FINAL ENVIRONMENTAL ASSESSMENT

REHABILITATION OF UMAUMA STREAM BRIDGE PROJECT

District of North Hilo, Island of Hawai'i
Federal Project No. BR-019-2(61)

State of Hawai'i
Department of Transportation, Highways Division

February 2012

Rehabilitation of Umauma Stream Bridge Project
Federal-Aid Project No. BR-019-2(61)
District of North Hilo, Hawai‘i Island, Hawai‘i Belt Road

Final Environmental Assessment

This environmental document has been prepared pursuant to
Chapter 343, Hawai‘i Revised Statutes
and Hawai‘i Administrative Rules, Title 11, Chapter 200

Proposing Agency:

State of Hawai‘i
Department of Transportation, Highways Division
601 Kamokila Boulevard, Room 688
Kapolei, Hawai‘i 96707

February 2012

PROJECT SUMMARY INFORMATION

PROJECT:	Hawai‘i Belt Road, Rehabilitation of Umauma Stream Bridge, District of North Hilo, Island of Hawai‘i, Federal-Aid Project No. BR-019-2(61)
PROPOSING AGENCY:	State of Hawai‘i Department of Transportation, Highways Division 601 Kamokila Boulevard, Room 688 Kapolei, Hawai‘i 96707 Contact: Eddie Chiu, 808-692-7547
FEDERAL AUTHORITY:	Federal Highway Administration (FHWA)
LOCATION:	Hawai‘i Belt Road, District of North Hilo, Island of Hawai‘i, approximately at Milepost 16.02, State Right-of-Way. Construction Staging on TMK (3) 3-1-01:15
PROPOSED PROJECT:	The proposed project is to construct bridge widening and structural rehabilitation of the existing historic Umauma Bridge. The existing bridge would remain open and in use as the improvements are constructed.
ANTICIPATED IMPACTS:	Impacts would primarily be limited to the right-of-way and would be temporary in nature. Potential impacts from construction include noise, dust, sedimentation, removal of vegetation, and traffic disruption. The proposed project would not increase roadway capacity, and minimal long-term impacts are anticipated. With implementation of mitigation measures, no adverse effect to historic resources would occur.
HRS CH. 343 TRIGGER:	Use of state lands and state funds; historic site
STATE LAND USE DESIGNATION:	Conservation
EXISTING ZONING:	State Right-of-Way through areas zoned Agricultural District (AG-20)
SPECIAL MANAGEMENT AREA:	Within SMA
DETERMINATION	Finding of No Significant Impact (FONSI)

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1 INTRODUCTION

This Final Environmental Assessment (Final EA) has been processed as a Finding of No Significant Impact (FONSI) by the State of Hawai'i, Department of Transportation. As a result, the preparation of an Environmental Impact Statement (EIS) is not required.

To facilitate the readers' ability to distinguish revisions made to the Draft EA, substantive changes and additions are underlined. Text that has been deleted is indicated by a ~~strikethrough~~. There have been no major substantive changes to the environmental analysis in the Final EA.

1.1 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

The evaluation of projects to determine their effects on the environment is required by the Hawai'i Revised Statutes (HRS), Chapter 343. An Environmental Assessment (EA) is a "written evaluation to determine whether an action may have a significant effect" (HRS §343-2). The agency with primary responsibility over the project (the proposing agency) is required to prepare an EA and makes a final determination according to significant impacts, or lack of significance. As stated in HRS §343-1:

> An environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties, and alert decision makers to significant environmental effects which may result from the implementation of certain actions. …The process of reviewing environmental effects is desirable because environmental consciousness is enhanced, cooperation and coordination are encouraged, and public participation during the review process benefits all parties involved and society as a whole.

As described above, the basic purpose of an EA is to provide information to the public and decision makers on proposed actions. The EA must also disclose: potential significant adverse environmental impacts, the expected primary and secondary consequences, and the cumulative as well as the short and long-term effects of the action.

The purposes of the Final EA are to document agency and public consultation on the project and respond to the comments received during the comment period on the Draft EA. The Final EA also considers new issues and changes to the project since publication of the Draft EA, and establishes that there are no significant impacts, and that a FONSI is appropriate so that the project can proceed.

1.2 PROJECT OVERVIEW AND PROJECT NEED

The State of Hawai'i, Department of Transportation, Highways Division (DOT), with funding assistance from the Federal Highway Administration (FHWA), plans to construct bridge widening and structural rehabilitation of the existing historic Umauma Bridge. Improvements include construction of concrete support columns to be placed within and adjacent to the existing steel support towers, widening of the bridge deck and roadway shoulders, and construction of a new concrete railing.

The existing Umauma Bridge was constructed in 1911. In the early 1950s, the bridge, including the trestles, was widened to support a two-lane highway for vehicular traffic. The bridge was retrofitted in the early 2000s to resist updated earthquake design loads. Umauma Bridge is a historic bridge and under the jurisdiction of the State Historic Preservation Division (SHPD). The steel framed Umauma Bridge is showing signs of steel deterioration. Repair and maintenance projects have been completed and are currently in progress to minimize steel deterioration. The proposed rehabilitation project would install new concrete towers that would support bridge loads, and existing steel towers would become non-structural, as the new concrete piers would be the primary load carrying elements.

The proposed project would also improve safety and correct existing roadway deficiencies. The removal of the existing sidewalks and bridge railings, the widening of the bridge deck and constructing new bridge railings (which conform to current acceptable standards) along both sides of the bridge would improve the safety for high-speed vehicular traffic by eliminating a vaulting hazard that a sidewalk would present. Also, wider shoulders and taller bridge railings along both sides of the bridge would improve the safety for bicyclists and pedestrians.

The State DOT has identified the following objectives of the Rehabilitation of Umauma Stream Bridge Project:

- To rehabilitate the deteriorating, steel framed Umauma Bridge while satisfying SHPD historical requirements.
- To bring the bridge roadway in compliance with FHWA regulations and current safety standards.

1.3 FEDERAL AND STATE AUTHORITY

The proposed action will utilize funding from both federal and state agencies, including the FHWA and DOT. There will be an 80 percent contribution by FHWA funds, and 20 percent contribution by the State. Because there is both federal and state funding for the project, it is subject to both federal and state environmental laws and regulations.

Environmental review procedures required by the State of Hawai‘i include compliance with HRS §343, and Hawai‘i Administrative Rules (HAR), Title 11, Department of Health. A Categorical Exclusion (CE) pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended, is anticipated for this project.

1.4 PUBLIC REVIEW ON THE DRAFT EA

Following completion of the Draft EA, the environmental document was submitted to the State Office of Environmental Quality Control (OEQC). Notification of the availability of the Draft EA was published in the October 23, 2011 *The Environmental Notice* by OEQC, in addition to the Hawai‘i Tribune Herald, West Hawai‘i Today, and Laupahoehoe and Hilo public libraries. During the 30-day public comment period ending November 21, 2011, agencies, organizations, and individuals were provided the opportunity to comment on the proposed project. The

comment period was extended to allow several agencies to submit comments beyond the submittal deadline.

1.5 PERMITS AND APPROVALS REQUIRED OR POTENTIALLY REQUIRED

Government permits required or potentially required to implement the proposed action are listed below:

STATE OF HAWAI'I

Department of Transportation

- Preparation and approval of an Environmental Assessment – The DOT will act as the approving agency for the proposed action and will have authority to determine if the EA is adequate and whether a FONSI is appropriate.

Office of Planning

- Coastal Zone Management (CZM) Federal Consistency Certification – Consistency Verified August 26, 2011

State Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL)

- Conservation District Use Application (CDUA) (**not required**) – The majority of the work would take place within the State right-of-way, and the staging area is on the mauka side of the road and is outside of OCCL jurisdiction. Further, rehabilitation of the bridge appears to be the continued use of a nonconforming structure, and a CDUA would not be required.

Department of Health

- Section 401, Clean Water Act (CWA) – anticipated Water Quality Certification for Nationwide Permit 14
- National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Stormwater Activities (**not required**) – since construction activities would disturb approximately 0.87 acres (less than one acre of total land area), including construction staging area, an NPDES permit would not be required.
- Noise Permit
- Noise Variance

Hawai'i Commission on Water Resources

- Stream Channel Alteration Permit (SCAP)

COUNTY OF HAWAI'I

- Construction Permits – Grading and Grubbing

- Special Management Area Permit (SMA) (**not required**) – the proposed bridge rehabilitation project would be considered repair of a highway within an existing right-of-way, and would be considered exempt from SMA permit requirements.

FEDERAL

U.S. Army Corps of Engineers

- Department of Army Permit, Section 404, Clean Water Act – Nationwide Permit Verification issued August 17, 2011.

2 PROJECT DESCRIPTION

2.1 ENVIRONMENTAL SETTING

PROJECT LOCATION

The project site is located on the Hawai‘i Belt Road (Highway No. 19) at approximately milepost 16.02 in the North Hilo District, Hawai‘i Island (see Figure 1). The Umauma Stream Bridge carries the Hawai‘i Belt Road over Umauma Stream, along the Hāmākua Coast (see Photo 1). The bridge is located entirely within the State right-of-way.

EXISTING CONDITIONS

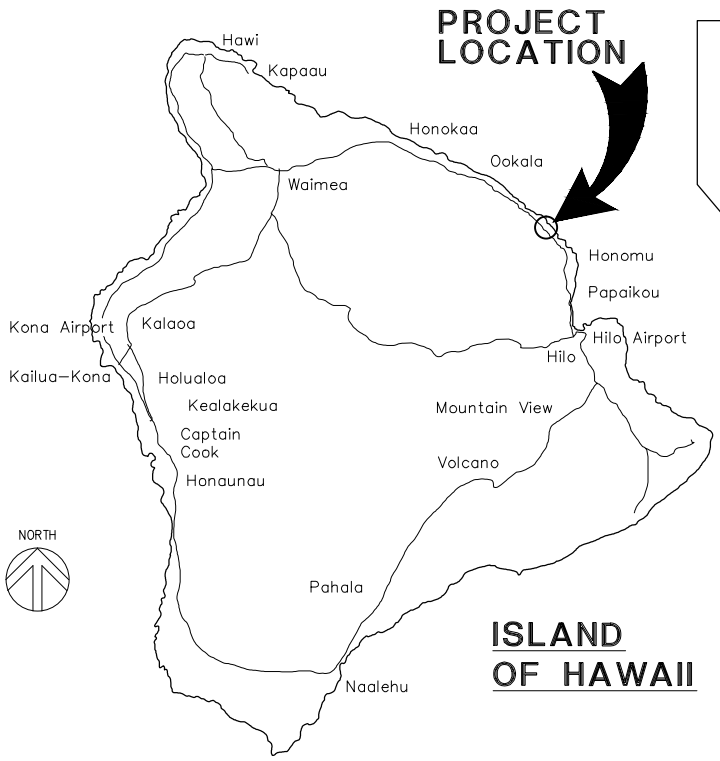
Umauma Bridge is a steel girder and trestle bridge (see Photo 2) built over Umauma Stream. The superstructure is concrete deck on steel girder and the substructure is steel girder on circa 1912 steel railroad trestle with concrete abutments. Open horizontal concrete rail and cap were added as parapets in 1955. Concrete endposts, also added in 1955, have an incised bridge name and date of construction.

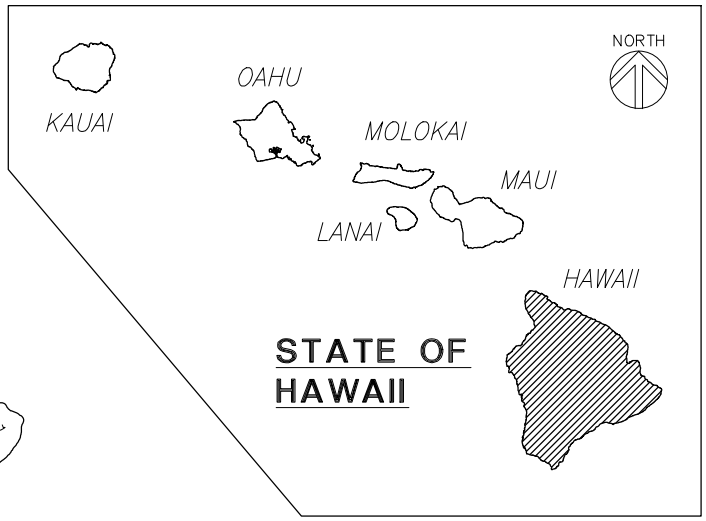
The existing bridge is approximately 110 feet tall. The bridge is 28 feet wide (curb-to-curb) and 38.5 feet wide (out-to-out) with a bridge deck half section consisting of a 12-foot wide asphaltic concrete (AC) travel lane, 2-foot wide AC shoulder, 3.5-foot wide concrete sidewalks (raised 6 inches from the roadway), and a 1-foot wide by 2.5-foot high railing (see Figure 2 for existing bridge plan and profile).

Adjacent land uses include rural residential and agricultural uses. The Umauma stream flows in a predominantly west to east direction with open ocean located to the east of the bridge.

