STATE OF HAWAI'I
DEPARTMENT OF HAWAIIAN HOME LANDS
LAND DEVELOPMENT DIVISION

June 26, 2018
Date

ADDENDUM NO. 1
TO
INVITATION FOR BIDS

IFB-18-HHL-008
HO'OLEHUA WATER SYSTEM IMPROVEMENTS (PWS 230)
BID PACKAGE 1 - HO'OLEHUA

NOTICE TO ALL PROSPECTIVE BIDDERS

This Addendum is hereby made a part of the Contract Documents for **IFB-18-HHL-008**, and it shall amend the said contract documents as detailed within this Addendum document.

APPROVED:

N Sakamoto

Date: June 26, 2018

Norman L. Sakamoto, Acting Administrator
Land Development Division
Department of Hawaiian Home Lands

Please execute and immediately return the receipt below to the Department of Hawaiian Home Lands via facsimile to: **(808) 620-9299, Attention: James C. Richardson, Project Manager, Land Development Division.**

Receipt of Addendum No. 1 for the **IFB-18-HHL-008**, is hereby acknowledged.

Signed	Date
Print Name	Title
Name of Firm/Company	

ADDENDUM NO. 1

IFB-18-HHL-008
HOʻOLEHUA WATER SYSTEM IMPROVEMENTS (PWS 230)
BID PACKAGE 1 - HOʻOLEHUA
HOʻOLEHUA, MOLOKAʻI, HAWAIʻI

1. Access to the Hoʻolehua 2x3.5 MG Reservoir site will be provided to any Prospective Bidder beginning at **9:00 a.m.** on **Thursday, June 28, 2018** for inspection of the concrete water tanks. The Point-of-Contact for access is: Gene Ross Davis, Acting Molokai District Supervisor, (808) 560-6104 or Myron Poepoe (808) 336-0736.

2. The Minutes from the Pre-Bid Conference held at the DHHL Molokaʻi District Office on June 18, 2018 and the Sign-In Sheet are attached.

3. The revised Agenda from the Pre-Bid Conference held on Monday, June 18, 2018 is attached.

4. The Draft Archaeological Monitoring Plan, dated March 2018, by Pacific Legacy is attached.

5. The Draft Historic Preservation Plan, dated May 2018, by Pacific Legacy is attached.

6. The Construction Plans for Hoolehua Water System Improvements, Emergency Repairs Due to Vandalism at Hoolehua 2x3.5 MG Reservoir are attached.

7. The updated State of Hawaiʻi Wage Rate Schedule, Bulletin No. 492, dated June 11, 2018 is attached.

8. The updated State of Hawaiʻi Apprentice Schedule, Bulletin No. 492, dated June 11, 2018 is attached.

9. The Contract TIME OF PERFORMANCE for IFB-18-HHL-008 shall be revised to include the following statement:

   "IFB-18-HHL-008 – Seven Hundred Thirty (730) calendar days from the written formal Notice to Proceed (NTP) of which the first One Hundred Eighty-Two (182) calendar days will be for non-construction items only, i.e. the submitting of all submittals or shop drawings for approval, processing permits, staging, setting-up of the field office, ordering of materials, requests for information, etc. The following Five Hundred Forty-Eight (548) calendar days will address all other contractual requirements including the actual construction of the project."

10. Geotechnical Engineering Exploration Report for Site No. 1 and Site No. 7, by Geolabs, Inc., dated December 5, 2017 is attached.

11. Percolation Testing at Hoolehua Maintenance Facility (Site 7), by Hirata & Associates, dated December 18, 2017 is attached.

12. The Pre-Bid Conference Agenda referenced the incorrect version of the Federal Wage Rate Schedule (Davis-Bacon). The current (04/17/18) version is included in the IFB.

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

PRE-BID CONFERENCE REPORT

TO:	Jim Richardson, DHHL		
FROM:	G70		
PROJECT(S):	DHHL Molokai USDA-Funded Hoolehua Water System (PWS No. 230) Improvements		
G70 PROJECT NOS.:	216065-01	**DATE:**	June 22, 2018
SUBJECT:	Meeting Minutes (June 18, 2018)		
LOCATION:	DHHL Molokai District Office	**NO. OF PAGES:**	2
THOSE PRESENT:	See Sign-In Sheet		

See: Pre-Bid Conference Agenda for IFB-18-HHL-008 and IFB-18-HHL-009

1. Meeting commenced at 8:10 a.m. led by G70 (DHHL Personnel were delayed at the rental car company)
2. Proceed with Agenda items:
   - I. Introductions – Design Team (G70, Okahara & Ronald Ho), DHHL and Construction Manager (SSFM)
   - II. Schedule
   - III. Invitation for Bid (IFB) Overview
     - Project Funded by USDA and DHHL Trust Funds; No NAHASDA funding
     - Two Bid Packages
   - IV. Scope of Work
     - **Bid Package 1 – Hoʻolehua**
     - Site 1 – Kauluwai Well Site
     - Site 3 – Kauluwai 1.0 MG Tank
     - Site 4 – Hoolehua 2x3.5 MG Tanks
     - Site 5 – Puu Kapele Avenue
     - Site 6 – Pressure Breaker Tank
     - Site 7 – Hoolehua Maintenance Yard
     - G70 provides summary of SOW for each site (as shown in Agenda)
     - Allowance for Archaeological Monitoring for each Site
     - NPDES Permit obtained for both Bid Packages

- Archaeological Monitoring Plan (AMP) and Historic Preservation Plan (HPP) both not approved, but currently under review at State Historic Preservation Division (SHPD)
- State DOT Highways approval obtained for both Bid Packages
- Site 3 – replacement of existing transite (asbestos-cement) pipe; any pipe disturbance may require removal of pipe; when new pipe is connected to the system, water may need to be shut off, so other users of the tank will need to be notified of the service interruption
- Field office is budgeted, but Contractor not required to provide at every site
- Site 3 – New Line will be within DHHL easement; Existing line is not within DHHL property
- Site 4 – Also has separate emergency work package that is funded by DHHL (State CIP funds) and will added as part of the Addendum
- Site 4 – significant vegetation removal required for access road construction; tree clearing of a certain truck diameter requires observations; bids should account for this
- Site 7 – PRV Replacements along Farrington Avenue and Lihi Pali Avenue – replacement must be one-at-a-time.
- Site 7 – Contractor is responsible for design and permitting of new maintenance facility
- Site 7 – Electrical Engineer will clarify if service can come off the existing building or if an upgrade to the existing pole mounted transformer is required
- **Bid Package 2 - Kalamaʻula**
- Site 2 – PRV Replacement will require temporary system shutdown
- Site 2 – Access to tank site is via dirt road for which there are numerous rock obstructions which must be removed.
- Site 2 – Steeper portions of new access roadway will be concrete pavement instead of asphalt concrete pavement
- Site 2 – Contractor will evaluate existing condition of fire hydrant and gate valve; if evidence of corrosion is observed, gate valve, fire hydrant and riser shall be replaced.

V. Procurement Requirements
- The Federal Wage Rate Schedule (Davis-Bacon) had the wrong date shown (01/27/2018). The Current WRS (04/27/18) is included in the IFB.
- The State Wage Rate Schedule will be updated in Addendum No. 1

VI. Contract Notice to Proceed, Time of Performance, Liquidated Damages and Change Orders
- DHHL has asked USDA to expedite review of Change Orders especially since USDA Engineer is based in Colorado

VII. Requests for Information
- All requests shall be made in writing

VIII. Information for Prospective Bidders

IX. Special Conditions
- Some of the work will result in a reduction of the available water pressure, Contractor must coordinate with DHHL and Molokaʻi Fire Department
- USDA is requesting that pictures detailing progress be provided with all Contractor's Daily Report

X. Summary of Bid Deadlines and Contract Award

XI. Questions Received Prior to Pre-Bid Conference

XII. Site Visit Schedule following Pre-Bid Conference
- Time of Bid Opening is 2:00 p.m. not 2:00 a.m.

XIII. Additional Questions/Comments:
- Q1: Site 2 – What is the length of the 12-ft wide access road?

- A1: Approximately 52,000 linear feet
- Q2: When do you expect to issue NTP?
- A2: Approximately 1-1/2 to 2 months following Bid Open/Award; Time for USDA approval and execution of Contract
- Bid Open is at DHHL Offices on Oʻahu not Molokaʻi
- There are separate Bid Packages, make sure correct Notice of Intent to Bid is submitted.
- Reconvene at 9:30 a.m. to head out to Site visits.

3. Meeting adjourned

P:\2016\216065-01 DHHL Molokai USDA Funded Water System Improvements\Civil DOCS\Pre-Bid Meeting (2018-06-18)\Pre-Bid Conference Minutes_IFB-18-HHL-008_009_2018-06-18.docx

PRE-BID CONFERENCE

IFB No.: IFB-18-HHL-008
Hoʻolehua Water System Improvements (PWS 230)
Bid Package No. 1 - Hoʻolehua

IFB No.: IFB-18-HHL-009
Hoʻolehua Water System Improvements (PWS 230)
Bid Package No. 2 - Kalamaʻula

DHHL Molokaʻi District Office
600 Maunaloa Highway, Suite D-1
Kaunakakai, Molokaʻi, Hawaiʻi 96748
DHHL/OHA Conference Room
Monday, June 18, 2018, 8:00 a.m. - 10:00 a.m.

AGENDA

I. INTRODUCTION

A. Owner – Department of Hawaiian Home Lands (DHHL)
   1. James Richardson, Project Manager, Land Development Division, Design & Construction Branch
   2. E. Halealoha Ayau, Water Resource Management Specialist, Planning Office
   3. Gene Ross Davis, District Supervisor (Acting), Molokaʻi District Office

B. Engineering Design Consultants
   1. Group 70 International, Inc. dba G70 (Civil)
      a. Ryan Char, P.E., Principal-In-Charge
      b. Peter Mow, P.E., Project Manager
      c. Aaron Couch
   2. Ronald N.S. Ho and Associates, Inc. (Electrical)
      a. Yuta Sawaki
   3. Okahara and Associates, Inc. (Mechanical)
      a. Ronald Layaoen

C. Construction Manager – SSFM International, Inc.
   1. Brooks Aoki, Construction Manager
   2. Cory Uchima, Construction Manager

D. Hoʻolehua Water System Maintenance/Service Contractor – Pacific Electro-Mechanical, Inc.

II. SCHEDULE

a. 8:00 a.m. to 8:05 a.m. Welcome/Introduction/Sign-In Sheet

b. 8:05 a.m. to 8:20 a.m. Invitation for Bid (IFB) Overview

c. 8:20 p.m. to 9:05 a.m. Scope of Work

d. 9:05 a.m. to 9:30 a.m. Procurement Requirements
   Contract NTP, Time of Performance, Liquidated Damages

and Change Orders
Requests for Information
Information for Prospective Bidders
Special Conditions
Summary of Bid Deadlines and Contract Award

e. 9:30 a.m. to 10:00 a.m. Q&A

f. 10:00 a.m. to 4:00 p.m. Site Visits (See Section XI)

III. INVITATION FOR BID (IFB) OVERVIEW

A. USDA / NAHASDA Funding

B. The Ho'olehua Water System Improvements project consists of two (2) Bid Packages. Package 1 (IFB-18-HHL-008) includes work at six different sites within Ho'olehua. Package 2 (IFB-18-HHL-009) which consists of work within Kalama'ula.

C. Website: Package 1 - https://dhhl.hawaii.gov/procurement/ifb-18-hhl-008/

Package 2 - https://dhhl.hawaii.gov/2018/06/08/ifb-18-hhl-009/

D. Contractors may choose to bid on only one package or may elect to bid on both packages. There is no requirement to bid on both packages.

IV. SCOPE OF WORK (General Description)

A. IFB-18-HHL-008 (BID PACKAGE 1)

1. SITE 1 – KAULUWAI WELL SITE

a. 0.2 MG RESERVOIR SITE WORK

i. 200,000-gallon reservoir, including subbase base course, structural fill, liners and coatings, piping & fittings to exterior face of footing, ladders, landings, railings, hatches, vents, finishes and all appurtenances and incidentals.

ii. Grading and drainage, including reservoir site clearing & grubbing; unclassified excavation for 0.2 MG reservoir, embankments – fill & backfill; roadway excavation, disposal of excess material; inclusive of structural excavation, crushed rock base and backfill. Inclusive of retaining walls, appurtenances, drain line extension and relocation of headwall and incidental construction.

iii. Paving, including 6" aggregate base course, inclusive of hauling, spreading, laying, and compacting; 2" Asphaltic Concrete paving, inclusive of hauling, spreading, laying, rolling and compacting; smooth-riding connection and all incidentals.

iv. Site piping work, including influent/effluent line, overflow line, washout line, perimeter drain, sampling line, copper pressure line, connection to existing influent/effluent line, inclusive of fittings, valves, valve

boxes, concrete blocks, trench excavation, cushion and backfill, all appurtenant and incidental items.

b. ABOVE-GROUND DIESEL FUEL STORAGE TANK

   i. Grading, paving and fencing, including roadway excavation and backfill, disposal of excess material; 6" aggregate base course inclusive of hauling, spreading, laying and compacting, 2" A. C. paying inclusive of hauling, spreading, laying, rolling and compacting; smooth-riding connection and all incidentals; 8-ft. high chain link fencing and new 16-ft. wide double swing gate inclusive of all appurtenant and incidental items.

   ii. Installation of diesel fuel storage tank and appurtenances, including all equipment on fuel tank per manufacturer's recommendations, site grading, concrete foundation and bollards per manufacturer's recommendations, all appurtenant and incidental items.

   iii. Fuel oil piping, including all fittings, valves, trench excavation and backfill, containment, connection to existing generator set fuel line, all appurtenant and incidental items.

c. SCADA IMPROVEMENTS

   i. Electrical systems, including preliminary site investigation, electrical power and controls including alarm circuit input into existing SCADA system, all appurtenant components and incidental items. Inclusive of booster pump and deep well pump replacement.

d. BOOSTER PUMP AND DEEP WELL PUMP MOTOR REPLACEMENT

   i. Booster pump motor replacement, including two (2) booster pumps, disposal of construction and demolition debris, installation of concrete pad, connection to electrical and existing water system. Inclusive of deep well pump motor replacement.

e. MISCELLANEOUS ITEMS

   i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

   ii. Field Office, including installation and removal, in place complete.

   iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

   iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.

   v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMP's, watering and roadway cleaning.)

vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals, and other activities to mobilize for project.

vii. Demobilization, including removing excess materials and equipment, clean-up.

viii. Archaeological Monitoring

ix. Implementation of the Historic Preservation Plan (Applies only to Site 1)

2. SITE 3 – KAULUWAI 1.0 MG RESERVOIR

   a. INSTALL CONTROL VALVES

      i. Install new 6” pipe, including fitting, concrete blocks, all appurtenant and incidental items, inclusive of excavation cushion and backfill, cutting and plugging of existing 6” piping, and connection to existing 6” piping.

      ii. Lin. Ft., Install new 6” pipeline, including meter, meter box, valves, valve boxes, fittings, concrete blocks, all appurtenant and incidental items; inclusive of excavation, cushion and backfill, cutting and removal of existing 6” piping with all appurtenant and incidental items.

   b. MISCELLANEOUS ITEMS

      i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

      ii. Field Office, including installation and removal, in place complete.

      iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

      iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.

      v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMP’s watering and roadway cleaning).

      vi. Mobilization, including obtaining insurance bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.

      vii. Demobilization, including removing excess materials and equipment, clean-up.

      viii. Archaeological Monitoring

3. SITE 4 – HOʻOLEHUA 2 X 3.5 MG RESERVOIR

   a. REPLACE FLOW CONTROL VALVES AND INFLUENT PIPING

i. Construct control valves, vault and site work, including clearing and grubbing, structural excavation and backfill, inclusive of disposal of excess material; masonry, reinforcing steel, steel plate covers, miscellaneous metals, all appurtenant and incidental items.

ii. Installation of flow and level control valves, including 6” piping, fittings, gate valves, air release valves, copper piping inclusive of connecting to existing copper pipe, cutting existing copper pipe, remove portion of copper pipe and existing pressure gauge, concrete blocks and pedestals, all appurtenant and incidental items.

iii. Install new 6” influent piping, including gate valves, fittings, pipe straps, concrete blocks and pedestals, connection of two existing 6” piping to two reservoirs, all appurtenant and incidental items, inclusive of removal and disposal of existing 6” C.I. piping.

iv. Install new exterior galvanized steel vertical ladder with security gate, including all appurtenant and incidental items for the safe and proper installation of new ladder, inclusive of removal and disposal of existing ladder.

v. Tank repair, including replacement of rebar, resurface tank exterior, installation of ancillary equipment, excavation and disposal of construction debris.

vi. Fencing, 8-foot high fencing around both tanks and new access road, with gate access for vehicles and pedestrians at tank site and access road entry/exit points, including excavation and disposal of construction debris.

vii. Roadway and grading and paving, 5,280 linear feet including roadway excavation, backfill, inclusive of appurtenant grading within shoulder and transition to existing ground and disposal of excess material; 6” aggregate base course and 2” ac pavement, inclusive of hauling, spreading, laying, rolling and compacting with smooth riding connection.

viii. Each, Butterfly valve replacement, including replacement of 20” butterfly valves, realigning manholes, excavation and debris disposal.

ix. ADDITIVE: Emergency Repairs due to Vandalism (Separate Funding source)

b. MISCELLANEOUS ITEMS

i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

ii. Field Office, including installation and removal, in place complete.

iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.

v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).

vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.

vii. Demobilization, including removing excess materials and equipment, clean-up.

viii. Archaeological Monitoring.

4. SITE 5 PUU HELEAKALA IMPROVEMENTS

a. NEW 8" TRANSMISSION MAIN AND FIRE HYDRANTS

i. Linear Foot, install new 8" pipe, including trench excavation, pipe cushion and backfill, trench repaving where applicable, 8" gate valves, valve boxes, fittings, concrete blocks, all appurtenant and incidental items, inclusive of reconnection of existing laterals.

ii. Each, install 6" Gate Valve, including valve box, all appurtenant and incidental items.

iii. Each, Install Fire Hydrant Assembly, Including 6" pipe, concrete pads reflector post, concrete blocks, all appurtenant and incidental items.

b. MISCELLANEOUS ITEMS

i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

ii. Field Office, including installation and removal, in place complete.

iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.

v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).

vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.

vii. Demobilization, including removing excess materials and equipment, clean-up.

viii. Archaeological Monitoring.

5. SITE 6 – HO‘OLEHUA PRESSURE BREAKER TANK ROADWAY
   a. 12-FOOT WIDE ACCESS ROAD
      i. Replace ancillary equipment, including replacement of butterfly valves, all appurtenant and incidental items, excavation and disposal of demolition and construction debris.
      ii. Linear Foot, construct new 12-foot wide access road, including roadway excavation and backfill, disposal of excess material, pavement, and fencing and gates to support new access road.
      iii. Each, Butterfly replacement, including replacement of 20” butterfly valves, relocating or repairing manholes, excavation and debris disposal.
   b. MISCELLANEOUS ITEMS
      i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.
      ii. Field Office, including installation and removal, in place complete.
      iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.
      iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.
      v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).
      vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.
      vii. Demobilization, including removing excess materials and equipment, clean-up.
      viii. Archaeological Monitoring.

6. SITE 7 – HO‘OLEHUA VARIOUS IMPROVEMENTS
   a. VALVE REPLACEMENT
      i. Each, Pressure Reducing Valve Replacement, including replacement of 12” gate valves, relocating or repairing manholes, excavation and debris disposal.
      ii. Each, Pressure Reducing Valve Station Replacement, including 2-new Pressure Reducing Valve at each location, fittings and piping,

adjusting manholes, excavation, backfill and disposal of excess material.

iii. Each, Air Relief Valve Replacement, including new Air Relief Valve, excavation, backfill and disposal of excess material.

b. MAINTENANCE YARD IMRPOVEMENTS

i. Maintenance Yard Improvements, including demolition of existing building, expansion of existing concrete pad, construction of new building, grading, excavation, installation of a fire hydrant, site infrastructure (water, sewer, drain) including a new Individual Wastewater System (IWS), locating and backfilling the existing cesspool and transferring the existing service to the new IWS, locating and connecting to the existing potable water service and power connections, lightning, fencing; stabilizing the existing parking driving path and ancillary equipment.

c. MISCELLANEOUS ITEMS

i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

ii. Field Office, including installation and removal, in place complete.

iii. Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

iv. Each, Project Sign for United States Department of Agriculture (USDA) in place complete.

v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).

vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.

vii. Demobilization, including removing excess materials and equipment, clean-up.

viii. Archaeological Monitoring.

7. ALL SITES

a. Required mitigation for the inadvertent discovery of human burials with the project area

b. Phase I Additive Alternate, for imported backfill, is provided if the excavated material is determined to be unsuitable to reuse as trench backfill by the geotechnical engineer.

c. Phase I Allowances are provided for archaeological monitoring, geotechnical observation, monitoring & testing, biological monitoring and unforeseen site conditions.

B. IFB-18-HHL-009 (BID PACKAGE 2)

1. SITE 2 – KALAMAʻULA SYSTEM

a. 12-FT ACCESS ROAD TO 0.2 MG KALAMAʻULA RESERVOIR

i. Linear Foot, Roadway grading and paving, including roadway excavation and backfill, disposal of excess material, inclusive of appurtenant grading within shoulder and transition to existing ground and disposal of excess material; 6" aggregate base course inclusive of hauling, spreading, laying and compacting, 2" Asphaltic Concrete Pavement inclusive of hauling, spreading, laying, rolling and compacting with smooth-riding connection.

ii. Each, Replace 6" and 4" Pressure Reducing Valve at Reservoir site. Existing Vault to remain; inclusive of all appurtenances, in-place, complete.

iii. Each, Replace Existing 4" Pressure Reducing Valve with New 2" Pressure Reducing Valve assembly (above ground); inclusive of temporary chain link fence removal and restoration.

b. 12-IN TRANSMISSION MAIN INSTALLATION

i. Linear Foot, install 12" water line, including trench excavation, cushion and backfill, gate valves, valve boxes, lateral connections, fitting, concrete blocks, connections to existing water lines and all appurtenant and incidental items.

c. MISCELLANEOUS REPAIR AND REPLACEMENT WORK WITHIN KALAMAʻULA

i. Each. Replace 12" Gate Valve including excavation, backfill and debris disposal at various locations along Likelike Avenue and Keana Street.

~~ii. Each. Replace Pressure Reducing Valve, including excavation, backfill and debris disposal along existing 12: transmission main between Kalamaʻula Reservoir and Kauluwai Well Sites.~~ (NIC – Work completed by DHHL)

iii. Each. Replace Air Relief Valve, including excavation, backfill and debris disposal at various locations along Likelike Avenue and Keana Street.

iv. Each. Replace Fire Hydrant and Fire Hydrant Riser and where corrosion is present, replace lateral and Gate Valve, including excavation, backfill and debris disposal at various locations along Likelike Avenue and Keana Street.

v. Replace 3" laterals and provide water meter reconnections at various locations along Mauna Loa Highway in Kalama'ula

d. MISCELLANEOUS ITEMS

i. Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.

ii. Field Office, including installation and removal, in place complete.

iii. Each. Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.

iv. Each. Project Sign for United States Department of Agriculture (USDA) in place complete.

v. Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES). Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).

vi. Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.

vii. Demobilization, including removing excess materials and equipment, clean-up.

viii. Archaeological Monitoring.

V. PROCUREMENT REQUIREMENTS

A. This project is not General Excise Tax (GET) exempt, and may be applied to all subcontractors, equipment, materials and supplies;

B. Wage Rates:

1. This project is subject to the State Department of Labor and Industrial Relations' (DLIR) Wages Rate Schedules, per Chapter 104, Hawaii Revised Statutes State Wage Rate Schedule (http://labor.hawaii.gov/rs/home/wages/72-2/); and,

a. State Apprentice Wage Rate Schedule* (http://labor.hawaii.gov/rs/home/wages/72-2/)

b. List of Construction Trades in Registered Apprenticeship Programs* (http://labor.hawaii.gov/wdd/home/employers/apprenticeship/resources/)

2. Federal Labor Standards Provisions (Davis-Bacon). Current General Decision Number is: **HI180001 04/27/2018*** (https://www.wdol.gov/dba.aspx).

* Note:

a. Federal wage rates in the General Decision Number are locked-in 10 days prior to the Bid Opening date for the IFB, even if new rates are published, if the contract is awarded 90 Calendar days from the Bid Opening date.

b. State DLIR Wages Rate Schedule (**IFB-18-HHL-008** and **IFB-18-HHL-009** include **Bulletin No. 492, published June 11, 2018**) are subject to change. Any changes in the State DLIR Wage Rate Schedule are applicable for the entire duration of this contract.

c. The higher wage rate shall govern.

C. Prior to contract award, DHHL shall verify Offeror compliances with Section 3-122-112, Hawaii Administrative Rules, which involves clearances from the DCCA, DLIR, and State and Federal tax offices.

Failure to either provide the clearances noted in Sec. 3-122-112, HAR, or rectify a non-compliant status within ten (10) business days of notification may be grounds to disqualify a bidder. Therefore, it is highly recommended that Offerors register with Hawaii Compliance Express (HCE). To register with HCE, go to: http://vendors.ehawaii.gov

D. Surety companies executing bonds must appear on the U.S. Department of Treasury's Listing of Certified Companies (https: www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm)

E. A Bid Security covering 5% of the bid offer is required for this IFB.

* A personal or company check does not qualify as an "Official Check" in the Bid Offer Form.

