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

COMMISSION ON WATER RESOURCE MANAGEMENT

May 22, 2013
Honolulu, Hawaii

Application for Stream Channel Alteration Permit (SCAP.3649.2)
Kaumuali'i Highway Improvements of Līhu'e Mill Bridge to Rice Street
Nāwiliwili Stream, Līhu'e, Kaua'i
(TMKs: (4) 3-8-004:007 por., (4) 3-8-005:003 and (4) 3-8-005:009 por.)

APPLICANT:
Stanford Iwamoto
State Department of Transportation
Highways Division
869 Punchbowl Street, Room 513
Honolulu, HI 96813

LANDOWNER:
Līhu'e MS, LLC
3970 Wyllie Road
Princeville, HI 96722
(TMKs: (4) 3-8-004:007 and (4) 3-8-005:009)

Grove Farm Company, Inc.
P.O. Box 662069
Līhu'e, HI 96766
(TMK: (4) 3-8-005:003)

SUMMARY OF REQUEST:

Application for Stream Channel Alteration Permit (SCAP.3649.2) is part of a larger project by the State of Hawai'i, Department of Transportation (HDOT) to widen Kaumuali'i Highway between Līhu'e Mill Bridge and Rice Street in Līhue District, Island of Kaua'i (Federal Aid Project No. ARR-050-1(036). This Project is one segment of the Phased Kaumuali'i Highway, Līhu'e to West of Maluhia Road Improvement Project being undertaken by HDOT, and will include construction of a new bridge span and approaches on the mauka side of the highway to carry two-lanes of west-bound traffic across the Nāwiliwili Stream gulch, and rehabilitation and widening of the existing Līhu'e Mill Bridge and approaches to carry two lanes of east-bound traffic.

LOCATION: See Exhibits 1, 2 and 3.

BACKGROUND:

On August 23, 2000, a Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) for the Kaumuali'i Highway Improvements, Līhu'e to West of Maluhia Road, were approved and published by the Office of Environmental Quality Control.

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On August 27, 2012, the Commission received a Draft SCAP application from Craig Araki of R.M. Towill Corporation (RMTC) on behalf of the applicant. A meeting was held with Commission staff to review the draft SCAP application, along with construction timeline, photos, and an updated FONSI.

On January 25, 2013, the Commission received a completed SCAP application from Jim Niermann of RMTC on behalf of the applicant.

On February 22, 2013, HDOT completed an Environmental Assessment Re-Evaluation for Phase 1 of the Kaumuali'i Highway Improvements, Līhu'e Mill Bridge to Rice Street. The Federal Highway Administration (FHWA) found that the FONSI issued on August 1, 2000 was still valid and no new or revised analysis under the National Environmental Policy Act was required.

On February 27, 2013, a letter acknowledging receipt of the SCAP application was sent to the applicant and RMTC, initiating the Commission's process for agency review of the project.

On April 25, 2013, Commission staff attended a meeting with representatives for HDOT Highways Division Kaua'i District, RMTC, and the State Department of Health's Clean Water Branch to coordinate agency review of the SCAP and Clean Water Act permit applications for the Project. Other meeting attendees included representatives from the U.S. Army Corps of Engineers, Division of Aquatic Resources, FHWA, and project contractor Kiewit Infrastructure West Company. The purpose of the meeting was to discuss key project activities and modifications to certain aspects of the project scope.

On April 29, 2013, the Commission received a Stream Channel Alteration Permit Application Information Update from RMTC describing key changes to the Project description from the original SCAP application. These changes include: 1) Modification to the temporary stream diversion to eliminate installation of two 36-inch high-density polyethylene (HDPE) diversion pipes by means of trenching and excavation in the stream bank and instead place one 60-inch HDPE pipe within the stream channel through the work area and anchored in place with flexible intermediate bulk container (FIBC) sand bags; 2) Installation of a temporary riprap causeway in the isolated stream channel to support drill rig operations for construction of the pier shaft; 3) Reduction of the amount of riprap bank protection on the east stream bank from 150 linear feet to approximately 12 linear feet; and 4) Elimination of a planned 36-inch diameter drainage outfall downstream from the existing bridge on the east bank.

DESCRIPTION:

Nāwiliwili Stream is a 7.0 mile long stream that runs perennially. The Nāwiliwili watershed encompasses an area of 5.2 square miles and zoned primarily for agriculture (56-percent) and urban (44-percent) use. Recent surveys show that the stream supports no native stream vertebrates and a limited number of native invertebrates. With no stream gages in the vicinity of Nāwiliwili Stream, for the project area RMTC calculated a typical flow value of approximately 70 cubic feet per second (cfs).

The existing Līhu'e Mill Bridge is non-conforming with current highway standards and no longer provides sufficient capacity to meet existing and projected traffic demands on Kaumuali'i Highway. Planned bridge improvements have been designed to meet current standards set by the American Association of State Highway and Transportation Officials, the FHWA, and HDOT.

The Project is a design-build that is being undertaken in thee increments (Exhibits 4 and 5).

Increment 1: Realignment of Ho'omana Road

Work will begin with the installation of best management practices (BMP) and relocation of existing utilities. Excavation and grading of a new Ho'omana Road alignment will be performed, along with the construction of a new road drainage system comprised of grassed swales, drain inlets and subsurface drain

lines. The new Ho'omana Road drainage system will tie into the existing drainage system on Kaumuali'i Highway. No work will occur in the stream during Increment 1. The work for Increment 1 is expected to begin February 2013and last until May 2013

Increment 2: Construction of the new bridge span and west-bound approach roads
Work will begin with the installation of best management practices (BMP) and relocation of existing utilities. The work for Increment 2 is expected to begin May 2013 and last until December 2013, and will be performed as follows:

- Diversion of Nāwiliwili Stream by means of a temporary sand bag inlet headwall anchoring a 60-inch diameter HDPE diversion pipe. The sand bag headwall will form a barrier across the stream channel and divert stream flows into the diversion pipe. The diversion pipe will be approximately 220 feet in length and will be placed on the stream bed through the work area beneath the existing and new bridge spans. A temporary sand bag outlet headwall will be placed at the downstream limits of the isolated work area to anchor the diversion outlet. Additional sand bags will be placed adjacent to the HDPE pipe at approximately 100-foot intervals to anchor the pipe in place.
- A temporary dumped riprap "causeway" will be placed in the isolated stream channel adjacent to the drill shaft location in the stream bank (Līhu'e Mill Bridge Pier Shaft 1) to provide a stable foundation for drilling equipment. The causeway will provide a flat work area approximately 40 feet long by 25 feet wide by 10 feet deep to match the top of the stream bank, with sides sloped at 2:1. Upon completion of pier shaft construction, the temporary causeway will be removed in entirety from the isolated stream channel.
- Construction of drilled shafts and reinforced concrete bridge piers for the new bridge span and for the Līhu'e Mill Bridge deck widening. One 72-inch pier shaft for the deck widening will be constructed at the west bank of the stream and will be partially within the stream channel (along the bank). Ungrouted riprap gabions will be installed in the stream bank around the pier for bank protection. The remaining pier shafts will all be constructed on dry land within the gulch.
- Construction of a new 60-inch diameter drainage outlet in the west bank of the Nāwiliwili Stream channel upstream from the new highway bridge. An existing, historic rock retaining wall lines the stream channel at the location of the new 60-inch drainage outlet. The rock retaining wall will be reconstructed around the drainage outlet using grouted rock material in accordance with an Archaeological Preservation Plan required by the State Historic Preservation Division. Ungrouted riprap will be installed across the stream channel at the outlet to dissipate energy and protect against scour.
- Excavation and construction of the west and east abutments and wing walls for the new bridge span.
- Construction of new bridge deck girders, new concrete deck, and new guardrails. The new bridge will be approximately 50 feet wide and 319 feet long.
- Grading and construction of the new east (930 lf) and west (1,500 lf) road approach roads (Kaumuali'i Highway), including concrete curb, gutter, sidewalk, asphalt paved road surface, signage and striping.
- Installation of stream bank protection as required to prevent scour of bridge piers and abutments. Riprap will be installed along the east bank of the stream beneath the new bridge and riprap gabions will be installed in the west bank of the stream around the new bridge pier for stream bank protection. Except for one location where riprap will be installed across the stream bottom to dissipate energy from the new 60-inch diameter drainage outlet, the stream will remain natural bottom. Riprap will be installed to match existing grades.
- Removal of stream diversion and restoration of stream flow into the original channel
- Removal of BMPs, as necessary.
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Increment 3: Rehabilitation and widening of the existing Līhu'e Mill Bridge and re-construction of east-bound approach roads

Work will begin with the installation of best management practices (BMP), roadway grading and demolition work. A new road drainage system will be constructed comprised of drain inlets, manhole, continuous deflective separation units, subgrade drain lines, connection to the new 60-inch drainage outlet, and connections to the existing subgrade highway drainage system which discharges to Nāwiliwili Stream via an existing culvert outlet at the east limits of the project area. All in-stream work required for the construction of the drainage system and new D-60 drainage outlets would be constructed during Increment 2. The majority of work, expected to begin January 2014 and last until June 2014, consists of:

- Reinforcement and rehabilitation of the existing bridge structure.
- Construction of steel structure supports for the bridge deck widening.
- Demolition of the existing bridge deck and construction of new deck and railing (rehabilitated bridge will be approximately 48 feet wide and 347 feet long).
- Grading and construction of the replacement east and west road approach roads.
- Landscaping within the right-of-way.
- Removal of all BMPs.

Excavation

Excavation activities for the Project consists of approximately 299 cubic yards comprising: 1) excavation for riprap bank protection on east and west banks; 2) boring one 72-inc drilled shaft and excavating in the west stream bank to construct a reinforced concrete bridge pier consisting of shaft, cap and column; 3) excavation for the installation of a permanent HDPE 60-inch drainage outfall in the west stream bank and dumped riprap outfall protection across the stream bed; and 4) excavation in the stream bed for the installation of a temporary dumped riprap apron at the diversion outlet. All excavation within the stream channel will be reconstructed to match existing elevations and grades in the stream bed.

Fill

Fill activities for the Project consists of an equivalent estimate of 299 cubic yards comprising: 1) installation of dumped and grouted riprap bank protection on the east bank and dumped riprap gabions around the new bridge pier on the west bank; 2) constructing a new reinforced concrete bridge pier consisting of a pier shaft, cap and column, each of which will be separately cast in place; and 3) construction of the 60-inch drainage outfall consisting of backfill around the D60 pipe using native soil, installation of dumped riprap across the stream bed for energy dissipation and scour protection, and reconstruction of the existing rock retaining around the D60 pipe using grouted rock material.

Construction methods

Key Project elements that impact the stream channel consist of the following actions: 1) Temporary stream diversion; 2) Construction of one bridge pier; 3) Construction of 60-inch drainage outfall; 4) Construction of bank stabilization; and 5) Removal of temporary diversion. Specific construction methods for each of these project elements are identified in detail below.

Temporary stream diversion (Exhibits 6, 7, 8 and 9)

The stream diversion will consist of one 60-inch HDPE pipe placed on the stream bed through the work area and anchored in place with FIBC sandbags. A sandbag headwall will be installed across the stream channel at the upstream end of the pipe to block the stream and divert flows into the pipe. A sand bag headwall will also be constructed at the downstream outlet end to isolate and prevent discharges from the work area. The diversion pipe will be positioned to match the invert of the stream channel in order to maintain continuous stream flow connection for the passage of aquatic animals. A temporary riprap apron will be installed at the outlet to dissipate energy and prevent scour.

Diversion structures will be adequately designed to accommodate normal stream flows. No heavy equipment shall be allowed to work or be operated within State waters, including Nāwiliwili Stream. Stationary equipment such as motors and pumps, located within or adjacent to a water body, shall be positioned over drip pans. When any artificial obstruction or diversion is being constructed, maintained, or placed in operation, sufficient water shall, at all times, be allowed to pass downstream to maintain stream flow and allow the passage of aquatic animals through the project limits. Where possible, the contractor will avoid or minimize impacts associated with the diversion and work within the stream by scheduling construction during periods of low flow.