Historical Value

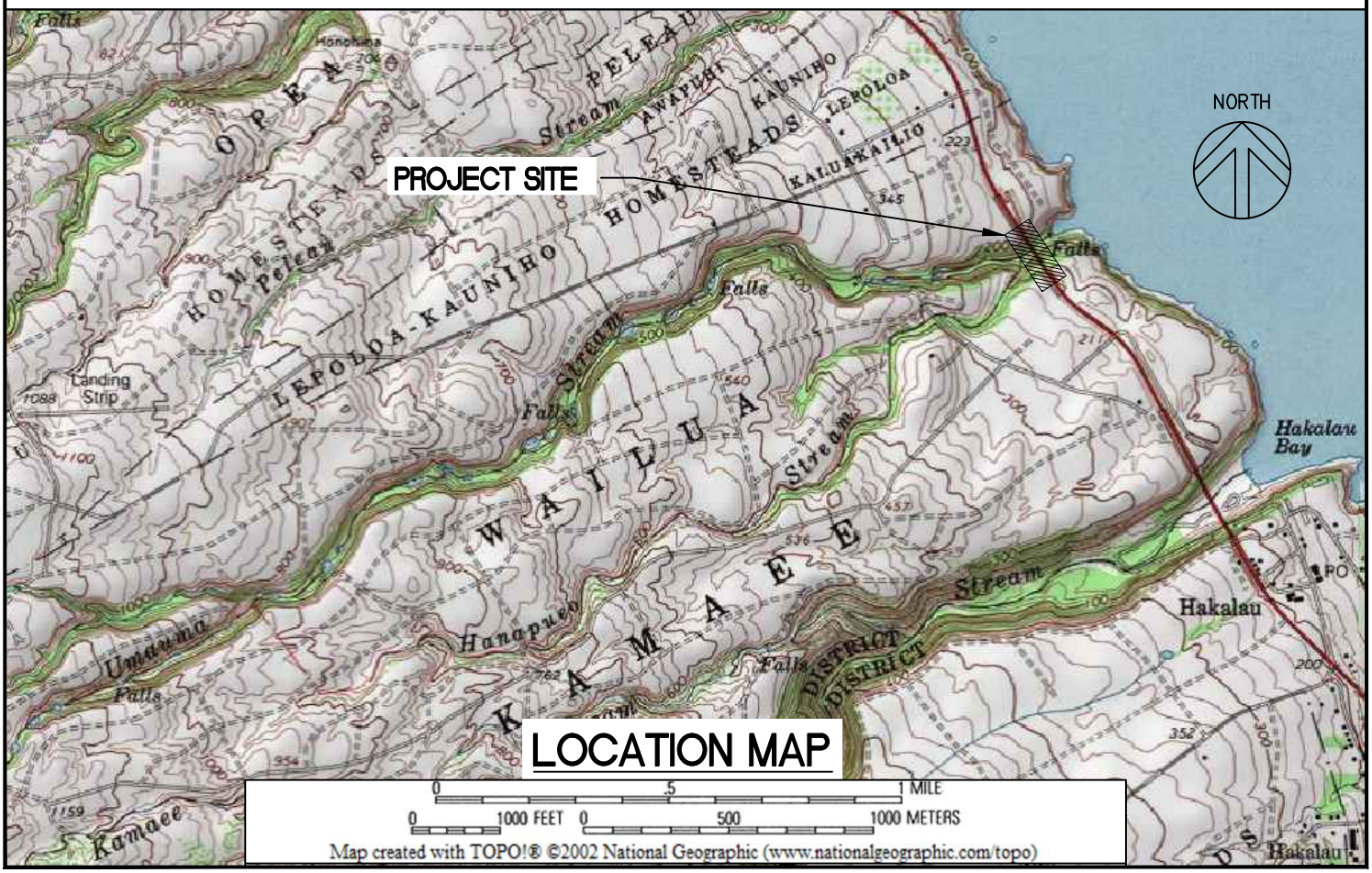
Umauma Bridge is part of a National Register eligible multiple property nomination of “Steel Trestle Bridges on the Hāmākua Coast” written by Spencer Lieneweber in cooperation with the Hawai‘i DOT. The SHPD and DOT are currently working toward an agreement on the bridge inventory and finalizing documentation for the National Register. The bridge is significant under National Register criteria for its association with the Hilo Railroad Company, which played a major role in the development of the Hāmākua Coast for sugar plantations and as one of the few remaining steel girder and trestle bridges that represent the work of John Mason Young. The period of significance extends from 1911 when the rail trestle bridges were first constructed to 1953 when Territorial Highways engineer William Bartels converted the bridges to highway bridges to accommodate the change in transportation methods.





VICINITY MAP

NOT TO SCALE



LOCATION MAP

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

VICINITY AND LOCATION MAP

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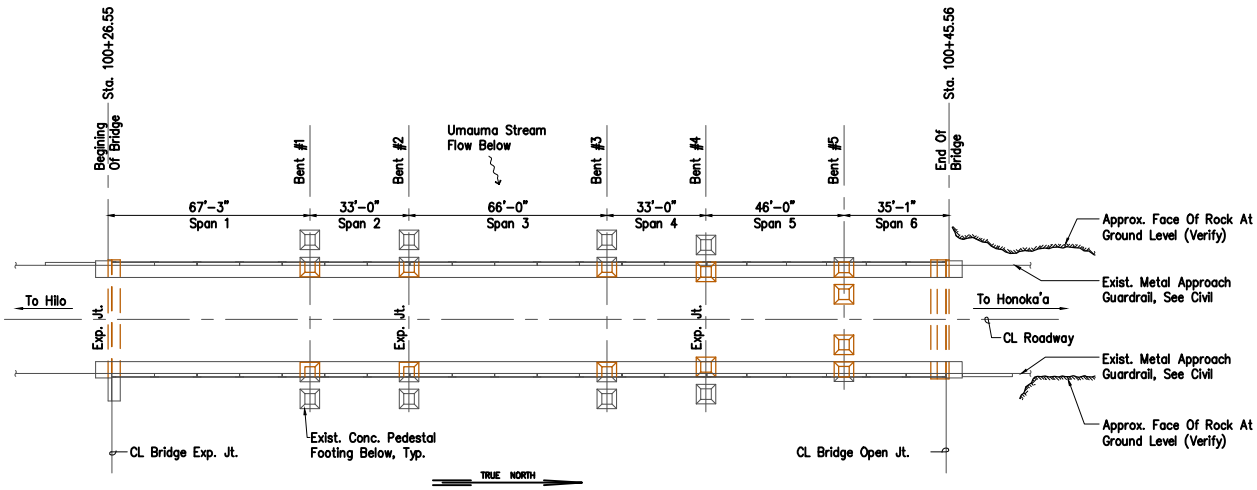
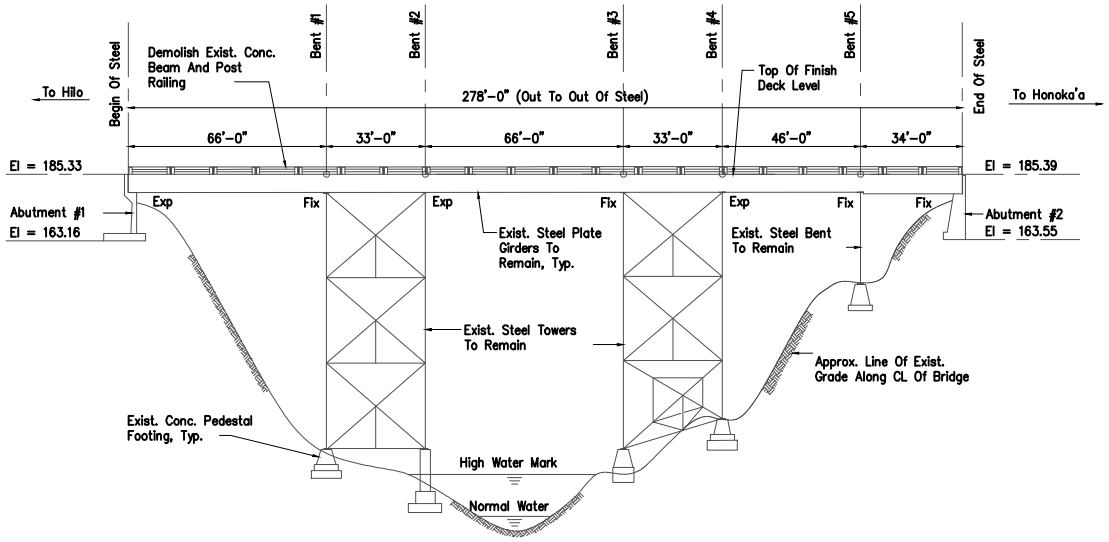


EXISTING BRIDGE PLAN
SCALE: 1" = 64'



EXISTING BRIDGE PROFILE
SCALE: 1" = 64'

GRAPHIC SCALE
20' 0 20' 40' 60'
1/64" = 1'-0"

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

EXISTING PLAN AND PROFILE

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Photo 1: View of bridge along roadway

Photo 2: Steel girder and trestle

2.2 DESCRIPTION OF THE PROPOSED ACTION

The proposed project would include construction of concrete support columns to be placed within and adjacent to the existing steel support towers, widening of the bridge deck and roadway shoulders, and construction of a new concrete railing.

CONCRETE TOWERS

The proposed project would reinforce the deteriorating steel structure of the bridge by constructing two main concrete towers and one smaller concrete tower within the existing steel towers (see Figure 3). The towers would be constructed within the steel towers to preserve the historically significant bridge structure (see Photo 3). The new concrete pier caps would be constructed over the new towers, and the existing steel members would be encased within the new concrete pier caps. Due to constructability challenges and structural load requirements, spread footings are the foundation system that would most likely be used at Pier 1 (adjacent to stream on Hilo side) and Pier 2 (adjacent to stream on Honoka‘a side). Spread footings consist of reinforced concrete at the same ground elevation as existing pedestal footings. Micropiles would likely be used at Pier 3. A micropile is an approximate 7-inch diameter reinforced concrete pile that extends to the rock layer below existing grade, which varies from 10 to 50 feet below existing grade. Drilled shafts would be used at two abutments.

BRIDGE DECK, END POSTS, AND ROADWAY IMPROVEMENTS

To comply with Federal Highway Administration (FHWA) regulations, the bridge deck would be widened to 40 feet (curb-to-curb) and 44 feet (out-to-out). The proposed bridge deck would be entirely AC with 12-foot travel lanes and 8-foot shoulders (see Figure 4 for existing and proposed sections). The existing raised sidewalk would be removed. The new concrete railing would be raised to 4-foot-2-inches to comply with the FHWA bike safety regulations. The lower 2-foot-8-inches section of railing would be tapered to a 2-foot-6-inch base at the bottom to comply with FHWA vehicular barrier regulations. The widened bridge shoulders would taper back to the existing shoulders as soon as feasible along the roadway to avoid any major grading into the adjacent embankments. Roadway improvements on both sides of the bridge would extend approximately 20 feet beyond the bridge approach slab to provide a transition from the existing roadway to the new bridge.

The bridge end posts at the Honoka‘a end of the bridge would terminate directly into the existing cut slope to negate the need for guardrails. The bridge end post on the Hilo downstream end of the bridge would be protected via guardrail extending from the new end post and terminating into the existing cut slope (same as existing condition). Sand barrels would protect the bridge end post on the Hilo upstream end of the bridge since there is not adequate space to provide a guardrail with crashworthy end terminal while still providing access to the adjacent maintenance yard.

STORMWATER AND DRAINAGE

The proposed concrete towers would be constructed outside of the normal stream flow of Umauma Stream. The existing bridge deck drain inlets currently discharge through a section of

4-inch pipe with an outlet approximately 4-feet below the bridge deck, allowing stormwater to discharge to the atmosphere and fall to the ground/stream below (see Photos 4 and 5). The proposed project would replace the drain inlets with deck drains placed at certain locations to prevent stormwater from falling directly into the stream. By doing so, storm runoff would be filtered through natural vegetation on the stream bank before entering into the stream.

GRADING AND EARTHWORK

The proposed earthwork within the stream bank would be limited to restoration of the grades disturbed by the spread footing construction (see Figure 5 for conceptual grading plan). Because of the steepness of the existing grades, the slope would require stabilization with geotextile fabric and geogrid reinforcement (see Figure 5 section). As a result of the thickness of the spread footing, portions of the concrete would be left exposed and not buried. The proposed earthwork at the bridge deck would consist of minor grading of the approaches to accommodate the widened bridge deck shoulder.

ROCK FALL PREVENTION MEASURES

There is one rock fall potential problem area that has been identified on the *makai*[1] side of the bridge, situated at the lower 40 feet of the slope. While the rock formation is currently fairly stable, the project includes implementation of rock stabilization measures prior to construction. The area of potential rock fall and prevention measures included as part of the proposed action are described in detail in Section 3.1, *Topography and Soils*.

SITE-SPECIFIC BEST MANAGEMENT PRACTICES

The proposed bridge rehabilitation project includes site-specific Best Management Practices (BMPs) to be implemented during project construction to minimize erosion and potential impacts to water quality. These BMPs included as part of the proposed action are described in detail in Section 3.1, *Topography and Soils*.

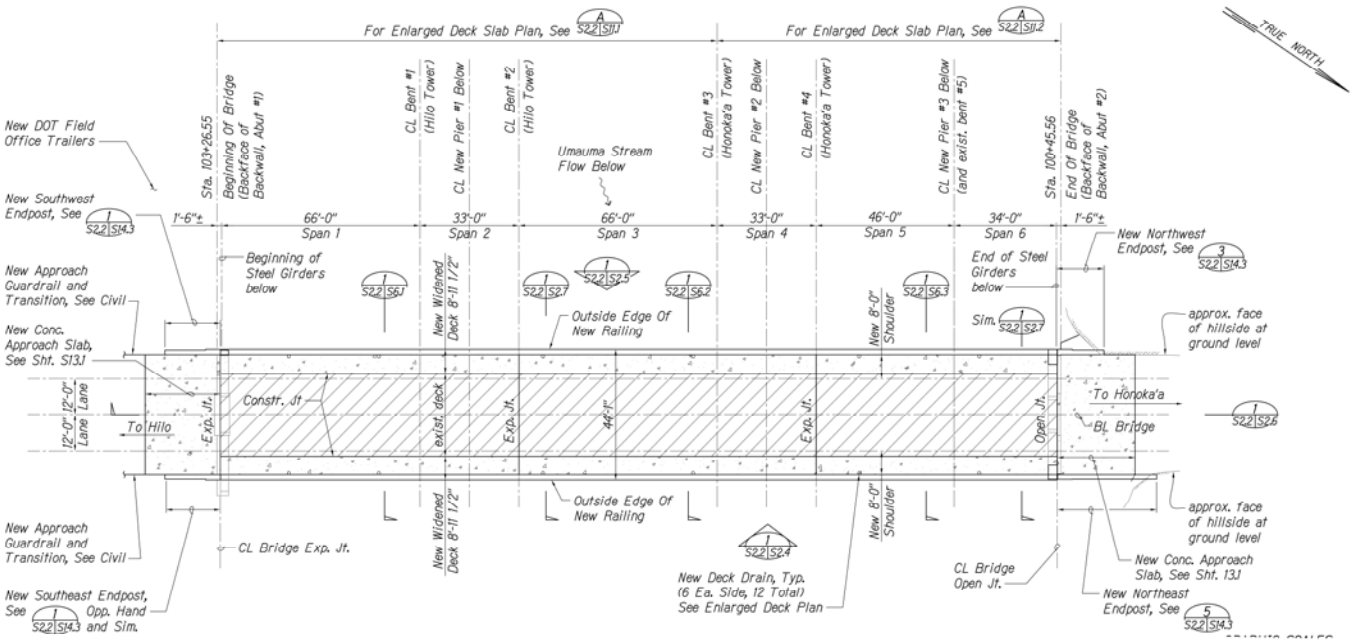
BRIDGE MAINTENANCE

Current bridge maintenance consists of temporary repairs and temporary repainting intended to slow down, but not stop, existing corrosion of steel. Bridge maintenance occurs approximately every 2 years.