F. Payment Bond and Performance Bond will be required for the contract, each covering 100% of the contract price.

VI. CONTRACT NOTICE TO PROCEED, TIME OF PERFORMANCE, LIQUIDATED DAMAGES AND CHANGE ORDERS

A. The **Contract Time of Performance** is as follows:

1. **IFB-18-HHL-008** – **Seven Hundred Thirty (730) calendar days** from a written formal **Notice to Proceed (NTP)**.

2. **IFB-18-HHL-009** – **Five Hundred Forty-Eight (548) calendar days** from a written formal **Notice to Proceed (NTP)**.

B. Contractor shall submit a Project Schedule/Construction Phasing Plan and Cashflow Drawdown Schedule within seven (7) working days of the formal Notice to Proceed date.

C. Liquidated damages are **$1,000.00** per calendar day.

Change orders:

Agency (DHHL and USDA) approval is required before Change Orders are effective. A Work Change Directive cannot change the Contract amount or Contract duration without a subsequent Change Order.

VII. REQUESTS FOR INFORMATION

A. All Requests for Information shall be made in writing (e-mail and facsimile are acceptable) and shall be directed to both the DHHL Project Manager and the Consultant, G70. The contact information is as follows:

1. Department of Hawaiian Home Lands
   Land Development Division
   Design and Construction Branch
   91-5420 Kapolei Parkway, Room 124
   Kapolei, Hawaii 96707
   Attention: James C. Richardson, Project Manager
   Phone: (808) 620-9282
   Fax: (808) 620-9299
   E-Mail: james.c.richardson@hawaii.gov

2. Group 70 International Inc., dba G70
   111 South King Street, Suite 170
   Honolulu, Hawaii 96813
   Attention: Peter L. Mow, P.E., Project Manager
   Phone: (808) 441-2103
   Fax: (808) 523-5874
   E-Mail: peterm@g70.design

B. Requests for Information shall be submitted no later than **4:00 p.m. HST** on **July 3, 2018**.

VIII. INFORMATION FOR PROSPECTIVE BIDDERS

A. A written summary of this Pre-Bid Conference will be issued by an **Addendum** posted on the DHHL website (dhhl.hawaii.gov).

B. Written answers to questions will be issued by **Addenda** posted on the DHHL website. Any verbal responses by DHHL and Consultant shall not be binding.

C. Interested bidders are responsible to check the DHHL website for the issuance of any **Addenda** up until the due date for bids.

IX. SPECIAL CONDITIONS

A. SC-08 PERMITS AND FEES – Contractor shall apply, obtain and pay for all required permits. All work necessary for compliance will be incidental to the various contract items. No separate payment.

B. SC-09 COORDINATION WITH OTHER PARTIES – Coordinate with all affected government agencies. Minimize disruptions to water service and coordinate with DHHL and Moloka'i Fire Department. Coordinate and schedule inspectional services.

C. SC-19 CONTRACTOR'S DAILY REPORT – Provide daily reports with required information.

D. SC-28 ARCHAEOLOGICAL MONITORING PLAN, ARCHAEOLOGICAL MONITOR, ARCHAEOLOGICAL MONITORING REPORT AND HISTORIC PRESERVATION PLAN – All sites have an ALLOWANCE for Archeological Monitoring. Work within

Site 1 – Kauluwai Well must comply with the Historic Preservation Plan. The Archaeological Monitoring Plan is currently in review with the State Historic Preservation Division and will be provided upon approval.

E. SC-37 WATER SYSTEM SPECIFICATIONS – All bids must meet Water System Standards for Maui County Department of Water Supply (DWS) and shall be bid in-place complete.

F. SC-48 PROJECT SIGNS – Two project signs are required for this project: State of Hawaii sign and a USDA sign.

G. SC-49 COMPLIANCE WITH USDA LETTER OF CONDITIONS – Environmental requirements.

H. Traffic Control on intersections with State Highways and County Roads.

I. Bid Package 1 and 2 contracts will overlap.

J. Contractor staging Lots:

Staging area has not been secured for this project as of 06/18/2018

K. For the duration of the construction, water service to the Ho‘olehua and Kalama‘ula residents shall not be interrupted for longer than a few hours (around midday). This shall be reflected in the construction schedule submitted for acceptance by DHHL. A notice of water service interruption must be provided to all residents, regarding the day and estimated time, for their information and planning. Water stored in DHHL tanks may be available for use during disruption periods. Use of this water must be coordinated and approved by the Construction Manager and DHHL.

X. SUMMARY OF BID DEADLINES & CONTRACT AWARD

(as provided in IFB '**NOTICE TO BIDDERS**' and '**Instructions for Bid Submittal**')

SUBMITTALS	DEADLINES
Substitution Requests	**July 3, 2018 4:00 p.m. HST**
Written questions (e.g. Request for Information or Clarification)	**July 3, 2018 4:00 p.m. HST**
NOTICE OF INTENTION TO BID (E-mail to james.c.richardson@hawaii.gov or Fax to 808-620-9299)	**July 6, 2018 4:00 p.m. HST**
STANDARD QUALIFICATION QUESTIONNAIRE (Submittals from previous projects are NOT valid). (E-mail to james.c.richardson@hawaii.gov or Fax to 808-620-9299)	**July 6, 2018 4:00 p.m. HST**
Last Date for Addendum Issuance	**July 10, 2018 4:00 p.m. HST**
BID OFFER & BID OPENING • Sealed bids due by **2:00 p.m.** at DHHL's **Hale Kalaniana'ole, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707**. • The **2:00 p.m.** deadline shall be according to the official time clock established at the location bids are received. Bidders are responsible to ensure that bid package is time stamped. • Bids will be opened shortly after **2:00 p.m.** and read aloud. (Bidders are welcome to attend). • Bids submitted after 2:00 p.m., July 18, 2018, will be time-stamped, but not accepted or opened. • All bid forms and requirements are included in the IFB package. • Apparent low Bidder shall be announced after all Bids are opened and tabulated. • All accepted Bids submitted shall be reviewed for compliance with all Bid requirements.	**July 18, 2018 2:00 p.m. HST**
CONTRACT AWARD • Award of Contract will be made to the responsible and responsive Bidder with the lowest "Grand Total Bid", approximately two (2) weeks following bid opening & certification of bid tabulation.	

XI. QUESTIONS RECEIVED PRIOR TO PRE-BID CONFERENCE

A. Question:

SPECIAL CONDITION SC-35, specifies State of Hawaii Department of Transportation "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" to be included with the specification for this project & Section 105.16 requires not less than 30% of total Contract cost to be done by the General Contractor own organization. DHHL Construction General Conditions, Section 5.13.6 ***requires not less than 20% of the total contract work to be performed by its own organization.*** *Please* ***confirm which specification prevails****.*

Response:

DHHL Construction General Conditions, Section 5.13.6 shall govern. State of Hawaii Department of Transportation "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" section 105.16 regarding percentage of total work to be done by General Contractor's own organization shall be deleted.

XII. SITE VISIT SCHEDULE FOLLOWING PRE-BID CONFERENCE

A.	10:15 a.m. to 11:00 a.m.	Site 2 – Kalamaula Reservoir and Access Road (and Bypass PRV site, if time allows)
B.	11:30 a.m. to 12:30 p.m.	Site 1 – Kauluwai Well Site and Site 3 – Kauluwai 1 MG Reservoir
C.	12:45 p.m. to 1:30 p.m.	Site 7 – Hoolehua Maintenance Yard
D.	2:00 p.m. to 3:00 p.m.	Site 6 – Hoolehua Pressure Breaker Tank and Site 4 – Hoolehua 2x3.5 MG Reservoirs
E.	3:15 p.m. to 3:45 p.m.	Site 5 – Puu Kapele Avenue Improvements

Hoolehua WSI

Projects Sites

Puu Kapele Ave & Nenehanupo Ave (Site 5)

Kalaupapa Kalaupapa

Kalawao Kalawao

Ho'olehua 2-3.5 MG Tank Site (Site 4)

Kualapuu

Ho'olehua Ho'olehua

Site 7 Maintenance Building

Hoolehua Pressure Breaker Tank (Site 6)

Kauluwai 1.0 MG Reservoir (Site 3)

Kauluwai Well Site (Site 1)

Moloka'i

Kalamaula Well Site (Site 2)

'Umipa'A

'Umipa'A

Mauna Loa Hwy

Department of Hawaiian Home Lands, Moloka'i District Office

Kaunakakai

Kaunakakai

460

Kamehameha V Hwy

N

2 mi

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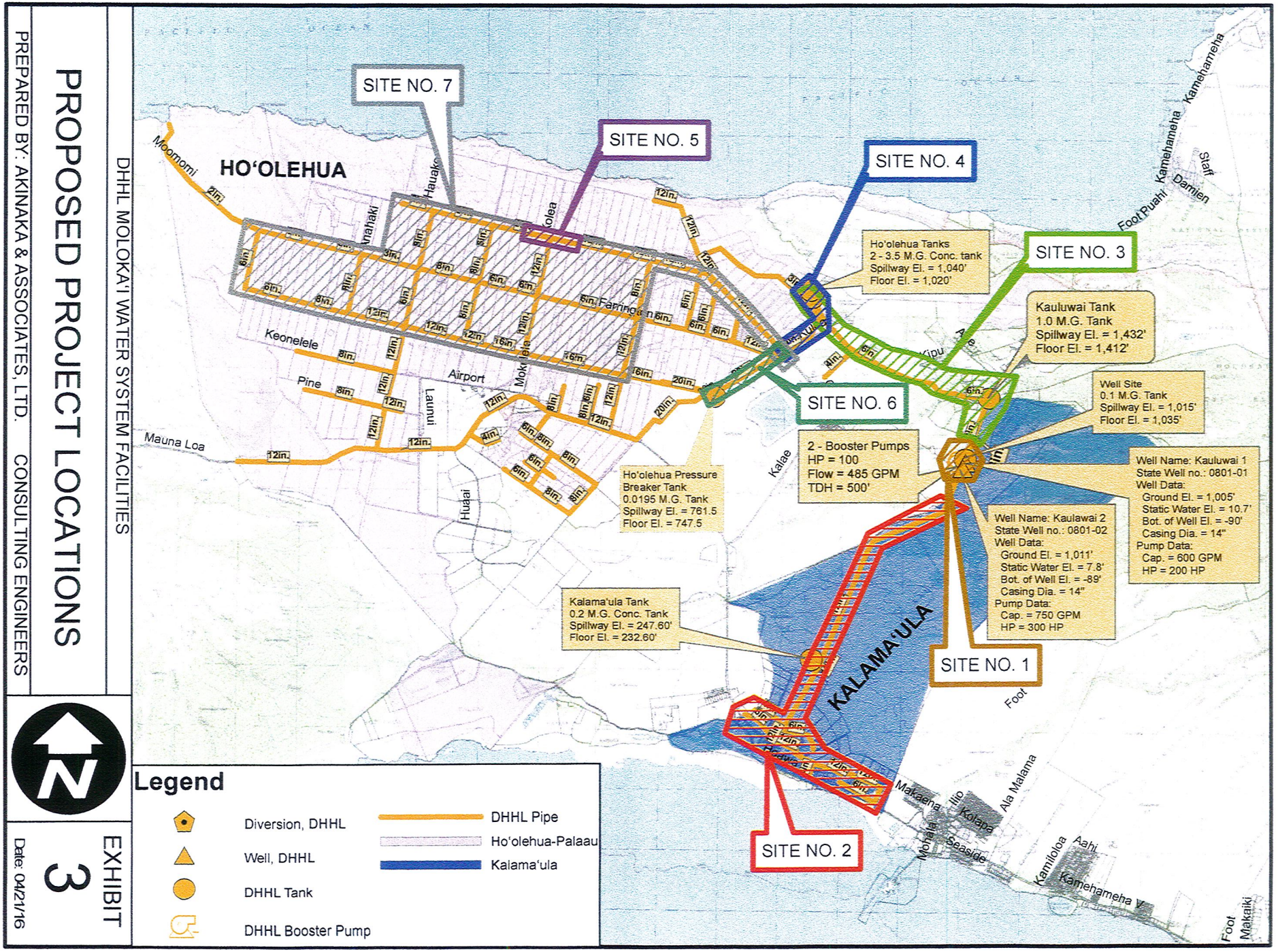
Date: 05/20/2004



PRE-BID CONFERENCE
ATTENDEE SIGN-IN SHEET

No.	Company/Organization Name	Representative Name	Telephone	Fax	Email Address
1	DHHL (Oahu)	James Richardson	620-9282	620-9299	james.c.richardson@hawaii.gov
2	DHHL (Oahu)	Kehaulani Quartero	620-9284	620-9299	Kehaulani.a.quartero@hawaii.gov
3	DHHL (Molokai)	Gene Ross Davis	560-6104	560-6665	gene.davis@hawaii.gov
4	DHHL	E. Halealoha Ayau	646-9015		e.halealoha.ayau@hawii.gov
5	DHHL (Molokai)	Myron Poepoe	336-0736		poepoensons@yahoo.com
6	G70	Ryan Char	441-2174	523-5874	ryanc@g70.design
7	G70	Peter Mow	441-2103	523-5874	peterm@g70.design
8	G70	Aaron Couch	441-2130	523-5874	aaronc@g70.design
9	Okahara & Assoc.	Ronald Layaoen	961-5527		rlayaoen@okahara.com
10	Ronald N.S. Ho & Assoc.	Yuta Sawaki	941-0577		ysawaki@rnsha.com
11	SSFM	Cory Uchima	268-8116		cuchima@ssfm.com
12	SSFM	Brooks Aoki	357-4787		baoki@ssfm.com
13	ITC Water Management / Lehua Builders	Sandra Duvauchelle	870-9860		sandy@lehuabuilders.com
14	ITC Water Management / Lehua Builders	John Duvauchelle	870-5344		

PRE-BID CONFERENCE
ATTENDEE SIGN-IN SHEET

No.	Company/Organization Name	Representative Name	Telephone	Fax	Email Address
15		Kuulei Arce	658-0362		22kuulei@gmail.com
16	Goodfellow Bros.	Steve Pawlak	270-5922	879-6724	stevep@goodfellowbros.com
17	Goodfellow Bros.	Harry Kirias	268-1675		harryk@goodfellowbros.com
18	Hi Built	Kamaile Alcon	336-0263		kmkservices@yahoo.com
19	Ideal Construction	Shawn Enos	848-0502	842-7010	senos@icihawaii.com
20	Kiewit	Kyle Johnson	479-4208		kyle.johnson@kiewit.com
21	MEI Corporation	Fonua Latu	232-2004 750-6665		leon@meicorporation.net fonua@meicorporation.net

Pacific Legacy

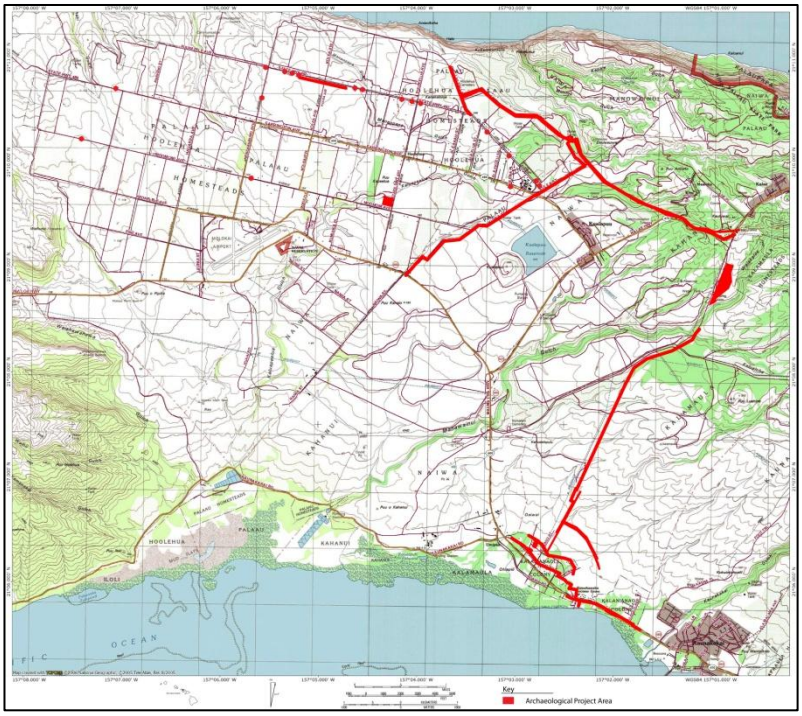
Historic Preservation

DRAFT

DRAFT
SUBJECT TO CHANGE

ARCHAEOLOGICAL MONITORING PLAN FOR THE PROPOSED IMPROVEMENTS TO THE DEPARTMENT OF HAWAIIAN HOME LANDS WATER SYSTEM ON MOLOKA‘I LANDS IN PĀLĀ‘AU, HO‘OLEHUA, NĀ‘IWA, KAHANUI, AND KALAMA‘ULA AHUPUA‘A

[TMK (2) 5-2-002:999; (2) 5-2-005:999; (2) 5-2-006:999; (2) 5-2-007:029, 030, 035, 039, 040, 055, 076-080, 082-085, 090, 999; (2) 5-2-008:001, 002, 004-006, 029, 043, 044, 046, 079, 084, 086, 091, 099, 102, 122, 123, 999; (2) 5-2-009:012, 016, 018, 026, 999; (2) 5-2-010:001-004, 007; (2) 5-2-012:034, 035, 999; (2) 5-2-013:010, 020, 021; (2) 5-2-021:999; (2) 5-2-023:009; (2) 5-2-024:999; (2) 5-2-025:999; (2) 5-2-032:068, 070; and (2) 5-2-033:047-053, 058, 061]



Pacific Legacy: Exploring the past, informing the present, enriching the future.

CULTURAL RESOURCES CONSULTANTS

Hawai‘i Offices:
Kailua, O‘ahu
Hilo, Hawai‘i

California Offices:
Business Office
Bay Area
Sierra/Central Valley

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DRAFT

ARCHAEOLOGICAL MONITORING PLAN FOR THE PROPOSED IMPROVEMENTS TO THE DEPARTMENT OF HAWAIIAN HOME LANDS WATER SYSTEM ON MOLOKA‘I LANDS IN PĀLĀ‘AU, HO‘OLEHUA, NĀ‘IWA, KAHANUI, AND KALAMA‘ULA AHUPUA‘A

[TMK (2) 5-2-002:999; (2) 5-2-005:999; (2) 5-2-006:999; (2) 5-2-007:029, 030, 035, 039, 040, 055, 076-080, 082-085, 090, 999; (2) 5-2-008:001, 002, 004-006, 029, 043, 044, 046, 079, 084, 086, 091, 099, 102, 122, 123, 999; (2) 5-2-009:012, 016, 018, 026, 999; (2) 5-2-010:001-004, 007; (2) 5-2-012:034, 035, 999; (2) 5-2-013:010, 020, 021; (2) 5-2-021:999; (2) 5-2-023:009; (2) 5-2-024:999; (2) 5-2-025:999; (2) 5-2-032:068, 070; and (2) 5-2-033:047-053, 058, 061]

Prepared by:

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(808) 263-4800

Prepared for:
G70
925 Bethel Street
Honolulu, HI 96813

March 2018

TABLE OF CONTENTS

LIST OF FIGURES

Note: In this report, the spellings and the use of diacritical marks (glottal stops and macrons) follow conventions issued by Pukui and Elbert (1986) and Pukui et al. (1974) with limited exceptions – spellings and diacritical marks are used as the original sources used them in quotations, titles, and proprietary names. For example, Pohakuloa Training Area is used without the macron in "Pohakuloa" because it is part of the name of the installation, but when referring to the region in general, the Hawaiian name "Pōhakuloa" is used.

Frontispiece: Overall project area.

1.0 INTRODUCTION

Pacific Legacy, Inc., under contract to G70 has prepared the following archaeological monitoring plan (AMP) for the proposed water system improvements on the Department of Hawaiian Home Lands (DHHL) on the island of Molokaʻi. These project lands are located in the *ahupuaʻa* (traditional Hawaiian land divisions that typically extended from the mountains to the sea) of Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula in central Molokaʻi. To support this project, DHHL is receiving funds from the U.S. Department of Agriculture (USDA). Because of this federal funding, this project is considered an "undertaking" under 36 CFR 800. As such it must comply with the different regulations associated with the National Historic Preservation Act of 1966 (as amended), especially 36 CFR 60.

The area of potential effect (APE) for this project was subjected to an archaeological inventory survey (AIS) that was conducted during four separate phases: between 24 to 26 October 2011, between 13 to16 November 2012, between 21 to 30 September 2015, and between 9 to 13 November 2015. These phases were necessary because of minor changes in the infrastructure routes and improvements. The AIS report (McIntosh et al. 2017) was accepted by the State Historic Preservation Division (SHPD) in February 2018 (Log No.: , Doc. No.: ; see Appendix A). This AIS report recommended archaeological monitoring to take place during construction activities. Monitoring activities will include erecting protective barriers around sites to be preserved.

The proposed Molokaʻi Water System Improvements project will include actions to improve reliability and functionality of water delivery to the 1,900 users connected to the Hoʻolehua Water System—PWS No. 230 on Molokaʻi Island. Proposed actions to the water system will occur at seven discontiguous areas located in portions of the *ahupuaʻa* of Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula in central Molokaʻi (Figure 1 and Figure 2). Presented below is a brief description of the project APE for the proposed Water System Improvements project. This description is from the accepted AIS report (McIntosh et al. 2017).

Project Area 1 - Well Site Improvements

1-A 200,000 Gallon Storage Tank: This task includes the installation of 200,000-gallon storage tank and ancillary equipment to connect to the existing system, excavation, and disposal of overburden/construction debris. The new tank will be located adjacent to the existing 100,000-gallon tank on a hillside at the well site. The proposed storage tank is necessary to ensure uninterrupted supply of water to Kalamaʻula residents. This tank will augment, not replace existing storage facilities.

1-B Chlorination and Storage Facility: Disinfection of water is an important process to ensure the delivery of safe drinking water. Improvements are necessary to make the facility safer for workers and the general public. This task includes the construction of a new structure that includes safety facilities (such as an eye wash/safety shower) in a decontamination room, a clean room and a storage room, excavation, and disposal of

overburden/construction debris. The storage room will be designed to ensure safe storage of disinfection product containers that meet Occupational Safety and Health Administration (OSHA) standards. In addition, critical /equipment necessary for emergency maintenance, safety and operations of the water system will be stocked/housed at this facility. At a minimum, the equipment identified will include a forklift, front-end loader and replacement pumps.

1-C Above-Ground Fuel Storage Tank (fuel AST): Currently, the water system has an emergency generator to supply electricity for pump operation when grid supplied energy is not available. The generator has fuel storage capacity to operate the generator for a maximum of 24-hours. A fuel AST would augment the existing capacity, increasing operational time of the generator during emergencies. Tasks associated with this action include the installation of a fuel AST at the well site, fuel lines connecting the tank to existing generator system, automation equipment, security fencing, excavation, and disposal of overburden/construction debris.

1-D Well Site Compound Modifications: The existing well site compound does not have adequate space to accommodate a new 200,000 gallon storage tank, chlorination facility, a fuel AST, and ancillary equipment associated with the solar energy system. Activities associated with this task include the redesign and construction of a minimum 8-foot high deer deterrent fencing and roadway system for security and access, excavation, disposal of overburden/construction debris.

1-E Booster Pump Replacement: The existing booster pumps have reached their estimated useful life. Pump failure is a concern. This task requires the replacement of the existing booster pumps and ancillary equipment. It is anticipated that activities associated with the task will include grading, excavation, disposal of construction debris, demolition debris and overburden, as well as installation of a concrete pad, connection to the supervisory control and data acquisition (SCADA) and electrical systems as well as the existing water system. Reuse of existing site preparations such as a pre-existing concrete pad will be implemented if possible.

1-F Energy System Modifications: A one-megawatt solar system will be built on approximately seven acres within a 25-acre area at the well site identified for solar production by DHHL. This system would be comprised of approximately 3,500 to 4,000 fixed ground-mounted solar panels (depending on panel efficiency). An inverter bank will convert the DC output of the solar panels into AC that can be used to drive the existing pumps. The system will be connected to the Maui Electric Company grid for redundancy as well as to the existing diesel backup generators located at the well site. It is anticipated that the system will not export electricity to the Maui Electric Company grid. The existing electrical panels are nearing the end of their expected useful life. They will be replaced to meet existing requirements and modified as necessary to accommodate additional solar requirements.

Project components 1A-E will be located within the existing fenced-off pumping station located at the southern tip of the area. The exact location of Component 1-F (solar farm) has not been determined yet, but a commitment has been made to locate it in a manner that does not impact Site 2572, a large lithic scatter that has been recommended for preservation.

Project Area 2 – Kalamaʻula Improvements

2-An All-Weather Roadway to Kalamaʻula Tank: The access road to the existing 200,000 gallon tank in Kalamaʻula is unpaved and severely eroded, hampering access for maintenance and operations. This task will modify the existing dirt roadway with the installation of a 3,000 linear feet (LF) of all-weather roadway from Hāʻena Street to the reservoir. The new roadway will follow the existing road corridor. Tasks included in this action will include roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

2-B Kalamaʻula Transmission Main and Lateral Replacements: The conveyance system in Kalamaʻula is not a looping system, occasionally resulting in lower pressure, and water sitting in pipes for a longer than optimal period of time. Additionally, portions of the existing galvanized transmission lines are over 30 years old and have reached the end of their useable life. This task will include the installation of new larger capacity mains and 15 laterals along approximately 5,600 LF in Kalamaʻula. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

2-C Valves Replacement: One Pressure Relief Valve (PRV), 20 Gate Valves (GV), 9 Air Relief Valves ARV) and associated ancillary equipment in Kalamaʻula have reached the end of their useful life due in part to the harsh environmental conditions. This task will include replacing PRV, GV, and ARV valves and realigning manholes as necessary. This project will also require limited excavation at each valve site and debris disposal.