The stream diversion installation method is as follows:

- Prior to starting installation of the temporary stream diversion, the contractor will take photographs to document the existing conditions of the stream during normal flow.
- Connect entire length of 60-inch diameter HDPE diversion pipe together on bank above stream channel (approximately 220 linear feet).
- Place a turbidity barrier comprised of a floating boom and weighted silt curtain across the stream channel downstream from the diversion outlet.
- Isolate the east side of the stream channel at the temporary diversion outlet riprap apron location by installing sandbags and sheeting to divert stream flows around the work area. Isolate one side of the stream at a time, starting on the east side of the stream channel, to maintain continuous stream flow. Excavate the stream bed in the isolated work area, place and secure geofabric, and place 24-inch thick dumped rip rap on the stream bed. Store the material excavated from the stream channel on site for replacement when restoring the stream bed.
- Reposition the sandbags to isolate the east side of the stream channel at the temporary diversion outlet riprap apron location. Excavate the stream bed in the isolated work area, place and secure geofabric, and place 24-inch thick dumped rip rap on the stream bed. Store the material excavated from the stream channel on site for replacement when restoring the stream bed.
- Place dunnage on the slope of the stream bank to buffer the diversion pipe contact points during installation. Strap the diversion pipe with slings and taglines to guide placement. Starting from the temporary outlet and working upstream toward the inlet, lower the diversion pipe onto the stream bed by rolling the pipe on the dunnage with a backhoe using taglines and slings to stabilize pipe movement. Submerge the pipe and allow stream water to fill the pipe from the inlet end.
- Install the first layer of sandbags at the diversion inlet headwall and divert stream flows into the 60-inch diversion pipe. Place banding strip (sling) to secure the diversion pipe to the sandbags.
- Install the second layer of sandbags to complete the headwall.
- Place intermediate diversion pipe anchor sandbags.
- Install the first layer of sandbags at the temporary diversion outlet headwall. Place banding strip (sling) to secure the diversion pipe to the sandbags. Install the second layer of sandbags to complete the headwall. Release diversion pipe taglines and strapping. Visually inspect water conditions for sedimentation and remove turbidity barrier as soon as water appears clear.
- All sand bags will consist of Flexible Intermediate Bulk Containers (FIBC) filled with native material sourced on-site. The sand bags will be wrapped in plastic liner to form an impermeable barrier and placed using a backhoe loader / excavator.
- After installation of the stream diversion and prior to starting work activities, take photographs to document existing conditions of the entire length of the isolated stream channel. Pay particular attention to stream bed features, rock clusters and outcroppings that contribute to the formation of riffle-pool conditions during normal stream flow.

All in-stream work will take place entirely within the isolated work area. Work within the isolated work area will be executed in manageable increments to minimize exposed work areas in the event of major flooding events.

Construction of one bridge pier (Exhibit 10)
One reinforced concrete bridge pier, consisting of a 72-inch pier shaft, cap and column, will be constructed in the west stream bank to support the Līhu'e Mill Bridge deck widening. The pier will be constructed after the stream is diverted to provide and isolated work area. Drill rig operations for the pier shaft require the installation of a temporary riprap "causeway" in the isolated stream channel. Following construction of the bridge pier, ungrouted riprap gabions will be installed in the stream bank around the pier for bank protection. Additional bridge piers for the Līhu'e Mill Bridge deck widening, new bridge span, and bridge abutments will all be constructed on dry land away from the stream channel within the gulch.

The temporary riprap causeway installation for drill shaft operations is as follows:

- Install a temporary dumped riprap "causeway" in the isolated stream channel adjacent to the drill shaft location in the stream bank to provide a stable foundation for drilling equipment.
- Place geotextile fabric across the stream channel and over the diversion pipe at the location where riprap will be placed. Place 60-inch diameter HPDE pipe (approximately 65 linear feet) adjacent to the diversion pipe to serve as an overflow pipe.
- Place riprap material across the isolated stream channel to create a causeway with a flat work area approximately 40 feet long by 25 feet wide by 10 feet deep to match the top of the stream bank.
- Set a steel plate on top of the riprap to distribute loads. Install BMPs (impermeable sheeting and/or drip pans) on top of the causeway to capture potential pollutants that may be released from the equipment (oil, grease, sediment).
- Conduct drill shaft operation and construct new bridge pier shaft, as described below.
- Upon completion of construction of the new bridge pier shaft, remove the causeway. Remove drip pans and steel plate. Remove riprap at top of the causeway. Riprap material not reused for permanent installation (D60 outfall apron, permanent bank protection) will be transported offsite and stockpiled for reuse. Remove the overflow pipe and geotextile fabric. Restore the stream bed in accordance with the restoration plan.

The bridge pier construction method is as follows:

- Excavate drill shaft with drill rig positioned on temporary causeway.
- Construct bridge pier: set rebar cage and pour concrete into shaft. Remove causeway when pier shaft is complete (see above).
- Construct pier cap: install support of excavation, excavate to top of pier shaft, set form and rebar on end of pier for pier cap, pour concrete pier cap.
- Construct pier column: set form and rebar for pier column, pour concrete pier column,
- Backfill pier cap and column.
- Place ungrouted riprap gabions in the stream channel around the new bridge pier to match preexisting grades.

Construction of bank stabilization (Exhibits 11 and 12)
Installation of stream bank protection as required to prevent scour of bridge piers and abutments. Riprap will be installed along the east bank of the stream beneath the new bridge and riprap gabions will be installed in the west bank of the stream around the new bridge pier for stream bank protection. Except for one location where riprap will be installed across the stream bottom to dissipate energy from the new 60-inch diameter drainage outlet, the stream will remain natural bottom.

The riprap installation method is as follows:

- In the east bank, over-excavate the riprap bank protection area below the OHWM to a depth of 3 feet and place 36-inch thick dumped riprap.
- Above the OHWM, over-excavate the riprap bank protection area beneath the new bridge span and adjacent to the bridge abutments to a depth of 18 inches and install 18-inch thick grouted riprap to the top of the bank.
- In the west bank, following construction of the new bridge pier, install dumped riprap gabions around the bridge pier to match the existing grades of the stream channel to the top of the bank.
- Backfill behind the gabions using native soil.

Construction of 60-inch drainage outlet (Exhibit 13)
A new 60-inch diameter HDPE drainage outfall will be constructed in the west bank of the Nāwiliwili Stream channel upstream from the new highway bridge. An existing, historic rock retaining wall lines the stream channel at the location of the new 60-inch drainage outfall. The rock retaining wall will be reconstructed around the drainage outlet using grouted rock material in accordance with an Archaeological Preservation Plan required by the State Historic Preservation Division. Ungrouted riprap will be installed across the stream channel at the outlet to dissipate energy and protect against scour.

The drainage outfall construction method is as follows:

- Demolish existing rock retaining wall in stream channel in accordance with Archaeological Preservation Plan approved by the SHPD.
- Excavate trench above stream bank for placement of new, permanent 60-inch HDPE drainage pipe.
- Construct riprap apron for energy dissipation and outlet protection by over-excavating stream channel and placing ungrouted riprap below OHWM to match pre-construction grades. Ungrouted riprap will be used across the stream bed to provide an irregular, permeable surface with crevices for sediment capture and aquatic plant growth.
- Reconstruct the existing rock wall around 60-inch drain pipe outlet using grouted rocks, incorporating as much of the original rock wall materials and fashioned to the original wall design (i.e., with grout) per requirements and oversight provided by the SHPD.
- Backfill the 60-inch pipe trench and retaining wall as the wall is reconstructed using native soil.
- Stabilize disturbed surfaces at the top of bank using erosion control matting and grassing.

Removal of the temporary diversion
Following completion of construction activities in the isolated stream channel, the stream bed will be restored and the stream diversion will be removed in its entirety. The stream diversion removal method is as follows:

- Secure the diversion pipe with taglines and strapping.
- Clear the isolated stream channel of all equipment, material and debris. Clear sediment buildup captured by the downstream sandbag berm. Replace rock clusters and formations in stream bottom to match pre-existing conditions that create riffle-pool effect.
- Install a turbidity barrier (floating boom and weighted silt curtain) across the stream below the diversion outlet.
- Remove the sandbags at the diversion outlet.
- Isolate the east side of the stream channel around the temporary outlet riprap apron by installing sandbags and sheeting to divert stream flows around the work area. Maintain continuous flow.
- Remove intermediate anchor sand bags.

- Place dunnage on the slope of the stream bank to buffer the diversion pipe contact points during removal.
- Remove diversion inlet headwall sand bags and restore flows through the stream channel around the diversion pipe. Block the inlet end of the diversion pipe and allow pipe to drain.
- Starting from the inlet end and working downstream, lift the HDPE diversion pipe using the straps and taglines affixed to a backhoe staged on the top of the stream bank. Guide the pipe along the dunnage to the top of bank. Disassemble the pipe into segments sized for removal by truck.
- Remove the temporary riprap apron material and geotextile fabric on the stream bed from the isolated (east) side of the channel. Replace the stream bed material from the original excavation. Restore the stream bottom as much as possible to pre-existing conditions. Replace rock clusters and formations in stream bottom to match pre-existing conditions that create rifflepool effect.
- Reposition the sandbags to isolate the west side of the stream channel around the remaining portion of the temporary riprap apron. Remove the temporary riprap apron material and geofabric on the stream bed from the isolated (west) side of the channel. Replace the stream bed material from the original excavation. Restore the stream bottom as much as possible to pre-existing conditions. Replace rock clusters and formations in stream bottom to match preexisting conditions that create riffle-pool effect.
- Remove the sandbags and restore flow to entire stream channel. Visually inspect water conditions for sedimentation and remove turbidity barrier as soon as water appears clear.

Construction storm water and hydrotesting effluent discharges will be covered under National Pollutant Elimination System (NPDES) Notice of Intent (NOI) Forms C and F Permits from the Department of Health – Clean Water Branch.

Best management practices

BMPs for the Project include, but are not limited to, the following activities

- Installation of perimeter controls and erosion and sediment control measures including storm water run-on and sediment barrier devices to control storm water flowing onto the project area (e.g., compost filter socks, gravel snake bags, straw wattles).
- On-site drainage systems to be built include grate inlets, curb-cut catch basin inlets and storm water quality manhole units. Storm drain inlet protection measures include grate inlet protection and catch basin inlet protection.
- Check dams will be constructed across swales and drainage ditches to reduce runoff velocity and erosive forces to facilitate settling of sediment.
- Dewatering basins and dewatering tanks will be used to remove sediment from sediment-laden water pumped from the construction site to allow work to be performed in dewatered conditions, reduce the transport of soil particles in flowing water, and reduce the liquefaction of soils. Dewatering effluent will be discharged to a dewatering tank system or other device. Dewatering will be achieved by a combination of; 1) a dewatering tank system to contain and treat liquid effluent pumped from the drill shafts and isolated stream area, and 2) dewatering basins to contain wet excavated material for drying prior to reuse or disposal. Groundwater and storm water that infiltrates into the isolated stream channel during work activities will be pumped out of the work areas and processed through a dewatering tank system.
- Hydromulch will be applied to all cut slopes along the realigned Ho'omana Road and Kaumuali'i Highway to provide temporary stabilization of bare slopes.
- Vegetated swales will be constructed along the shoulders of the new Ho'omana Road alignment and along the makai side of the Kaumuali'i Highway east-bound approach. Runoff flows in the vegetative swales will be directed toward drain inlets and storm water quality manhole units located on the site.

The Project timeframe is 18 months at an approximate cost of $40 million (current estimate).

ANALYSIS:

Agency Review Comments:

Kauai County, Planning Department:

1. A Federal Emergency Management Agency (FEMA) Certificate of No-Rise Determination for the subject permit application is required and in accordance with Section 60.3(d)(3) of the National Flood Insurance Program (NFIP) regulations and the County's Flood Ordinance No. 831. A FEMA Certification of No-Rise Determination is required since the proposed work affects the floodway of Nāwiliwili Stream. Encroachments, including fill, new construction and substantial improvement of structures are prohibited in the floodway, unless certified by a registered professional civil engineer, with supporting data that the encroachments will not cause any increase in base flood elevations during the occurrence of the base flood discharge.

2. The County will defer review and approval of the hydrologic and hydraulic analysis of the No Rise Determination to the State Department of Land and Natural Resources since this is a State DOT project. We would appreciate receiving a hard copy and pdf copy on a CD of the approved No-Rise Determination study for our files.

Department of Hawaiian Home Lands: No objections.

Department of Health, Clean Water Branch (DOH-CWB):

1. The project is subject to Clean Water Act Section 401, Water Quality Certification (File no. WQC0837).

Department of Land and Natural Resources (DLNR), Engineering Division:

1. The project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zones AE and AE Floodway (AEF). The NFIP regulates developments within these zones.

   The remainder of the project site according to the FIRM, is located in Zone X. The NFIP does not regulate within Zone X.

2. The project must comply with the rules and regulations of the NFIP presented in Title 44 of the Code of Federal Regulation (44CFR), whenever development within a Special Flood Hazard Area is undertaken.

DLNR, Land Division: No objections.

DLNR, Division of State Parks: No objections.