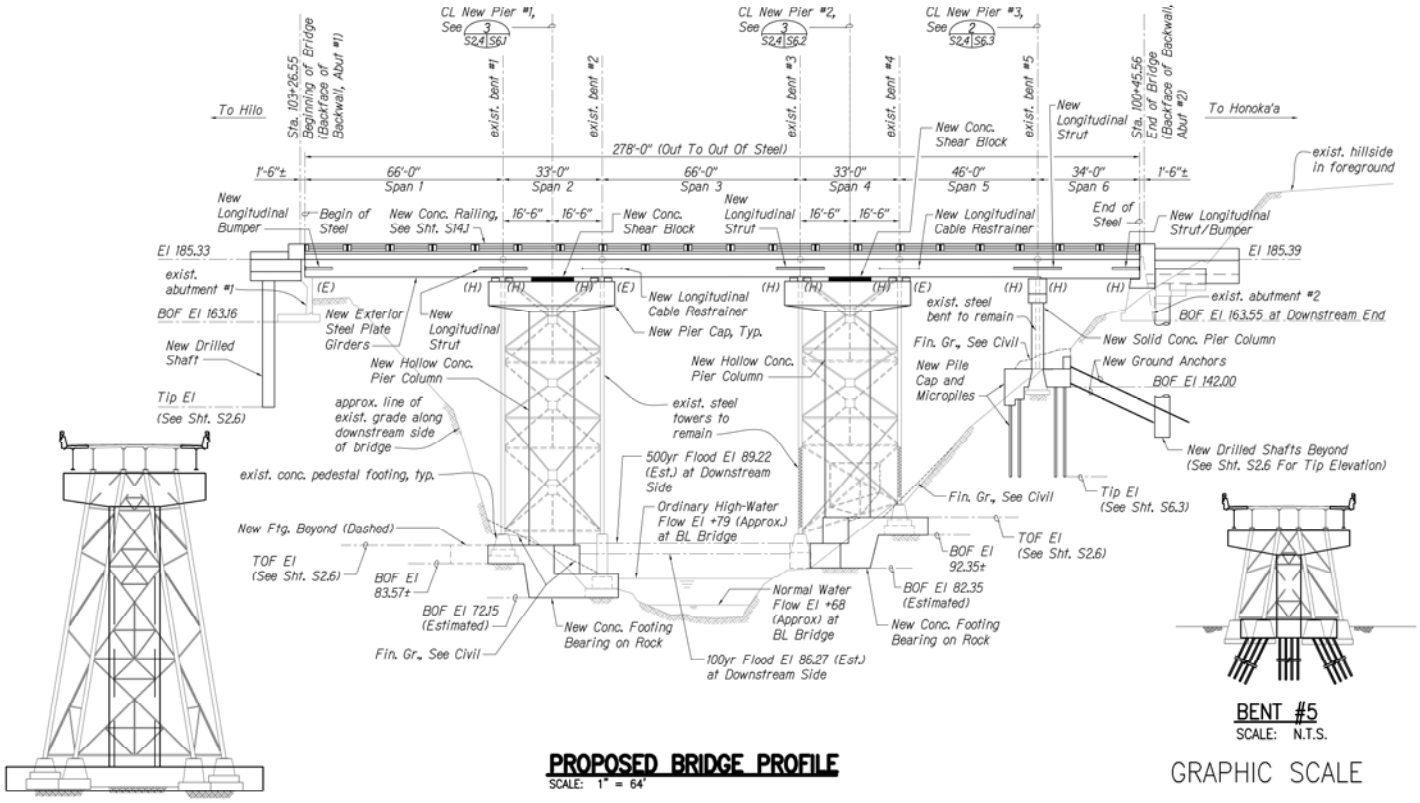
TRAFFIC CONTROL

The State DOT Hawai‘i District construction specifications require that one roadway lane be open at all times (see Photo 6). If it is necessary to close both lanes at the same time, State DOT Hawai’i District attempts to maintain a maximum of 10-minute lane closure. However, a longer closure may occur depending on the construction task.

[1] *Makai* – Hawaiian word meaning toward the ocean



PROPOSED BRIDGE PLAN
SCALE: 1" = 64'



PROPOSED BRIDGE PROFILE
SCALE: 1" = 64'

BENT #1
SCALE: N.T.S.

BENT #5
SCALE: N.T.S.

GRAPHIC SCALE
20' 0 20' 40' 60'
1/64" = 1'-0"

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

PROPOSED PLAN AND PROFILE

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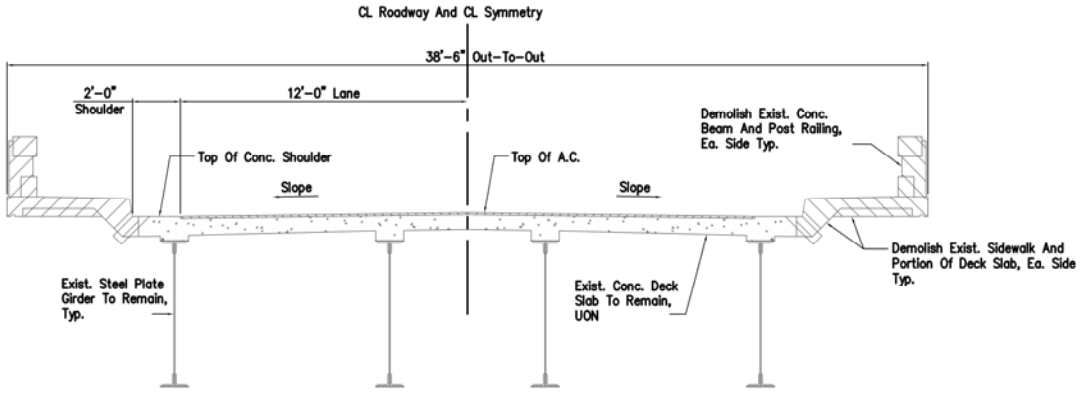
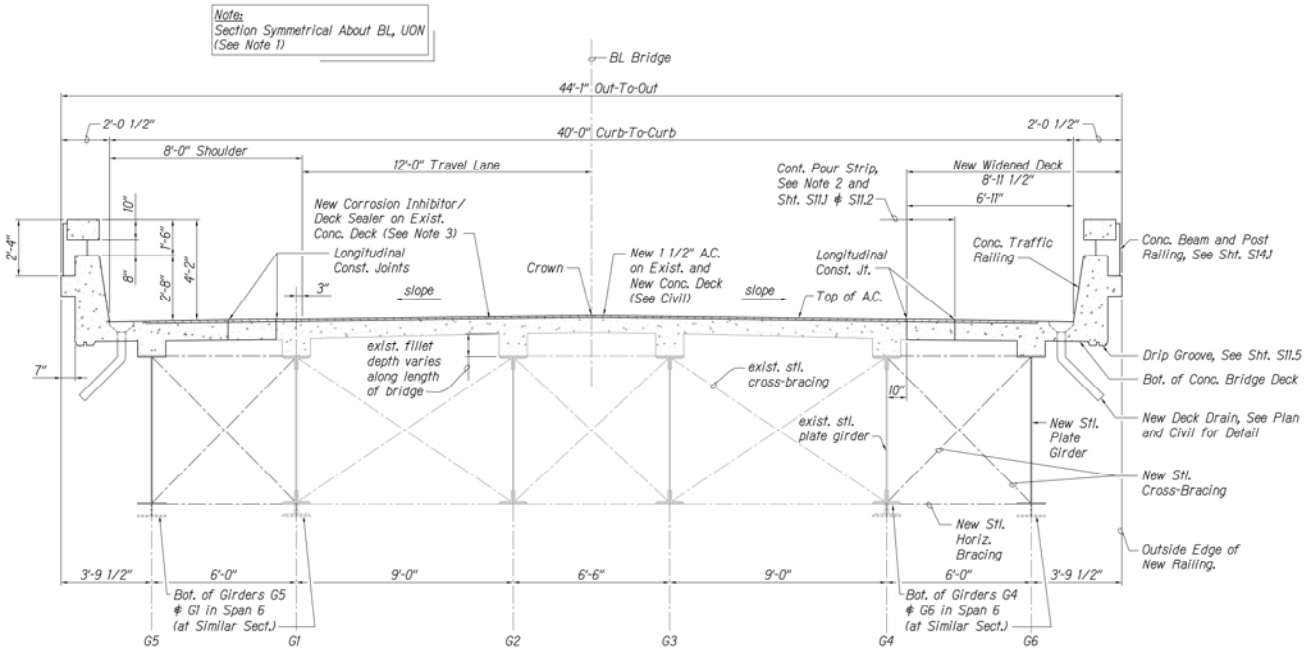


EXISTING CROSS SECTION
SCALE: N.T.S.



PROPOSED CROSS SECTION
SCALE: N.T.S.

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

EXISTING AND PROPOSED SECTIONS

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Photo 3: Steel support tower footings

Photo 4: Drain inlet

Photo 5: Drainage outfall

Photo 6: Lane closure during construction

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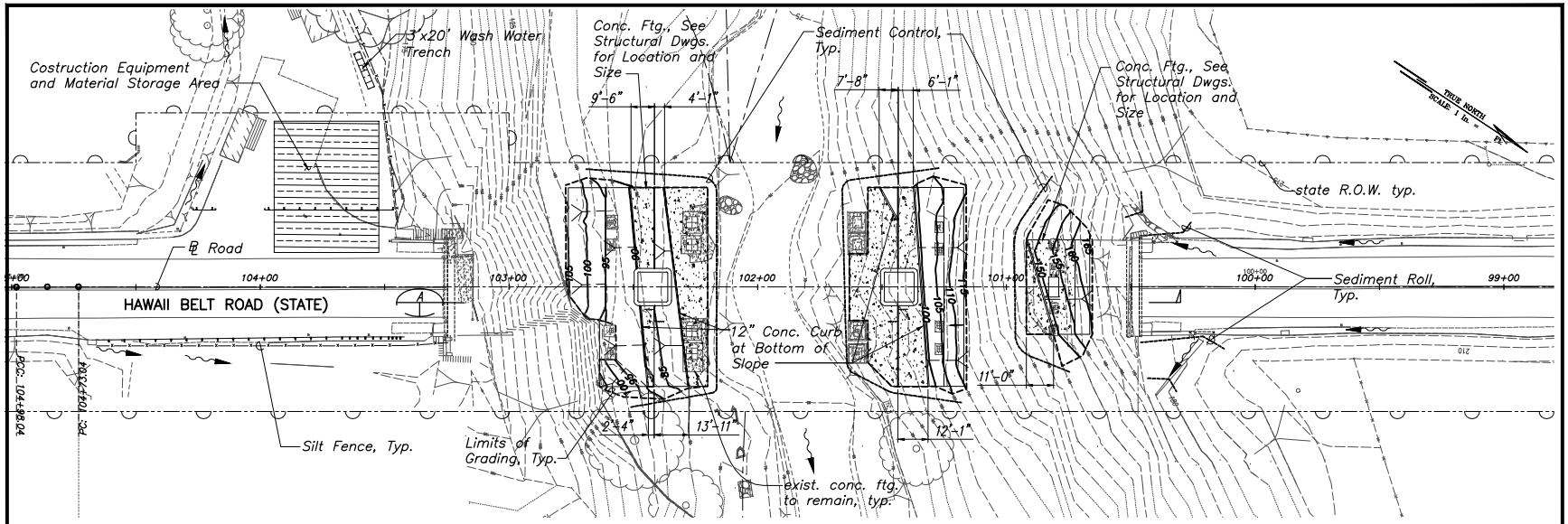
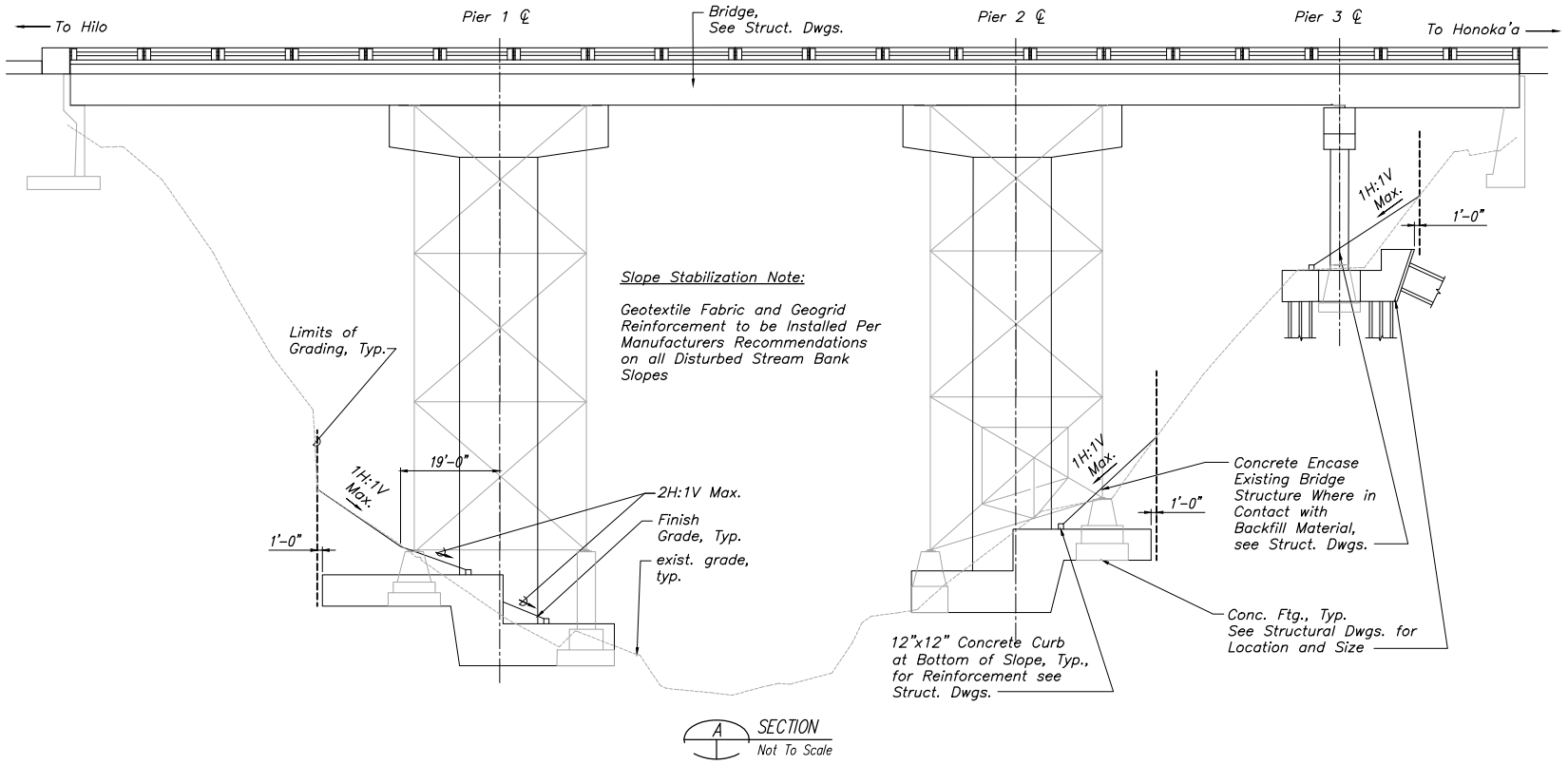
HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

