:*

The proposed improvements will not substantially affect any scenic vistas. Construction of an additional lane will expand the existing one-lane bridge to a two-lane bridge. The addition will have low concrete rails, similar in appearance to the existing rails, on the sides of the roadway.

13. *Requires substantial energy consumption:*

Bridge widening strategies are passive in nature and will not require any energy consumption. Energy expended in relation to these projects will be temporary, construction-related and are not required upon completion of project activities.

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## SECTION 10

### PERMITS AND APPROVALS REQUIRED

#### FEDERAL

None

#### STATE

- Department of Transportation: Work Within State Highway Right-of-Way

#### COUNTY OF MAUI

- Planning Department: Special Management Area Permit

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**SECTION 11****REFERENCES**

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**APPENDIX A-1**

**PRE-ASSESSMENT CORRESPONDENCE AND COMMENTS RECEIVED**

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6601 Pacific, Inc.

May 13, 2008

Commander  
U.S. Army Corps of Engineers  
Building 230  
Fort Shafter, HI 96858-5440

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
Project 360-B-01-03

Commander:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uaakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

6601 Pacific, Inc.

May 13, 2008

Mr. Patrick Leonard  
Field Supervisor  
United States Department of the Interior  
Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Blvd., Room 3-122  
Honolulu, HI 96850

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
Project 360-B-01-03  
Species List

Mr. Leonard:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uaakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking any information your department may have regarding the presence of any and all federally listed or proposed species, or proposed or designated critical habitat that may be found within the vicinity of this project site. In addition to the US Fish and Wildlife Service, we will also consult with the Hawaii Natural Heritage Program for information on threatened, rare, or endangered species in or near the project area.

We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

May 13, 2008

Mr. Theodore Liti, Director  
Department of Business, Economic Development and Tourism  
P.O. Box 2359  
Honolulu, HI 96804

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Liti:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

May 13, 2008

Director  
Department of Health  
Environmental Planning Office  
919 Ala Moana Blvd., Room 312  
Honolulu, HI 96814

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

To Whom It May Concern:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located at the intersection of Hana Highway and Uakea Road, at approximately Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential concerns the Department of Health may have for this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@h-e.aecom.com](mailto:diane.kodama@h-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

Jack Brown, Jr.

May 13, 2008

State of Hawaii  
 Department of Land and Natural Resources  
 Historic Preservation Division  
 601 Kamohila Blvd., Room 555  
 Kapolei, HI 96707

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
 Project 360-B-01-03  
 Cultural Resources Survey

To Whom It May Concern:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uaakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

The project will be funded entirely by State monies without federal assistance. Therefore, the State DOT does not intend to conduct formal consultation in accordance with Section 106 of the National Historic Preservation Act. However, in compliance with the requirements of the Hawaii Revised Statutes, Chapter 343, we are seeking any information your department may have regarding the presence of any and all cultural resources that may be found within the vicinity of this project site.

We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@im-e.aecom.com](mailto:diane.kodama@im-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-5535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Attachment

DWE-Pandita, Inc.

May 13, 2008

State of Hawaii  
 Department of Land and Natural Resources  
 Land Division  
 54 High Street, Room 101  
 Waikuku, HI 96793

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
 Project 360-B-01-03

To Whom It May Concern:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uaakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@im-e.aecom.com](mailto:diane.kodama@im-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-5535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Attachment

City of Honolulu, HI

May 13, 2008

Mr. Glenn M. Yasui  
Department of Transportation  
Highways Division  
869 Punchbowl Street, Room 513  
Honolulu, HI 96813

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Yasui:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located at the intersection of Hana Highway and Uakea Road, at approximately Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)-4-006:003, and (2)-4-003:009. The (2)-4-006:003 property is owned by the County of Maui and contains a backyard, Fire Station and Police Station. The (2)-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

City of Honolulu, HI

May 13, 2008

Mr. Clyde W. Namu'o  
Administrator  
Office of Hawaiian Affairs  
711 Kapiolani Blvd., Suite 500  
Honolulu, HI 96813

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Namu'o:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)-4-006:003, and (2)-4-003:009. The (2)-4-006:003 property is owned by the County of Maui and contains a backyard, Fire Station and Police Station. The (2)-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

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Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment



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0101101010\_00

May 14, 2008

Councilmember Bill Kauaeka Medeiros  
County Council, County of Maui  
Kalana O Maui Building, 8<sup>th</sup> Floor  
200 South High Street  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Councilmember Medeiros:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

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Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

May 13, 2008

Ms. Cheryl K. Okuma  
County of Maui  
Department of Environmental Management  
One Main Plaza  
2200 Main Street, Suite 175  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Ms. Okuma:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

401-999-0600

May 14, 2008

Fire Chief  
County of Maui Fire Control  
200 Dairy Road  
Kahului, HI 96732

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Fire Chief:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

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Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

401-999-0600

May 14, 2008

Mr. James Perry  
District Supervisor  
County of Maui Public Works  
Highways Division  
35 Hana Highway  
PO Box 204  
Hana, HI 96713

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Perry:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@hn-e.com](mailto:diane.kodama@hn-e.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

4001 Koahe, Hilo,

May 13, 2008

Mr. Jeffrey S. Hunt  
County of Maui  
Planning Department  
250 South High Street  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Hunt:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a backyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

4001 Koahe, Hilo,

May 13, 2008

Mr. Samuel Kalalau III  
Chair  
County of Maui Planning Department  
Cultural Resources Commission  
250 South High Street  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Kalalau:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a backyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

0001 Pro. no. 000

M & E Pacific, Inc.  
 Davies Porcine Center, Suite 15009, 641 Biehop Street, Honolulu, Hawaii 96813  
 T 808 521 9551 ext. 2261D hawaii@me.com, ext 245135 silva@me.com  
 F 808 524 0246 www.me.com/usa

May 14, 2008

Mr. Thomas Phillips  
 Police Chief  
 County of Maui Police Department  
 55 Mahalani Street  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Chief Phillips:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKS: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKS fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Attachment

July 1, 2008

Kuiea Paraeuelles  
 Environmental Coordinator  
 Office of the Mayor  
 County of Maui  
 200 South High Street, 9<sup>th</sup> Floor  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Kuiea:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKS: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKS fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify any potential impacts this project may have. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Attachment

diane.kodama, inc.

diane.kodama, inc.

May 13, 2008

May 13, 2008

Alliance for the Heritage of East Maui  
PO Box 455  
Hana, HI 96713

Hana Community Association  
PO Box 202  
Hana, HI 96713

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

To Whom It May Concern:

To Whom It May Concern:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

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This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@dm-e.aecom.com](mailto:diane.kodama@dm-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@dm-e.aecom.com](mailto:diane.kodama@dm-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager



Diane Kodama, P.E.  
Senior Project Manager

Attachment

Attachment

May 13, 2008

Ms. Kiersten Faulkner  
Executive Director  
Historic Hawaii Foundation  
680 Iwilei Road, Suite 690  
Honolulu, HI 96817

Subject: Iana Highway Improvements – Uaaken Road to Keawa Place  
Project 360-B-01-03

Ms. Faulkner:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uaaken Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006-003, and (2)1-4-003-009. The (2)1-4-006-003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003-009 property is owned by Iana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

We are seeking your consultation to identify potential impacts or comments you may have on this project. We look forward to your prompt response to our inquiry. If you have any questions, you may call me at 529-7226 or email me at [diane.kodama@m-e.aecom.com](mailto:diane.kodama@m-e.aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

May 13, 2008

Ms. Marsha Wienert  
Maui Visitors Bureau  
1727 Wili Pa Loop  
Wailuku, HI 96793

Subject: Iana Highway Improvements – Uaaken Road to Keawa Place  
Project 360-B-01-03

Ms. Wienert:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Iana Highway, located at the intersection of Hana Highway and Uaaken Road, at approximately Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006-003, and (2)1-4-003-009. The (2)1-4-006-003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003-009 property is owned by Iana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

This project will consist of roadway widening at the bridge/box culvert. All proposed structures shall be contained in the existing right-of-way.

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Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Attachment

M&amp;E Pacific, Inc.

M&amp;E Pacific, Inc.

May 13, 2008

May 13, 2008

Ms. Mahenani Wendt  
Executive Director  
Native Hawaiian Legal Corporation  
1164 Bishop Street, Suite 1205  
Honolulu, Hawaii 96813

Mr. Daniel Grantham  
President  
Sierra Club, Maui Group  
PO Box 791180  
Paia, HI 96779

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Ms. Wendt:

Mr. Grantham:

We are preparing a Draft Environmental Assessment for the State DOT for a project site along Hana Highway, located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88. The project site is a bridge/box culvert fronting properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc. Attached is a map indicating the approximate location of the project site and the TMKs fronting it.

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Sincerely,

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager



Diane Kodama, P.E.  
Senior Project Manager

Attachment

Attachment



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
FORT SHAFTER, HAWAII 96860-5440

June 12, 2008

SENT TO  
ATTENTION OF:

Regulatory Branch

File Number POH-2008-138

Ms. Diane Kodama  
M&E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

We have received your May 13, 2008, request for comments in preparation of a Draft Environment Assessment (EA) for the proposed Iana Highway Improvements, Project 360-B-01-03. The proposed project site is located near the intersection of Hana Highway and Uakea Road, near Milepost (MP) 33.88, at Latitude 20.762° N. and Longitude 155.993° W., near Hana, Maui. The file has been assigned file number POH-2008-138, which should be referred to in all future correspondence with us.

We recommend the draft EA address whether any potential waters of the U.S., as represented by the presence of perennial, intermittent or ephemeral streams or wetlands, are in, adjacent to or flow through, the land parcels subject to development. The EA should also disclose whether any streams or other aquatic resources that may occur within the land parcel have an existing direct or indirect surface water connection to the Pacific Ocean.

Section 404 of the Clean Water Act requires that a Department of the Army (DA) permit be obtained for the discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark.

We appreciate the opportunity to provide comments on the proposed development project and associated EA. Should you have any questions, please contact Mr. Benjamin Soisell of my staff at (808) 438-2039 or at Benjamin.N.Soisell@usace.army.mil. For additional information about our Regulatory Program, visit our web site at <http://www.poh.usace.army.mil/EC-R/EC-R.html>.

Sincerely,

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



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard, Room 3-122, Box 50088  
Honolulu, Hawaii 96850

In Reply Refer To:  
2008-SL-0198  
2008-FA-0126

Ms. Diane Kodama, P.E.  
Senior Project Manager  
M & E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Subject: Species List for Proposed Hana Highway Bridge Widening, Uakea Road to Keawā Place, Project 360-B-01-03, Maui, Hawaii

Dear Ms. Kodama:

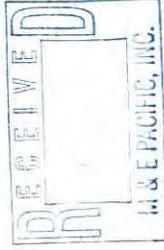
Thank you for your May 13, 2008, letter requesting a list of endangered and threatened species that may occur in the vicinity of the proposed bridge widening on Hana Highway, Maui, for the development of an environmental assessment. We received your request on May 15, 2008.

Based on the project information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program, the threatened Newell's shearwater (*Puffinus auricularis newelli*) and endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*) (collectively referred to as seabirds) are known to occur within the vicinity of the proposed project. In addition, because your proposed project is road widening at a bridge/box culvert area, siltation and/or erosion issues may need to be addressed during construction. To help you address potential project impacts to these listed species and to coral reef ecosystems in your environmental assessment, we provide the following recommendations:

- Construction equipment, poles, and other structures associated with the project that protrude above the vegetation line could pose a flight obstacle to the night-flying seabirds during the breeding season. Any increase in the use of night-time lighting, particularly during each year's peak fallout period, could result in seabird disorientation, fallout, and injury or mortality. Potential impacts to seabirds could be minimized by shielding outdoor lights associated with the project, avoiding night-time construction, and providing all project staff and residents with information about seabird fallout. All lights, including street lights, should be shielded so the bulb can be seen only from below. Use of lights at night during the peak fallout period of September 15 through December 15 should be avoided.

- To minimize erosion, sedimentation, and other adverse impacts to aquatic resources and nearby coral reef ecosystems, we recommend that applicable measures identified in the

JUN 13 2008



Ms. Diane Kodama, P.E.

enclosed list of Standard Best Management Practices for aquatic resources be incorporated into the project's plan.

If you determine the proposed project may adversely impact federally listed species, please contact our office for further assistance. If you have questions or would like additional information, please contact Consultation and Technical Assistance Program Fish and Wildlife Biologist, Dawn Greenlee (phone: 808-792-9400; fax: 808-792-9581).

Sincerely,



for Patrick Leonard  
Field Supervisor

Enclosure

U.S. Fish and Wildlife Service  
Recommended Standard Best Management Practices

The Fish and Wildlife Service recommends that the following measures be incorporated into projects to minimize the degradation of water quality and impacts to aquatic fish and wildlife resources:

- a. Turbidity and siltation from project-related work will be minimized and contained to within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse weather conditions;
- b. Dredging and filling in the aquatic environment will be designed to avoid or minimize the loss special aquatic site habitat (pool/riffle areas, wetlands, etc.) and the unavoidable loss of such habitat will be compensated for;
- c. All project-related materials and equipment (dredges, barges, backhoes, etc.) to be placed in the water will be cleaned of pollutants prior to use;
- d. No project-related materials (fill, revetment rock, pipe, etc.) will be stockpiled in the water (stream channels, wetlands, etc.);
- e. All debris removed from the aquatic environment will be disposed of at an approved upland or ocean dumping site;
- f. No contamination (trash or debris disposal, alien species introductions, etc.) of adjacent aquatic environments (stream channels, wetlands, etc.) will result from project-related activities;
- g. Fueling of project-related vehicles and equipment should take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project will be developed. Absorbent pads and containment booms will be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases;
- h. Any under-layer fills used in the project will be protected from erosion with (rock, core-loc units, etc.) as soon after placement as practicable; and
- i. Any soil exposed near water as part of the project will be protected from erosion (with plastic sheeting, filter fabric, etc.) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding, etc.).



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 535  
KAPOLEI, HAWAII 96707

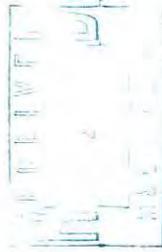
LAMAR THURLEY  
ATTORNEY GENERAL  
CANTON PLAZA, 100 EAST WYOMING STREET  
HONOLULU, HAWAII 96813  
RUSSELL Y. TESH  
DIRECTOR  
KIM KAWAHARA  
ASSISTANT DIRECTOR  
STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 535  
KAPOLEI, HAWAII 96707  
KIMBERLY A. HARRIS  
ASSISTANT DIRECTOR  
STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 535  
KAPOLEI, HAWAII 96707

July 10, 2008

Ms. Diane Kodama  
Metalf & Eddy  
841 Bishop Street  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

**SUBJECT: Chapter 6E-42 Historic Preservation Review [County/State] –  
Information Request for the Proposed Hana Highway Improvements Project  
Unaka Road to Kenwa Place (Project Number 360-14-01-03)  
Niimalu/Kawapapa Ahupua'a, Hana District, Island of Maui  
TMK (2) 1-4-006:003 and 1-4-003:009 (Portions)**



LOG NO: 2008.1783  
DOC NO: 0807/PP08  
Archaeology

Thank you for the opportunity to review and comment on the information request, which was received by our staff on May 15, 2008. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division (SHPD); no field inspection was conducted on the subject parcel. We sincerely appreciate your correspondence and apologize for the delay of this review.

The proposed subject action consists of roadway widening at the bridge/box culvert. All proposed structures will be contained in the existing right-of-way (near Mile Post 33.88). Our records indicate that an Archaeological Inventory Survey has not been conducted of the subject area. This area was once the location of pre-Contact traditional Hawaiian agricultural and habitation sites with scattered burial and ceremonial sites.

Previously documented archaeological sites in the general vicinity consist of pre-Contact temporary and permanent habitation sites, *heiau*, rock terraces, enclosures, rock mounds, modified rock outcrops, rock alignments, rock overhangs, petroglyphs, walled cave shelters, and post-Contact historic properties. Sites listed on the Statewide Inventory of Historic Places (SIHP) include the Hana Belt Road (50-50-13-1638), rock terrace (SIHP 50-50-13-6361), a traditional Hawaiian habitation complex with fishponds, *heiau*, caves and various agricultural components (SIHP 50-50-13-1485) etc.

We believe historic archaeological properties and/or previously disturbed historic archaeological properties may be present in the subject area. Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend that no construction activities occur until an Archaeological Inventory Survey (or Assessment) has been conducted of the subject area to determine whether significant historic properties are present. Following the survey, an acceptable report documenting the findings will need to be submitted to this office for review. To review the current list of qualified archaeological firms, please refer to the following SIHPD website: [www.state.hi.us/dlnr/hpnl](http://www.state.hi.us/dlnr/hpnl).

Ms. Diane Kodama  
Page 2

In the event that historic properties are identified, proposed mitigation in consultation with this office will be submitted for review and approval. Please direct any questions or concerns to the Maui Office Annex of the SHPD at (808) 243-4640, (808) 243-1285, or (808) 243-4641.

Aloha,

  
Digitally signed by Nancy A.  
Harris  
Date: 2008.07.12 11:30:10  
-1000

Nancy McMahon  
Historic Preservation Manager  
State Historic Preservation Division

JP: Dept of Planning, FAX 270-7634  
c: Maui Cultural Resources Commission, Dept. of Planning, 250 S. High Street, Wailuku, HI 96793



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

HRD08/3689

June 10, 2008

Diane Kodama, P.E.  
Senior Project Manager  
M&E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**RE: Hana Highway Improvements – Uakea Road to Keawa Place, Project 360-B-01-03,  
District of Hana, Island of Maui**

Aloha e Diane Kodama,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated May 13, 2008. A preparation notice for a Draft Environmental Assessment (DEA) for the State Department of Transportation (DOT) for a project site along Hana Highway has been sent to our office. OHA looks forward to reviewing the DEA upon completion and offers the following comments at this time.

OHA has substantive obligations to protect the cultural and natural resources of Hawaii for its beneficiaries, the people of this land. The Hawaii Revised Statutes mandate that OHA "serve as the principal public agency in the State of Hawaii responsible for the performance, development, and coordination of programs and activities relating to native Hawaiians and Hawaiians; . . . and [t]o assess the policies and practices of other agencies impacting on native Hawaiians and Hawaiians, and conducting advocacy efforts for native Hawaiians and Hawaiians." (HRS § 10-3)

The DEA, in accordance with Chapter 343 of the Hawaii Revised Statutes (HRS), should include a Cultural Impact Assessment (CIA). In accordance with the requirement of Act 50, Session Laws of Hawaii 2000, a CIA shall include information relating to the practices and beliefs of the Native Hawaiians who once inhabited this area, and it is recommended that the community be involved in this assessment.

The proposed project is in close proximity of known historic sites. These historic sites are located within TMK (2)1-4-006: 001 owned by Hana Ranch, Inc. Due to the close proximity of known historic sites we encourage the applicant to take certain precautions while proceeding with the proposed project. We request the applicant's assurances that should two kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions, please contact Jason Jeremiah (808) 594-1816 or e-mail him at [jasonj@oha.org](mailto:jasonj@oha.org).

'O wau iho nō me ka 'ōia 'i'o.

Clyde W. Nāmut'o  
Administrator

C: OHA Maui CRC Office



CHARMAINE TAVARES  
Mayor  
CHERYL K. OKUMA, Esp.  
Director  
GREGG KRESGE  
Deputy Director

TRACY TAKAMINE, P.E.  
Solid Waste Division  
DAVID TAYLOR, P.E.  
Wastewater Reclamation  
Division

CHARMAINE TAVARES  
MAYOR



JEFFREY A. MURRAY  
CHIEF  
ROBERT M. SHIMADA  
DEPUTY CHIEF

**COUNTY OF MAUI**  
DEPARTMENT OF FIRE AND PUBLIC SAFETY  
FIRE PREVENTION BUREAU

780 ALUIA STREET  
WAILUKU, HAWAII 96793  
(808) 244-9161  
FAX (808) 244-1363

May 20, 2008



**COUNTY OF MAUI**  
DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT  
2200 MAIN STREET, SUITE 175  
WAILUKU, MAUI, HAWAII 96793

May 23, 2008

Ms. Diane Kodama, P.E.  
Senior Project Manager  
M & E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Ms. Diane Kodama, P.E.  
Senior Project Manager  
M & E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**SUBJECT: HANA HIGHWAY IMPROVEMENTS PROJECT 360-B-01-03  
EARLY CONSULTATION REQUEST  
TMK (2) 1-4-006:003 and (2) 1-4-003:009**

**SUBJECT: HANA HIGHWAY IMPROVEMENTS-UAKEA ROAD TO KEAWA PLACE  
PROJECT 360-B-01-03**

Dear Ms. Kodama,

Dear Ms. Kodama.

We reviewed the subject project as a pre-application consultation and have the following comments:

I have had the opportunity to review the project proposal. The bridge widening is much appreciated and we look forward to its completion. It is understood that the roadway fronting the police and fire station may be intermittently closed during the construction phase. This closure will impact the timely response of emergency vehicles heading north. We do recognize that the work is very important.

1. Wastewater Reclamation Division comments:

a. None. There are not any County sewer lines in this area.

2. Solid Waste Division comments:

a. None.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

It is imperative that communication amongst the construction company and emergency personnel be consistent and frequent. Please have the contractor notify the fire department personnel at 808-248-7525 whenever the decision to close the roadway is made. We look forward to working with you on this important issue.

Sincerely,

Cheryl Okuma, Director

Sincerely,

Valentino F. Martin  
Captain  
Fire Prevention Bureau

CHARMAINE IWAHES  
Mayor  
MILTON M. ARAKAWA, A.I.C.P.  
Director  
MICHAEL M. MIYAKI  
Deputy Director  
Telephone: (808) 270-7045  
Fax: (808) 270-7955



RALPH MAGAMINE, L.S., P.E.  
Development Services Administration  
CARY YAMASHITA, P.E.  
Engineering Division  
BRUNN HASHIRO, L.P.E.  
Highways Division

COUNTY OF MAUI  
DEPARTMENT OF PUBLIC WORKS  
200 SOUTH HIGH STREET  
WAILUKU, MAUI, HAWAII 96793

June 3, 2008

Diane Kodama  
M & E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, HI 96813

Subject: Hana Highway Improvements - Uakea Road to Keawa Place  
Project 360-B-01-03

Ms Diane Kodama

Thank you for allowing me to comment on this project. This project is located next to our county garage and equipment baseyard. In my 40 years with the department, I have seen it overflow and flood the whole interior of the garage and equipment parking lot a number of times. I would like to suggest that it be built a little wider and deeper than the existing grade. Hopefully that solves the overflow problem. Another concern is that this bridge is part of the historic road and it has a date it was built on the side inscribed 1915. Will that be saved? Any questions you can contact me at Hana baseyard 248-8254.

Sincerely,

  
James P. Perry  
District Supervisor

CHARMAINE IWAHES  
Mayor  
JERRY S. HUNT  
Director  
COULTEEN B. SUWAGA  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PLANNING

June 30, 2008

Ms Diane Kodama  
M&E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

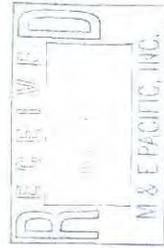
SUBJECT: PRE CONSULTATION IN PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED HANA HIGHWAY IMPROVEMENTS FOR UAKEA ROAD TO KEAWA PLACE, MILEPOST 33.88, MAUI, HAWAII, TMK: 1-4-003:009 and 1-4-006:003 (RFC 2008/0050) (PROJECT 360-B-01-03)

The Department of Planning (Department) is in receipt of the above-referenced document for the proposed Hana Highway Improvements - Uakea Road to Keawa Place. The Department understands the proposed action includes the following:

1. The State Department of Transportation proposes to widen a portion of Hana Highway, located near Milepost 33.88 that will encompass an existing bridge/box culvert.

Based on the foregoing, the Department provides the following comments in preparation of the Draft EA:

1. The land use designations for the project area are as follows:
  - a. State Land Use - Agricultural
  - b. Community Plan - Agricultural
  - c. County Zoning - Not Zoned
  - d. Other - Located within the Special Management Area



Ms. Diane Kodama  
June 30, 2008  
Page 2

2. The Special Management Area (SMA) for this portion of Hana Highway is located on the mauka side of the existing highway right-of-way. A SMA Permit may be required for the proposed project;
3. This portion of Hana Highway is listed on both the National and State Register of Historic Places;
4. The Maui County Cultural Resources Commission should be consulted on the proposed project; and
5. The proposed improvements should retain the rural character of the roadway.

Thank you for the opportunity to comment. Please include the Department on the distribution list for the Draft. Should you require further clarification, please contact Staff Planner Robyn Loudermilk via email at [robyn.loudermilk@mauicounty.gov](mailto:robyn.loudermilk@mauicounty.gov) or by phone at 270-7180.

Sincerely,



CLAYTON I. YOSHIDA, AICP  
Planning Program Administrator

For: JEFFREY S. HUNT, AICP  
Planning Director

xc: Robyn L. Loudermilk, Staff Planner  
Charlene Shibuya, DOT-Highways, Maui District  
RFC File  
General File  
JSH:CIY:RLL:vb  
K:\WP\_DOCS\PLANNING\RFC\2008\00650\_HanaHwyUakeaRoad.Comments.Doc



May 23, 2008

Diane Kodama, PE  
Senior Project Manager  
M&E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, HI 96813

RE: Hana Highway Improvements, Uakea Road to Keawa Place, Project 360-B-01-03

Dear Ms. Kodama,

Thank you for referring the proposed Hana Highway Improvements from Uakea Road to Keawa Place to Historic Hawaii Foundation for consultation on potential impacts to historic resources.

The Hana Highway is listed on the Hawaii State Register of Historic Places and is an important historic resource for Maui County. The initial request for comment is unclear about what, if any, of the character-defining features of the historic road would be impacted by the widening at the bridge/box culvert. Does the project include demolition or replacement of the existing bridge and culvert? Will the widening impact other resources? Will the alignment of the road change? Will view sheds be impacted? Is the design of the proposed project consistent with context-sensitive design principles?

In order to review and comment on the proposal, Historic Hawaii Foundation requests that additional information be provided, including:

1. A description of the undertaking, including drawings or photographs, as necessary to describe it;
2. A description of the historic property and area of potential effect;
3. A description of the potential effect on historic properties; and
4. Proposed avoidance or mitigation of the potential effect, if any.

Thank you for the opportunity to comment. I look forward to continued consultation as the project moves forward.

Very truly yours,



Kirsten Faulkner, AICP  
Executive Director



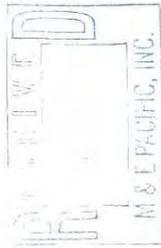
850 Waiola Road, Suite 6007 Honolulu, Hawaii 96817 Tel: (808) 533-2900 Fax: (808) 533-6000  
Email: [preservation@hawaii.gov](mailto:preservation@hawaii.gov) Web: [www.hawaii.gov](http://www.hawaii.gov)

CHARMAINE TAVARES  
Mayor  
CHERYL K. OKUMA, Esq.  
Director

GREGG KRESGE  
Deputy Director



TRACY TAKAMINE, P.E.  
Solid Waste Division  
DAVID TAYLOR, P.E.  
Wastewater Reclamation  
Division



COUNTY OF MAUI  
DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT  
2200 MAIN STREET, SUITE 175  
WAILUKU, MAUI, HAWAII 96793

June 4, 2008

Ms. Diane Kodama, P.E.  
Senior Project Manager  
M & E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**SUBJECT: HANA HIGHWAY IMPROVEMENTS PROJECT 360-B-01-03  
EARLY CONSULTATION REQUEST  
TMK (2) 1-4-006:003 and (2) 1-4-003:009**

Dear Ms. Kodama,

We reviewed the subject project as a pre-application consultation and have the following comments:

1. Wastewater Reclamation Division comments:
  - a. None. There are not any County sewer lines in this area.
2. Solid Waste Division comments:
  - a. None.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

  
Cheryl Okuma, Director

**APPENDIX A-2**  
**DRAFT EA CORRESPONDENCE AND COMMENTS RECEIVED**

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AECOM  
 1000 Town Center Drive, Suite 200  
 Irvine, CA 92618  
 Tel: 949.451.5000  
 Fax: 949.451.5001  
 www.aecom.com

February 10, 2009

George Young  
 Chief, Regulatory Branch  
 US Army District of Honolulu  
 Building 230  
 Fort Shafter, Hawaii 96858

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Chief Young,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your June 12, 2008 letter and would like to offer the following responses:

1. **Comment:** We recommend that the DEA address whether any potential waters if the US, as represented by the presence of perennial, intermittent or ephemeral streams or wetlands, are in, adjacent to or flow through, the land parcels subject to development. The EA should also disclose whether any streams or other aquatic resources that may occur within the land parcel have an existing direct or indirect surface water connection to the Pacific Ocean.  
**Response:** Noted. The DEA states that the perennial Kawaipapa Stream is located near the project site. However, it is not anticipated that the Stream will be affected by the project work.
2. **Comment:** Section 404 of the Clean Water Act required that a Department of the Army (DA) permit be obtained for the discharge of dredged and/or fill material into waters of the US, including jurisdictional wetlands. The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.  
**Response:** Noted. It is not anticipated that either dredged or fill material will be discharged into US waters.
3. **Comment:** Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the US. Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark.  
**Response:** Noted. It is not anticipated that the project work will affect Section 10 waters.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7225 or email me at [diane.kodama@atecom.com](mailto:diane.kodama@atecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File

February 10, 2009

Mr. Patrick Leonard  
Field Supervisor

United States Department of the Interior  
Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Blvd., Room 3-122  
Honolulu, HI 96850

Subject: Hana Highway Improvements – Uakea Road to Keawea Place  
Project 360-B-01-03  
Species List

Dear Mr. Leonard,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your June 16, 2008 letter and would like to offer the following responses:

- Comment:** The threatened Newell's shearwater (*Puffinus auricularis newelli*) and endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*) (collectively referred to as seabirds) are known to occur within the vicinity of the proposed project.

**Response:** Noted. Information has been incorporated into the DEA.

**Comment:** Construction equipment, poles, and other structures associated with the project that protrude above the vegetation line could pose a flight obstacle to the night-flying seabirds during the breeding season. Any increase in the use of night-time lighting, particularly during each year's peak fallout period, could result in seabird disorientation, fallout, and injury or mortality. Potential impacts to seabirds could be minimized by shielding outdoor lights associated with the project, avoiding night-time construction, and providing all project staff and residents with information about seabird fallout. All lights, including street lights, should be shielded so the bulbs can be seen only from below. Use of lights at night during the peak fallout period of September 15 through December 15 should be avoided.

**Response:** To minimize the potential effect on seabirds, the lights and equipment are not to protrude above the vegetation line, and outdoor lights associated with the project will be shielded downward so that the bulb can be seen only from below. Hana Highway is not a full roadway, so lighting of the project area will only be necessary for the length of the project.
- Comment:** Because your proposed project is road widening at a bridge/box culvert area, siltation and/or erosion issues may need to be addressed during construction. To minimize erosion, sedimentation, and other adverse impacts to aquatic resources and nearby coral reef ecosystems, we recommend that applicable measures identified in the enclosed list of Standard Best Management Practices for aquatic resources be incorporated into the project's plan.

**Response:** Noted. Best Management Practices will be employed at the construction site to minimize impacts on the environment.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File

February 10, 2009

Mr. Theodore Liu, Director  
 Department of Business, Economic Development and Tourism  
 P.O. Box 2359  
 Honolulu, HI 96804

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Mr. Liu,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Department of Business, Economic Development and Tourism did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecon.com](mailto:diane.kodama@aecon.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosures

February 10, 2009

Director  
 Department of Health  
 Environmental Planning Office  
 919 Ala Moana Blvd., Room 312  
 Honolulu, HI 96814

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

To Whom It May Concern:

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Department of Health, Environmental Planning Office did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. Three (3) copies of the DEA are enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecon.com](mailto:diane.kodama@aecon.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosures

February 10, 2009

Ms. Nancy McMahon  
Historic Preservation Manager  
State of Hawaii  
Department of Land and Natural Resources  
Historic Preservation Division  
601 Kamohila Blvd., Room 555  
Kapolei, HI 96707

Subject: Hana Highway Improvements – Uaakea Road to Keawea Place  
Project 360-B-01-03  
Cultural Resources Survey

Dear Ms. McMahon:

Thank you for your review and comment to our pre-consultation letter for the subject project. We are writing to inform you that the Draft Environmental Assessment (DEA) has been completed, and research and consultation for the DEA have supported our determination that there will be no adverse impacts to the historical resources in the project area.

The Draft Environmental Assessment (DEA), is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

February 10, 2009

State of Hawaii  
Department of Land and Natural Resources  
Land Division  
54 High Street, Room 101  
Waikuku, HI 96793

Subject: Hana Highway Improvements – Uaakea Road to Keawea Place  
Project 360-B-01-03

To Whom It May Concern:

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uaakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Department of Land and Natural Resources, Land Division did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

AECOM  
1000 Town Center Drive, Suite 1000  
Folsom, CA 95630-4000  
Tel: 916.424.4000 Fax: 916.424.4001  
www.aecom.com

February 10, 2009

Mr. Glenn M. Yasui  
Department of Transportation  
Highways Division  
869 Punchbowl Street, Room 513  
Honolulu, HI 96813

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Mr. Yasui:

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006.003, and (2)1-4-003.009. The (2)1-4-006.003 property is owned by the County of Maui and contains a backyard, Fire Station and Police Station. The (2)1-4-003.009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Department of Transportation, Highways Division did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Chairlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

February 10, 2009

Mr. Clyde W. Namu'o  
 Administrator  
 Office of Hawaiian Affairs  
 711 Kapiolani Blvd., Suite 500  
 Honolulu, HI 96813

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Mr. Namu'o,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your June 3, 2008 letter and would like to offer the following responses:

1. **Comment:** The Draft Environmental Assessment (DEA), in accordance with Chapter 343 of the Hawaii Revised Statutes (HRS), should include a Cultural Impact Assessment (CIA). In accordance with the requirement of Act 50, session Laws of Hawaii 2000, a CIA shall include information relating to the practices and beliefs of the Native Hawaiians who once inhabited this area, and it is recommended that the community be involved in this assessment.  
**Response:** A CIA has been performed by Scientific Consultant Services, Inc. and has been included in the DEA.
2. **Comment:** The proposed project is in close proximity of known historic sites. These historic sites are located within TMK (2) 1-4-006:001 owned by Hana Ranch, Inc. Due to the close proximity of known historic sites we encourage the applicant's assurances that should iwi kupauna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.  
**Response:** Noted. Information has been incorporated into the DEA. It was noted in the DEA that should the Contractor uncover any cultural resources during his construction activities, he will be required to stop work immediately and notify the SHPD of his finds. SHPD will then determine the appropriate treatment of these new finds. The DOT will comply with all SHPD requirements.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File



February 10, 2009

Dr. John T. Harrison, PhD,  
Environmental Coordinator  
UH Manoa Environmental Center  
2500 Dole Street, Krauss Annex 19  
Honolulu, HI 96822

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
Project 360-B-01-03

Dear Dr. Harrison,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uaakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the UH Manoa Environmental Center did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Diane Kodama, P.E.  
Senior Project Manager



February 10, 2009

Mr. Roy Kam, Database Manager  
Hawaii Biodiversity and Mapping Program  
University of Hawaii at Manoa  
Center for Conservation Research and Training  
3050 Malle Way, Gilmore Hall #406  
Honolulu, Hawaii 96822

Subject: Hana Highway Improvements – Uaakea Road to Keawa Place  
Project 360-B-01-03  
Species List

Dear Mr. Kam,

Thank you for your review and comment to our pre-consultation letter for the subject project. We are writing to inform you that the Draft Environmental Assessment (DEA) has been completed, and research and consultation for the DEA have supported our determination that there will be no adverse impacts to the environmental resources in the project area.

The Draft Environmental Assessment (DEA), is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Diane Kodama, P.E.  
Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File



February 10, 2009

Councilmember Bill Kauaieka Medeiros  
County Council, County of Maui  
Kaiana O Maui Building, 8<sup>th</sup> Floor  
200 South High Street  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Councilmember Medeiros,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006.003, and (2)1-4-003.009. The (2)1-4-006.003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003.009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to you in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the County Council did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii's Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aeacom.com](mailto:diane.kodama@aeacom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Diane Kodama, P.E.  
Senior Project Manager



February 10, 2009

Ms. Cheryl Okuma  
Director  
County of Maui  
Department of Environmental Management  
One Main Plaza  
2200 Main Street, Suite 175  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Ms. Okuma,

Thank you for your review and comment to our pre-consultation letter for the subject project. We are writing to inform you that the Draft Environmental Assessment (DEA) has been completed, and research and consultation for the DEA have supported our determination that there will be no adverse impacts to the environmental resources in the project area.

The Draft Environmental Assessment (DEA) is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aeacom.com](mailto:diane.kodama@aeacom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Diane Kodama, P.E.  
Senior Project Manager

Enclosure: Draft Environmental Assessment

cc. Project File

AECOM  
 1111 ...  
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February 10, 2009

Valeriano F. Martin  
 Captain  
 Fire Prevention Bureau  
 County of Maui Department of Fire and Public Safety  
 780 Alua Street  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Chief Martin,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your May 20, 2008 letter and would like to offer the following responses:

1. **Comment:** The bridge widening is much appreciated and we look forward to its completion.  
**Response:** Noted.  
**Comment:** It is understood that the roadway fronting the police and fire station may be intermittently closed during the construction phase. This closure will impact the timely response of emergency vehicles heading north. We do recognize that the work is very important.  
**Response:** Noted. Information has been incorporated into the DEA. The road closures are anticipated to be:
  1. Demo of downstream bridge railing ( 4 days)
  2. Excavation of abutments (15 days)
  3. Pouring of new bridge deck slab ( 10 days)
3. **Comment:** Communication between the construction company and emergency personnel must be consistent and frequent. The contractor should notify the fire department personnel whenever the decision to close the road is made.  
**Response:** Noted. A note will be added to the plans for the contractor to notify the Fire Dept. when the road will be closed.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File

AS/CS/MS  
11/11/09 10:00 AM  
1/20/09 10:00 AM

February 10, 2009

Ms. Tamara Horcajo  
Maui Department of Parks & Recreation  
200 South High Street  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawea Place  
Project 360-B-01-03

Dear Ms. Horcajo,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKS: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibusya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager





REC'D  
 FEB 10 2009  
 PLANNING DEPARTMENT  
 250 SOUTH HIGH STREET  
 WAILUKU, HI 96793

February 10, 2009

Mr. Jeffrey S. Hunt  
 County of Maui  
 Planning Department  
 250 South High Street  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Mr. Hunt,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your June 30, 2008 letter and would like to offer the following responses:

1. **Comment:** The land use designations for the project area are as follows:
  - a. State Land Use - Agricultural
  - b. Community Plan - Agricultural
  - c. County Zoning - Not Zoned
  - d. Other - Located within the Special Management Area
- Response:** Noted. Information has been incorporated into the DEA.
2. **Comment:** The Special Management Area (SMA) for this portion of Hana Highway is located on the mauka side of the existing highway right-of-way. A SMA Permit may be required for the proposed project.
- Response:** Noted. It is not anticipated that construction will occur on the mauka side of the existing highway right-of-way, and therefore no SMA Permit will be necessary.
3. **Comment:** This portion of the Hana Highway is listed on both the National and State Register of Historic Places.
- Response:** Noted. Information has been incorporated into the DEA.
4. **Comment:** The Maui County Cultural Resources Commission should be consulted on the proposed project.
- Response:** Noted. The Maui County Cultural Resources Commission will be consulted and the consultation information will be incorporated into the FEA.
5. **Comment:** The proposed improvements should retain the rural character of the roadway.
- Response:** Noted. The new bridge has been designed to be similar in appearance to the existing structure to preserve the visual nature of the existing conditions.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

Enclosure: Draft Environmental Assessment

cc: Project File

February 10, 2009

Mr. Samuel Kalalau III  
 Chair  
 County of Maui Planning Department  
 Cultural Resources Commission  
 250 South High Street  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Mr. Kalalau,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006.003, and (2)1-4-003.009. The (2)1-4-006.003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003.009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window, therefore, it was assumed that the County of Maui Planning Department, Cultural Resources Commission did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

February 10, 2009

Mr. Thomas Phillips  
 Police Chief  
 County of Maui Police Department  
 55 Mahalani Street  
 Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
 Project 360-B-01-03

Dear Chief Phillips,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006.003, and (2)1-4-003.009. The (2)1-4-006.003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003.009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window, therefore, it was assumed that the County of Maui Police Department did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
 Senior Project Manager

February 10, 2009

Kuhea Paracuelles  
Environmental Coordinator  
Office of the Mayor  
County of Maui  
200 South High Street, 9<sup>th</sup> Floor  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Kuhea,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. The letter was returned, and another request was sent to your office in July 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Environmental Coordinator, Office of the Mayor did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii's Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office, as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

February 10, 2009

Alliance for the Heritage of East Maui  
PO Box 455  
Hana, HI 96713

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

To Whom It May Concern:

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Alliance for the Heritage of East Maui did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii's Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

AFCOM  
1000 Kalia Road, Suite 1000  
Honolulu, HI 96813

February 10, 2009

Hana Community Association  
PO Box 202  
Hana, HI 96713

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

To Whom It May Concern:

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Hana Community Association did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii's Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

February 10, 2009

Ms. Kirsten Faulkner  
Executive Director  
Historic Hawaii Foundation  
680 Waiilei Road, Suite 690  
Honolulu, HI 96817

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Ms. Faulkner,

Thank you for your review and comment to our pre-consultation letter for the subject project. We have reviewed the comments listed in your May 23, 2008 letter and would like to offer the following responses:

1. Comment: The Hana Highway is listed on the Hawaii State Register of Historic Places and is an important historic resource for Maui County.