2-D Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

2-E Fire Hydrants: Harsh environmental conditions have reduced the life expectancy of most fire hydrants in the coastal area of Kalamaʻula. Replacement of the deteriorated hydrants will improve fire protection capabilities in the areas. This task will include the replacement of approximately 30 fire hydrants.

Project Area 3 - Kauluwai Tank and Transmission Improvements

3-A Kauluwai Tank Transmission Main: A section of the 6-inch main transmission line at the existing 1.0 MG Kauluwai tank is approximately 12 feet above the lowest portion of the tank. As a result, the water stored at the base of the tank cannot be utilized. This task

would redesign and replace the lower main increasing the useable storage capacity to the tank design capacity. Some excavation and associated disposal of debris is also anticipated. It is anticipated that completion of this tank will reduce water stagnation in the bottom of the tank.

3-B Kauluwai to Hoʻolehua Transmission Main: The existing main was constructed utilizing a 6-inch transite (asbestos) pipe. Integrity of the existing pipe is a concern. This task requires the replacement of 11,000 LF of piping. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

3-D Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 4 - Hoʻolehua Tank Site Improvements

4-A Hoʻolehua Tank Improvements: The tanks should be modified to improve safety and automation. This task, 4-A has been subdivided into four subtasks as described below. In addition to the subtasks described, this task will include site preparation, installation of ancillary equipment and disposal of construction debris/overburden.

4-A-1 Automation of Level and Flow Control Valves: Water flow from 1.0 MG reservoir to the two 3.5 MG tanks located in Hoʻolehua requires manual operation of a gate valve. Changes in demand require manual adjustments. This subtask would connect these tanks to the SCADA system and allow for automated adjustments providing more consistent water delivery. The sub-task will include construction of a new control valve vault, installation and connection of control equipment to existing system and ancillary equipment.

4-A-2 Replacement of Exposed Vertical Piping and Valves: Some of the exposed pipes and valves are corroded. This sub-task would assess and replace corroded ancillary equipment.

4-A-3 Exterior Ladder: The exterior ladder is unsafe. This sub-task would replace or repair the existing ladder and safety railing system to meet OSHA safety requirements.

4-A-4 Tank Repair: There are two 3.5 MG tanks located at Site #4 that were placed in operation approximately 80 years ago. While the tanks are still operational, the concrete is showing signs of wear and is crumbling in some areas. Rebar supports show substantial rusting. This sub-task would repair the tanks.

4-B All-Weather Roadway to 3.5 MG tanks: The existing access road to the 3.5 MG tanks in Hoʻolehua is unpaved and located on non-DHHL lands owned by Kualapuʻu Ranch

and subject to their authorization. This task will develop a new road within DHHL landholdings. The new roadway will extend from Pālāʻau Road approximately 5,280 LF to the 3.5 MG tanks. Tasks included in this action will include grubbing, grading, roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

4-C Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tanks. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 5 - Hoʻolehua Transmission and Fire Protection Improvements

5-A Hoʻolehua to Veterans' Cemetery to Lihi Pali Avenue Transmission Main: The existing water main is comprised of a mix of one to three inch pipes of various materials. It does not extend to the Veterans' Cemetery, nor does it provide service to several homesteads along the northern extent of Lihi Pali Avenue. This task would include the replacement of the existing main and extend service to Veterans' cemetery and then on to Lihi Pali Avenue with approximately 11,000 LF of 8-inch main. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

5-B Fire Protection: The Veterans' Cemetery as well as the homesteads in this section of Hoʻolehua do not have fire protection. This task would improve brush fire protection as well as provide fire protection for existing homes in the vicinity through the installation of 17 fire hydrants and a new access roadway from Hoʻolehua to the Veterans' Cemetery. Tasks included in this action will include roadway excavation, disposal of overburden/construction debris in addition to construction of a gravel packed roadway.

5-C Puʻukapele Transmission Main: The existing 1.25 inch galvanized transmission line is over 30 years old and has reached its useable life. Main breaks interrupt service to the areas. This task includes the replacement of approximately 3,350 LF of transmission main and laterals alongside the installation of two new fire hydrants. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals not being replaced.

Project Area 6 - Hoʻolehua Pressure Breaker Tank Facility Improvements

6-An All-Weather Roadway to the Pressure Breaker Tank: The existing access road to the 19,500 gallon pressure reducer tank in Hoʻolehua is unpaved and inaccessible during heavy rains. This task will modify an existing dirt roadway. Approximately 7,920 linear feet (LF) of all-weather roadway will be installed from the intersection of Kūleʻa and Moʻomomi Avenue to Farrington Avenue. The new roadway will follow an existing, overgrown road corridor. Tasks included in this action will include grubbing, grading,

roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

6-B Ancillary Equipment Improvements: Several of the equipment located at the Pressure Breaker Tank Facility such as the butterfly valves have reached the end of their useful life. This task will replace equipment in kind. This project may include limited excavation, disposal of demolition/construction debris and replacement of equipment.

6-C Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, limited excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 7 - Hoʻolehua Maintenance Yard Improvements, and Scattered Valve and Hydrant Replacements

7-A Valve and Hydrant Replacement: Seven Pressure Relief Valve (PRV), seven Gate Valves (GV), five In-line Valves (IV), 11 Air Relief Valves (ARV), up to five fire hydrants and associated ancillary equipment in Hoʻolehua have reached the end of their useful life. This task will include replacing hydrants, PRV, GV, IV, ARV valves and realigning manholes as necessary. This project will also require limited excavation at each valve site and debris disposal.

7-B Maintenance Yard Improvements: The Maintenance Building, built in 1969 is not large enough to house necessary equipment and materials needed to maintain the water system. Based on an evaluation of the existing structure, the deterioration of support structures dictated building replacement rather than expansion of the existing. This task will include the demolition of the existing structure, re-use of the existing concrete pad and expanding it to accommodate a 4,800 square foot warehouse type facility. A fire hydrant and water meter will be installed to provide fire protection for the building and surrounding DHHL lands. An additional concrete pad, up to 2,400 square feet, will be constructed to accommodate outside storage, loading, unloading, and parking. Tasks included in this action will include grubbing, grading, excavation, disposal of demolition, overburden, and construction debris as well as the installation of fire hydrant and ancillary equipment and construction of the building and concrete pad.

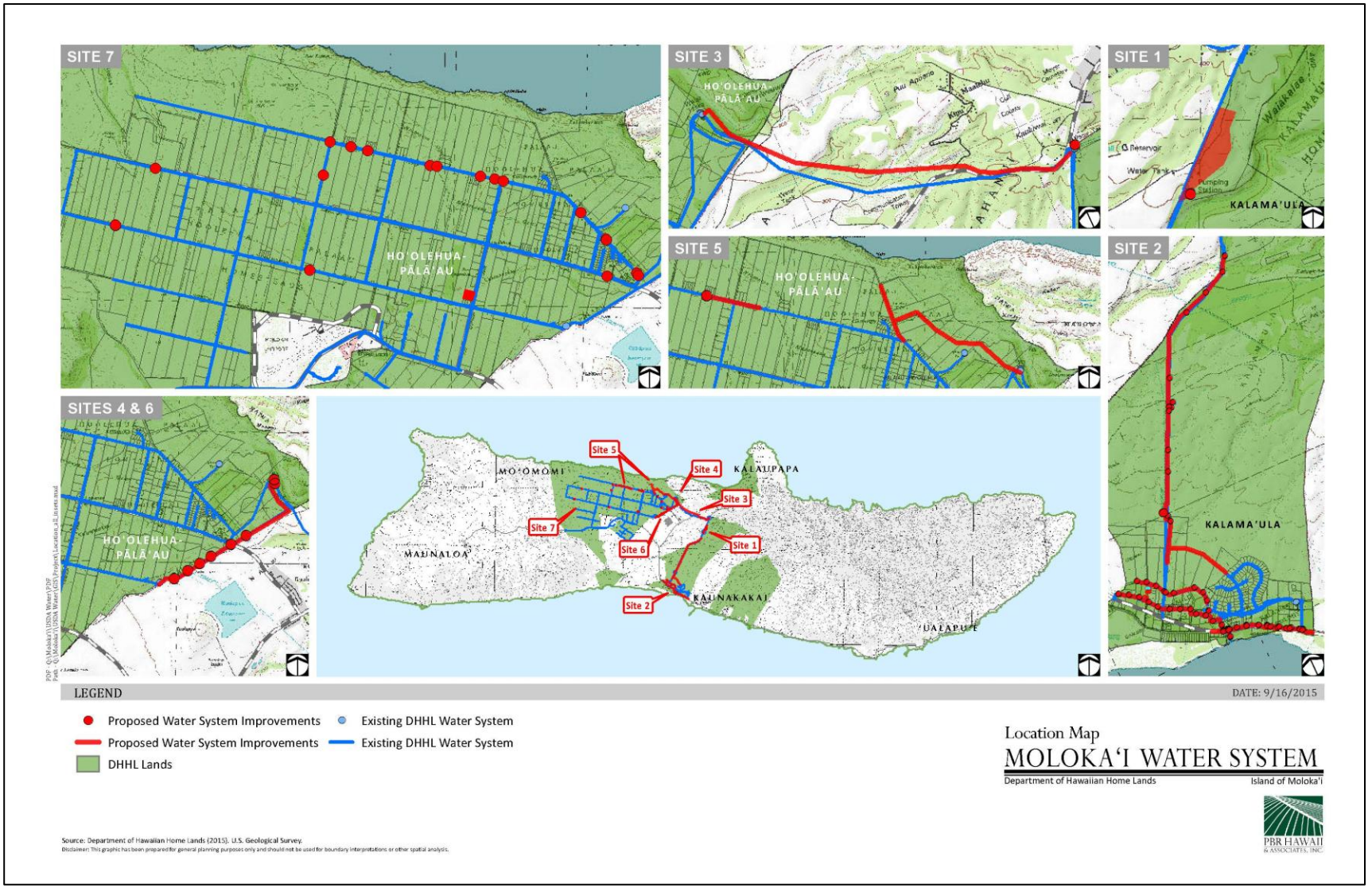


Figure 1. Location of project areas (from McIntosh et al. 2018: Figure 1).

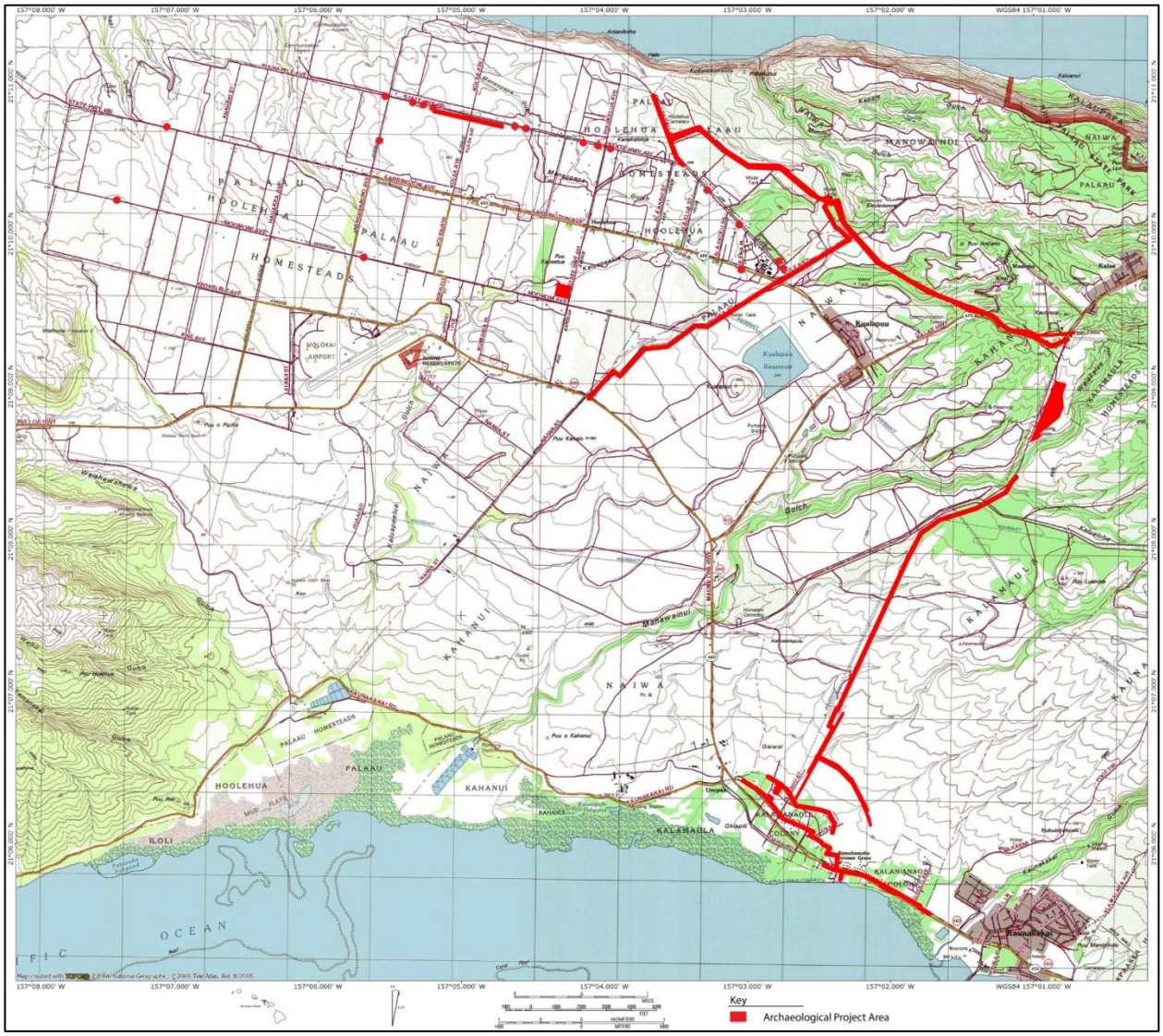


Figure 2. Topographic map showing APE (from McIntosh et al. 2018: Figure 2).

1.1 STATUTORY REQUIREMENTS

HAR §13-279-4 specifies the components to be included within an Archaeological Monitoring Plan. It also indicates that the completed AMP will need to be reviewed and approved by the Hawai‘i State Historic Preservation Division prior to the implementation of the Plan and the initiation of any ground-disturbing activities related to the specific project. HAR §13-279-4 states that:

(a) Archaeological monitoring shall be based on a written plan, which specifies:

  (1) what kinds of archaeological remains or historic properties are anticipated;
  (2) where in the construction area these properties are likely to be found;
  (3) needed fieldwork, which may include, but not be limited to, profile documentation of cultural layers' stratigraphy, drawings, photographs, excavation of exposed features;
  (4) a provision that the archaeologist conducting the monitoring has the authority to halt construction in the immediate area of a find, in order to carry-out the plan. Construction can shift to other areas in such a case;
  (5) a coordination meeting with the construction team and archaeologist, so the construction team is aware of the plan;
  (6) any laboratory work expected to be done;
  (7) report preparation; and
  (8) archiving of the collections.

(b) This plan shall be reviewed and approved by the SHPD prior to initiation of the monitoring project, pursuant to HAR § 13-284.

2.0 INVENTORY SURVEY RESULTS AND HISTORIC PROPERTIES ANTICIPATED

Between 2011 and 2015, Pacific Legacy conducted an AIS of various DHHL properties in the *ahupua‘a* of Pālā‘au, Ho‘olehua, Nā‘iwa, Kahanui, and Kalama‘ula in the central portion of the Island of Moloka‘i. To support this project, DHHL is receiving funds from the U.S. Department of Agriculture (USDA). Because of this federal funding, this project is considered an “undertaking” under 36 CFR 800 and must comply with the regulations found in the National Historic Preservation Act of 1966 (as amended).

This AIS was meant to identify areas or potential areas of concern for the DHHL for the proposed Water System Improvements, which will include actions to improve reliability and functionality of water delivery to the 1,900 users connected to the Ho‘olehua Water System—PWS No. 230 on Moloka‘i Island.

Fourteen archaeological sites newly documented (Site 2516 through 2521 and Site 2565 through 2572) and three previously documented sites (Site 800 through 802) were identified within the project’s area of potential effect (APE). One isolated find of a sandstone ‘*ulu maika* stone was also identified. These sites included nine traditional Hawaiian pre-Contact or early post-Contact sites, seven historic sites, and one military site.

Four of the newly identified archaeological sites (Site 2516, 2519, 2565, 2572) were tested in order to provide additional information on the possible age, chronology, and function of the sites.

All of the sites recorded in the APE (n=17), with the exception of Site 2517 (a probable historic windbreak or hunting blind) are assessed as significant under Criterion (d). These 16 sites have either yielded or have the potential to yield information important to Hawai‘i’s history. In addition, Site 801, a complex of cairns interpreted as possible burial facilities, and Sites 2568 and 2572 (traditional lithic scatters) are also assessed as significant under Criterion (e) because of their cultural importance.

The 17 historic properties identified in the APE were evaluated for inclusion in the HRHP and the NRHP, 11 of these properties are eligible for listing on the HRHP (800-802, 2516, 2518, 2519, 2565-2568, and 2572. One site (2572) is evaluated as eligible for listing in the NRHP.

The project will impact historic properties documented within the APE. Because of this impact, a determination of effect must be made for these historic properties. The effect determination is “Effect, with proposed mitigation commitments.”

No further work is recommended for 14 of the 17 recorded sites. Preservation is recommended for Site 801 and Site 2568, and Site 2572.

2.1 HISTORIC PROPERTIES ANTICIPATED

It is anticipated that the development project has the potential to uncover and impact potential significant surface and subsurface historic properties. Surface sites that may be impacted may include low structural remnants such as alignments, as well as midden or lithic scatters. Subsurface properties could include pre-Contact, early post-Contact, and historic deposits. These deposits could include artifacts, hearths, and earth ovens (*imu*). It is unlikely, but still possible that human burials may also be encountered.

3.0 PROPOSED CONSTRUCTION ACTIVITIES

The proposed project will consist of mechanical clearing, grubbing, mass grading and trench excavations to create well sites, reservoirs, water distribution piping, access roads, and fencing. These mechanized construction activities have the potential to impact historic properties.

4.0 ARCHAEOLOGICAL MONITORING PLAN COMPONENTS

To ensure appropriate identification, documentation, and significance assessments of any subsurface historic properties (e.g., cultural deposits, features) that may be encountered during construction activities, the following monitoring measures will be implemented.

4.1 PRE-CONSTRUCTION BRIEFING

Prior to the initiation of construction activities, the archaeological monitor will meet with the construction crew on site to discuss the archaeological monitoring procedures. The pre-construction archaeological awareness briefing will cover the following topics:

1.) if a bulldozer operator, backhoe operator, or other construction personnel discovers and/or exposes a subsurface cultural deposit or feature(s) they shall stop work in the area and allow the archaeological monitor to inspect the find and complete all appropriate documentation;

2.) if a backhoe operator or other construction personnel discovers, exposes, or disturbs a human burial or isolated human remains they must immediately stop work, move away from the burial site, to allow the archaeological monitor to inspect and secure the find, to make the necessary notifications, and to conduct appropriate treatment;

3.) if a backhoe operator or other construction personnel finds an isolated artifact they shall report the find to the archaeological monitor;

4.) construction personnel shall not pick up artifacts or remove them from the work site; and

5.) all cultural materials found during construction activities, including Hawaiian artifacts and historic glass bottles, are the property of the landowner and may not be collected by anyone other than the archaeological monitor.

6.) Review construction sheets with supervisors and crew to ensure awareness of preserve areas and areas where no work can occur.

4.2 PROTECTIVE BARRIERS

Protective barriers will be established prior to project construction around sites slated for preservation, as stipulated in the Historic Preservation Plan (Cleghorn in prep.). No construction or project work shall occur within preserve areas. Any damage in preserve areas shall be immediately reported to the archaeological monitor who will in turn report the damage to SHPD.

4.3 ARCHAEOLOGICAL MONITORING

The possibility that subsurface cultural deposits may be present within the project area necessitates the presence of an archaeological monitor on-site fulltime during all bulldozing, grading, and trenching activities extending more than 12 inches below the present ground surface. If any subsurface cultural deposits, features, or human remains are encountered, all work shall be halted in the area and the archaeological monitor will be contacted immediately.

If it becomes apparent that the subsurface deposits within the project area are extremely disturbed or that they consist of recent fill sediments, the archaeological monitor shall consult with the SHPD about changing the monitoring activities to an on-call program. Written approval from SHPD is needed before any changes to the archaeological monitoring program are implemented.

The purpose of archaeological monitoring will be to ensure that:

1.) any potential historic properties (e.g., cultural deposits, features, human remains) exposed by ground-disturbing activities will be appropriately identified, documented, and assessed for significance;

2.) any artifacts encountered are appropriately documented (descriptions and close-up photographs with scale) either in the field or in the archaeological consultants' laboratory; and

3.) any human remains encountered are treated appropriately in accordance with HAR § 13-300.

A daily Archaeological Monitoring Log (AML) will be completed every day that archaeological work is conducted on site (an example of such a form is presented in Appendix B). The AML shall serve as the official record of archaeological activities performed and shall specify who was working on site, times of work, and what was done. In addition, data will be recorded regarding field methods and all subsurface deposits, features, or human remains encountered, as well as representative profiles of project area stratigraphy and photo documentation of the work and findings.

4.4 INTACT CULTURAL DEPOSITS AND FEATURES

Should any subsurface cultural deposits or features be discovered during construction, the archaeological monitor has the authority to halt construction in the immediate vicinity of the find. Construction can be shifted to other areas. If such a finding is made, the SHPD archaeological staff shall be notified and briefed as to the extent, content, and associations of the discovery. The potential significance of the discovery will be agreed upon and mitigation needs, as appropriate for non-burial sites, will be discussed and resolved with the SHPD archaeological staff. The finds shall be fully documented. This documentation may include, GPS recording, describing the cultural layer's stratigraphy and contents (USDA nomenclature and Munsell color notations shall be used), scaled profile drawings, photographs, and (if deemed necessary) the excavation, sampling, and/or screening of exposed cultural layers and features. The stratigraphic context of subsurface deposits or features will be determined, and any important associations with other natural or cultural strata will be recorded. Where appropriate, samples will be collected for further analyses.

The data recorded in the field, combined with documentary data will be used to assess the significance of the finding as per HAR §13-284 (Rules Governing Procedures for Historic

Preservation Review to Comment on Chapter 6E-42 Projects). These significance assessments will be presented in the Archaeological Monitoring Report.

4.5 ARTIFACTS

Any traditional Hawaiian artifacts that are encountered during construction will be collected for further analysis. Diagnostic historic artifacts that are more than 50 years old will also be collected for further analysis. Non-diagnostic and recent artifacts will be documented in the field, including recording of context, relative abundance, and close-up photographs with scale. The provenience of the finds will be plotted on a project map of the area, and any observed associations with cultural or natural strata will be noted.

4.6 HUMAN SKELETAL REMAINS

If human remains are inadvertently encountered during trenching or any other construction related activity, all work in the immediate vicinity shall cease SHPD archaeology and burial sites staff shall be notified. Burial finds will be treated in accordance with HAR § 13-300 and any SHPD directives. SHPD will assume the lead in consulting with recognized descendents and the Molokai Island Burial Council.

4.7 TREATMENT OF RECOVERED CULTURAL REMAINS

All collected artifactual remains and associated samples will be transported to the archaeological consultant's offices for processing. Laboratory processing will consist of cleaning, sorting, identifying, and documenting the collected materials. A project catalogue shall be generated and presented in the final report.

Artifacts collected will be identified and recorded by measuring, photographing and/or sketching. Midden material shall be identified minimally by major class and recorded on standard laboratory forms by weight. This material will be presented in table format in the final report. All samples (soil, charcoal, etc.) will be initially processed and catalogued in the archaeological consultant's laboratory before being sent to specialist laboratories for detailed analyses. Any charred wood samples selected for radiocarbon dating will be submitted first for wood identification to identifiable short-lived species for dating.

4.8 CURATION

Suitable temporary curation facilities for archaeological samples collected during field investigations will be provided by the archaeological consultant. Final curation of recovered materials in a suitable archive shall be determined in consultation with the landowner and the SHPD.

4.9 REPORTING

Brief verbal or email progress reports shall be provided to the SHPD and the client upon the discovery of any significant findings, on completion of on-site monitoring activities, laboratory analyses, and report preparation. The following written reports shall also be submitted:

- Letter Report at the completion of on-site monitoring;
- Draft Archaeological Monitoring Report within 90 days of completion of monitoring fieldwork; and
- Final Archaeological Monitoring Report within 30 days of receipt of SHPD reviews comments.

The Archaeological Monitoring Report will be prepared upon the completion of all archaeological monitoring activities. The components of this report will conform to the specifications outlined in HAR §13-279 (Rules Governing Standards for Archaeological Monitoring Studies and Reports).

5.0 REFERENCES CITED

Cleghorn, Paul
in prep. *Historic Preservation Plan for the Proposed Improvements to the Department of Hawaiian Home Lands Water System on Molokaʻi Lands in Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula Ahupuaʻa.* Prepared by Pacific Legacy, Inc.

McIntosh, J.D., C.C. Fechner, and P.L. Cleghorn
2018 *Archaeological Inventory Survey for the Proposed Improvements to the Department of Hawaiian Home Lands Water System on Molokaʻi Lands in Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula Ahupuaʻa.* Prepared by Pacific Legacy, Inc. On file at SHPD library, Kapolei, Oʻahu.