University of Hawaii, Environmental Center (UH-EC):

1. The proposed alteration is part of a larger highway improvements project that was the subject of a Final Environmental Assessment/Finding of No Significant Impact (FEA/FONSI) issued in August 2000 by the U.S. Department of Transportation and the HDOT. However, the SCAP application raises three related areas of general concern. First, it does not fully incorporate new information and knowledge that has been developed since the publication of the FEA. Second,

the FEA identifies and evaluates environmental effects at scales which may not meet the site-specific and stream-specific level of analysis appropriate to SCAP review. Third, the SCAP application may lack sufficiently detailed quantification of the proposed extent of material alterations to the stream channel, drainage infrastructure, and related stream impacts to effectuate a suitably rigorous analysis for Commission decision-making.

2. The Commission's consideration of this SCAP application may benefit from additional information not provided in the FEA and the SCAP application materials. To start with, please note that the aquatic species survey and biological assessment that is appended to the FEA did not include Nāwiliwili Stream (Kido 1999, page 2). However, a subsequent bioassessment not referenced in the SCAP application-rated habitat quality in lower Nāwiliwili Stream as generally impaired/very poor, and biotic integrity as impaired (Kido 2002). Among the streams included in the 2002 survey, "[t]he most severe impairment of aquatic life use appears to occur in lower Nāwiliwili Stream (with extreme sediment loads on the stream bottom, absence of functional riparian zones removed by adjacent housing subdivisions, highly unstable stream banks, and a lack of natural rock substrate), where even alien species numbers were low, conspicuously so for swordtails (Gambusia affinis) and guppies (Poecilia reticulata) which are prolific breeders and usually super-abundant in most degraded stream sites" (Kido 2002).

3. The 2008/2010 State of Hawai'i Water Quality Monitoring and Assessment Report indicates that marine receiving waters in Nāwiliwili Bay remain impaired. The establishment of Total Maximum Daily Loads (TMDLs) for Nāwiliwili Stream (DOH 2008) and the completion of a watershed-based plan for Nāwiliwili (El-Kadi et al. 2004) provide additional context for strategizing large-scale water quality improvements, which could benefit from HDOT involvement that goes beyond its compliance with standard regulatory measures. Under these circumstances, it would seem useful for the applicant to provide additional, quantified detail describing how the proposed stream channel alteration would contribute to the reduction of pollutant loads, the improvement of water quality, and the recovery of ecosystem health in Nāwiliwili Stream and marine receiving waters.

4. The FEA indicates that the larger project will not change existing drainage patterns and flow capacities, and would result in a loss of 86 acres of open space with the addition of 40 acres of new impervious surface. Although the larger project may not create a regionally significant difference in runoff volumes and base flood elevations, as suggested in the FEA/FONSI, it may be useful for the SCAP application to provide additional, detailed information about site-specific changes to drainage and streamflow regimes arising from new bed culverting, bank hardening, and realignment of stormwater conveyance structures that lead to the stream. What post-construction management measures would be implemented to achieve drainage inlet protection and pollutant source controls? Similarly, it would be useful for the applicant to further describe its long-term plans for stream bank restoration. Do these plans include revegetation and ongoing maintenance of the riparian corridor using native plant species?

5. If CWRM issues a permit for the proposed alteration, it may be useful to share the application information (e.g. location and basic construction specifications) with the Hawai'i National Hydrography Dataset (NHD) Partnership, so that the hydrologic and engineering features and events associated with the proposed alteration can be properly incorporated into the NHD.

U.S. Army Corps of Engineers (USACE):

1. On January 3, 2013, an approved jurisdictional determination (JD) was issued to the DOT for the Nāwiliwili Stream at the proposed project location. Early coordination with the DOT's authorized agent, RMTC and review of the Department of the Army (DA) permit application

submittal, dated November 2012, indicated a DA permit would be required for this project. USACE withdrew this permit application from further processing on January 23, 2013 due to subsequent changes made to the proposed project design. On March 27, 2013, we received a subsequent DA permit application submittal with revised project plans. Based upon our review of the project plans, we have determined a DA permit is required (File no. POH-2012-00159).

Hawaii Revised Statutes (HRS) Chapter 343, Environmental Review

Environmental Assessment (EA) Triggers. In accordance with HRS §343-5(a), the applicant's proposed action does trigger an EA because State funds will be used for Kaumuali'i Highway improvements. On August 23, 2000, a Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) for the Kaumuali'i Highway Improvements, Līhu'e to West of Maluhia Road, were approved and published by the Office of Environmental Quality Control.

On February 22, 2013, HDOT completed an Environmental Assessment Re-Evaluation for Phase 1 of the Kaumuali'i Highway Improvements, Līhu'e Mill Bridge to Rice Street. The Federal Highway Administration (FHWA) found that the FONSI issued on August 1, 2000 was still valid and no new or revised analysis under the National Environmental Policy Act was required.

Staff Review:

In the first SCAP application submitted by RMTC on January 25, 2013, the applicant proposed to construct a similar temporary diversion to provide for continuous downstream flow while work was performed for drilling the 36-inch shaft on the west bank of Nāwiliwili Stream. However, the initial design called for breaching the stream bank and installing two 36-inch HDPE pipes to temporarily convey streamflow around the isolated work area.

Commission staff prefers the current proposal to install one 60-inch HDPE pipe within the Nāwiliwili Stream channel to convey streamflow and maintain the integrity of the stream bank. The DOH-CWB has expressed concerns that during high streamflow events the 60-inch HDPE could become dislodged and be washed downstream. RMTC has provided assurances that should that happen they will work to remove any work site debris as soon as possible. Additionally, though the proposed project is not expected to have a significant impact of the limited aquatic resources in this area, the current proposal should provide sufficient stream flow connectivity should there be any native stream organisms migrating upstream.

According to a hydraulic analysis provided by RMTC, the 60-inch HDPE will be constructed outside of the stream bank, then placed into the flowing stream. The approximate length of the culvert will be 225 linear feet. The temporary causeway will have an additional 80-foot long, 60-inch HDPE drain passing through it. Using a HEC-RAS model developed for the existing conditions, RMTC modified the model to analyze the proposed diversion culvert in the stream. Using circular culvert capacity and box drain capacity charts from the FHWA, the capacity of a 60-inch culvert was determined to be approximately 150 to 160 cfs. The results of the analysis showed that the flow depths and velocities in the culvert are within the acceptable range.

RECOMMENDATION

Staff recommends that the Commission:

1. Approve a Stream Channel Alteration Permit (SCAP.3649.2) for construction of a new bridge span and approaches on the mauka side of the highway across the Nāwiliwili Stream gulch, including the installation of a temporary stream diversion, construction of one bridge pier, construction of 60-inch drainage outfall, and construction of bank stabilization, at Kaumuali'i Highway, Līhu'e Mill Bridge to Rice Street, Nāwiliwili Stream, Līhu'e, Kaua'i at TMKs: (4) 3-8-004:007 por., (4) 3-8-005:003 and (4) 3-8-005:009 por., subject to the following conditions:

   a) The applicant shall obtain a Department of the Army permit from the U.S. Army Corps of Engineers before proceeding with any work in the stream channel.
   b) The applicant shall obtain a Clean Water Act Section 401, Water Quality Certification from the Department of Health, Clean Water Branch before proceeding with any work in the stream channel.
   c) Standard conditions in Exhibit 15.

Respectfully submitted,

WILLIAM M. TAM
Deputy Director

Exhibits:

1. General Project Location
2. Close-up Project Location on TMK Parcel Map
3. Close-up Project Location on Land Use District Map
4. Project Site with Increment Stages
5. General Plan of In-Stream Work
6. Temporary Stream Diversion Installation Sequence
7. Temporary Stream Diversion Plan
8. Temporary Stream Diversion Inlet Headwall
9. Temporary Stream Diversion Outlet Headwall
10. Temporary Causeway Plan and Section
11. Stream Grading and Drainage Plan
12. Proposed Pier and Stream Bank Restoration
13. Drainage Plan Details
14. Photographs of Existing Environment, Līhu'e Mill Bridge
15. Standard Stream Channel Alteration Permit Conditions

APPROVED FOR SUBMITTAL:

WILLIAM J. AILA, JR.
Chairperson

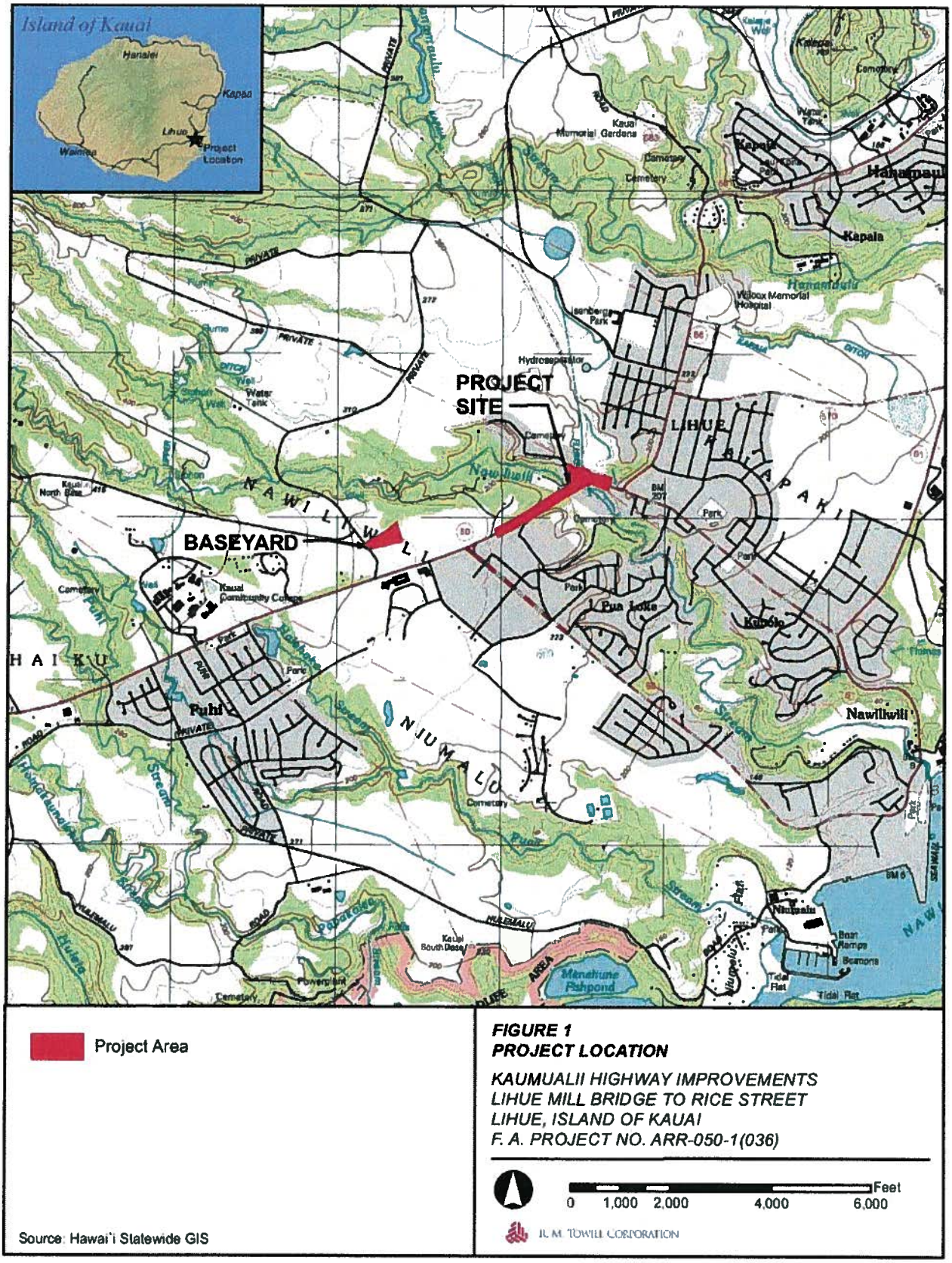

Island of Kauai
Hanalei
Kapaa
Lihue
Waimea
Project Location
PROJECT SITE
BASEYARD
LIHUE
HALE PAKI
HAIKU
Puhi
NAWILIWILI
NIUMALU
Kapaia
Hanamaulu
Nawiliwili
Kalapaki
Kauai Community College
Wilcox Memorial Hospital
Kauai Memorial Gardens
Project Area
Source: Hawai'i Statewide GIS
FIGURE 1
PROJECT LOCATION
KAUMUALII HIGHWAY IMPROVEMENTS
LIHUE MILL BRIDGE TO RICE STREET
LIHUE, ISLAND OF KAUAI
F. A. PROJECT NO. ARR-050-1(036)
Feet
0 1,000 2,000 4,000 6,000
R.M. TOWILL CORPORATION