Response: Noted.

2. Comment: The initial request for comment was unclear as to whether the project includes demolition or replacement of the existing bridge and culvert.

Response: The goal of the subject project is to do the least intrusive construction to this historic bridge while allowing for drainage to pass through as it has been. The intent is to widen the structure by extending the box culvert makai with the same look. The existing concrete bridge railing and the CRM wing walls of the culvert will be demolished. The new bridge railing will be identical to the existing railing, and the date "1915" and form lines on the existing bridge parapet will be duplicated on the new bridge parapet.

3. Comment: Clarify whether the widening will impact other resources.

Response: The widening will not impact other resources. Bridge construction will occur in an area that is currently paved. No trees or foliage will be cut down in order to make room for the new bridge.

4. Comment: The initial request for comment was unclear as to whether the alignment of the road will change.

Response: The alignment of Hana Highway within the project area will be changed slightly to accommodate the new lane on the bridge. The alignment will change only enough to carry the centerline of the highway from one side of the bridge to the other in order to create two lanes in the travelway. The new alignment is not anticipated to require additional paving outside of the existing pavement limits.

5. Comment: Clarify whether the view sheds will be impacted.

Response: The view sheds will not be impacted. The bridge extension is flat and construction will occur in an area that is currently paved. No trees or foliage will be cut down in order to make room for the new alignment.

6. Comment: The initial request for comment was unclear as to whether the design of the proposed project is consistent with context-sensitive design principles.

Response: See response to Item #2.

7. Comment: Historic Hawaii Foundation requests that additional information be provided, including:

1. A description of the undertaking, including drawings or photographs, as necessary to describe it;
2. A description of the historic property and area of potential effect;
3. A description of the potential effect on historic properties; and
4. Proposed avoidance or mitigation of the potential effect, if any.

Response: Noted. Information has been incorporated into the DEA.

The comments received have been incorporated into the Draft Environmental Assessment (DEA), which is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. A copy of the DEA is enclosed for your review and information.

Should you have any further questions or comments, please call me at 529-7226 or email me at [diane.kodama@aecom.com](mailto:diane.kodama@aecom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,

Diane Kodama, P.E.  
Senior Project Manager



Enclosure: Draft Environmental Assessment

cc: Project File

February 10, 2009

Ms. Mahealani Wendt  
Executive Director  
Native Hawaiian Legal Corporation  
1164 Bishop Street, Suite 1205  
Honolulu, Hawaii 96813

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Ms. Wendt,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Native Hawaiian Legal Corporation did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aeocom.com](mailto:diane.kodama@aeocom.com), or contact Ms. Charlene Shibusya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

February 10, 2009

Ms. Marsha Wienert  
Maui Visitors Bureau  
1727 Will Pa Loop  
Wailuku, HI 96793

Subject: Hana Highway Improvements – Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Ms. Wienert,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the Island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Maui Visitors Bureau did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7226 or email me at [diane.kodama@aeocom.com](mailto:diane.kodama@aeocom.com), or contact Ms. Charlene Shibusya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager

AFCOM  
10000  
10000

February 10, 2009

Mr. Daniel Grantham  
President  
Sierra Club, Maui Group  
PO Box 791180  
Paia, HI 96779

Subject: Hana Highway Improvements -- Uakea Road to Keawa Place  
Project 360-B-01-03

Dear Mr. Grantham,

The State of Hawaii Department of Transportation (DOT) is proposing to widen a bridge/box culvert on the Hana Highway, near the intersection of Hana Highway and Uakea Road, in the Hana District on the island of Maui. M&E Pacific has been contracted to prepare an Environmental Assessment (EA) for the bridge widening. The project site fronts properties identified as TMKs: (2)1-4-006:003, and (2)1-4-003:009. The (2)1-4-006:003 property is owned by the County of Maui and contains a baseyard, Fire Station and Police Station. The (2)1-4-003:009 property is owned by Hana Ranch, Inc.

A request for a pre-assessment review of the proposed project was submitted to your organization in May 2008. Comments to the project were not received within the stated 30-day window; therefore, it was assumed that the Sierra Club, Maui Group did not have comments or objections to the project at that time. The research and consultation performed for the DEA have supported our determination that there will be no adverse impacts to the environmental or cultural resources in the project area.

The DEA is scheduled to be published by the State of Hawaii's Office of Environmental Quality Control (OEQC) newsletter *The Environmental Notice*, on February 23, 2009. The report will be available for review at the OEQC office as well as the Hana Public & School Library in Hana, Hawaii. Please contact us if you would like to have a copy of the DEA.

Should you have any questions or comments, please call me at 529-7225 or email me at [diane.kodama@afcom.com](mailto:diane.kodama@afcom.com), or contact Ms. Charlene Shibuya of the DOT at 873-3535.

Sincerely,



Diane Kodama, P.E.  
Senior Project Manager





STATE OF HAWAII  
DEPARTMENT OF HEALTH  
PO. Box 3378  
HONOLULU, HAWAII 96801-3378

CHYONGE L. FUJINO, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
EPO-09-025

March 19, 2009



Ms. Diana Kodama  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

**SUBJECT:** Draft Environmental Assessment for Hana Highway Improvements – Uakea Road  
to Keawa Place  
Hana, Maui, Hawaii

Thank you for allowing us to review and comment on the subject application. The application was routed to the various branches of the Environmental Health Administration. We have the following Clean Water Branch and General comments.

Clean Water Branch

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at <http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:

- a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
- b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
- c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

Ms. Kodama  
March 19, 2009  
Page 2

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting the applicable Notice of Intent (NOI) form:

- a. Storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

- b. Discharges of construction activity dewatering.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/geni-index.html>.

3. For types of wastewater discharges not covered by an NPDES general permit, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/ndiv-index.html>.

4. You must also submit a copy of the NOI or NPDES permit application to the State DLNR, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. Please call the Army Corps of Engineers at (808) 438-9258 to see if this subject project requires a Department of the Army (DA) permit. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the Water Quality Standards. Noncompliance with water quality

requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

7. The EA should specify if any impacted State waters are listed in the Clean Water Act, Section 303(d) list of impaired water bodies in Chapter IV of the *2006 State of Hawaii Water Quality Monitoring and Assessment Report*.

Any NPDES permit(s) for discharges into these water bodies will incorporate the requirement for the Permittee to develop and implement a facility/project-specific Waste Load Allocation (WLA) implementation and monitoring plan when a Total Maximum Daily Load (TMDL) which specifies WLAs applicable to the Permittee's project is approved by the U.S. Environmental Protection Agency. The Permittee shall incorporate and implement the facility/project-specific WLA implementation and monitoring plan as part of the project's Storm Water Pollution Control Plan or Site-Specific Best Management Practices Plan, as appropriate. The facility/project-specific WLA implementation and monitoring plan shall include Data Quality Objectives (DQO) and Quality Assurance and Quality Control methods. The purpose and goal of DQO process can be found at <http://www.hanford.gov/dqo>. Information on the DOH WLA Implementation and TMDLs are available on the DOH Environmental Planning Office website at <http://hawaii.gov/health/environmental/env-planning/wqm/wqm.html> (see *TMDL Technical Reports and Implementation Plans for approved TMDLs are available here for download in pdf format*).

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

#### General

We strongly recommend that you review all of the Standard Comments on our website: [www.hawaii.gov/health/environmental/env-planning/anduss/anduss.html](http://www.hawaii.gov/health/environmental/env-planning/anduss/anduss.html). Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,



KELVIN H. SUNADA, MANAGER  
Environmental Planning Office

c: EPO  
CWB  
EH-Maui



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 555  
KAPOLU, HAWAII 96707



LAVINA L. THIBBLE  
DIRECTOR OF LAND AND NATURAL RESOURCES  
CONSERVATION AND HISTORIC PRESERVATION  
STATE OF HAWAII  
REBECCA M. KEENE  
DEPUTY DIRECTOR  
KENT C. KAWAIAHA  
DEPUTY DIRECTOR  
POLYMERIZATION OF POLYETHYLENE TEREPHTHALATE  
CONSERVATION AND HISTORIC PRESERVATION  
CONSTRUCTION AND RESTORATION OF HISTORIC BUILDINGS  
CONSTRUCTION AND RESTORATION OF HISTORIC BUILDINGS  
HISTORIC AND CULTURAL RESOURCES  
KAPOLU, HAWAII 96707  
STATEWORKS

May 21, 2009

Ms. Diane Kodama, P.E.  
Senior Project Manager  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813



LOG NO: 2009.0154  
DOC NO: 0903PC38  
Archaeology

**SUBJECT: Chapter 6E-8 Historic Preservation Review -  
Comments Regarding a Draft Environmental Assessment for Inna Highway  
Improvements from Uaieka Road to Keawa Place  
Kawaipapa Ahupua'a, Inna District, Island of Maui, Hawaii'i  
TMK: (2) 1-4-006:001 por.; (2) 1-4-006:999 por.; and 1-4-003:unidentified**

Thank you for the opportunity to review this document, which our staff received on February 12 of 2009 (M & E Pacific, Inc.: 2009) *Draft Environmental Assessment for the Inna Highway Improvements, Uaieka Road to Keawa Place*. Please accept our apologies for the delay in commenting.

Overall, we **cannot agree** that the proposed project will have no adverse effect on culturally significant historic or archaeological properties because the historic preservation review process has not yet been completed. In July of 2008 we recommended that an archaeological inventory survey be undertaken of the area of potential effect (SHPD LOG NO: 2008.1783; DOC NO: 0807JP08). While that has occurred and an associated report was reviewed by this office on March 14 of this year, we are still awaiting the receipt of a revised copy for final review (SHPD LOG NO: 2009.0155; DOC NO: 0903PC47) from Scientific Consultant Services, Inc. Therefore, we must withhold formal comments until the report has been resubmitted and accepted.

Should you have any questions or comments regarding this letter, please contact Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

*Patty J. Conte*

Nancy McMahon, Deputy SHPO/State Archaeologist  
State Historic Preservation Division

PHONE (808) 594-1888

FAX (808) 594-1865



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

IRD09/3689C

April 6, 2009

Diane Kodama  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, HI 96813

**RE: Draft Environmental Assessment for the Inna Highway Improvements project, Maui.**

Aloha e Diane Kodama,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 10, 2009, letter requesting comments on the above-mentioned project. The state Department of Transportation proposes to widen the travelway of a one-lane bridge/box culvert on Route 360 Inna Highway, near the intersection of Uaieka Road and Inna Highway. OHA has reviewed the project and offers the following comments.

OHA is concerned about the effects stormwater runoff from the project site will have on area stream and marine waters, and we ask that Best Management Practices be implemented to mitigate these impacts. We appreciate that the applicant will adopt the U.S. Fish and Wildlife Services' recommendations to protect native seabirds. In addition, we ask that unimpacted, disturbed areas of the project site be revegetated with native plants once construction is finished. Finally, OHA will rely on the assurances that should not kīpapa or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions, please contact Sterling Wong by phone at (808) 594-0248 or e-mail him at [sterlingw@oha.org](mailto:sterlingw@oha.org).

'O wai iho nō me ka 'ōia'i'o.

*Clyde W. Nāmā'u*

Clyde W. Nāmā'u  
Administrator

CHARMAINE TAVARES  
Mayor  
CHERYL K. OKUMA, Esq.  
Director  
GREGG VRESSE  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT  
2200 MAIN STREET, SUITE 100  
WAILUKU, MAUI, HAWAII 96793

February 24, 2009

Mr. Diane Kodama  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**SUBJECT: HANA HIGHWAY IMPROVEMENTS -  
UAKEA ROAD TO KEAWA PLACE  
EARLY CONSULTATION  
TMK (2) 1-4-003:009 AND (2) 1-4-006:003, HANA, MAUI**

Dear Ms. Kodama,

We reviewed the subject project as a pre-application consultation and have the following comments:

1. Solid Waste Division comments:
  - a. None.
2. Wastewater Reclamation Division (WWRD) comments:
  - a. None. No County sewer system in the area.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

*Cheryl K. Okuma*  
Cheryl K. Okuma, Director

TRACY TAKAMINE, P.E.  
Solid Waste Division  
DAVID TAYLOR, P.E.  
Wastewater Reclamation  
Division



CHARMAINE TAVARES  
Mayor



DEPARTMENT OF PARKS & RECREATION  
700 Hali'i in Nakoa Street, Unit 2, Wailuku, Hawaii 96793

February 20, 2009

Ms. Diane Kodama, P.E.  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**SUBJECT: Hana Highway Improvements - Uakea Road to Keawa  
Place Project 360-B-01-03**

Dear Ms. Kodama:

We have reviewed the proposed Hana Highway improvements, Uakea Road to Keawa Place project and have no comments or objections to submit at this time.

Thank you for the opportunity to review and comment on this matter. Please feel free to contact me or Mr. Patrick Matsui, Chief of Parks Planning and Development at 270-7931 should you have any other questions.

Sincerely,

*Tamara Horcajo*  
TAMARA HORCAJO  
Director, Parks & Recreation

cc: Patrick Matsui, Chief of Parks Planning and Development

TH:PM:do

TAMARA HORCAJO  
Director  
ZACHARY Z. HELM  
Deputy Director  
(808) 270-7230  
FAX (808) 270-7934



CHARMAHE TAVARES  
Mayor

JEFFREY S. HUNT  
Director

KATHLEEN ROSS AOKI  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PLANNING

April 6, 2009

Ms. Diane Kodama  
M&E Pacific, Inc.  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

**SUBJECT: COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR THE PROPOSED HANA HIGHWAY IMPROVEMENTS FOR UAKEA ROAD TO KEAWA PLACE, MILEPOST 33.88, ISLAND OF MAUI, HAWAII, TMK: (2) 1-4-003:009 and (2) 1-4-006:003 (EAC 2009/0010) (PROJECT 360-B-01-03)**

The Department of Planning (Department) is in receipt of the above-referenced document for the proposed Hana Highway Improvements – Uakea Road to Keawa Place. The Department understands the proposed action includes the following:

- The State Department of Transportation proposes to widen a portion of Hana Highway, located near Milepost 33.88 that will encompass an existing bridge/box culvert.

Based on the foregoing, the Department provides the following comments in preparation of the Draft EA:

1. The Draft EA includes the information provided by the Department in its letter dated June 30, 2008;
2. The Department would like to clarify that the proposed project is located within the Special Management Area (SMA);
3. The Department has made a determination that a SMA Use Permit will be required for the proposed action. This determination was made based upon the potential for adverse impacts to a historic resource: Hana Belt Road (Road);
4. Also known as Hana Highway, the portion of the Road from Ho'alaia Bridge in Huelo to Koukou'ai Bridge in Kipahulu is listed on both the State of Hawaii and National Register of Historic Places. There are 59 bridges

250 SOUTH HIGH STREET, WAILUKU, HAWAII 96793  
MAIN LINE (808) 270-7295, FACSIMILE (808) 270-7634  
COURTESY DIVISION (808) 270-8295, LONG RANGE DIVISION (808) 270-2214, ZONING DIVISION (808) 270-7253

Ms. Diane Kodama  
April 6, 2009  
Page 2

- and eight (8) culverts along this stretch of Road. The SMA Use Permit will ensure that the proposed project is in keeping with the rural character of the Road;
5. As part of the SMA Use Permit process, the Department will schedule the proposed project with the Maui County Cultural Resources Commission;
6. The Final EA should include the construction drawings for the proposed project; and
7. A SMA Use Permit Application is included for your use.

Thank you for the opportunity to comment. Please include the Department on the distribution list for the Final EA. Should you require further clarification, please contact Staff Planner Robyn Loudermilk at [robyn.loudermilk@mauicounty.gov](mailto:robyn.loudermilk@mauicounty.gov) or 270-7180.

Sincerely,

CLAYTON I. YOSHIDA, AICP  
Planning Program Administrator

For: JEFFREY S. HUNT, AICP  
Planning Director

cc: Robyn L. Loudermilk, Staff Planner  
Stan Solamillo, Cultural Resources Planner  
Charlene Shitabuya, DOT-Highways, Maui District  
Project File  
General File

JSH:CY:RLL:bv  
K:\WP\_DOCS\PLANNING\EAC\2009\0010\_HanaHwy\Uakea\Rod\DEA\Comments.DOC



March 9, 2009

Diane Kodama, P.E., Senior Project Manager  
AECOM  
841 Bishop Street, Suite 1900  
Honolulu, Hawaii 96813

**RE: Hāna Highway Improvements, Uakea Road to Keawa Place, Project 360-B-01-03, Draft Environmental Assessment**

Dear Ms. Kodama,

Thank you for referring the above mentioned project to Historic Hawai'i Foundation (HHF) for review. We previously submitted comments and questions regarding your pre-consultation letter on the subject project. You provided responses to those questions in your recent submittal.

Our first comment was that Hāna Highway is listed on the State Register, which you indicate is noted. HHF continues to be concerned that the project is not treating the bridge itself as a historic resource. Section 6.3.1 of the report states that "...the existing bridge at the project site is an historic property." However, two paragraphs later, the DEA states that "although no significant historic sites are anticipated to be encountered, the State DOT is cognizant that Route 360 Hāna Highway is listed on the Hawai'i State Register of Historic Places...and agrees that efforts must be made to preserve the original character of the highway."

HHF would like to ensure that the bridge is treated as contributing to the historic character of the Hāna Highway. Please rectify the discrepancy between the statements that this is a historic bridge and that no historic properties are anticipated to be encountered by acknowledging that the project will effect a historic property.

Secondly, HHF commented that the initial request for comments was unclear as to whether the project includes demolition or replacement of the existing bridge and culvert. The response was that "the goal of the subject project is to do the least intrusive construction to this historic bridge while allowing for drainage to pass through as it has been. The intent is to widen the structure by



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Email: preservation@historichawaii.org / Web: www.historichawaii.org



extending the box culvert ma kai with the same look." The above statements gave the impression that the existing bridge would remain, but would be widened. You go onto to say that "the new bridge railing will be identical to the existing railing and the date '1915' and form lines on the existing bridge parapet will be duplicated on the new bridge parapet." This statement and throughout Section 4.1, titled Technical, refer to both the existing and new bridges. How much of the existing historic bridge will remain? And how much of the historic bridge will be demolished? How much of the project will be new construction? Please provide both drawings and a narrative description to clarify the level of demolition anticipated.

Regarding making the new railings identical to the existing railings and stamping the date '1915' on the new parapet wall, HHF feels that this is inappropriate. Doing so would give the impression that the new structure was constructed in 1915. As this is not the case, it is not prudent to convey a false sense of history by making it appear as if this new bridge is historic. What would be more appropriate is to design the new bridge railings in a style that is compatible with, but not identical to, the remaining historic bridges along the Hāna highway. It should blend in, but should not convey a false sense of history.

In the alternatives section, no other alternatives were looked at besides the no-action alternative. HHF feels that additional alternatives should be explored that may allow for the preservation of this bridge and keeping the historic character of the roadway more intact.

The one lane bridges along the Hāna Highway contribute to the character of the road and its rural nature. Widening the bridge would negatively impact this Hawai'i Register-listed property. Should you choose to proceed with the project in its current form, appropriate mitigation measures should be explored that would contribute to preserving the character of the roadway, such as a commitment to preserve other historic bridges along the route.

Thank you for the opportunity to comment.

Very truly yours,

Kirsten Paulkner, AICP  
Executive Director

Copies:

Dr. Pua Ahi, State Historic Preservation Division



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**APPENDIX B**  
**RECORD OF FLORAL AND FAUNAL INVESTIGATION**

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**Silva, Shelle**

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**From:** Kodama, Diane  
**Sent:** Friday, May 23, 2008 9:48 AM  
**To:** Charlene.Shibuya@hawaii.gov  
**Cc:** Silva, Shelle; Tiedemann, Alexander  
**Subject:** FW: Hana Highway  
**Attachments:** m&e\_hanahighway.jpg

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

**Categories:** Red Category

---

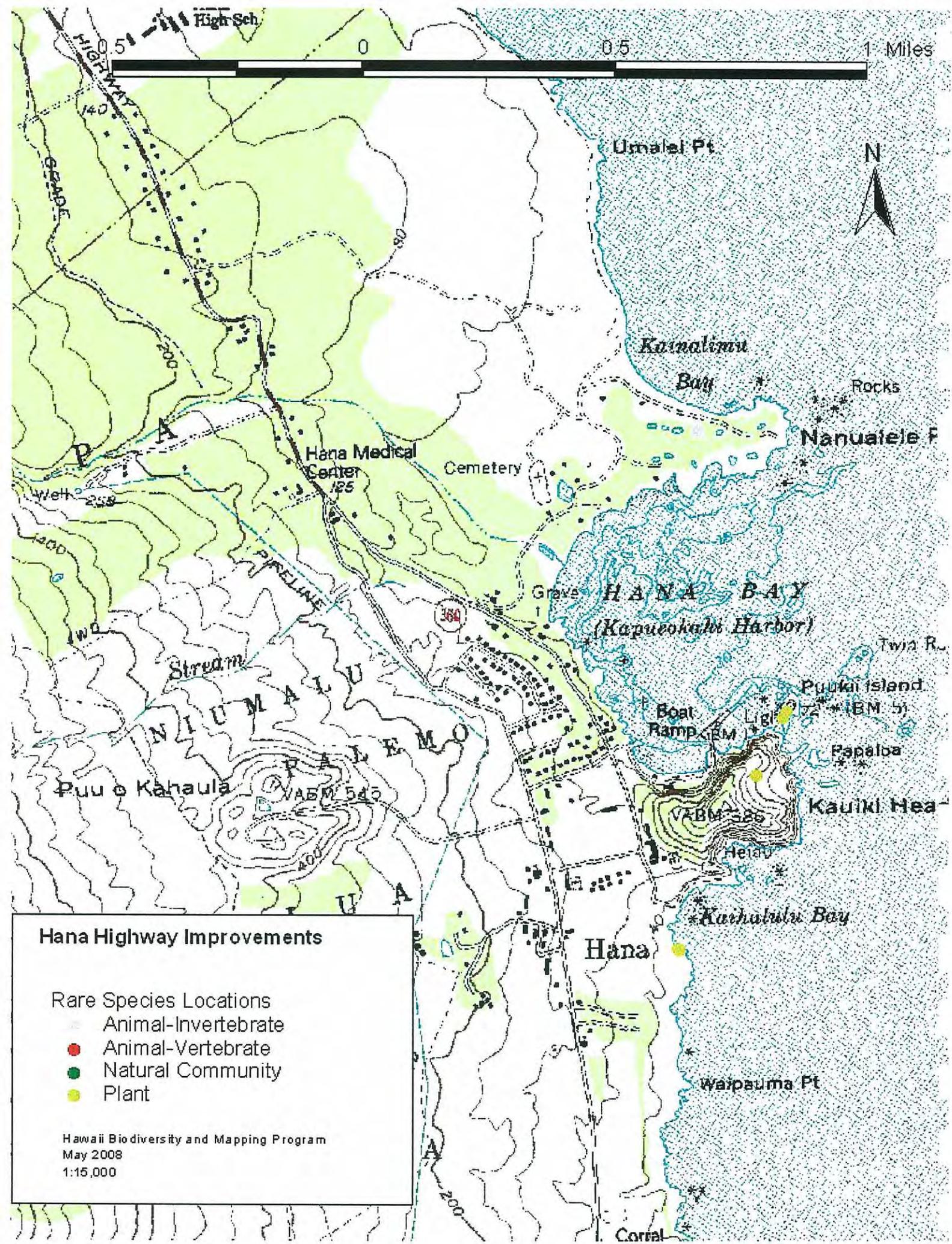
**From:** Roy Y s Kam [mailto:rkam@hawaii.edu]  
**Sent:** Friday, May 23, 2008 9:42 AM  
**To:** Kodama, Diane  
**Subject:** Hana Highway

Diane,

Per your request for the Hana Highway Improvement projet. There have been no recordings of rare species in the vicinity of your site. Attached is a jpeg map for your reference.

Roy Kam  
Database Manager  
Hawaii Biodiversity and Mapping Program  
University of Hawaii at Manoa  
Center for Conservation Research and Training  
Ph: 956-8094  
Fax: 956-8493

Mailing Address:  
3050 Maile Way Gilmore Hall #406  
Honolulu, Hawaii 96822  
Office Address:  
Biomedical and Sciences Building  
Court B, Room #203



**Hana Highway Improvements**

- Rare Species Locations
- Animal-Invertebrate
  - Animal-Vertebrate
  - Natural Community
  - Plant

Hawaii Biodiversity and Mapping Program  
 May 2008  
 1:15,000

**APPENDIX C**

**DEPARTMENT OF THE ARMY JURISDICTIONAL DETERMINATION LETTER**

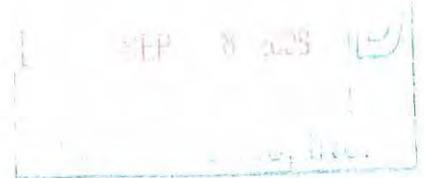
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REPLY TO  
ATTENTION OF:

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

September 4, 2008



Regulatory Branch

File Number POH-2008-138

Ms. Diane Kodama  
M & E Pacific, Inc.  
Davies Pacific Center  
841 Bishop St, Suite 1900  
Honolulu, Hawaii 96813

Dear Ms. Kodama:

We have evaluated your June 30, 2008 letter regarding the Hana Highway Improvements Project located between Hana Uakea and Keawa, Hana, Maui, Hawaii. We have reviewed the information you submitted with respect to the Corps' authority to issue Department of the Army (DA) permits pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344).

Based on the information you submitted, it appears the proposed highway widening project will not involve work activities in navigable waters of the U.S., including adjacent wetlands, or activities that will involve the placement or discharge of dredged and/or fill material into waters of the U.S.; therefore, **a DA permit will not be required.** This determination does not relieve you of the responsibility to obtain any other permits, licenses, or approvals that may be required under County, State, or Federal law for your proposed work.

Should you have any questions regarding this jurisdictional determination, please contact Ms. Serena Sweet of my staff at (808) 438-2039 or by e-mail at [serena.e.sweet@usace.army.mil](mailto:serena.e.sweet@usace.army.mil) and reference the Corps File No. **POH-2008-138** in all future correspondence and inquiries related to this project.

Sincerely,

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



**APPENDIX D**  
**COMMUNITY MEETING MINUTES**

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**DATE:** June 10, 2009 **TIME:** 6:00 PM  
**PRESENT:** Dawn Lono (DL) – County of Maui, Jean Mardfin (JM), Ward Mardfin (WM), Charlene Shibuya, (CS), Diane Kodama (DYK)—AECOM Pacific, Inc., 521-3051  
**LOCATION:** Helene Social Hall  
**PROJECT:** State of Hawai'i, Department of Transportation – Highways Division  
*Hana Highway Improvements, Uakea Road to Keawa Place, Hana, Maui, Hawai'i*  
Project No. 360B-01-03  
**PROJECT NUMBER:** 36802855.00300  
**SUBJECT:** Hana Community Meeting  
**COPIES:** CS, DYK, Project File  
**REQUIRED RESPONSE OR ACTIONS:** None.

The purpose of the meeting was to discuss and ascertain community concerns for the proposed project.

1. DL and JM both support project.
2. There was a complaint about herbicide.
3. A suggestion was made to have prisoners cut foliage around project site.
4. DL will post for meeting if needed for future projects.
5. Charlene Shibuya will send email to DL about Keanae maintenance contact info.

SIGNED:

  
Diane Y. Kodama

6/10/09  
DATE

## Silva, Shelle

---

From: Kodama, Diane  
Sent: Thursday, December 10, 2009 9:04 AM  
To: Silva, Shelle  
Subject: FW: Route 360 Hana Hwy - Herbicide spraying

Follow Up Flag: Follow up  
Flag Status: Completed

To include in EA.

-----Original Message-----

From: Charlene.Shibuya@hawaii.gov [mailto:Charlene.Shibuya@hawaii.gov]  
Sent: Thursday, June 11, 2009 12:43 PM  
To: Dawn.Lono@MauiCounty.us  
Cc: Stephen.T.Rodgers@hawaii.gov; William.J.Park@hawaii.gov; Ramon.NMN.Lazo@hawaii.gov; Ferdinand.Cajigal@hawaii.gov; Kodama, Diane  
Subject: Route 360 Hana Hwy - Herbicide spraying

Dawn

Thank you for taking the time to attend last night's informational meeting on DOT's box culvert/ bridge widening project titled "Route 360 Hana Highway Improvements, Uakea St to Keawa St, proj.no. 360B-01-03". And appreciate your offer to show others in the community the preliminary plans that we gave you, to let me know if there are any negative comments or reaction to the project. A draft Environmental Assessment (EA) was prepared and filed with the Office of Environmental Quality Control (OEQC) Office back in February 2009. If the community is not opposed to this project, DOT wants to move forward with finalizing the EA and doing the Special Management Area (SMA) application to the Maui County Planning Commission.

Also, by copy of this e-mail to our Maintenance Section staff, letting them know your concern with the herbicide spraying along the roadsides where children walk and when motorists have to follow the truck then smell the spray without the same protective clothing / mask that the operator uses. You had an encounter about a month ago. If our maintenance staff has questions or need further clarification on your concerns, the following persons may call you.

Stephen Rodgers, Maintenance Superintendent ph. 873-3535  
Bill John Park, Maintenance Supervisor ph.873-3542  
Ramon Lazo, Keanae Baseyard Supervisor ph.248-8463

HWY-MM: Dawn's phone number is 248-7513. She works in the Hana Council office which is a 'satellite' office of the Maui County Council Services office in the County Building.

Charlene Shibuya  
Construction Engineer / Design Project Manager  
State of Hawaii - Dept of Transportation Highways Division - Maui  
District Office  
650 Palapala Drive Kahului, Hawaii 96732-2321

**APPENDIX E**  
**ARCHAEOLOGICAL INVENTORY SURVEY**

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**ARCHAEOLOGICAL INVENTORY SURVEY OF  
A HĀNA HIGHWAY WIDENING AREA  
AT MILE MARKER 33.88, CULVERT #9,  
HĀNA, KAWAIPAPA AHUPUA`A, HĀNA DISTRICT,  
MAUI ISLAND, HAWAII  
[TMK: 1-4-006:999]**

Prepared by:

**David Perzinski, B.A.  
and  
Michael F. Dega, Ph.D.**

June 2009

Prepared For:

**AECOM  
Davis Pacific Center  
841 Bishop Street, Ste. 1900  
HNL, HI 96813**



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## INTRODUCTION

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey in advance of a road widening project in Hāna, Kawaipapa Ahupua`a, Hāna District, Maui Island, Hawai`i [TMK: 1-4-006:999] (Figures 1 and 2). The project area is located at Mile Marker 33.88 on Hāna Highway, just north of the Hāna Fire Department Building. The location is known as “Crossing #60” of the highway and Culvert #9. An Archaeological Inventory Survey was conducted to mitigate any archaeological concerns associated with the Hāna Highway widening improvements from Uakea Road to Keawa Place in Hāna, Maui.

Archaeological work in the project area was conducted to determine whether historic properties were present on surface and/or subsurface and to determine what effects the proposed highway improvements will have on the bridge and/or other associated features. The inventory survey included pedestrian survey and limited shovel testing. Prior to the present study, the Hāna Highway (State Rte 360) and Pi ilani Highway (Rte. 31) were nominated and found eligible for the National Register of Historic Places and designated SIHP No. 50-50-06-1638 (Duensing, 2001). Two features associated to Site -1638 were documented during the present inventory survey. Feature A is a bridge spanning a small basalt-lined gulch on Hāna Highway at mile marker 33.88. Feature B is the basalt lined gulch located on the *makai* (east) side of the bridge. The feature designations (A and B) for these two components of Site -1638 are not related to the existing National Register site record.

The scope of work for the inventory survey included archival research in the vicinity or the project area, a 100% pedestrian survey and documentation of the bridge and surrounding area impacted by improvements. Fieldwork was conducted on January 13, 2009 by SCS archaeologist David Perzinski B.A., under the overall direction of Michael Dega, Ph.D.

## ENVIRONMENTAL SETTING

The project area encompasses a total of approximately 300 m<sup>2</sup> and is situated just south of the Hāna Highway and Uakea Road split on the north side of Hāna Town at mile marker 33.88, approximately one-half mile from the coastline.

General soil surveys of the Hāna area show that the current project area is associated with the Hāna Series, which consists of well-drained soils on uplands (Foote *et al.* 1972: Sheet 128; 37). The soil encountered in the project area appears to consist of Hāna extremely stony, silty clay loam, though it is likely that the original soil has been disturbed.

The natural vegetation regime of the parcel has been completely altered. On the east (*makai*) side of the bridge there is a county maintenance lot and buildings and a basalt-lined culvert with no vegetation. On the west (*mauka*) side of the bridge is a small (< 3m across) dry drainage bed with only mowed grasses, guava and *kukui*. This side has been intensively graded with berms built up on the north and south side of the dry drainage bed.

Given its windward location, the project area is relatively wet, receiving on average between 75 and 100 in. of annual rainfall (Giambelluca et al. 1986). Air temperatures in the Hāna area are about average with a high temperature range from 79° in the winter months to 85° in the summer months (Fahrenheit) at Hāna Airport. Average low temperatures range from 62° to 70° in the winter and summer months respectively (Fahrenheit) (Armstrong, 1983).



Figure 1: USGS Topographic Map Showing Project Area Location.



## HISTORICAL BACKGROUND

Traditionally, the division of Maui's lands into districts (*moku*) and subdistricts was performed by a *kahuna* (priest) named Kalaiha`ōhi`a, sometime during the 1500s (Beckwith 1940:383). Maui consisted of 12 political districts: Wailuku, Ka`anapali, Lahaina, Honua`ula, Kula, Hāmākuapoko, Hāmākualoa, Kahikinui, Kaupō, Kapahulu, Ko`olau, and Hāna. Between A.D. 1400 and 1500, two polities had consolidated in East and West Maui. Hāna was the ruling center of East Maui which included the districts of Ko`olau, Kapahulu, and Kaupō. The chiefs of East Maui traced their lineage from a Hawai`i Island conquering chief named Kalahuimoku (Fornander 1969, vol. 2:78–79). It was not until the marriage of a daughter of the ruling chief of Hāna to the son of the West Maui chief in the 1500s, that unification of the island under West Maui was realized (*ibid*:83–87).

Hāna's political importance is reflected in legendary and historical accounts which include the works of David Malo (1951), Samuel Kamakau (1961), John Papa `Ī`i (1963) and Abraham Fornander (1919, 1969). Topographic and constructed features, such as Pu`u Ka`iwi O Pele, Pu`u Ka`uiki and Keko`ona Fish pond in Wananalua reflect its connection with the gods, as does its choice as a residence for many of Maui's *ali`i* (chief) such as Kaluanuiāhua, Kamalalawalu, Lonikamahiki, Pi`ilani, Kāhapi`ilani, Kahekili, Kalaniōp`u, Ke`eaumoku, Kamehameha, to name a few (in Beckwith 1970:19–22, 379). Myths and legends reaffirm Hāna's sacredness. Many stories, including those concerning Kō`ula, the fish god; Pele, the fire goddess; the origin of Kau`iki Hill; the fishing grounds of Kapukaulua; and the formation Alau Island, suggests Hāna had always been a place of favor (Sterling 1998:118–155).

The largest *heiau* (shrine, place of worship) on Maui and in Hawai`i, Pi`ilani Hale, has been the object of several archaeological projects beginning in the 1970s with an initial survey and site description and continuing with subsequent ongoing stabilization activities. Showing evidence of at least nine building episodes, this important structure was thought to have begun in the sixteenth century (Kolb 1991:155–165). First serving as a *luakini heiau* (human sacrifice) and later functioning as a chiefly residence, it was constructed by either paramount chief Pi`ilani or his descendants. Further towards the town of Hāna are other significant cultural sites. Traditional stories are associated with the Wai`ānapanapa caves and Kuakeali`i and Ohala were *heiau* situated nearby, along with a section of Kihapi`ilani's paved trail. Other sites slightly to the north include, several rock shelters, a fishpond (Cleghorn and Rogers 1987), a stacked basalt wall containing a trumpet shell (Griffin 1987), habitation sites (Bevacqua 1972; Cleghorn 1988), agricultural subsurface layers (Bordner 1981), and a burial (Griffin 1987).

Kawaipapa Ahupua`a was the place where Kihapi`ilani began the paving of the island-wide road, continuing the work of his father, Pi`ilani: "The construction of the road was begun at the stream of Kawaipapa and at Pihehe where it would start to enter the *hala* grove of Kahalaowaka..." (Manu 1884). In 1931, Walker recorded a total of seven *heiau* for Kawaipapa, including the unusual Kauleilepo-Kauleiula Heiau consisting of two raised platforms connected by a causeway (Walker 1931). Several of these religious features incorporated burials. Kanimoku and Kawaipapa were *heiau* recorded inland, the former structure referred to as a *pu`uhonua* (place of refuge) where Ka`ahumanu, child of a Hawai`i Island chief and a Maui chiefess, spent her childhood.

Situated only a short distance across the `Alenuihāhā channel from Hawai`i Island, Hāna was often chosen as the destination for invading warriors. In 1759, Kalani`ōpu`u a Hawai`i Island chief, captured Ka`uiki Hill overlooking the harbor of Wananalua (now Hāna Harbor), making it his stronghold for the next 20 years. In 1782, Maui Chief Kahekili sent two forces to win back his territory (Thrum 1923). Ka`uiki Hill, where the Hawai`i chiefs were trapped, was cut off from its water supply, causing the surrender of the foreign warriors who were sacrificed and offered at Kuawalu and Honua`ula, two *luakini* war *heiau* at the bottom of Ka`uiki hill (Fornander 1969). Ka`uiki Hill, a so called “fortress,” was associated with many famous battles and traditional stories (Walker in Sterling 1998:136) Ka`ahumanu and Kaheihimalie, daughters of Ke`eaumoku of Hawai`i Island and Chiefess Namahana of Maui, were born here while their family lived under the protection of Mahi-hele-lima, its governor. Both were to become the wives of Kamehameha I. Un-rivaled in its esteem, it was said of Kau`iki Hill: “...the heaven is nearer the earth than elsewhere, in fact so close that it could be reached by a good strong cast of the spear” (Thrum 1919:67).

A total of six Heiau were recorded for Wananalua Ahupua`a: Kaikaiea, Kilinui (a *luakini*), Lanakila (a *pu`uhonua*, place of refuge), Puuheewale, and Kaiapuni (Sterling 1998, Walker 1931, Thrum 1917). After the death of Kahekili in 1794, Kamehameha captured Maui, including Hāna and the fortress of Kau`iki Hill, as he progressed up the island chain.

Hāna was not only valuable for its strategic location, but for the productivity of its land and sea. The fish ponds in `Aleamai, Haneo`o, and Hāmoa were not only able to support residing *ali`i* and their entourage, but the natural fishing grounds and well-watered soils caused prosperity for its thriving community:

Hāna [the district] was a fertile land where taro, sweet potatoes, bananas, sugar cane, and wild fruits grew in abundance, and there was always much food to be had. Kawaipapa was rich in fish from the ponds and from the sea.... (Kamakau 1961:25)

It was recorded that much of the land in Hāna had been former agricultural areas (Handy 1940, Sterling 1998:133–139). Taro was grown in Wananalua and Niumalu Ahupua`a, and sweet potato crops were being cultivated near the shoreline of Ka`uiki Head. In Hāmoa, dry land taro was grown in `Ōpae-kui valley which also provided upland shrimp (Handy 1940).

## THE MĀHELE

After 1795 Hāna, became an *`āina panala`au* (conquered land), under the control of Kamehameha I who gave it to Ke`eaumoku Papaiaheaha, who left it to his son, Kahekili Ke`eaumoku. At his death, the land was passed to his sister Ka`ahumanu, who, in turn passed it to her niece Elizabeth Kaho`anoku Kina`u, the daughter of Kaheihimalie and Kamehameha. Kina`u had six children and her only daughter, Victoria Kamamalu, inherited all of her mother’s land when she was only four months old.

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the *maka`āinana* (commoners), if they

had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could then take possession of the property (Chinen 1958:16).

Hāna, one of the many lands received by Victoria Kamamalu, was not kept, but given by Kamamalu to the government, parceled, and awarded during the Māhele. Most of Wananalua Ahupua`a was purchased by J.P. Judd (Grant 883), Oloewa was awarded to Richardson (LCA 443), `Aleamai was awarded to Kaleimakali`i (LCA 8660), and Mokaenui belonged to the government. The majority of Haneo`o Ahupua`a was received by Julia Alapai (LCA 8525B) and Keohōkalole, mother of King Kalākaua, received Hāmoa Ahupua`a.