GRADING AND SECTION



GRADING AND EROSION CONTROL PLAN



A SECTION
Not To Scale

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CONSTRUCTION STAGING

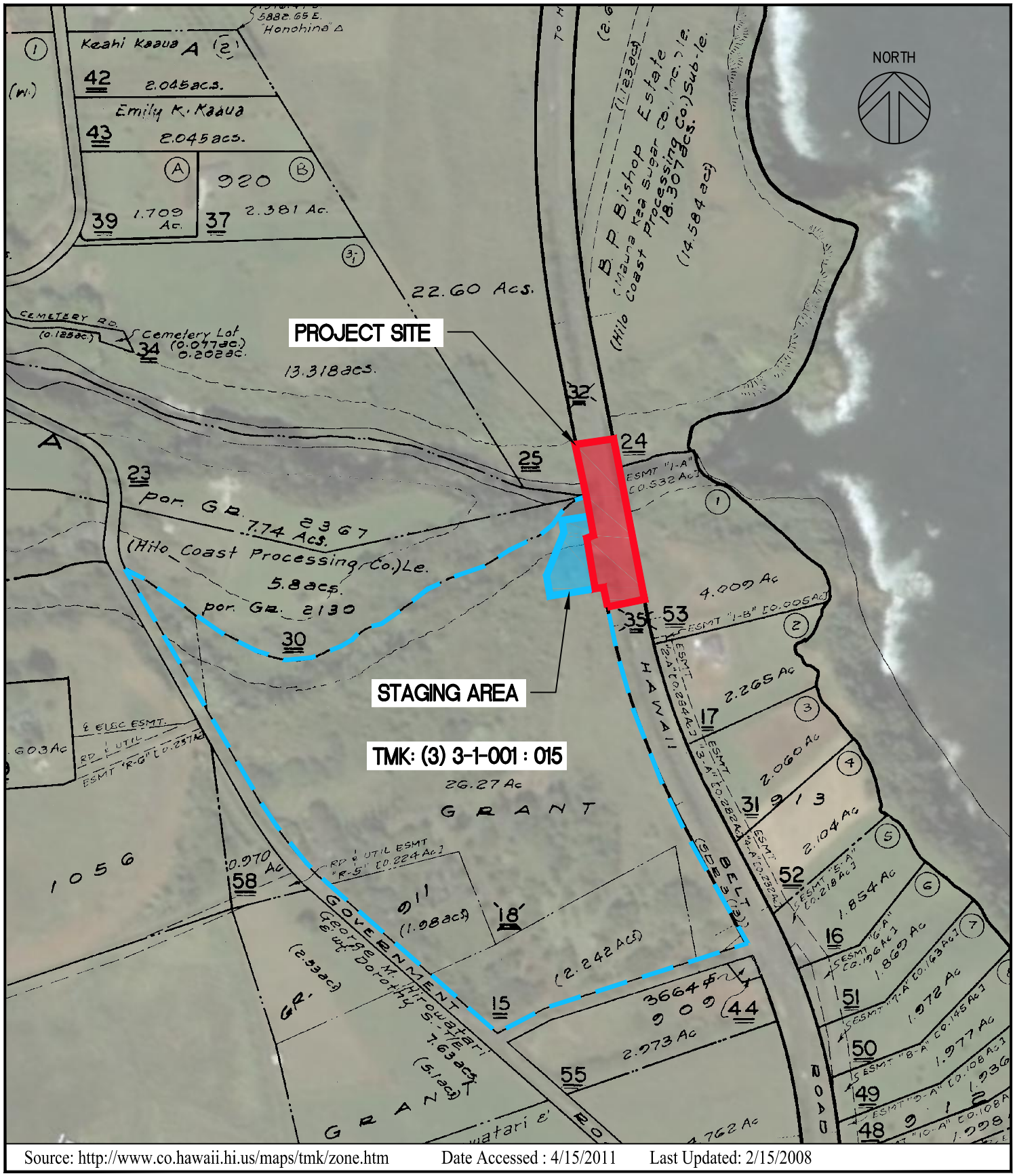
The construction staging area is proposed to be located on the Hilo side of the bridge, *mauka*[2] of the roadway, on an adjacent property to the bridge (TMK (3) 3-1-01:15) (see Figure 6). The Department of Transportation (DOT) currently has several trailers in this staging area for bridge maintenance use (see Photo 7). Construction equipment would also be staged adjacent to the bridge footings and would be within State right-of-way.

PROJECT CONSTRUCTION AND COST

Construction of the bridge rehabilitation improvements is scheduled to begin during early summer 2012. The actual start date would be dependent on obtaining the required permits and approvals. The project would be constructed for the duration of approximately two years.

Construction of the proposed bridge rehabilitation project is estimated to cost $35 million (subject to change), with Federal contribution of 80 percent and State contribution of 20 percent of the total construction cost.

[2] *Mauka* – Hawaiian word meaning toward the mountain



Source: http://www.co.hawaii.hi.us/maps/tmk/zone.htm Date Accessed : 4/15/2011 Last Updated: 2/15/2008

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

CONSTRUCTION STAGING AREA

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Photo 7: Construction staging area

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The intent of this chapter is to describe the existing physical and social environment that is affected by the proposed action. Potential impacts that may result from implementation of the proposed action and mitigation measures to minimize the adverse impacts are described below.

3.1 TOPOGRAPHY AND SOILS

The existing bridge spans over approximately 280 feet of the Umauma Stream gulch, with a 90 to 100-foot drop from the bridge deck to the stream and embankments below. The sides of the gully are steep, with some areas as steep as near vertical near the bottom of the slope. Most of the slope areas are covered by vegetation. Within the project area, the streambed consists of basaltic bedrock and is generally 50 to 60 feet in width (AECOS 2010). Rock outcrops, along with numerous boulders, are exposed at the bottom of the gully adjacent to the stream.

Predominant soils in the area of the project site as classified by the Natural Resources Conservation Service (NRCS) consist of rough broken land (RB) (see Figure 7). Rough broken land is used to characterize gulches, with slopes 35 to 70 percent (NRCS 2009). Based on soil suitability, the State of Hawai‘i, Department of Agriculture has established the Agricultural Lands of Importance to the State of Hawai‘i (ALISH) system to identify areas of prime farmland. The ALISH system classifies three types of land suitable for agriculture: Prime Lands, Unique Lands, and Other Lands. The project site is located within State right-of-way, and is not considered as agricultural lands of importance (see Figure 8).

Soil borings completed in April 2010 behind the existing abutments encountered fill consisting of mottled brown clayey silt with sand and gravel below the existing pavement section, with 27 feet in thickness on the Hilo side and 12 feet on the Honoka‘a side. Basalt was encountered at depths of about 36 and 47 feet. Borings drilled by the piers encountered basalt at depths ranging from the ground surface at Pier 1 to about 13 feet at Pier 2, and 11 feet at Pier 3. Borings at Pier 1 encountered groundwater at a depth of 29 feet (Hirata & Associates, Inc. 2011).

There were several areas of rock formation identified by DOT to be rock fall potential problem areas. Although there were some problem areas observed on the *mauka* side of the bridge, these problem areas were determined to be adequately set back laterally to not be a concern for the bridge or for workers repairing the bridge. An additional rock fall problem area included a set of nested rocks likely placed during the original construction of the bridge situated at the upper 20 feet of the slope, and on the *makai* side of the bridge. However, these rocks were removed in June 2010 to minimize hazards to the maintenance crew, with no impact to the existing bridge. The remaining identified area of concern is situated at the lower 40 feet of the slope, below and *makai* of the bridge, with the total height of the valley slope estimated at approximately 80 feet high. The slope in this area is generally near vertical. This rock formation appears to consist of massive basalt rock formations, and based on the jointing, the rock formation appears to consist of vertical slices or columns of rock. In general, the thickness (i.e. the distance into the slope) of the rock pieces is much less than the width and the height. Based on observations by the bridge maintenance crew, there appears to be an increased lateral width opening in the vertical joints (DOT email dated 5/12/2010). As part of the proposed bridge rehabilitation project, prior to

initiation of work on the bridge, this rock formation would be bolted in place to minimize potential rock fall hazards.

IMPACTS AND MITIGATION MEASURES

Implementation of the proposed action would result in disturbance of less than 1 acre. The proposed earthwork within the stream bank would be limited to restoration of the grades disturbed by the spread footing construction (see Figure 5 for conceptual grading plan). Because of the steepness of the existing grades, the slope would require stabilization with geotextile fabric and geogrid reinforcement (see Figure 5 section). As a result of the thickness of the spread footing, portions of the concrete would be left exposed and not buried. The proposed earthwork at the bridge deck would consist of minor grading of the approaches to accommodate the widened bridge deck shoulder. All vegetation within the grading limits shown on Figure 5 would be removed during construction and re-grassed following project completion.

There would be a short-term increase in soil erosion during construction since grading associated with construction of the proposed facilities would result in the exposure of bare soil to potential erosion. All grading operations would be conducted in compliance with dust and erosion control requirements of Hawaii County Code Chapter 10, *Erosion and Sedimentation Control*. The proposed action includes a site-specific Best Management Practices (BMP) plan developed as part of the project to minimize erosion and sedimentation during construction. The following measures have been included as part of the proposed action:

1. Implement general Water Pollution and Erosion Control Measures as required by Hawaii County Code Chapter 10, *Erosion and Sedimentation Control*.
2. All work shall be done in such a way as to isolate all work from the stream so that no material removed or replaced during the construction process will fall into or reach the stream.
3. The contractor shall install a rain gage prior to any field work including the installation of any site-specific best management practices. The rain gage shall have a tolerance of at least 0.05 inches of rainfall, and have an opening of at least one-inch in diameter. Install the rain gage on the project site in an area that will not deter rainfall from entering the gage opening. The rain gage installation shall be stable and plumbed. Do not begin field work until the rain gage is installed and site-specific best management practices are in-place.
4. Work within Ordinary High Water Mark (OHWM) as shown on the grading plans:
    a. The work shall be conducted during the dry season or when any affected stream has minimal or no flow, to the extent practicable. The work shall be discontinued during flooding, intense rainfall, storm surge, or high surf conditions where runoff and turbidity cannot be controlled.
    b. The contractor shall install a stream gage in line with the upstream edge of the proposed footings. The gage shall be closely monitored by designated personnel or by an automated alarm system. In the event that the stream elevation reaches 72 feet above mean sea level (MSL) or the stream depth rises more than 1 foot in 30 minutes all work shall be discontinued and

personnel, loose construction materials, and equipment shall be relocated to higher ground (minimum of 10 feet above the OHWM) until the stream levels have subsided to the acceptable level. The above BMP represents a minimum measure and the contractor shall improve upon it as necessary to ensure personnel safety and minimize potential for pollutant and debris discharge to the stream.

c. The contractor shall closely monitor the site rain gage. All work shall be discontinued and personnel/loose construction materials and equipment shall be relocated to higher ground (minimum of 10 feet above the OHWM) during intense rainfall of 0.5 inches or greater within a 24-hour period.

d. The contractor shall check with the National Weather Service to keep abreast of approaching severe weather in order to take appropriate precautionary measures to secure the project site.

e. At the end of each work day all loose construction material and equipment shall be relocated to higher ground (minimum of 10 feet above the OHWM).

f. All footing form braces shall be constructed within the footing limits and shall not be located on the stream side of the forms. The contractor shall design the forms to withstand stream flow forces resulting from a 1-year recurrence interval storm, which is estimated to have a stream flow elevation of 79.5 MSL at the upstream edge of the proposed footings and a stream flow velocity of 35 feet per second.

5. No project-related materials (fill, revetment rock, pipe etc.) shall be stockpiled within the stream banks.
6. No fueling of project-related vehicles and equipment shall take place within the stream banks.
7. The contractor shall not allow personnel or equipment to enter or cross the wetted portions of the streambed.
8. Dewatering effluent shall not be discharged to the stream or any other tributary that will discharge to a stream, pond, or the ocean. Every effort should be made to allow ground water or storm water to naturally percolate into the ground. In the event that dewatering activities are absolutely necessary, dewatering effluent shall be hauled and disposed of at a DOH approved facility.
9. During work being performed above the stream banks and/or stream (e.g. chipping, removal of concrete or iron, painting, concrete pouring, etc.) netting, filter cloth, or similar materials shall be suspended below the work area in such a fashion as to capture any falling debris and prevent contamination of the stream and/or stream banks.

The grading permit application shall specify the best management practices included as part of the project. Prior to the initiation of construction, the County would review proposed grading plan for consistency with County requirements and good engineering practice. The contractor would implement engineering measures to control soil erosion and storm runoff during construction. The project would not result in a significant impact due to soil erosion and off-site

sediment transport. For a discussion of drainage on the project site, see Section 3.2, *Hydrology and Water Quality*.

For placement of the proposed bridge footings, minor excavation of rock would be required. The excavated rock material would be removed and transported for land disposal. A Foundation Investigation report has been prepared and includes engineering characteristics of existing soils, the subsurface conditions at the site, and geotechnical recommendations for the design of new foundations, including seismic considerations, resistance to lateral pressures, and site grading (Hirata & Associates, Inc. 2011). All measures set forth in the site geotechnical report shall be adhered to during project construction. To ensure all measures are implemented, a qualified geotechnical engineer shall be retained for construction monitoring. The geotechnical engineer shall:

- Observe the construction of drilled shafts and micropiles, including all drilling and concrete placement operations, as well as load testing;
- Observe probing and grouting operations in foundation areas;
- Observe footing excavations prior to placement of reinforcing steel and concrete;
- Observe structural fill and backfill fill placement and perform compaction testing;
- Review and/or perform laboratory testing on import borrow to determine its acceptability for use in compacted fills; and,
- Provide geotechnical consultation as required.

Implementation of the recommended measures in the Foundation Investigation report would minimize impacts from soil hazards.