EXHIBIT 1

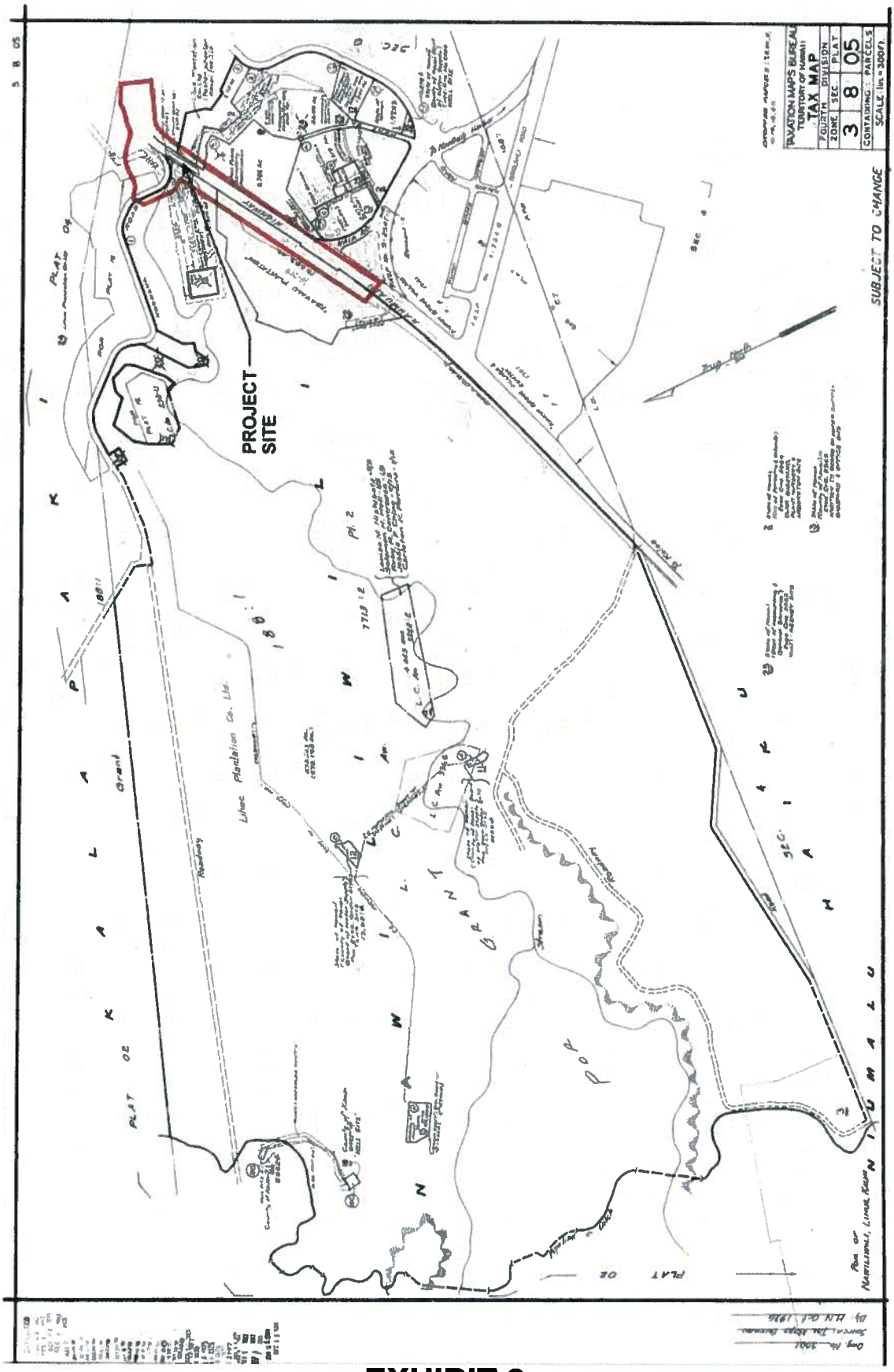


EXHIBIT 2

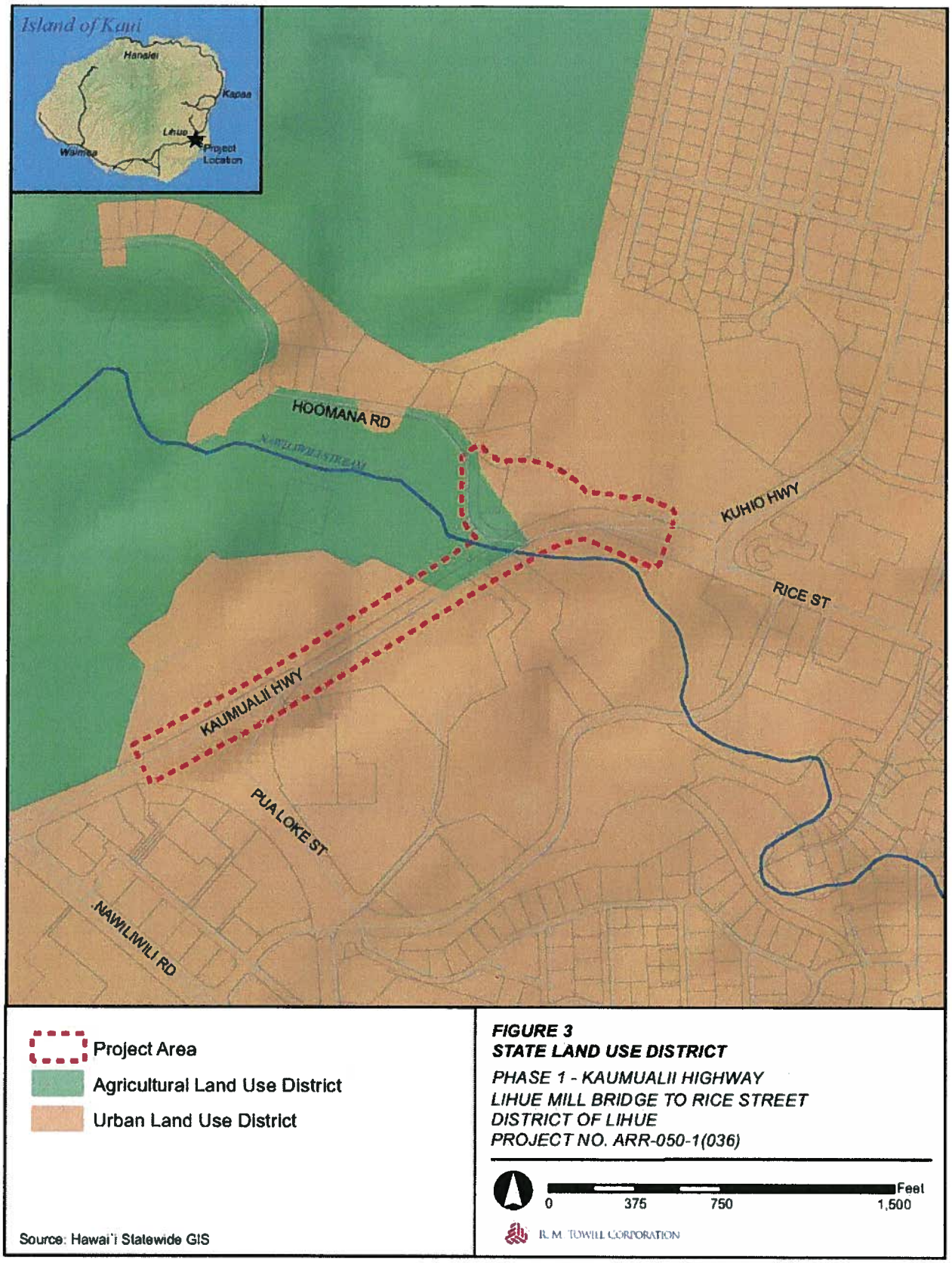

Island of Kauai
Hanalei
Kapaa
Lihue
Waimea
Project Location
HOOMANA RD
KUHIO HWY
RICE ST
KAUMUALII HWY
PUALOKE ST
NAWILIWILI RD
Project Area
Agricultural Land Use District
Urban Land Use District
Source: Hawai'i Statewide GIS
FIGURE 3
STATE LAND USE DISTRICT
PHASE 1 - KAUMUALII HIGHWAY
LIHUE MILL BRIDGE TO RICE STREET
DISTRICT OF LIHUE
PROJECT NO. ARR-050-1(036)
0
375
750
1,500
Feet
R. M. TOWILL CORPORATION

EXHIBIT 3

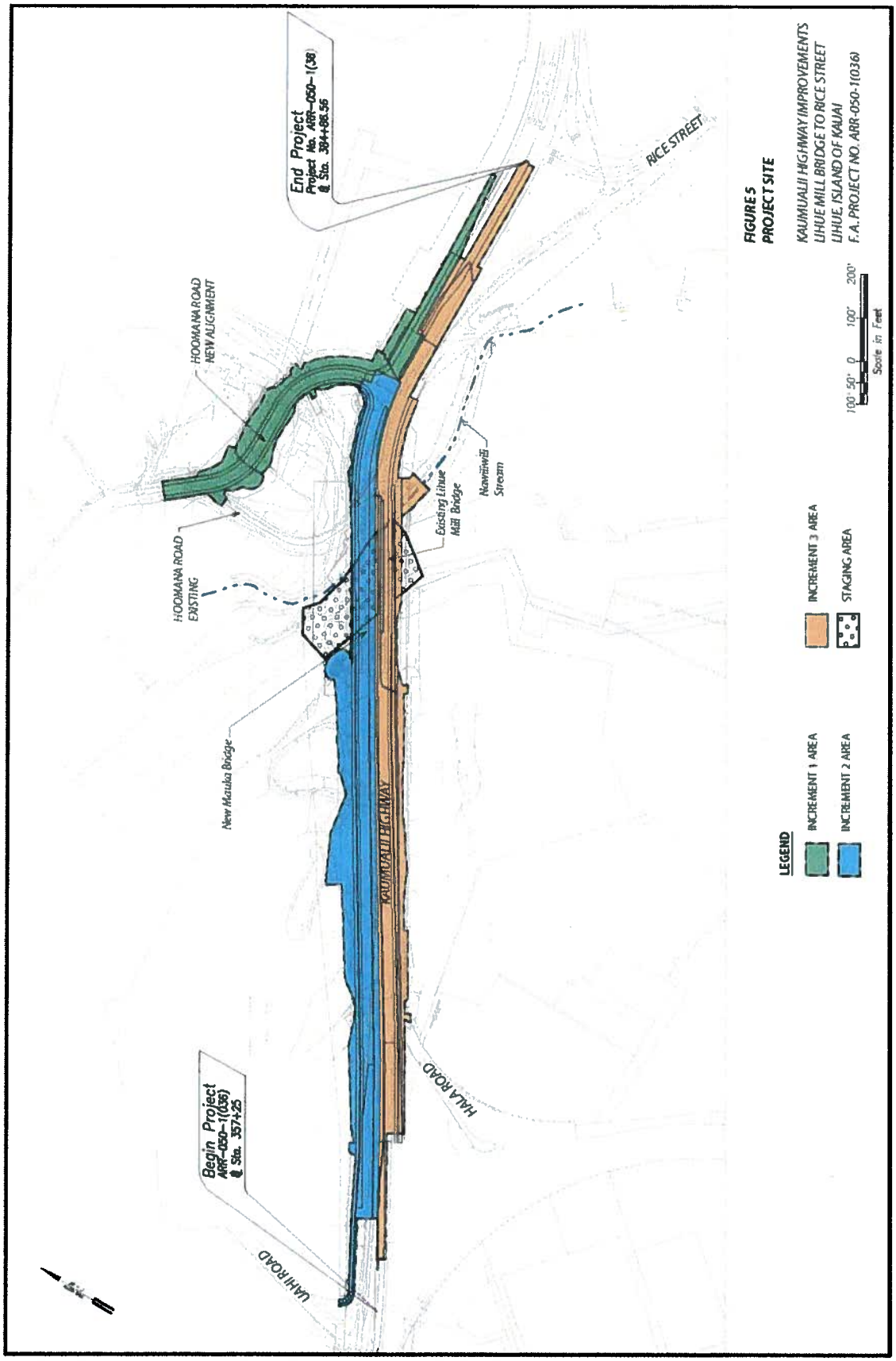

End Project
Project No. ARR-050-1(38)
@ Sta. 384+88.56
RICE STREET
HOOMANA ROAD
NEW ALIGNMENT
HOOMANA ROAD
EXISTING
Existing Lihue
Mill Bridge
Nawiliwili
Stream
New Mauka Bridge
KAUMUALII HIGHWAY
HALA ROAD
Begin Project
ARR-050-1(036)
@ Sta. 357+25
UAHI ROAD
FIGURE 5
PROJECT SITE
KAUMUALII HIGHWAY IMPROVEMENTS
LIHUE MILL BRIDGE TO RICE STREET
LIHUE, ISLAND OF KAUAI
F.A. PROJECT NO. ARR-050-1(036)
100' 50' 0 100' 200'
Scale in Feet
LEGEND
INCREMENT 1 AREA
INCREMENT 2 AREA
INCREMENT 3 AREA
STAGING AREA