### **COMMERCIAL SUGAR**

The sugar industry appeared early in Hāna, between 1849 and 1859. A Mr. Lindgren constructed a small mill on the flats of Haneo`o-Hāmoa, *makai* of the Hāna Highway, and began cultivation of around 60 acres of cane. The Hāna Plantation, begun in 1851 by George Wilfong, was one of the first commercial sugar plantations in Hawai`i. By 1861, more land consolidation and general improvements, including a railroad, had occurred, and the whole operation had a new owner, August Unna. Many small LCA and grant owners also cultivated cane and then sold it to the mill. An extensive wall system was constructed, establishing boundaries and protecting the agricultural crops from the rising encroachment of grazing cattle. The Hāna Plantation was purchased by a Mr. Grinbaum in 1889, combining them with previously obtained sections, and thus forming the Hāna Plantation Company (Condé and Best 1973). In turn, Theo H. Davies and Co. assumed ownership of the plantation in the early 1900s, absorbing small LCA holdings and changing the name to Kaeleku Sugar Co. Once again, a change in ownership occurred when C. Brewer & co. obtained possession in 1933, but by 1945, the plantation was closed and liquidated (*ibid*).

Archival research indicates the settlement pattern in the Hāna District was one of dispersed households living and farming within a relatively narrow coastal zone (0–600 ft. amsl), at this time. As the importance of commercial sugar increased, valuable land was absorbed into the plantation and the population shifted – small land holdings were sold and settlement concentrated around the mill and port of Hāna (Kame`eleihiwa 1992:309). Wilfong imported laborers from other countries, beginning with the Chinese in 1852, to maintain the sugar crops, further altering the traditional lifestyle. It should be noted that the 1946 tsunami inundated much of the coastal region, affecting the old Hāna airport and any other low-lying area within the Hāna District. Presumably, past tsunami also impacted the land. Most of the land surrounding the present project route was planted in sugar.

### **RANCHING**

Livestock was introduced to the Hawaiian Islands in 1793 when Captain Vancouver transported cattle and sheep aboard his ship the *Discovery* with the intention of giving the four cows, two bulls, four ewes, and two rams to Kamehameha I as a gift of goodwill. The rough seas and intense heat of the journey took its toll on the health of the cattle and several of the animals died. In order to ensure that the cattle population would increase, a ten year *kapu* was placed on slaughtering them. Eventually the cattle did recover in number. However, once the 10 year *kapu* on cattle slaughter had been lifted the number of cattle increased so dramatically they became a dangerous nuisance. As they were allowed to roam wild gardens were destroyed and the Native

Hawaiians were terrified of being attacked. Managing and controlling the unruly animals became a necessity. In order to solve this problem Kamehameha I employed “a varied crew with unsavory reputations who had immigrated to the islands to escape their pasts” as bullock *hunters* to capture the animals (Cowan-Smith and Stone 1988:8).

Things were about to change in 1803 when Captain Richard Cleveland and his partner Captain William Shaler introduced horses to the Islands. These men brought aboard their ship, the HMS *Lelia Byrd*, several horses including a stallion and a mare with foal which they presented as gifts to Kamehameha. Soon the horses, like the cattle, were roaming freely across the Islands. The horses (*lio*) adapted rapidly to the rough terrain where the cattle grazed and “their ability to work the livestock [did not] go unnoticed” (Cowan-Smith and Stone 1988:12).

Around 1830, Kamehameha III brought Mexican *vacqueros* from Vera Cruz to the Big Island to teach the local men how to rope and handle the animals. As the cattle and horse populations proliferated the animals were transferred to the various Hawaiian Islands and the *vacqueros*, which now included local cowboys, were needed on the outer islands.

Cattle were on the Island of Maui as early as 1806. Amaso Delano (in Brennan 1995:97) provides the following account of the effect cattle had on traditional life on Maui:

They had recently brought to this island, one of the bulls the Captain Vancouver landed at Owhyee (Hawaii). He had made very great destruction amongst their sugar cane and gardens, breaking them and their cane patches and tearing them to pieces with his horns and tearing them with his feet. He would run after and frighten the natives and appeared to have the disposition to do all the mischief he could, so much so that he was an unwelcome guest among them.

As sandalwood and *koa* were diminishing, cattle became an important resource to the Hawaiian economy. By 1820, the number of cattle had increased to such a degree they were aggressively being hunted for their hides. In addition, their tallow and meat became important commodities of local and international trade. Soon cattle and their importance in the trade industry flourished to such an extent that Hawai`i became a major supplier of beef to California during the Gold Rush and subsequently to the visiting whaling ships, as well (Cowan-Smith and Stone 1988:6). Around 1945 or 1946, Paul Fagan, one of the new owners of the Hāna Plantation Company, shifted land use from cane to cattle pasture and began building a small Hotel in Hāna (Kolb *et al.* 1993). Mr. Fagan purchased 14, 000 acres of Hāna land and utilizing some of the plantation lands to raise cattle, began the Hāna Ranch (Cleghorn and Rogers 1987:12).

## PREVIOUS ARCHAEOLOGY

Numerous archaeological projects have been conducted since the 1990s in Hāna District (Figure 3). Table 2 lists those projects completed in proximity to the Hāna Town area.

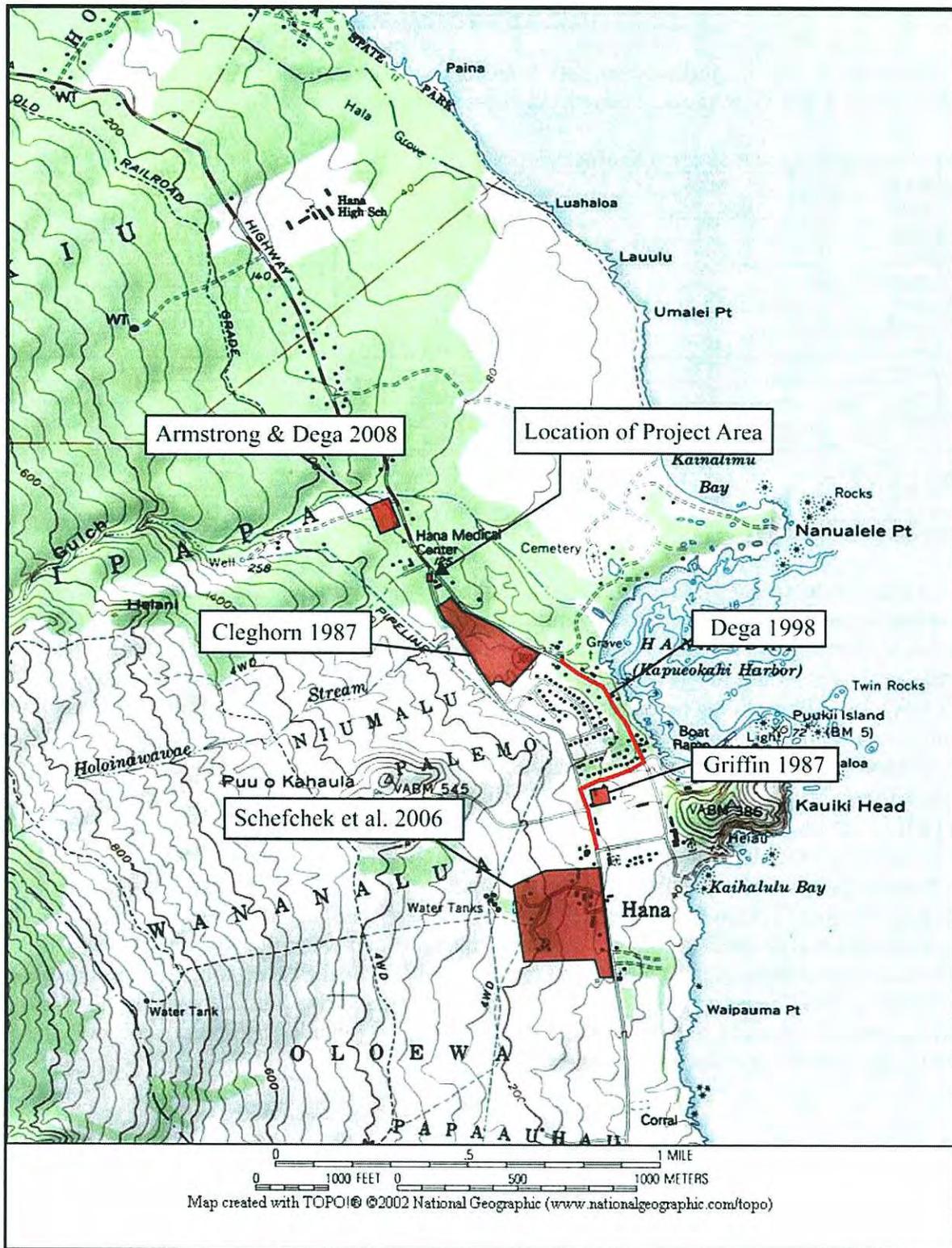
**Table 2: Sample of Archaeological Projects Conducted near the Project Area.**

Author	Date	Location	Investigation
Thrum	1909-1913	Hāna District	<i>Heiau</i> survey
Walker	1931	Hāna District	Survey
Nakkim	1970	Hāna District	Survey
Bevacqua	1972	Hāna District	Survey
Bordner	1981	Hotel Hāna	Recon., testing
Cleghorn and Rogers	1987	Hāna Ranch	Archival research
Griffin	1987	Hāna Ranch	Field check
Cleghorn	1987	Hāna Ranch	Reconnaissance
Estioko-Griffin	1986	Kawaipapa Complex	Field check
Donham	1991	Mokae Ahupua`a	Burial
Borthwick <i>et al.</i>	1992	Hāna Ranch	Survey, testing
Henry and Graves	1993	Kawaipapa	Survey
Fredericksens <i>et al.</i>	1996	Kawaipapa, Niumalu	Survey
Masterson <i>et al.</i>	1997	Haneo`o	Survey, testing
Sterling	1998	Hāna District	Synthesis

An earlier document by Scientific Consultant Services enumerated the archaeological projects conducted in and around Hāna (Sullivan and Dega 2003). These included work conducted by Sterling (1998), and Cleghorn and Rogers (1987), who provided a synthesis of archaeological sites within the general Hāna area during a Bishop Museum Study (Cleghorn and Rogers 1987:18, 20) involving aerial photograph analysis shows archaeological sites within close proximity to the current project area, Table 2 provides a brief description of these sites.

Walker (1931), compiled a list of archaeological sites along the Hāna coast, and Thrum's *Hawaiian Annual* provided an archaeological study focused on religious structures of Maui Island (1917). Having been a pre-Contact population center and loci of political development, Hāna contains a multitude of sites, especially *heiau* (Kirch 1985:136; Walker, 1931). There are approximately 18 *heiau* sites from Hāna Bay to Hāmoa Ahupua`a, at the southern end of the present project route (Thrum 1917, Walker 1931).

Less than a quarter mile from the current project area, an archeological survey was conducted on approximately 11 acres of land for the Hāna Medical Center; four archaeological sites were identified (Henry and Graves 1993). Features included two boundary walls, enclosures, a platform, and a terrace. Functional interpretation included habitation, animal husbandry, agriculture, and boundary makers.



**Figure 3:** USGS Topographic Map Showing Location of Previous Archaeological Studies in the Vicinity of the Project Area

An Inventory Survey was conducted on 400 acres of former pastureland, *mauka* of the Hāna Highway through Papa`auhau, `Aleamai, and Haneo`o (Borthwick *et al.*:1992). In spite of many years under cane cultivation, 51 sites were identified and described. These included habitation, agricultural, and religious sites. Testing resulted in the collection of samples for radiocarbon dating, with one yielding a date range entirely within the pre-Contact era (A.D. 1345–1650). Walker had previously identified Luumaikaua Heiau near the County Road, and Kahuwakahoku Heiau, associated with a large fish pond in Haneo`o (1931).

Five sites were identified during an Archaeological Inventory Survey and testing adjacent to Loko Nui fishpond in Haneo`o Ahupua`a (Masterson *et al.* 1997). Historic Hawaiian graves, a boundary wall, a subsurface hearth, a trash pit, and an historic house site were recorded.

The *ahupua`a* of Hāmoa has been mentioned as being the place of many *heiau*, from sea to mountain (Ashdown 1971). Although there are no streams, dryland taro thrived in the wet climate. Nakkim (1970) refers to Hāmoa as the ‘breadbasket’ of this stretch of Hāna coastline”.

Hāmoa was mapped and surveyed by the State Historical Sites Survey in 1973 (Hommon 1973). A walled site (50-50-13-1484), including over 100 features, was referred to as the “Hāmoa Complex” most of which appeared to be agricultural in function. Features included agricultural clearings, walls, terraces, an *`auwai* (ditch), and stone mounds. An historical and archaeological study of Hāmoa was completed in 1993 (Kolb *et al.*). The study was the most extensive survey and synthesis of historic data for a windward community in East Maui at the time. Seventy-four features, including walls, terraces, mulch pits, enclosures, modified rock shelters, and at least five *heiau* were combined (based on feature proximity) to form 11 sites (*ibid*). All but seven sites were located *mauka* of the Hāna Highway. The presence of so many religious structures suggests the significance of Hāmoa maybe equivalent to Kawaipapa and Wananalua Ahupua`a, to the north (*ibid*:105). Seven radiocarbon dates resulting from this project ranged from A.D.1229 to A.D. 1675, into the present time, and clustering in between the fifteenth to seventeenth centuries (*ibid*:96).

Mokae Ahupua`a contains an extensive habitation site near Pu`u Hele extending inland from Kaholaiki beach, as well as sand dune used for burials (Donham 1991). Two separate water-worn stone pavements including human bone, shell midden and charcoal have been exposed along 40 meters of eroding dune.

In 2001, the Hāna Belt Road was listed on the National and Hawai`i Registers of Historic Places and given the SIHP No. 50-50-06-1638. The completion of the Road, now referred to as Hāna Highway, was completed in 1926 and linked East Maui with the rest of the island. The engineering and transportation feat utilized existing pathways to construct a road which expands over 1,530 acres and contains over 74 structures.

## **METHODOLOGY**

The survey phase of fieldwork consisted of one person surveying the project area with the objective of identifying surface features. Though no traditional Hawaiian sites were anticipated, it was clear that because of the location and historic nature of the bridge, historic sites were likely to exist nearby.

Documentation of site consisted of numerous photographs, tape and compass maps and limited shovel testing to determine the nature of the subsurface sediments. Stratigraphic profiles of the shovel test pit were illustrated in the field and soil characteristics were recorded. Photographs were taken of trench locations prior to, and during, excavation.

Archival research entailed investigating the historic and archaeological background of the general project area. This examination included a documentary search of previous archaeological research conducted in this region of Maui as well as a review of archival literature relating to Land Commission Awards and local mythology. The review of historical documents was accomplished in order to understand the impact of post-Contact events on the cultural and archaeological landscape of the region.

All laboratory work was conducted in the Honolulu office of SCS and included the drafting of site plan view maps and trench profiles. All documentary materials are currently being curated at the SCS office in Maui.

## **RESULTS OF FIELDWORK**

The relatively small project area (less than 300 sq. meters) was subjected to a 100% pedestrian survey and one shovel test, as well as photographic documentation and mapping. In all, one historic property composed of two features was identified during the archaeological inventory survey. One shovel test was excavated on the west side of the bridge to a depth of 70 cm below surface. Due to the cobble and boulder nature of the soil, the unit could not extend any deeper and additional attempts at excavation were not able to penetrate the stony sediment. On the east side of the culvert no shovel test units were conducted due to the lack of soil and exposure of bedrock along the gulch floor.

**SIHP No.: 50-50-06-1638**

**Site Type:** Bridge and Basalt Lined Culvert

**Function:** Transportation, Water diversion

**Feature (#):** 2

**Age:** Historic

**Description:** Site -1638 includes all features associated with the Hāna Belt Road, completed in 1926 and listed on the National and Hawai'i Register of Historic Places in 2001. Features A and B consist of an historic one-lane bridge and a basalt-lined culvert (Figure 4). The bridge and culvert are located at mile marker 33.88 along the Hāna Highway, just north of the Uakea Road/Hāna Highway fork and just south of the Hāna Fire Department, adjacent to a County Maintenance yard. The bridge (Feature A) spans a semi-dry gulch that consists of basalt cobbles, boulders and recently mowed grasses and weeds on the *mauka* side, and a basalt and concrete-lined culvert (Feature B) on the *makai* side.

### **Feature A**

Feature A consists of a one-lane bridge spanning a small gulch located at mile marker 33.88 along the Hāna Highway. The bridge is paved with asphalt with a concrete guardrail over a concrete box drain spanning the gulch (Figures 5-7). The bridge measures five meters in length with an overall width of 4.37 meters.

The west (*mauka*) face of the bridge consists of a 4.25 meter long by 2.65 meter high concrete box flanked by a 3.5 meter long by 55-250 cm high basalt and concrete faced support wall on the north side and a 4.75 meter long by 83-265 cm high basalt and concrete faced support wall on the south side. The two support walls are capped with white painted concrete and inscribed with "10/16/07 V. Polido" indicating recent modifications to the original construction. The east face of the bridge is finished with concrete and has the date "1915" stamped with 20 cm high numbers and measures 2.55 meters from the top of the guard rail to the base of the gulch. Galvanized steel guardrails extend from the north and south flanks of the east side of the bridge.

The internal dimensions of the concrete box measures 4.32 m long by 4.27 m wide by 1.22 m high and constructed of molded concrete. The base of the culvert is covered in alluvium, bedrock and modern trash and debris.

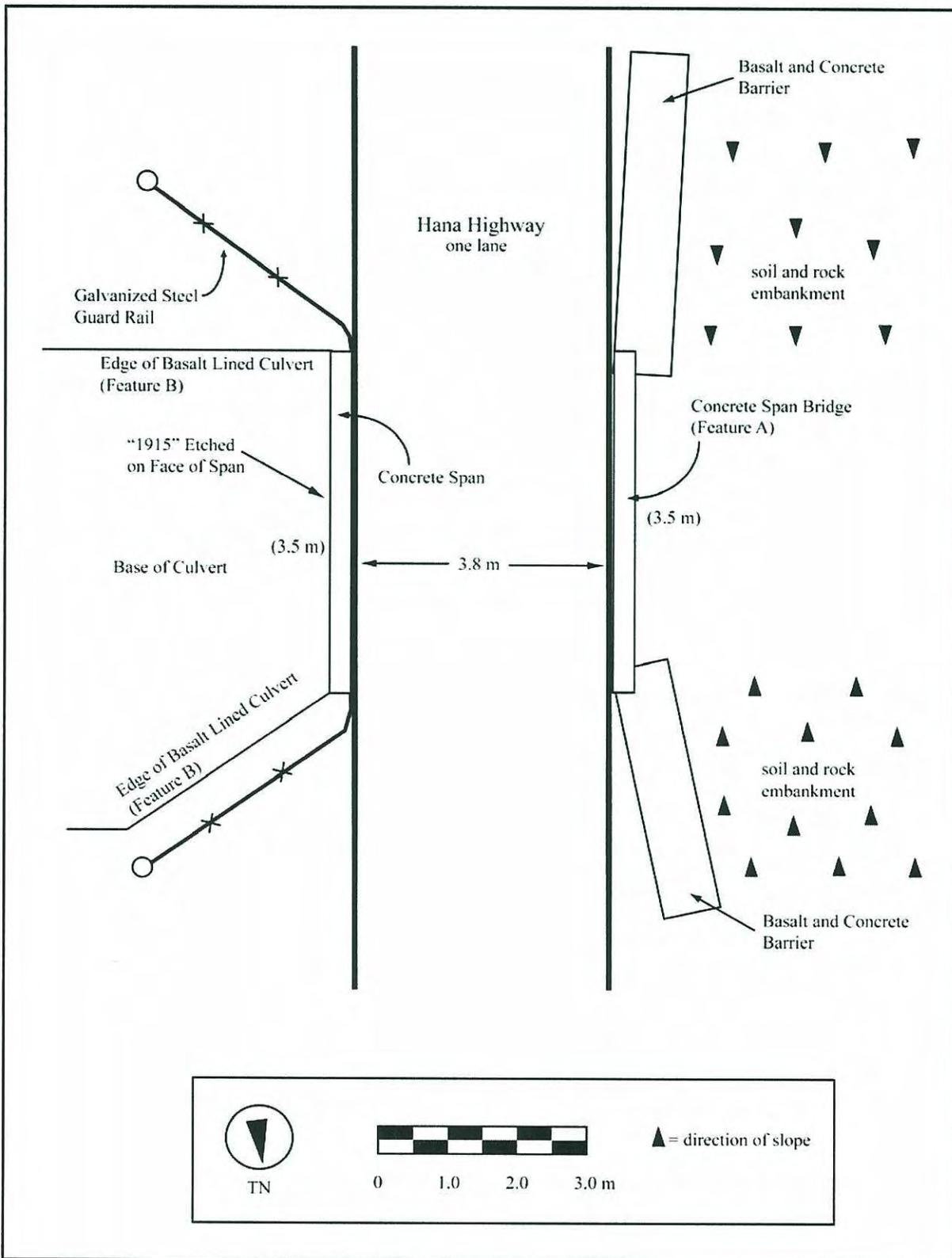


Figure 4: Plan View of SIHP No. 50-50-06-1638



**Figure 5:** View West of Bridge and Culvert (SIHP No. 50-50-06-1638 Features A and B)



**Figure 6:** View Northeast of SIHP No. 50-50-06-1638 Feature A

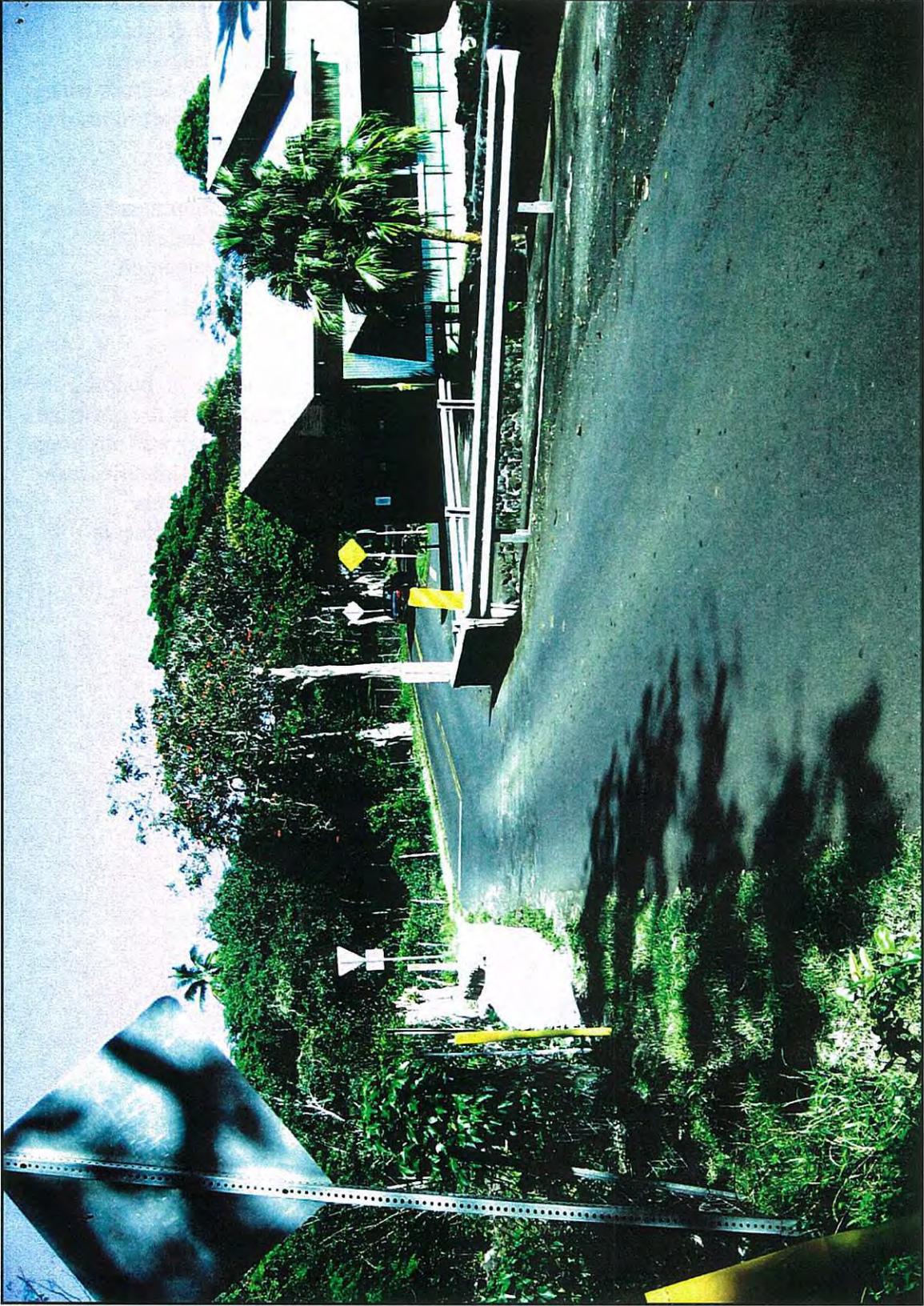


Figure 7: View North of Bridge Spanning the Gulch

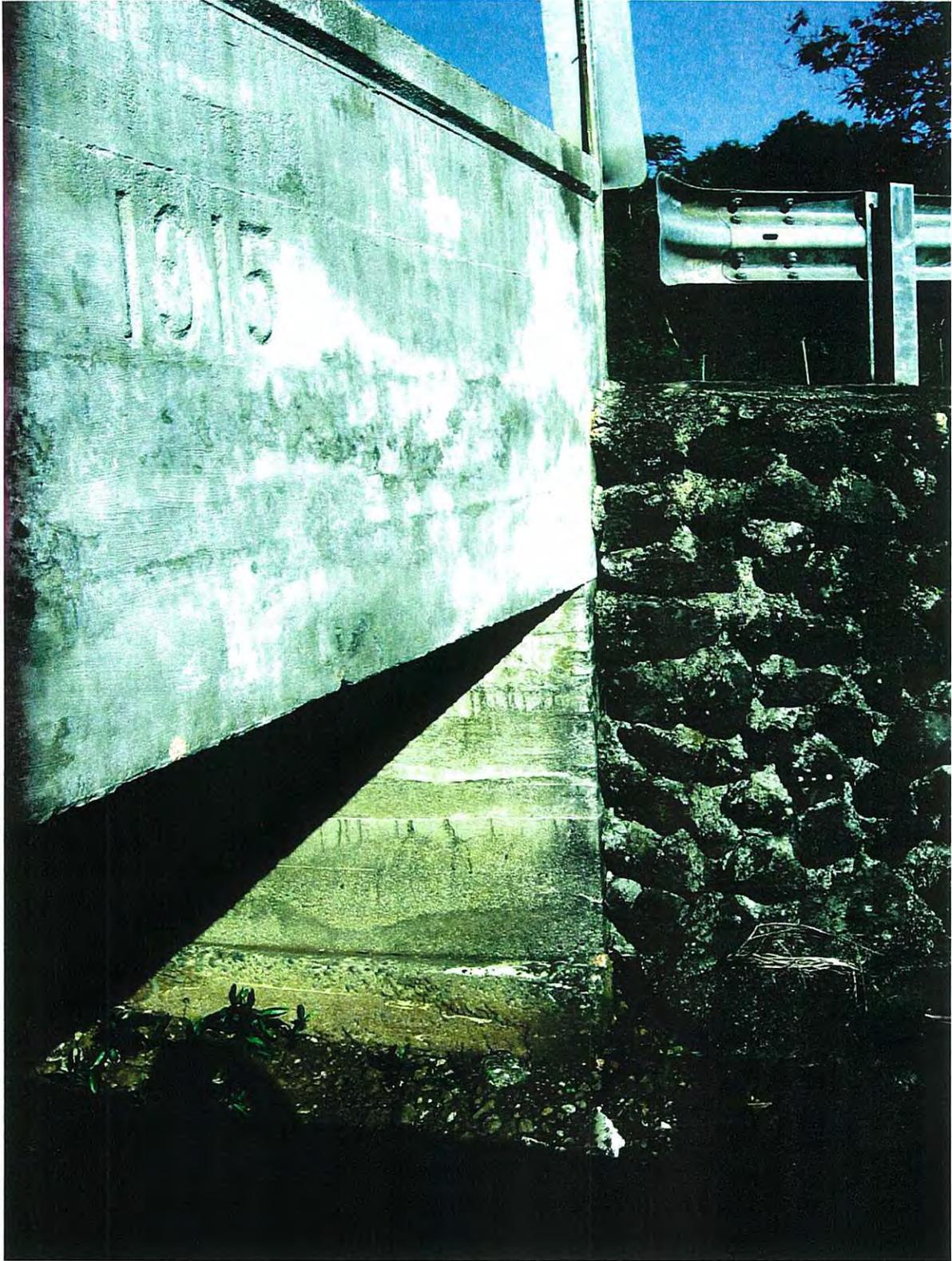
**Feature B**

Feature B consists of the basalt and concrete lined culvert abutting the eastern side of the bridge at mile marker 33.88 (see Figure 4). The basalt is stacked 10+ courses to a height of 2 meters on the northeast and southeast corners of the bridge (Figures 8 and 9). The culvert extends to Uakea Road approximately 65 m to the east. The culvert measures 4.9 m across where it connects with the east side of the bridge. As it continues towards the east the culvert flares out on the north side and remains relatively perpendicular to the bridge on the south side.

The base of the culvert is exposed bedrock and loose basalt cobbles and boulders and an assortment of detritus (Figure 10). Two mature palm trees are growing from the base of the culvert approximately 10 meters from the bridge indicating that the culvert has remained relatively dry or semi-dry for several years.

**Shovel Test Unit**

One shovel test unit was dug on the southwestern side of the bridge where no bedrock was observed. The unit extended to 68 cm below surface and was terminated due to the presence of boulders and extremely stony sediment (Figure 11). Only one stratigraphic layer was observed which consisted of 10 YR 4/2 (dark grayish brown) stony silt loam containing few historic trash remnants (rusted metal, wire). No cultural layers or traditional Hawaiian materials were encountered and it is likely that this layer represents previously disturbed natural sediments



**Figure 8:** View to North of the Culvert Abutting the Bridge



**Figure 9:** View South of the Culvert Abutting the Bridge



**Figure 10:** View East from Beneath Bridge Showing Base of Culvert



Figure 11: View of South (upslope) Wall of Shovel Test Unit 1

## SIGNIFICANCE ASSESSMENTS

Two features associated with the Hāna Highway (SIHP No. 50-50-06-1638) were documented in the project area during Archaeological Inventory Survey at TMK: 1-4-006:999. The features (see below) have been evaluated for significance according to the criteria established for the State and National Register of Historic Places. The five criteria are listed below:

- Criterion A:** Site is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion B:** Site is associated with the lives of persons significant to our past;
- Criterion C:** Site is an excellent site type; embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction;
- Criterion D:** Site has yielded or has the potential to yield information important in prehistory or history;
- Criterion E:** Site has cultural significance; probable religious structures or burials present (State of Hawai`i criteria only).

### **State Site 50-50-06-1638**

Per the 2001 nomination form the Hāna Highway and Pi`ilani Highway were determined to be significant under Criteria A and C with a period of significance from ca. 1900 to 1947 for engineering, social history, transportation and commerce (Duensing, 2001).

## RECOMMENDATIONS

### **STATE SITE 50-50-06-1638**

Based on plans regarding the preservation of the character of the existing bridge, construction of the new bridge will either not effect or retain many characteristics of the old bridge. The new concrete bridge parapet on the downstream (eastern) side of bridge will closely match the existing parapets. The parapet at the upstream end will remain. On the downstream (eastern) side, the bridge face and approximately 14 feet of the basalt and concrete lined culvert walls will be removed to make room for an additional lane of traffic (Figure 12). The new 2-lane bridge will be overlaid with asphalt and concrete and anyone passing over the new bridge will not see any difference from the old bridge except that it is wider.

In 2001, A Final Preservation Plan for County of Maui Bridges Within the Hāna Highway Historic District was prepared to address preservation issues for County of Maui Bridges. Because Culvert #9 is under the jurisdiction of the State of Hawai`i it is not covered by this plan.

No further work is recommended at the portion of Hāna Highway at mile marker 33.88 that crosses a basalt and concrete lined culvert in the project area. The features have been adequately documented with photographs and scale drawings.

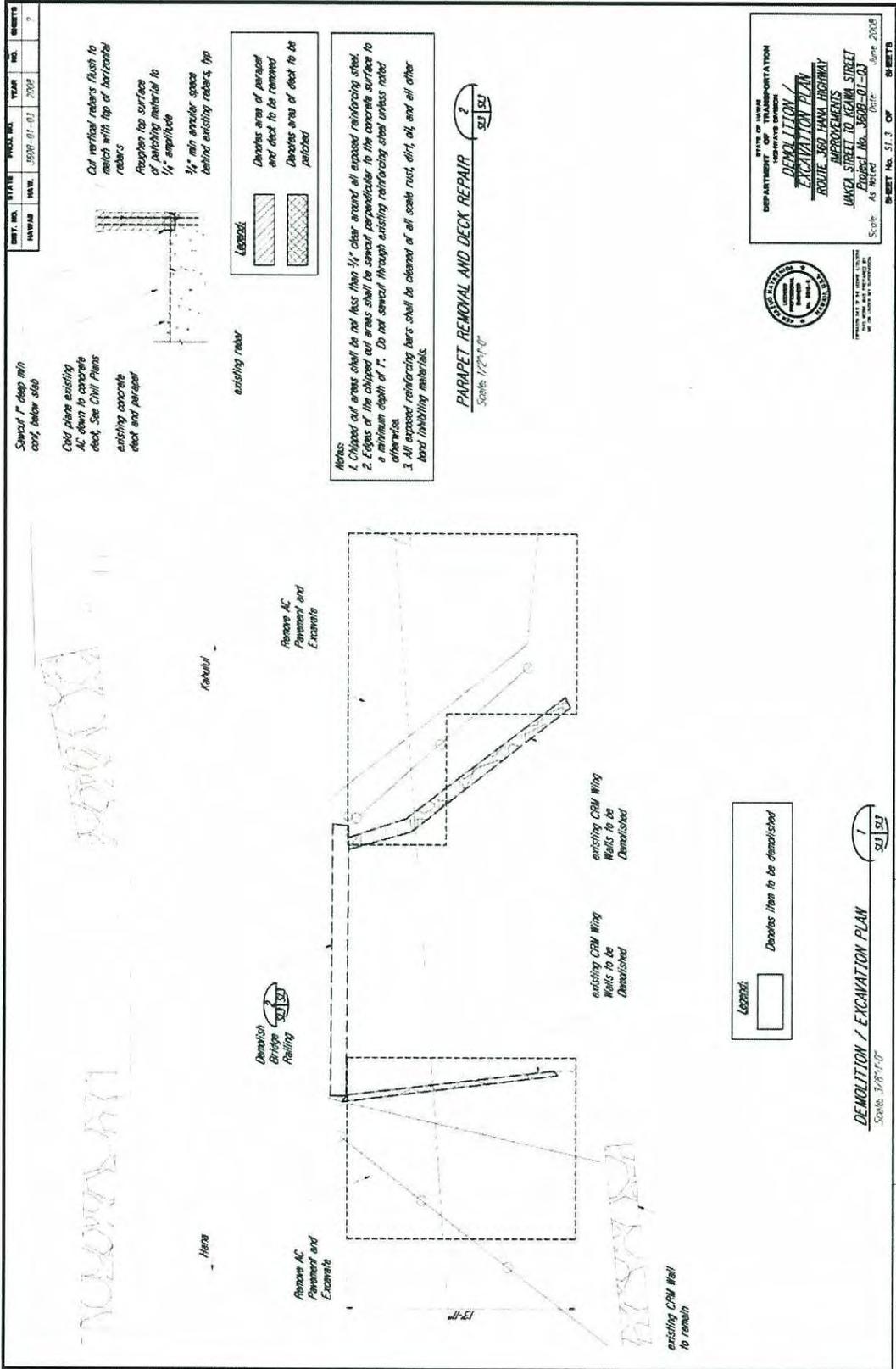


Figure 12: Plan View of Bridge Showing Portion of Basalt and Concrete Culvert to be Demolished (Map Courtesy of AECOM)

## **ARCHAEOLOGICAL MONITORING**

Archaeological Monitoring is recommended during any subsurface disturbance (includes excavation as well as grubbing/bulldozing) on the bridge at mile marker 33.88 [TMK: 1-4-006:999]. This recommendation is made to protect any additional cultural resources and/or burials that may be encountered during subsurface excavation on the bridge.

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**APPENDIX F**  
**CULTURAL IMPACT ASSESSMENT**

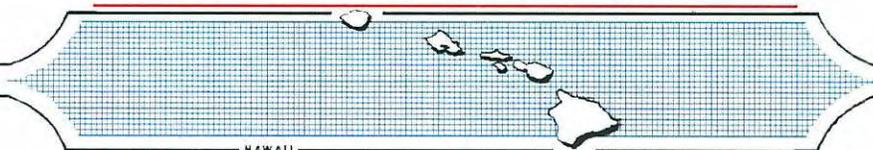
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**A CULTURAL IMPACT ASSESSMENT OF  
Of PROPOSED HĀNA HIGHWAY IMPROVEMENTS,  
NIAMALU/KAWAIPAPA AHUPUA`A, HĀNA DISTRICT,  
MAUI ISLAND, HAWAII  
[TMK 1-4-006:003 AND 1-4-003:009 por.]**

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## INTRODUCTION

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific Inc., to conduct a Cultural Impact Assessment of, Hāna Highway improvements, Niumalu/Kawaipapa Ahupua`a, Hāna in Hāna District, Maui Island [TMK: 1-4-006:003 and 1-4-003:009 por.] (Figures 1 and 2). The project proposes road widening at a bridge/box culvert in Hāna at Uakea Road and Keawa Place.

The Constitution of the State of Hawai`i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of native Hawaiians. Article XII, Section 7 requires the State to “protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua`a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778” (2000). In spite of the establishment of the foreign concept of private ownership and western-style government, Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result in 1850, the Hawaiian Government confirmed the traditional access rights to native Hawaiian *ahupua`a* tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai`i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, “native Hawaiian rights...may extend beyond the *ahupua`a* in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner” (Pele Defense Fund v. Paty, 73 Haw.578, 1992).

In Section 1 of Act 50, enacted by the Legislature of the State of Hawai`i (2000) with House Bill 2895, it is stated that:

...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii’s culture, and traditional and customary rights...[H.B. NO. 2895].

Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs and practices, and resources of native Hawaiians as well as other ethnic groups. Act 50 also requires state agencies and other developers to assess the effects of proposed land use or shore line developments on the “cultural practices of the community and State” as part of the HRS Chapter 343 environmental review process (2001).

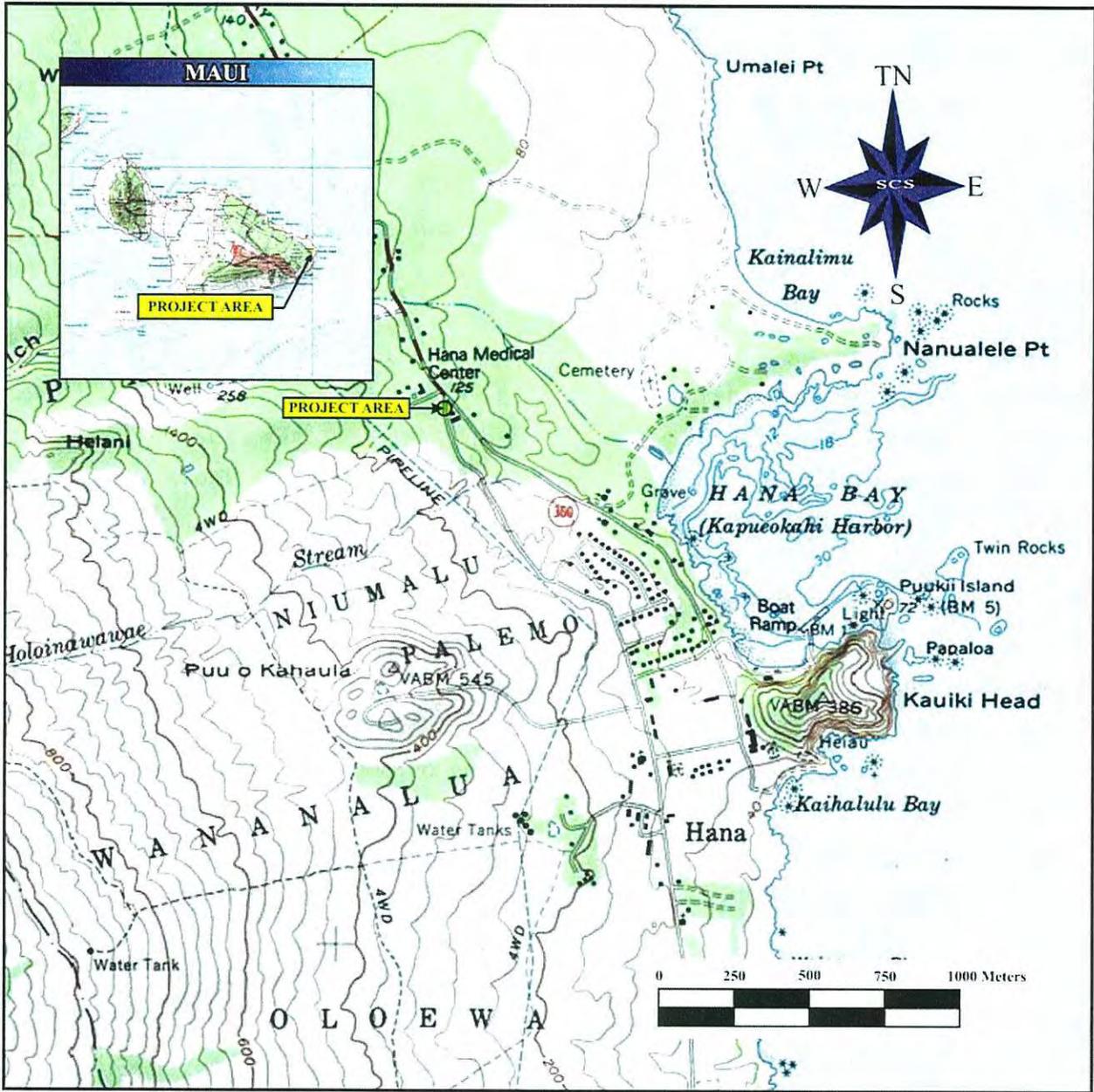


Figure 1: USGS Quadrangle Map Showing Project Area



It also re-defined the definition of “significant effect” to include “the sum of effects on the quality of the environment including actions impact a natural resource, limit the range of beneficial uses of the environment, that are contrary to the State’s environmental policies. . . or adversely affect the economic welfare, social welfare or cultural practices of the community and State” (H.B. 2895, Act 50, 2000). Cultural resources can include a broad range of often overlapping categories, including places, behaviors, values, beliefs, objects, records, stories, etc. (H.B. 2895, Act 40, 2000).