APPENDIX A

SHPD AIS ACCEPTANCE LETTER

INSERT LETTER UPON RECEIPT

APPENDIX B

MONITORING LOG

PACIFIC LEGACY, INC.
DAILY MONITORING LOG

Project Name: _____ Project#: _____ Date: _____

Monitor: _____

Location of Monitoring:

_____

_____

Activities Monitored:

_____

_____

_____

Times of Monitoring (include breaks):

_____

_____

_____

Photographs taken (camera #, digital download to file #):

_____

_____

Materials collected (Bag #'s):

_____

_____

_____

Findings:

_____

_____

_____

_____

_____

_____

_____

_____

_____ (continued on back)

Other:

_____

_____

Pacific Legacy

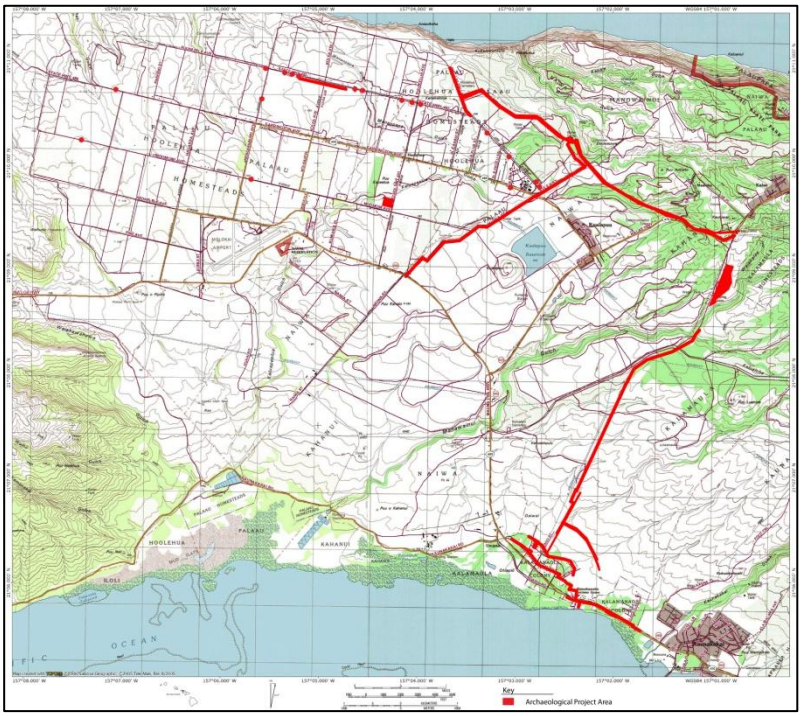
Historic Preservation

DRAFT
SUBJECT TO CHANGE

DRAFT

HISTORIC PRESERVATION PLAN FOR THE PROPOSED IMPROVEMENTS TO THE DEPARTMENT OF HAWAIIAN HOME LANDS WATER SYSTEM ON MOLOKA‘I LANDS IN PĀLĀ‘AU, HO‘OLEHUA, NĀ‘IWA, KAHANUI, AND KALAMA‘ULA AHUPUA‘A

[TMK (2) 5-2-002:999; (2) 5-2-005:999; (2) 5-2-006:999; (2) 5-2-007:029, 030, 035, 039, 040, 055, 076-080, 082-085, 090, 999; (2) 5-2-008:001, 002, 004-006, 029, 043, 044, 046, 079, 084, 086, 091, 099, 102, 122, 123, 999; (2) 5-2-009:012, 016, 018, 026, 999; (2) 5-2-010:001-004, 007; (2) 5-2-012:034, 035, 999; (2) 5-2-013:010, 020, 021; (2) 5-2-021:999; (2) 5-2-023:009; (2) 5-2-024:999; (2) 5-2-025:999; (2) 5-2-032:068, 070; and (2) 5-2-033:047-053, 058, 061]



Pacific Legacy: Exploring the past, informing the present, enriching the future.

CULTURAL RESOURCES CONSULTANTS

Hawai‘i Offices:
Kailua, O‘ahu
Hilo, Hawai‘i

California Offices:
Business Office
Bay Area
Sierra/Central Valley

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DRAFT

HISTORIC PRESERVATION PLAN FOR THE PROPOSED IMPROVEMENTS TO THE DEPARTMENT OF HAWAIIAN HOME LANDS WATER SYSTEM ON MOLOKA‘I LANDS IN PĀLĀ‘AU, HO‘OLEHUA, NĀ‘IWA, KAHANUI, AND KALAMA‘ULA AHUPUA‘A

[TMK (2) 5-2-002:999; (2) 5-2-005:999; (2) 5-2-006:999; (2) 5-2-007:029, 030, 035, 039, 040, 055, 076-080, 082-085, 090, 999; (2) 5-2-008:001, 002, 004-006, 029, 043, 044, 046, 079, 084, 086, 091, 099, 102, 122, 123, 999; (2) 5-2-009:012, 016, 018, 026, 999; (2) 5-2-010:001-004, 007; (2) 5-2-012:034, 035, 999; (2) 5-2-013:010, 020, 021; (2) 5-2-021:999; (2) 5-2-023:009; (2) 5-2-024:999; (2) 5-2-025:999; (2) 5-2-032:068, 070; and (2) 5-2-033:047-053, 058, 061]

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May 2018

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LIST OF FIGURES

Note: In this report, the spellings and the use of diacritical marks (glottal stops and macrons) follow conventions issued by Pukui and Elbert (1986) and Pukui et al. (1974) with limited exceptions – spellings and diacritical marks are used as the original sources used them in quotations, titles, and proprietary names. For example: Pohakuloa Training Area is used without the macron in "Pohakuloa" because it is part of the name of the installation, but when referring to the region in general the Hawaiian name "Pōhakuloa" is used.

Frontispiece: Site Overall project area.

1.0 INTRODUCTION

Pacific Legacy, Inc., under contract to G70 has prepared the following historic preservation plan (HPP) for the proposed water system improvements on the Department of Hawaiian Home Lands (DHHL) on the island of Molokaʻi. These project lands are located in the *ahupuaʻa* (traditional Hawaiian land divisions that typically extended from the mountains to the sea) of Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula in central Molokaʻi. To support this project, DHHL is receiving funds from the U.S. Department of Agriculture (USDA). Because of this federal funding, this project is considered an "undertaking" under 36 CFR 800. As such it must comply with the different regulations associated with the National Historic Preservation Act of 1966 (as amended), especially 36 CFR 60. This HPP is one component of an overall two-part mitigation commitment to minimize impacts to significant historic properties in the project area. The other component is an archaeological monitoring plan (AMP; Cleghorn 2018), each of is being submitted separately to the State Historic Preservation Division (SHPD) for review and approval.

The area of potential effect (APE) for this project was subjected to an archaeological inventory survey (AIS) that was conducted during four separate phases: between 24 to 26 October 2011, between 13 to16 November 2012, between 21 to 30 September 2015, and between 9 to 13 November 2015. These phases were necessary because of minor changes in the infrastructure routes and improvements. The AIS report (McIntosh et al. 2018) was accepted by the State Historic Preservation Division (SHPD) in February 2018 (Log No.: , Doc. No.: ; see Appendix A). This AIS report recommended the preservation of three archaeological sites:

Site 801	possible complex of human burials
Site 2568	lithic reduction area
Site 2572	possible stone adze manufacture site

This HPP develops a plane for the preservation of these cultural resources.

1.1 PROJECT DESCRIPTION

The proposed Molokaʻi Water System Improvements project will include actions to improve reliability and functionality of water delivery to the 1,900 users connected to the Hoʻolehua Water System—PWS No. 230 on Molokaʻi Island. Proposed actions to the water system will occur at seven discontiguous areas located in portions of the *ahupuaʻa* of Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula in central Molokaʻi (Figure 1 and Figure 2). Presented below is a brief description of the project APE for the proposed Water System Improvements project. This description is from the accepted AIS report (McIntosh et al. 2018).

Project Area 1 - Well Site Improvements

1-A 200,000 Gallon Storage Tank: This task includes the installation of 200,000-gallon storage tank and ancillary equipment to connect to the existing system, excavation, and

disposal of overburden/construction debris. The new tank will be located adjacent to the existing 100,000-gallon tank on a hillside at the well site. The proposed storage tank is necessary to ensure uninterrupted supply of water to Kalamaʻula residents. This tank will augment, not replace existing storage facilities.

1-B Chlorination and Storage Facility: Disinfection of water is an important process to ensure the delivery of safe drinking water. Improvements are necessary to make the facility safer for workers and the general public. This task includes the construction of a new structure that includes safety facilities (such as an eye wash/safety shower) in a decontamination room, a clean room and a storage room, excavation, and disposal of overburden/construction debris. The storage room will be designed to ensure safe storage of disinfection product containers that meet Occupational Safety and Health Administration (OSHA) standards. In addition, critical /equipment necessary for emergency maintenance, safety and operations of the water system will be stocked/housed at this facility. At a minimum, the equipment identified will include a forklift, front-end loader and replacement pumps.

1-C Above-Ground Fuel Storage Tank (fuel AST): Currently, the water system has an emergency generator to supply electricity for pump operation when grid supplied energy is not available. The generator has fuel storage capacity to operate the generator for a maximum of 24-hours. A fuel AST would augment the existing capacity, increasing operational time of the generator during emergencies. Tasks associated with this action include the installation of a fuel AST at the well site, fuel lines connecting the tank to existing generator system, automation equipment, security fencing, excavation, and disposal of overburden/construction debris.

1-D Well Site Compound Modifications: The existing well site compound does not have adequate space to accommodate a new 200,000 gallon storage tank, chlorination facility, a fuel AST, and ancillary equipment associated with the solar energy system. Activities associated with this task include the redesign and construction of a minimum 8-foot high deer deterrent fencing and roadway system for security and access, excavation, disposal of overburden/construction debris.

1-E Booster Pump Replacement: The existing booster pumps have reached their estimated useful life. Pump failure is a concern. This task requires the replacement of the existing booster pumps and ancillary equipment. It is anticipated that activities associated with the task will include grading, excavation, disposal of construction debris, demolition debris and overburden, as well as installation of a concrete pad, connection to the supervisory control and data acquisition (SCADA) and electrical systems as well as the existing water system. Reuse of existing site preparations such as a pre-existing concrete pad will be implemented if possible.

1-F Energy System Modifications: A one-megawatt solar system will be built on approximately seven acres within a 25-acre area at the well site identified for solar production by DHHL. This system would be comprised of approximately 3,500 to 4,000 fixed ground-mounted solar panels (depending on panel efficiency). An inverter bank

will convert the DC output of the solar panels into AC that can be used to drive the existing pumps. The system will be connected to the Maui Electric Company grid for redundancy as well as to the existing diesel backup generators located at the well site. It is anticipated that the system will not export electricity to the Maui Electric Company grid. The existing electrical panels are nearing the end of their expected useful life. They will be replaced to meet existing requirements and modified as necessary to accommodate additional solar requirements.

Project components 1A-E will be located within the existing fenced-off pumping station located at the southern tip of the area. The exact location of Component 1-F (solar farm) has not been determined yet, but a commitment has been made to locate it in a manner that does not impact Site 2572, a large lithic scatter that has been recommended for preservation.

Project Area 2 – Kalamaʻula Improvements

2-An All-Weather Roadway to Kalamaʻula Tank: The access road to the existing 200,000 gallon tank in Kalamaʻula is unpaved and severely eroded, hampering access for maintenance and operations. This task will modify the existing dirt roadway with the installation of a 3,000 linear feet (LF) of all-weather roadway from Hāʻena Street to the reservoir. The new roadway will follow the existing road corridor. Tasks included in this action will include roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

2-B Kalamaʻula Transmission Main and Lateral Replacements: The conveyance system in Kalamaʻula is not a looping system, occasionally resulting in lower pressure, and water sitting in pipes for a longer than optimal period of time. Additionally, portions of the existing galvanized transmission lines are over 30 years old and have reached the end of their useable life. This task will include the installation of new larger capacity mains and 15 laterals along approximately 5,600 LF in Kalamaʻula. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

2-C Valves Replacement: One Pressure Relief Valve (PRV), 20 Gate Valves (GV), 9 Air Relief Valves ARV) and associated ancillary equipment in Kalamaʻula have reached the end of their useful life due in part to the harsh environmental conditions. This task will include replacing PRV, GV, and ARV valves and realigning manholes as necessary. This project will also require limited excavation at each valve site and debris disposal.

2-D Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

2-E Fire Hydrants: Harsh environmental conditions have reduced the life expectancy of most fire hydrants in the coastal area of Kalamaʻula. Replacement of the deteriorated

hydrants will improve fire protection capabilities in the areas. This task will include the replacement of approximately 30 fire hydrants.

Project Area 3 - Kauluwai Tank and Transmission Improvements

3-A Kauluwai Tank Transmission Main: A section of the 6-inch main transmission line at the existing 1.0 MG Kauluwai tank is approximately 12 feet above the lowest portion of the tank. As a result, the water stored at the base of the tank cannot be utilized. This task would redesign and replace the lower main increasing the useable storage capacity to the tank design capacity. Some excavation and associated disposal of debris is also anticipated. It is anticipated that completion of this tank will reduce water stagnation in the bottom of the tank.

3-B Kauluwai to Hoʻolehua Transmission Main: The existing main was constructed utilizing a 6-inch transite (asbestos) pipe. Integrity of the existing pipe is a concern. This task requires the replacement of 11,000 LF of piping. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

3-D Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 4 - Hoʻolehua Tank Site Improvements

4-A Hoʻolehua Tank Improvements: The tanks should be modified to improve safety and automation. This task, 4-A has been subdivided into four subtasks as described below. In addition to the subtasks described, this task will include site preparation, installation of ancillary equipment and disposal of construction debris/overburden.

4-A-1 Automation of Level and Flow Control Valves: Water flow from 1.0 MG reservoir to the two 3.5 MG tanks located in Hoʻolehua requires manual operation of a gate valve. Changes in demand require manual adjustments. This subtask would connect these tanks to the SCADA system and allow for automated adjustments providing more consistent water delivery. The sub-task will include construction of a new control valve vault, installation and connection of control equipment to existing system and ancillary equipment.

4-A-2 Replacement of Exposed Vertical Piping and Valves: Some of the exposed pipes and valves are corroded. This sub-task would assess and replace corroded ancillary equipment.

4-A-3 Exterior Ladder: The exterior ladder is unsafe. This sub-task would replace or repair the existing ladder and safety railing system to meet OSHA safety requirements.

4-A-4 Tank Repair: There are two 3.5 MG tanks located at Site #4 that were placed in operation approximately 80 years ago. While the tanks are still operational, the concrete is showing signs of wear and is crumbling in some areas. Rebar supports show substantial rusting. This sub-task would repair the tanks.

4-B All-Weather Roadway to 3.5 MG tanks: The existing access road to the 3.5 MG tanks in Hoʻolehua is unpaved and located on non-DHHL lands owned by Kualapuʻu Ranch and subject to their authorization. This task will develop a new road within DHHL landholdings. The new roadway will extend from Pālāʻau Road approximately 5,280 LF to the 3.5 MG tanks. Tasks included in this action will include grubbing, grading, roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

4-C Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tanks. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 5 - Hoʻolehua Transmission and Fire Protection Improvements

5-A Hoʻolehua to Veterans' Cemetery to Lihi Pali Avenue Transmission Main: The existing water main is comprised of a mix of one to three inch pipes of various materials. It does not extend to the Veterans' Cemetery, nor does it provide service to several homesteads along the northern extent of Lihi Pali Avenue. This task would include the replacement of the existing main and extend service to Veterans' cemetery and then on to Lihi Pali Avenue with approximately 11,000 LF of 8-inch main. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals.

5-B Fire Protection: The Veterans' Cemetery as well as the homesteads in this section of Hoʻolehua do not have fire protection. This task would improve brush fire protection as well as provide fire protection for existing homes in the vicinity through the installation of 17 fire hydrants and a new access roadway from Hoʻolehua to the Veterans' Cemetery. Tasks included in this action will include roadway excavation, disposal of overburden/construction debris in addition to construction of a gravel packed roadway.

5-C Puʻukapele Transmission Main: The existing 1.25 inch galvanized transmission line is over 30 years old and has reached its useable life. Main breaks interrupt service to the areas. This task includes the replacement of approximately 3,350 LF of transmission main and laterals alongside the installation of two new fire hydrants. Activities associated with this task will also include trench excavation, disposal of construction debris and overburden, as well as connection to the existing water mains and laterals not being replaced.

Project Area 6 - Hoʻolehua Pressure Breaker Tank Facility Improvements

6-An All-Weather Roadway to the Pressure Breaker Tank: The existing access road to the 19,500 gallon pressure reducer tank in Hoʻolehua is unpaved and inaccessible during heavy rains. This task will modify an existing dirt roadway. Approximately 7,920 linear feet (LF) of all-weather roadway will be installed from the intersection of Kūleʻa and Moʻomomi Avenue to Farrington Avenue. The new roadway will follow an existing, overgrown road corridor. Tasks included in this action will include grubbing, grading, roadway excavation, disposal of overburden/construction debris in addition to construction of the asphalt concrete roadway.

6-B Ancillary Equipment Improvements: Several of the equipment located at the Pressure Breaker Tank Facility such as the butterfly valves have reached the end of their useful life. This task will replace equipment in kind. This project may include limited excavation, disposal of demolition/construction debris and replacement of equipment.

6-C Deer Deterrent Fencing: Existing fencing does not restrict deer access to the area surrounding the tank. Health and sanitation of water stored at the tank may be compromised by the presence of deer feces. This task will include the removal of the existing fences, limited excavation, installation of minimum 8 foot tall deer deterrent fencing, and disposal of overburden/construction debris.

Project Area 7 - Hoʻolehua Maintenance Yard Improvements, and Scattered Valve and Hydrant Replacements

7-A Valve and Hydrant Replacement: Seven Pressure Relief Valve (PRV), seven Gate Valves (GV), five In-line Valves (IV), 11 Air Relief Valves (ARV), up to five fire hydrants and associated ancillary equipment in Hoʻolehua have reached the end of their useful life. This task will include replacing hydrants, PRV, GV, IV, ARV valves and realigning manholes as necessary. This project will also require limited excavation at each valve site and debris disposal.

7-B Maintenance Yard Improvements: The Maintenance Building, built in 1969 is not large enough to house necessary equipment and materials needed to maintain the water system. Based on an evaluation of the existing structure, the deterioration of support structures dictated building replacement rather than expansion of the existing. This task will include the demolition of the existing structure, re-use of the existing concrete pad and expanding it to accommodate a 4,800 square foot warehouse type facility. A fire hydrant and water meter will be installed to provide fire protection for the building and surrounding DHHL lands. An additional concrete pad, up to 2,400 square feet, will be constructed to accommodate outside storage, loading, unloading, and parking. Tasks included in this action will include grubbing, grading, excavation, disposal of demolition, overburden, and construction debris as well as the installation of fire hydrant and ancillary equipment and construction of the building and concrete pad.

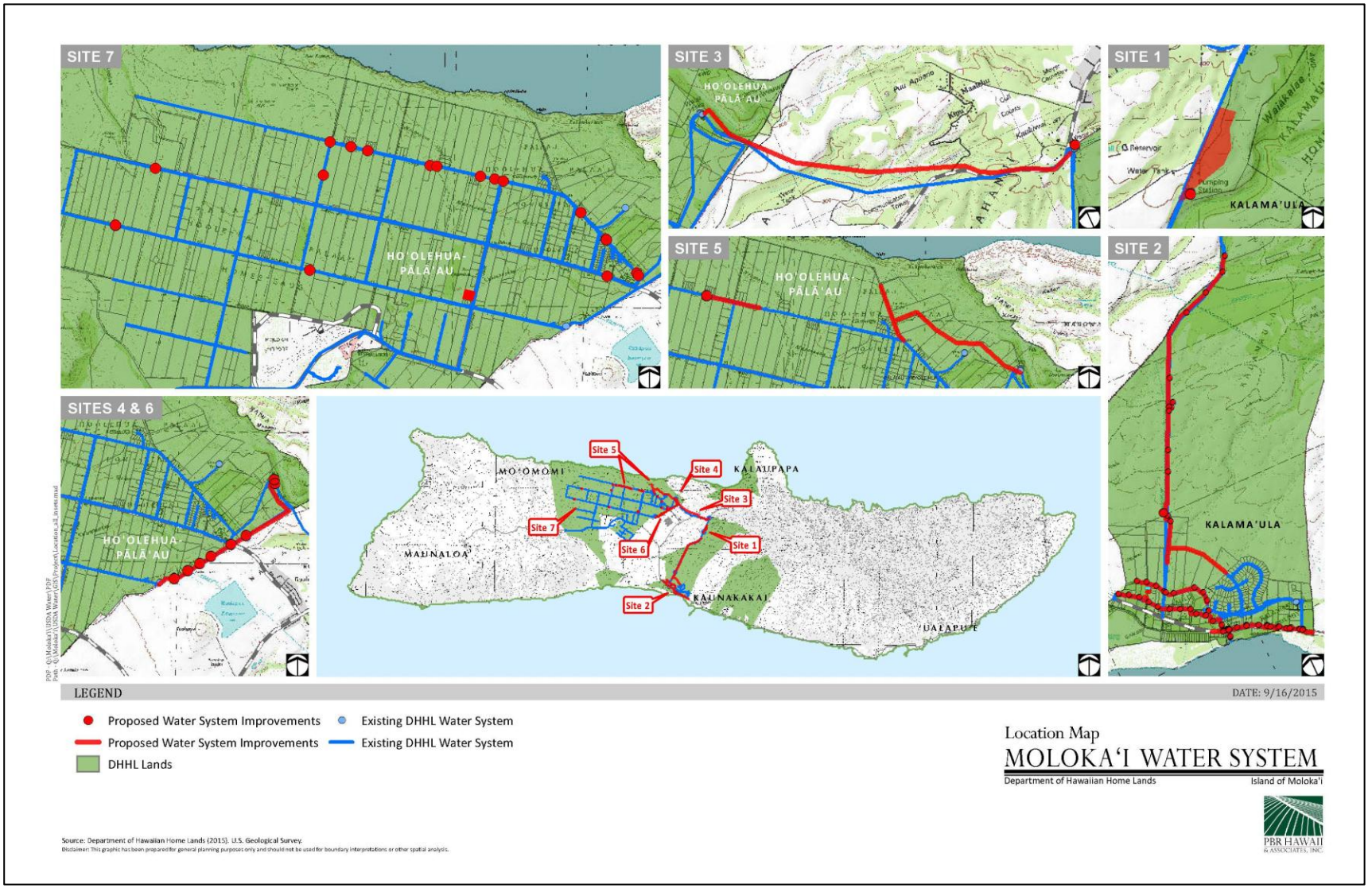


Figure 1. Location of project areas (from McIntosh et al. 2018: Figure 1).

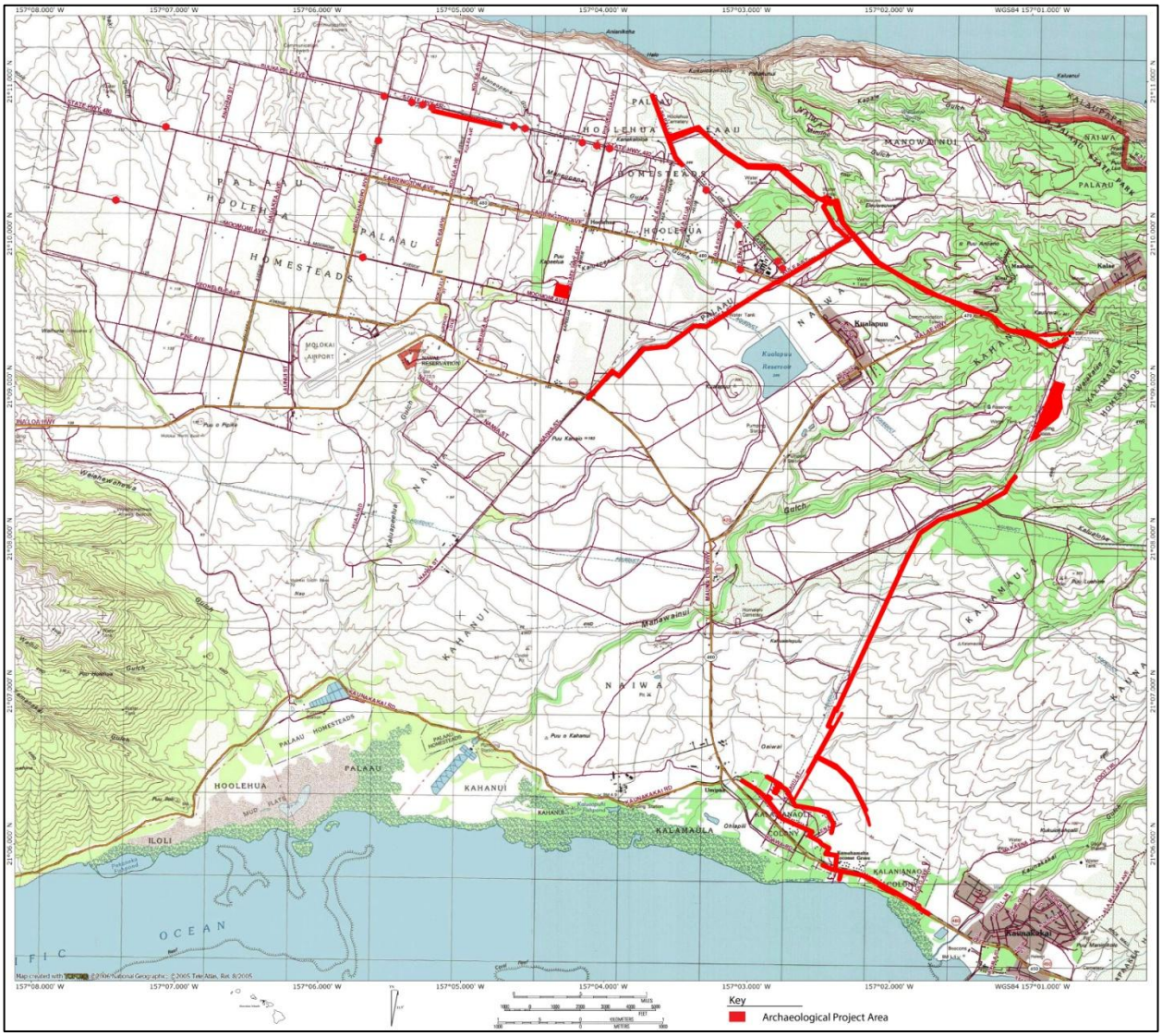


Figure 2. Topographic map showing APE (from McIntosh et al. 2018: Figure 2).