EXHIBIT 4

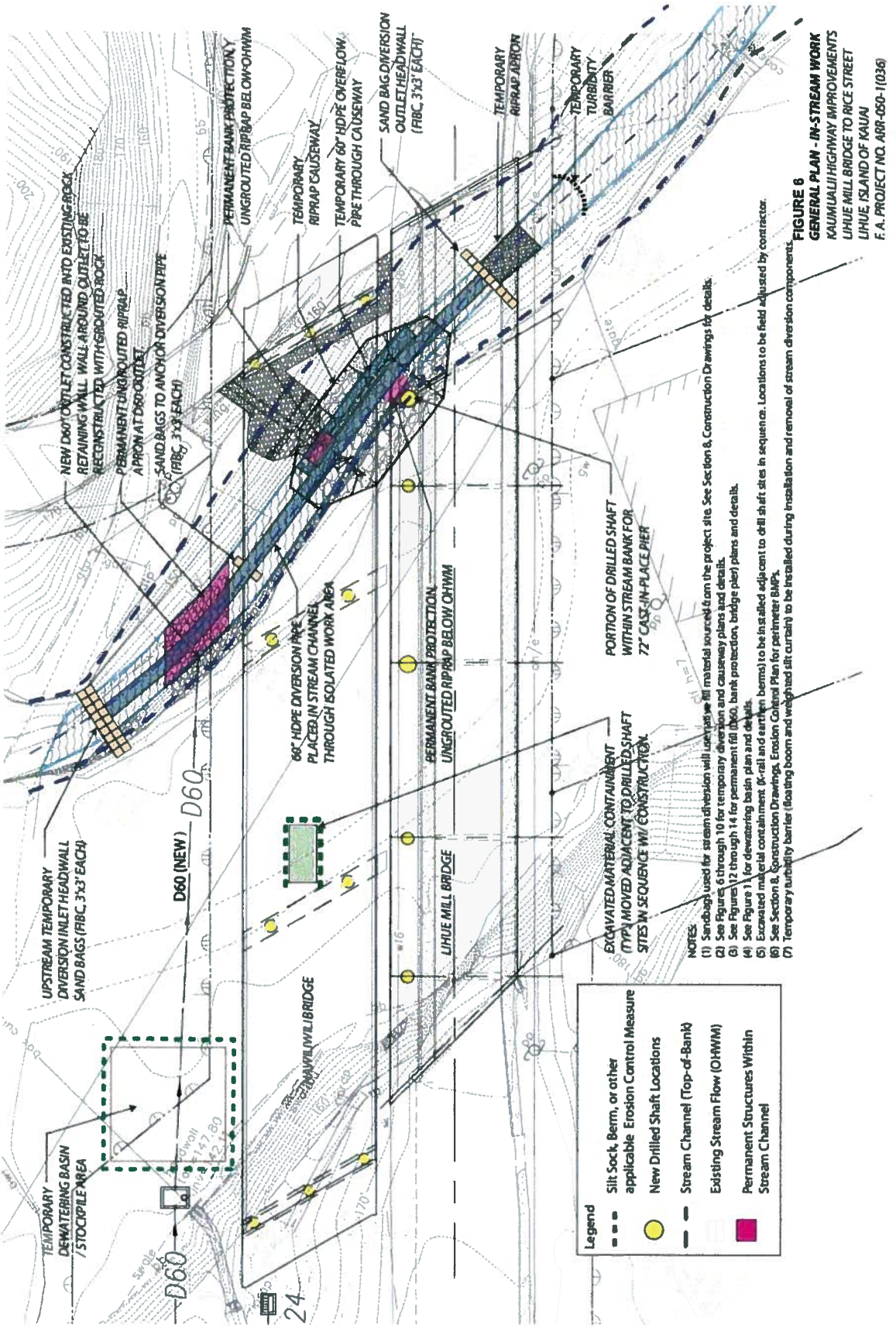
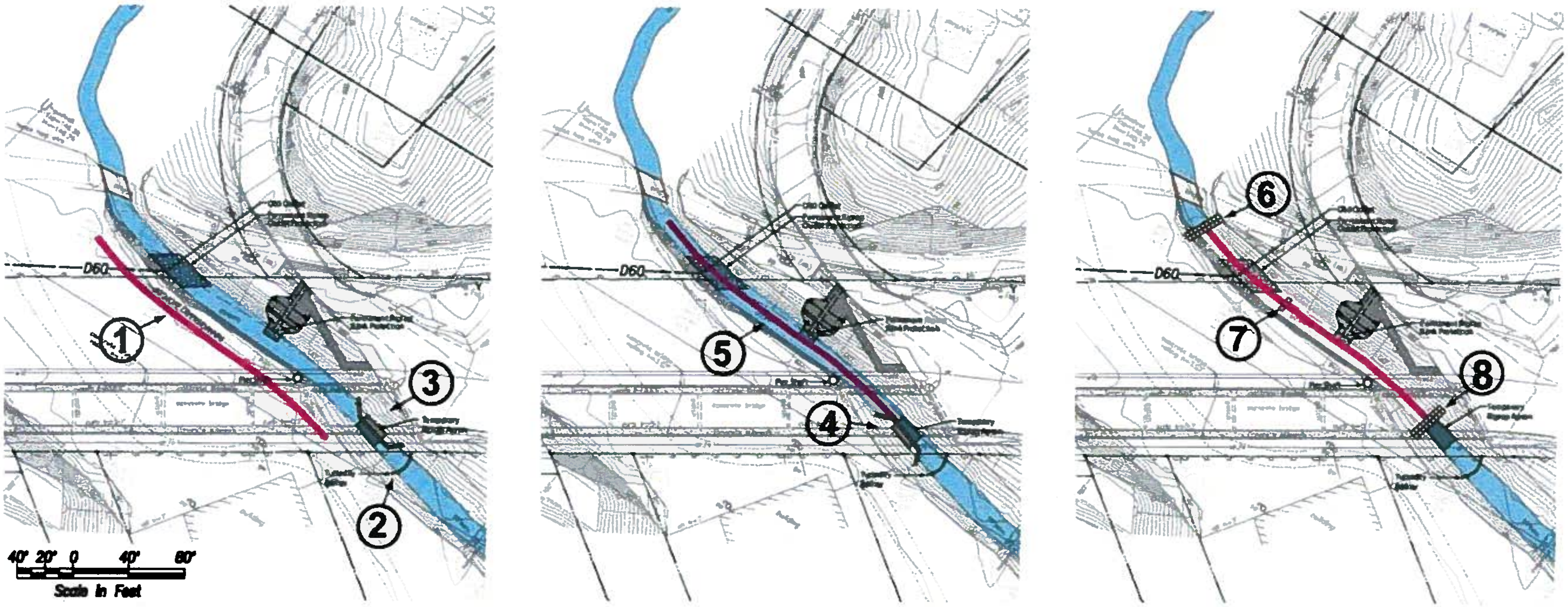


FIGURE 6
GENERAL PLAN - IN-STREAM WORK
KAUMUALII HIGHWAY IMPROVEMENTS
UHUE MILL BRIDGE TO RICE STREET
UHUE, ISLAND OF KAUAI
F.A. PROJECT NO. ABR-050-1(036)

EXHIBIT 5

EXHIBIT 6



1) Connect entire 60-inch HPDE diversion pipe together on bank above stream channel (approximately 220 linear feet).
2) Place a turbidity barrier comprised of a floating boom and weighted silt curtain across the stream channel downstream from the diversion outlet.
3) Isolate the stream channel at the temporary diversion outlet riprap apron location by installing sandbags and sheeting to divert stream flows around the work area. Isolate one side of the stream at a time, starting on the east side of the stream channel, to maintain continuous stream flow. Excavate the stream bed in the isolated work area, place and secure geofabric, and place 24-inch thick dumped rip rap on the stream bed. Store the material excavated from the stream channel on site for replacement when restoring the stream bed.

4) Reposition the sandbags to isolate the west side of the stream channel. Complete the installation of the temporary riprap apron in the isolated work area following the same installation procedure. When complete, remove the sandbags from the stream channel and restore flows. Store the material excavated from the stream channel on site for replacement when restoring the stream bed.
5) Place dunnage on the slope of the stream bank to buffer the diversion pipe contact points during installation. Strap the diversion pipe with slings and taglines to guide placement. Starting from the temporary outlet and working upstream toward the inlet, lower the diversion pipe onto the stream bed by rolling the pipe on the dunnage with a backhoe using taglines and slings to stabilize pipe movement. Submerge the pipe and allow stream water to fill the pipe from the inlet end.

6) Install the first layer of sandbags at the diversion inlet headwall and divert stream flows into the 60-inch diversion pipe. Place banding strip (sling) to secure the diversion pipe to the sandbags. Install the second layer of sandbags to complete the headwall.
7) Place intermediate diversion pipe anchor sandbags.
8) Install the first layer of sandbags at the temporary diversion outlet headwall. Place banding strip (sling) to secure the diversion pipe to the sandbags. Install the second layer of sandbags to complete the headwall. Release diversion pipe taglines and strapping. Visually inspect water conditions for sedimentation and remove turbidity barrier as soon as water appears clear.

FIGURE 7
TEMPORARY STREAM DIVERSION INSTALLATION SEQUENCE
KAUMUALII HIGHWAY IMPROVEMENTS
LIHUE MILL BRIDGE TO RICE STREET
LIHUE, ISLAND OF KAUAI
F. A. PROJECT NO. ARR-050-1(036)