Thus, Act 50 requires that an assessment of cultural practices and the possible impacts of a proposed action be included in the Environmental Assessments and the Environmental Impact Statements, and to be taken into consideration during the planning process. The concept of geographical expansion is recognized by using, as an example, “the broad geographical area, e.g. district or *ahupua`a*” (OEQC 1997). It was decided that the process should identify ‘anthropological’ cultural practices, rather than ‘social’ cultural practices. For example, *limu* (edible seaweed) gathering would be considered an anthropological cultural practice, while a modern-day marathon would be considered a social cultural practice.

Therefore, the purpose of a Cultural Impact Assessment is to identify the possibility of cultural activities and resources within a project area, or its vicinity, and then assessing the potential for impacts on these cultural resources. The CIA is not intended to be a document of in depth archival-historical land research or a record of oral family histories unless these records contain information about specific cultural resources that might be impacted by a proposed project.

According to the Guidelines for Assessing Cultural Impacts established by the Hawaii State Office of Environmental Quality Control (OEQC 1997):

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

The meaning of “traditional” was explained in *National Register Bulletin*:

Traditional” in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations’, usually orally or through practice. The traditional cultural significance of a historic property, then is significance derived from the role the property plays in a community’s historically rooted beliefs, customs, and practices. . . . [Parker and King 1990:1]

## **METHODOLOGY**

This Cultural Impact Assessment was prepared in accordance with the suggested methodology and content protocol in the Guidelines for Assessing Cultural Impacts (OEQC 1997). In outlining the “Cultural Impact Assessment Methodology”, the OEQC states: that “...information may be obtained through scoping, community meetings, ethnographic interviews and oral histories...” (1997).

This report contains archival and documentary research, as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs. This Cultural Impact Assessment was prepared in accordance with the methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997), when possible. The assessment concerning cultural impacts may address, but not be limited to, the following matters:

- (1) a discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained;
- (2) a description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken;
- (3) ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained;
- (4) biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or

being interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area;

- (5) a discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken, as well as the particular perspective of the authors, if appropriate, any opposing views, and any other relevant constraints, limitations or biases;
- (6) a discussion concerning the cultural resources, practices and beliefs identified, and for the resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site;
- (7) a discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project;
- (8) an explanation of confidential information that has been withheld from public disclosure in the assessment;
- (9) a discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs;
- (10) an analysis of the potential effect of any proposed physical alteration on cultural resources, practices, or beliefs; the potential of the proposed action to isolate cultural resources, practices, or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place, and;
- (11) the inclusion of bibliography of references, and attached records of interviews which were allowed to be disclosed.

Based on the inclusion of the above information, assessments of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

### **ARCHIVAL RESEARCH**

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps and land records such as Land Commission

Awards, Royal Patent Grants, and Boundary Commission records; historic accounts; and previous archaeological project reports.

## **INTERVIEW METHODOLOGY**

Interviews are conducted in accordance with Federal and State laws, and guidelines, when knowledgeable individuals are able to identify cultural practices in, or in close proximity to the project area. If they have knowledge of traditional stories, practices and beliefs associated with a project area or if they know of historical properties within the project area, they are sought out for additional consultation and interviews. Individuals who have particular knowledge of traditions passed down from preceding generations and a personal familiarity with the project area are invited to share their relevant information concerning particular cultural resources. Often people are recommended for their expertise, and indeed, organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs (OHA), historical societies, Island Trail clubs, and Planning Commissions are depended upon for their recommendations of suitable informants. These groups are invited to contribute their input, and suggest further avenues of inquiry, as well as specific individuals to interview. No interviews were conducted for the present project as there were no responses from any of the contacted organizations and/or individuals.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then transcribed. These draft transcripts are returned to each of the participants for their review and comments. After corrections are made, each individual signs a release form, making the information available for this study. When telephone interviews occur, a summary of the information is usually sent for correction and approval, or dictated by the informant and then incorporated into the document. If no cultural resource information is forthcoming and no knowledgeable informants are suggested for further inquiry, interviews are not conducted.

Letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Thelma Shimaoka of the Maui Branch of the Office of Hawaiian Affairs; the County of Maui Cultural Resources Commission, Hinano Rodrigues who is the SHPD Island Historian, the Hāna Culture Center, Hui O Ke Ola Pono (Terry Poaipuni), Kukulu Kumu Hāna (Patricia Cockett), and Kamika Kepa`a of the Native Hawaiian Preservation Council (Appendix A). In addition, a Cultural Impact Assessment Notice was published on January 18, 21, 22, 2009 in *The Honolulu Advertiser* and *The Maui News*, on January 18, 21, 22, 2009 (Appendix B). These notices requested information of cultural resources or activities in the area

of the proposed project, gave the TMK number and where to respond with information. Based on the responses, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

## **PROJECT AREA AND VICINITY**

The project area was located along the Hāna Highway, that extends through the Hāna Ranch, Inc., property on the west side of the town (Figure 3).

## **CULTURAL AND HISTORICAL CONTEXT**

The island of Maui ranks second in size of the eight main islands in the Hawaiian Archipelago. Pu`u Kukui, forming the west end of the island (1,215 m above mean sea level), is composed of large, heavily eroded amphitheater valleys that contain well-developed permanent stream systems that watered fertile agricultural lands extending to the coast. The deep valleys of West Maui and their associated coastal areas have witnessed many battles in ancient times and were coveted productive landscapes.

## **PAST POLITICAL BOUNDARIES**

Traditionally, the division of Maui's lands into districts (*moku*) and sub-districts was performed by a *kahuna* (priest, expert) named Kalaiha`ōhia, during the time of the *ali`i* Kaka`alaneo (Beckwith 1940:383; Fornander places Kaka`alaneo at the end of the 15<sup>th</sup> century or the beginning of the 16<sup>th</sup> century [Fornander 1969, Vol. 6:248]).

Maui consisted of 12 political districts: Wailuku, Ka`anapali, Lahaina, Honua`ula, Kula, Hāmākuapoko, Hāmākualoa, Kahikinui, Kaupō, Kapahulu, Ko`olau, and Hāna. Between A.D. 1400 and 1500, two polities had consolidated in East and West Maui. Hāna was the ruling center of East Maui which included the districts of Ko`olau, Kapahulu, and Kaupō. The chiefs of East Maui traced their lineage from a Hawai`i Island conquering chief named Kalahuimoku (Fornander 1969, vol. 2:78–79). It was not until the marriage of a daughter of the ruling chief of Hāna to the son of the West Maui chief in the 1500s, that unification of the island under West Maui was realized (*ibid*:83–87).

Land was considered the property of the king or *ali`i`ai moku* (the *ali`i* who rules the island/district), which he held in trust for the gods. The title of *ali`i`ai moku* ensured rights and responsibilities to the land, but did not confer absolute ownership. The king kept the parcels he

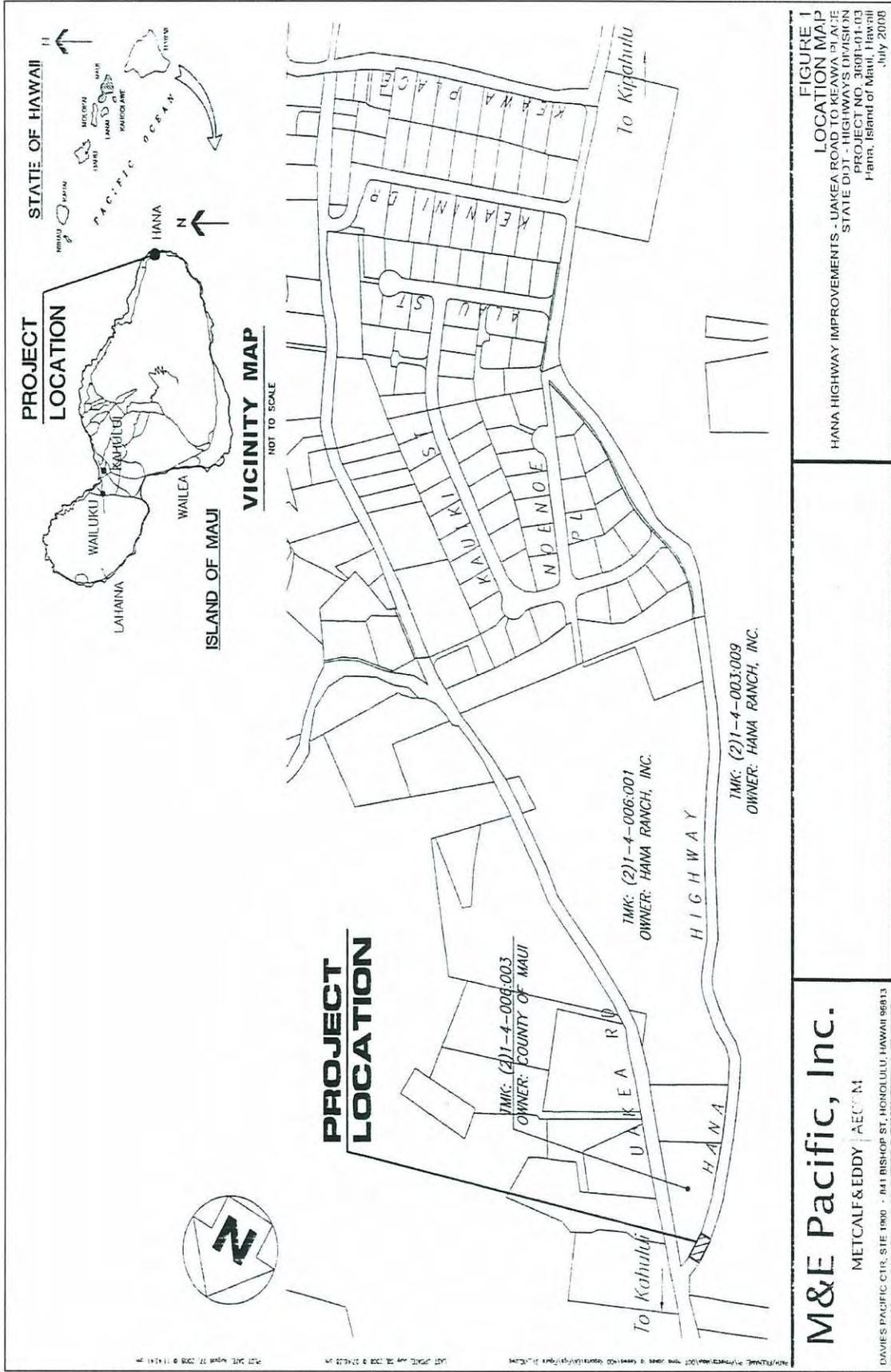


Figure 3: Plan View Map of Project Area (provided by M&E 2009).

wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land.

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili`āina* or *`ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (*ibid*:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *`ili*. The land holding of a tenant or *hoa`āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61).

Hāna was not only valuable for its strategic location, but for the productivity of its land and sea. The fish ponds in `Aleamai, Haneo`o, and Hāmoa were not only able to support residing *ali`i* and their entourage, but the natural fishing grounds and well-watered soils caused prosperity for its thriving community:

Hāna [the district] was a fertile land where taro, sweet potatoes, bananas, sugar cane, and wild fruits grew in abundance, and there was always much food to be had. Kawaipapa was rich in fish from the ponds and from the sea.... (Kamakau 1961:25)

It was recorded that much of the land in Hāna had been former agricultural areas (Handy 1940, Sterling 1998:133–139). Taro was grown in Wananalua and Niumalu Ahupua`a, and sweet potato crops were being cultivated near the shoreline of Ka`uiki Head. In Hāmoa, dry land taro was grown in `Ōpae-kui valley which also provided upland shrimp (Handy 1940).

## TRADITIONAL SETTLEMENT PATTERNS

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua`a*. During pre-Contact times, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane,

*Saccharum officinarum*) and *mai`a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *`uala* (sweet potato, *Ipomoea batatas*) were produced. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985). In the valleys of West Maui, intensified agriculture, including irrigation channels and stone-faced pond fields, was likely to have begun in what is referred to as the Expansion Period (A.D. 1200–1400, Kirch 1985).

### **WAHI PANA (LEGENDARY PLACES)**

Hāna's political importance was noted in legendary and historical accounts which include the works of David Malo (1951), Samuel Kamakau (1961), John Papa `Ī`Ī (1963) and Abraham Fornander (1919, 1969), as well as the religious temples consecrated by paramount chiefs. Topographic and constructed features, such as Pu`u Ka`iwi O Pele, Pu`u Ka`uiki and Keko`ona Fish pond in Wananalua reflect its connection with the gods, as does its choice as a residence for many of Maui's *ali`i* (chief) such as Kaluanuiahua, Kamalalawalu, Lonikamakahiki, Pi`ilani, Kāhapi`ilani, Kahekili, Kalaniōp`u, Ke`eaumoku, and Kamehameha, to name a few (in Beckwith 1970:19–22, 379). Myths and legends reaffirm Hāna's sacredness. Many stories, including those concerning Kō`ula, the fish god; Pele, the fire goddess; the origin of Kau`iki Hill; the fishing grounds of Kapukaulua; and the formation Alau Island, suggests Hāna had always been a place of favor (Sterling 1998:118–155).

The largest *heiau* (shrine, place of worship) on Maui and in Hawai`i, Pi`ilani Hale, has showed evidence of at least nine building episodes. This important structure, thought to have begun in the sixteenth century (Kolb 1991), first served as a *luakini heiau* (human sacrifice) and later functioned as a chiefly residence. It was constructed by either paramount chief Pi`ilani or his descendants. Further towards the town of Hāna are other significant cultural sites. Traditional stories are associated with the Wai`ānapanapa caves and Kuakeali`i and Ohala were *heiau* situated nearby, along with a section of Kihapi`ilani's paved trail. Other sites slightly to the north include, several rock shelters, a fishpond, a stacked basalt wall containing a trumpet shell, habitation sites, and evidence of agriculture.

Kawaipapa Ahupua`a was the place where Kihapi`ilani began the paving of the island-wide road, continuing the work of his father, Pi`ilani: "The construction of the road was begun at the stream of Kawaipapa and at Pihehe where it entered the *hala* grove of Kahalaowaka..." (In Sterling:122, Manu 1884). In 1931, Walker recorded a total of seven *heiau* for Kawaipapa, including the unusual Kauleilepo-Kauleiula Heiau consisting of two raised platforms connected

by a causeway (Walker 1931). Several of these religious features incorporated burials. Kanimoku and Kawaipapa were *heiau* recorded inland, the former structure referred to as a *pu`uhonua* (place of refuge) where Ka`ahumanu, child of a Hawai`i Island chief (Ke`eaumokupapaiahiahi) and a Maui chiefess (Namahana), spent her childhood.

Situated only a short distance across the `Alenuihāhā channel from Hawai`i Island, Hāna was often chosen as the destination for invading warriors. In 1759, Kalani`ōpu`u a Hawai`i Island chief, captured Ka`uiki Hill overlooking the harbor of Wananalua (now Hāna Harbor), making it his stronghold for the next 20 years. In 1782, Maui Chief Kahekili sent two forces to win back his territory (Kamakau 1961). Ka`uiki Hill, where the Hawai`i chiefs were trapped, was cut off from its water supply, causing the surrender of the foreign warriors who were sacrificed and offered at Kuawalu and Honua`ula, two *luakini* war *heiau* at the bottom of Ka`uiki hill (Fornander 1969). Ka`uiki Hill, a so called “fortress,” was associated with many famous battles and traditional stories (Walker in Sterling 1998:136) Ka`ahumanu and Kaheihimalie, daughters of Ke`eaumoku of Hawai`i Island and Chiefess Namahana of Maui, were born here while their family lived under the protection of Mahi-hele-lima, its governor. Both were to become the wives of Kamehameha I. Un-rivaled in its esteem, it was said of Kau`iki Hill: “...the heaven is nearer the earth than elsewhere, in fact so close that it could be reached by a good strong cast of the spear” (Thrum 1919:67).

A total of six *heiau* were recorded for Wananalua Ahupua`a: Kaikaiea, Kilinui (a *luakini*), Lanakila (a *pu`uhonua*, place of refuge), Puuheewale, and Kaiapuni (Sterling 1998, Walker 1931, Thrum 1917). After the death of Kahekili in 1794, Kamehameha captured Maui, including Hāna and the fortress of Kau`iki Hill, as he progressed up the island chain.

## THE GREAT MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on Western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kamehameha III was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kuykendall 1938 Vol. I:145; Daws 1962:111; Kelly 1983:45, 1998:4; Kame`eleihiwa 1992:169–70, 176). The Great Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the *maka`āinana* (commoners), if they had been

made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, *ʻokipū* (on Oʻahu), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kameʻeleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

After 1795 Hāna, became an *ʻāina panalaʻau* (conquered land), under the control of Kamehameha I who gave it to Keʻeaumoku Papaiahehe, who left it to his son, Kahekili Keʻeaumoku. At his death, the land was passed to his sister Kaʻahumanu, who, in turn passed it to her niece Elizabeth Kahoʻanoku Kinaʻu, the daughter of Kaheiheimalie and Kamehameha I. Kinaʻu had six children and her only daughter, Victoria Kamamalu, inherited all of her mother’s land when she was only four months old. Hāna, one of the many lands received by Victoria Kamamalu, was not kept, but given by Kamamalu to the government, parceled, and awarded during the Māhele.

## **HISTORIC LAND USE**

The sugar industry appeared early in Hāna, between 1849 and 1859. A Mr. Lindgren constructed a small mill on the flats of Haneoʻo-Hāmoa, *makai* of the Hāna Highway, and began cultivation of around 60 acres of cane. The Hāna Plantation, begun in 1851 by George Wilfong, was one of the first commercial sugar plantations in Hawaiʻi. By 1861, more land consolidation and general improvements, including a railroad, had occurred, and the whole operation had a new owner, August Unna. Many small LCA and grant owners also cultivated cane and then sold it to the mill. An extensive wall system was constructed, establishing boundaries and protecting the agricultural crops from the rising encroachment of grazing cattle. The Hāna Plantation was purchased by a Mr. Grinbaum in 1889, combining them with previously obtained sections, and thus forming the Hāna Plantation Company (Condé and Best 1973). In turn, Theo H. Davies and Co. assumed ownership of the plantation in the early 1900s, absorbing small LCA holdings and changing the name to Kaeleku Sugar Co. Once again, a change in ownership occurred when C. Brewer & co. obtained possession in 1933, but by 1945, the plantation was closed and liquidated (*ibid*).

Archival research indicates the settlement pattern in the Hāna District was one of dispersed households living and farming within a relatively narrow coastal zone (0–600 ft. amsl), at this time. As the importance of commercial sugar increased, valuable land was absorbed into the plantation and the population shifted – small land holdings were sold and settlement concentrated around the mill and port of Hāna (Kame`eleihiwa 1992:309). Wilfong imported laborers from other countries, beginning with the Chinese in 1852, to maintain the sugar crops, further altering the traditional lifestyle. It should be noted that the 1946 tsunami inundated much of the coastal region, affecting the old Hāna airport and any other low-lying area within the Hāna District. Presumably, past tsunami also impacted the land. Most of the land surrounding the present project route was planted in sugar.

## **RANCHING**

Livestock was introduced to the Hawaiian Islands in 1793 when Captain Vancouver transported cattle and sheep aboard his ship the *Discovery* with the intention of giving the four cows, two bulls, four ewes, and two rams to Kamehameha I as a gift of goodwill. Cattle were on the Island of Maui by 1806. Amaso Delano (in Brennan 1995:97) provides the following account of the effect cattle had on traditional life on Maui:

They had recently brought to this island, one of the bulls the Captain Vancouver landed at Owhyee (Hawaii). He had made very great destruction amongst their sugar cane and gardens, breaking them and their cane patches and tearing them to pieces with his horns and tearing them with his feet. He would run after and frighten the natives and appeared to have the disposition to do all the mischief he could, so much so that he was an unwelcome guest among them.

As sandalwood and *koa* were diminishing, cattle became an important resource to the Hawaiian economy. By 1820, the number of cattle had increased to such a degree they were aggressively being hunted for their hides. In addition, their tallow and meat became important commodities of local and international trade. Soon cattle and their importance in the trade industry flourished to such an extent that Hawai`i became a major supplier of beef to California during the Gold Rush and subsequently to the visiting whaling ships, as well (Cowan-Smith and Stone 1988:6). Around 1945 or 1946, Paul Fagan, one of the new owners of the Hāna Plantation Company, shifted land use from cane to cattle pasture and began building a small Hotel in Hāna (Kolb *et al.* 1993). Mr. Fagan purchased 14,000 acres of Hāna land and utilizing some of the plantation lands to raise cattle, began the Hāna Ranch (Cleghorn and Rogers 1987:12).

## SUMMARY

The “level of effort undertaken” to identify potential effect by a project to cultural resources, places or beliefs (OEQC 1997) has not been officially defined and is left up to the investigator. A good faith effort can mean contacting agencies by letter, interviewing people who know of cultural resources and activities that may be affected by the project or who know its history, conducting research identifying sensitive areas and previous land use, holding meetings in which the public is invited to testify, notifying the community through the media, and other appropriate strategies based on the type of project being proposed and its impact potential. Sending inquiring letters to organizations concerning development of a piece of property that has already been totally impacted by previous activity and is located in an already developed industrial area may be a “good faith effort”. However, when many factors need to be considered, such as in coastal or mountain development, a good faith effort might mean an entirely different level of research activity.

In the case of the present parcel, letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Thelma Shimaoka of the Maui Branch of the Office of Hawaiian Affairs; the County of Maui Cultural Resources Commission, Hinano Rodrigues who is the SHPD Island historian, the Hāna Culture Center, Hui O Ke Ola Pono (Terry Poaipuni), Kukulu Kumu Hāna, and Kamika Kepa`a of the Native Hawaiian Preservation Council (Appendix A). In addition, a Cultural Impact Assessment Notice was published on January 18, 21, 22, 2009 in *The Honolulu Advertiser* and *The Maui News*, on January 18, 21, 22, 2009 (Appendix B). These notices requested information of cultural resources or activities in the area of the proposed project, gave the TMK number and where to respond with information.

Historical and cultural source materials were extensively used and can be found listed in the References Cited portion of the report. Such scholars as I`i, Kamakau, Beckwith, Chinen, Kame`eleihiwa, Fornander, Kuykendall, Kelly, Handy and Handy, Puku`i and Elbert, Thrum, Sterling, and Cordy have contributed, and continue to contribute to our knowledge and understanding of Hawai`i, past and present. The works of these and other authors were consulted and incorporated in the report where appropriate. Land use document research was supplied by the Waihona `Aina 2009 Data base.

## CIA INQUIRY RESPONSE

No specific suggestions of further contacts were received from Thelma Shimaoka of the Maui Branch of the Office of Hawaiian Affairs; the County of Maui Cultural Resources Commission, Hinano Rodrigues who is the SHPD Island historian, Hui O Ke Ola Pono (Terry Poaipuni), Kukulu Kumu Hāna (Patricia Cockett), or Kamika Kepa`a of the Native Hawaiian Preservation Council nor was there any response to either newspaper notice.

An e-mail was received from Carl Lindquist, representing the Hāna Cultural Center, in which he stated:

As this area is subject to extremely heavy stream flows from time to time, there is no question that any cultural or archaeological impact resulting from work in the streambed itself is non-existent.

Mr. Lindquist voiced some concerns:

. . . because this is an intermittent stream, the only wildlife or botanical concern would be the assurance that no invasive species or chemical materials will be introduced which might be carried downstream and/or into the ocean.

My deeper concern has to do with proper investigation and protection of any sites which might lie alongside the streambed, and which might be affected by the ensuing construction activity. I urge you to take all necessary steps to make certain that any archeological, cultural or biological assets in these areas be fully studied and properly protected.

Analysis of the potential effect of the project on cultural resources, practices or beliefs, its potential to isolate cultural resources, practices or beliefs from their setting, and the potential of the project to introduce elements which may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). To our knowledge, the project area has not been used for traditional cultural purposes within recent times. Based on historical research and the lack of response from the previously listed contacts and public announcements, it is reasonable to conclude that Hawaiian rights related to gathering, access or other customary activities within the project area and the valley will not be affected and there will be no direct adverse effect upon cultural practices or beliefs. The visual impact of the project from surrounding vantage points, e.g. the highway, mountains, and coast is minimal.

## **CULTURAL ASSESSMEMNT**

Based on the lack of response from organizations and public notices, and the archival research, it is reasonable to conclude that, pursuant to Act 50, the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Concerns of the Hāna Cultural Center, via Mr. Lindquist, dealing with botanical and archaeological matters, do not fall under the aegis of a CIA and should be addressed by other consultants. However, because there were no cultural activities identified within the specific project area or immediate vicinity, there are no adverse effects.



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**APPENDIX A: LETTER INQUIRIES**  
**(enclosures not included)**



SCIENTIFIC CONSULTANT SERVICES, Inc



711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

Hana Cultural Center  
P.O. Box 27, Hana,  
Maui, Hawai'i 96713

January 13, 2009

Dear Sirs:

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc, SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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 which support such cultural beliefs...

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by development of the property. The assessment results are dependent on the response and contributions made by individuals and organizations such as yours. Enclosed is a map showing the proposed project area. Please contact me at our SCS Honolulu office at (808) 597-1182; my cell phone, 225-2355; or home, (808) 637-9539, with any information or recommendations concerning this Cultural Impact Assessment.

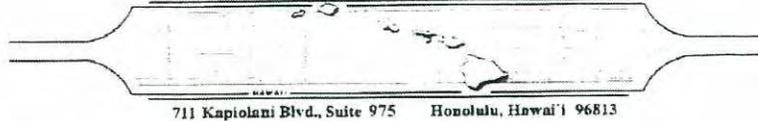
Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

Ph: 808-597-1182 / SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS / Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

SCIENTIFIC CONSULTANT SERVICES, Inc



Thelma Shimaoka  
c/o Office of Hawaiian Affairs  
140 Hoohana St.  
Suite 206  
Kahului, HI 96732

January 13, 2009

Dear Ms. Shimaoka:

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

Ph: 808-597-1182 SCS... SERVING ALL YOUR *ARCHAEOLOGICAL* NEEDS Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i



Kamika Kepa`a  
Native Hawaiian Preservation Council  
606 Kalo Place  
Lahaina, HI 96761

January 13, 2009

Dear Mr. Kepa`a:

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc, SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

SCIENTIFIC CONSULTANT SERVICES, Inc.



County of Maui  
Department of Planning  
Cultural Resources Commission  
250 S. High Street  
Wailuku, HI 96793

January 13, 2009

Dear Sir or Madam:

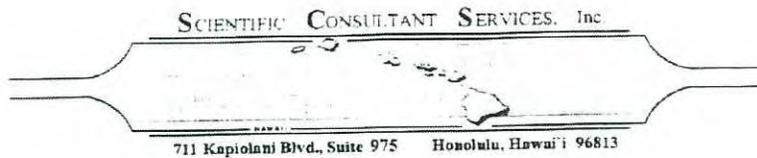
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Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)



Hinano Rodrigues, Cultural Historian  
DLNR Maui Office  
130 Mahalani Street  
Wailuku, HI 96791

January 13, 2009

Dear Hinano:

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc, SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

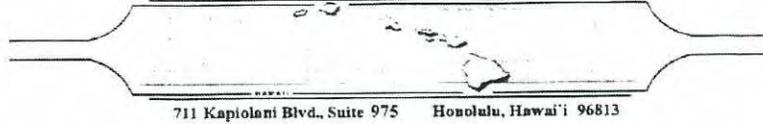
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Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

SCIENTIFIC CONSULTANT SERVICES, Inc.



Kukulu Kumu Hāna  
c/o Patricia Cockett  
P. O. Box 413  
Hāna, HI 96713

January 13, 2009

Dear Ms. Cockett:

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc, SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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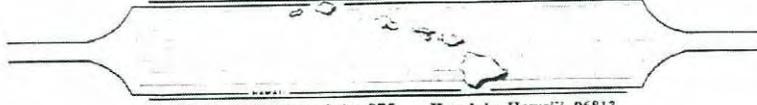
Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

Ph: 808-597-1182 SCS... SERVING ALL YOUR *ARCHAEOLOGICAL* NEEDS Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

SCIENTIFIC CONSULTANT SERVICES, Inc.



711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

Ms. Terry Poaipuni  
c/o Hui o Ke Ola Pono  
Hāna Community Center  
P. O. Box 189  
Hāna, Maui 96713

January 13, 2009

Dear Ms. Poaipuni

Scientific Consultant Services, Inc. (SCS) has been contracted by M & E Pacific, Inc., to conduct a Cultural Impact Assessment (CIA) of a bridge section (TMK:1-4-006:003, 1-4-03:009 [portion]), that includes road widening at a bridge/box culvert in Hāna, Island of Maui. According to documents supplied by M & E Pacific, Inc, SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty,  
Senior Archaeologist  
Enclosure (1)

Ph: 808-597-1182 SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i



**APPENDIX B: PUBLIC NOTIFICATIONS AFFIDAVITS**



**AFFIDAVIT OF PUBLICATION**

STATE OF HAWAII, }  
County of Maui. } ss.

1015

Rhonda M. Kurohara being duly sworn  
deposes and says, that she is in Advertising Sales of  
the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a  
newspaper published in Wailuku, County of Maui, State of Hawaii;  
that the ordered publication as to \_\_\_\_\_  
CULTURAL IMPACT ASSESSMENT NOTICE

of which the annexed is a true and correct printed notice, was  
published 3 times in THE MAUI NEWS, aforesaid, commencing  
on the 18th day of January, 2009, and ending  
on the 22nd day of January, 2009, (both days  
inclusive), to-wit: on \_\_\_\_\_  
January 18, 21, 22, 2009

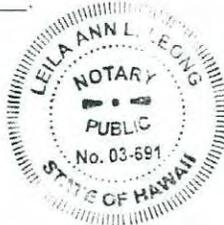
**CULTURAL IMPACT ASSESSMENT NOTICE**  
Information requested by SCS  
of cultural resources or on-going  
cultural activities on or near this  
parcel in Hana, Maui.  
TMK: (2) 1-04-06:003,  
1-4-03:009 por.  
Please respond within 30 days  
to SCS at (808) 597-1182  
(MN: Jan. 18, 21, 22, 2009)

and that affiant is not a party to or in any way interested in the above  
entitled matter.

[Signature]

This 1 page Cultural Impact, dated  
January 18, 21, 22, 2009,  
was subscribed and sworn to before me this 22nd day of  
January, 2009, in the Second Circuit of the State of Hawaii,  
by Rhonda M. Kurohara.

[Signature]  
Notary Public, Second Judicial  
Circuit, State of Hawaii  
**LEILA ANN L. LEONG**  
My commission expires 11-23-11



IN THE MATTER OF  
CULTURAL IMPACT ASSESSMENT NOTICE

**CULTURAL  
IMPACT  
ASSESSMENT  
NOTICE:**  
Information re-  
quested by SCS of cul-  
tural resources or on-  
going cultural activities  
on or near this parcel in  
Hāna, Maui, TMK: (2)  
1-04-06:003, 1-4-03:009  
per. Please respond  
within 30 days to SCS  
at (808) 597-1182.  
(Hon. Adv.: Jan. 18, 21,  
22, 2009) (A-624119)

1015

STATE OF HAWAII  
City and County of Honolulu

AFFIDAVIT OF PUBLICATION  
ss.

Jane Kawasaki being duly sworn  
deposes and says that she is a clerk, duly authorized to  
execute this affidavit of THE HONOLULU ADVERTISER, a division  
of GANNETT PACIFIC CORPORATION, that said newspaper is a  
newspaper of general circulation in the State of Hawaii, and that  
the attached notice is a true notice as was published in the  
aforereferenced newspaper as follows

- 01/18/2009 The Honolulu Advertiser
- 01/21/2009 The Honolulu Advertiser
- 01/22/2009 The Honolulu Advertiser

and that affiant is not a party to or in any way interested in the above  
entitled matter.

Jane Kawasaki

Subscribed and sworn to before me this 22nd day of January A.D.  
2009



Elsie A. Maruyama  
Notary Public of the First Judicial Circuit  
State of Hawaii  
My commission expires March 7, 2012

NOTARY PUBLIC CERTIFICATION

Elsie A. Maruyama First Judicial Circuit  
Document Description: Affidavit of Publication  
No. of Pages: 1 Date of Doc. 1/22/2009  
Elsie A. Maruyama 1/22/2009  
Notary Signature Date



624119

**APPENDIX G**  
**CONSTRUCTION PLANS**

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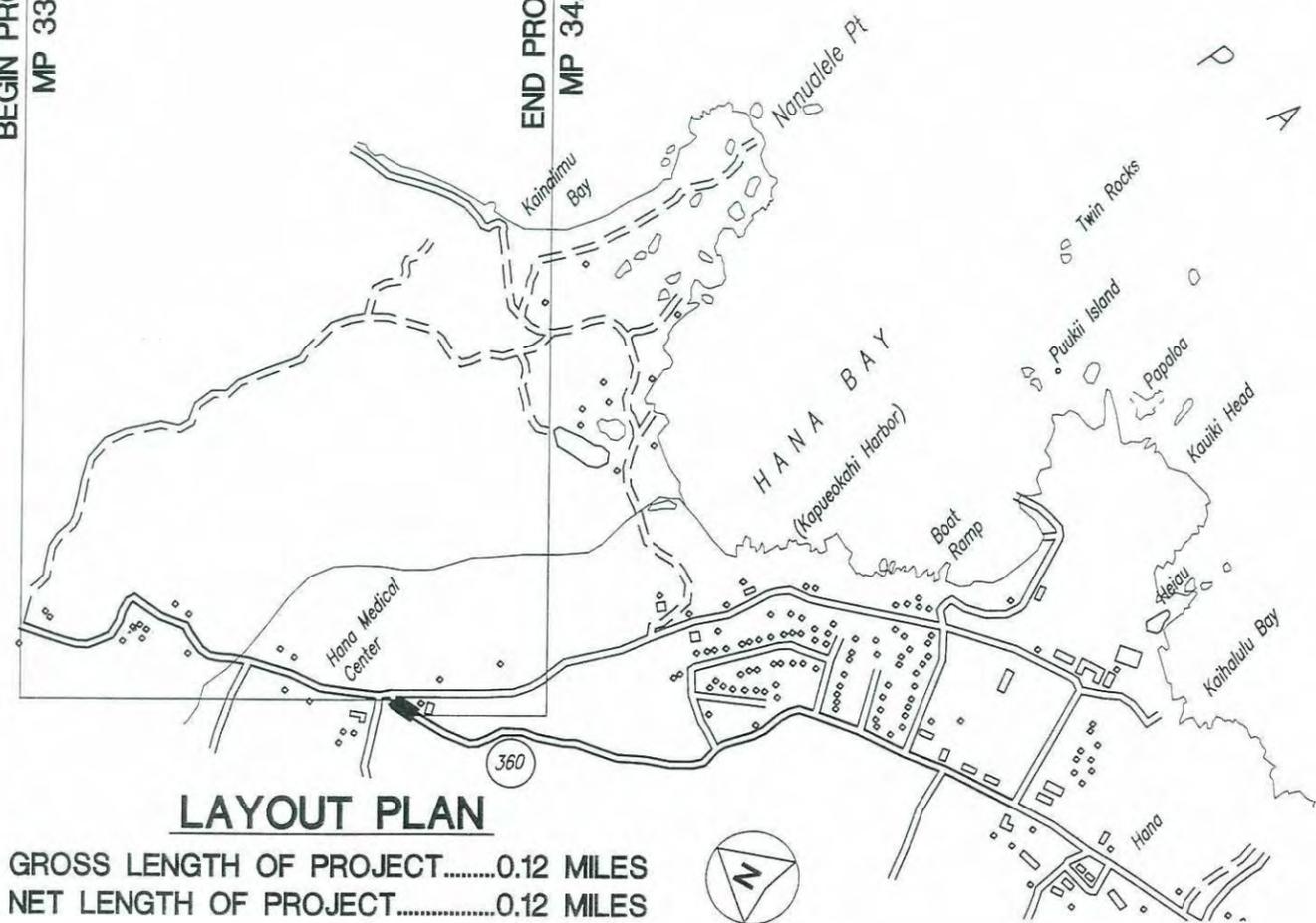
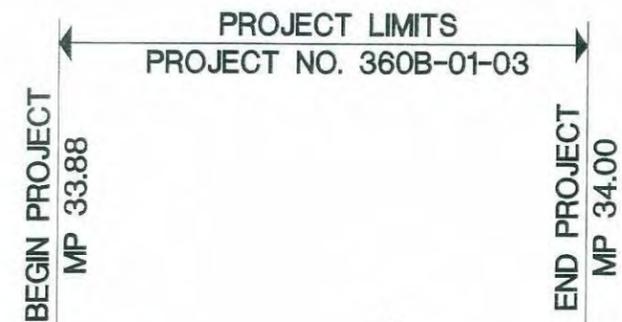
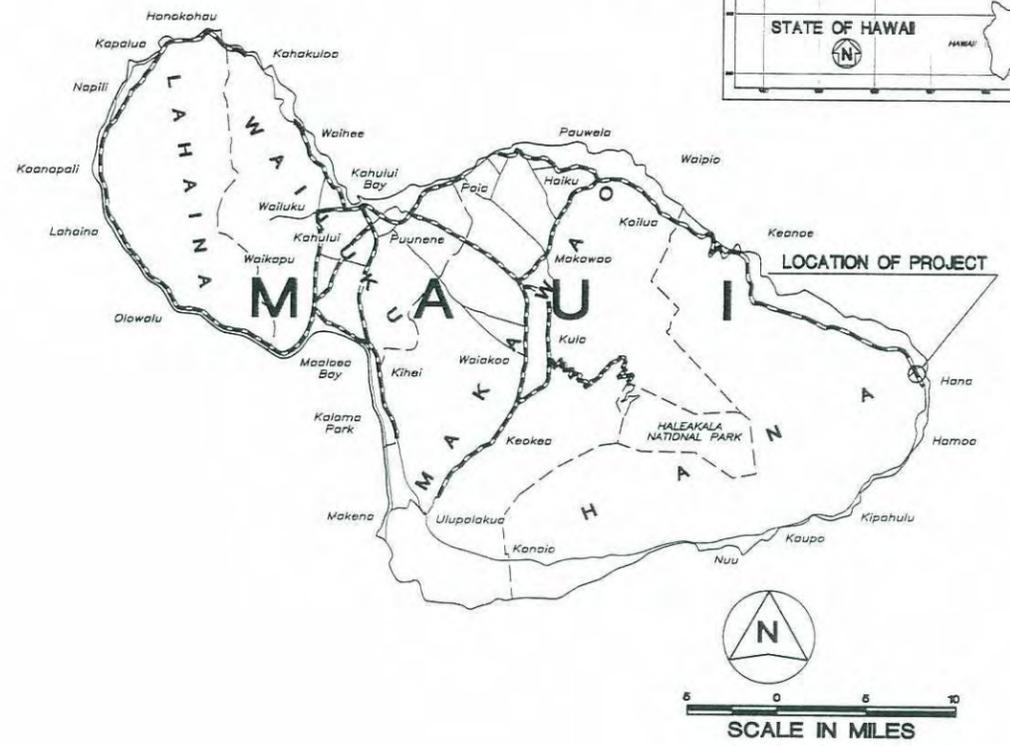
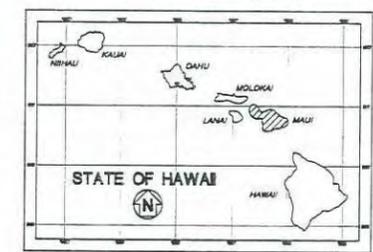
INDEX TO DRAWINGS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STANDARD PLANS SUMMARY
3	GENERAL NOTES & EROSION CONTROL PLAN AND DETAILS
4	WATER POLLUTION & EROSION CONTROL NOTES & LEGEND
5	BORING INFORMATION
6	DEMOLITION PLAN
7	SITE & STRIPING PLAN
8-9	CROSS-SECTIONS
10	TRAFFIC CONTROL PLAN
11	STRUCTURAL GENERAL NOTES
12	TYPICAL DETAILS
13	DEMOLITION/EXCAVATION PLAN
14	BRIDGE LAYOUT PLAN
15	LONGITUDINAL ELEVATION AND SECTION
16	FOUNDATION LAYOUT PLAN
17	SECTIONS AND DETAILS