In addition, the proposed action includes a rock fall protection system to minimize identified potential rock fall hazards. Prior to initiation of work on the bridge, the rock formation of concern identified above would be bolted in place to minimize potential rock fall hazards. Preliminary design recommendations include bolting the formation with 10 to 15-foot deep grouted double-corrosion protected anchors spaced at 5 feet on-center. The final design of the rock fall protection system will be included prior to construction.

Map Unit Legend

Island of Hawaii Area, Hawaii (HI801)	
Map Unit Symbol	Map Unit Name
HoC	Hilo silty clay loam, 0 to 10 percent slopes
HoD	Hilo silty clay loam, 10 to 20 percent slopes
RB	Rough broken land

Source: USDA NRCS Web Soil Survey Date Accessed : 3/31/2011

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

SOILS MAP

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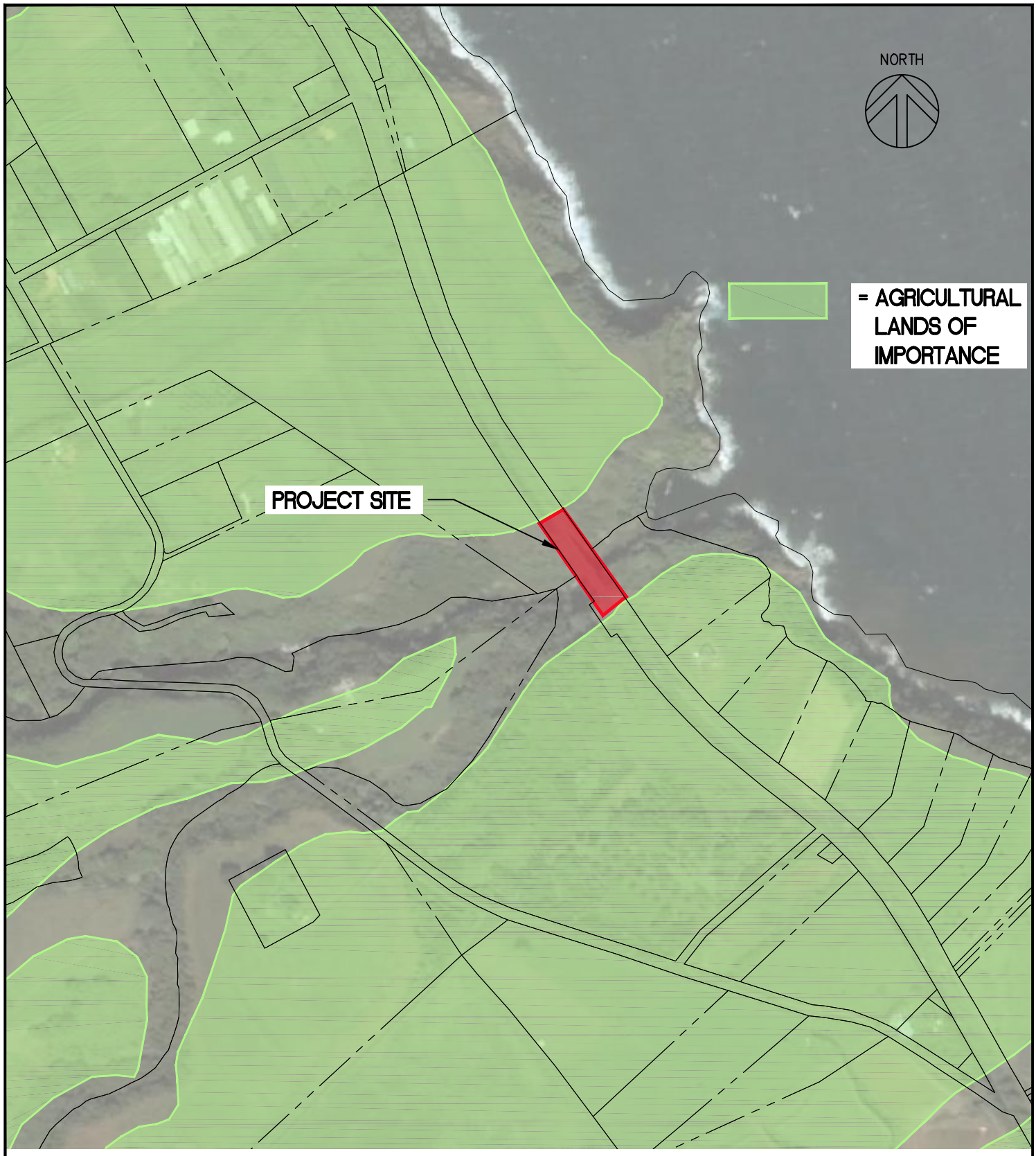

Source: http://www.state.hi.us/dbedt/gis/download.htm Date Accessed : 4/6/2011

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

AGRICULTURAL LANDS OF IMPORTANCE

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3.2 HYDROLOGY AND WATER QUALITY

Umauma Stream originates on the eastern slopes of Mauna Kea at an elevation above 12,000 feet, passes through the Hakalau Forest National Wildlife Refuge, and reaches its coastal outlet into the Pacific Ocean as a waterfall into a small bay northwest of Hakalau Bay. The Umauma watershed is 21.5 square miles, and is large, narrow, and steep in the upper watershed. There are several tributaries in the watershed, including Hanapueo Stream, which joins Umauma Stream just above the project site at Māmalahoa Highway (State Highway 19). (AECOS Inc. 2010; DAR 2008)

Umauma Stream is a perennial stream and is classified as Class-2 inland, flowing waters by the State of Hawai'i, Division of Aquatic Resources (DAR). Protected uses of Class 2 waters include recreational use, support and propagation of fish and other aquatic life, and agricultural and industrial water supply. Umauma Stream is not included on the Hawai'i Department of Health 2006 list of impaired waters prepared under the Clean Water Act §303(d) (*AECOS*, Inc. 2010).

Water quality and biological surveys were completed for a 1,200-foot segment of Umauma Stream on July 21, 2010 to identify aquatic biota and assess water quality (see Appendix C). Water samples were collected at three locations in the project vicinity and analyzed for selected parameters. The nutrient concentrations of ammonia, nitrate-nitrite, total nitrogen, and total phosphorus were all low relative to state water quality criteria. Total nitrogen and phosphorus at the sampled levels depict clean stream waters typically found only in the least developed watersheds of Hawai'i (*AECOS*, Inc. 2010).

The existing bridge deck drain inlets currently discharge through a section of 4-inch pipe with an outlet approximately 4-feet below the bridge deck, allowing stormwater to discharge to the atmosphere and fall to the ground/stream below.

IMPACTS AND MITIGATION MEASURES

Construction activities disturbing one or more acres are regulated under the National Discharge Elimination System (NPDES) stormwater program and are required by the State to obtain a NPDES permit. Because the project would disturb approximately 0.87 acres (less than one acre), including the construction staging area, a construction NPDES permit would not be required. However, construction activities could result in adverse impacts to water quality, including erosion, sedimentation, and turbidity within Umauma Stream. The proposed action includes a site-specific Best Management Practices (BMP) plan developed as part of the project to minimize any environmental effects to water quality in the vicinity of the project site during construction. With implementation of best management practices, the construction of the project would not result in a violation of water quality standards. For a discussion of impacts due to soil erosion and off-site sediment transport, see Section 3.1, *Topography and Soils* above.

A portion of one proposed footing is within the ordinary high water mark (OHWM) of jurisdictional waters of the United States. The "footprint" of these footings would extend slightly beyond the "footprint" of the existing columns – the footprint would be larger in area and deeper into bedrock. No dredging of the stream is proposed with implementation of the proposed project. Since the Umauma Stream is a waterway subject to federal jurisdiction, construction of

the footing within the ordinary high water mark (OHWM) of the stream would require a permit from the U.S. Army Corps of Engineers (USACE). A USACE permit application was submitted for the proposed bridge rehabilitation project, and a Nationwide Permit Verification was issued for the project. Nationwide permits are general permits issued nationwide to authorize categories of minor activities. In addition to the General Conditions of the Nationwide Permit, the following special conditions would be required:

- Minimize disturbances to stream banks and place footing foundations outside of the floodplain.
- Specific erosion control measures in road construction plans shall be developed to avoid potential impacts to the environment.
- Casting of road materials shall be avoided.
- Roadway and associated stormwater collection systems shall be maintained properly.
- Any earth work shall be conducted during the dry season and construction equipment shall be staged away from stream banks on high ground when ever possible.
- Stormwater drain outlets shall be designed to avoid scouring and erosion of vegetated areas.

A Water Quality Certification (WQC), issued by the State Department of Health (DOH) pursuant to Section 401 of the Clean Water Act is required for any activity including, but not limited to, the construction or operation of facilities, which may result in any "discharge" into navigable waters. This certification is in place to regulate water quality during and after the construction phase of the project to assure discharge will meet State Water Quality Standards. It is anticipated that the project will be covered under a WQC for Nationwide Permits. Consultation with DOH to confirm WQC requirements has been initiated.

The Hawaii Commission on Water Resources requires Stream Channel Alteration permits (SCAP) for alteration of stream channels. Because there is work within the streambed, a SCAP would be required for the proposed project.

Implementation of the proposed bridge rehabilitation project would result in a slight increase in the quantity of stormwater runoff due to the increased impervious surface of the bridge deck widening. The proposed project would replace the drain inlets with deck drains placed at certain locations to prevent stormwater from falling directly into the stream. By doing so, storm runoff would be filtered through natural vegetation on the stream bank before entering into the stream and would result in a beneficial effect to stormwater quality. A scour analysis was completed for the project drainage. To prevent scouring, a concrete cut-off wall is included in the project design at the upstream / Honoka'a corner of Pier #2 spread footing foundation. Further, due to the height and size of the drain outlets, the stormwater stream would be dispersed by the air prior to hitting the ground, and scouring and erosion of vegetated areas would be avoided. The storm drains would be constructed in accordance with FHWA drainage standards Roadway runoff in Hawai'i County does not require additional permitting, such as an individual NDPES permit (HDOH 2011).

The proposed project includes continued maintenance of the historic bridge consisting of temporary repairs and repainting. Repainting and bridge maintenance would continue to occur approximately every two years. BMPs required for these maintenance activities would be implemented to minimize any potential discharge into the stream, and no additional adverse effects would occur.

3.3 NATURAL HAZARDS

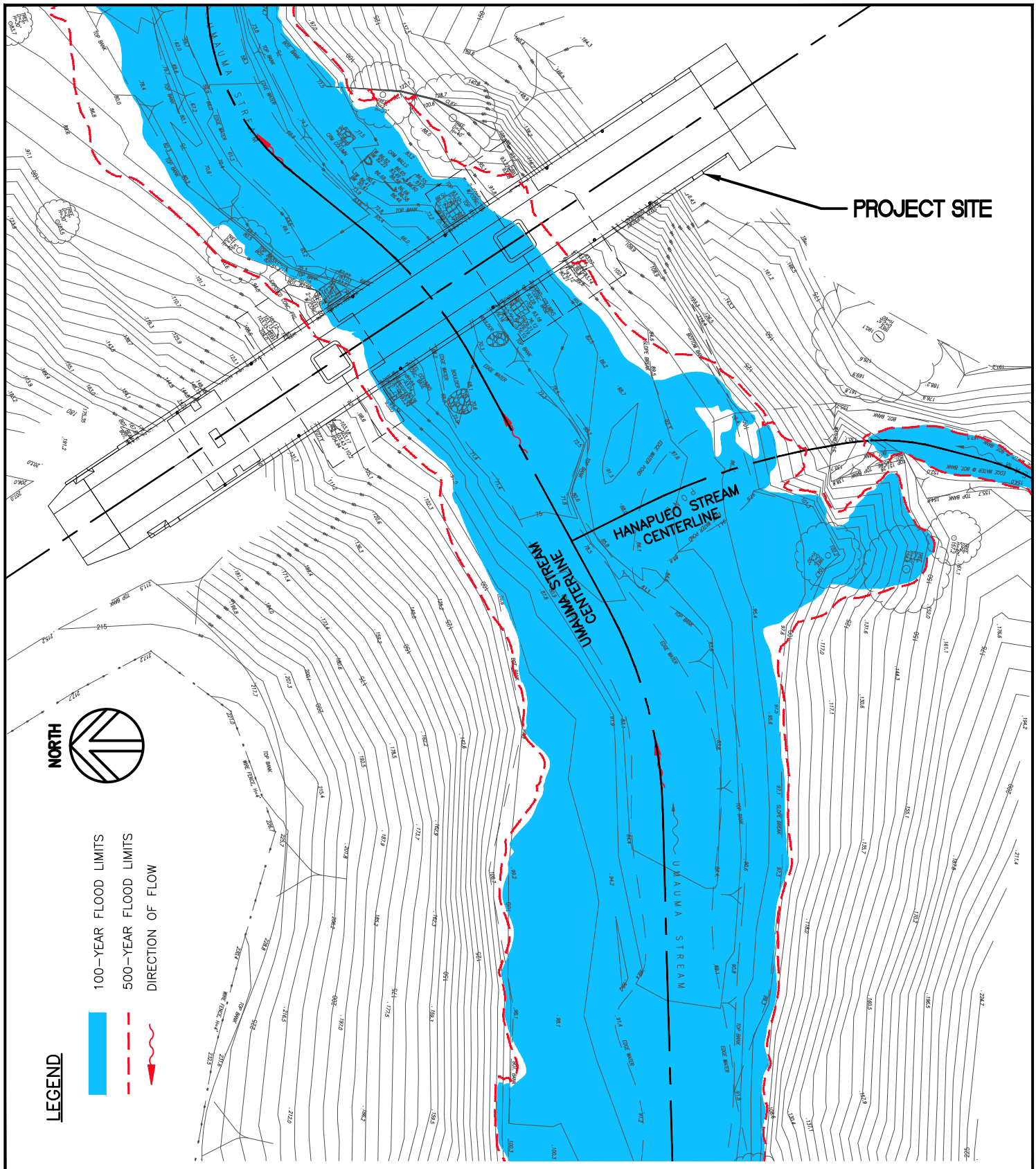
Natural hazards in Hawai‘i include floods, hurricanes, volcanoes, and earthquakes. The project site is in an area that is not mapped by the Federal Emergency Management Agency (FEMA) and is identified an area of minimal tsunami inundation. Due to the lack of available stream flow data, the stream flows will be calculated using the regression equation developed under the publication “Flood-Frequency Estimates for Streams on Kauai, Oahu, Molokai, Maui, and Hawaii, State of Hawaii” dated 2010, developed by the USGS in cooperation with DOT. The 100-year recurrence interval storm water runoff rates for Umauma Stream are shown in Figure 9. Along with the hazardous effects of strong winds, Hawai‘i is also subject to the threat of approaching tropical storms and hurricanes. The project area is not located adjacent to any active volcanoes. For a discussion of potential hazards from rock falls, see Section 3.1, *Topography and Soils*.