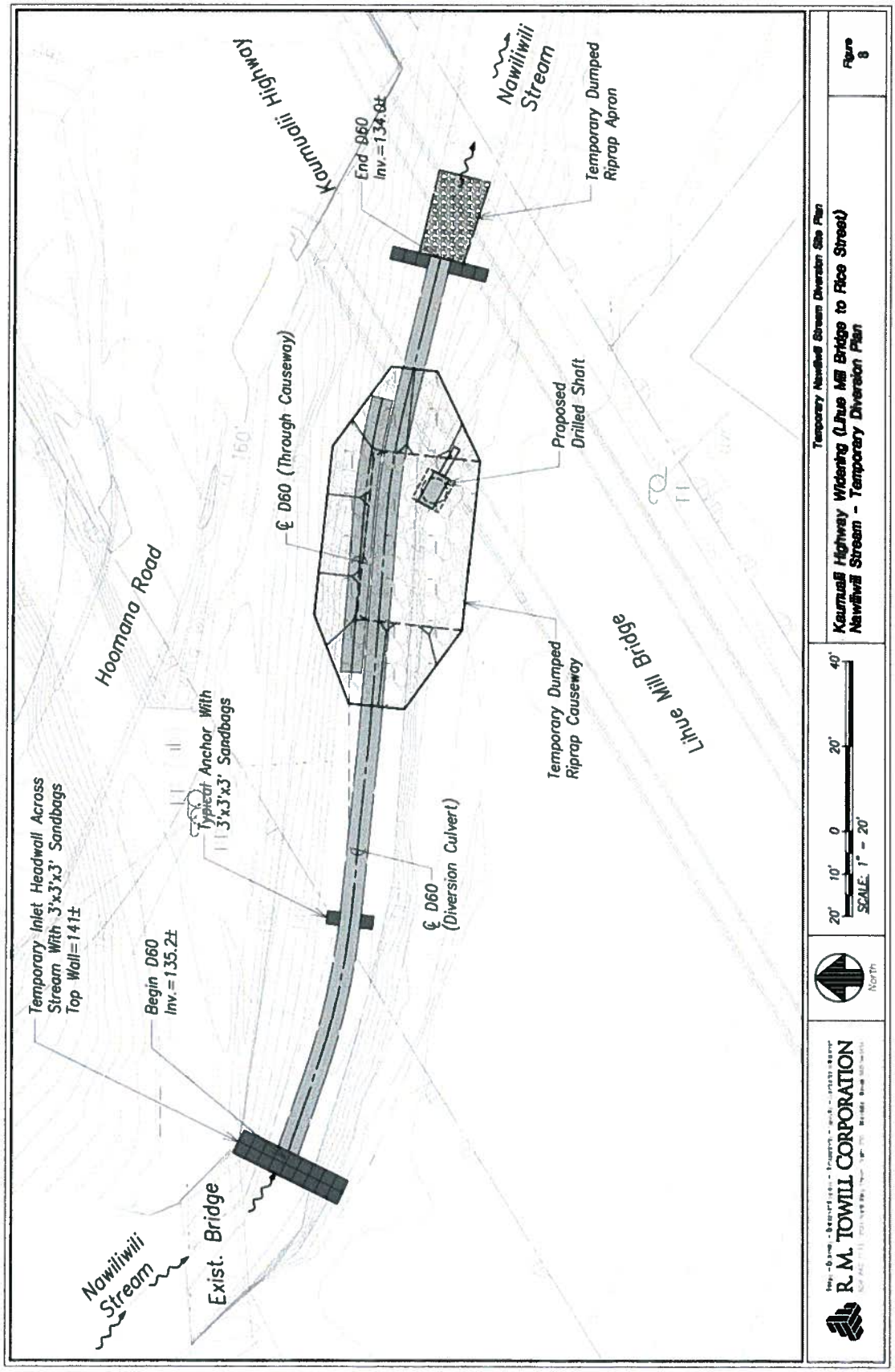

Kaumualii Highway
Nawiliwili Stream
End D60
Inv.=134.0±
Temporary Dumped Riprap Apron
Proposed Drilled Shaft
℄ D60 (Through Causeway)
Hoomana Road
Typical Anchor With 3'x3'x3' Sandbags
Temporary Dumped Riprap Causeway
Lihue Mill Bridge
Temporary Inlet Headwall Across Stream With 3'x3'x3' Sandbags Top Wall=141±
Begin D60
Inv.=135.2±
℄ D60 (Diversion Culvert)
Nawiliwili Stream
Exist. Bridge
R.M. TOWILL CORPORATION
North
20' 10' 0 20' 40'
SCALE: 1" = 20'
Temporary Nawiliwili Stream Diversion Site Plan
Kaumualii Highway Widening (Lihue Mill Bridge to Rice Street)
Nawiliwili Stream - Temporary Diversion Plan
Figure 6

EXHIBIT 7

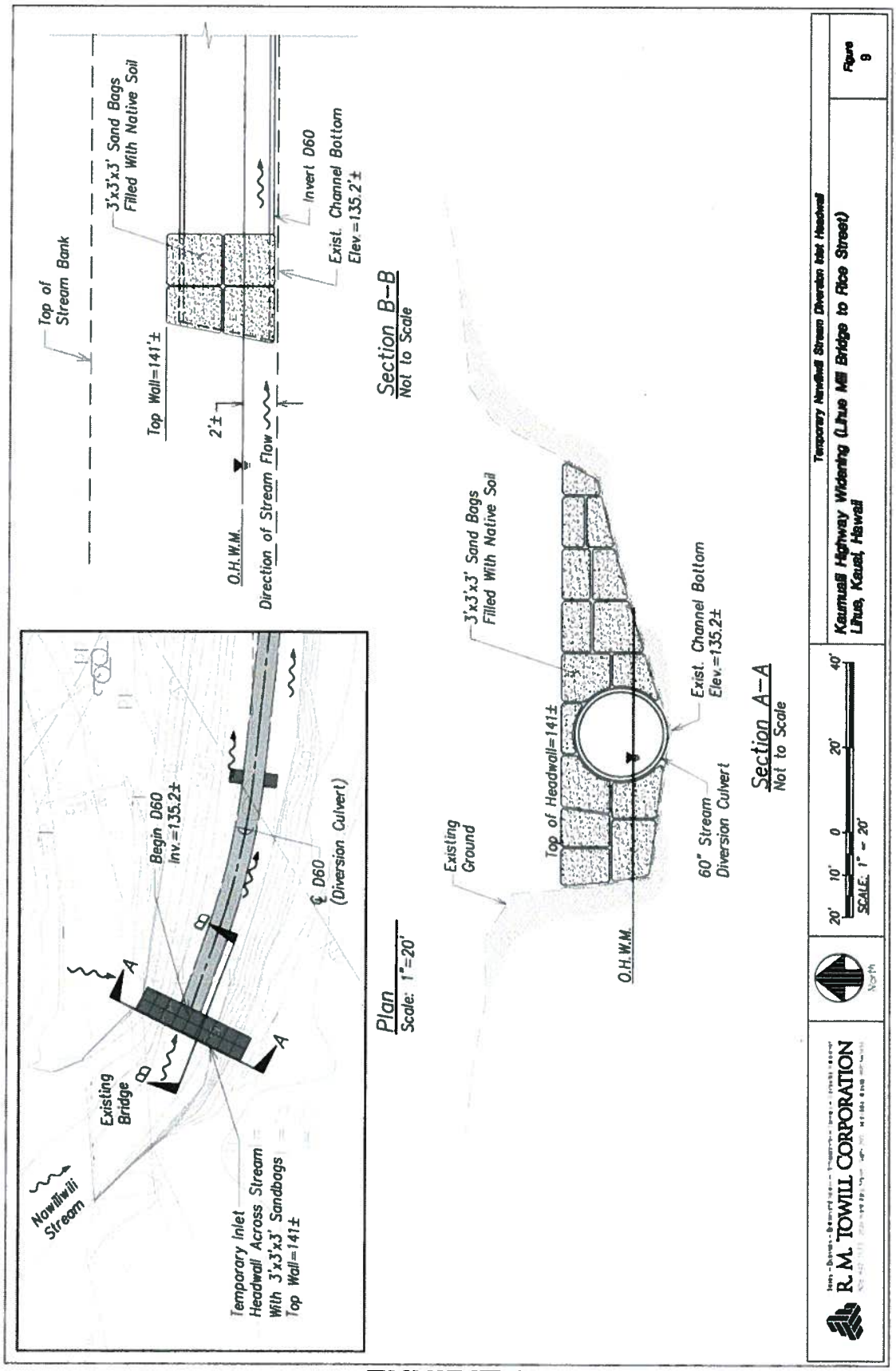

Plan
Scale: 1"=20'
Nawiliwili Stream
Existing Bridge
Temporary Inlet Headwall Across Stream With 3'x3'x3' Sandbags Top Wall=141±
Begin D60 Inv.=135.2±
℄ D60 (Diversion Culvert)
Section B-B
Not to Scale
Top of Stream Bank
3'x3'x3' Sand Bags Filled With Native Soil
Top Wall=141'±
2'±
O.H.W.M.
Direction of Stream Flow
Invert D60
Exist. Channel Bottom Elev.=135.2'±
Section A-A
Not to Scale
Existing Ground
3'x3'x3' Sand Bags Filled With Native Soil
Top of Headwall=141±
O.H.W.M.
60" Stream Diversion Culvert
Exist. Channel Bottom Elev.=135.2±
R.M. TOWILL CORPORATION
North
20' 10' 0 20' 40'
SCALE: 1" = 20'
Temporary Nawiliwili Stream Diversion Inlet Headwall
Kaumualii Highway Widening (Lihue Mill Bridge to Rice Street)
Lihue, Kauai, Hawaii
Figure 9

EXHIBIT 8

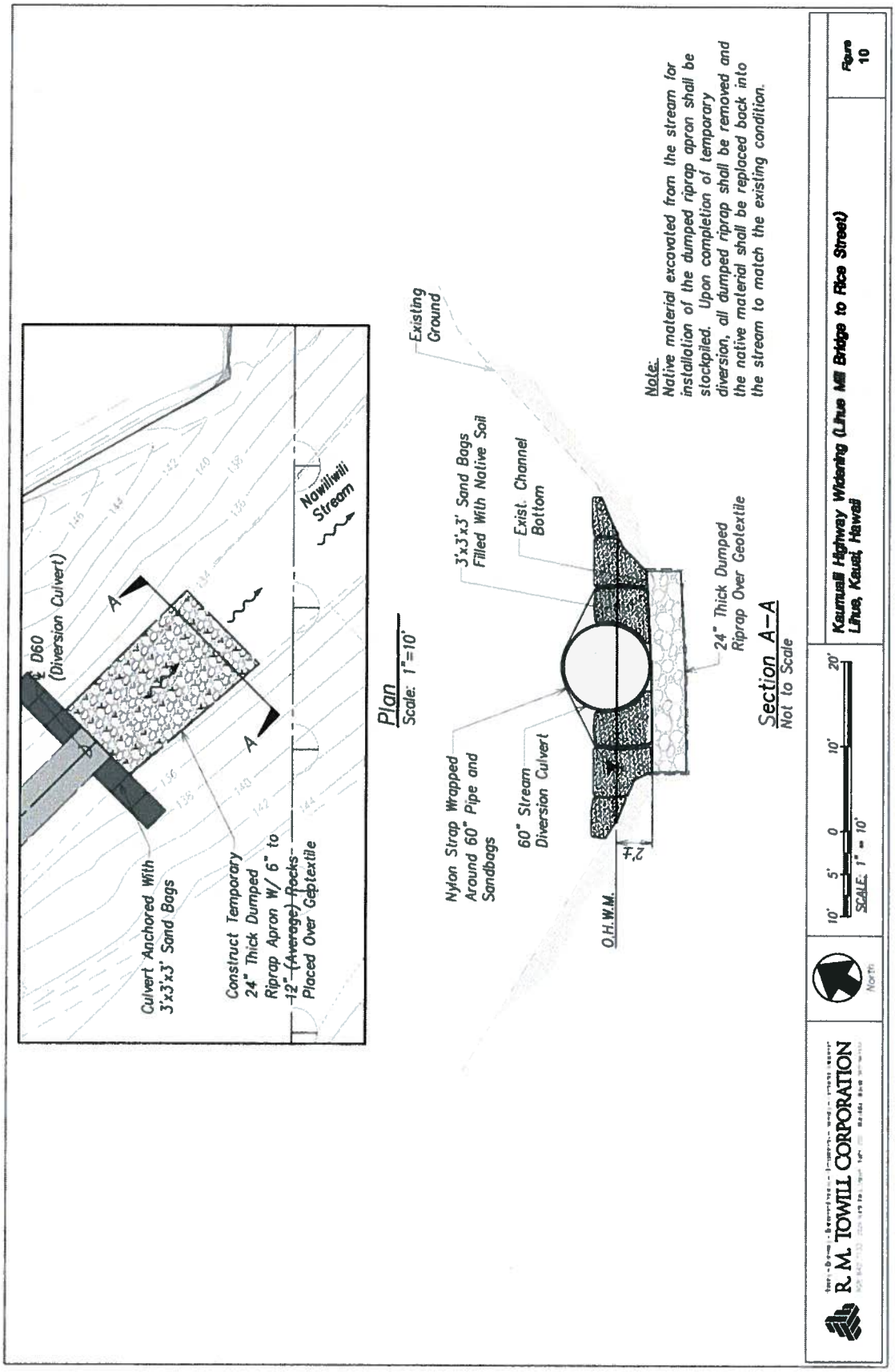

D60 (Diversion Culvert)
Culvert Anchored With 3'x3'x3' Sand Bags
Construct Temporary 24" Thick Dumped Riprap Apron W/ 6" to 12" (Average) Rocks Placed Over Geptextile
Nowiliwili Stream
Plan
Scale: 1"=10'
Existing Ground
3'x3'x3' Sand Bags Filled With Native Soil
Exist. Channel Bottom
Nylon Strap Wrapped Around 60" Pipe and Sandbags
60" Stream Diversion Culvert
O.H.W.M.
24" Thick Dumped Riprap Over Geolextile
Section A-A
Not to Scale
Note:
Native material excavated from the stream for installation of the dumped riprap apron shall be stockpiled. Upon completion of temporary diversion, all dumped riprap shall be removed and the native material shall be replaced back into the stream to match the existing condition.
R. M. TOWILL CORPORATION
North
10' 5' 0 10' 20'
SCALE: 1" = 10'
Kaumualii Highway Widening (Lihue Mill Bridge to Rice Street)
Lihue, Kauai, Hawaii
Figure 10