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
HONOLULU, HAWAII

PLANS FOR  
**ROUTE 360**  
**HANA HIGHWAY**  
**IMPROVEMENTS**  
UAKEA STREET TO KEAWA STREET  
PROJECT NO. 360B-01-03

DISTRICT OF HANA  
ISLAND OF MAUI

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2003	1	17



**LAYOUT PLAN**

GROSS LENGTH OF PROJECT.....0.12 MILES  
NET LENGTH OF PROJECT.....0.12 MILES

AECOM, Inc. DESIGNED BY \_\_\_\_\_  
HWY-M 873-3535 June 2008  
MANAGED BY \_\_\_\_\_ PHONE \_\_\_\_\_ DATE \_\_\_\_\_

DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII

APPROVED: \_\_\_\_\_

DIR. OF TRANSPORTATION      DATE \_\_\_\_\_

P:\PROJECTS\360B-01-03\Drawings\Working\Drawings\01 - Title Sheet.dwg  
LAST UPDATE: 02-24-2010 @ 08:42 am  
PLOT DATE: 25-27-2010 @ 10:29 am

# STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	2	17

STANDARD PLAN NO.	TITLE	DATE
B-01	Notes and Miscellaneous Details	07/01/86
B-02		
B-03	Typical Structure Excavation and Backfill Pay Limits	07/01/86
B-04		
B-05		
B-06	Concrete Box Girder	07/01/86
B-07	Concrete Box Girder	07/01/86
B-08	Concrete Box Girder	07/01/86
B-09		
B-10		
B-11		
B-12	Prestressed Concrete Piles	r07/16/90
B-13	Prestressed Concrete Piles	r07/16/90

STANDARD PLAN NO.	TITLE	DATE
D-01	Chain Link Fence With Toprail	r03/06/87
D-02	Chain Link Fence Without Toprail	r07/26/90
D-03	Wire Fence With Metal Posts	07/01/86
D-04	Typical Details of Curbs and/or Gutters	07/01/86
D-05	Typical Details of Reinforced Concrete Drop Driveway	07/01/86
D-06	Centerline and Reference Survey Monument	07/01/86
D-07	Street Survey Monument	07/01/86
D-08	Landscaping Shrub and Tree Planting	07/01/86
D-09	Field Office	07/01/86
D-10	Field Office	07/01/86
D-11	Project Site Laboratory	07/01/86
D-12	Project Site Laboratory	07/01/86
D-13	Field Office & Project Site Laboratory	07/01/86

STANDARD PLAN NO.	TITLE	DATE
H-01	Type A, B, C and D Catch Basin	07/01/86
H-02	Type A1, B1, C1 and D1 Catch Basin	07/01/86
H-03	Type A2, B2, C2 and D2 Catch Basin	07/01/86
H-04	Typical Reinforcing Details for Catch Basins	07/01/86
H-05	Type A, B and C Storm Drain Manhole	07/01/86
H-06	Type D and E Storm Drain Manhole	07/01/86
H-07	Type F Storm Drain Manhole	07/01/86
H-08	Catch Basin and Manhole Casting	07/01/86
H-09	Type A-9 and A-9P Frames and Grates	07/01/86
H-10	Type A-9B Frames and Grates	07/01/86
H-11	Type 61614 and 61214 Grated Drop Inlet	07/01/86
H-12	Type 61616 Grated Drop Inlet	07/01/86
H-13	61214, 61614 & 61616 Steel Frames and Grates	07/01/86
H-14	61214B Steel Frame and Grates	07/01/86
H-15	61614B Steel Frame and Grates	07/01/86
H-16	Concrete and Cement Rubble Masonry Structures	r10/16/90
H-17	Inlet Structures	r10/16/90
H-18	Flared End Section for Culverts	07/01/86
H-19	Outlet Structures	r02/15/91
H-20	Concrete Spillway Inlet	07/01/86
H-21	18" Slotted C.M.P. Drain	07/01/86
H-22	C.M.P. Coupling Details Standard Joint	r10/16/90
H-23	Hat Shaped Coupling Band	r10/16/90

STANDARD PLAN NO.	TITLE	DATE
TE-01	Miscellaneous Sign Details	07/01/86
TE-02	Galvanized Flanged Channel Sign Post Mounting	07/01/86
TE-03	Galvanized Square Tube Sign Post Mounting	07/01/86
TE-04	Regulatory Signs	r09/01/87
TE-05	Warning Signs	07/01/86
TE-06	Miscellaneous Signs	r11/03/89
TE-07	Reserved	07/01/86
TE-08	Construction Signs	r09/01/87
TE-09	Miscellaneous Intersection Signs	r03/06/87
TE-10	Reserved	07/01/86
TE-11	Bike Route Sign and Supplementary Plates	07/01/86
TE-12	State Route Marker and Auxiliary Markers	07/01/86
TE-13	Interstate Route Marker	07/01/86
TE-14	State Route Marker and Border Detail for Guide Signs	07/01/86
TE-15	Route Marker Assemblies	07/01/86
TE-16	Miscellaneous Reflector Markers	07/01/86
TE-17	Type II Object Markers	07/01/86
TE-18	Mileposts	07/01/86
TE-19	Reserved	07/01/86
TE-20	Overhead Sign Supports	07/01/86
TE-21	Overhead Sign Support, Box Truss Type, Aluminum	07/01/86
TE-22	Foundation Details and Schedules	07/01/86
TE-23	Supports for Ground Mounted Guide Sign	r11/03/89
TE-24	Breakaway Sign Supports for Ground Mounted Guide Signs	07/01/86
TE-25	Laminated Aluminum Sign Panels (Overhead)	07/01/86
TE-26	Laminated Aluminum Sign Panels (Ground Mounted)	07/01/86
TE-27	Solid Aluminum Extruded Sign Panel and Accessory Details	07/01/86
TE-28	Guide Signs Luminaire Mountings	07/01/86
TE-29	Reserved	07/01/86
TE-30	Raised Pavement Markers and Striping	r05/09/90
TE-31	Miscellaneous Pavement Markings	r05/09/90
TE-32	Miscellaneous Pavement Markings	r05/09/90
TE-33	Miscellaneous Pavement Markings	r11/03/89
TE-34	Reserved	07/01/86
TE-35	Pavement Alphabets, Numbers & Symbols	07/01/86
TE-36	Pavement Alphabets, Numbers & Symbols	07/01/86
TE-37	Reserved	07/01/86
TE-38	Traffic Signal System, Miscellaneous Details	r11/03/89
TE-39	Traffic Signal System, Miscellaneous Details	07/01/86
TE-40	Loop Detectors	r11/03/89
TE-41	Pullboxes	07/01/86
TE-42	Type III Traffic Signal Standard	07/01/86
TE-43	Concrete Pullbox (2' x 3')	07/01/86
TE-44	Reserved	07/01/86

STANDARD PLAN NO.	TITLE	DATE
TE-45	Reserved	07/01/86
TE-46	Reserved	07/01/86
TE-47	Reserved	07/01/86
TE-48	Reserved	07/01/86
TE-49	Reserved	07/01/86
TE-50	Metal Guardrail	r03/06/87
TE-51	Strong Post W-Beam Guardrail	r09/01/87
TE-52	Metal Guardrail with Rubrail	r11/03/89
TE-53	Metal Guardrail with Rubrail at Obstruction	r09/01/87
TE-54	Beam Type Guardrail with Rubrail at Obstruction (Shoulder Installation)	r11/03/89
TE-55	Metal Guardrail Connection to Concrete Barrier	r11/03/89
TE-56	Concrete Barrier Transition	07/01/86
TE-57	Guardrail Type 3, Thrie Beam	r11/03/89
TE-57A	Guardrail Type 3, Modified Thrie Beam	11/03/89
TE-58	Approach End Flare, One & Two Way Roadway	07/01/86
TE-59	Trailing End Flare, One & Two Way Roadway	r11/03/89
TE-60	Anchor Block Details	07/01/86
TE-61	Breakaway Cable Terminal (BCT)	r11/03/89
TE-62	Breakaway Cable Terminal (BCT)	r09/01/87
TE-63	Guardrail Type 4 (Rigid Barrier)	r09/01/87
TE-64	Portable Concrete Barrier	r11/03/89
TE-65	Guardrail Type 4, Miscellaneous	r09/01/87
TE-66	Barricades	07/01/86
TE-67	Delineation & Pavement Markings at Bridges	07/01/86
TE-68	Wheelchair Ramps	r07/18/94
TE-69	Wheelchair Ramps	r07/18/94

7/18/94 REVISD TE-68 & TE-69.  
 2/15/91 REVISD H-19.  
 10/16/90 REVISD H-16, H-17,  
 H-22 & H-23.  
 7/26/90 REVISD D-02.  
 7/16/90 REVISD B-12, B-13.  
 5/09/90 REVISD TE-30, TE-31,  
 & TE-32.  
 11/03/89 REVISD TE-06, TE-23,  
 TE-30, TE-31, TE-32, TE-33, TE-38,  
 TE-40, TE-52, TE-54, TE-55, TE-57,  
 TE-59, TE-61, TE-64, TE-68, TE-69,  
 ADDED TE-57A TO STANDARD PLANS.  
 9/01/87 REVISD TE-04, TE-06,  
 TE-08, TE-32, TE-51, TE-53, TE-54,  
 TE-55, TE-57, TE-59, TE-62, TE-63,  
 TE-63 & TE-69.  
 3/06/87 REVISD D-01, TE-09  
 TE-40, TE-50, TE-51, TE-57, TE-59,  
 TE-61, TE-63 & TE-64.

NOTE:  
 STANDARD PLANS APPLICABLE TO THIS PROJECT  
 ARE INDICATED BY A "●" NEXT TO THE  
 STANDARD PLAN NO. (For Example: D-07 ●).

DATE: \_\_\_\_\_  
 SURVEY PLOTTED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 QUANTITIES BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 No. \_\_\_\_\_



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 OR UNDER MY SUPERVISION.

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

## STANDARD PLANS SUMMARY

ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03

Scale: None Date: October 2010

SHEET No. 2 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	3	17

**General Notes**

- The scope of work for this project consists of widening an existing one-lane bridge near Milepost 24 of Hana Highway, Route 360.
- The contractor is reminded of the requirements of subsection 108.01 - subletting of contract, which requires him to perform work amounting to not less than 30 percent of the total contract cost less deductible items. Non-compliance with this subsection may be grounds for rejection of bid.
- The contractor's attention is directed to the following sections of the special provisions: subsection 107.13 - public convenience and safety; subsection 107.21 - contractor's responsibility for utility property and services; and section 645 - traffic control.

**General Notes (Cont'd)**

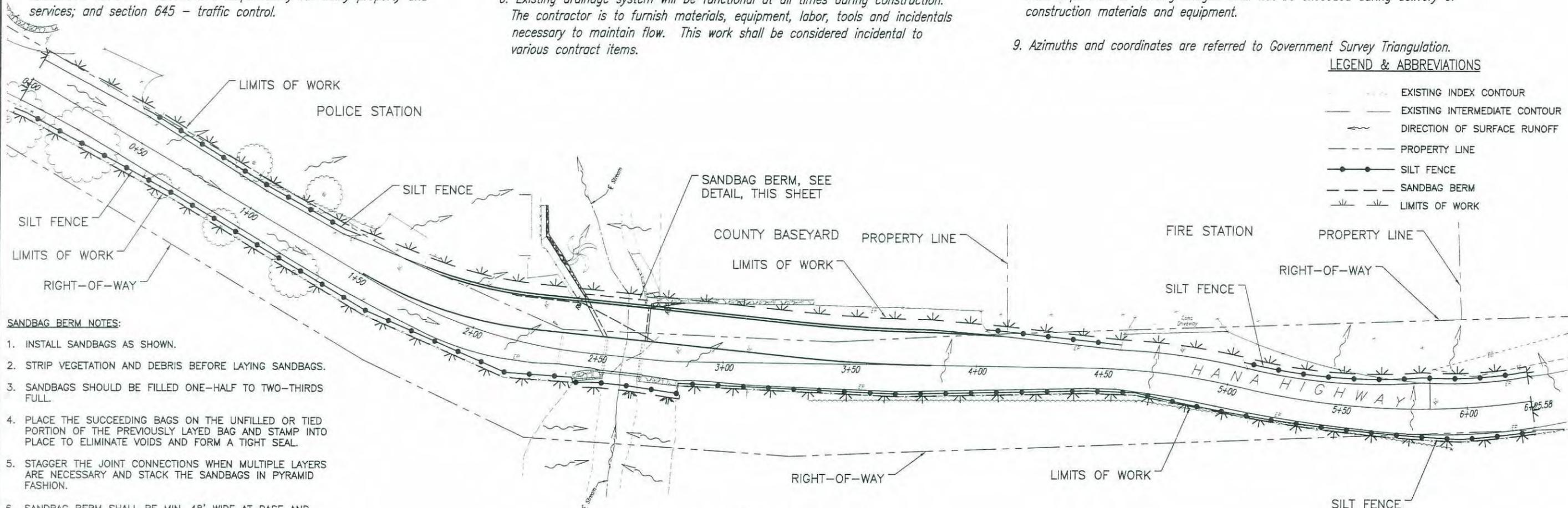
- At the end of each day's work, the contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic.
- The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.
- Existing drainage system will be functional at all times during construction. The contractor is to furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to various contract items.

**General Notes (Cont'd)**

- The contractor shall post construction signs before the first construction site and past the last construction site, if the sites are less than 1 mile apart. Where the distance between sites are greater than 1 mile, construction signs shall be posted at each of these sites. Signs shall be visible to all traveling vehicles.
- The contractor shall verify load limitations of existing bridges on Hana Highway with the highways division's maui district office prior to bidding. Load capacities of existing bridges shall not be exceeded during delivery of construction materials and equipment.
- Azimuths and coordinates are referred to Government Survey Triangulation.

**LEGEND & ABBREVIATIONS**

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- DIRECTION OF SURFACE RUNOFF
- PROPERTY LINE
- SILT FENCE
- SANDBAG BERM
- LIMITS OF WORK

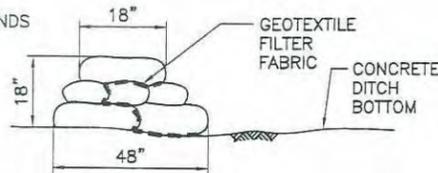


**SANDBAG BERM NOTES:**

- INSTALL SANDBAGS AS SHOWN.
- STRIP VEGETATION AND DEBRIS BEFORE LAYING SANDBAGS.
- SANDBAGS SHOULD BE FILLED ONE-HALF TO TWO-THIRDS FULL.
- PLACE THE SUCCEEDING BAGS ON THE UNFILLED OR TIED PORTION OF THE PREVIOUSLY LAYED BAG AND STAMP INTO PLACE TO ELIMINATE VOIDS AND FORM A TIGHT SEAL.
- STAGGER THE JOINT CONNECTIONS WHEN MULTIPLE LAYERS ARE NECESSARY AND STACK THE SANDBAGS IN PYRAMID FASHION.
- SANDBAG BERM SHALL BE MIN. 48' WIDE AT BASE AND 18" WIDE AT CREST.
- SANDBAGS SHALL BE COMPOSED OF POLYPROPYLENE-, POLYETHYLENE- OR POLYAMIDE-WOVEN FABRIC, WITH MINIMUM UNIT WEIGHT 4 OUNCES PER SQUARE YARD, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
- GRADE OF MATERIAL IN SANDBAGS SHALL BE COARSE SAND OR GRAVEL.

**TYPICAL DIMENSIONS PER SANDBAG**

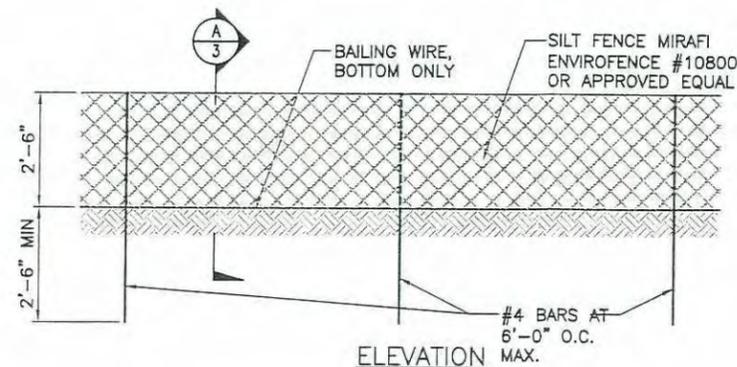
WIDTH: 16" TO 18"  
 LENGTH: 24" TO 30"  
 THICKNESS: 6" TO 8"  
 WEIGHT: 90 TO 125 POUNDS



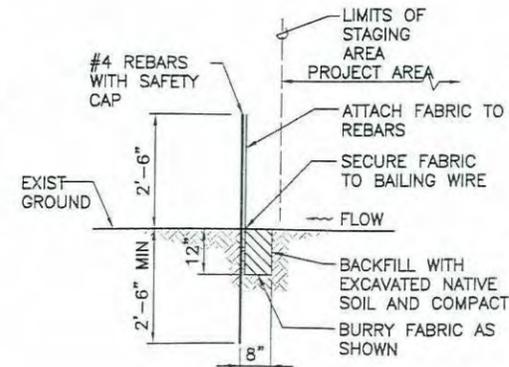
**SANDBAG BERM DETAIL**  
 NOT TO SCALE

**Erosion Control Plan**

Scale: 1" = 20'



**TEMPORARY SILT FENCE DETAIL**  
 SCALE: 1/2"=1'-0"



**SECTION A**  
 SCALE: 1/2"=1'-0"



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STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**GENERAL NOTES & EROSION CONTROL PLAN AND DETAILS**  
 ROUTE 360 HANA HIGHWAY IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03  
 Scale: \_\_\_\_\_ Date: October 2010

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	4	17

WATER POLLUTION AND EROSION CONTROL NOTES:

A. GENERAL:

- The Contractor is reminded of the requirements of Section 209 – Water Pollution and Erosion Control, in the "Hawaii Standard Specifications for Road, Bridge and Public Works Construction". Section 209 describes but is not limited to: submittal requirements; scheduling of a water pollution and erosion control conference with the Engineer; construction requirements; method of measurement; and basis of payment.
- The Contractor shall follow the guidelines in the "Best Management Practices Manual for Construction Sites in Honolulu", dated May 1999 in developing, installing and maintaining the Best Management Practices (BMP) for the project.
- The Engineer may assess liquidated damages of up to \$27,500 for non-compliance of each BMP requirement and each requirement stated in Section 209, for every day of non-compliance. There is no maximum limit on the amount assessed per day.
- The Engineer will deduct the cost from the progress payment for all citations received by the Department for non-compliance, or the Contractor shall reimburse the State for the full amount of the outstanding cost incurred by the State.

B. WASTE DISPOSAL:

1. Waste Materials

All waste materials shall be collected and stored in a securely lidded metal dumpster. The dumpster shall meet all local and State solid waste management regulations. All trash and construction debris from the site shall be deposited in the dumpster. The dumpster shall be emptied a minimum of twice per week or as often as is deemed necessary. No construction waste materials shall be buried onsite. The Contractor's supervisory personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the office trailer and the Contractor shall be responsible for seeing that these procedures are followed.

2. Hazardous Waste

All hazardous waste materials shall be disposed of in the manner specified by local or State regulations or by the manufacturer. The Contractor's site personnel shall be instructed in these practices and shall be responsible for seeing that these practices are followed.

3. Sanitary Waste

All sanitary waste shall be collected from the portable units a minimum of once per week, or as required.

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

- All control measures shall be inspected at least once each week and within 24 hours following any rainfall event of 0.5 inches or greater.
- All measures shall be maintained in good working order. If repair is necessary, it shall be initiated within 24 hours after the inspection.
- Built-up sediment shall be removed from silt fence when it has reached one-third the height of the fence.
- Silt screen or fence shall be inspected for depth of sediment, tears, to verify that the fabric is securely attached to the fence posts or concrete slab and to verify that the fence posts are firmly in the ground.
- Temporary and permanent seeding and planting shall be inspected for bare spots, washouts and healthy growth.
- A maintenance inspection report shall be made promptly after each inspection by the Contractor.
- The Contractor shall select a minimum of three personnel who shall be responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.
- Personnel selected for the inspection and maintenance responsibilities shall receive training from the Contractor. They shall be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:

1. Materials Pollution Prevention Plan

a. Applicable materials or substances listed below are expected to be present onsite during construction. Other materials and substances not listed below shall be added to the inventory.

Concrete  
Detergents  
Paints (enamel and latex)  
Metal Studs  
Tar

Fertilizers  
Petroleum Based Products  
Cleaning Solvents  
Wood  
Masonry Block

b. Material Management Practices shall be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. An effort shall be made to store only enough product as is required to do the job.

c. All materials stored onsite shall be stored in a neat, orderly manner in their appropriate containers and if possible under a roof or other enclosure.

d. Products shall be kept in their original containers with the original manufacturer's label.

e. Substances shall not be mixed with one another unless recommended by the manufacturer.

f. Whenever possible, a product shall be used up completely before disposing of the container.

g. Manufacturer's recommendations for proper use and disposal shall be followed.

h. The Contractor shall conduct a daily inspection to ensure proper use and disposal of materials onsite.

2. Hazardous Material Pollution Prevention Plan

a. Products shall be kept in original containers unless they are not resealable.

b. Original labels and material safety data sheets (MSDS) shall be retained.

c. Surplus products shall be disposed of according to manufacturers' instructions or local and State recommended methods.

3. Onsite and Offsite Product Specific Plan

a. The following product specific practices shall be followed onsite:

1) Petroleum Based Products:

All onsite vehicles shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used onsite shall be applied according to the manufacturer's recommendation.

2) Fertilizers:

Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm water. Storage shall be in a covered shed. The contents of any partially used bags of fertilizer shall be transferred to a sealable plastic bin to avoid spills.

3) Paints:

All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the highway drainage system but shall be properly disposed of according to manufacturers' instructions or State and local regulations.

4) Concrete Trucks:

Concrete trucks shall be allowed to wash out or drum wash water only at a designated site. Water shall not be discharged in the highway drainage system or waters of the United States. The Contractor shall contact Drinking Water Branch, Department of Health at 586-4258 to receive permission to designate a disposal site. The Contractor shall clean disposal site as required or as requested by the Owner's representative.

Onsite and Offsite Product Specific Plan (Cont'd)

b. Offsite Vehicle Tracking:

A stabilized construction entrance shall be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance shall be cleaned daily or as required to remove any excess mud, cold planed materials, dirt or rock tracked from the site. Dump trucks hauling material from the construction site shall be covered with a tarpaulin.

4. Spill Control Plan

a. A spill prevention plan shall be posted to include measures to prevent and clean up each spill.

b. The Contractor shall be the spill prevention and cleanup coordinator. The Contractor shall designate at least three site personnel who shall receive spill prevention and cleanup training. These individuals shall each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel shall be posted in the material storage area and in the office trailer onsite.

c. Manufacturers' recommended methods for spill cleanup shall be clearly posted and site personnel shall be made aware of the procedures and the location of the information and cleanup supplies.

d. Materials and equipment necessary for spill cleanup shall be kept in the material storage area onsite.

e. All spills shall be cleaned up immediately after discovery.

f. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

g. Spills of toxic hazardous material shall be reported to the appropriate State or local government agency, regardless of the size.

Legend

AC	Asphalt Concrete
BB	Bottom Bank
BFP	Backflow Preventer
BW	Bottom of Wall
CLF	Chain Link Fence
CMU	Concrete Masonry Unit Wall
Conc	Concrete
CRM	Concrete Rubbel Mansorry
D=	Approximate Diameter
DYL	Double Yellow Line
Elev.	Elevation
EP	Edge of Pavement
FH	Fire Hydrant
GP	Gate Post
GR	Gravid Rail
H=	Approximate Height
ICY	Irrigation Control Valve D=0.80
Mon.	Number Monument
PP	Power Pole
RM	Reflector Marker
S=	Approximate Size
SLP	Street Light Pole
SWL	Solid White Pavement Stripe
TB	Top Bank
TMK	Tax Map Key
TW	Top of Wall
Veg	Various Vegetation
W=	Approximate Width
WM	Water Meter Box
WV	Water Valve

 Paving at Guardrail  
 New Pavement

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
CHECKED BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**WATER POLLUTION & EROSION CONTROL NOTES & LEGEND**  
ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: None Date: October 2010

**APPENDIX H**  
**DRAINAGE REPORT**

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# Hana Highway Improvements: Uakea Road to Keawa Place

Hana, Maui, Hawaii

## *Drainage Report*

TMK: (2<sup>nd</sup> Div) 1-4-006:999

September 2010



(Expires April 30, 2012)

This work was prepared by me or under my direct supervision.

Signature (*Diane Y. Kodama*)  
AECOM

Date

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## SECTION 1

### INTRODUCTION

#### 1.1 PURPOSE

The objective of this drainage report is to analyze and evaluate the effects of the proposed bridge widening on existing drainage patterns, and to determine whether a drainage system to manage flow within the site and to convey water off-site is necessary in accordance with State of Hawaii drainage requirements for the area. This report analyzes the conditions before and after the widening of the bridge.

#### 1.2 GENERAL INFORMATION

- A. The Hana Highway Improvements project is being developed by the State of Hawaii Department of Transportation. The proposed site is owned by the State of Hawaii and the site is currently occupied by a one-lane bridge. The project proposes to widen the roadway at the bridge/box culvert adjacent to the County Highways Baseyard on Route 360 Hana Highway near the intersection with Uakea Road (MP 33.88). These improvements will provide for clear two way traffic flow over the bridge. The total project area is 0.41 acres.
- B. Owner: State of Hawaii  
Department of Transportation – Highways Division  
650 Palapala Drive  
Kahului, HI 96732  
Phone: (808) 873-3535  
Fax: (808) 873-3544
- C. Vicinity & Location Map (See Figure 1)

## SECTION 2

### PHYSICAL ENVIRONMENT

#### 2.1 LOCATION

The project site is located in Hana, on the island of Maui, Hawaii. The project site is within the state highway Right-of-Way. Refer to Figure 1 for a Location Map of the project. The Tax Map Key (TMK) for the project lot is (2) 1-4-006:999.

#### 2.2 TOPOGRAPHY

Based on the topographic map (Ref. #5), the project area has an approximate ground elevation ranging from 117 to 127 feet above Mean Sea Level (MSL). The area being covered by the bridge widening is an open box culvert which has a natural, unlined rock bottom littered with bushes and other plants. The project site is flat with slopes of approximately 1%-2%.

#### 2.3 SOILS

According to the August 1972 publication, *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, by the United States Department of Agriculture, Soil Conservation Service, the soil at the project site consists of Hana extremely stony silty clay loam (HKOC). Hana extremely stony silty clay loam (HKOC), 3 to 15 percent slopes, is moderately deep with stones covering 3 to 15 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. This soil is used for pastures and homesites.

#### 2.4 DRAINAGE/FLOODING

According to the US Department of Homeland Security, Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) (Figure 2), the project site is classified as Zone X (Map Number 150003 0670E, Ref. #1). Zone X areas are classified as areas outside of the 500-year flood zone. The existing drainage runoff within the project area sheet flows from the project site into adjacent properties.

## SECTION 3

### DRAINAGE

#### 3.1 METHODOLOGY

The method utilized in this drainage report is the Rational Method. Calculations based on both the County of Maui Standard *Rules for the Design of Storm Drainage Facilities in the County of Maui*, November 1995 (Ref. #2) and the State of Hawaii DOT-Highways Division Standard *Design Criteria for Highway Drainage*, May 2006 (Ref. #3) have been done. The County of Maui Standard *Rules for the Design of Storm Drainage Facilities in the County of Maui* states that the Rational Method shall be used for drainage areas of 100 acres or less, while the State of Hawaii DOT-Highways Division Standard *Design Criteria for Highway Drainage* states that the Rational Method can be used for drainage areas up to 200 acres.

#### 3.2 HYDROLOGIC CRITERIA

The hydrologic criteria used to obtain peak discharges are summarized as follows:

##### Criteria

Recurrence Interval:	$T_m = 10$ years (for non-sump conditions), from <i>Rules for the Design of Storm Drainage Facilities in the County of Maui</i> [November 1995]
	$T_m = 25$ years (for Roadway Drainage for an Arterial Highway), from State of Hawaii DOT-Highways Division Standard <i>Design Criteria for Highway Drainage</i> [May 2006]
Intensity and Rainfall Duration	Intensity of 1-hr Rainfall
Peak Discharges	Rational Method
Runoff Coefficient C	The design coefficient "C" was determined based on the type of Drainage Area, given in Table 2 of the <i>Rules for the Design of Storm Drainage Facilities in the County of Maui</i> [November 1995].

### 3.3 EXISTING DRAINAGE CONDITIONS

The existing ground in the project area consists of ac pavement and the concrete bridge structure. The existing ac pavement generally slopes from north to south in existing drainage area 1 (XDA-1), and from west to east in existing drainage area 2 (XDA-2). All runoff generated on-site sheet flows easterly into adjacent properties. The existing runoff generated by the project site based on County of Maui standards is 3.91 cfs (cubic feet per second), and based on State of Hawaii DOT standards is 3.33 cfs.

### 3.4 PROPOSED DRAINAGE IMPROVEMENTS

The proposed drainage pattern will correspond to the existing conditions. The proposed improvements will only increase the impervious surface of the project site by the area of the new bridge section. There is no existing drainage system in the area and no drainage improvements are proposed. Due to the increase in impervious surface on the site, the proposed flow based on County of Maui standards is increased by 0.06 cfs to 3.97 cfs), and based on State of Hawaii DOT standards is increased by 0.06 cfs to 3.39 cfs.

### 3.5 CONCLUSIONS

Based on the County of Maui standards, the existing drainage runoff is 3.91 cfs. By increasing the impervious surface with the new bridge section, the proposed flow is 3.97 cfs. Sheet flow offsite will change from 3.91 to 3.97, with a negligible increase of 0.06 cfs.

Based on the State of Hawaii DOT standards, the existing drainage runoff is 3.33 cfs. By increasing the impervious surface with the new bridge section, the proposed flow is 3.39 cfs. Sheet flow offsite will change from 3.33 to 3.39, with a negligible increase of 0.06 cfs.

It has been determined that the County of Maui drainage standards are more conservative and, therefore, those standards have been used in the calculations for this Drainage Report. Because the increase in drainage runoff is negligible at 0.06 cfs, we do not anticipate any adverse impacts to neighboring properties, or locations downstream of the area due to the proposed improvements.

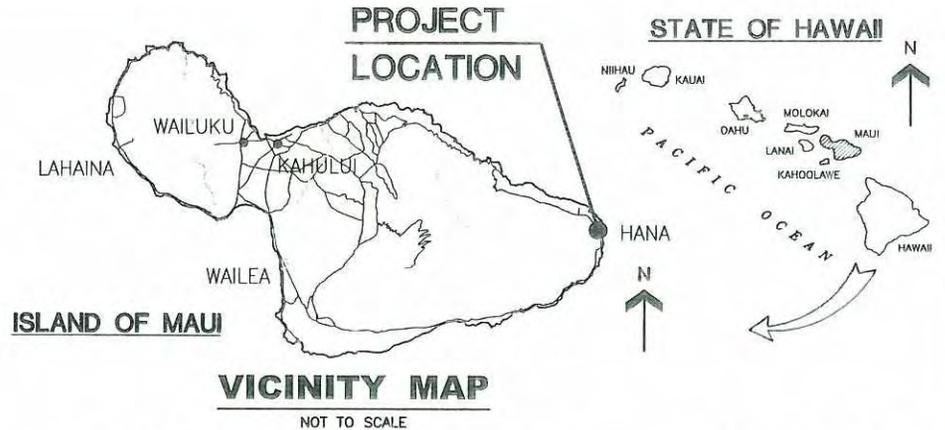
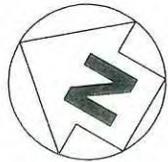
## REFERENCES

1. *Flood Insurance Rate Map*, County of Maui, Hawaii, Map Number 150003 0670E, Federal Emergency Management Agency, US Department of Homeland Security, Revised Sept 25, 2009.
2. *Rules for the Design of Storm Drainage Facilities in the County of Maui*, Department of Public Works and Waste Management County of Maui, November 1995.
3. *Design Criteria for Highway Drainage*, Highways Division, Department of Transportation, State of Hawaii, May 2006.
4. *Rainfall-Frequency Atlas of the Hawaii Islands for Areas to 200 Square Miles, Durations to 24 hours, and Return Periods from 1 to 100 Years*, Technical Paper No. 43, US Department of Commerce, Weather Bureau, 1962.
5. *Hawaii Statewide Uniform Design Manual for Streets and Highways*, Highways Division, Department of Transportation, State of Hawaii, October 1980.
6. United States Department of Agriculture, Natural Resources Conservation Service, *Web Soil Survey*, <<http://websoilsurvey.nrcs.usda.gov/app/>>..
7. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, United States Department of Agriculture, Soil Conservation Service, August 1972.
8. Hana Highway Topographic Map, AECOM Pacific, June 2009.

PLOT DATE: August 27, 2010 @ 08:27:01 am

LAST UPDATE: June 17, 2010 @ 02:44:31 pm

PATH:\PLANS\01\Projects\Maui\DOT Home Uses to Reseal\400 Reports\EA\Figs\Figure 01\_Vic.dwg



### PROJECT LOCATION

TMK: (2)1-4-006:999  
OWNER: STATE OF HAWAII

TMK: (2)1-4-006:003  
OWNER: COUNTY OF MAUI

TMK: (2)1-4-003:009  
OWNER: HANA RANCH, INC.

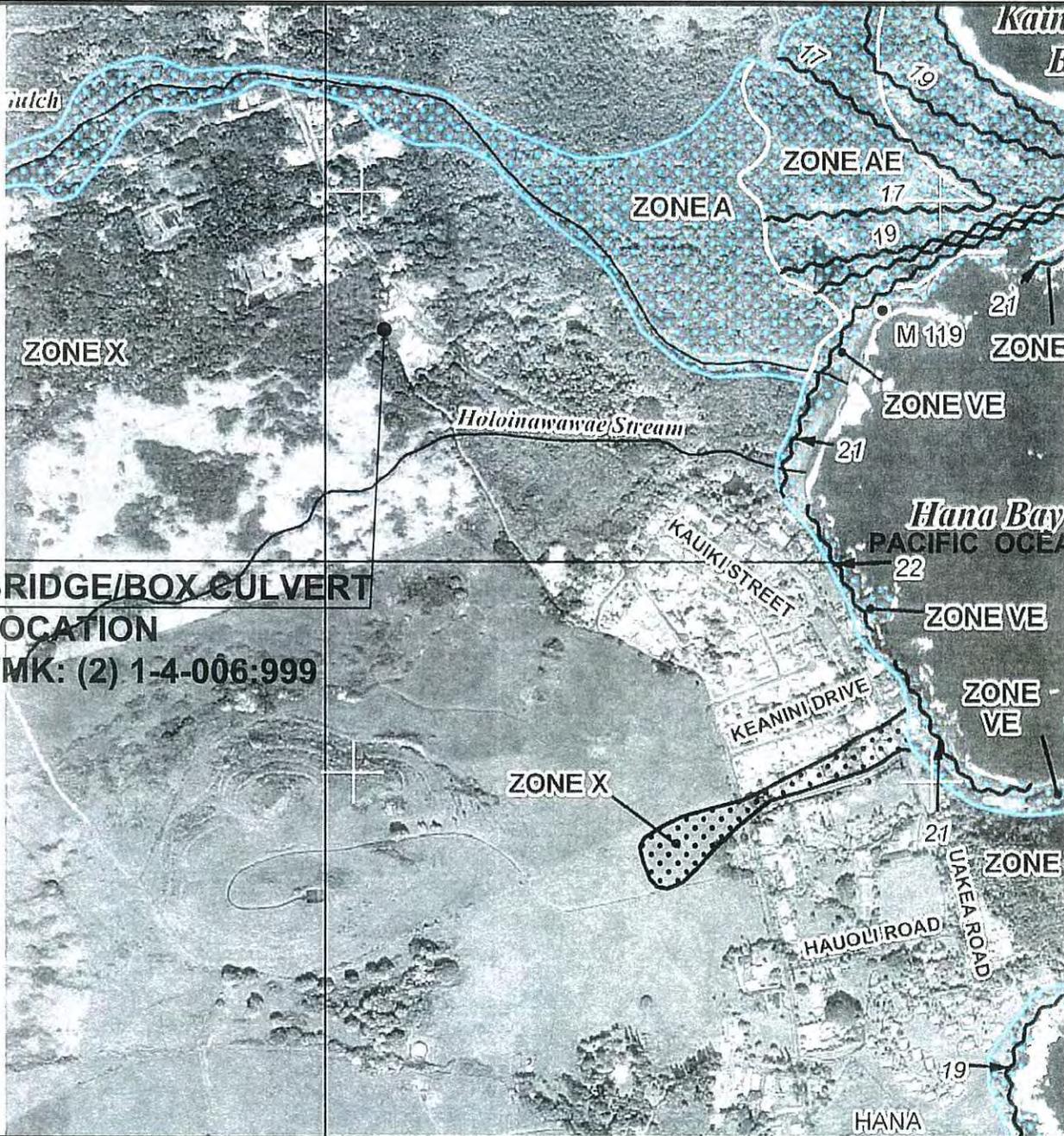


# AECOM

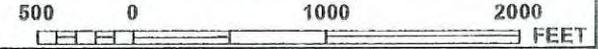
1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

**FIGURE 1**  
**LOCATION MAP**  
HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
STATE DOT - HIGHWAYS DIVISION  
PROJECT NO. 360B-01-03  
Hana, Island of Maui, Hawaii  
JULY 2010

PART/FILENAME: P:\Projects\Maui\DOT Hana\Users to Keana\400 Reports\EA\Fig\Figure 09 - FIRM.mxd  
 LAST UPDATE: July 15, 2010 @ 11:06:55 am  
 PLOT DATE: August 27, 2010 @ 09:46:37 am



MAP SCALE 1" = 1000'



NATIONAL FLOOD INSURANCE PROGRAM  
 FIRM

PANEL 0670E

**FIRM**  
FLOOD INSURANCE RATE MAP

MAUI COUNTY,  
HAWAII

PANEL 670 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MAUI COUNTY	150003	0670	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER  
1500030670E

MAP REVISED  
SEPTEMBER 25, 2009

Federal Emergency Management Agency

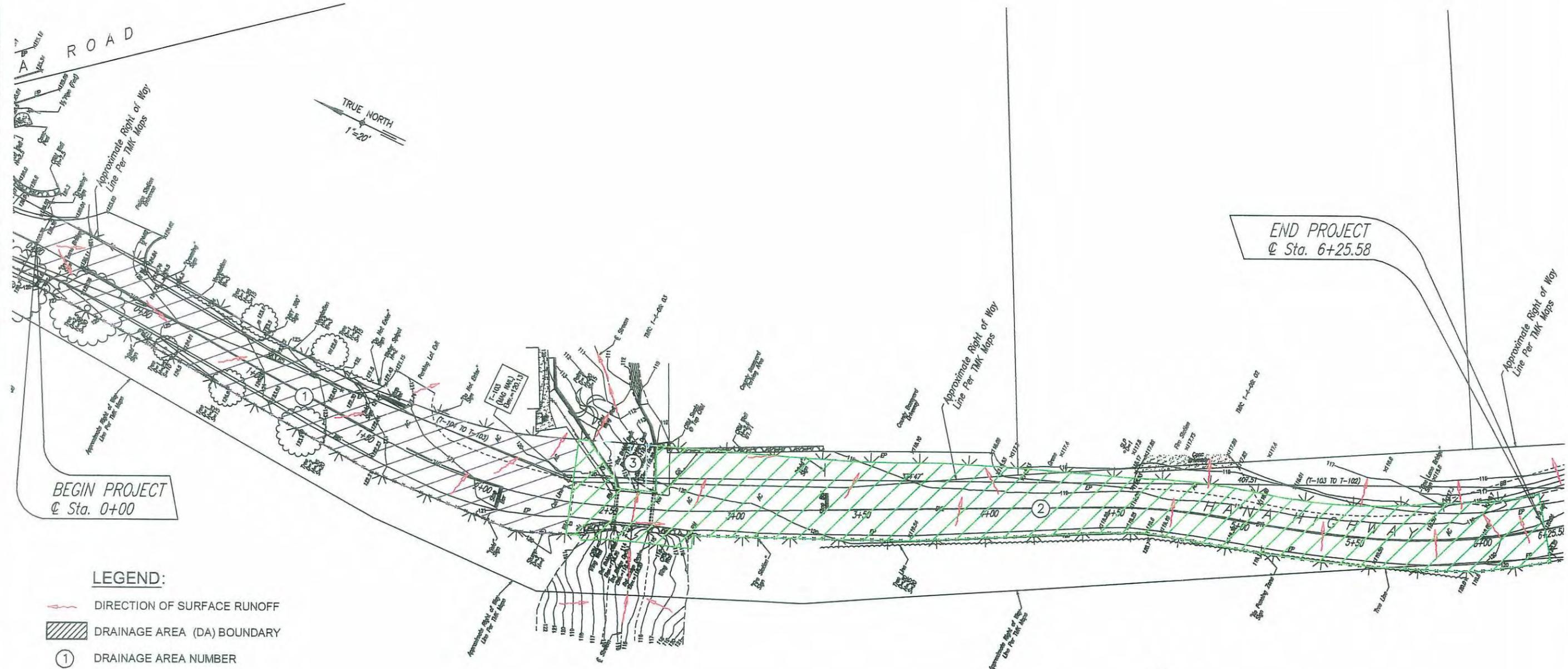
**AECOM**

1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

FIGURE 2  
FIRM MAP

HANA HIGHWAY IMPROVEMENTS - UAKEA ROAD TO KEAWA PLACE  
 STATE DOT - HIGHWAYS DIVISION  
 PROJECT NO. 360B-01-03  
 Hana, Island of Maui, Hawaii  
 JULY 2010