1.2 THE HISTORIC PRESERVATION PROCESS

Historic preservation activities related to the DHHL Water System Improvement Project are being conducted under Hawai‘i state law (Hawai‘i Revised Statutes Chapter 6-E) and associated Hawai‘i Administrative Rules (HAR). The state historic preservation process as outlined under HAR §13-275 involves the identification of historic properties (such as archaeological sites and historic buildings) through an archaeological inventory survey. The historic sites identified during this survey are then evaluated as to their historic significance based upon one or more criteria, as defined in 36 CFR §60.4 and Hawai‘i Revised Statute §13-275-6. These state level criteria reflect the Secretary of the Interior's standards for listing on the National Register of Historic Places as defined in the Code of Federal Regulation Title 36 (36 CFR §60.4). An archaeological inventory survey of DHHL Water System Improvement project was undertaken between 2011 and 2015. This survey resulted in the documentation and the evaluation of 17 archaeological sites. A report of the survey's findings (McIntosh et al. 2018) was submitted to the Hawai‘i State Historic Preservation Division for review and accepted in 2018 (a copy of the SHPD acceptance letter is included in Appendix A).

HAR §13-275 also calls for the mitigation of impacts to significant sites that might result from any proposed actions or undertakings. If significant sites are threatened by potential development activities, impacts to them may be mitigated through either preservation or data recovery. No data recovery was recommended in the AIS (McIntosh et al. 2018). The preservation of three sites was recommended. Preservation, as defined in HAR §13-275-8(l)(A), consists of “avoidance and protection (conservation), stabilization, rehabilitation, restoration, reconstruction, interpretation, or appropriate cultural use.” The guiding document for preservation activities is the Historic Preservation Plan. Hawai‘i Administrative Rules §13-277, entitled “Rules Governing Requirements for Archaeological Site Preservation and Development,” outline the components required for a Historic Preservation Plan as prepared pursuant to chapters 13-275. The following Historic Preservation Plan satisfies the requirements of HAR §13-277.

1.3 REPORT ORGANIZATION

The following Historic Preservation Plan has been organized to address the various issues associated with the management and protection of the cultural resources present within the project area. According to HAR §13-277, the HPP shall include the following elements. These elements will be addressed in the identified sections of this plan.

1. Introduction to the Preservation Plan **(Section 1.0)**.
2. Identify historic properties to be preserved **(Section 2.0)**
3. Preservation **(Section 3.0)**
    a. Interim Protection Measures **(Section 3.1)**
    b. Long Term Preservation Measures **(Section 3.2)**
4. References Cited **(Section 4.0)**

2.0 SURVEY RESULTS AND HISTORIC PROPERTIES TO BE PRESERVED

Between 2011 and 2015, Pacific Legacy conducted an AIS of various DHHL properties in the *ahupua'a* of Pālā'au, Ho'olehua, Nā'iwa, Kahanui, and Kalama'ula in the central portion of the Island of Moloka'i. Fourteen archaeological sites newly documented (Site 2516 through 2521 and Site 2565 through 2572) and three previously documented sites (Site 800 through 802) were identified within the project's area of potential effect (APE; Figure 3). One isolated find of a sandstone '*ulu maika* stone was also identified. These sites included nine traditional Hawaiian pre-Contact or early post-Contact sites, seven historic sites, and one military site. Four of the newly identified archaeological sites (Site 2516, 2519, 2565, 2572) were tested in order to provide additional information on the possible age, chronology, and function of the sites.

All of the sites recorded in the APE (n=17), with the exception of Site 2517 (a probable historic windbreak or hunting blind) are assessed as significant under Criterion (d). These 16 sites have either yielded or have the potential to yield information important to Hawai'i's history. In addition, Site 801, a complex of cairns interpreted as possible burial facilities, and Sites 2568 and 2572 (traditional lithic scatters) are also assessed as significant under Criterion (e) because of their cultural importance.

The 17 historic properties identified in the APE were evaluated for inclusion in the Hawai'i Register of Historic Places (HRHP) and the National Register of Historic Places (NRHP), 11 of these properties are eligible for listing on the HRHP (800-802, 2516, 2518, 2519, 2565-2568, and 2572. One site (2572) is evaluated as eligible for listing in the NRHP.

The project will impact historic properties documented within the APE. Because of this impact, a determination of effect must be made for these historic properties. The effect determination is "Effect, with proposed mitigation commitments."

No further work is recommended for 14 of the 17 recorded sites. Preservation is recommended for Site 801 and Site 2568, and Site 2572.

2.1 SITE 50-60-03-801

Site 800 was originally recorded by Tomonari-Tuggle (1983) for a roadway corridor study (Tomonari-Tuggle 1983). Site 801 is located just outside of the road corridor (Figure 3)and consists of "seven cairns and a short amorphous wall" (Tomonari-Tuggle 1983:13) covering ca. 0.11 acres (Figure 4, Figure 5, and Figure 6). Site 801 was interpreted as a possible burial complex.

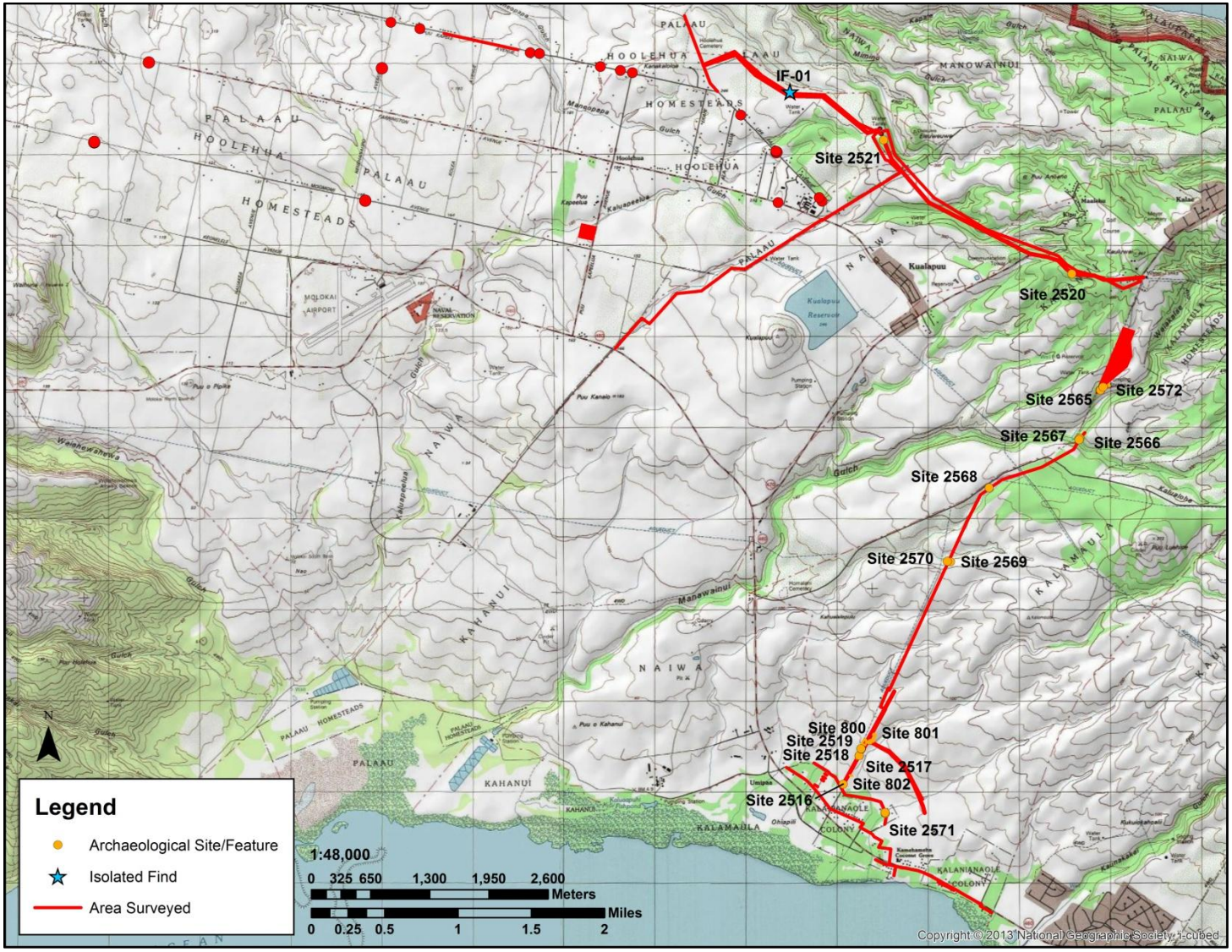


Figure 3. Archaeological sites identified during inventory survey (from McIntosh et al. 2018:Figure 5).

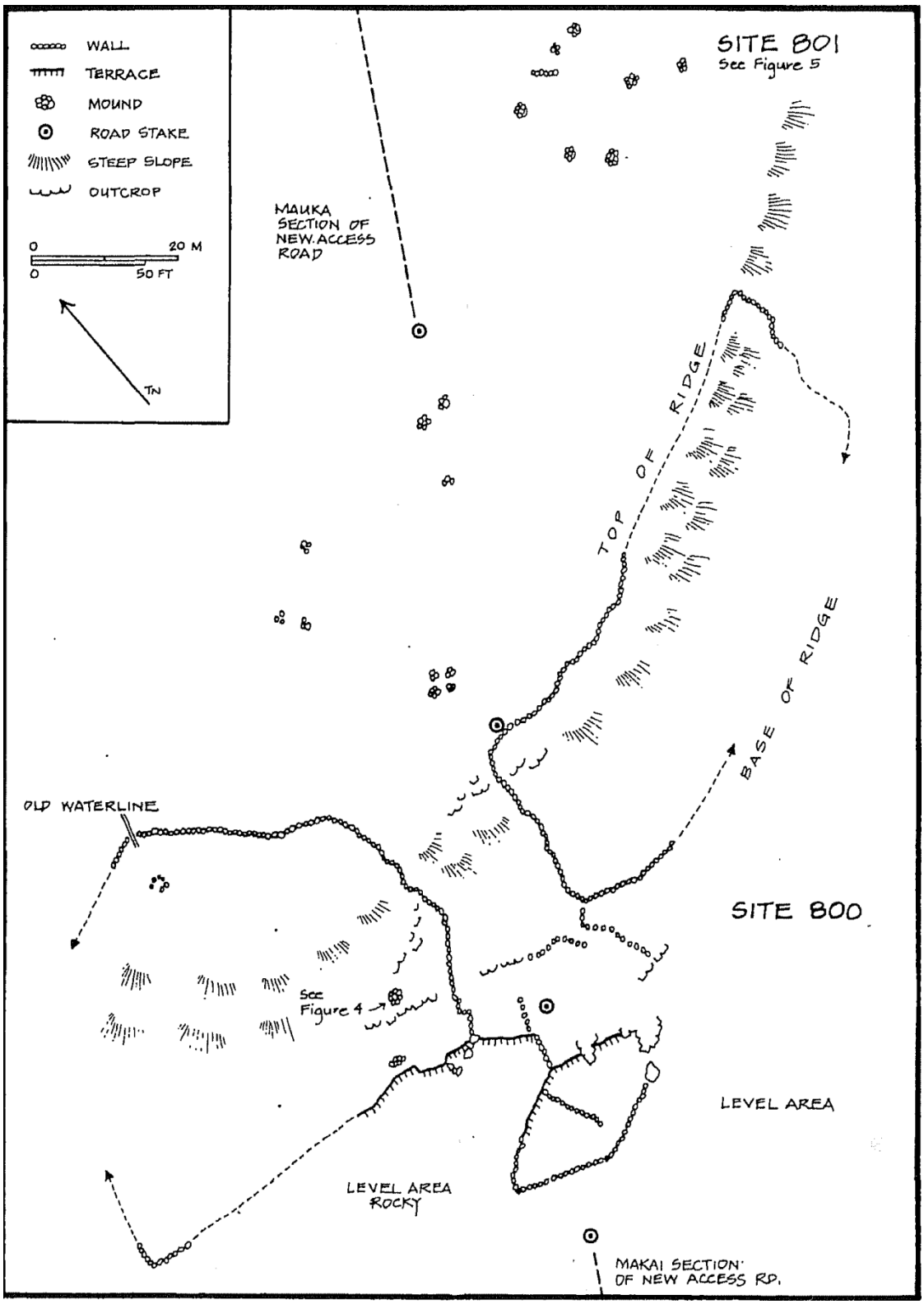


Figure 4. Sites 800 and 801 site map as recorded by Tomonari-Tuggle (1983). Note location of proposed *mauka/makai* roadway at time of recording

Figure 5. Site 801, stone mound (view east).

Figure 6. Site 801, stone mound (view south).

2.2 SITE 50-60-03-2568

Site 2568 consists of a stone alignment located towards the north end of Project Area 2 (2-B Kalamaʻula Transmission Main and Lateral Replacements) in Kalamaʻula (**Error! Reference source not found.**, **Error! Reference source not found.**, **Error! Reference source not found.**). The alignment is located on the west side of a north to south running gulch approximately 35 m southeast of a dirt access road. The alignment is situated on an exposed basalt outcrop located ca. 20 m above a dry streambed. The surrounding area consists of a gentle to moderate (20˚) south facing slope with areas of eroding and decaying basalt rocks and outcrops. Vegetation in the area consists of a variety of low grasses and scattered *kiawe* trees. The site tag is located at the east end of the stone alignment.

The stone alignment is situated on top of an exposed bedrock outcrop. The outcrop measures ca. 10.5 m long (east to west) by 6.3 m wide (north to south). The alignment is oriented roughly east to west and consists of approximately 17 flat basalt slabs. It measures ca. 3.0 m in overall length. The basalt slabs range in size from ca. 0.17 to 0.44 m long by 0.13 to 0.32 m wide by 0.03 to 0.07 m thick. A small area to the north of the alignment appears to have been cleared of stone and debris for ca. 0.8 m. Approximately 1.0 m north of the alignment are the remnants of what may have been a second parallel stone alignment, although it is too jumbled and inconsistent to record as an alignment.

A variety of both traditional and historic cultural material was observed at Site 2568. A basalt core (A) is located ca. 1.7 m north of the alignment (Figure 10). The core measures ca. 0.07 m long by 0.06 m wide by 0.06 m thick. At least three flake scars are visible on the surface of the core. A second basalt core (B) is located ca. 2.0 m south of the alignment (Figure 11). This core measures ca. 0.09 m long by 0.06 m wide by 0.03 m thick. At least three flake scars are visible on the surface of the core. Approximately 1.7 m southeast of the second basalt core is a basalt flake situated at the base of the outcrop. The flake measures ca. 0.08 m long by 0.07 m wide by 0.01 m thick. Cortex is visible on the dorsal surface of the flake. Also scattered around the outcrop are several dense basalt water worn pebbles and cobbles. None of these show any signs of battering indicating use as a hammerstone, but several are broken. No other water worn stones were observed in the vicinity. In addition, several historic clear glass bottle fragments are located upslope to the north of the alignment, although it is unlikely that they are directly associated with the alignment.

Site 2568 appears to have functioned as an activity area during the pre-Contact or early post-Contact period. The function of the alignment may have been to provide a break or gap in the activity areas. The types of traditional artifacts observed suggest that the site was specifically utilized for the production of basalt stone tools.

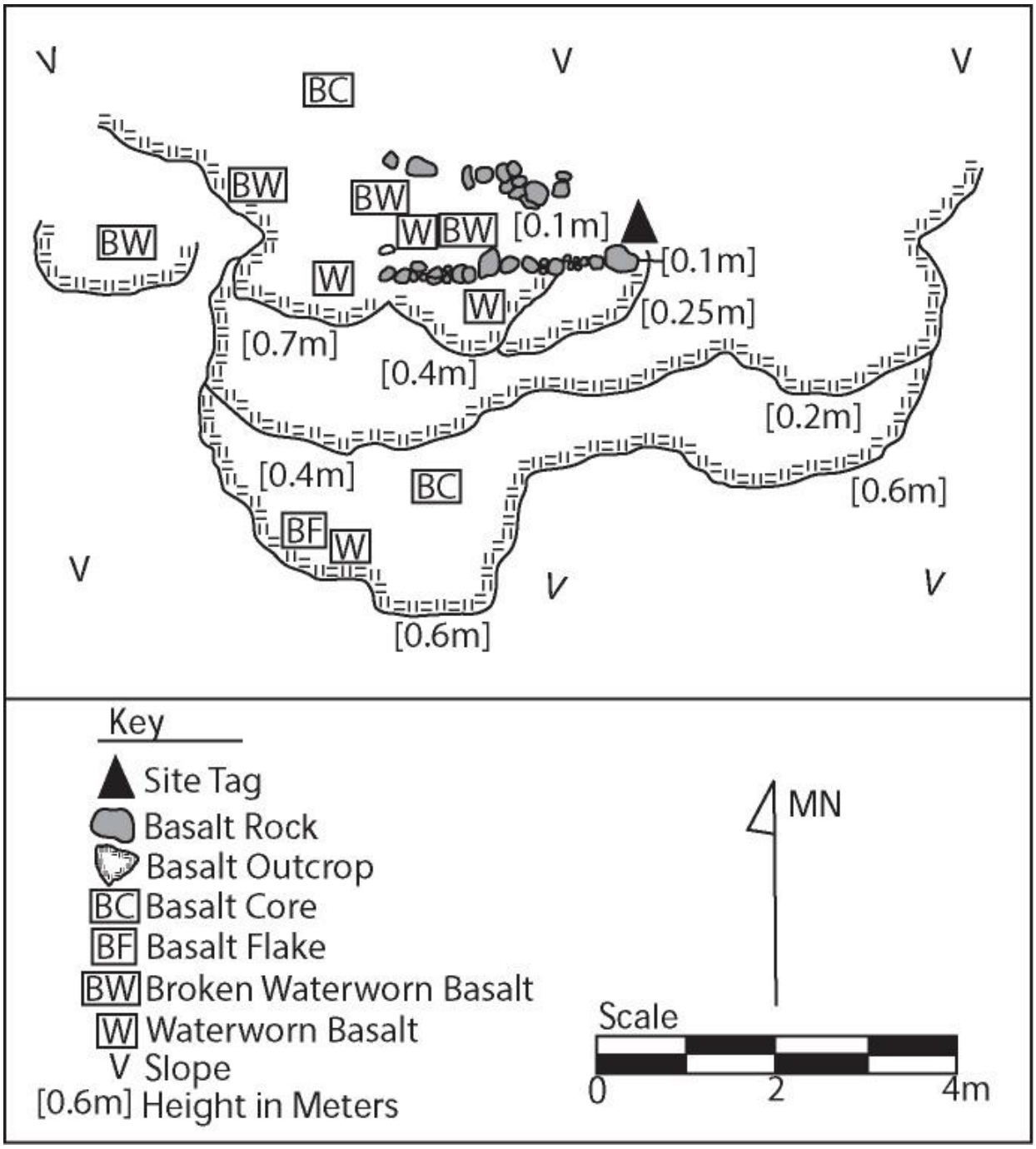


Figure 7. Plan view map of Site 2568

Figure 8. Site 2568, alignment (view east).

Figure 9. Site 2568, alignment (view northwest).

Figure 10. Site 2568, Basalt Core (A).

Figure 11. Site 2568, Basalt Core (B).

2.3 SITE 50-60-03-2572

Site 2572 consists of a traditional surface artifact scatter located along a ridge top situated at the southwest end of Project Area 1 (1-F Energy System Modifications) in Kalamaʻula (**Error! Reference source not found.**, Figure 13., Figure 14..). A barbed wire fence with a metal gate runs northeast to southwest through the site. The vegetation along the top of the ridge is relatively sparse and mostly consists of grass, lantana, and a few unidentified trees. Vegetation on the slopes of the ridge is much denser and includes Christmas berry and *kukui* trees. The site tag is located in the western portion of the site within the densest concentration of traditional artifacts.

Site 2572 consists of a traditional artifact scatter including a variety of basalt and volcanic glass artifacts. The basalt artifacts identified consist of one broken basalt adze (collected) (Figure 15., Figure 16., Figure 17.), two basalt hammerstones (collected) (**Error! Reference source not found.**, **Error! Reference source not found.**), two basalt flakes with polish (collected) (Figure 20, Figure 21), numerous basalt flakes, and unmodified water worn basalt cobbles and pebbles. The basalt flakes range in size from 1.3-7.5 cm long by 0.7-4.9 cm wide by 0.2-3.0 cm thick. The volcanic glass artifacts identified consist of a volcanic glass core, and numerous volcanic glass flakes and shatter. The volcanic glass flakes range in size from 0.6-2.1 cm long by 0.3-1.3 cm wide by 0.1-0.8 cm thick. A particularly dense concentration of artifacts is located near the western end of the site. Despite the amount and variety of traditional artifacts at Site 2572, no stone structural features were identified. The artifact scatter measures approximately 90 m long (northeast to southwest) by 22 m wide (northwest to southeast). Table 1 summarizes the artifacts collected from Site 2572.

A test unit placed in site to determine if the artifacts were present beneath the surface. Artifacts were found and recovered to a depth of 20 cm below the surface.

Site 2572 is in fair condition. Site 2572 appears to have functioned as an activity area during the pre-Contact period. The types of artifacts observed at Site 2572 suggest that the site was specifically utilized for the production of both basalt and volcanic glass stone tools.

Table 1. Artifacts Collected from Site 2572

Artifact	Length (cm)	Width (cm)	Thickness (cm)
Broken Basalt Adze	7	4	1.75
Basalt Hammerstone (A)	6.5	3.5	2.2
Basalt Hammerstone (B)	10	6.8	3.5
Basalt Flake with Polish (A)	2.1	1.7	0.9
Basalt Flake with Polish (B)	1.8	2.2	0.5

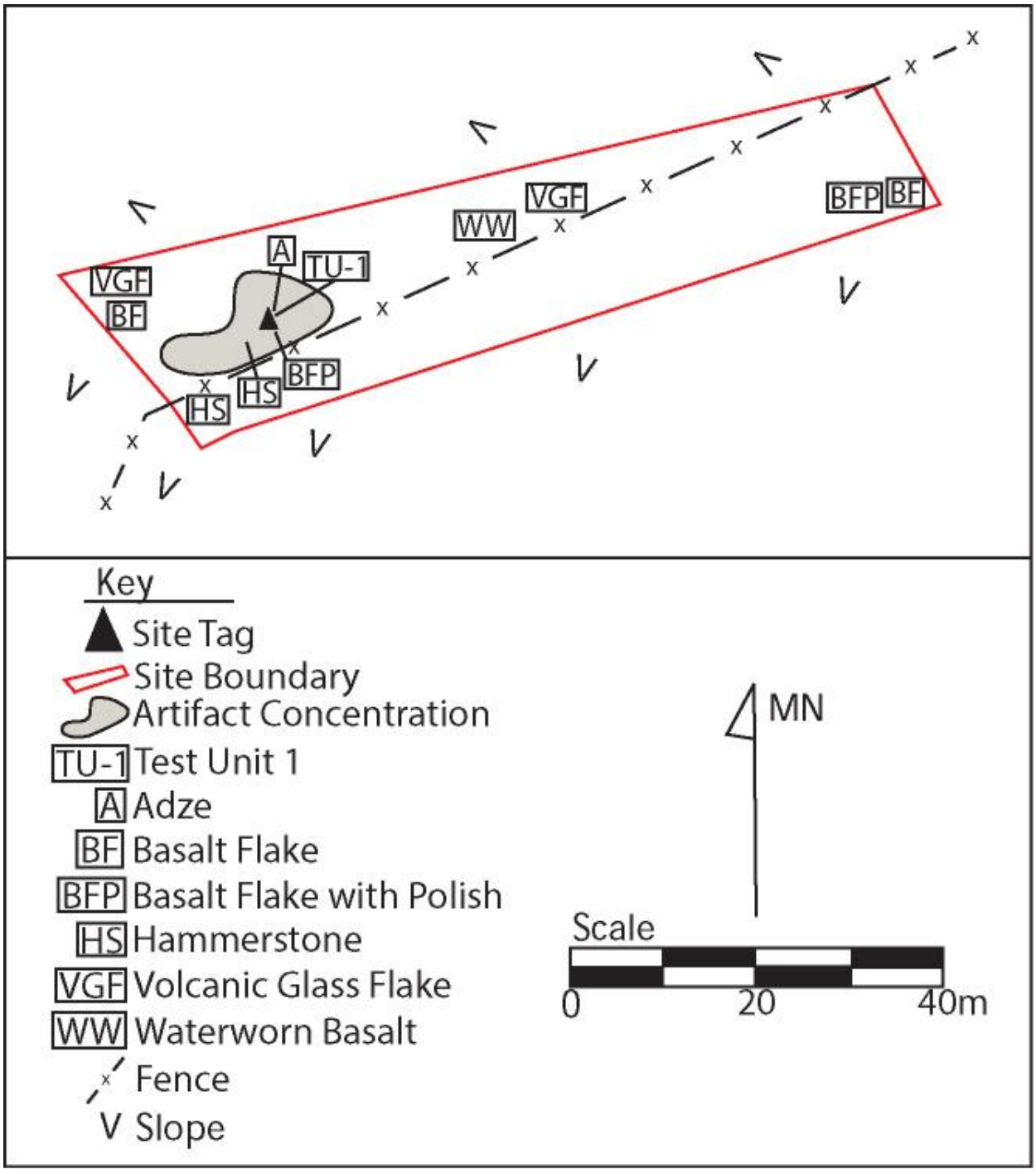


Figure 12. Plan view map of Site 2572.