EXHIBIT 9

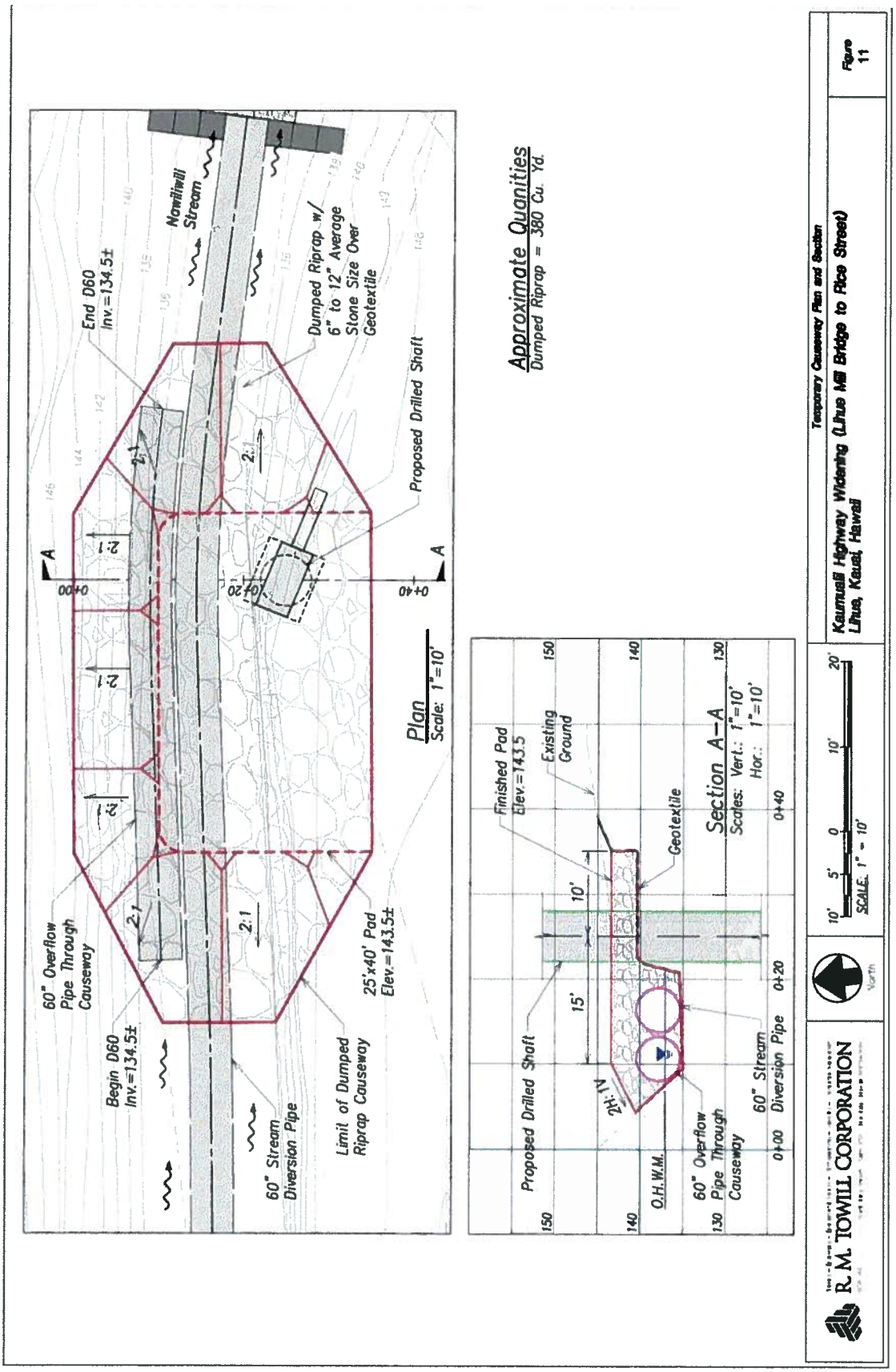

Plan
Scale: 1"=10'
Approximate Quantities
Dumped Riprap = 380 Cu. Yd.
Section A-A
Scales: Vert.: 1"=10'
Hor.: 1"=10'
Temporary Causeway Plan and Section
Kaumualii Highway Widening (Lihue Mill Bridge to Rice Street)
Lihue, Kauai, Hawaii
R.M. TOWILL CORPORATION
Figure 11
Nawiliwili Stream
End D60 Inv.=134.5±
Dumped Riprap w/ 6" to 12" Average Stone Size Over Geotextile
Proposed Drilled Shaft
60" Overflow Pipe Through Causeway
Begin D60 Inv.=134.5±
60" Stream Diversion Pipe
Limit of Dumped Riprap Causeway
25'x40' Pad Elev.=143.5±
Finished Pad Elev.=143.5
Existing Ground
Geotextile
O.H.W.M.
60" Stream Diversion Pipe
SCALE: 1" = 10'

EXHIBIT 10

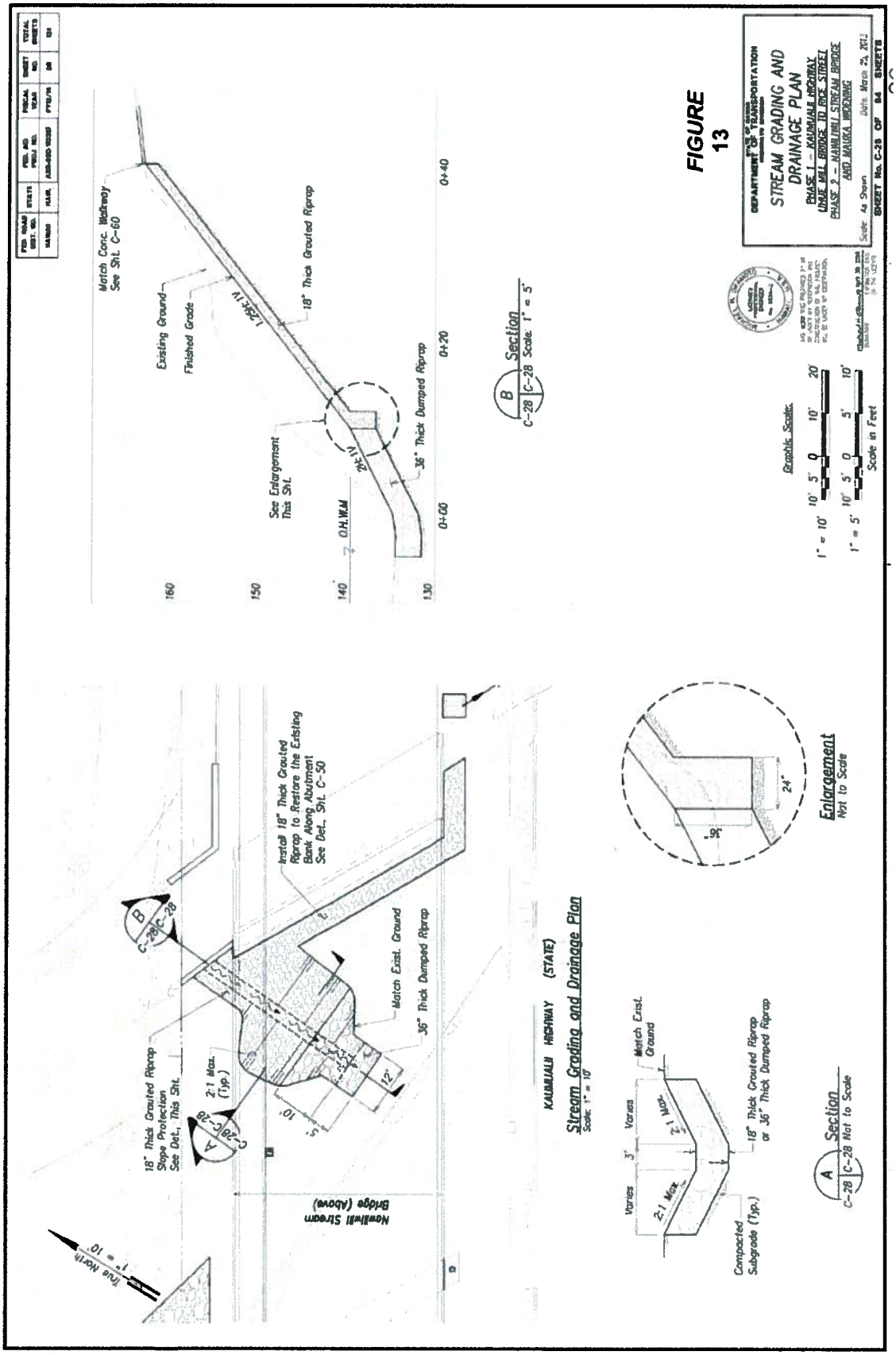


FIGURE 13
STREAM GRADING AND DRAINAGE PLAN
Stream Grading and Drainage Plan
Enlargement
Not to Scale
Section
Match Conc. Walkway See Sht. C-60
Existing Ground
Finished Grade
18" Thick Grouted Riprap
See Enlargement This Sht.
36" Thick Dumped Riprap
Install 18" Thick Grouted Riprap to Restore the Existing Bank Along Abutment See Det., Sht. C-50
Match Exist. Ground
18" Thick Grouted Riprap Slope Protection See Det., This Sht.
2:1 Max. (Typ.)
Nowlein Stream Bridge (Above)
KAUMUALII HIGHWAY (STATE)
Varies
Compacted Subgrade (Typ.)
Graphic Scales
Scale in Feet

EXHIBIT 11

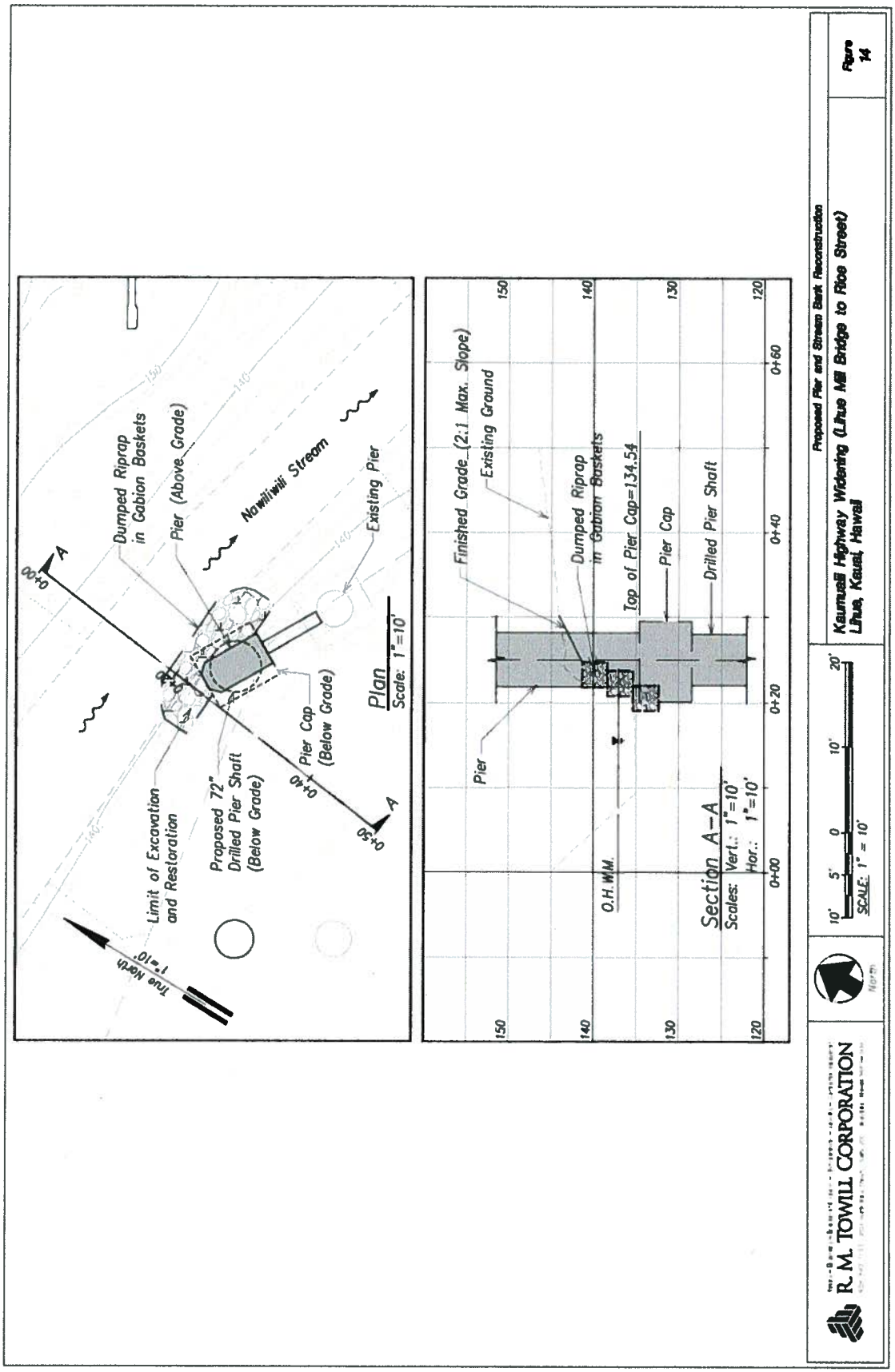

Plan
Scale: 1"=10'
Dumped Riprap in Gabion Baskets
Pier (Above Grade)
Nawiliwili Stream
Existing Pier
Limit of Excavation and Restoration
Proposed 72" Drilled Pier Shaft (Below Grade)
Pier Cap (Below Grade)
True North
Section A-A
Scales: Vert.: 1"=10'
Hor.: 1"=10'
Finished Grade (2:1 Max. Slope)
Existing Ground
Pier
O.H.W.M.
Top of Pier Cap=134.54
Pier Cap
Drilled Pier Shaft
Proposed Pier and Stream Bank Reconstruction
Kaumualii Highway Widening (Lihue Mill Bridge to Rice Street)
Lihue, Kauai, Hawaii
SCALE: 1" = 10'
R. M. TOWILL CORPORATION
Figure 14