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008		



**LEGEND:**

- DIRECTION OF SURFACE RUNOFF
- DRAINAGE AREA (DA) BOUNDARY
- DRAINAGE AREA NUMBER

**FLOW**

DA	AREA	FLOW
XDA1	0.16 AC	1.55 CFS
XDA2	0.24 AC	2.33 CFS
XDA3	0.01 AC	0.03 CFS

*Existing Drainage Conditions*

Scale: 1" = 20'

DATE	_____
SURVEY PLOTTED BY	_____
DESIGNED BY	_____
DESIGNED BY	_____
QUANTIFIED BY	_____
CHECKED BY	_____
ORIGINAL PLAN No.	_____



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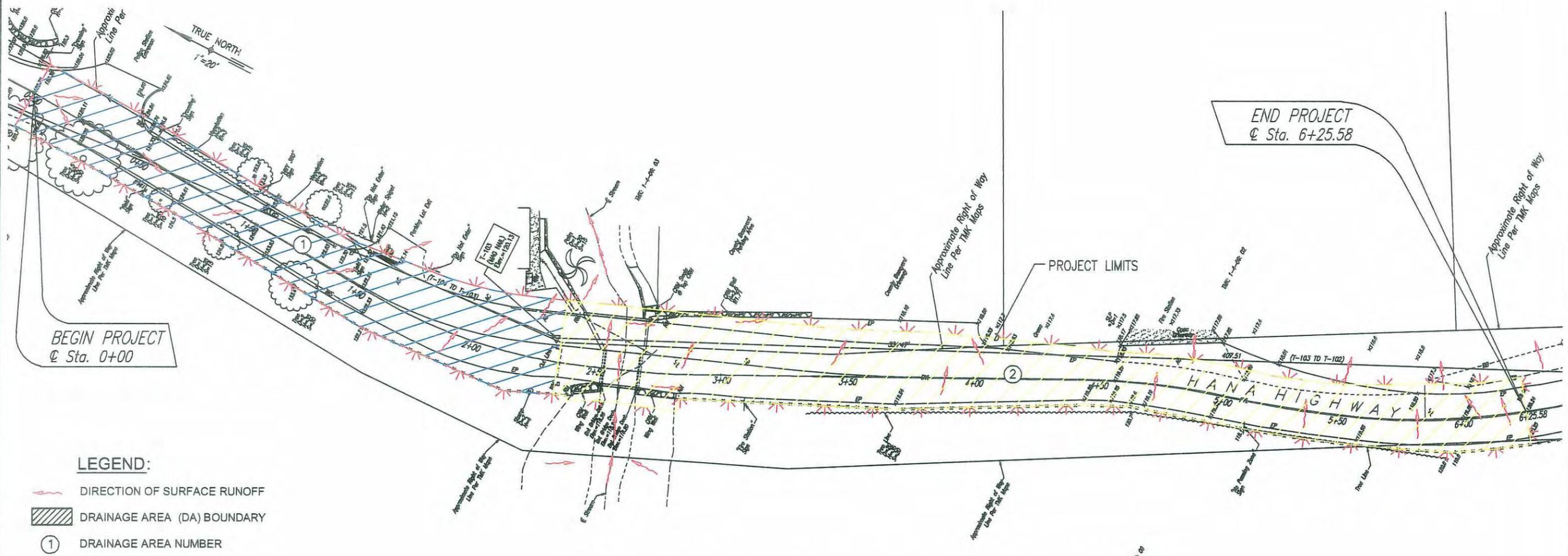
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**EXISTING DRAINAGE CONDITIONS**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: 1" = 20' Date: September 2010

SHEET No. 1 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008		



BEGIN PROJECT  
@ Sta. 0+00

END PROJECT  
@ Sta. 6+25.58

**LEGEND:**

- DIRECTION OF SURFACE RUNOFF
- DRAINAGE AREA (DA) BOUNDARY
- DRAINAGE AREA NUMBER

*Proposed Drainage Conditions*

Scale: 1" = 20'

**FLOW**

DA	AREA	FLOW
NDA1	0.16 AC	1.55 CFS
NDA2	0.25 AC	2.42 CFS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PROPOSED DRAINAGE CONDITIONS**

*ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: 1" = 20'      Date: October 2010*

SHEET No. 2 OF 2 SHEETS

**APPENDIX A-1**

References based on

*Rules for the Design of Storm Drainage Facilities in the County of Maui*  
County of Maui



# Table 1

## GUIDE FOR THE DETERMINATION OF RUNOFF COEFFICIENTS FOR BUILT-UP AREAS\*

WATERSHED CHARACTERISTICS	EXTREME	HIGH	MODERATE	LOW
INFILTRATION	NEGLIGIBLE <u>0.20</u>	SLOW 0.14	MEDIUM 0.07	HIGH 0.0
RELIEF	STEEP (> 25%) 0.08	HILLY (15-25%) 0.06	ROLLING (5-15%) 0.03	FLAT (0-5%) <u>0.0</u>
VEGETAL COVER	NONE <u>0.07</u>	POOR (< 10%) 0.05	GOOD (10-50%) 0.03	HIGH (50-90%) 0.0
DEVELOPMENT TYPE	INDUSTRIAL & BUSINESS <u>0.55</u>	HOTEL - APARTMENT 0.45	RESIDENTIAL 0.40	AGRICULTURAL 0.15

\*NOTE: The design coefficient "c" must result from a total of the values for all four watershed characteristics of the site.

# Table 2

## RUNOFF COEFFICIENTS

<u>Type of Drainage Area</u>	<u>Runoff Coefficient C</u>
Business:	
Downtown areas	0.95
Neighborhood areas	0.70
Residential:	
Single-family areas	0.50
Multi-units, detached	0.60
Multi-units, attached	0.75
Suburban	0.40
Apartment dwelling areas	0.70
Industrial:	
Light areas	0.80
Heavy areas	0.90
Parks, cemeteries	0.25
Playgrounds	0.35
Railroad-yard areas	0.40
Unimproved areas	0.30
Streets:	
Asphaltic	0.95
Concrete	0.95
Brick	0.85
Drive and walks	0.85
Roofs	0.95
Lawns:	
Sandy, soil, flat, 2%	0.10
Sandy, soil, avg., 2-7%	0.15
Sandy, soil, steep, 7%	0.20
Heavy soil, flat, 2%	0.17
Heavy soil, avg., 2-7%	0.22
Heavy soil, steep, 7%	0.35

- 20A-1  
- 20A-2  
- 20A-3  
- 20A-4

# Table 3

## MINIMUM RUNOFF COEFFICIENTS FOR BUILT-UP AREAS

RESIDENTIAL AREAS:	C = 0.55 to 0.70
HOTEL-APARTMENT AREAS:	C = 0.70 to 0.90
BUSINESS AREAS:	C = 0.80 to 0.90
INDUSTRIAL AREAS:	C = 0.80 to 0.90

*The type of soil, the type of open space and ground cover and the slope of the ground shall be considered in arriving at reasonable and acceptable runoff coefficients.*

# Table 4

## APPROXIMATE AVERAGE VELOCITIES OF RUNOFF FOR CALCULATING TIME OF CONCENTRATION

<u>TYPE OF FLOW</u>	<u>VELOCITY IN FPS FOR SLOPES (in percent) INDICATED</u>			
	0-3%	4-7%	8-11%	12-15%
OVERLAND FLOW:				
Woodlands	1.0	2.0	3.0	3.5
Pastures	1.5	3.0	4.0	4.5
Cultivated	2.0	4.0	5.0	6.0
Pavements	5.0	12.0	15.0	18.0

### OPEN CHANNEL FLOW:

Improved Channels Determine Velocity by Manning's Formula

Natural Channel* (not well defined)	1.0	3.0	5.0	8.0
--	-----	-----	-----	-----

*\*These values vary with the channel size and other conditions so that the ones given are the averages of a wide range. Wherever possible, more accurate determinations should be made for particular conditions by Manning's formula.*

NCA-1  
XPA

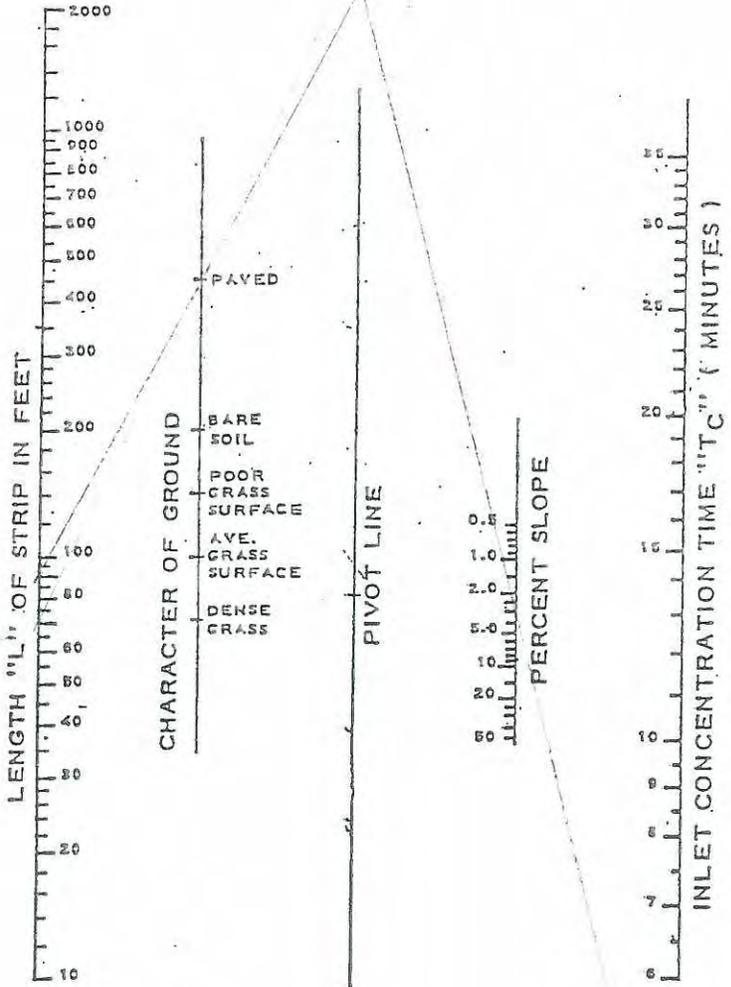


Plate 1  
Overland  
Flow  
Chart

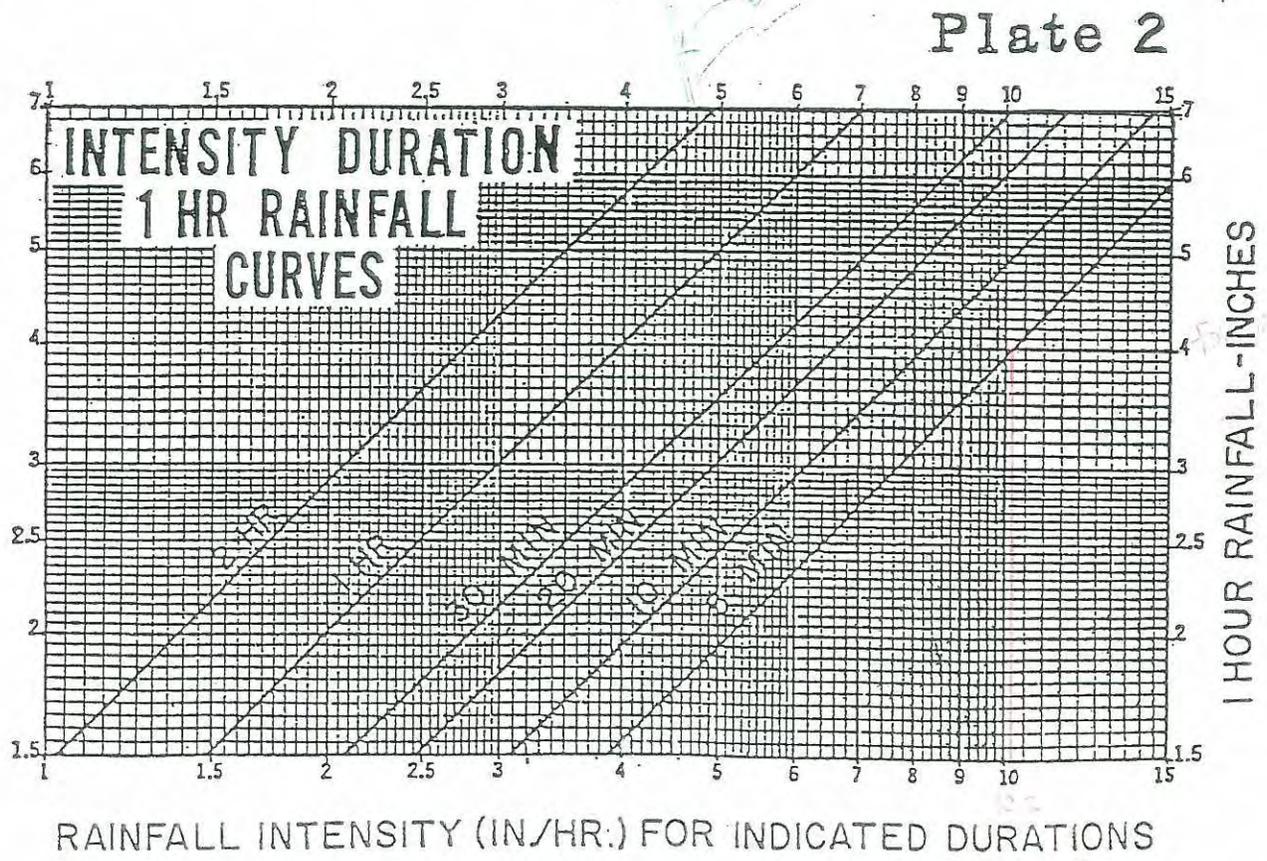
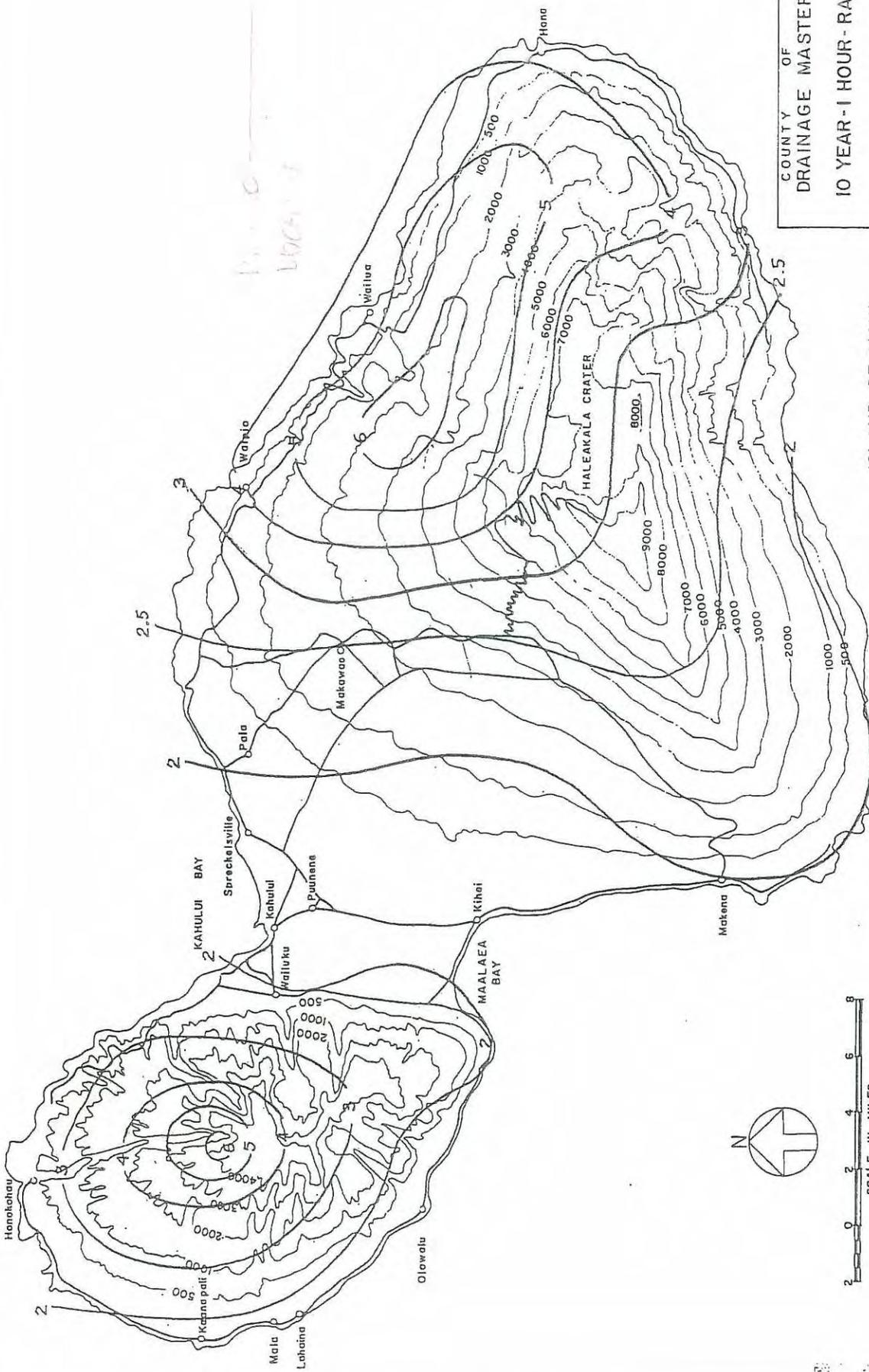


Plate 2

COUNTY OF MAUI  
 DRAINAGE MASTER PLAN  
 10 YEAR - 1 HOUR - RAINFALL  
 R.M. TOWILL CORPORATION  
 CIVIL ENGINEERS - SURVEYORS

ISLAND OF MAUI

LA PEROUSE BAY



## **APPENDIX A-2**

Drainage Calculations – Existing & Proposed Condition based on  
*Rules for the Design of Storm Drainage Facilities in the County of Maui*  
County of Maui





Plate 1 (Reference 1)—*Overland Flow Chart*—yields a time of concentration of:

$$T_{c,XDA-1} = < 5 \text{ minutes.}$$

Plate 4 (Reference 1)—*Drainage Master Plan, 10 Year 1 Hour Rainfall*—suggests a 10year, 1-hour recurrent rainfall intensity of:

$$I_{10\text{-yr, 1-hr}} = 4.0 \text{ inches.}$$

For all existing drainage areas.

Plate 2 (reference 1)—*Intensity Duration 1 Hr Rainfall Curves*—indicates a converted, actual, working rainfall intensity for the project site to be used in the Rational Method as being:

$$I_{XDA-1} = 10.20 \text{ in./hr.}$$

### **Area**

As calculated through AutoCAD:

$$A_{XDA-1} = 0.16 \text{ Ac.}$$

### **Surface Runoff**

The product of the aforementioned, determined values yields the anticipated drainage flow that sheet flows into and from the project site:

$$Q = C \times I \times A$$

$$Q_{XDA-1} = C \times I \times A = (0.95) \times (10.20 \text{ in./hr}) \times (0.16 \text{ Ac}) = \underline{\underline{1.55 \text{ cfs.}}}$$





Existing Condition Hydrological Analysis

AECOM

Drainage Flows (Drainage Areas < 100 Acres) Resulting from Rainfalls with 10-year and 50-year Recurrence Intervals											
Inlet Struct.	DA	C	I	L	Slope	Time of Concentration	Velocity	Calculated Time of Concentration	Corrected I	AutoCAD-calculated Area	Q <sup>design</sup>
			(in./hr)	(ft)	(ft/ft)	(minutes)	(ft/s)	(minutes)	(in./hr)	Area (ft <sup>2</sup> )	(cfs)
NA	X1	0.95	4.00	91	3.29%	off chart	5.0	0.30	10.20	6,930	1.55
NA	X2	0.95	4.00	72	2.80%	off chart	5.0	0.24	10.20	10,481	2.33
NA	X3	0.30	4.00	16	15.31%	off chart	3.5	0.08	10.20	369	0.03

Non-sump, Q10  
 Non-sump, Q10  
 Non-sump, Q11

Total of Drainage Area Lengths: 179

Total of LS Values: 7.5000 ft

Average Slope of Drainage Areas: 89.4951 ft  
 ft/ft

Total of Drainage Areas: 0.41 acres

Total of Drainage Area Flows: 3.91 cfs

Proposed Condition Hydrological Analysis

AECOM

Drainage Flows (Drainage Areas < 100 Acres) Resulting from Rainfalls with 10-year and 50-year Recurrence Intervals											
Inlet Struct.	DA	C	I	L	Slope	Time of Concentration	Velocity	Calculated Time of Concentration	Corrected I	AutoCAD-calculated Area	Q <sup>design</sup>
			(in./hr)	(ft)	(ft/ft)	(minutes)	(ft/s)	(minutes)	(in./hr)	Area (ft <sup>2</sup> )	(cfs)
NA	N1	0.95	4.00	91	3.29%	off chart	5.0	0.30	10.20	6,930	1.55
NA	N2	0.95	4.00	72	2.80%	off chart	5.0	0.24	10.20	10,850	2.42

Non-sump, Q10  
Non-sump, Q10

Total of Drainage Area Lengths: 163  
 Total of LS Values: 5.0000 ft  
 Average Slope of Drainage Areas: 81.3301 ft  
 ft/ft  
 Total of Drainage Areas: 0.41 acres  
 Total of Drainage Area Flows: 3.97 cfs

## **APPENDIX B-1**

References based on  
*Design Criteria for Highway Drainage,*  
State of Hawaii Department of Transportation, Highways



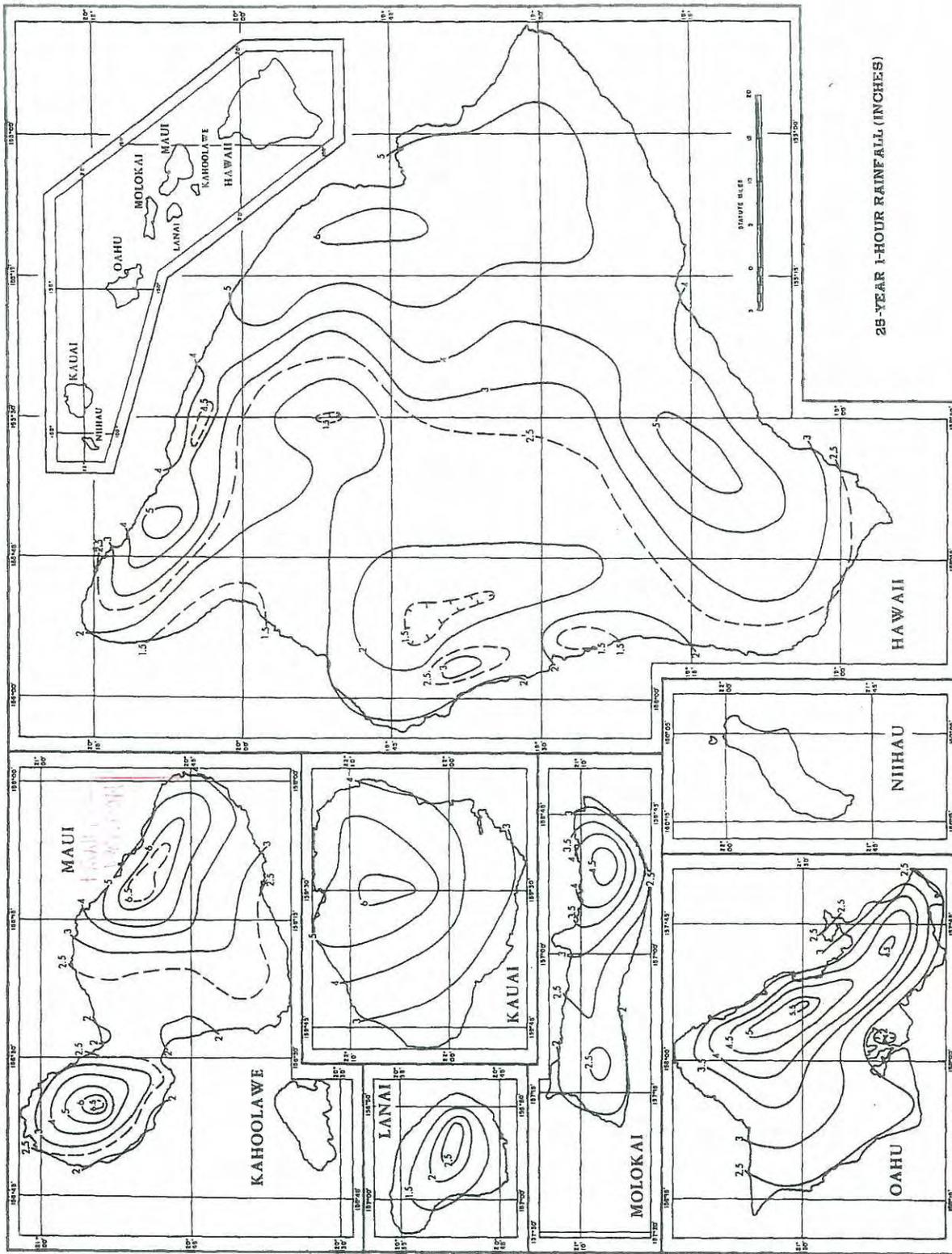


Figure 19.—25-yr. 1-hr. rainfall (in.)

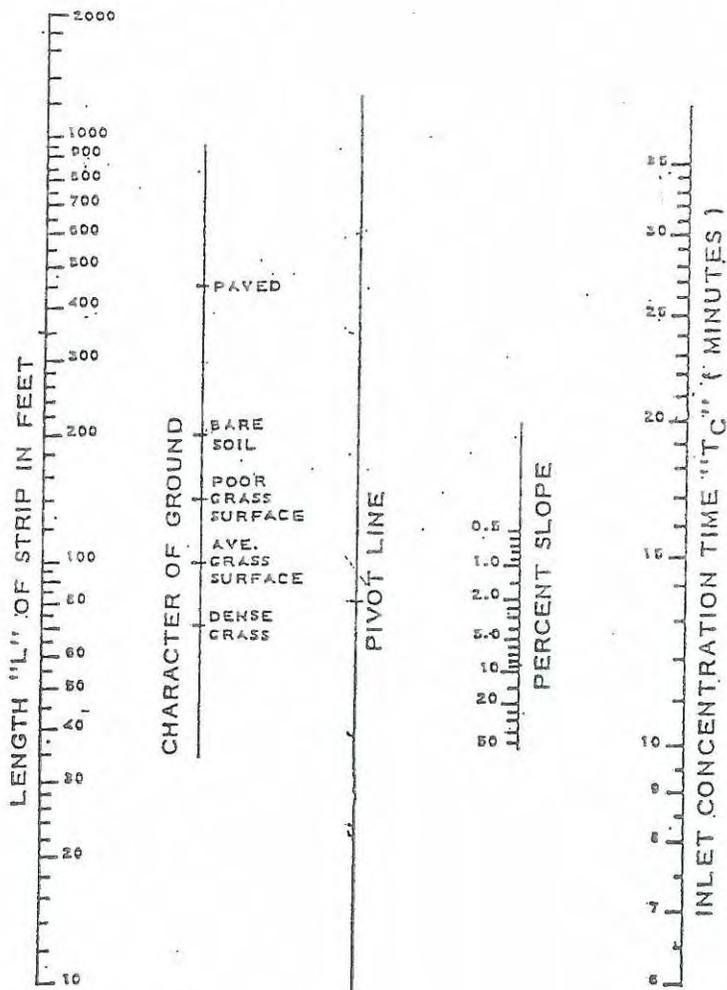
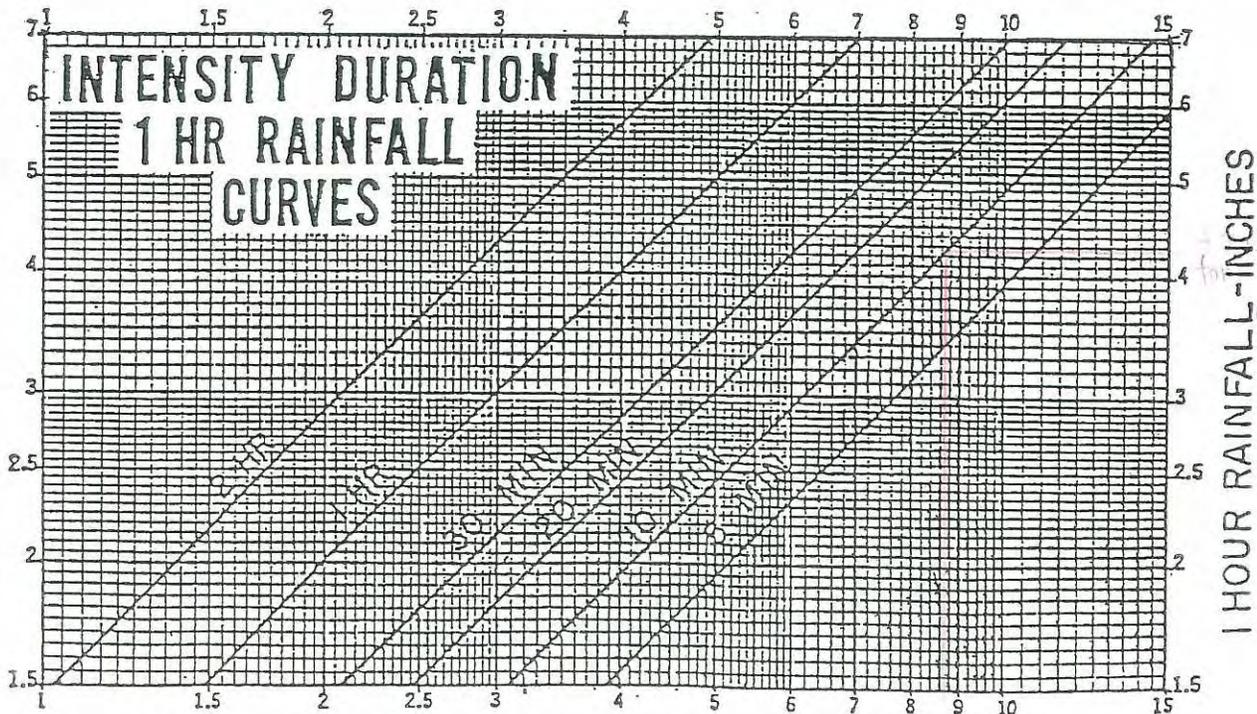


Plate 1

Overland  
Flow  
Chart

Plate 2



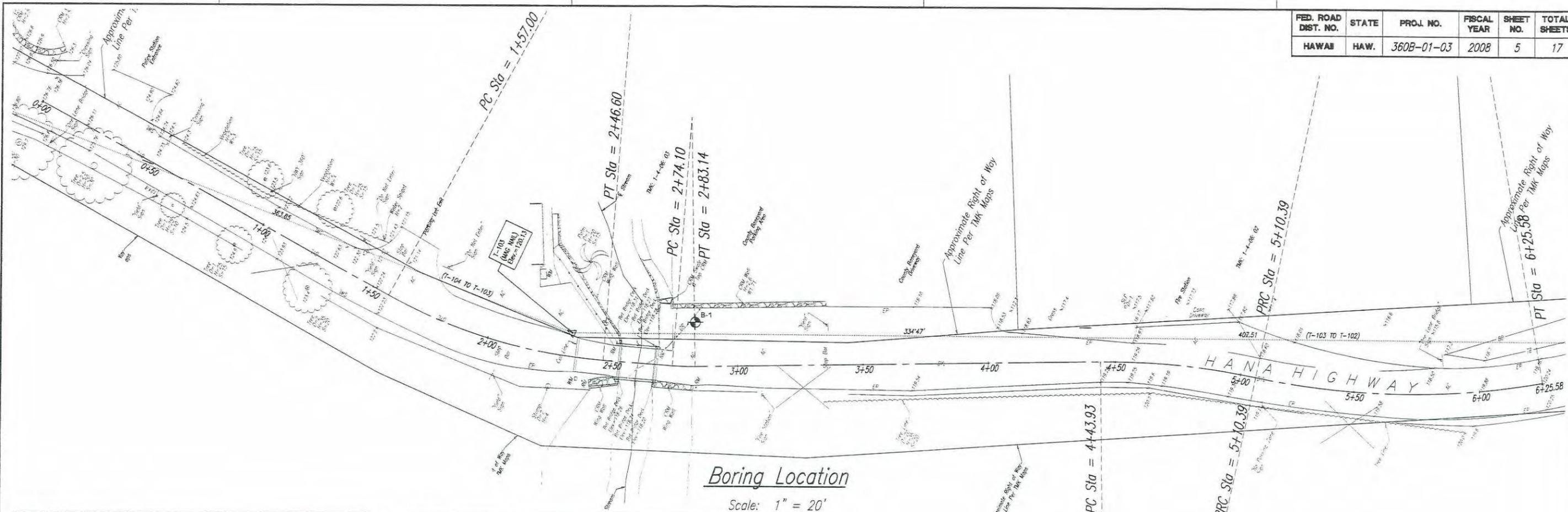
RAINFALL INTENSITY (IN/HR.) FOR INDICATED DURATIONS

## **APPENDIX B-2**

Drainage Calculations – Existing & Proposed Condition based on  
*Design Criteria for Highway Drainage,*  
State of Hawaii Department of Transportation, Highways



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	5	17



**Boring Location**  
Scale: 1" = 20'

**GEOLABS, INC.**  
Geotechnical Engineering

**Log Legend**

**UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)**

MAJOR DIVISIONS	USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS LESS THAN 5% FINES GW
		POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES GP
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES GM
		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES GC
	SANDS	CLEAN SANDS LITTLE OR NO FINES SW
		POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES SP
FINE-GRAINED SOILS	50% OR MORE OF MATERIAL PASSED THROUGH NO. 4 SIEVE	SANDS WITH FINES SM
		SILTY SANDS, SAND-SILT MIXTURES SC
	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50
		ML
SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	
	CL	
HIGHLY ORGANIC SOILS		PT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

**LEGEND**

(Symbol)	(2-INCH) O.D. STANDARD PENETRATION TEST	LL	LIQUID LIMIT
(Symbol)	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX
(Symbol)	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
(Symbol)	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
(Symbol)	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psf)
(Symbol)		W	WATER LEVEL OBSERVED IN BORING

Plate A

**GEOLABS, INC.**  
Geotechnical Engineering

HANA HIGHWAY IMPROVEMENTS  
UAKEA ROAD TO KEAWA PLACE  
HANA, MAUI, HAWAII

Log of Boring  
**1**

Laboratory		Field				Approximate Ground Surface Elevation (feet MSL): 119.5'	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RDD (%)	Penetration Resistance (Blows/foot)		
	65				14		1-inch ASPHALTIC CONCRETE
	46				15		Brown CLAYEY SILT with gravel, very stiff, moist (fill)
	40	65	93	45	50/6" Ref.		Gray to brown SILTY SAND AND COBBLES with gravel, medium dense, moist (clinker and ashly fill)
UC=23069							Gray vugular BASALT, moderately fractured, unweathered to slightly weathered, very hard (a's basalt)
UC=14821							
							Brownish gray GRAVEL AND COBBLES (BASALTIC), medium dense, moist (clinker)
							Boring terminated at 22 feet
							* Elevation estimated from Preliminary Topographic Survey transmitted by M&E Pacific, Inc. on 4/22/06.

Date Started: May 29, 2006  
Date Completed: May 29, 2006  
Water Level: Not Encountered

Logged By: S. Latronic  
Total Depth: 22 feet  
Work Order: 5305-00

Drill Rig: MOBILE B-53  
Driving Method: 4" Auger & HQ Coring  
Driving Energy: 140 lb. wt., 30 in. drop

Plate A-1

**LEGEND**

(Symbol) BORING LOCATION  
(Symbol) BORING NUMBER



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**BORING INFORMATION**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03

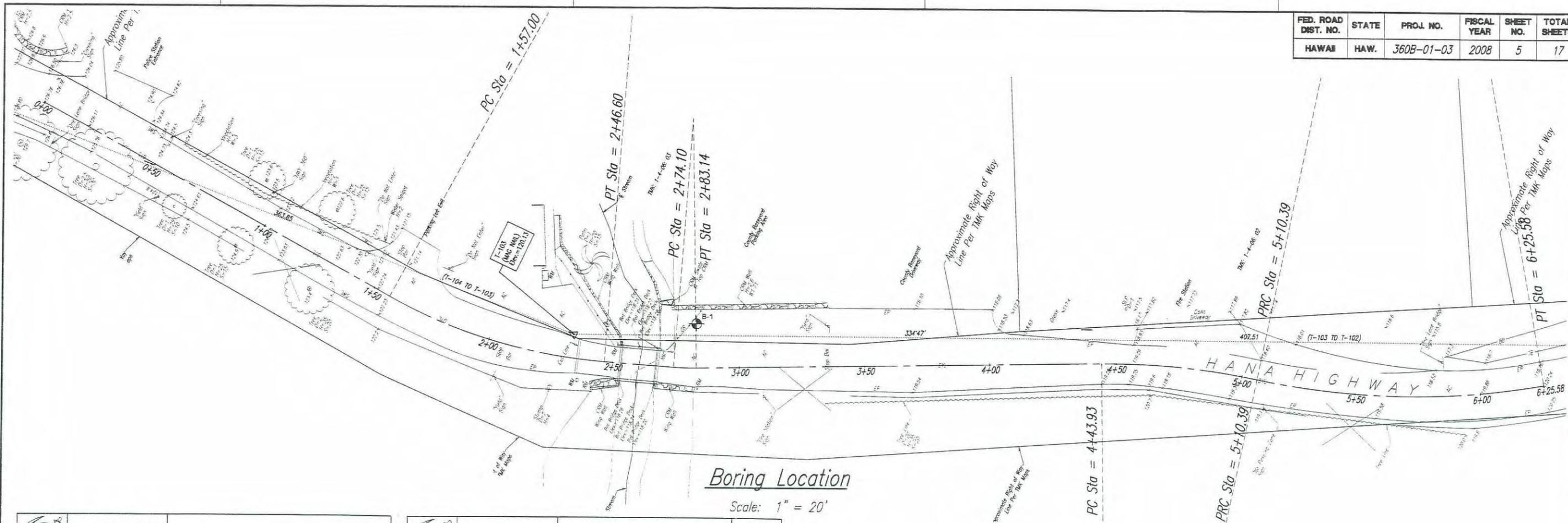
Scale: 1" = 20' Date: October 2010

SHEET No. 5 OF 10 SHEETS

SURVEY PLOTTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_

ORIGINAL PLAN No. \_\_\_\_\_  
NOTE BOOK No. \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	5	17



**Boring Location**  
Scale: 1" = 20'

**GEOLABS, INC.**  
Geotechnical Engineering

**Log Legend**

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)			
MAJOR DIVISIONS	USCS	USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS LESS THAN 5% FINES	GW WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 5% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GP POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES	GM SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	SANDS	CLEAN SANDS LESS THAN 5% FINES	SW WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES 5% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SP POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES MORE THAN 12% FINES	SM SILTY SANDS, SAND-SILT MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		LIQUID LIMIT 50 OR MORE	CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		LIQUID LIMIT 50 OR MORE	OL ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	MH INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
		LIQUID LIMIT 50 OR MORE	CH INORGANIC CLAYS OF HIGH PLASTICITY
		LIQUID LIMIT 50 OR MORE	OH ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS		PT PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

**LEGEND**

(2-INCH) O.D. STANDARD PENETRATION TEST	LL LIQUID LIMIT
(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI PLASTICITY INDEX
SHELBY TUBE SAMPLE	TV TORVANE SHEAR (ts)
GRAB SAMPLE	PEN POCKET PENETROMETER (tsf)
CORE SAMPLE	UC UNCONFINED COMPRESSION (psi)
	W WATER LEVEL OBSERVED IN BORING

Plate A

**GEOLABS, INC.**  
Geotechnical Engineering

HANA HIGHWAY IMPROVEMENTS  
UAKEA ROAD TO KEAWA PLACE  
HANA, MAUI, HAWAII

Log of Boring  
1

Other Tests	Laboratory				Field				Approximate Ground Surface Elevation (feet MSL): 119.5'
	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	ROD (%)	Penetration (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	
	63			14					1-inch ASPHALTIC CONCRETE
	46			15					Brown CLAYEY SILT with gravel, very stiff, moist (fill)
UC= 23069	40	65	93	45	50/6" Ref.				Gray to brown SILTY SAND AND COBBLES with gravel, medium dense, moist (clinker and ashy fill)
UC= 14821			95	75					Gray vugular BASALT, moderately fractured, unweathered to slightly weathered, very hard (a'ā basalt)
			55	0					Brownish gray GRAVEL AND COBBLES (BASALTIC), medium dense, moist (clinker)
									Boring terminated at 22 feet

\* Elevation estimated from Preliminary Topographic Survey transmitted by M&E Pacific, Inc. on 4/22/08.