Figure 13. Site 2572 (view southwest).

Figure 14..Site 2572 (view east).

Figure 15. Site 2572, Broken Basalt Adze, front.

Figure 16. Site 2572, Broken Basalt Adze, back.

Figure 17. Site 2572, Broken Basalt Adze, side.

Figure 18. Site 2572, Basalt Hammerstone (B).

Figure 19. Site 2572, Basalt Hammerstone (B).

Figure 20. Site 2572, Basalt Flake with Polish (A).

Figure 21. Site 2572, Basalt Flake with Polish (A).

3.0 PRESERVATION

The overall purpose of historic preservation is concisely stated in the National Historic Preservation Act of 1966, as amended:

> The historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people [16 U.S.C. §470:1(b) (2)]; and
>
> The preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, esthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans [16 U.S.C. §470:1(B)(4)].

The State Historic Preservation Division (SHPD) has produced Hawai'i Administrative Rules (HAR (§13-277-3(1)) guiding the preservation of cultural resources, and identifies seven forms of preservation:

1. Avoidance and protection (conservation)
2. Stabilization
3. Rehabilitation
4. Restoration
5. Reconstruction
6. Interpretation
7. Appropriate cultural use

The landowner is committed to the first form of preservation – Avoidance and protection (conservation). The landowner avows to protect and conserve the tree sites described in Section 2 (801, 2568, and 2572) Furthermore, if Native Hawaiians come forward and want to visit traditional Hawaiian sites, Molokai District Office Supervisor will work to accommodate these requests. Contact information for the Molokai District Office is:

> P.O. Box 2009
> 808-560-6104
> Kaunakakai HI 96793
> 808-560-6665 (fax)
> Kaunakakai HI 96793

3.1 INTERIM PROTECTION MEASURES

Minimally, ten-meter buffers will be established around each of the sites slated for preservation. These buffer zones will extend outward from the perimeter of each site to a distance of 10 m in a roughly circular pattern. The buffer zones will be demarcated on all sides with orange construction fencing.

The buffer zones shall be placed on all maps utilized by construction personnel with notes to not enter the fenced or flagged areas. The flagging and fencing will serve two purposes: to alert construction personnel that the area is sensitive and not to be entered, and to act as an avoidance feature around each site to prevent accidental intrusion or disturbance. The preservation plan components will be discussed during the on-site pre-construction briefing of the construction supervisors and crew.

The flagging and fencing will be positioned prior to construction commencement and will be checked regularly to ensure that it remains secure and easily visible. The flagging and fencing is to remain in place throughout the construction action. Upon completion of construction, the fencing will be removed.

3.2 LONG TERM PRESERVATION MEASURES

Avoidance, sometimes referred to as passive preservation, will be employed at each preserved feature via the maintenance of the established 10-foot preservation buffer. No landscape improvements or alterations will be made to any of the features. The natural vegetation in the area will be allowed to remain and grow without any additional irrigation or maintenance.

No walls, fencing, or signage for interpretive information or notification will be erected at any of the sites. This is aimed at not attracting attention to the sites, which may encourage people to enter and potentially disturb the areas.

The landowner shall be responsible for maintenance of the features (e.g., litter removal) and monitoring of feature integrity; inspections of the preserve areas will be conducted on an annual basis. SHPD has the authority to conduct periodic inspections to ensure compliance (HAR 13-277-6).

Access to the sites will be handled by DHHL's Molokai District Office (contact information provided above).

SHPD shall be consulted as follows:

1. SHPD shall be notified of any changes to or damage to any of the preserves
2. SHPD shall be consulted should any future projects or work to be conducted for the preserve sites or in the area of the preserves

4.0 REFERENCES CITED

Cleghorn, Paul

2018. *Archaeological Monitoring Plan for the Proposed Improvements to the Department of Hawaiian Home Lands Water System on Molokaʻi Lands in Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula Ahupuaʻa.* Prepared by Pacific Legacy, Inc.

McIntosh, J.D., C.C. Fechner, and P. L. Cleghorn

2018 *Archaeological Inventory Survey for the Proposed Improvements to the Department of Hawaiian Home Lands Water System on Molokaʻi Lands in Pālāʻau, Hoʻolehua, Nāʻiwa, Kahanui, and Kalamaʻula Ahupuaʻa.* Prepared by Pacific Legacy, Inc. On file at SHPD library, Kapolei, Oʻahu.

Tomonari-Tuggle, M. J.

1983 *Archaeological Reconnaissance Survey of a Road Corridor in the Ahupuaʻa of Kalamaʻula. Island of Molokaʻi. TMK 5-2-10: portion 1.* Prepared for the Department of Hawaiian Home Lands, State of Hawaiʻi.

APPENDIX A

SHPD AIS ACCEPTANCE LETTER

INSERT LETTER WHEN RECEIVED

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

PREFINAL PLANS (03/08/2018)

HOOLEHUA WATER SYSTEM IMPROVEMENTS

TASK ORDER No. 11 - EMERGENCY REPAIRS DUE TO VANDALISM AT HOOLEHUA 2-3.5 MG RESERVOIR

HOOLEHUA, MOLOKAI, HAWAII

TAX MAP KEY: (2) 5-2-007:029, 5-2-007:030, & 5-2-007:090

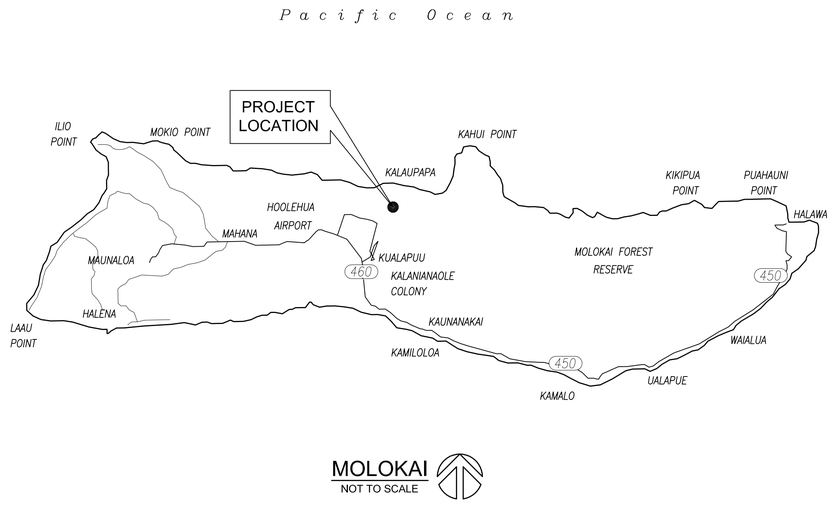
PREPARED BY:

GROUP 70 INTERNATIONAL, INC.

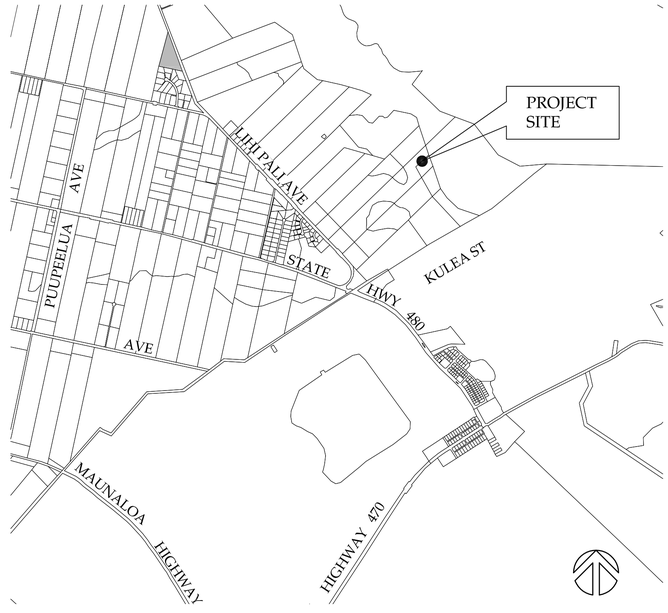
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4398

808-523-5866
WWW.G70.DESIGN

LOCATION MAP



VICINITY MAP



APPROVALS

CHAIRMAN, HAWAIIAN HOMES COMMISION — DATE
STATE OF HAWAII

DIRECTOR, DEPARTMENT OF PUBLIC WORKS — DATE
COUNTY OF MAUI
(FOR WORK WITHIN COUNTY RIGHT-OF-WAY ONLY)

CHIEF, HIGHWAYS DIVISION — DATE
DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII
(APPROVAL GRANTED FOR WORK WITHIN STATE RIGHT-OF-WAY ONLY,
ID _-__-__, LETTER OF APPROVAL NO. HWY-T _-____, DATED
__/__/__)

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION, — DATE
STATE DEPARTMENT OF HEALTH

DEPARTMENT OF WATER SUPPLY — DATE
COUNTY OF MAUI

DWG. NO.
T001
SHEET 1 OF 26

FILE	POCKET	FOLDER	NO.

DRAWING INDEX

SHT NO.	DWG NO.	DESCRIPTION
1	T001	TITLE SHEET, LOCATION AND VICINITY MAP
2	T002	INDEX AND ABBREVIATIONS
3	T003	NOTES 1
4	T004	NOTES 2
5	T005	GENERAL PLAN
6	SE001	GENERAL NOTES & TYPICAL DETAILS
7	SE101	TYPICAL DETAILS
8	SE102	HATCH DETAILS
9	SE103	WATERPROOF AND SUPPORT DETAILS
10	SE201	PARTIAL STRUCTURAL PLAN GROUND LEVEL
11	SE202	PARTIAL STRUCTURAL PLAN EXISTING RESERVOIR ROOF
12	SE203	PARTIAL STRUCTURAL PLAN EXISTING RESERVOIR ROOF
13	SE301	CONCRETE STRUCTURE REPAIR ELEVATION
14	SE302	CONCRETE STRUCTURE REPAIR ELEVATION
15	SE303	DETAILS
16	E-1	GENERAL NOTES AND ELECTRICAL SYMBOLS
17	E-2	SANDWICH ISLES COMMUNICATION NOTES
18	E-3	OVERALL ELECTRICAL SITE PLAN
19	E-4	DUCT SECTION DETAILS AND REQUIREMENTS
20	E-5	HOOLEHUA RESERVOIR ELECTRICAL PLAN
21	E-6	KANAKALOLO CEMETERY SITE PLAN
22	E-7	KANAKALOLO CEMETERY ELECTRICAL PLAN
23	E-8	SCHEDULES AND ONE-LINE DIAGRAM
24	E-9	ELECTRICAL EQUIPMENT CABINET ELEVATION
25	E-10	ELECTRICAL EQUIPMENT CABINET AND CONCRETE PAD DETAILS
26	E-11	MISCELLANEOUS ELECTRICAL DETAILS

ABBREVIATIONS

∠	ANGLE
A	AREA
AC	ASPHALT CONCRETE OR ACRE
ACS	ACRES
A/C	AIR CONDITIONING
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ATT	AT&T CABLE
AVE	AVENUE
℄	BASELINE
BC	BOTTOM OF CURB
BFP	BACK FLOW PREVENTER ASSEMBLY
BLDG	BUILDING
BOT	BOTTOM
BW	BOTTOM OF WALL
C&C	CITY AND COUNTY
℄	CENTERLINE
C	CHORD
CATV	CABLE TELEVISION
CB	CATCH BASIN
CHWS	CHILL WATER SERVICE
CHWR	CHILL WATER RETURN
CF	CURB FACE
C.L.	CHAIN LINK
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
CRM	CONCRETE RUBBLE MASONRY
CW	COLD WATER
COTG	CLEAN OUT TO GRADE
D	DIAMETER, DEPTH OR DRAIN
DI	DRAIN INLET
DIA, ø	DIAMETER
DCV	DETECTOR CHECK VALVE
DEFL	DEFLECTION
DET	DETAIL
DMH	DRAIN MANHOLE
D.P.P	DEPT OF PLANNING AND PERMITTING
DS	DOWNSPOUT
DSP	DRY STAND PIPE
DHHL	DEPARTMENT OF HAWAIIAN HOME LANDS
DWGS	DRAWINGS
DWS	DEPARTMENT OF WATER SUPPLY
DWY	DRIVEWAY
E,ELEC	ELECTRIC
ELEV, EL	ELEVATION
EG	EXISTING GROUND
EOP	EDGE OF PAVEMENT
EP	ELECTRICAL POLE
EX, EXIST, (E)	EXISTING
FA	FIRE ALARM
FDC	FIRE DEPT CONNECTION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FM	FORCE MAIN
FS	FINISH SURFACE
FT	FEET
G	GAS
GB	GRADE BREAK
GI	GRATED INLET
GMH	GAS MANHOLE
GND	GROUND
GP	GUARD POST/GUY POLE/GATE POST
GV	GATE VALVE
GW	GUY WIRE
H, HT	HEIGHT
HB	HOSE BIBB
HECO	HAWAIIAN ELECTRIC COMPANY
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
HW	HOT WATER
ICV	IRRIGATION CONTROL VALVE
INV	INVERT
IRR	IRRIGATION
JTS	JOINT TRUNKING SYSTEM
JKT	JACKET
L	LENGTH OR LENGTH OF CURVE
LID	LOW IMPACT DEVELOPMENT
LP	LAMP OR LIGHT POLE
LPT	LOW POINT
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL AND PLUMBING
MB	MAILBOX OR METER BOX
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
M/N	METER NUMBER
NO.	NUMBER
NON-POT	NON-POTABLE
O.C.	ON CENTER
OH, O/H	OVERHEAD
PAVT	PAVEMENT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PERF	PERFORATED
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL, ℄	PROPERTY LINE
PM	PARKING METER
POC	POINT ON CURVE
POT	POTABLE
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PRV	PRESSURE REDUCING VALVE
PSL	PEDESTRIAN SIGNAL LIGHT
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
REF, REFL	REFLECTOR
ROW, R/W	RIGHT-OF-WAY
S	SEWER, SLOPE OR SPREAD
SC	SIGNAL CORPS
SCH 40	SCHEDULE 40
SCH 80	SCHEDULE 80
SCMH	SIGNAL CORPS MANHOLE
SDMH	STORM DRAIN MANHOLE
SF	SQUARE FOOT, SQUARE FEET
SL	STREET LIGHT
SLB	STREET LIGHT BOX
SMH	SEWER MANHOLE
SPR	SPRINKLER
ST	STREET
STA	STATION
STD	STANDARD
STRUCT	STRUCTURAL
SW, S/W	SIDEWALK
TC	TOP OF CURB
TDC	TOP OF DROPCURB
T	TANGENT OR TELEPHONE
TEL	TELEPHONE
TG	TOP OF GRATE
THRU	THROUGH
TMK	TAX MAP KEY
TP	TOP OF PIPE
TRC	TOP OF ROLLED CURB
TS	TOP OF STEM
TSL	TRAFFIC SIGNAL LIGHT
TSLB	TRAFFIC SIGNAL LIGHT BOX
TV	TOP OF VALVE
TW	TOP OF WALL
TYP	TYPICAL
UP	UTILITY POLE
UP/SL	UTILITY POLE WITH STREET LIGHT
VAR	VARIES OR VARIABLE
VB	VALVE BOX
W	WATER
WL	WATER LINE
WM	WATER METER
WMB	WATER METER BOX
WMH	WATER MANHOLE
WSE	WATER SERVICE ELEVATION
WV	WATER VALVE
X-WALK	CROSSWALK

LEGEND

- PROPERTY LINE
- LOT LINE
- EASEMENT
- LIMITS OF GRADING
- O/H — EXISTING OVERHEAD ELECTRIC LINE
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- W8 — EXISTING WATER LINE
- S6 — EXISTING SEWER LINE
- W8 — NEW WATER LINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — EXISTING DRAINAGE FLOW
- CONCRETE PAVEMENT
- GRAVEL

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE
JOB NO.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

DWG. NO.
T002
SHEET 2 OF 26

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM

GROUP 70 INTERNATIONAL, INC.
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4398
808.523.5866
WWW.G70.DESIGN

MARCH 2018

FILE	POCKET	FOLDER	NO.

FILE: 214041-11 T002 INDEX.dwg
DATE REV.: 07/03/2018

GENERAL NOTES

1. LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE BASED ON AVAILABLE "AS-BUILT" OF RECORD CONSTRUCTION PLANS AND ARE APPROXIMATE ONLY AND THEIR ACCURACY IS NOT GUARANTEED.

2. EXISTING CONTOURS AND FEATURES ARE BASED ON "TOPOGRAPHIC SURVEY MAP MOLOKAI DHHL WATERLINE IMPROVEMENTS" PREPARED BY CONTROL POINT SURVEYING INC. DATED APRIL 12, 2017, AS AMENDED

3. ELEVATIONS SHOWN WERE ESTABLISHED ONSITE USING GPS OBSERVATIONS AND ARE BASED HORIZONTAL DATUM: NAD 83 HI ZONE 2 STATE PLANE COORDINATES, U.S. FEET.

4. EXISTING GRADES SHALL BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH GRADING WORK. SHOULD ANY DISCREPANCIES BE DISCOVERED IN THE EXISTING GRADES OR DIMENSIONS GIVEN ON THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER BEFORE PROCEEDING ANY FURTHER WITH THE WORK, OTHERWISE HE WILL BE HELD RESPONSIBLE FOR ANY COST INVOLVED IN THE CORRECTION OF CONSTRUCTION PLACED DUE TO SUCH DISCREPANCIES.

5. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES WITHIN PROJECT LIMITS BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND UTILITIES.

6. THE CONTRACTOR SHALL REPORT ANY INCONSISTENCIES WITH THE PROPOSED PLAN TO THE OWNER'S REPRESENTATIVE AND SHALL DEMOLISH, REMOVE, OR RELOCATE ALL EXISTING UTILITIES, IMPROVEMENTS, ETC. INCONSISTENT WITH THE PROPOSED PLAN AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND AT THE CONTRACTOR'S EXPENSE.

7. THE LATEST REVISIONS OF THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," SEPTEMBER 1984 AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," 2005 SHALL BE INCLUDED AS PART OF THESE CONSTRUCTION PLANS. THE CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS BEFORE COMMENCING CONSTRUCTION.

8. SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS BE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND MITIGATION MEASURES, IF NECESSARY.

9. PURSUANT TO CHAPTER 6E OF THE HAWAII REVISED STATUTES, ALL CONTRACTORS SHALL ENSURE THAT IN THE EVENT THAT ANY HUMAN SKELETAL REMAINS ARE INADVERTENTLY DISCOVERED DURING CONSTRUCTION, THE REMAINS SHALL NOT BE MOVED AND ANY ACTIVITY IN THE IMMEDIATE AREA THAT COULD DAMAGE THE REMAINS OR THE POTENTIAL HISTORIC SITE SHALL CEASE AND THE DEPARTMENT OF LAND AND NATURAL RESOURCES' HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), THE APPROPRIATE MEDICAL EXAMINER OR CORONER, AND THE POLICE DEPARTMENT (TELEPHONE: 244-6400), SHALL BE CONTACTED. ALL LESSEES USING EXISTING DIRT ROADS TO ACCESS THEIR PROPERTY SHALL CONTINUE TO BE PROVIDED ACCESS TO THEIR PROPERTY AT ALL TIMES DURING CONSTRUCTION ACTIVITIES BY THE CONTRACTOR.

CONSTRUCTION NOTES WITHIN COUNTY RIGHT-OF-WAY

1. CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK ON COUNTY HIGHWAYS FROM THE DEVELOPMENT SERVICES ADMINISTRATION TWO WEEKS PRIOR TO THE COMMENCEMENT OF WORK.

2. STANDARD DETAIL DRAWINGS AND STANDARD SPECIFICATIONS OF THE DEPARTMENT OF PUBLIC WORKS SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.

3. ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE LATEST VERSION OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE PUBLIC WORKS CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED, OR THE REQUIREMENTS FOR WORK WITHIN STATE RIGHT-OF-WAY AS COVERED IN THE CONTRACT DOCUMENTS AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

4. IF EXISTING UTILITIES, WHETHER OR NOT SHOWN ON PLANS, ARE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL AT HIS OWN EXPENSE BE REQUIRED TO REPAIR SUCH UTILITIES.

5. CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC, ACCORDING TO THE LATEST VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE FOR STREETS AND HIGHWAYS", AND TO THE RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES AND/OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND THE U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS".

6. THE DIRECTOR OF PUBLIC WORKS AND/OR THE DIRECTOR OF THE DEPARTMENT OF WATER SUPPLY HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLAN OR DETRIMENTAL TO THE PUBLIC'S INTEREST.

7. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE DEVELOPMENT SERVICES ADMINISTRATION FIVE (5) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

8. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND COUNTY GRADING ORDINANCE.

9. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.

10. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE WORK SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.

CONSTRUCTION NOTES WITHIN COUNTY RIGHT-OF-WAY CONT'D.

10. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE WORK SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.

11. THE CONTRACTOR SHALL SUBMIT A TIFF AND FIVE (5) COPIES OF THE "AS-BUILT" DRAWINGS PRIOR TO THE FINAL APPROVAL OF THE IMPROVEMENTS.

12. IF THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING WATERLINE IS EIGHTEEN INCHES (18") OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE-JACKETED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION DATED SEPTEMBER 1984, AS AMENDED.

13. SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS OR MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR AND/OR LANDOWNER SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.

14. PURSUANT TO MAUI COUNTY CODE SECTION 3.44.015(C), THE COUNTY OF MAUI IS NOT RESPONSIBLE FOR ANY PARK, ROADWAY, EASEMENT (INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, ACCESS, RECLAIMED WATER, OR AVIGATION EASEMENT), OR ANY OTHER INTEREST IN REAL PROPERTY SHOWN ON THIS MAP OR SHOWN ON THESE PLANS, UNLESS THE MAUI COUNTY COUNCIL HAS ACCEPTED ITS DEDICATION BY A RESOLUTION APPROVED BY A MAJORITY OF A COUNCIL'S MEMBERS AT A REGULAR OR SPECIAL MEETING OF THE MAUI COUNTY COUNCIL.

15. STEEL PLATE WARNING SIGNS ARE REQUIRED FOR ALL STEEL PLATES IN THE RIGHT-OF-WAY.

16. WHEELCHAIR RAMP INSPECTION/CERTIFICATION FORMS SHALL BE REQUIRED FOR ALL NEWLY CONSTRUCTED RAMPS.

17. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE OF THERMOPLASTIC MATERIAL.

18. COMPACTION REQUIREMENTS

    A. TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:

    I. EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;

    II. AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;

    III. AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;

    IV. ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;

    V. TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.

    B. CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK.

    C. THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION.

DEPARTMENT OF PUBLIC WORKS NOTES

1. THE CONTRACTOR SHALL ALLOW FOUR WEEKS TO OBTAIN A GRADING PERMIT FROM THE DEVELOPMENT SERVICES ADMINISTRATION PRIOR TO COMMENCEMENT OF ANY CLEARING AND GRUBBING. A SATISFACTORY DRAINAGE AND EROSION CONTROL PLAN SHALL BE SUBMITTED IN THE EVENT THE GRUBBING AREA EXCEEDS ONE ACRE OR THE PROPOSED CUT OR FILL IS GREATER THAN 15 FEET IN HEIGHT. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL BEST MANAGEMENT PRACTICE MEASURES.

2. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC AND IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAY, 2003 EDITION WITH REVISION No. 1 INCORPORATED, DATED NOVEMBER 2004", THE CONTRACTOR SHALL PREPARE AND OBTAIN NECESSARY APPROVALS OF TRAFFIC CONTROL PLANS IF REQUIRED BY THE DEVELOPMENT SERVICES ADMINISTRATION.

3. STANDARD DETAIL DRAWINGS OF THE DEPARTMENT OF PUBLIC WORKS AND THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION (1994) SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.

4. ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE APPLICABLE SECTIONS OF THE 2005 HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED.

5. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND COUNTY GRADING ORDINANCE.

6. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.

PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND COUNTY LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.

2. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE COUNTY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.

3. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.

GRADING NOTES

1. FINISH SPOT ELEVATIONS AND FINISH CONTOURS, AS SHOWN ON PLAN REPRESENTS FINISH GRADING. THE SITE WORK CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER THE LOCATION AND DEPTH OF TOPSOIL THE FINISH SUBGRADE SHALL REFLECT THE FINISH GRADE LESS SPECIFIED TOPSOIL DEPTH.

2. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE MEASURES OF THE BEST MANAGEMENT PRACTICE (BMP) PLAN. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS.

3. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE STATE DEPARTMENT OF HEALTH SHALL BE PAYABLE BY THE CONTRACTOR.

4. THE CONTRACTOR, AT HIS EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE OF DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.

5. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE ENGINEER OF THE LOCATION OF DISPOSAL SITES. THE DISPOSAL SITE MUST ALSO FULFILL REQUIREMENTS OF THE GRADING ORDINANCES.

6. THE CONTRACTOR SHALL NOT DEMOLISH OR CLEAR ANY STRUCTURE, SITE OR VACANT LOT WITHOUT FIRST ASCERTAINING THE PRESENCE OR ABSENCE OF RODENTS WHICH MAY ENDANGER THE PUBLIC HEALTH BY DISPERSAL FROM SUCH PREMISES. SHOULD SUCH INSPECTION REVEAL THE PRESENCE OF SUCH RODENTS, THE CONTRACTOR SHALL ERADICATE SUCH RODENTS BEFORE DEMOLISHING OR CLEARING SAID STRUCTURE, SITE OR VACANT LOT.