IMPACTS AND MITIGATION MEASURES

During construction, stream flood events, or flash flooding, could result in potential hazards to workers and construction equipment located in the flood hazards area. Site-specific BMPs included as part of the project include measures to be taken in the event of intense rainfall, weather, or increased stream flows. These measures include relocation of personnel and construction materials and equipment to higher ground (a minimum of 10 feet above the OHWM). With implementation of these BMPs, potential hazards to construction workers would be minimized, and no mitigation would be required.

Construction of the proposed bridge rehabilitation project would not result in increased flooding or hazards from flooding in surrounding areas. While the proposed bridge footings would be within a flood hazard zone, they are designed to withstand stream flood flows. During stream flood events, the average velocity of the stream is not uniform across the channel section: the higher velocity flows occur in the center of the stream, and the lower velocities will occur at the banks. Debris is typically transported through the center of the stream due to the higher velocities. Therefore, it is not anticipated that the footing forms would be subjected to heavy debris impacts during a stream flood event.

While there is no FEMA map for the project area showing tsunami inundation areas, the maximum elevation run-ups are around 17 feet MSL for tsunami inundation on FEMA maps near Hilo. Since the bridge footings are located near 70 feet MSL, it is unlikely a tsunami event would affect the bridge structure.



Source: "Storm Drainage Analysis for Hawai'i Belt Road Rehabilitation of Uma'uma Sream Bridge" by Bow Engineering Date: October 2010

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HAWAII BELT ROAD - REHABILITATION OF UMAUMA STREAM BRIDGE

FLOOD LIMITS

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The proposed concrete footing design would minimize damage during tropical storm, hurricane, or strong wind events, and earthquake events. The maximum design wind velocity applied was 105 miles per hour in accordance with HDOT Highways Division "Design Criteria for Bridges and Structures" (Oct 20, 2010 edition). Prior to the initiation of construction, the County would review proposed construction plans for consistency with County requirements and good engineering practice. No significant environmental effects would result, and no mitigation would be necessary.

3.4 BIOLOGICAL RESOURCES

Water quality and biological surveys were completed for a 1,200-foot segment of Umauma Stream on July 21, 2010 to identify aquatic biota and assess water quality (see Appendix C). This section summarizes the biological findings of the report.

Vegetation: The stream gorge margins are steep and covered in vegetation. Most of the species of flowering plants and fern observed along the stream banks are recently naturalized species and Polynesian introductions, including sourbush (*Pluchea carolinensis*), Guinea grass (*Urocloa maxima*), torpedo grass (*Panicum repens*), and Hilo grass (*Paspalum conjugatum*) (AECOS, Inc. 2010). Of the 23 species observed, only one species, *neke* (*Cyclosorus interuptus*) is indigenous[3] to the Hawaiian Islands.

Aquatic biota: Umauma Stream provides habitats for three species of 'o'opu, two of which (*L. concolor and S. stimpsoni*) are endemic to the Hawaiian Islands. Two species of endemic crustaceans (*A. bisulcata* and *M. grandimanus*) were observed during the field survey, and a native limpet and sponge have also been reported within the stream (DAR 2008). None of the aquatic species observed during the survey is listed as threatened or endangered by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973, as amended, or by the State of Hawai'i under its endangered species program (*AECOS* Inc. 2010).

Wildlife Species: Based on data compiled by the Hawaii Biodiversity and Mapping Program, and the Hawaii GAP Program, the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) and Hawaiian hawk (*Buteo solitarius*) have been observed in the vicinity of the proposed project. There is no federally designated critical habitat on the project site (USFWS consultation letter dated June 6, 2011 – see Appendix A).

IMPACTS AND MITIGATION MEASURES

The proposed project would enlarge bridge footings and would result in the removal of all existing vegetation within the grading limits shown on Figure 5; these areas would be re-grassed following construction to prevent erosion, and would later be re-colonized by localized grasses and plants. The enlarged footings would result in long-term loss of a few square feet of natural habitat. No adverse long-term effect to natural habitat would occur with project implementation.

[3] Occurs naturally in a particular region or environment, but may occur elsewhere.

Hawaiian hoary bats roost in woody vegetation and leave their young in trees and shrubs when they forage. The Hawaiian hawks also nest in woody vegetation. To minimize potential impacts to the endangered Hawaiian hoary bat and Hawaiian hawk, the following measures would be required:

- During construction, woody plants greater than 15 feet tall shall not be removed or trimmed during the bat-birthing and pup-rearing season (May 15 through August 15).
- Brush and tree clearing for construction should be avoided during the Hawaiian hawk-breeding season (March through September). If clearing should occur during the Hawaiian hawk-breeding season, a biological survey shall be conducted to determine if Hawaiian hawk nests are in the vicinity. A qualified biologist shall conduct these surveys or ornithologist in accordance with USFWS survey methodology.

During construction, site-specific BMPs developed as part of the project would minimize erosion and sedimentation and potential adverse effects to aquatic biota down stream of the project site. No adverse long-term effects to aquatic biota would occur with project implementation, and no mitigation would be necessary.

3.5 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

HISTORICAL PERSPECTIVE

Hāmākua Area History

Early Cultural History

The cultural history of the Hāmākua area includes legend of three gods native to Hawai‘i Island: Pele, Poli‘ahu, and Kamapua‘a. Kamapua‘a lived in Kohala, Pele in the crater of Kilauea, and Poli‘ahu on the summit of Mauna Kea. The battles of Poli‘ahu and Pele resulted in eruptions and earthquakes, which gave shape to the Hāmākua landscape (County of Hawai‘i 2010).

The largest early Hawaiian settlements in the Hāmākua area were located in Waimanu and Waipi‘o Valleys. Most settlements included small villages where wet land taro was grown. There were six *moku* (districts) and many separate land divisions, or *ahupua‘a* (land division usually extending from the uplands to the sea), within the island. Connecting all *moku* was a system of trails. There are several sacred sites in the Hāmākua area, and heiau (temple) were known to exist in Waipunalei, the vicinity of Laupāhoehoe, Kukuihaele area, and at Lalakea, among others. An archaeological study of Waipi‘o Valley and Hāmākua conducted in 1977 found that there is a scarcity of visible prehistoric habitation sites along the Hāmākua coast due to agricultural practices, although some subsurface deposits may still exist (County of Hawai‘i 2010).

Historic Activities and Land Uses

From the onset of western interest, there were several trade markets on the island of Hawai‘i, including sandalwood trade until the 1820’s, whalers after 1810, and cattle ranching. In Hāmākua, dairies and other agricultural activities were important. Sugar was the most prominent agricultural crop, and plantation areas cropped up in Hāmākua. The sugar industry resulted in new infrastructure, including extensive flume systems, railways, and bridge trestles spanning

large gulches. Sugar was the dominant agricultural crop in the area until 1994, when the last sugar plantation in Hāmākua closed (County of Hawai'i 2010).

Project Site History

The existing Umauma Bridge was originally built in 1911 to support railroad tracks and consisted of two main steel trestles (or towers) supporting six spans of riveted steel plate girders. In the early 1950's, the bridge and the trestles were widened to support a two-lane highway for vehicular traffic. The widened bridge consisted of a concrete bridge deck, sidewalks, and an open beam and post type railings. In the early 2000's, the bridge was retrofitted to resist updated earthquake design loads.

AREA HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Umauma Bridge was included in two different historic bridge inventories – one done in 1987, which was accepted by the SHPD ("The Historic Bridge Inventory and Evaluation of the Island of Hawaii" prepared for the State of Hawaii, Department of Transportation, Highway Division (SDOT), July 1987) and the other current one is a draft statewide bridge inventory ("State of Hawaii Historic Bridge Inventory and Evaluation" prepared for the State of Hawaii, Department of Transportation, Highway Division (SDOT), prepared by the Heritage Center, School of Architecture, University of Hawaii at Manoa in 2008). Both inventories show the Umauma Bridge has been identified as eligible for listing on the Hawaii and National Register of Historic Places.

Umauma Bridge is part of a National Register eligible multiple property nomination of "Steel Trestle Bridges on the Hāmākua Coast" written by Spencer Lieneweber in cooperation with the Hawai'i DOT. The SHPD and DOT are currently working toward an agreement on the bridge inventory and finalizing documentation for the National Register. The bridge is significant under National Register criteria for its association with the Hilo Railroad Company, which played a major role in the development of the Hāmākua Coast for sugar plantations and as one of the few remaining steel girder and trestle bridges that represent the work of John Mason Young.

A field inspection of the project area was conducted by Robert B. Rechtman, Ph.D. of Rechtman Consulting, LLC on March 11, 2010. Based on this inspection, it was determined that the footing areas for the new concrete columns have already been significantly impacted as a result of the original bridge construction, and that no archaeological or cultural resources are present.

Cultural practices such as fishing and gathering may occur on some areas of Umauma stream; however, Umauma stream gulch is largely inaccessible from the bridge, as the sides of the gully are steep, with some areas as steep as near vertical near the bottom of the slope. Most of the slope areas are covered by vegetation. There is no public access to the stream at the project location.

IMPACTS AND MITIGATION MEASURES

As described above, the footing areas for the new concrete columns are located on basaltic bedrock and have already been significantly impacted as a result of the original bridge

construction. No archaeological or cultural resources are present. Therefore, the placement of the new concrete columns would have no effect on archaeological resources. While cultural practices such as fishing and gathering may occur on some areas of Umauma stream, implementation of the proposed project would not result in any long-term adverse affects to these activities. For a discussion of potential short-term impacts to water quality, see Section 3.2, *Hydrology and Water Quality*.

Section 106 of the National Historic Preservation Act (NHPA) requires that the head of any Federal department having authority to license any undertaking shall, prior to the issuance of any authorization, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. Under Section 106 of the NHPA, the FHWA is required to consult with the State Historic Preservation Officer (an official appointed in each State or territory to administer the National Historic Program) in order to determine a project's potential to impact resources of historic or cultural significance.

Formal consultation with the State Historic Preservation Division (SHPD) has been conducted in accordance with Section 106 of the National Historic Preservation Act and HRS Section 6E-8. FHWA has determined the project to have "no adverse effect with conditions", and the SHPD has concurred with those findings (see letter in Appendix A). The conditions include:

1. The trestles and steel girders are retained.
2. Color the center concrete column a color such that the trestles will be more visually dominant.
3. Paint the trestles with a coating more long term to alleviate the corrosion problems necessitating the rehabilitation project.
4. Additional girders will resemble, but to the trained eye not duplicate, the originals.
5. The look and feel of the bridge is maintained as presented to SHPD.
6. DOT will provide the requested additional photographic documentation.
7. Submit the Steel Trestle Bridges of the Hāmākua Coast multiple property nomination to the Hawaii Historic Places Review Board for consideration within one year of this letter.
8. Retain the Hamilton & Chambers plaque that is affixed to the bridge's present superstructure.
9. Continue to consult with the Hawaii SHPO throughout the schematic, design development and final design stages to ensure the work conforms to the Secretary of Interior's Standards for Rehabilitation.

While there is low probability of encountering archaeological sites in this area, in the event that historic resources, including human skeletal remains, are identified during the construction activities, all work would cease in the immediate vicinity of the find, the find would be protected from additional disturbance, and the State Historic Preservation Division, Oahu Section, would be contacted immediately. With implementation of these conditions, no adverse effect to cultural, historic, or archaeological resources would occur.

3.6 AIR QUALITY AND CLIMATE

The project site is located along the Hāmākua coast on the northeastern shore of Hawai'i Island. This area lies nearly perpendicular to the prevailing flow of the trade winds, and is moderately rainy, with frequent trade wind showers. Rainfall in the project area ranges from 160 inches annually at the coastal elevations to over 240 inches in the areas upslope of the project site (County of Hawai'i 2010). Temperatures are generally uniform and mild, with daytime temperatures commonly in the 70's to 80's and nighttime temperatures are in the 60's to 70's.

The Department of Health, Clean Air Branch, monitors the ambient air in the State of Hawai'i for various gaseous and particulate air pollutants. The U. S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM_{10} and $PM_{2.5}$). Hawai'i has also established a state ambient air standard for hydrogen sulfide. The primary purpose of the statewide monitoring network is to measure ambient air concentrations of these pollutants and ensure that these air quality standards are met.

The closest monitoring station to the project area is located in Hilo, mainly to monitor air quality impacts from fugitive dust and hydrogen sulfide. According to the State of Hawai'i Department of Health Annual Summary 2009 Air Quality Data, criteria and pollutant levels in the State of Hawai'i remained well below all federal and state ambient air quality standards (Hawaii DOH, 2009).

IMPACTS AND MITIGATION MEASURES

Construction of the proposed bridge rehabilitation project could result in temporary air quality effects, including exhaust emissions from construction vehicles and dust generated by short-term construction related activities. Components of construction emissions include employee trips, exhaust emissions from construction equipment, and fugitive dust emissions. Grading and earthwork within the project area could generate airborne dust particulates.

Dust control measures such as watering and sprinkling shall be implemented as needed to minimize wind-blown dust. To minimize construction-related exhaust emissions, project contractors shall ensure that all internal combustion engines are maintained in proper working order. In addition, the work shall be in conformance with the air pollution control standards contained in HAR, Title 11, Chapters 59, "Ambient Air Quality Standards," and Chapter 60, "Air Pollution Control." With re-grassing of exposed areas following construction, wind-blown dust in the project area would be minimized.

Once constructed, the proposed bridge rehabilitation project and associated concrete footings would not result in any air emissions, and there would be no long-term adverse air quality impacts associated with the proposed action. Other than passing vehicles on the highway and over the bridge, there are no air contaminant sources in the project area.

3.7 NOISE

The project site is located in a rural area of northeast Hawai‘i Island. Surrounding noise levels in the vicinity of the project site are considered relatively low. Existing noise sources are from occasional vehicular traffic crossing the bridge, in addition to the sound of flowing stream water. There are four rural residential properties within a quarter mile of the nearest construction area.