Date Started: May 29, 2006	Water Level: Not Encountered
Date Completed: May 29, 2006	
Logged By: S. Latronic	Drill Rig: MOBILE B-53
Total Depth: 22 feet	Drilling Method: 4" Auger & HQ Coring
Work Order: 5805-00	Driving Energy: 140 lb. wt., 30 in. drop

Plate A - 1

**LEGEND**

⊕ BORING LOCATION  
B-1 BORING NUMBER

SURVEY PLOTTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 QUANTITIES BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 No. \_\_\_\_\_



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

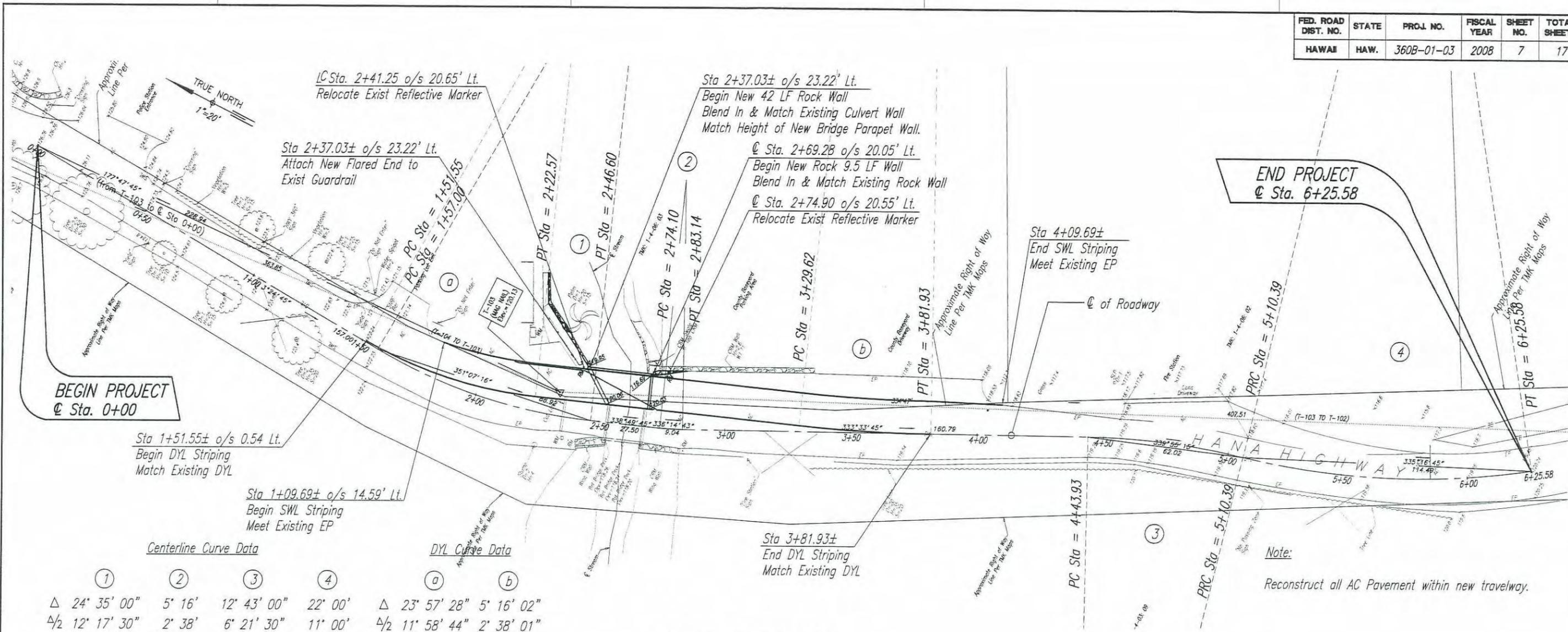
**BORING INFORMATION**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03

Scale: 1" = 20' Date: October 2010

SHEET No. 5 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	7	17



Centerline Curve Data

	①	②	③	④	①	②
Δ	24° 35' 00"	5° 16'	12° 43' 00"	22° 00'	Δ 23° 57' 28"	5° 16' 02"
Δ/2	12° 17' 30"	2° 38'	6° 21' 30"	11° 00'	Δ/2 11° 58' 44"	2° 38' 01"
R	208.84'	98.39'	280.00'	300.00'	R 169.85'	569.00'
T	45.50'	4.53'	31.20'	58.31'	T 36.04'	26.17'
C	88.92'	9.04'	62.02'	114.49'	C 70.51'	52.29'
LC	89.60'	9.04'	62.15'	115.19'	LC 71.02'	52.31'

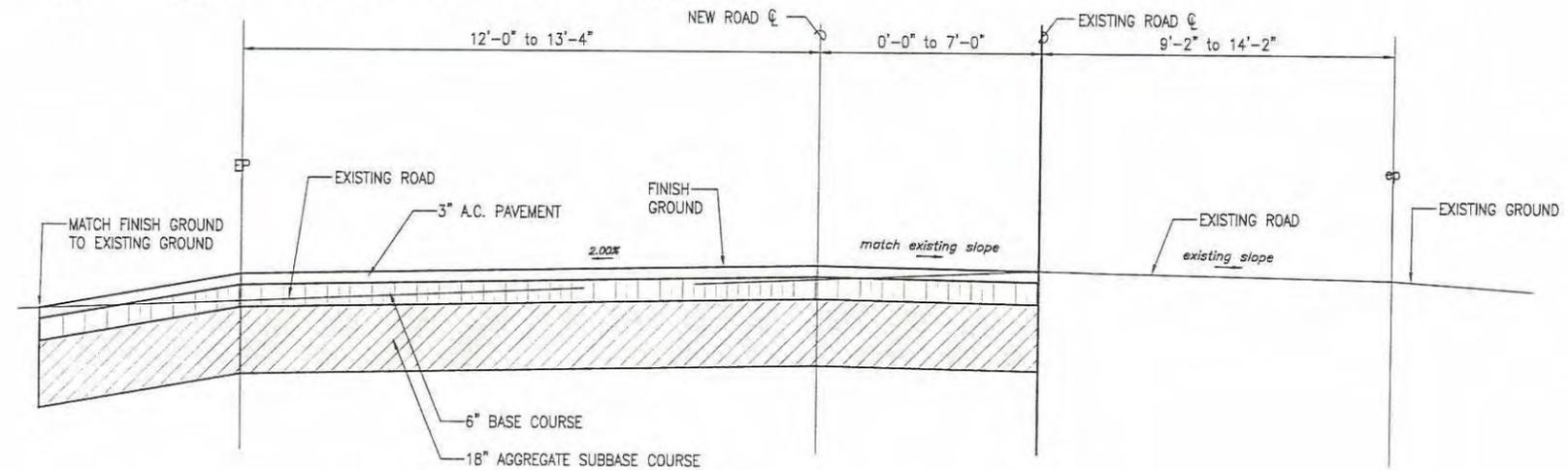
DYL Curve Data

### Site & Striping Plan

Scale: 1" = 20'

Note:  
Reconstruct all AC Pavement within new travelway.

- Survey Notes:
1. Azimuths and Coordinates are referred to Government Survey Triangulation Station "Kauiki Δ". From found Monuments as shown on Hana House Lots No. 2, File Plan No. 1481.
  2. Map is compiled from records found at the State Survey Office, Real Property Tax Mapping Branch and Bureau of Conveyances. Recorded data has not been verified by an actual survey on the ground.
  3. Elevations are referred to: "STA 6995-1" Elevation 127.38, as shown on the Topographic Survey Map of Lot 1 and a Portion of Lot 2 of the Hana Ranch Subdivision No. 3 dated March 24, 2006, by Newcomer-Lee Land Surveyors, Inc., and provided by DOT Highways.
  4. Date of Survey: April 02 - May 14, 2008.



Typical Section

Scale: 1" = 2'

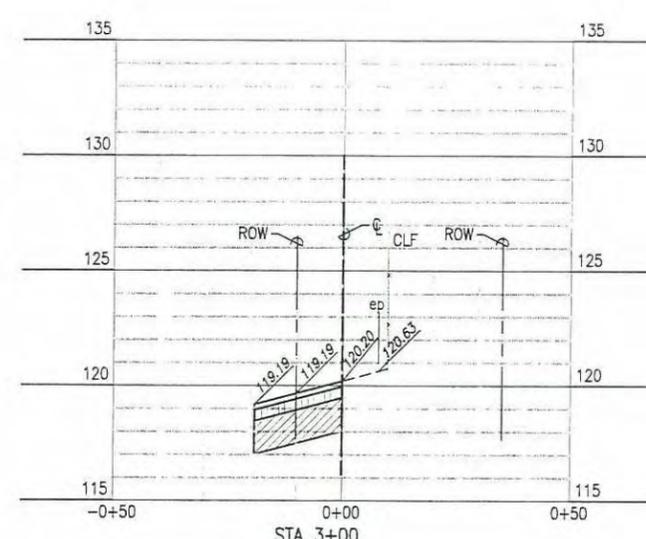
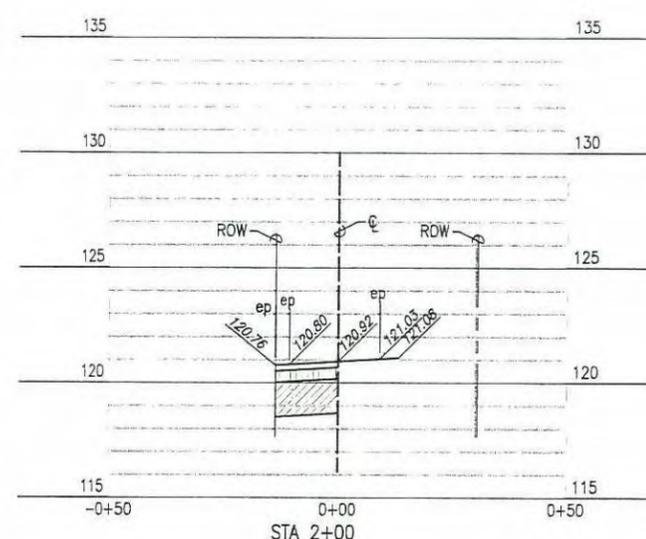
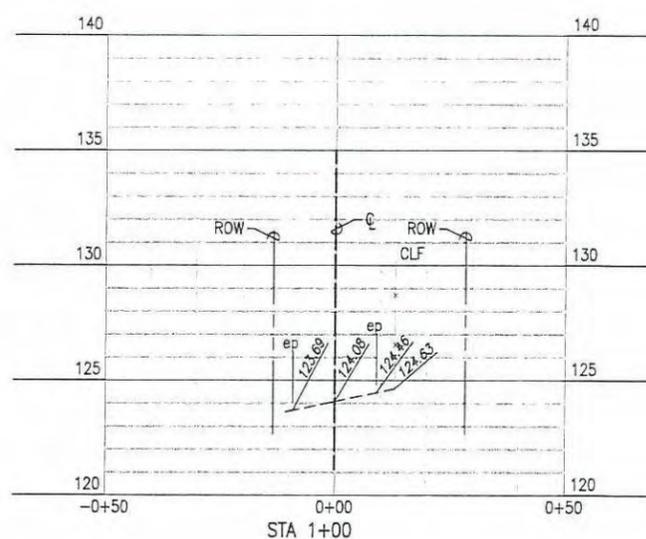
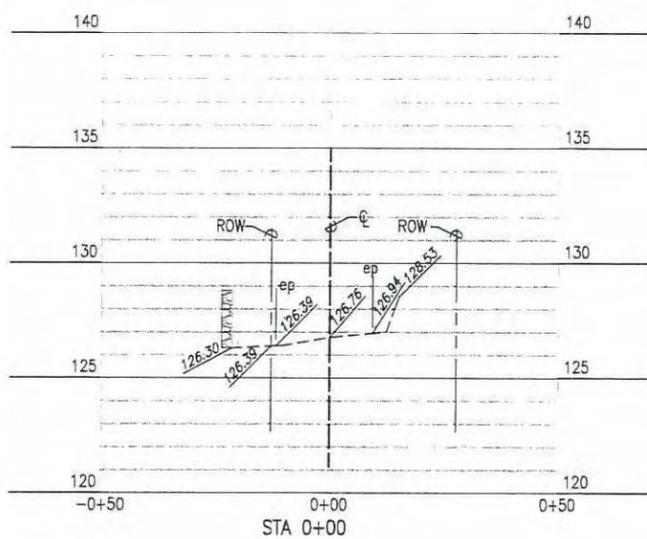
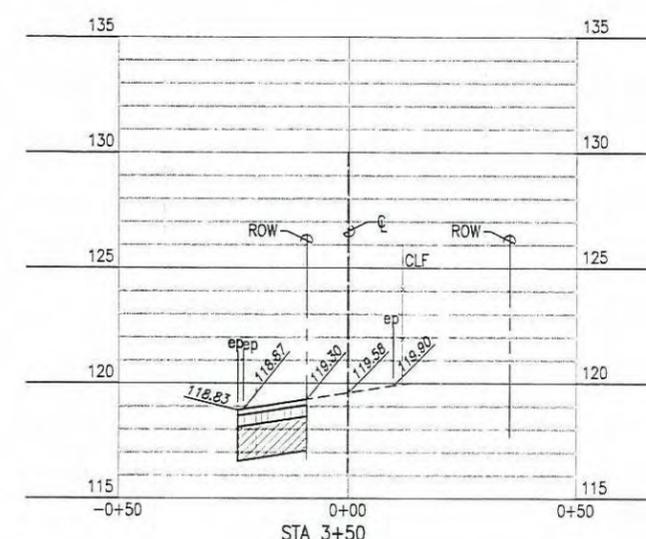
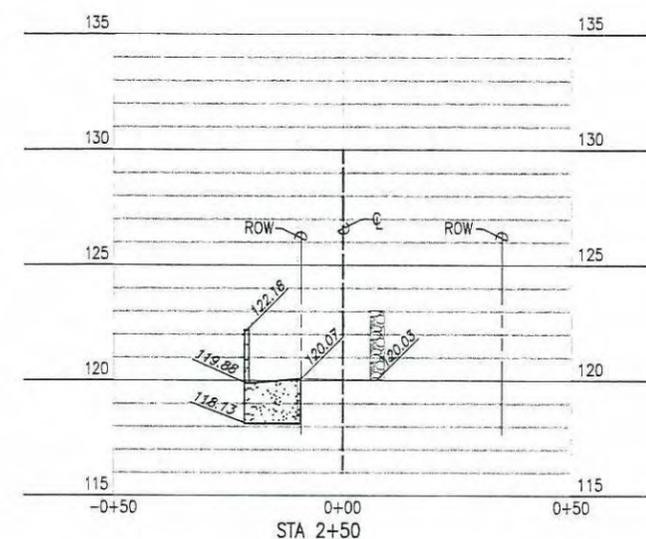
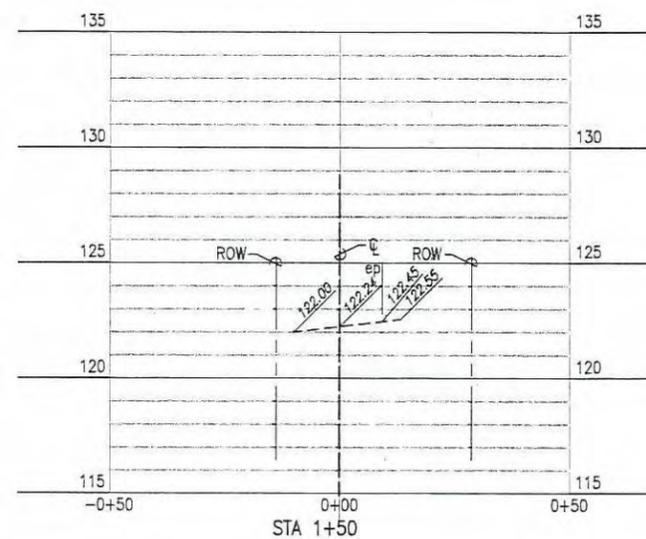
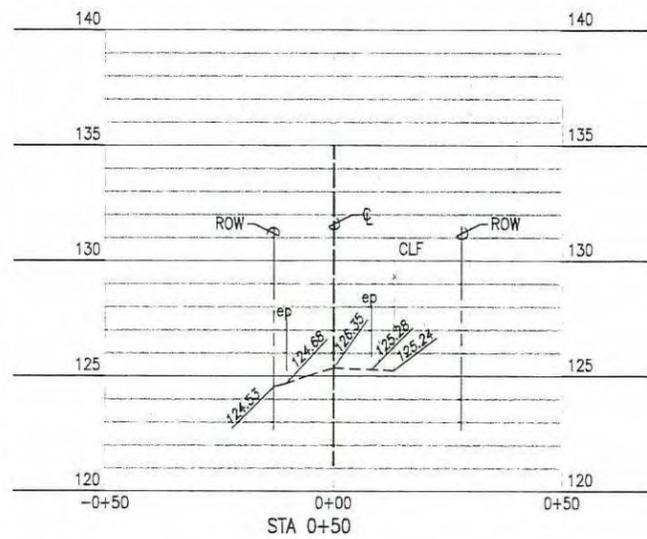
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 ORIGINAL PLAN: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 NOTE BOOK: \_\_\_\_\_  
 No. \_\_\_\_\_



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STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**SITE & STRIPING PLAN**  
 ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03  
 Scale: 1" = 20' Date: October 2010  
 SHEET No. 7 OF 10 SHEETS

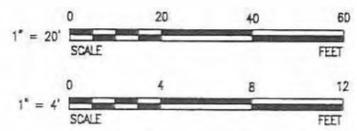
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	8	17



SURVEY PLOTTED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWN BY \_\_\_\_\_  
 TRACED BY \_\_\_\_\_  
 DESIGNED BY \_\_\_\_\_  
 QUANTITIES BY \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_  
 No. \_\_\_\_\_

### Cross Sections - 1

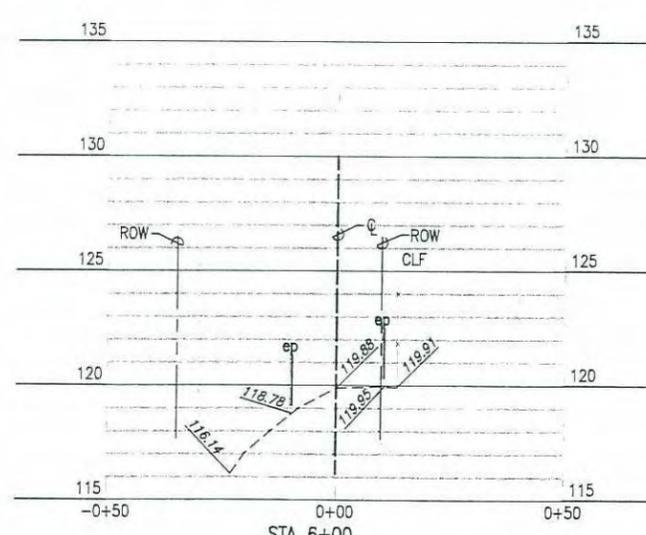
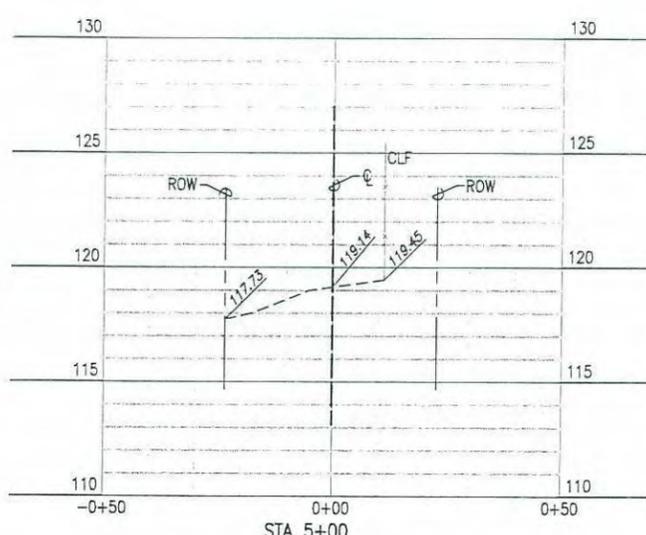
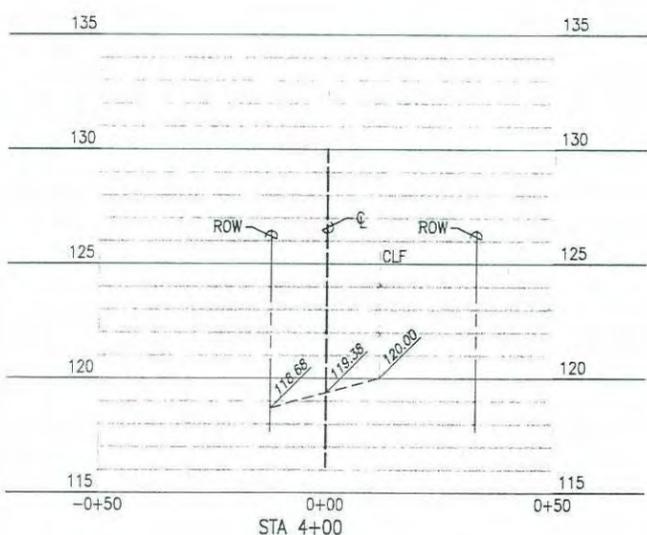
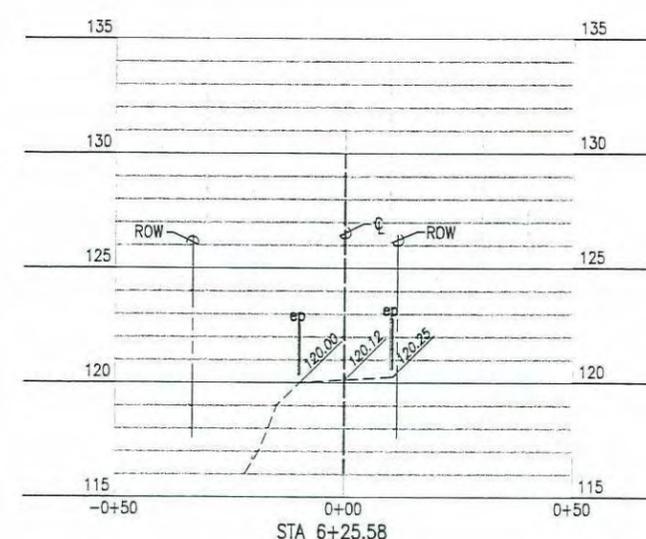
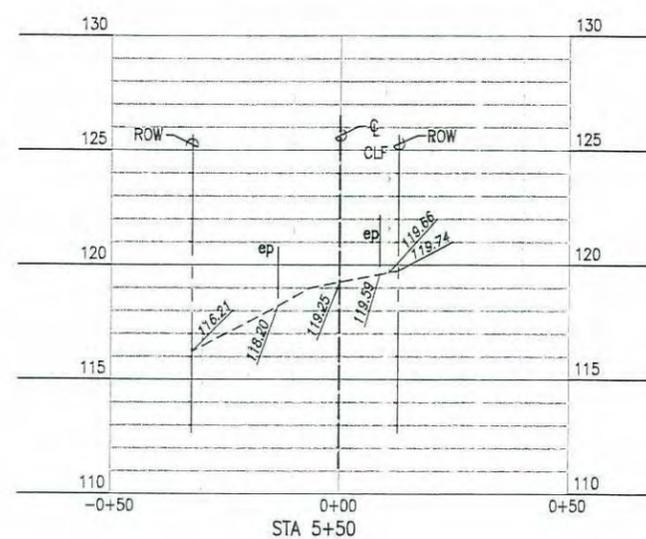
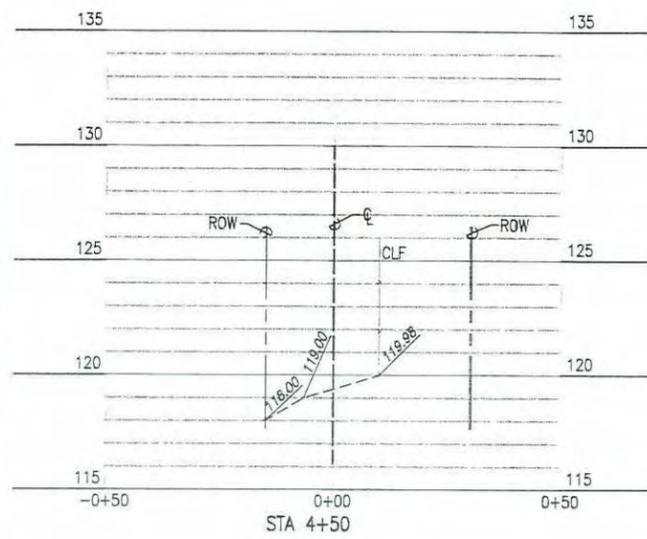
Scales: Horiz: 1" = 20'  
 Vert: 1" = 4'



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STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**CROSS SECTIONS - 1**  
 ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03  
 Scale: 1" = 20' Date: October 2010  
 SHEET No. 8 OF 10 SHEETS

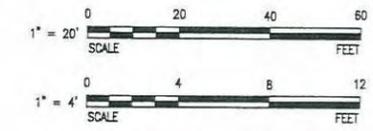
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	9	17



SURVEY PLOTTED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 DESIGNED BY \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_  
 ORIGINAL PLAN NO. \_\_\_\_\_

### Cross Sections - 2

Scales: Horiz: 1" = 20'  
 Vert: 1" = 4'



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STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**CROSS SECTIONS - 2**  
 ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03  
 Scale: 1" = 20' Date: October 2010  
 SHEET No. 9 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	10	17

General Notes for Traffic Control Plan:

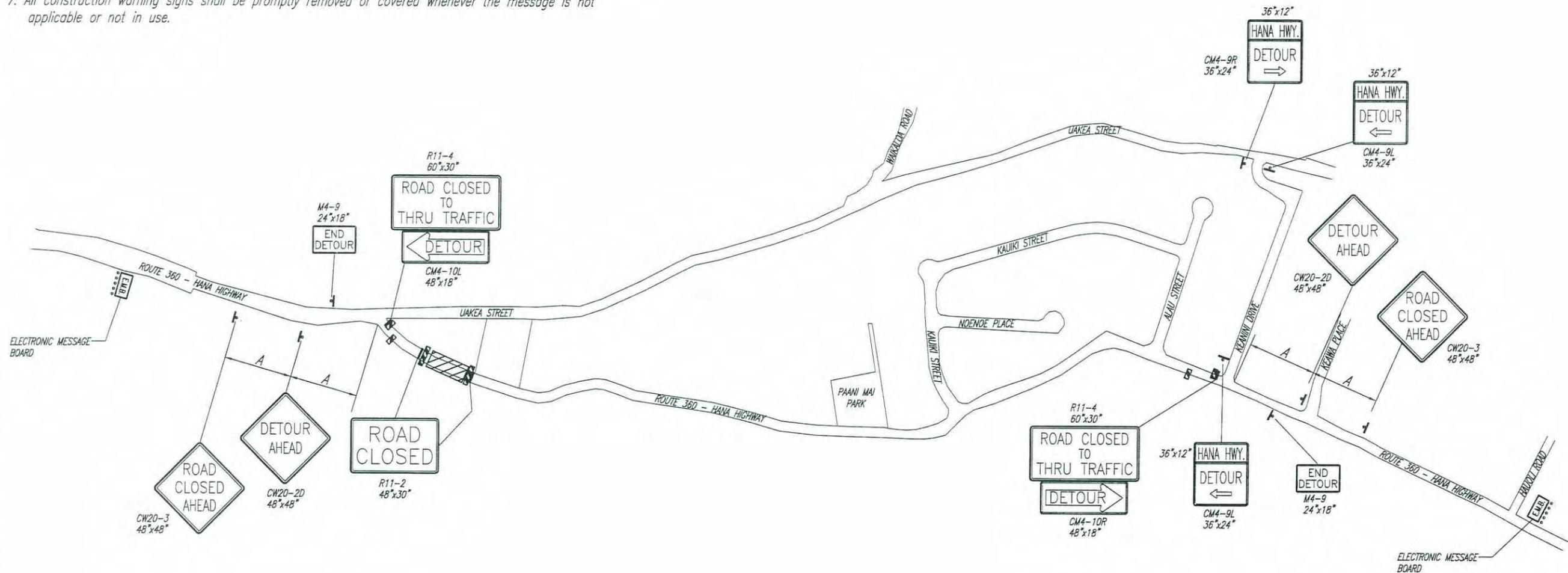
1. The Permittee shall make minor adjustments at intersections, driveways, bridges, structures, etc., to fit field conditions.
2. Cones or delineators shall be extended to a point where they are visible to approaching traffic.
3. Traffic control devices shall be installed such that the sign or device farthest from the work area shall be placed first. The others shall then be placed progressively toward the work area.
4. Regulatory and warning signs within the construction zone that are in conflict with the traffic control plan shall be removed or covered. All signs shall be restored upon completion of the work.
5. Flaggers and/or police officers shall be in sight of each other or in direct communications at all times.
6. Sign spacings (A) shall be 100' unless otherwise noted on the traffic control plan.
7. All construction warning signs shall be promptly removed or covered whenever the message is not applicable or not in use.

General Notes for Traffic Control Plan Continued:

8. The backs of all signs used for traffic control shall be appropriately covered to preclude the display of inapplicable sign messages (i.e., when signs have messages on both faces).
9. At the end of each day's work or as soon as the work is completed, the Permittee shall remove all traffic control devices no longer needed to permit free and safe passage of public traffic. Removal shall be in the reverse order of installation.
10. Replace permanent markings and traffic signs upon completion of each phase of work.
11. Maintain access to/from existing driveways at all times.
12. Exact location of electronic message board to be coordinated with State Engineer.

Legend:

- † Sign
-  Work Area
-  Type III Barricade
-  Electronic Message Board



ORIGINAL PLAN No.	DATE
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

Traffic Control Plan

Scale: NOT TO SCALE



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03

Scale: None Date: October 2010

SHEET No. 10 OF 10 SHEETS

**STRUCTURAL GENERAL NOTES**

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	11	17

**1. General:**

- A. Workmanship and materials shall conform to the AASHTO LRFD Bridge Design Specification, 5th Edition, and the Hawaii Standard Specifications for Bridge and Road Construction (2005 Edition), and all applicable special provisions by the State of Hawaii Department of Transportation.
- B. The Contractor shall compare the Civil and Structural drawings with each other and report in writing to the Engineer, inconsistencies or omissions.
- C. The Contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing the work. Report in writing to the Engineer all inconsistencies or omissions.
- D. The Contractor shall be responsible for means and methods of construction, workmanship and job safety. The Contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.
- E. Details noted as typical on structural drawings shall apply in all conditions unless specifically shown or noted otherwise.
- F. The Contractor shall be responsible for coordinating the work of all trades.
- G. The Contractor shall be responsible for protection of the adjacent properties, structures, streets, and utilities during the construction period. Any damage or deteriorated property shall be restored to the condition prior to the beginning of work or better at no cost to the State.
- H. Construction loading shall not exceed design live load unless special shoring is provided. Permitted construction loads shall be properly reduced in areas where the structure has not attained full design strength.

**2. Design Criteria:**

- A. Dead Load  
Weight of all components of the structures, appurtenances attached thereto, and earth covers.  
Future wearing surface (curb to curb) \_\_\_\_\_ 25 psf  
Future utilities on each side of the bridge \_\_\_\_\_ 150 plf
- B. Live Load  
AASHTO HL-93 Loading
- C. Seismic  
Seismic design is in accordance with the AASHTO Guide Specifications for LRFD Seismic Bridge Design (May 2007), as modified by the State of Hawaii Department of Transportation.  
0.2-second spectral response acceleration coefficient,  $S_s = 0.60$   
1.0-second spectral response acceleration coefficient,  $S_1 = 0.18$   
Horizontal peak ground acceleration coefficient,  $PGA = 0.28$   
Site class \_\_\_\_\_ = B  
Seismic zone \_\_\_\_\_ = 2
- D. Basic Wind Speed \_\_\_\_\_ = 105 MPH
- E. Bridge Railing \_\_\_\_\_ in accordance with AASHTO TL-2 design factors
- F. Soil Properties
  - 1. Static Lateral Earth Pressure:
    - a. At-Rest condition \_\_\_\_\_ = 55 pcf
  - 2. Dynamic Lateral Earth Pressure:
    - a. Wall movement less than 0.5 inches \_\_\_\_\_ = 19.0  $H^2$  pcf  
Where: H = Height of retained soil or backfill in feet
  - 3. Bearing Pressure:
    - a. Extreme event limit state \_\_\_\_\_ = 18,000 psf
    - b. Strength limit state \_\_\_\_\_ = 8,000 psf
  - 4. Coefficient of Friction:
    - a. Extreme event limit state \_\_\_\_\_ = 0.75
    - b. Strength limit state \_\_\_\_\_ = 0.60
  - 5. Passive Earth Pressure (Level ground condition):
    - a. Extreme event limit state \_\_\_\_\_ = 520 pcf
    - b. Strength limit state \_\_\_\_\_ = 260 pcf

**3. Foundation:**

- A. Foundation design is based upon the geotechnical report by Geolabs, Inc. and dated September 30, 2008.
- B. Contractor shall provide for de-watering of excavation from either surface water, ground water or seepage. NPDES permit required for discharging into State waters.
- C. Contractor shall provide for design and installation of all cofferdams, cribbing, sheeting, and shoring necessary for personnel safety and to preserve excavations and earth banks, and adjacent structures and property for damage.
- D. Excavation boundaries and grade elevations for footing shall be approved by the Engineer prior to placing the concrete and reinforcing.
- E. Backfill behind the abutment and retaining wall structure shall be Type A structural backfill, conforming to Section 703.20 of the Hawaii Standard Specifications for Roads, Bridges and Public Works Construction, 2005.

**4. Concrete:**

- A. Concrete shall be regular weight concrete and shall have a minimum 28-day compressive strength of 4,000 psi and have a maximum w/c ratio of 0.45.
- B. All inserts, anchor bolts, plates, etc. embedded in concrete shall be hot-dip galvanized unless otherwise noted.
- C. Conduits, pipes, and sleeves passing through a wall not conforming to typical details shall be located and submitted to the Engineer for approval.
- D. Construction joints may be relocated by the Contractor and submitted to the Engineer for approval. Construction joints shall be made and relocated as not to impair the strength of the structure and to minimize shrinkage stresses. All construction joints shall be cleaned, laitance removed and wetted. See typical details for specific requirements.
- E. Non-shrink grouts shall be a premixed compound consisting of non-staining, non-metallic aggregate, cement, water reducing and plasticizing agents capable of developing minimum compressive strength of 4,000 psi in 3 days and 7,000 psi in 28 days.
- F. Unless otherwise noted, chamfer all concrete edges 3/4".
- G. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by Contractor if permitted by the mix design.
- H. Reinforcing bars, anchor bolts, inserts and other items to be cast in the concrete shall be secured in position prior to placement of concrete.

**5. Reinforcing Steel:**

- A. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60, unless unless noted otherwise.
- B. Stainless steel bars shall be Type 316.
- C. Clear concrete coverage for reinforcing bars shall be as follows, unless otherwise noted:
  - a. Footing, grade beams, etc. cast against earth \_\_\_\_\_ 3"
  - b. Footing, grade beams, etc. formed and exposed to earth \_\_\_\_\_ 2"
  - c. Wall faces exposed to earth of weather \_\_\_\_\_ 2"
  - d. Deck slab top bars \_\_\_\_\_ 2 1/2"
- D. Splices:
  - a. Reinforcing steel shall be spliced only where indicated on plans. Provide lap splice length per typical details and schedule sheet S0.4, unless otherwise noted.
- E. Bar bends and hook shall be "standard hooks" in accordance with Typical Details on sheet S0.2.

**6. Existing Concrete:**

- A. Contractor shall not damage, cut or drill through existing reinforcing, unless noted otherwise. If reinforcing is damaged, the Contractor shall inform the Engineer immediately and shall be responsible for repairing the damage at Contractor's sole expense and to the satisfaction of the Engineer.

**7. Surface Preparation for Parapet Removal and Deck Repairs:**

- A. Concrete shall be removed down to the specified depth as noted in the deck repair details. Sawcut all edges 1", no feathering of patching material is allowed. Avoid cutting any reinforcing steel when sawcutting, unless noted otherwise. The exposed concrete shall be roughened to a 1/4" amplitude and shall be cleaned and free of laitance, dust and other bond inhibiting materials.
- B. All unspecified reinforcing steel damaged due to the Contractor's operations shall be repaired by the Contractor at his/her expense and to the satisfaction of the Engineer.
- C. Exposed reinforcing steel, whether fully exposed or only partially exposed, shall be exposed all around, creating a minimum 3/4" annular space around the rebars.

**8. Bonding Agent:**

- A. After the concrete surfaces have been prepared and cleaned, and immediately before placing the concrete patching, a coat of bonding agent shall be applied. The surface shall receive a thorough and even coating and excess bonding agent shall not be permitted to collect in pockets. The rate of progress in applying the bonding agent shall be limited so that it does not become dry before it is covered with the concrete patching. During delays in the concrete patching operations, should the surface of the bonding agent dry, the dried bonding agent shall be completely removed and fresh bonding agent applied. Removal shall be by sandblasting or by another procedure approved by the Engineer. The removal of bonding shall be at the expense of the Contractor.
- B. The bonding agent provide corrosion protection to the reinforcing steel and act as a bonding agent for the fresh mortar. All exposed reinforcing steel shall receive two (2) coats of 20 mils each, total of 40 mils. The concrete surface shall receive one (1) coat at 20 mils. Follow manufacturer's specifications for recommended time between application of bonding agent and patching mortar. The minimum bond strength provided by the bonding agent shall be 2,400 psi after 14 days (ASTM C-882).

**9. Polymer Modified Patching Mortar:**

- A. Patching mortar shall be a polymer modified mortar, have high abrasion resistance and shall be suitable for horizontal, vertical and overhead surfaces. The minimum bond strength provided by the patching mortar shall be 2,200 psi after 28 days (ASTM C-882). Refer to manufacturer's specifications for preparation and application guidance.