EXHIBIT 12

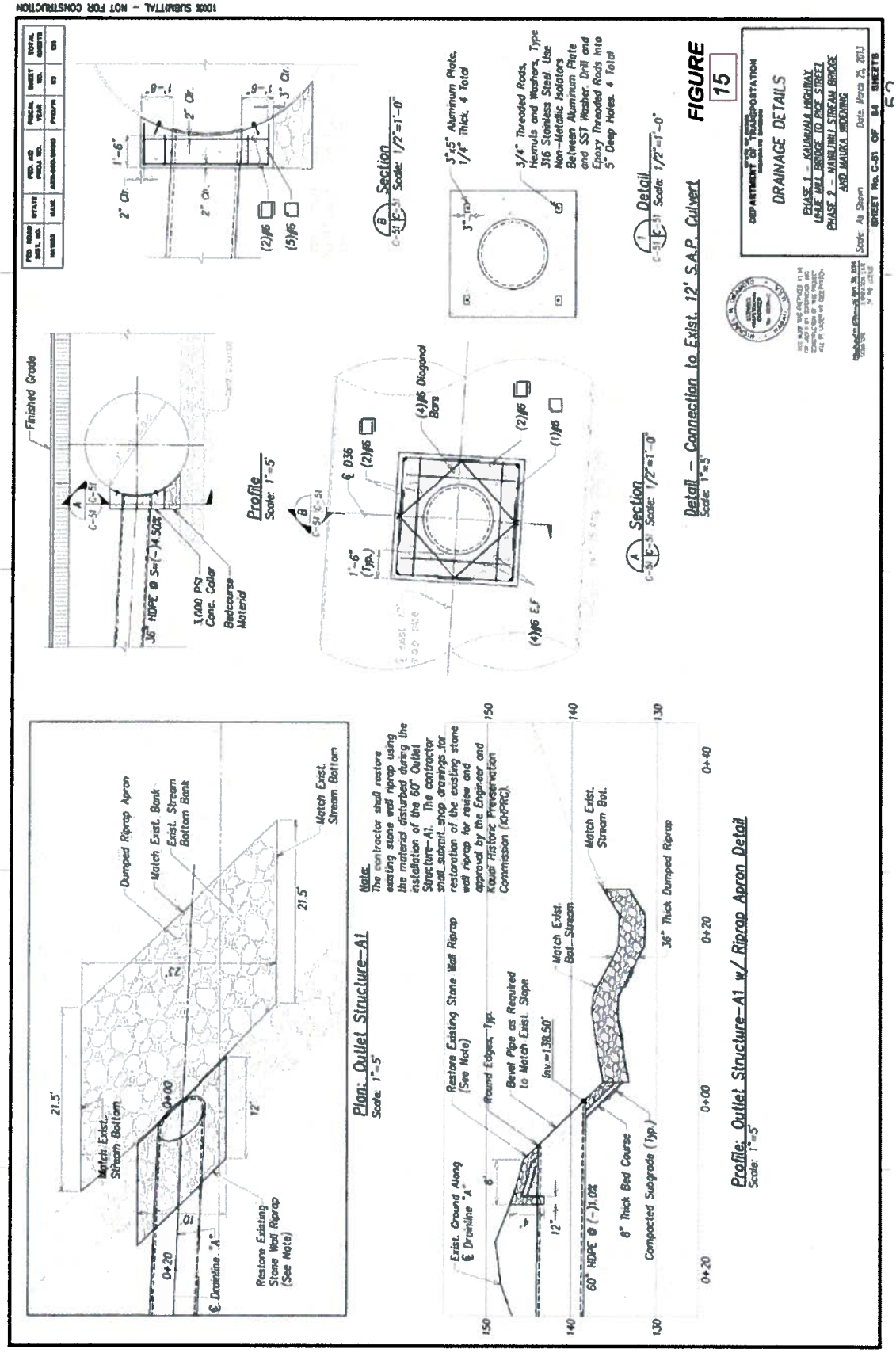
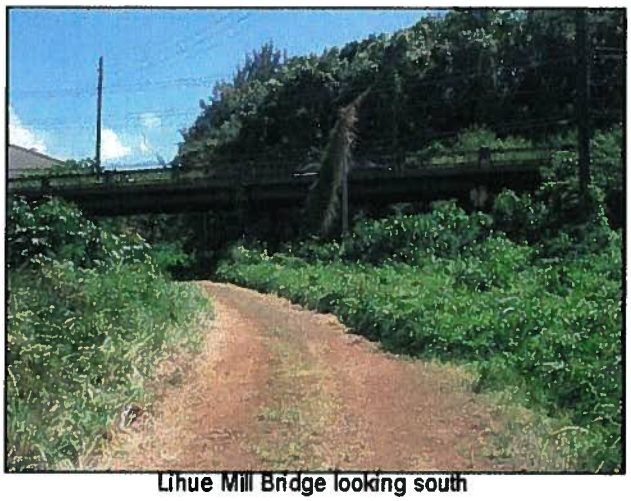

100% SUBMITTAL - NOT FOR CONSTRUCTION
Section
Scale: 1/2"=1'-0"
Detail
Scale: 1/2"=1'-0"
Profile
Scale: 1"=5'
Section
Scale: 1/2"=1'-0"
Detail – Connection to Exist. 12' S.A.P. Culvert
Scale: 1"=5'
FIGURE 15
DEPARTMENT OF TRANSPORTATION
DRAINAGE DETAILS
PHASE 1 – KAMEHAMEHA HIGHWAY
LIKE-LIKE BRIDGE TO PKE. STREET
PHASE 2 – MAIN LIMIT STREAM BRIDGE
AND MAURA WIDENING
Finished Grade
Backcourse Material
1:00 PSI Conc. Collar
Dumped Riprap Apron
Match Exist. Bank
Exist. Stream Bottom Bank
Match Exist. Stream Bottom
Restore Existing Stone Wall Riprap (See Note)
Plan: Outlet Structure-A1
Scale: 1"=5'
Note:
The contractor shall restore existing stone wall riprap using the material disturbed during the installation of the 60" Outlet Structure-A1. The contractor shall submit shop drawings for restoration of the existing stone wall riprap for review and approval by the Engineer and Kauai Historic Preservation Commission (KHPRC).
Restore Existing Stone Wall Riprap (See Note)
Round Edges Typ.
Bevel Pipe as Required to Match Exist. Slope
Inv=138.50'
Match Exist. Bot. Stream
Match Exist. Stream Bot.
36" Thick Dumped Riprap
8" Thick Bed Course
Compacted Subgrade (Typ.)
Exist. Ground Along ℄ Drainline "A"
60" HDPE @ (-)1.0%
Profile: Outlet Structure-A1 w/ Riprap Apron Detail
Scale: 1"=5'

EXHIBIT 13

LIHUE MILL BRIDGE EXISTING ENVIRONMENT



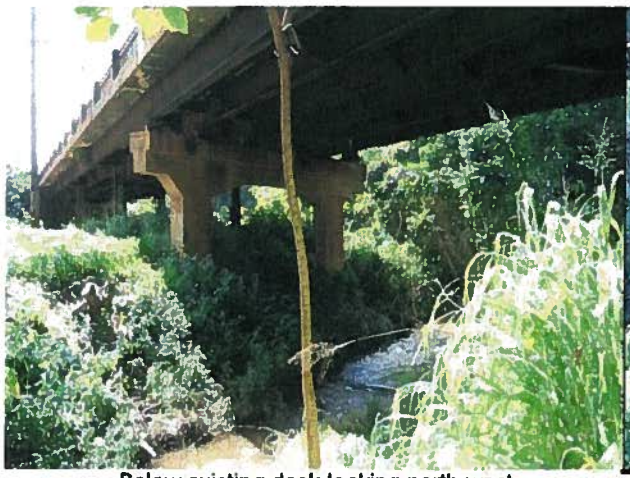
Lihue Mill Bridge looking south

Below existing deck looking east

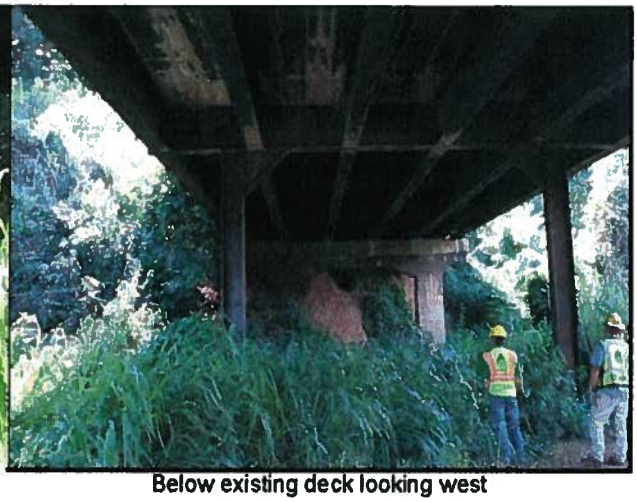
Vegetation along the east bank of Nawiliwili stream

Existing east bank abutment

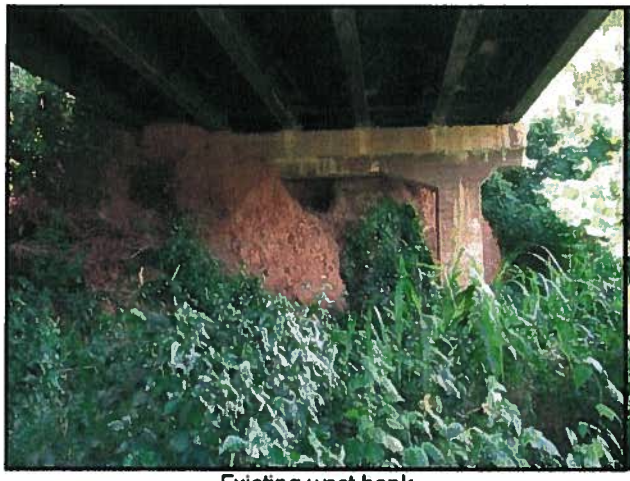
EXHIBIT 14



Below existing deck looking north west



Below existing deck looking west



Existing west bank

Vegetation on the west bank upstream

EXHIBIT 14

STANDARD STREAM CHANNEL ALTERATION PERMIT CONDITIONS
(Revised 9/19/07)

1. The permit application and staff submittal approved by the Commission at its meeting on May 22, 2013, shall be incorporated herein by reference.

2. The applicant shall comply with all other applicable statutes, ordinances, and regulations of the Federal, State and county governments.

3. The applicant, his successors, assigns, officers, employees, contractors, agents, and representatives, shall indemnify, defend, and hold the State of Hawaii harmless from and against any claim or demand for loss, liability, or damage including claims for property damage, personal injury, or death arising out of any act or omission of the applicant or his successors, assigns, officers, employees, contractors, and agents under this permit or related to the granting of this permit.

4 The applicant shall notify the Commission, by letter, of the actual dates of project initiation and completion. The applicant shall submit a set of as-built plans and photos of the completed work to the Commission upon completion of this project. This permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The proposed work under this stream channel alteration permit shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

5. Before proceeding with any work authorized by the Commission, the applicant shall submit one set of construction plans and specifications to determine consistency with the conditions of the permit and the declarations set forth in the permit application.

6. The applicant shall develop site-specific, construction best management practices (BMPs) that are designed, implemented, operated, and maintained by the applicant and its contractor to properly isolate and confine construction activities and to contain and prevent any potential pollutant(s) discharges from adversely impacting state waters. BMPs shall control erosion and dust during construction and schedule construction activities during periods of low stream flow.

7. The applicant shall protect and preserve the natural character of the stream bank and stream bed to the greatest extent possible. The applicant shall plant or cover lands denuded of vegetation as quickly as possible to prevent erosion and use native plant species common to riparian environments to improve the habitat quality of the stream environment.

8. In the event that subsurface cultural remains such as artifacts, burials or deposits of shells or charcoal are encountered during excavation work, the applicant shall stop work in the area of the find and contact the Department's Historic Preservation Division immediately. Work may commence only after written concurrence by the State Historic Preservation Division.

EXHIBIT 15