7. THE FOLLOWING MEASURES SHALL BE TAKEN TO CONTROL DUST AND EROSION DURING THE SITE DEVELOPMENT PERIOD:

    A. MINIMIZE TIME OF CONSTRUCTION.

    B. RETAIN EXISTING GROUND COVER UNTIL THE LATEST DATE TO COMPLETE CONSTRUCTION.

    C. CONSTRUCT REMAINING PERMANENT EROSION AND DRAINAGE CONTROL FEATURES AS EARLY AS POSSIBLE.

    D. USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.

    E. STATION WATER TRUCK ON-SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION AREAS (WEEKENDS AND HOLIDAYS INCLUDED).

    F. USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION. IMPLEMENT AND MAINTAIN THE MEASURES OF THE BMP PLAN.

    G. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.

    H. ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.

COMPACTION REQUIREMENTS

1. TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:

    A. EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;

    B. AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;

    C. AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;

    D. ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;

    E. TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.

2. CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK.

3. THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION.

ARCHAEOLOGICAL NOTE

IN THE EVENT THAT ANY HISTORICAL RESOURCES, INCLUDING HUMAN SKELETAL REMAINS, STRUCTURAL REMAINS, CULTURAL DEPOSITS, OR LAVA TUBES ARE IDENTIFIED DURING CONSTRUCTION ACTIVITIES, CEASE WORK IN THE IMMEDIATE VICINITY OF THE FIND, PROTECT THE FIND FROM DISTURBANCE, AND CONTACT THE STATE HISTORIC PRESERVATION DIVISION AT (808) 243-1285.

EROSION CONTROL NOTES

1. DURING CONSTRUCTION, PREVENTIVE MEASURES SHALL BE USED TO CONTROL FORESEEABLE DUST, EROSION OR SEDIMENTATION PROBLEMS WHICH MAY ARISE AS WORK PROGRESSES.

2. FUGITIVE DUST AND SOLID WASTE DISPOSAL DURING GRUBBING AND GRADING ACTIVITIES SHALL MEET THE REQUIREMENTS OF STATE OF HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60, AIR POLLUTION CONTROL AND CHAPTER 56, SOLID WASTE MANAGEMENT CONTROL.

3. ALL AREAS WHICH ARE AT FINAL GRADE SHALL BE IMMEDIATELY HYDROMULCHED AND SEEDED WITH NATIVE AKIAKI GRASS AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET OR PERMINENTLY LANDSCAPED.

4. REGRASS ALL EXPOSED AREAS.

EFFECTIVE AUGUST 10, 1998, THE MAUI COUNTY CODE GRADING ORDINANCE HAS BEEN REVISED. ALL GROUND DISTURBING ACTIVITIES IN MAUI COUNTY WILL NOW BE MORE CLOSELY MONITORED. ALL GRADING, GRUBBING, STOCKPILING, EXCAVATIONS ETC., SHALL PROVIDE MEASURES TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT DAMAGE TO THE ENVIRONMENT BY CONTAINING POLLUTANTS, INCLUDING SEDIMENT, DUST, AND OTHER CONTAMINANTS FROM DISCHARGING OFF A CONSTRUCTION SITE.

THEREFORE, CONTRACTOR SHALL CONTROL DUST AND OTHER SEDIMENT FROM THE PROJECT SITE, EVEN WHEN A GRADING PERMIT IS NOT REQUIRED.

A GRADING PERMIT WILL BE REQUIRED IF ANY OF THE FOLLOWING APPLY TO THE PROPOSED CONSTRUCTION:

A. THE GENERAL DRAINAGE PATTERNS ARE TO BE ALTERED.

B. THE EXCAVATION, FILL OR STOCKPILING IS MORE THAN 100 CY OF MATERIAL (50 CY IN SPECIAL MANAGEMENT AREA).

C. THE EXISTING GROUND ELEVATION IS TO BE CHANGED BY MORE THAN 4 FEET AT ANY LOCATION (2 FEET IN SPECIAL MANAGEMENT AREAS).

D. AN AREA LARGER THAN 1 ACRE IS TO BE GRUBBED (CLEARED).

A GRADING PERMIT WILL NOT BE REQUIRED FOR EXCAVATION AND BACKFILL FOR STRUCTURES THAT HAVE BEEN ISSUED A BUILDING PERMIT OR FOR CESSPOOLS AND SEPTIC TANKS AUTHORIZED BY THE STATE DEPARTMENT OF HEALTH.

FOR MORE DETAILED INFORMATION, REFER TO THE MAUI COUNTY CODE CHAPTER 20.08, "SOIL EROSION AND SEDIMENT CONTROL".

MINIMUM BEST MANAGEMENT PRACTICES

1. DRAINAGE:
   HANDLE DRAINAGE TO CONTROL EROSION, PREVENT DAMAGE TO DOWNSTREAM PROPERTIES AND RETURN WATERS TO THE NATURAL DRAINAGE COURSE IN A MANNER WHICH MINIMIZES SEDIMENTATION OR OTHER POLLUTION TO THE MAXIMUM EXTENT PRACTICABLE.

2. DUST CONTROL:
   CONTROL DUST EMISSIONS TO THE MAXIMUM EXTENT PRACTICABLE THROUGH BMPS SUCH AS WATER SPRINKLING, DUST FENCES, LIMITING AREA OF DISTURBANCE AND TIMELY GRASSING OF FINISHED AREAS.

3. VEGETATION:
   RETAIN NATURAL VEGETATION, ESPECIALLY GRASSES, WHENEVER FEASIBLE. AVOID STORAGE OF GRUBBED MATERIAL NEAR WATER COURSES.

4. EROSION CONTROL:
   STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MEASURES SUCH AS VEGETATION, RUNOFF DIVERSION, CHECK DAMS, MULCHING, BLANKETS, BONDED FIBER MATRICES AND VEHICLE WHEEL WASH FACILITIES.

5. SEDIMENT CONTROL:
   CAPTURE SEDIMENT TRANSPORTED IN RUNOFF TO MINIMIZE THE SEDIMENT FROM LEAVING THE SITE WITH METHODS SUCH AS SEDIMENT BASINS, SEDIMENT TRAPS, SILT FENCES, SAND BAGS, AND VEGETATED FILTER STRIPS.

6. MATERIAL AND WASTE MANAGEMENT:
   PROPERLY STORE TOXIC MATERIALS AND PREVENT THE DISCHARGE OF POLLUTANTS ASSOCIATED WITH CONSTRUCTION MATERIALS.

7. TIMING OF CONTROL MEASURE IMPLEMENTATION:
   TIMING OF CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN. DISTURBED AREAS OF CONSTRUCTION SITES THAT WILL NOT BE RE-DISTURBED FOR TWENTY-ONE (21) DAYS OR MORE WILL BE STABILIZED (GRASSED OR GRAVELED) BY NO LATER THAN THE FOURTEENTH (14TH) DAY AFTER THE LAST DISTURBANCE.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE
JOB NO.

NOTES 1

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP., DATE: APRIL 30, 2018

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM

GROUP 70 INTERNATIONAL, INC.
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4398
808 523 5866
WWW.G70DESIGN

MARCH 2018

DWG. NO. T003
SHEET 3 OF 26

FILE: 21404-11 T003 NOTES.dwg
DATE REV.: 02/03/2018

FILE	POCKET	FOLDER	NO.

NOTES FOR CONSTRUCTION WITHIN STATE HIGHWAYS RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK UPON STATE HIGHWAYS FROM THE OAHU DISTRICT ENGINEER, STATE HIGHWAYS, AT 727 KAKOI STREET, PRIOR TO COMMENCEMENT OF WORK WITHIN THE STATE'S RIGHT-OF-WAY.

2. CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN THE STATE'S RIGHT-OF-WAY, INCLUDING THE LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC, SHALL BE IN ACCORDANCE WITH THE CURRENT "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION", AND THE "SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS", OF THE THE STATE HIGHWAYS DIVISION.

3. WORK MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. AND 3:00 P.M., MONDAY THROUGH FRIDAY, EXCEPT STATE HOLIDAYS, UNLESS OTHERWISE APPROVED IN WRITING BY THE DIRECTOR OF THE DEPARTMENT OF TRANSPORTATION.

   DURING WORK HOURS, ONLY ONE LANE OF TRAFFIC SHALL BE CLOSED, UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT ENGINEER.

   AT CERTAIN LOCATONS, "NO LANE CLOSURE" WILL BE ALLOWED DURING THE "BACK TO SCHOOL JAM", THANKSGIVING WEEKEND, CHRISTMAS/NEW YEAR PERIOD AND AT OTHER TIMES, AS DIRECTED BY THE HIGHWAYS DIVISION.

4. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAII GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREET AND HIGHWAYS", ADOPTED BY THE DIRECTOR OF TRANSPORTATION AND THE CURRENT U.S. FEDERAL HIGHWAYS ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), PART VI – TEMPORARY TRAFFIC CONTROL".

   LANE CLOSURES SHALL CONFORM TO THE TRAFFIC CONTROL PLAN INCORPORATED INTO THESE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE HIGHWAYS DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.

5. THE MINIMUM PAVEMENT STRUCTURE SHALL CONSIST OF:

A. RESIDENTIAL DRIVEWAYS ON MINOR HIGHWAYS:

(1) 2-1/2" HOT MIX ASPHALT PAVEMENT (MIX IV), 6" AGGREGATE BASE COURSE AND 12" SUBBASE OR 2-1/2" HOT MIX ASPHALT PAVEMENT AND 6" ASPHALT TREATED BASE COURSE.

(2) 6" OF CLASS "A" CONCRETE REINFORCED WITH 6"x6"-W2.9xW2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

B. COMMERCIAL DRIVEWAYS AND SIDE ROADS ON MINOR HIGHWAYS:

(1) 2-1/2" HOT MIX ASPHALT PAVEMENT (MIX IV), 6" ASPHALT TREATED BASE COURSE AND 12" SUBBASE OR 4" HOT MIX ASPHALT PAVMENT AND 8" ASPHALT TREATED BASE COURSE.

(2) 8" OF CLASS "A" CONCRETE REINFORCED WITH 6"x6"-W2.9xW2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

C. CHANNELIZED INTERSECTIONS ON MAJOR HIGHWAYS:

4" HOT MIX ASPHALT PAVEMENT (MIX IV), 8" ASPHALT TREATED BASE COURSE AND 12" AGGREGATE SUBBASE OR 4" HOT MIX ASPHALT PAVEMENT (MIX IV) AND 12" ASPHALT TREATED BASE COURSE.

6. NO MATERIAL AN/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN THE STATE HIGHWAY RIGHT-OF-WAY, EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.

7. COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, AS FOLLOWS:

A. SUBBASE – ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET OF ROADWAY.
B. BASE COURSE – ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET OF ROADWAY.
C. ONE (1) COMPACTION TEST PER LIFT PER 300 LINEAL FEET OF TRENCH.
D. A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.

8. THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE CENTERLINE OF THE PROPOSED UTILITY TRENCH BOTH BEFORE COMMENCING TRENCH EXCAVATION WORK AND AFTER THE TRENCH HAS BEEN REPAVED. PROFILES SHALL BE SUBMITTED TO THE DISTRICT ENGINEER AND SHALL BE USED TO VERIFY THAT THE ROADWAY SURFACE HAS BEEN RESTORED TO ITS ORIGINAL CONDITION OR SMOOTHER.

9. THE DISTANCE FROM THE PAVED SURFACE TO THE TESTING EDGE OF A TEN-FOOT LONG STRAIGHT EDGE BETWEEN TWO POINTS SHALL NOT EXCEED 3/16 INCH.

10. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE AND SAFE NON-SKID BRIDGING MATERIAL, INCLUDING SHORING, OVER TRENCHES IN PAVEMENT AREAS. THE BRIDGING SHALL BE ABLE TO SUPPORT ALL TYPE OF VEHICULAR TRAFFIC.

11. UNLESS OTHERWISE NOTED, NO TRENCH SHALL BE OPENED MORE THAN 300 FEET IN ADVANCE OF INSTALLED AND TESTED PIPELINE AND/OR DUCTLINE.

12. EXISTING DRAINAGE SYSTEMS SHALL BE FUNCTIONAL AT ALL TIMES.

13. THE CONTRACTOR SHALL EXCERCISE CARE TO MINIMIZE DAMAGES TO EXISTING HIGHWAY IMPROVEMENTS. ALL DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE, TO THE SATISFACTION OF THE DISTRICT ENGINEER.

14. APPROVAL OF PERMIT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF NOTIFICATION OF APPROVAL TO THE APPLICANT. IN THE EVENT CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE YEAR PERIOD, THE APPLICANT IS REQUIRED TO RESUBMIT THE CONSTRUCTION PLANS FOR THE DIVISION'S REVIEW AND RE-APPROVAL.

15. ALL REGULATORY, GUIDE AND CONSTRUCTION SIGNS AND BARRICADES SHALL HAVE A HIGH-INTENSITY REFLECTIVE BACKGROUND.

16. THE CONTRACTOR SHALL INFORM THE STATE HIGHWAY'S PERMIT OFFICE (831-6712) AT LEAST TWO (2) DAYS PRIOR TO CLOSING ANY LANES.

17. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTIES USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.

18. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN A SAFE AND PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED. ALL WALKWAYS SHALL CONFORM TO ADA REQUIREMENTS.

19. THE CONTRACTOR SHALL REFERENCE, TO THE SATISFACTION OF THE DISTRICT ENGINEER, ALL EXISTING TRAFFIC SIGNS, POSTS AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POST AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES, AT HIS EXPENSE, UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE.

20. THE CONTRACTOR SHALL EXERCISE CARE WHEN PERFORMING WORK IN OR ADJACENT TO THE STATE HIGHWAY RIGHT-OF-WAY. DAMAGES TO THE EXISTING FACILITIES SHALL BE IMMEDIATELY REPORTED TO THE RESPECTIVE UTILITY COMPANIES AND/OR CITY OR STATE ANGENCIES. THE REPAIR WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

21. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS' HIGHWAY LIGHTING SUPERVISOR (837-8056), THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK.

22. THE CONTRACTOR SHALL NOTIFY THE CITY DEPARTMENT OF TRANSPORTATION SERVICES, TRAFFIC SIGNAL AND TECHNOLOGY DIVISION (768-8388), THREE (3) WORKING DAYS PRIOR TO ANY SIGNILIZED INTERSECTION WORK.

23. TRAFFIC SIGNALS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. TEMPORARY OPERATIONAL MICROWAVE OR OTHER APPROVED DETECTION DEVICES SHALL BE INSTALLED THREE (3) WORKING DAYS PRIOR TO ANY SIGNILIZED INTERSECTION EXCAVATION WORK. ALL WORK SHALL BE DONE IN ACCORDANCE TO THE REQUIREMENTS OF THE DEPARTMENT OF TRANSPORTATION SERVICES, CITY AND COUNTY OF HONOLULU AND PAID FOR BY THE CONTRACTOR.

24. THIS PROJECT WILL AFFECT BUS ROUTES, BUS STOPS AND PARA-TRANSIT OPERATIONS, THEREFORE, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF TRANSPORATION SERVICES, PUBLIC TRANSIT DIVISION AT 768-8396 AND OAHU TRANSIT SERVICES, INC. (BUS OPERATIONS: 848-4578 OR 848-6016 AND PARA-TRANSIT OPERATIONS: 454-5041 OR 454-5020) OF THE SCOPE OF WORK, LOCATIONS, PROPOSED CLOSURE OF ANY STREET, TRAFFIC LANE, SIDEWALK OR BUS STOP AND DURATION OF THE PROJECT, AT LEAST TWO (2) WEEKS PRIOR TO CONSTRUCTION.

25. THE PERMIT TO PERFORM WORK UPON STATE HIGHWYAS MAY BE REVOKED BECAUSE OF DEFAULT IN ANY OF THE FOLLOWING, BUT NOT LIMITED TO, CONDITIONS:

A. WORK PERFORMED BEFORE OR AFTER PERMITTED HOURS.
B. FAILURE TO MAINTAIN ROADWAY SURFACES IN A SMOOTH AND SAFE CONDITION.
C. FAILURE TO CLEAN UP CONSTRUCTION DEBRIS GENERATED FROM PROJECT WORK.
D. FAILURE TO PROVIDE PROPER TRAFFIC CONTROL.
E. FAILURE TO REPLACE DAMAGED PAVEMENT MARKINGS AND SIGNS.

26. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS PERMIT OFFICE (831-6712) AT LEAST TWO (2) WORKING DAYS PRIOR TO PERFORMING ANY TRENCH RESTORATION WORK. THIS WORK SHALL INCLUDE ANY BACKFILLING AND COMPACTING OF TRENCH MATERIAL; ANY PLACING AND COMPACTING OF BASE COURSE MATERIAL; AND ANY PAVING OPERATIONS. ANY TRENCH RESTORATION WORK PERFORMED BY THE CONTRACTOR THAT IS NOT WITNESSED BY A STATE REPRESENTATIVE WILL BE REQUIRED TO BE REMOVED AND RESTORED WITH A STATE REPRESENTATIVE PRESENT. ALL RESTORATION WORK WILL BE AT THE CONTRACTOR'S EXPENSE.

27. TEMPORARY COLD MIX TRENCH PATCHES WILL BE PERMITTED IN ANY GIVEN AREA FOR A MAXIMUM DURATION OF TWO WEEKS, AND SHALL BE A MINIMUM OF 2-INCHES THICK. ALL TEMPORARY PATCHES SHALL BE PLACED OVER PROPERLY PLACED AND COMPACTED BACKFILL AND BASE COURSE LAYERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTIANING ALL TEMPORARY PATCHES AND TO MAKE REPAIRS TO UNSATISFACTORY PATCHES WITHIN 24 HOURS.

28. THE CONTRACTOR WILL MAKE EVERY EFFORT TO MINIMIZE THE USE AND THE DURATION OF USE OF STEEL PLATES. ALL STEEL PLATES SHALL HAVE A NON-SKID SURFACE. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.

29. PLASTIC MARKING TAPE. PROVIDE PLASTIC MARKING TAPE THAT IS ACID AND ALKALI RESISTANT POLYETHELENE FILM 6-INCHES WIDE WITH A MINIMUM THICKNESS OF 0.004 INCH. PROVIDE TAPE WITH MINIMUM STRENGTH OF 1,750 PSI LENGTHWISE AND 1,500 PSI CROSSWISE. MANUFACTURE TAPE WITH INTEGRAL WIRES, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN THE TAPE IS BURIED UP TO 3 FEET DEEP. MANUFACTURE TAPE SPECIFICALLY FOR MARKING AND LOCATIONG UNDERGROUND UTILITIES. PROVIDE THE METALLIC CORE OF THE TAPE ENCASED IN APROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. CONFORM TO THE FOLLOWING TAPE COLOR AND BEAR A CONTINUOUS PRINTED INSCRIPTION DESCRIBING THE SPECIFIC UTILITY.

RED:	ELECTRIC
YELLOW:	GAS, OIL, DANGEROUS MATERIALS
ORANGE:	TELEPHONE, TELEGRAPH, TELEVISION, POLICE AND FIRE COMMUNICATIONS
BLUE:	WATER SYSTEMS
GREEN:	SEWER SYSTEMS

30. THE CONTRACTOR SHALL PROVIDE THE DISTRICT ENGINEER WITH AS-BUILT PLANS UPON COMPLETION OF THE WORK DONE IN THE STATE RIGHT-OF-WAY. THIS SHALL BE DONE PRIOR TO THE DEPARTMENT'S RELEASE OF THE PERFORMANCE BOND.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS FOR PERMIT PROJECTS WITHIN STATE HIGHWAY RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH THE "NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS FOR OAHU DISTRICT PERMIT PROJECTS". THIS IS AVAILABLE AT THE OAHU DISTRUCT OFFICE AT 727 KAKOI STREET (PH. 831-6793). DUE TO POTENTIAL COST IMPACTS, THE CONTRACTOR NEEDS TO BE AWARE OF THESE REQUIREMENTS.

2. THE CONTRACTOR SHALL COMPLETE AND SUBMIT A CONTRACTOR'S CERTIFICATION OF NPDES COMPLIANCE, INCLUDING COMPLETION OF THE BEST MANAGEMENT PRACTICE (BMP) CHECKLIST AND SUBMITTAL OF A WRITTEN BMP PLAN AND DRAWINGS, PRIOR TO ISSUANCE OF THE PERMIT TO PERFORM WORK UPON STATE HIGHWAYS. DUE TO POTENTIAL TIME IMPACTS ON REVIEWING BMPS, THE CONTRACTOR NEEDS TO ALLOW ENOUGH TIME FOR THE APPROVAL PROCESS.

3. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE HIGHWAYS DIVISION'S "CONSTRUCTION BEST MANAGEMENT PRACTICES FIELD MANUAL" IN DEVELOPING, INSTALLING AND MAINTAINING THE BEST MANAGEMENT PRACTICES (BMPS) FOR THE PROJECT.

4. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES FOR SOIL EROSION STANDARDS AND GUIDELINES" FOR THE PROJECT.

WATER SYSTEM

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.

2. ALL MATERIALS USED AND METHOD OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF DWS STANDARDS. CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS OF THE DWS STANDARD DETAILS BEFORE COMMENCING CONSTRUCTION.

3. ALL WATER SYSTEM WORK SHALL BE PERFORMED BY CONTRACTORS POSSESSING VALID STATE OF HAWAII CONTRACTOR'S LICENSES, REGARDLESS OF THE VALUE OF THE WORK.

4. THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES ARE NOT KNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING FOR THE NEW WATERLINE. THE COST OF LOWERING, RELOCATING OR ADJUSTING EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE, UNLESS NOTED OTHERWISE, AND WILL NOT BE PAID FOR SEPARATELY.

5. CONCRETE FOR REACTION BLOCKS AND ANCHOR BLOCKS SHALL BE DWS CLASS 2500.

6. THE MAXIMUM DISTANCE BETWEEN VALVE NUT AND TOP OF VALVE MANHOLE COVER SHALL BE THREE (3) FEET.

7. THE CONTRACTOR SHALL SUBMIT A MATERIALS LIST TO DWS FOR APPROVAL PRIOR TO CONSTRUCTION.

8. CONNECTION TO DWS SYSTEM:

   A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY FITTINGS AND OTHER MATERIALS AND EQUIPMENT REQUIRED FOR THE HOOK-UP. HE SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE, AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOK-UP. HE SHALL, HOWEVER, CHECK WITH DWS BEFORE EXCAVATING FOR VERIFICATION PURPOSES.

   B. WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED FOR BURIED APPLICATIONS, AND FLANGED JOINT FITTINGS SHALL BE USED FOR EXPOSED APPLICATIONS.

   C. AUTHORIZED DWS PERSONNEL MAY BE REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY DWS FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING AND DISINFECTION.

   D. IF THE DWS PROVIDES ONLY INSPECTION AND SUPERVISING OPERATORS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPEFITTERS AND LABORS TO MAKE THE CONNECTION.

   E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR TRENCH EXCAVATION, BACKFILLING, CLEANING AND CHLORINATION, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOK-UP, AS DIRECTED BY AND TO THE SATISFACTION OF DWS.

9. MINIMUM COVER OVER WATER MAIN, 6" DIAMETER OR LARGER, SHALL BE 3'-0". MINIMUM COVER FOR 4" DIAMETER SHALL BE 2'-6". MINIMUM COVER FOR DIAMETERS LESS THAN 4" SHALL BE 1'-6".

10. BOLTS FOR EXPOSED FLANGED DUCTILE IRON PIPE JOINTS SHALL BE EITHER SILICON BRONZE BOLTS AND NUTS OR 316 STAINLESS STEEL BOLTING WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED. T-BOLTS FOR DUCTILE IRON MECHANICAL JOINT (MJ) PIPE AND FITTING CONNECTIONS IN UNDERGROUND SITUATIONS SHALL BE ONE OF THE FOLLOWING SYSTEMS:

    A. 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED.

    B. COR-TEN T-BOLTS AND NUTS WITH HIGH GRADE ZINC SACRIFICIAL ANODES, EQUIVALENT TO "DURATRON" SACRIFICIAL "SAC-NUT" MODULES, INSTALLED ON THE NUTS FOR ALL STANDARD COR-TEN T-BOLTS.

    C. COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".

11. ALL BURIED METALS SHALL BE WRAPPED WITH POLY-WRAP. FOR ALL BURIED INSTALLATIONS OF DUCTILE IRON PIPE AND FITTINGS, POLY-WRAP IS REQUIRED EXCEPT WITHIN CONCRETE JACKETS.

12. LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.

13. THE CONTRACTOR SHALL PAINT AND NUMBER THE FIRE HYDRANT. NUMBERING TO BE FURNISHED BY DWS.

14. WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TESTING IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C600, UNDER THE "HYDROSTATIC TESTING" SECTION, TO A PRESSURE OF AT LEAST 1.5 TIMES THE WORKING PRESSURE. UNLESS OTHERWISE STATED IN THE CONSTRUCTION DOCUMENTS OR LIMITED BY THE PRESSURE RATING OF EQUIPMENT, THE PRESSURE TEST AND LEAKAGE TEST SHALL BE PERFORMED AT 225 POUNDS PER SQUARE INCH PRESSURE.