IMPACTS AND MITIGATION MEASURES

Noise impacts from a project can be categorized as those resulting from construction and those from operational activities. Construction noise would have a short-term effect; operational noise would continue throughout the lifetime of the project. Implementation of the proposed bridge rehabilitation project could temporarily increase noise levels during demolition of the existing bridge deck and construction of the new bridge deck and footings above maximum allowable limits. Typical heavy construction equipment would include but may not be limited to crane, excavator, hydraulic hammer, pneumatic compactor, cold planer, paving skid, concrete truck, and haul truck. It is anticipated that there would be some type of hammering or drilling for approximately 18 months of the 24-month total construction duration.

Construction-period noise would be minimized by project compliance with HAR Chapter 11-46, “Community Noise Control” of the State Department of Health. According to these rules, a noise permit would be required if construction noise is expected to exceed allowable limits. As established in HAR §11-46-4 and 11-46-6, the maximum permissible sound level during construction in the project area is 70 dBA[4]. Construction noise typically varies between 70 and 96 dBA, which exceed permissible levels established in HAR §11-46-4.

During certain construction phases, highway travel lanes would need to be closed, resulting in one-way traffic. In order to minimize adverse traffic impacts, work requiring lane closure is proposed to be at night. Construction noise exceeding permissible sound levels outside the time period of 7 am-6 pm Monday through Friday, or 9 am-6 pm on Saturday, or any time on Sundays and holidays would require a noise variance (HRS §342F). Therefore, in addition to the noise permit, a noise variance would be requested to extend work hours into the evenings and on weekends.

A single-family residence is located approximately 400 feet from the construction work area, and could be adversely affected from nighttime construction activity. To minimize adverse noise effects, the nearby residents would be contacted via phone call or visit and informed of the schedule and proposed construction activities.

There would be no long-term increase in noise during project operations since the project includes rehabilitation of an existing bridge, which is considered a passive structure. Further, the project would not generate additional traffic and associated noise.

[4] An A-weighted decibel is a decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels. For this reason, environmental noise usually is measured in dBA. Generally, a three-dBA increase in ambient noise levels represents the threshold at which most people can detect a change in the noise environment.

3.8 AESTHETIC AND VISUAL RESOURCES

The project site consists of a roadway bridge spanning Umauma Stream gulch. Surrounding land uses are rural agricultural. From the highway while driving, there are limited scenic views for motorists both *mauka* and *makai* of the stream and ocean. Motorists often stop in the area to view the falls from the bridge.

The Hāmākua Heritage Corridor follows Māmalahoa Highway (State Route 19) from Hilo to the Waipi‘o lookout. Umauma Falls at the World Botanical Gardens is identified as a scenic site along the corridor. While the Heritage Corridor does not have legal status at this time (July 2011), Hawai‘i County Code §25-6-60 established a means to designate scenic corridors. The scenic byways program is intended to provide for the enhancement of important scenic, historic, recreational, cultural, and/or natural resources accessed from identified scenic corridors.

IMPACTS AND MITIGATION MEASURES

During construction, workers, materials, and equipment would be visible from the bridge and highway. Most of the proposed repair work would be out of site for visitors viewing the falls from the bridge since the work would be underneath the bridge. As an already existing roadway and bridge, the bridge rehabilitation project would not significantly change the scenic and visual character of the surrounding area.

3.9 SOCIAL CHARACTERISTICS

Population

The year 2010 population in Hawai‘i County consisted of 185,079 persons, with a 24.5 percent increase from 2000 to 2010 (Census 2010). Population forecasts as set forth by the State Department of Business Economic Development and Tourism (DBEDT) indicate a projected population of approximately 279,700 residents by the year 2035, with an average annual growth rate of 1.3 percent (DBEDT 2009).

Economy

Agriculture is an important industry in the project area. In addition to agriculture, people in the greater project area are employed in a variety of industries not located in the project area. The annual average wage in private employment for Hawai‘i County in 2008 was $33,267, compared to $38,466 in the State. Due to the rural nature of the project area, residents generally must travel to Hilo or Waimea to obtain social and health services.

Recreation

The roadway and bridge are located in a dedicated public right-of-way. Umauma stream gulch is largely inaccessible from the bridge, as the sides of the gully are steep, with some areas as steep as near vertical near the bottom of the slope. There is no public access to the stream at the project location.

IMPACTS AND MITIGATION

Implementation of the proposed action would not displace any residents or businesses since construction would occur within the existing State right-of-way. While construction employment would be created during the project construction phase, needed employees could be expected to be provided by the local labor pool, without the importation of significant amounts of new labor. The Hawai'i Belt Road is important for the movement of people and goods in a safe an efficient manner, and the proposed bridge rehabilitation project would have a beneficial effect to this end.

3.10 UTILITIES AND PUBLIC SERVICES

UTILITIES

There are no utilities that span the bridge. There are utility/electrical lines on suspended over the gulch on both *mauka* and *makai* sides of the bridge. The *mauka* utility line may need to be temporarily relocated to allow for use of a crane during construction.

POLICE, FIRE, AND EMERGENCY MEDICAL SERVICES

The County Fire Department provides fire fighting, emergency medical service, search and rescue, hazard materials response, and life guarding services. There are fire stations located at Honoka'a and Laupāhoehoe, together with the fire stations in Hilo. Police patrol the area

Hale Ho'ola Hāmākua (HHH) serves the healthcare needs of the communities of Hāmākua, North Hawai'i, and South Kohala. Other medical facilities that serve the general project area population include North Hawai'i Community Hospital (Waimea), Waiakea Health Center (Hilo), and Hilo Medical Center.

IMPACTS AND MITIGATION

During construction, there may be increased calls or complaints to the police from motorists due to traffic disruption, noise, and temporary lane closures. The proposed improvements would not result in an increase in service demands from police and fire protection or other public services. No significant adverse impacts to existing utilities and public services are expected, and no mitigation would be necessary.

3.11 TRAFFIC AND TRANSPORTATION

The Umauma Stream Bridge carries the Hawai'i Belt Road, also known as Māmalahoa Highway (Highway No. 19), over Umauma Stream. Hawai'i Belt Road is a two-lane regional arterial roadway that provides primary access to the area. As reported by DOT in April 2011, the Average Daily Traffic (two-way) is estimated at 8,100 in 2011 and estimated to increase to 11,300 in 2031. A traffic accident analysis for Umauma Bridge from the State of Hawai'i, Department of Transportation, Traffic Branch did not identify any potential areas of concern within the limits of the project (September 13, 2011).

IMPACTS AND MITIGATION

Construction of the proposed bridge rehabilitation project would result in short-term impacts on traffic. During certain construction phases, one highway travel lane would need to be closed, resulting in one-way traffic and temporary delays. Temporary lane closure is proposed to occur during nighttime hours to minimize impacts to traffic. Providing notification of any temporary closures would minimize impacts to the public. Emergency services (police, fire, and ambulance services) and area residents would be given adequate notice of potential delays prior to construction. A temporary construction staging area is proposed be located on an adjacent property to the bridge to minimize illegal parking and ensure safety.

There would be no direct increase in operational traffic due to implementation of the proposed bridge rehabilitation project. While there were no areas of concern identified in the traffic accident analysis for Umauma Bridge, the proposed improvements would bring the bridge roadway in compliance with FHWA regulations and current safety standards. The removal of the existing sidewalks and bridge railings, the widening of the bridge deck and constructing new bridge railings (which conform to current acceptable standards) along both sides of the bridge would improve the safety for high-speed vehicular traffic by eliminating a potential vaulting hazard that a sidewalk could present. No additional vehicular lanes are proposed that could increase roadway capacity.

The bridge is regularly used as a viewing point by pedestrians for the waterfalls on Umauma Stream, creating a potential hazard to both motorists crossing the bridge and pedestrians stopping to view the falls. The proposed project includes wider shoulders and taller bridge railings along both sides of the bridge, which would improve the safety for bicyclists and pedestrians.

3.12 LAND USE CONTROLS

Sate and County policy, and land use and community plans and controls are established to address the long-term physical, social, economic, and environmental needs in Hawai‘i. State and County land use controls for the Rehabilitation of Umauma Stream Bridge project are described below.

STATE OF HAWAI‘I

The Hawai‘i State Plan, as codified in HRS Chapter 226, established a set of goals, objectives, and policies that serve as long-range guidelines for the growth and development of the State. The following discussion evaluates the general consistency of the proposed bridge rehabilitation project with the Hawai‘i State Plan goals and policies.

Table 1	**Consistency of the Proposed Rehabilitation of Umauma Stream Bridge Project with Adopted Hawai'i State Plan Objectives and Policies**
§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.	
Objective:	(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi- cultural/historical resources.
Policy:	(1) Promote the preservation and restoration of significant natural and historic resources.
Policy:	(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
	The proposed bridge rehabilitation project is designed to minimize potential impacts to historic impacts. There would be no adverse impacts to the aesthetic environment with implementation of the proposed project.
§226-13 Objectives and policies for the physical environment--land, air, and water quality.	
Objective:	(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.
Policy:	(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.
Policy:	(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.
	The proposed project includes site-specific BMPs to minimize potential sedimentation and erosion in the project area. The proposed improvements would bring the bridge roadway in compliance with FHWA regulations and current safety standards. The removal of the existing sidewalks and bridge railings, the widening of the bridge deck and constructing new bridge railings (which conform to current acceptable standards) along both sides of the bridge would improve the safety for high-speed vehicular traffic by eliminating a vaulting hazard that a sidewalk would present.
§226-17 Objectives and policies for facility systems--transportation.	
Policy:	(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment;
	The proposed project is designed with sensitivity to the natural environment. The project would provide short-term construction employment and would ensure the continued movement of people and goods in a safe and efficient manner.

Hawai'i State Environmental Policy

The identified purpose of the State Environmental Policy (HRS Chapter 344) is to "encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaii" (HRS §344-1). The following policies and guidelines from the State Environmental Policy apply to the proposed bridge rehabilitation project:

Table 2	Consistency of the Proposed Rehabilitation of Umauma Stream Bridge Project with State Environmental Policy Policies
§344-3 Environmental policy. It shall be the policy of the State, through its programs, authorities, and resources to:	
(1)	Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.
	The proposed project includes site-specific BMPs to minimize potential sedimentation and erosion in the project area. The proposed improvements would bring the bridge roadway in compliance with and current safety standards and is designed to minimize potential impacts to historic resources. There would be no long-term adverse impacts to natural resources and the environment with implementation of the proposed project.
§344-4 Guidelines. In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines:	
(2)	Land, water, mineral, visual, air, and other natural resources.
(A)	Encourage management practices which conserve and fully utilize all natural resources.
	The proposed project includes site-specific BMPs to minimize potential sedimentation and erosion in the project area and is designed with sensitivity to the natural environment.
(4)	Parks, recreation, and open space.
(A)	Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses;
	The proposed project is designed to minimize potential impacts to historic resources (see section 3.5 of this document).

State of Hawai'i, Land Use Commission – State Land Use Districts

The HRS Chapter 205 establishes four major land use district in which all lands in the State are placed. These districts include: urban, rural, agricultural, and conservation. The land *makai* of the bridge appears to be located within the "Conservation" District Resource Subzone classification. According to consultation with the Office of Conservation (OCCL), it is unclear if the bridge actually lies within the Conservation District or Agricultural District, as the roadway marks the boundary between these designations. The bridge appears to be a nonconforming structure, constructed after 1912 and improved upon in 1955, prior to Conservation District rules (1964). HRS §183C-5 allows for the continued use of nonconforming structures. Further, since the majority of the work would take place within the right-of-way, which is outside of OCCL jurisdiction, a Conservation District Use Permit would not be required.

Coastal Zone Management Program

In October 1972, the Congress passed the Coastal Zone Management Act for the purpose of establishing a national program for the management, beneficial use, protection, and development of land and water resources of the coastal areas of the United States. The Hawaii Coastal Zone Management (CZM) Program (HRS Chapter 205A) was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The objectives and policies of the CZM are to

provide recreational resources; protect historic, scenic, and coastal ecosystem resources; provide economic uses; reduce coastal hazards; and manage development in the coastal zone. An application for a Federal Consistency Review for the CZM Program was submitted for the proposed project, and concurrence of CZM consistency was issued on August 26, 2011. A brief discussion of the project's conformance with the CZM objectives is included below.

Table 3 Consistency of the Proposed Rehabilitation of Umauma Stream Bridge Project with Hawaii Coastal Zone Management (CZM) Program Objectives

RECREATIONAL RESOURCES	
Objective:	Provide coastal recreational opportunities accessible to the public. The roadway and bridge are located in a dedicated public right-of-way. Umauma stream gulch is largely inaccessible from the bridge, as the sides of the gully are steep, with some areas as steep as near vertical near the bottom of the slope. There is no public access to the stream at the project location.
HISTORIC RESOURCES	
Objective:	Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture. The bridge has been determined eligible for listing in both the Hawaii state and National Register of Historic Places. The proposed rehabilitation project would conform to the Secretary of Interior's Standards for Rehabilitation, and the State Historic Preservation Division has concurred with the determination of "no adverse effect with conditions".
SCENIC AND OPEN SPACE RESOURCES	
Objective:	Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources. The bridge project is not directly adjacent or abutting a scenic landmark, how Umauma Falls can be seen from the bridge and highway near the bridge and visitors stop in this area to view the falls. As an already existing roadway and bridge, the bridge rehabilitation project would not significantly change the scenic and visual character of the surrounding area.
COASTAL ECOSYSTEMS	
Objective:	Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems. A portion of one proposed footing is within the jurisdictional waters (OHWM) of the U.S. and a USACE permit application has been submitted. Clearing and grubbing would occur adjacent to the highway for construction staging and near the stream beneath the bridge above the OHWM for construction staging. Site-specific BMPs have been prepared to minimize adverse effects to project waterways.
ECONOMIC USES	
Objective:	Provide public or private facilities and improvements important to the State's economy in suitable locations. Rehabilitation of the Umauma Stream Bridge is vital to maintaining the viability of the Hawai'i Belt Road, which connects Hilo to Hāmākua, Waimea, and Kailua-Kona. The Hawai'i Belt Road is important for the movement of people and goods in a safe an efficient manner, and the proposed bridge rehabilitation project would have a beneficial effect to this end.