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____



EXPIRATION DATE OF THE LICENSE: 4/30/2012  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STRUCTURAL GENERAL NOTES**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: As Noted Date: September 2010

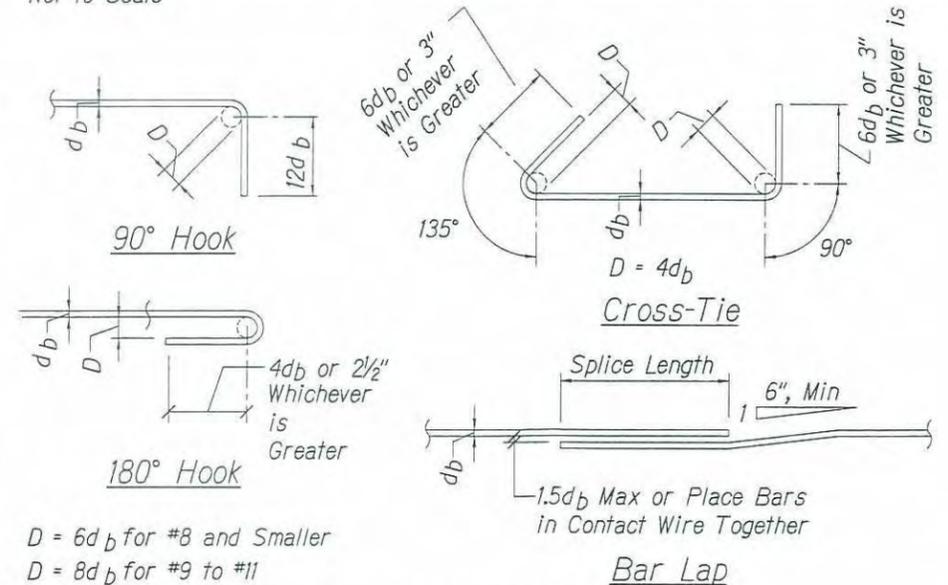
SHEET No. 50.1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	12	17

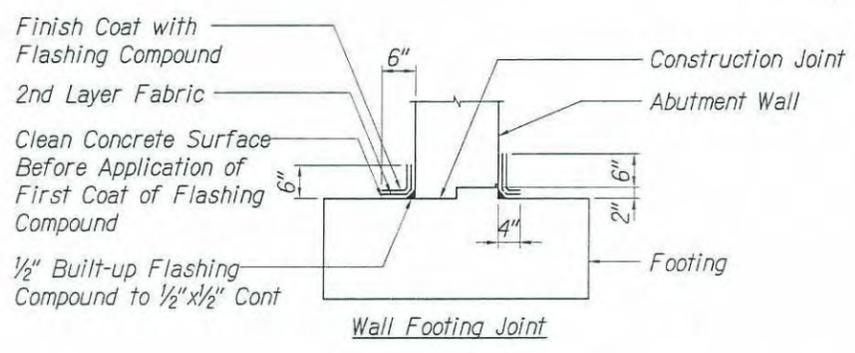
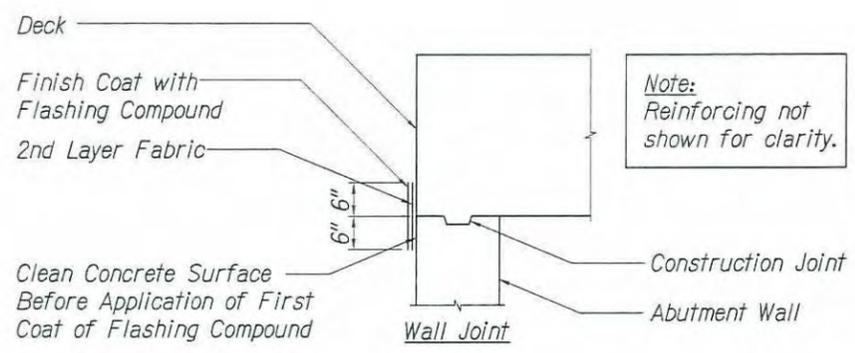
MINIMUM SPLICE & EMBEDMENT LENGTHS					
CONCRETE STRENGTH = 4,000 PSI					
BAR SIZE	LAP SPLICE		EMBEDMENT		
	OTHER BARS	TOP BAR	STRAIGHT		WITH STANDARD 90° HOOK
			OTHER BARS	TOP BAR	
#3, #4	21"	29"	12"	17"	7"
#5	26"	36"	15"	21"	9"
#6	31"	43"	18"	26"	10"
#7	39"	54"	23"	32"	12"
#8	51"	71"	30"	42"	14"
#9	64"	90"	38"	53"	15"
#10	81"	114"	48"	67"	17"
#11	100"	140"	59"	82"	19"

- Notes:**
- "Top Bars" are horizontal bars with 12" or more of concrete cast below.
  - Splice lengths may be reduced by multiplying the tabulated values by 0.765 if the centerline of splice of adjacent bars are staggered 6'-0" o.c. for #9 bar and smaller and 9'-0" o.c. for #10 bar and larger.
  - Embedment lengths for straight bars may be reduced by multiplying the tabulated values by 0.80 if the bars are spaced laterally not less than 6" center-to-center, with not less than 3" clear cover measured in the direction of the spacing.
  - Embedment lengths for bars with 90° hook are bars with side cover, normal to plane of hook, of not less than 2½" and cover on bar extension beyond hook not less than 2". Increase embedment length by 43% for bars not meeting these requirements.

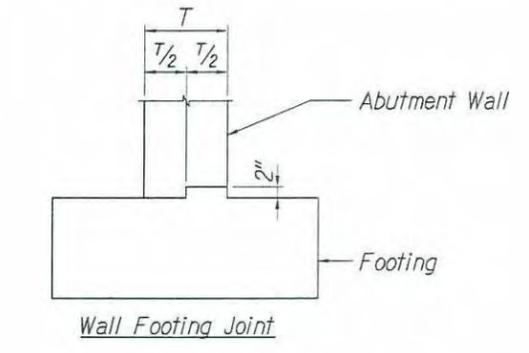
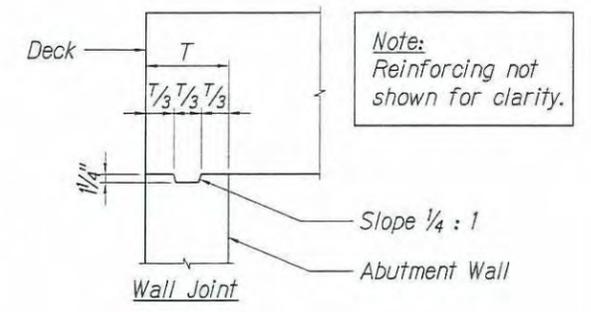
**TYPICAL REBAR SPLICE AND EMBEDMENT LENGTH SCHEDULE** 1  
Not to Scale S0.2 | S0.2



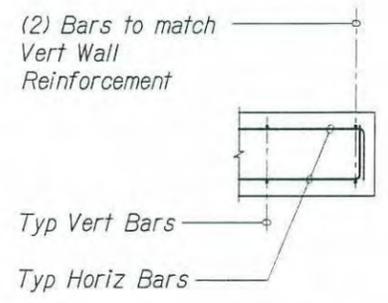
**STANDARD HOOKS AND CROSS-TIE DETAIL** 2  
Not to Scale S0.2 | S0.2



**WATERPROOFING DETAIL** 3  
Not to Scale S0.2 | S0.2



**TYPICAL CONSTRUCTION JOINT** 4  
Not to Scale S0.2 | S0.2



**TYPICAL WALL HORIZONTAL REINFORCEMENT DETAILS** 5  
Not to Scale S0.2 | S0.2

SURVEY PLOTTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 ORIGINAL PLAN NO. \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_



EXPIRATION DATE OF THE LICENSE 4/30/2012  
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STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

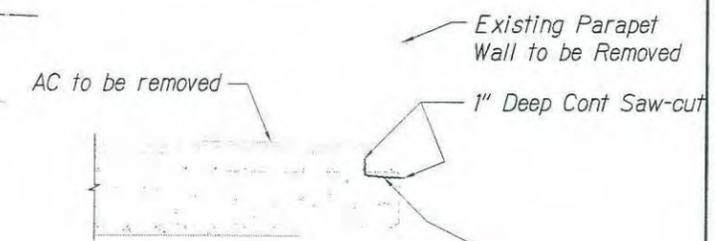
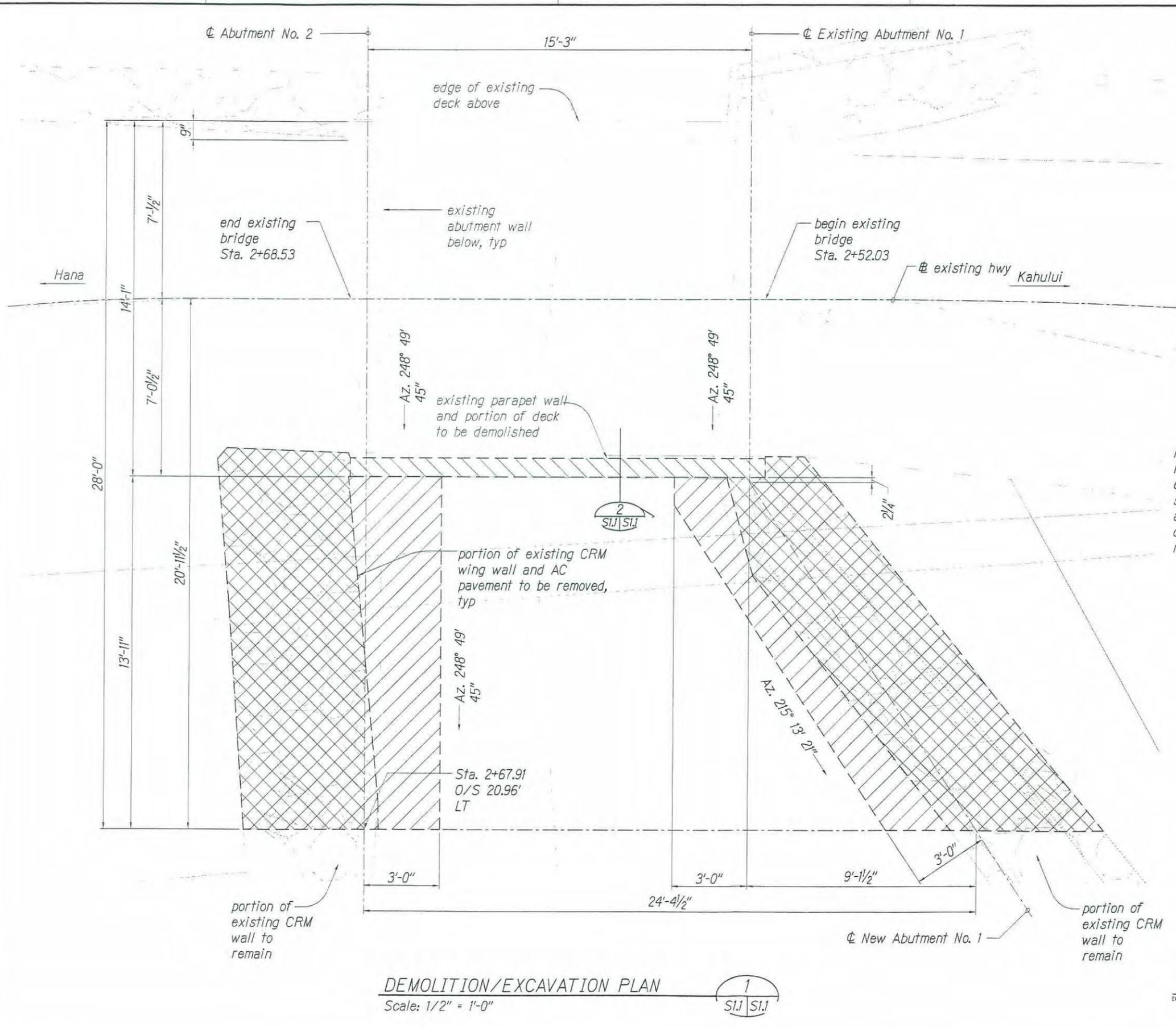
**TYPICAL DETAILS**

ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03

Scale: As Noted Date: September 2010

SHEET No. 50.2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	13	17



Remove existing concrete to provide a minimum 3/4" annular space around existing reinforcement. Existing concrete surface shall be roughened to 1/4" amplitude and shall be cleaned and free of laitance, dust and other bond inhibiting materials.

SECTION 2  
Scale: 1/2" = 1'-0"

- Legend**
- Excavation Pay Limits
  - Demolition Pay Limits

ORIGINAL PLAN No.	DATE
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
CHECKED BY	

DEMOLITION/EXCAVATION PLAN  
Scale: 1/2" = 1'-0"



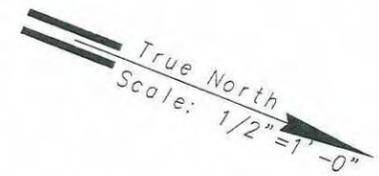
EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
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HIGHWAYS DIVISION

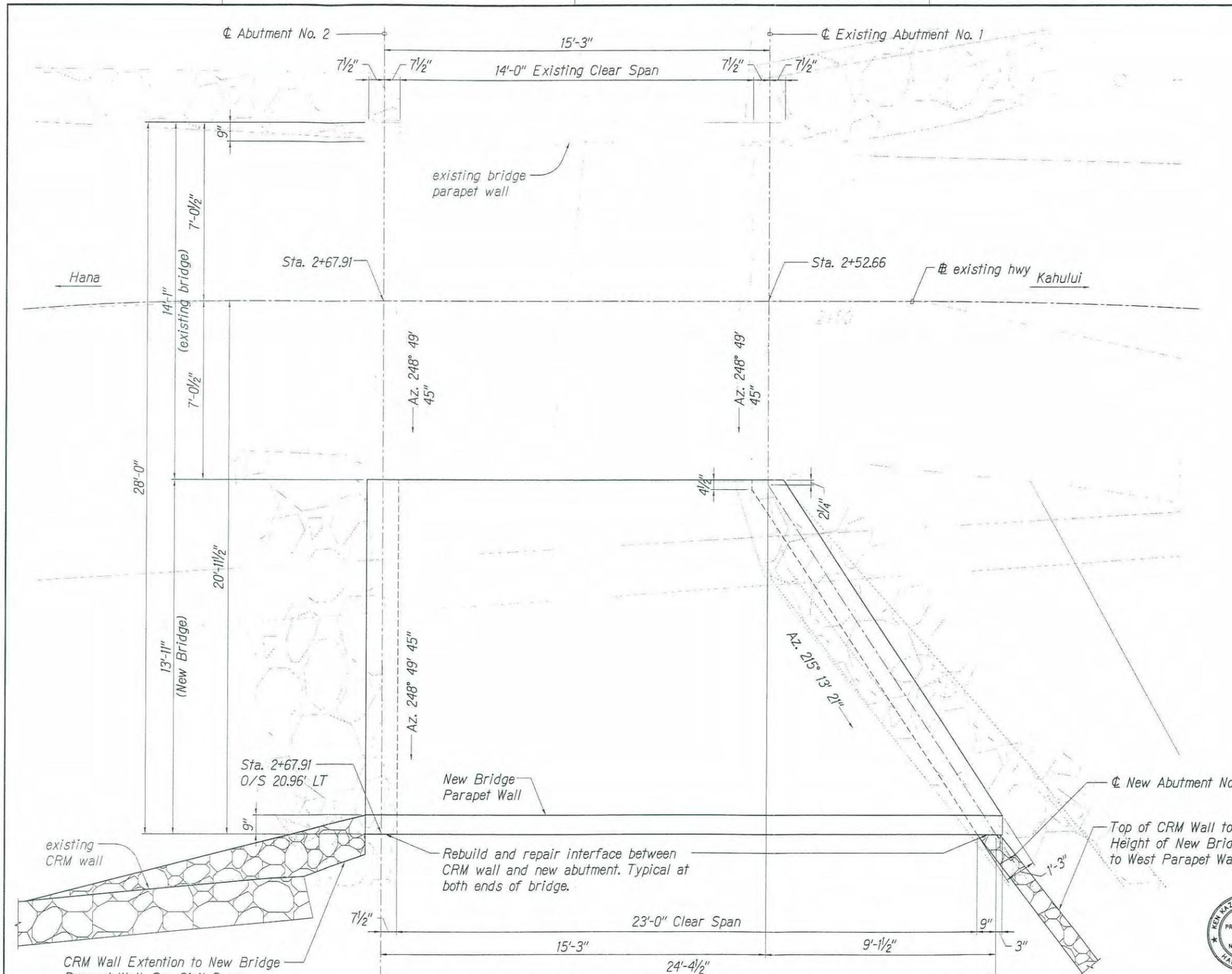
**DEMOLITION / EXCAVATION PLAN**  
ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: As Noted Date: September 2010

SHEET No. S1.1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	14	17

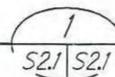


Note:  
For Top of Deck Elevations,  
See Civil Dwgs



ORIGINAL PLAN  
NO. \_\_\_\_\_  
DATE \_\_\_\_\_  
SURVEY PLOTTED BY \_\_\_\_\_  
DRAWN BY \_\_\_\_\_  
TRACED BY \_\_\_\_\_  
CHECKED BY \_\_\_\_\_

**BRIDGE LAYOUT PLAN**  
Scale: 1/2" = 1'-0"



EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

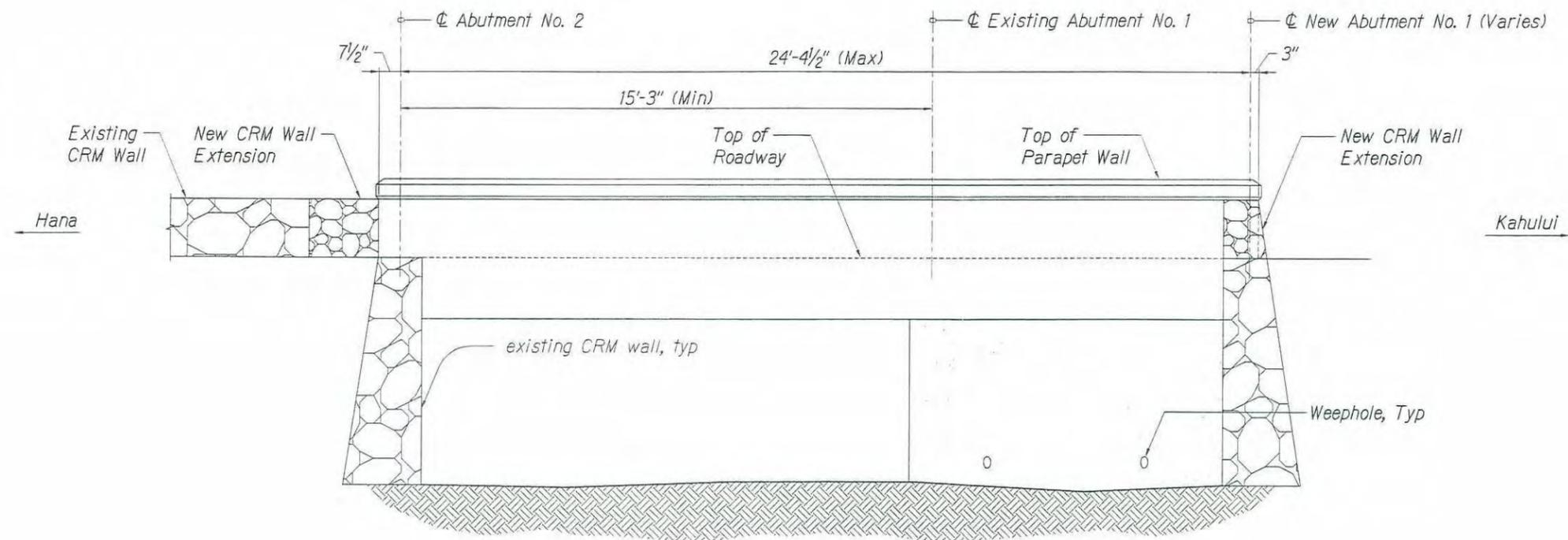
**BRIDGE LAYOUT PLAN**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03

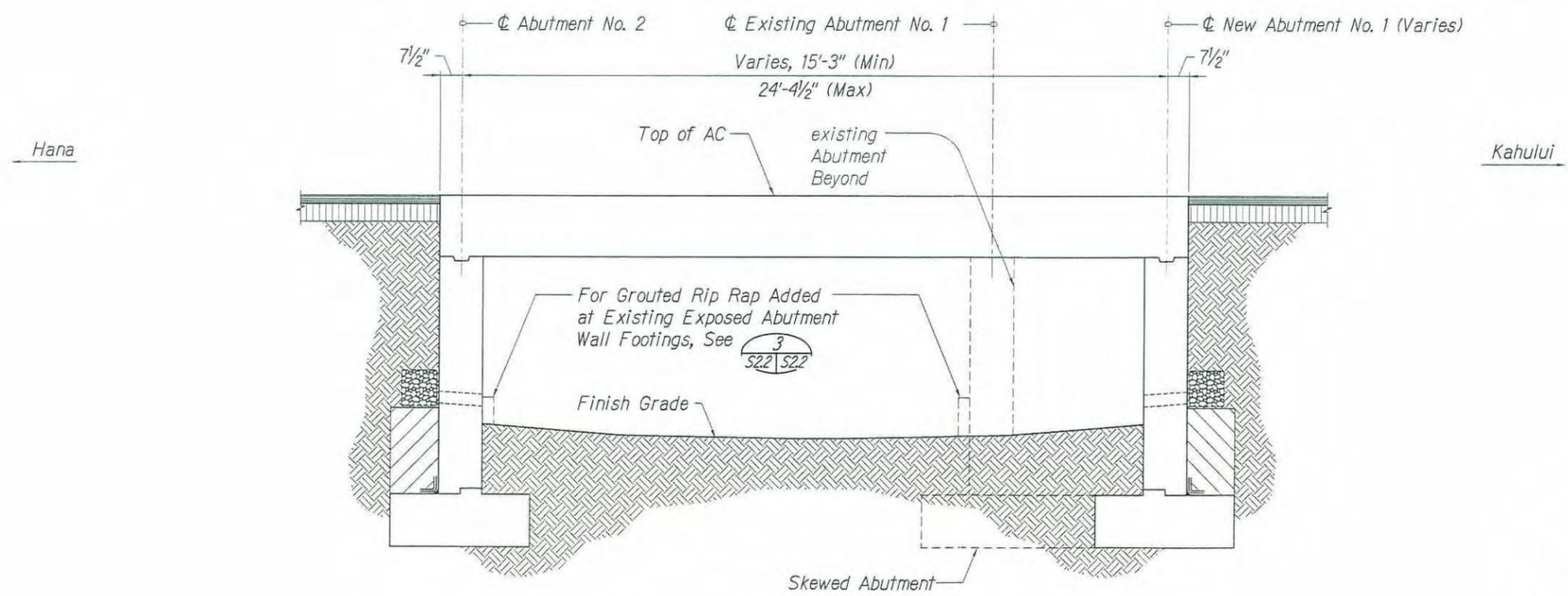
Scale: As Noted Date: September 2010

SHEET No. S21 OF 7 SHEETS

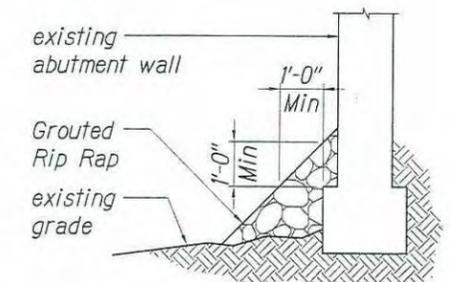
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	15	17



**LONGITUDINAL ELEVATION**  
Scale: 1/2" = 1'-0"  
1  
S2.2 | S2.2



**LONGITUDINAL SECTION**  
Scale: 1/2" = 1'-0"  
2  
S2.2 | S2.2



**DETAIL**  
Scale: 1/2" = 1'-0"  
3  
S2.2 | S2.2

ORIGINAL PLAN  
NOTE BOOK  
No. \_\_\_\_\_

SURVEY PLOTTED BY \_\_\_\_\_ DATE \_\_\_\_\_  
DRAWN BY \_\_\_\_\_  
TRACED BY \_\_\_\_\_  
CHECKED BY \_\_\_\_\_



EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

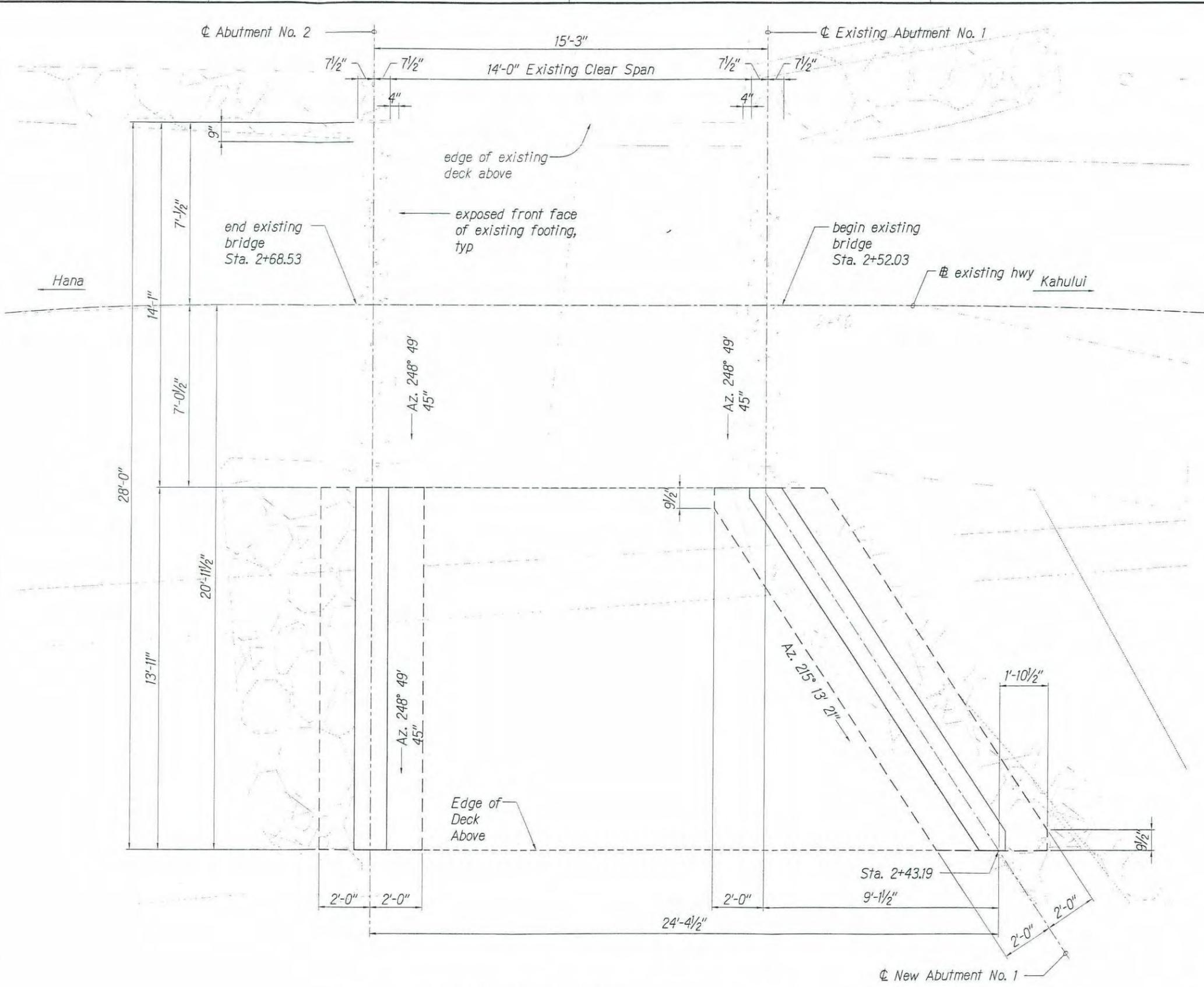
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**LONGITUDINAL ELEVATION  
AND SECTION**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: As Noted Date: September 2010

SHEET No. S2.2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	16	17



FOUNDATION LAYOUT PLAN  
 Scale: 1/2" = 1'-0"  
 1  
 S3.1 | S3.1

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
No.	



EXPIRATION DATE OF THE LICENSE 4/30/2012  
 THIS WORK WAS PREPARED BY  
 ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**FOUNDATION LAYOUT PLAN**

ROUTE 360 HANA HIGHWAY  
 IMPROVEMENTS  
 UAKEA STREET TO KEAWA STREET  
 Project No. 360B-01-03

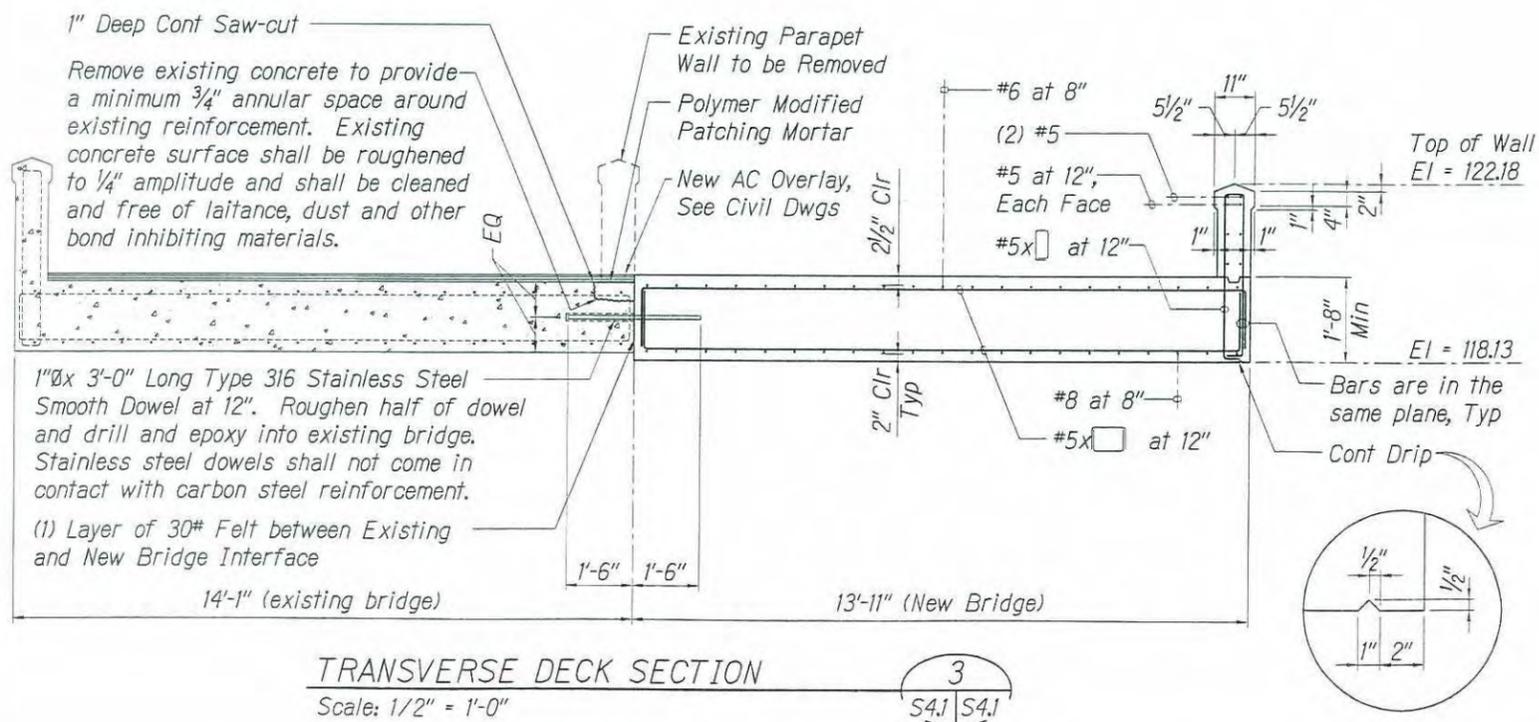
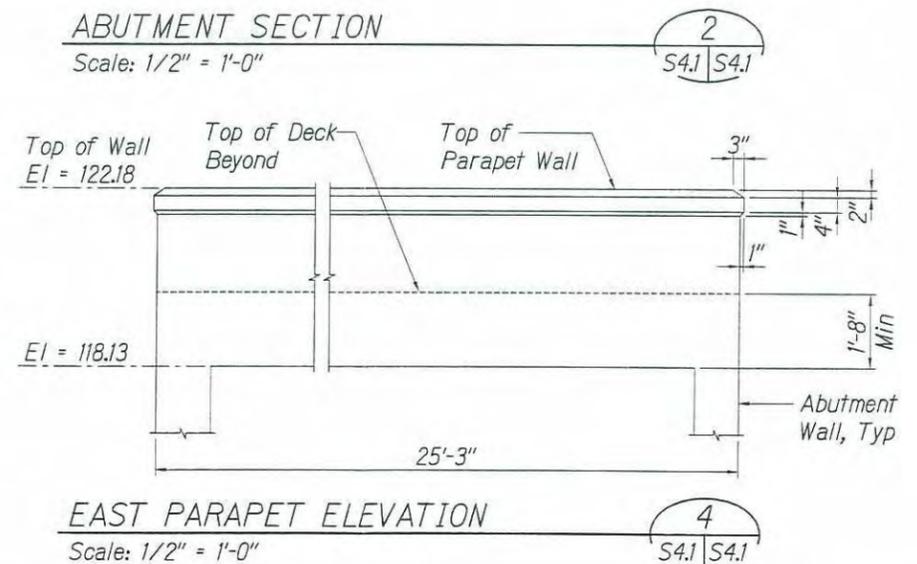
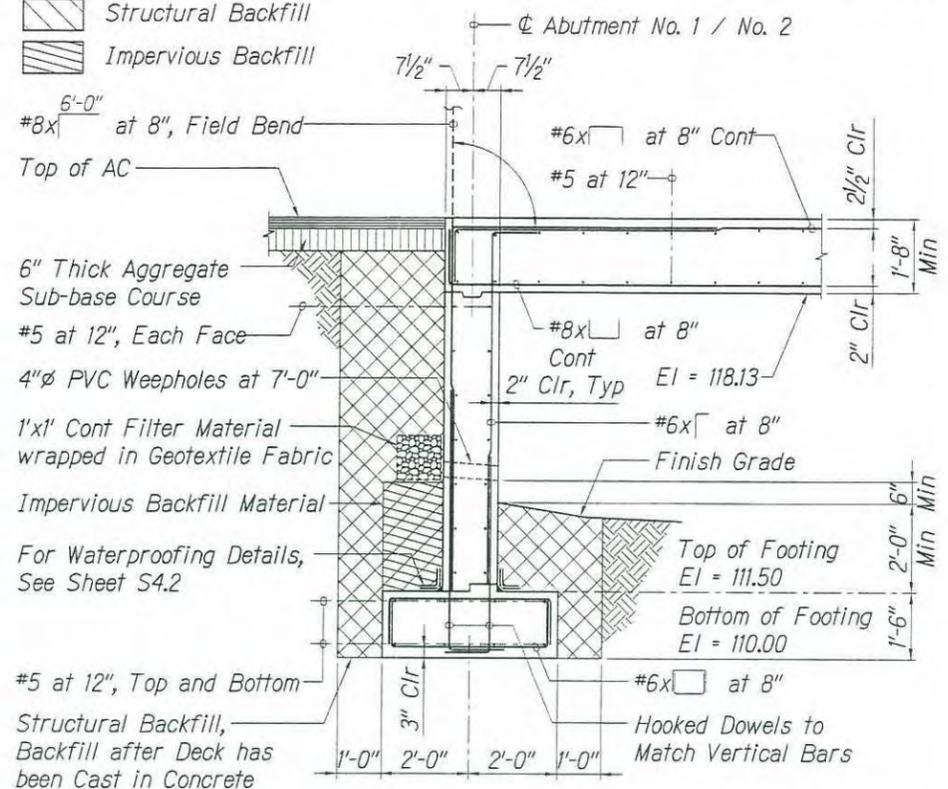
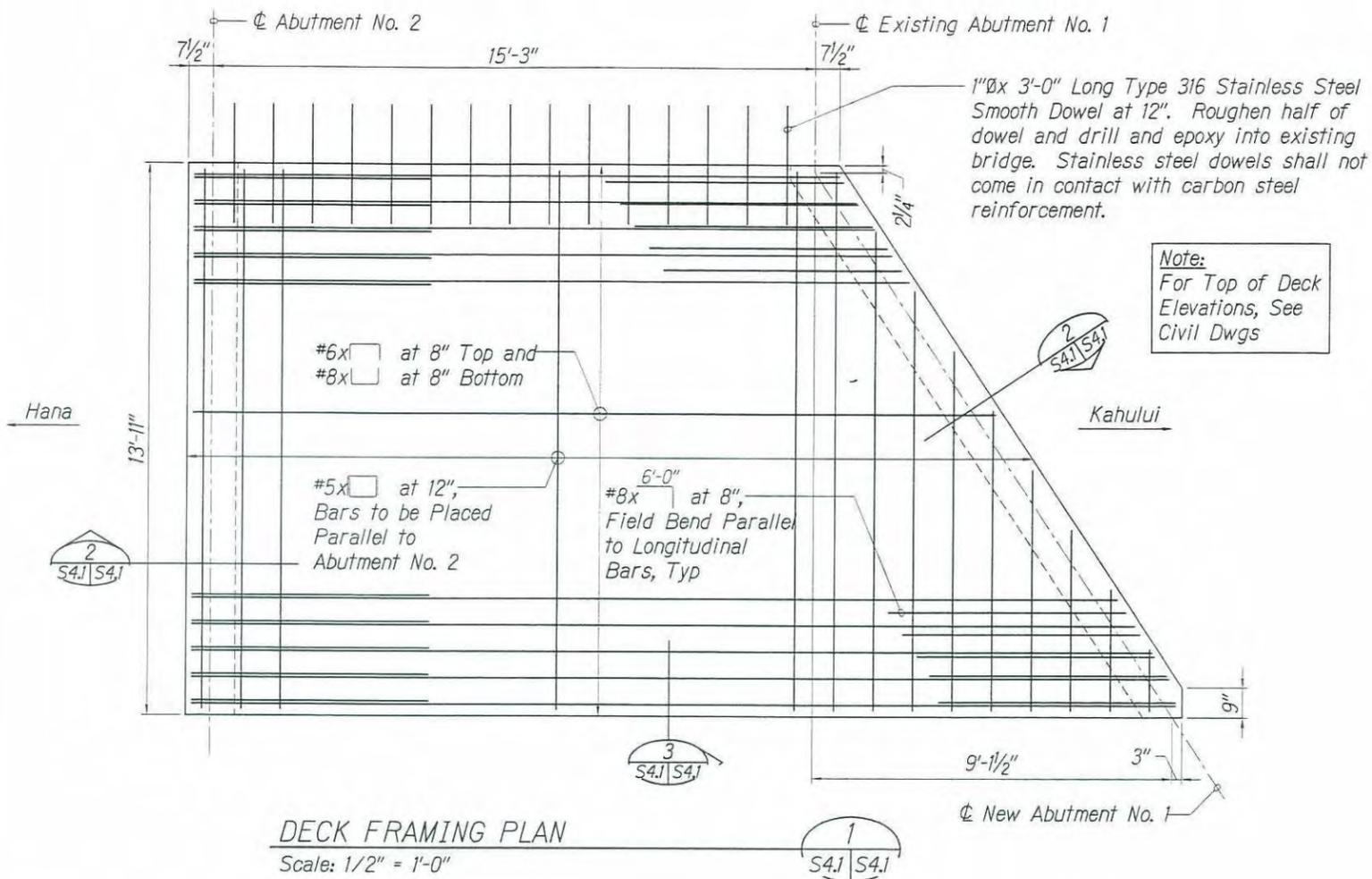
Scale: As Noted Date: September 2010

SHEET No. S3.1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-03	2008	17	17

**Legend**

- Excavation Pay Limits
- Structural Backfill
- Impervious Backfill



DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
CHECKED BY	_____
QUANTITIES BY	_____
NOTE BOOK	_____
No.	_____



EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**SECTIONS AND DETAILS**

ROUTE 360 HANA HIGHWAY  
IMPROVEMENTS  
UAKEA STREET TO KEAWA STREET  
Project No. 360B-01-03  
Scale: As Noted Date: September 2010

SHEET No. S4.1 OF 7 SHEETS

Drainage Flows (Drainage Areas < 100 Acres) Resulting from Rainfalls with 25-year Recurrence Intervals													
Inlet Struct.	DA	C	Tm	I	L	Slope	Time of Concentration	Velocity	Calculated Time of Concentration	Corrected I	AutoCAD-calculated	Area	Q <sub>design</sub>
			(Design criteria, year)	(in./hr)	(ft)	(ft/ft)	(minutes)	(ft/s)	(minutes)	(in./hr)	Area (ft <sup>2</sup> )	(acre)	(cfs)
NA	X1	0.95	Roadway Drainage, Tm=25	4.25	91	3.29%	off chart	5.0	0.30	8.70	6,930	0.16	1.322
NA	X2	0.95	Roadway Drainage, Tm=25	4.25	72	2.80%	off chart	5.0	0.24	8.70	10,481	0.24	1.984
NA	X3	0.30	Roadway Drainage, Tm=25	4.25	16	15.31%	off chart	3.5	0.08	8.70	369	0.01	0.026

Total of Drainage Area Lengths: 179

Total of LS Values: 7.5000 ft

Average Slope of Drainage Areas: 89.4951 ft

ft/ft

Total of Drainage Areas: 0.41 acres

Total of Drainage Area Flows: 3.332 cfs

Drainage Flows (Drainage Areas < 100 Acres) Resulting from Rainfalls with 25-year Recurrence Intervals													
Inlet Struct.	DA	C	Tm	I	L	Slope	Time of Concentration	Velocity	Calculated Time of Concentration	Corrected I	AutoCAD-calculated	Area	Q <sub>design</sub>
			(Design criteria, year)	(in./hr)	(ft)	(ft/ft)	(minutes)	(ft/s)	(minutes)	(in./hr)	Area (ft <sup>2</sup> )	(acre)	(cfs)
NA	N1	0.95	Roadway Drainage, Tm=25	4.25	91	3.29%	off chart	5.0	0.30	8.70	6,930	0.16	1.322
NA	N2	0.95	Roadway Drainage, Tm=25	4.25	72	2.80%	off chart	5.0	0.24	8.70	10,850	0.25	2.066

Total of Drainage Area Lengths: 163

Total of LS Values: 5.0000 ft

Average Slope of Drainage Areas: 81.3301 ft  
ft/ft

Total of Drainage Areas: 0.41 acres

Total of Drainage Area Flows: 3.389 cfs