Table 3	**Consistency of the Proposed Rehabilitation of Umauma Stream Bridge Project with Hawaii Coastal Zone Management (CZM) Program Objectives**
COASTAL HAZARDS	
Objective:	Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.
	Construction of the proposed bridge rehabilitation project would not result in increased flooding or hazards from flooding in surrounding areas. While the proposed bridge footings would be within a flood hazard zone, they are designed to withstand stream flood flows.
MANAGING DEVELOPMENT	
Objective:	Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
	Details of the proposed project were provided to elected leaders and federal, state, and county agencies for early consultation. The opportunity for public review will occur with issuance of the DEA and the USACE permit public notice. Site-specific BMPs would be required of the contractor to prevent adverse effects to state coastal waters.
PUBLIC PARTICIPATION	
Objective:	Stimulate public awareness, education, and participation in coastal management.
	See above.
BEACH PROTECTION	
Objective:	Protect beaches for public use and recreation.
	The proposed bridge footing is approximately 275 feet inland of the shoreline and approximately 75 feet above mean sea level. The footing would be embedded in solid rock. Because of the nature of the work and the distance from the shoreline, there is no risk of coastal erosion.
MARINE RESOURCES	
Objective:	Implement the State's ocean resources management plan.
	A conservation ethic and stewardship would be applied in the proposed project through the application of the site-specific BMPs. No marine or coastal resources are affected because of the BMPs and the distance of the project from the shoreline.

Special Management Area Designation

The CZM outlines controls and policies within an area along the shoreline called the Special Management Area (SMA). The objectives of the SMA were "the maintenance, restoration, and enhancement of the overall quality of the coastal zone environment, including, but not limited to, its amenities and aesthetic values, and to provide adequate public access to publicly owned or used beaches, recreation areas and national reserves." The purpose of the SMA Permit is to regulate any use, activity or operation that qualifies as a "development" and is administered at the County level. The project area is located within the SMA boundary. However, because "[r]epair or maintenance of roads and highways within existing rights-of-way" are not considered "development" according to HRS Chapter 205A-22 and Planning Commission Rule 9-4(e)(2)(B), the proposed bridge rehabilitation project would be considered exempt, and further review of the project according to SMA rules and regulations would not be required.

COUNTY LAND USE PLANS AND POLICIES

County of Hawaii General Plan

The *County of Hawaii General Plan* (2005) is a long range, generalized planning policy document to guide development of the County. It serves as a basis for an implementation program to effectuate desired changes and improvements in the social, economic, and environmental atmosphere of the County. Topics addressed in the General Plan include goals and policies regarding population, land use, the environment, cultural resources, economic activity, housing and urban design, transportation, social infrastructure, and government. The General Plan identifies viewpoints of Umauma gulch both mauka and makai from the bridge as examples of natural beauty in the North Hilo District. A goal of the General Plan is to "[p]rotect scenic vistas and view planes from becoming obstructed." The proposed project is rehabilitation of an existing bridge and highway, and would not conflict with this goal.

County of Hawai'i Zoning Designation

The proposed bridge rehabilitation project is located within the State right-of-way. Since the proposed alignment falls within existing right-of-way, there are no specific zoning standards or requirements that would require discretionary review. Property adjacent to the project are zoned Agricultural District.

Hāmākua Community Development Plan (CDP)

The project site is located in the planning area of the Hāmākua Community Development Plan (CDP). The Hāmākua CDP is currently (July 2011) in the planning process and has not yet been adopted. In the Hāmākua CDP Draft Community Profile (December 2010), the viewpoint of falls in Umauma gulch both *mauka* and *makai* is identified as a natural beauty site and a scenic resource of the area. The proposed bridge rehabilitation project is also identified as one of the proposed and funded capital road improvements in the Planning Area under the State Transportation Improvements Plan (STIP) (FY2011-2014) and State Capital Improvements Program (CIP).

4 ALTERNATIVES TO THE PROPOSED ACTION

This chapter considers alternatives to the proposed action, including the No Action Alternative. The alternatives were rejected for their inability to meet the project objectives or because attainment of the objectives were achieved at a higher cost, either financially or environmentally.

4.1 PROPOSED ALTERNATIVES

NO ACTION ALTERNATIVE

Under the No Action Alternative, the Umauma Stream Bridge would continue under current operations and maintenance schedule. Current maintenance consists of temporary repairs and temporary repainting intended to slow down, but not stop, existing corrosion of steel. Maintenance painting and repairs occur approximately every 2 years. Even with temporary repairs and repainting, the condition of the existing bridge would continue to deteriorate, and eventually the bridge would become unsafe. Further, this alternative would not meet any of the project objectives, including:

- To rehabilitate the deteriorating, steel framed Umauma Bridge while satisfying SHPD historical requirements.
- To bring the bridge roadway in compliance with FHWA regulations and current safety standards.

ALTERNATIVE 1: REPAIR AND REPAINT THE EXISTING STEEL TOWERS EVERY 8 YEARS FOR NEXT 75 YEARS

Alternative 1 is a more long-term repair and repainting plan than the No Action Alternative, and is estimated to last up to about 8 years. While it would extend the life of the bridge over the No Action Alternative, the cost and effort of doing a long-term repair/repainting cycle is substantially greater than cost/effort to do a temporary repair/repainting cycle. In addition, the following objectives would not be met:

- To rehabilitate the deteriorating, steel framed Umauma Bridge while satisfying SHPD historical requirements.
- To bring the bridge roadway in compliance with FHWA regulations and current safety standards.

ALTERNATIVE 2: BUILD NEW CONCRETE TOWERS WITHIN EXISTING STEEL TOWERS AND KEEP EXISTING BRIDGE SUPERSTRUCTURE (NO WIDENING).

This alternative would include building new concrete towers within the existing steel towers similar to the proposed action. Therefore, the project would meet the identified objective of rehabilitating the bridge while satisfying SHPD historical requirements. However, it would not

include improvements to the bridge roadway, including widening of the roadway. The following objective would not be met:

- To bring the bridge roadway in compliance with FHWA regulations and current safety standards.

ALTERNATIVE CONSIDERED BUT ULTIMATELY REJECTED: REPLACE EXISTING BRIDGE

One alternative considered but ultimately rejected included replacing the existing bridge in its entirety. This alternative was rejected due to significant and unavoidable adverse effects to historic resource, since it would result in the demolition of a significant historic resource.

4.2 LIFE CYCLE COST ANALYSIS OF ALTERNATIVES

To assist in the selection of the most cost-effective alternative, a life cycle cost analysis was performed for several of the alternatives (see table below). The cost analysis assumes a 75-year life cycle and 2007 dollars.

Alternative 1: Repair and repaint	$112,000,000
Alternative 2: Build new concrete towers – no widening	$51,000,000

The initial construction cost for Alternative 2 was estimated at $33 million, which is less than the proposed project cost of $35 million. However, as stated above, Alternative 2 would not meet the project-identified objective to bring the bridge roadway in compliance with FHWA regulations and current safety standards.

A cost analysis of a new parallel bridge next to the existing bridge was not considered due to its effect on realigning the existing roadway through the existing hillside at each end of the bridge. By inspection, the cost for this option would exceed the cost of all the other options already presented.

5 FINDINGS AND DETERMINATION

As set forth in HAR, Title 11, Department of Health, Chapter 200, §11-200-12, in considering the significance of potential environmental effects, an agency must "consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action." As evaluated in this EA, the proposed action is not expected to have a significant effect on the environment. The determination for the Rehabilitation of Umauma Stream Bridge Project is a Finding of No Significant Impact (FONSI). No Environmental Impact Statement would be required. The findings supporting this determination are discussed below.

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project would rehabilitate an existing bridge to preserve the historic integrity and improve roadway safety. The proposed project has been designed to avoid potential impacts to natural or cultural resources. Environmental impacts would be minimized by constructing the proposed improvements within the existing right-of-way and with implementation of mitigation measures and BMPs contained in this document.

(2) Curtails the range of beneficial uses of the environment.

The proposed improvements would not curtail the range of beneficial uses at the project site; implementation of the proposed rehabilitation project would be consistent with its current use as a bridge and roadway.

(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 project is consistent with the environmental goals, policies, and guidelines established in HRS Chapter 344 as discussed in Section 3.12 of this document. The project objective is to rehabilitate Umauma Bridge while maintaining its historical aspects and bring the bridge roadway in compliance with current safety standards.

(4) Substantially affects the economic or social welfare of the community or state.

The proposed action would have a positive effect on the economic and social welfare of the community and the state. Proposed improvements would support the safe movement of people and goods for the local community, as well as inter-island residents and visitors.

(5) Substantially affects public health.

Construction activities may temporarily increase fugitive dust and noise levels in the project vicinity. However, these impacts would cease upon completion of construction. No long-term negative impact on public health is anticipated with implementation of the proposed action. All

bridge and roadway improvements would be constructed in accordance with all health and safety regulations.

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

The proposed action is intended to serve the existing population and travelling public. The proposed action is not expected to generate population change since it would not increase the capacity of the roadway, and the bridge rehabilitation project would not create secondary demands and impacts on public facilities and services.

(7) Involves a substantial degradation of environmental quality.

There would be no long-term impacts associated with the proposed action. Construction activities may temporarily increase dust, noise, and traffic inconvenience in the project vicinity. However, these impacts would cease upon completion of construction. The project includes a small increase in impervious surfaces, which would increase stormwater runoff; however, project design includes the construction of storm drainage improvements that would redirect drainage from emptying directly into the stream. Storm runoff would be filtered through natural vegetation on the stream bank before entering into the stream. The proposed project also includes site-specific BMPs to minimize erosion and sedimentation effects to water quality. Additional mitigation measures included in Chapter 3 would minimize potential construction-related impacts.

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

The proposed action is limited to rehabilitation of Umauma Stream Bridge to preserve the historic quality of the bridge and bring the roadway into compliance with current safety regulations. The proposed action does not involve a commitment for larger action.

(9) Substantially affects a rare, threatened, or endangered species, or its habitat.

The proposed improvements would occur at the existing bridge and roadway alignment. With implementation of mitigation and BMPs described in Section 3.4 of this document, no substantial adverse effects would occur to rare, threatened, or endangered species, or its habitat.

(10) Detrimentally affects air or water quality or ambient noise levels.

Construction activities would have a short-term effect on air quality, water quality, and ambient noise levels. Mitigation included in Chapter 3 would minimize these potential impacts. No additional long-term impacts would occur.

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

There is no flood insurance map or flood hazard classification for the project area from the U.S. Federal Emergency Management Agency (FEMA). The project site is subject to minimal tsunami inundation. During construction, stream flood events, or flash flooding, could result in potential hazards to workers and construction equipment located in the flood hazards area. Site-specific BMPs included as part of the project include measures to be taken in the event of intense rainfall, weather, or increased stream flows. With implementation of these BMPs, potential hazards to construction workers would be minimized, and no mitigation would be required. Construction of the proposed bridge rehabilitation project would not result in increased flooding or hazards from flooding in surrounding areas. Prior to the initiation of construction, the County would review proposed construction plans for consistency with County requirements and good engineering practice.

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

As an already existing roadway and bridge, the bridge rehabilitation project would not significantly change the scenic and visual character of the surrounding area.

(13) Requires substantial energy consumption.

There would be energy consumption associated with construction of the proposed bridge rehabilitation project. The amount of energy that would be consumed with project implementation is not considered substantial.

6 INDIVIDUALS, COMMUNITY GROUPS, AND AGENCIES CONSULTED

6.1 CONSULTATION

EARLY CONSULTATION

Preliminary consultation with agencies, organizations, and individuals were conducted during preparation of the Draft EA for the Rehabilitation of Umauma Stream Bridge project. Agencies, organizations, and individuals followed by an asterisk (*) provided written comments for the project Draft EA, as included in Appendix A of this document. Comments received have been addressed in the appropriate sections of the EA.

Federal Agencies

US Army Corps of Engineers

US EPA, Region 9

* U.S. Fish and Wildlife Services

* National Marine Fisheries Services

State Agencies

* Department of Health (DOH)

Department of Agriculture

* Department of Defense

* Department of Education

Department of Human Services

Department of Labor and Industrial Relations

Housing Finance & Development Corporation

* Department of Accounting and General Services (DAGS)

Department of Business, Economic Development and Tourism (DBEDT), Office of Planning

DBEDT, Energy Office

University of Hawai‘i Environmental Center

* Office of Hawaiian Affairs (OHA)

* Department of Hawaiian Home Lands (DHHL)

Department of Land and Natural Resources (DLNR)

* DLNR, State Historic Preservation Division

DLNR, Division of Aquatic Resources

DLNR, Division of Conservation and Resource Enforcement

DLNR, Division of Forestry and Wildlife

DLNR, Land Division

* DLNR, Office of Conservation and Coastal Lands

County Agencies

* Department of Planning

* Department of Public Works

Department of Water Supply, Water Quality Assurance Branch

Department of Parks and Recreation

* Fire Department

* Police Department

* Department of Environmental Management
Department of Research and Development
Office of Housing and Community Development

Elected Officials
Senator Akaka
Senator Inouye
Congresswoman Hanabusa, 1st District
Congresswoman Hirono, 2nd District
William P. Kenoi, Mayor, County of Hawai'i
Malama Solomon, 1st Senatorial District
Mark M. Nakashima, 1st Representative District
Dominic Yagong, Hawaii County Councilmember, District 1

Community
North Hilo Community Council

Utility Companies
Hawaii Electric Light Company
Hawaiian Telcom

Libraries
Laupahoehoe Public Library
Hilo Public Library

News Media
Hawaii Tribune Herald
West Hawaii Today

COMMENTS AND RESPONSES ON THE DRAFT EA

Notification of the availability of the Draft EA was published in the October 23, 2011 *The Environmental Notice* by OEQC, in addition to the Hawai'i Tribune Herald, West Hawai'i Today, and Laupahoehoe and Hilo public libraries. During the 30-day public comment period ending November 21, 2011, agencies, organizations, and individuals were provided the opportunity to comment on the proposed project. The comment period was extended to allow several agencies to submit comments beyond the submittal deadline. Agencies that provided written comment are listed below. The comment letters and responses are included in Appendix B of this document.

Federal Agencies	
* National Marine Fisheries Service	November 15, 2011
State Agencies	
* Department of Education (DOE)	October 27, 2011
* Department of Hawaiian Home Lands (DHHL)	November 3, 2011
* Department of Labor and Industrial Relations	November 8, 2011
* Department of Accounting and General Services (DAGS)	November 16, 2011
* Department of Defense	November 17, 2011
* DLNR, Land Division	November 30, 2011
County of Hawai'i	
* Fire Department	October 21, 2011
* Department of Environmental Management	October 25, 2011

*	Police Department	October 27, 2011
*	Planning Department	November 22, 2011

6.2 LIST OF PREPARERS

This Final EA was prepared for DOT by RMBJ Consulting and Bow Engineering & Development, Inc. The following consultants were involved in the preparation of this document:

Raadha M. B. Jacobstein	Project Planner, RMBJ Consulting
William H. Q. Bow, P.E.	President, Bow Engineering & Development, Inc.
Brian Campbell	Project Engineer, Bow Engineering & Development, Inc.

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