15. THE DEVELOPER SHALL SUBMIT A COST LIST ALONG WITH AN AFFIDAVIT FOR THE WATER SYSTEM PRIOR TO ACCEPTANCE.

16. THE CONTRACTOR SHALL SUBMIT TWO SETS OF RECORD DRAWINGS VIA A CONSULTANT PRIOR TO ACCEPTANCE OF THE WATER SYSTEM. AN ELECTRONIC IMAGE FILE IN TIFF FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.

ADDITIONAL WATER SYSTEM NOTES

WATER SERVICE LATERAL CONNECTIONS:

1. THE CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT, AND LABOR FOR RE-CONNECTION OF CONSUMER'S PIPE TO NEW SERVICE LATERAL WITH COPPER PIPING AT THE CONTRACTOR'S EXPENSE. THE SIZE OF COPPER PIPE AND FITTINGS SHALL BE DETERMINED BY DWS OR AS SPECIFIED ON PLANS. THE USE OF PLASTIC MATERIALS IS PROHIBITED.

   A. ALL WATER METER INSTALLATIONS/RELOCATIONS SHALL BE COORDINATED WITH DWS PERSONNEL. ONLY DWS PERSONNEL IS AUTHORIZED TO REMOVE AND RELOCATE WATER METER.

   B. IF CONSUMER'S PIPE IS COPPER OR PVC, USE BRONZE PACK JOINT COUPLING. IF CONSUMER'S PIPE IS ANY OTHER MATERIAL, USE APPROPRIATE DI-ELECTRIC COUPLING.

   C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WATER SERVICE TO CONSUMERS AT ALL TIMES. IF WATER SERVICE DISRUPTION IS NECESSARY, THE CONTRACTOR SHALL COORDINATE ALL DISRUPTIONS OF SERVICE WITH CONSUMERS.

2. THE CONTRACTOR SHALL FURNISH AND INSTALL DUCTILE IRON NIPPLES WHETHER OR NOT SPECIFIED ON THE CONSTRUCTION PLANS FOR COMPLETE INSTALLATION OF THE WATERLINE AT THE CONTRACTOR'S EXPENSE.

3. THE CONTRACTOR SHALL FURNISH TEMPORARY CLEANOUTS WHEN NECESSARY TO TEST, FLUSH, AND CHLORINATE THE WATERLINE AT THE CONTRACTOR'S EXPENSE.

4. THE CONTRACTOR SHALL CONCRETE PLUG ALL OPEN ENDS OF ABANDONED WATERLINES AT THE CONTRACTOR'S EXPENSE, WHETHER OR NOT SHOWN ON THE CONSTRUCTION PLANS.

5. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL PORTIONS OF ABANDONED WATERLINES THAT ARE EXPOSED OR WITHIN 12-INCHES OF THE GROUND SURFACE AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL ADJUST TO FINISHED PAVEMENT GRADES, ALL EXISTING VALVE BOXES AND MANHOLES, INCLUDING FRAME AND COVERS FOR ALL UTILITIES (I.E., WATER, SEWER, DRAIN, ETC.) AFFECTED BY PAVEMENT RESTORATION AT THE CONTRACTOR'S EXPENSE, WHETHER SHOWN OR NOT SHOWN ON THE CONSTRUCTION PLANS.

7. THE CONTRACTOR SHALL RESTORE ALL ROAD IMPROVEMENTS, DISTURBED OR DAMAGED DURING CONSTRUCTION IN ACCORDANCE WITH THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, 1994," AS AMENDED, TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT. ROAD IMPROVEMENTS INCLUDE, BUT ARE NOT LIMITED TO, PAVEMENT, PAVEMENT MARKERS, STRIPING, SPEED HUMPS.

8. THE CONTRACTOR SHALL MAINTAIN FOUR FEET OF CLEARANCE WHEN TRENCHING OR EXCAVATING NEAR ANY UTILITY POLES. CONSTRUCTION EQUIPMENT SHALL SHALL MAINTAIN A TEN FOOT RADIAL CLEARANCE AROUND ANY OVERHEAD CONDUCTOR.

9. THE CONTRACTOR SHALL ADEQUATELY BRACE UTILITY POLES DURING TRENCHING AND BACKFILLING OPERATIONS. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF WORK NEAR UTILITY POLES.

CHLORINATION OF WATER SYSTEM PIPELINES

1. WATER MAINS AND APPURTENANCES SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. ALL PROCEDURES AND MATERIALS (LIQUID CHLORINE OR CALCIUM HYPOCHLORITE) USED FOR THE CHLORINATION OF THE PROJECT SHALL CONFORM TO AWWA REQUIREMENTS.

2. PRIOR TO CHLORINATION, THE PROJECT PIPELINES SHALL BE THOROUGHLY CLEANED. CLEANING OF LINES 8" AND LARGER SHALL BE BY PIGGING USING FOAM PIGS. SMALLER LINES CAN BE FLUSHED IN ACCORDANCE WITH AWWA REQUIREMENTS IF ADEQUATE WATER SUPPLY IS PROVIDED, OTHERWISE BY PIGGING. THE CONTRACTOR SHALL SUBMIT HIS PLAN FOR PIPELINE CLEANING, INCLUDING FITTING REQUIREMENTS FOR PIGGING, FOR APPROVAL PRIOR TO PROCEEDING.

3. THE INTERIOR SURFACES OF THE PROJECT SHALL BE EXPOSED TO THE CHLORINATING SOLUTION FOR A MINIMUM OF 24 HOURS AND THE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.

4. SHOULD CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE PROJECT TO BE CHLORINATED.

5. AT THE END OF THE 24-HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A CHLORINE RESIDUAL OF AT LEAST 10 PPM. MEASUREMENTS FOR CHLORINE RESIDUAL TESTS SHALL BE BY A TRAINED, QUALIFIED TESTER APPROVED BY THE DIRECTOR.

6. SHOULD THE RESULTS INDICATE ADEQUATE CHLORINATION, THE PROJECT SHALL BE THOROUGHLY FLUSHED AND FILLED WITH POTABLE WATER FROM THE EXISTING POTABLE WATER SYSTEM AND AGAIN TESTED FOR CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE TEST RESULTS INDICATE THAT THE WATER IN THE PROJECT HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.

7. FOLLOWING THE ACCEPTABLE FLUSHING OF THE HIGH CONCENTRATION CHLORINE SOLUTION, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES SHALL BE TAKEN AT LEAST 24 HOURS APART FROM REPRESENTATIVE POINTS IN THE PROJECT AND SUBJECTED TO MICROBIOLOGICAL TESTS PERFORMED BY A CERTIFIED LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH. AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED AND TESTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE SET FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. POSITIVE RESULTS WILL NOT BE ACCEPTABLE AND THE ENTIRE CHLORINATION PROCESS WILL BE REPEATED.

8. ANALYSIS FOR RESIDUAL CHLORINE SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.

9. MICROBIOLOGICAL TESTS SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.

10. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.

WASTEWATER NOTES

1. ALL WASTEWATER LINES AND APPURTENANCES SHALL CONFORM TO THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF MAUI.

2. ALL SEWERLINE AND APPURTENANCES SHALL FOLLOW THE DESIGN STANDARDS OF THE WASTEWATER RECLAMATION DIVISION, CITY AND COUNTY OF HONOLULU, VOLUMES 1 & 2, DATED JULY 1993 AND JULY 1984 RESPECTIVELY, UNLESS OTHERWISE NOTED.

3. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL SCHEDULE AND DOCUMENT A PRE-CONSTRUCTION MEETING WITH ALL AGENCIES HAVING UTILITIES AFFECTED BY THE WORK.

4. THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, WASTEWATER RECLAMATION DIVISION, HAS THE RIGHT TO STOP CONSTRUCTION, SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED PLANS AND SPECIFICATIONS, OR DETRIMENTAL TO THE PUBLIC INTEREST.

5. ALL EXISTING WASTEWATER LINES, WHETHER OR NOT SHOWN ON THE PLANS, IF DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED BY THE CONTRACTOR AND THE CONTRACTOR SHALL PAY ALL EXPENSES.

6. THE CONTRACTOR SHALL NOTIFY THE WASTEWATER RECLAMATION DIVISION ONE (1) WEEK PRIOR TO CONNECTION TO ANY EXISTING WASTEWATER LINES.

7. SHOULD THE CONTRACTOR EXCAVATE BEYOND THE TRENCH PAY-WIDTH, AS SPECIFIED IN THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, AND SUCH ACTION RESULTS IN A GREATER LOAD TO THE PIPE, THE CONTRACTOR SHALL PROVIDE, AT THE CONTRACTOR'S EXPENSE, A HIGHER CLASS OF BEDDING MATERIAL THAT WILL WITHSTAND THE ADDED LOAD.

8. WASTEWATER LATERALS SHALL BE SIX (6) INCHES IN DIAMETER AT A MINIMUM OF 2% SLOPE, UNLESS APPROVED OTHERWISE.

9. AN ADVANCE RISER CONNECTION SHALL BE INSTALLED AT EACH NEW WASTEWATER LATERAL.

10. WHERE THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING UTILITY LINE IS EIGHTEEN (18) INCHES OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE JACKETED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984.

11. WHEN THE WASTEWATER MAINS ARE OF A DIFFERENT MATERIAL THAN THE LATERALS, THE CONTRACTOR SHALL INSTALL APPROVED ADAPTERS.

12. ALL BACKFILL FOR WASTEWATER TRENCHES SHALL BE COMPACTED IN ONE (1) FOOT LIFTS TO A MINIMUM OF 95% OF ITS MAXIMUM DENSITY.

13. WHERE CONSTRUCTION IS TO BE DONE IN PHASES OR INCREMENTS, EACH PHASE OR INCREMENT SHALL BE APPROVED BY WASTEWATER RECLAMATION DIVISION BEFORE THE NEXT PHASE OR INCREMENT IS STARTED.

14. ALL WASTEWATER MAINS SHALL PASS A MANDREL TEST AS A CONDITION OF ACCEPTANCE 30 DAYS AFTER COMPLETION AND BACKFILL. THE MANDREL DIAMETER SHALL BE 95% OR MORE OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. A CERTIFICATION LETTER FROM THE CONTRACTOR, SIGNED BY THE DSA INSPECTOR, WILL BE FORWARDED TO THE WASTEWATER RECLAMATION DIVISION.

15. PRIOR TO INSPECTION BY CLOSED CIRCUIT TELEVISION (CCTV), ALL WASTEWATER LINES INSTALLED, INCLUDING LATERALS, SHALL BE FLUSHED WITH WATER AND ANY ACCUMULATED CONSTRUCTION DEBRIS AND OTHER FOREIGN MATERIALS SHALL BE REMOVED.

16. "AS-BUILT" DRAWINGS SHALL BE SUBMITTED AS A CONDITION FOR THE FINAL ACCEPTANCE OF THE PROJECT. IF MAIN TRANSMISSION LINES WILL BE DEDICATED TO THE COUNTY, THE CONTRACTOR SHALL ALSO SUBMIT GIS SHAPE FILE LAYER FILES (SHAPEFILE DATA IN NAD83 STATE PLANE ZONE 2 METERS) TO THE WASTEWATER RECLAMATION DIVISION.

17. ALL MAIN WASTEWATER LINES WHICH WILL BE DEDICATED TO THE COUNTY OF MAUI SHALL BE INSPECTED BY CCTV IN STRICT ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE JULY 15, 2001. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY. CCTV RESULTS SHOULD BE SUBMITTED ON DVD PER MEMO DATED OCTOBER 1,2006.

18. ANY CONNECTION MADE UNDER THE WATER TABLE WILL REQUIRE CCTV AT HIGH TIDE TO DETERMINE WATER TIGHTNESS, IN ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE JULY 15, 2001. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY.

19. CONTRACTOR MUST HAVE A SITE SPECIFIC SPILL PREVENTION PLAN (SSSPP) APPROVED BY WWRD PRIOR TO SEWER LINE CONSTRUCTION AND/OR SEWER LATERAL CONNECTION TO EXISTING FACILITIES, OR ANY WORK WITHIN FIVE (5) FEET OF WASTEWATER SYSTEM IMPROVEMENTS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE
JOB NO.

NOTES 2

DESIGNED BY: PLM
CHECKED BY: RMKC
DRAWN BY: CKM

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

GROUP 70 INTERNATIONAL, INC.
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4398
808 - 523 - 5866
WWW.G70.DESIGN

MARCH 2018

DWG. NO.
T004
SHEET 4 OF 26

FILE	POCKET	FOLDER	NO.

FILE: 214041-11 T004 NOTES 2.dwg
DATE REV.: 02/03/2018

TMK(2) 5-2-7: 90
DEPARTMENT OF HAWAIIAN HOMELANDS
LEASE: JAMES LINDSEY
EDGE BUSH
WATER TANK
3.5 MG RESERVOIR
FINISH FLOOR ELEVATION=1017'
(AS-BUILT DRAWINGS)
CHAIN LINK FENCE, H=6'
TOP OF TANK
ELEV.=1039.32
TOP OF TANK
ELEV.=1039.27
PROPOSED STRUCTURAL REPAIR WORK
SEE DWGS SE001 TO SE303
UTL. BOX
TOP=1016.35
2-PANEL BOX
UTL. MH
TOP=1017.70
TV=1017.11
BOT.=1016.0
GATE
WATER TANK
3.5 MG RESERVOIR
FINISH FLOOR ELEVATION=1017'
(AS-BUILT DRAWINGS)
TMK(2) 5-2-7: 29
DEPARTMENT OF HAWAIIAN HOMELANDS
LEASE: MELODY-LYNN L. ALCON
WV
TOP=1016.60
WMH
TOP=1016.56
4" RISER
WV
TOP=1016.46
EXPOSED 4" PIPE
TP=1016.49
SIGN
AREA OF WORK
TOP BANK
UTL. COVER
TOP=1016.32
(BOLTED)
WV BOX
TOP=1015.72
WV
TOP=1016.53
EDGE BUSH
WV BOX
TOP=1015.57
UTL. COVER
TOP=1016.02
(BOLTED)
WV
TOP=1016.21
TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASE: BRETT WAIPA
UTL. BOX
TOP=1013.27
TP=1010.86(4")
UTL. BOX
TOP=1018.41
UTL. BOX
TOP=1017.91
TONED LINE
D=2.5'
TONED LINE
D=2.8'
TONED LINE
D=2.1'
WOOD POST
H=6'

GENERAL PLAN

SCALE IN FEET

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE
JOB NO.

GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM

GROUP 70 INTERNATIONAL, INC.
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4398
808 523 5866
WWW.G70DESIGN

MARCH 2018

DWG. NO.
T005
SHEET 5 OF 26

FILE POCKET FOLDER NO.

FILE: 216065-01 T005 GENERAL PLAN.dwg
DATE REV.: 02/03/2018

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE BUILDING CODE OF THE HONOLULU CITY AND COUNTY (LATEST).

2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS.

3. THE GENERAL NOTES AND TYPICAL DETAILS SHALL APPLY UNLESS OTHERWISE SHOWN.

4. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN

5. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW BY THE ENGINEER.

6. ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF THE JOB AND NOTIFY ALL DISCREPANCIES TO THE ARCHITECT.

7. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.

8. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING AND THE PROTECTION OF ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES FROM DAMAGE. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING, BRACING AND GUYS IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY

9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA

10. THE CONTRACTOR SHALL NOTIFY TANIMURA & ASSOCIATES (PH. 536-7692) TWO (2) WORKING DAYS PRIOR TO BEGINNING ANY WORK WHICH WILL CONCEAL STRUCTURAL ELEMENT SUCH AS POURING CONCRETE (CONCEALING REINFORCING) OR SHEATHING WALLS (CONCEALING HOLD DOWN ANCHORS).

STRUCTURAL STEEL

1. ALL STRUCTURAL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. STEEL PIPES AND STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B. CHANNELS, ANGLES, PLATES, BARS AND MISCELLANEOUS STEEL SHAPES SHALL CONFORM TO ASTM A-36. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE A.I.S.C. SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

2. ALL BOLTS SHALL CONFORM TO ASTM A307.

3. WELDING: ALL WELDING IS TO COMPLY WITH A.W.S. SPECIFICATIONS AND IS TO BE DONE BY CERTIFIED WELDERS. ALL WELDING IS TO BE DONE BY ELECTRIC ARC PROCESS AND SHALL BE PERFORMED WITH APPROVED ELECTRODES AS REQUIRED BY I.B.C. WELDS ARE DESIGNED AT FULL STRESS AND MUST BE DONE IN THE SHOP OF A LICENSED FABRICATOR.

4. ALL WELDS NOT SHOWN SHALL BE FULL PENETRATION WELDS CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE CONNECTING MEMBERS.

5. THE CONTRACTOR SHALL DETAIL ALL MEMBERS AND CONNECTIONS NOT SHOWN AND SHALL SUBMIT THEM TO THE ENGINEER FOR REVIEW AND APPROVAL. COST OF THESE MEMBERS AND CONNECTIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.

6. GALVANIZE ALL STRUCTURAL STEEL SHAPES, PLATES, BOLTS AND ACCESSORIES EXPOSED TO WEATHER. OTHER SHAPES, PLATES AND ACCESSORIES SHALL BE SHOP PRIMED WITH A RUST INHIBITING PRIMER EXCEPT MEMBERS TO RECEIVE SPRAYED-ON FIREPROOFING.

REINFORCED CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-05.

2. ALL CONCRETE SHALL BE NORMAL WEIGHT (150 PCF) WITH AGGREGATES CONFORMING TO ASTM C-33. UNLESS OTHERWISE NOTED, THE COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS AND MAXIMUM AGGREGATE SIZES SHALL BE AS FOLLOWS:

	STRENGTH	AGGREGATE SIZE
FOOTING	3,000 PSI	1"
WALL AND CURBS	3,000 PSI	3/4"

3. MAXIMUM WATER-CEMENT RATIO SHALL NOT EXCEED 0.55.

4. ALL REINFORCING STEEL EXCEPT TIES AND STIRRUPS SHALL CONFORM TO ASTM A615 GRADE 60. TIES, STIRRUPS AND REBARS TO BE WELDED SHALL BE ASTM A615 GRADE 40.

5. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 48 BAR DIAMETERS BUT NOT LESS THAN 24" MINIMUM.

6. ALL REINFORCING BARS MARKED CONTINUOUS (CONT.) ON THE PLANS SHALL BE LAPPED 48 BAR DIAMETERS MINIMUM.

7. STAGGER ALL SPLICES WHERE POSSIBLE.

8. ALL WELDING OF REINFORCING SHALL CONFORM TO "STRUCTURAL WELDING CODE - REINFORCING STEEL" (AWS D1.4).

9. REBARS SHALL BE SUPPORTED, BENT AND PLACED AS PER "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" ACI 315 (LATEST).

10. MINIMUM COVER IN INCHES FOR REBARS FOR CAST-IN-PLACE CONCRETE:

CONCRETE CAST AGAINST EARTH 3"

FORMED CONCRETE EXPOSED TO EARTH OR WEATHER:
- #5 AND SMALLER 1-1/2"
- #6 AND LARGER 2"

11. UNLESS OTHERWISE SHOWN LAP OUTERMOST CROSS WIRES OF EACH SHEET OF WELDED WIRE FABRIC ONE SPACING OF CROSS WIRES PLUS 2" MINIMUM.

12. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE OR OTHER COATINGS ADVERSELY AFFECTING BOND CAPACITY.

13. REINFORCEMENT, ANCHOR BOLTS, SIMPSON CONNECTORS, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

CONCRETE REPAIR NOTES

1. REMOVE ALL DETERIORATED CONCRETE UNTIL ONLY SOUND CONCRETE REMAINS.

2. WHERE REINFORCING IS EXPOSED, CHIP CONCRETE AROUND THE BAR SUCH THAT THERE IS A MINIMUM OF ONE INCH BETWEEN THE BAR AND THE SURROUNDING CONCRETE.

3. CLEAN EXPOSED REINFORCING TO BARE METAL.

4. PERIMETER OF ALL SPALLED AREAS SHALL BE PROVIDED WITH AN EDGE CHIPPED OR SAW CUT ONE INCH MINIMUM DEEP INTO THE EXISTING CONCRETE.

5. THE CONTACT SURFACE SHALL BE ROUGHENED TO APPROXIMATELY 1/4 INCH OF DEPTH. AN APPROPRIATE PROCESS SHALL BE SELECTED SUCH THAT NO COARSE AGGREGATE IS ALLOWED TO BE POLISHED OR ROUNDED. THE CONTACT SURFACE SHALL NOT BE LIMITED TO THE DAMAGED CHIPPED OUT AREA BUT SHALL INCLUDE ALL EXISTING CONCRETE SURFACES TO RECEIVE NEW CONCRETE.

6. IMMEDIATELY PRIOR TO PLACING CONCRETE, AN APPROVED BONDING AGENT SHALL BE APPLIED TO THE PREPARED CONCRETE CONTACT SURFACE.

9. NEW CONCRETE SHALL BE NORMAL WEIGHT ACRYLIC MODIFIED MIX HAVING A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AT 28 DAYS AND A MAXIMUM AGGREGATE SIZE OF 3/4 INCH.

DESIGN CRITERIA

1. CODES: 2006 INTERNATIONAL BUILDING CODE

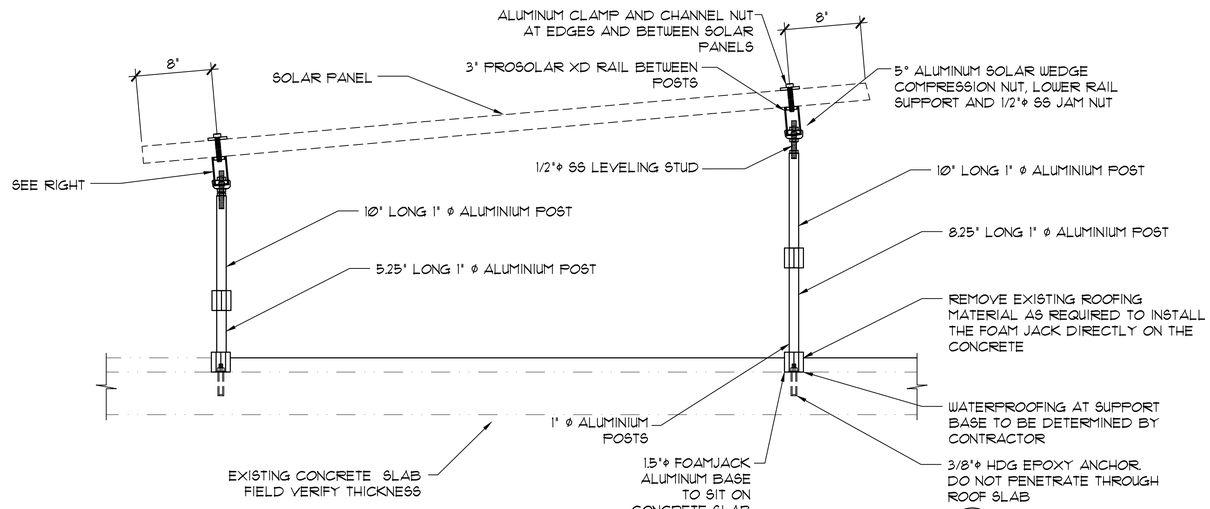
2. LATERAL FORCES

WIND
- BASIC WIND SPEED (3 SECOND GUST) 105 MPH
- WIND IMPORTANCE FACTOR I 1.15
- WIND EXPOSURE B
- Kzt TOPOGRAPHIC FACTOR 1.3
- Kd 0.80

3. LIVE LOADS
- HANDRAIL 200 LB CONCENTRATED OR 50LB PER FOOT HORIZONTAL

SPECIAL INSPECTION

1. SPECIAL INSPECTION REQUIRED FOR EPOXY ANCHOR INSTALLATION

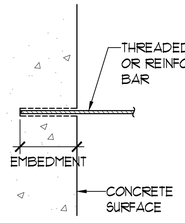


NOTES:
1. CONTRACTOR SHALL VERIFY THAT THE 3/8"ø THREADED ROD WILL FIT IN THE HOLE OF THE 1½" DIAMETER BASE.
2. CONTRACTOR SHALL VERIFY THAT THE EXISTING CONCRETE ROOF IS STRUCTURALLY SOUND TO RECEIVE THE NEW ANCHORS AND DEVELOP THE ULTIMATE PULLOUT LOADS
3. ALL HARDWARE COMPONENTS (EXCEPT ANCHORS) MANUFACTURED BY PRO SOLAR

SECTION AT PANEL SUPPORT

SC: 1 1/2"=1'-0"

A
SE001



THREADED ROD (REBAR	DRILL BIT DIAMETER	MINIMUM EMBEDMENT
3/8"ø (#3)	1/2"	4 1/2"
1/2"ø (#4)	5/8"	6"
5/8"ø (#5)	3/4"	6"
3/4"ø (#6)	7/8"	7"
7/8"ø (#7)	1"	8"

NOTES:
- A. PRE APPROVAL FOR SIMPSON STRONG TIE ET EPOXY TIE ADHESIVE. ALL SUBSTITUTION REQUEST SHALL BE SUBMITTED WITH CURRENT ICBO REPORT TO ENGINEER FOR REVIEW AND APPROVAL.
- B. THREADED ROD SHALL BE ASTM A307. REINFORCING BAR SHALL BE ASTM A615 GRADE 60.
- C. PRE DRILL HOLE WITH DRILL BIT COMPLYING WITH ANSI B212.15-1994.
- D. CLEAN HOLE WITH OIL FREE COMPRESSED AIR AND NYLON BRUSH.
- E. FILL HOLE HALF FULL WITH ADHESIVE THEN INSERT ANCHOR TO BOTTOM OF HOLE AND TWIST CLOCKWISE TO ENSURE ADHESIVE COVERS ANCHOR SURFACE. ADHESIVE MUST BE LEVEL WITH CONCRETE SURFACE AFTER INSERTION OF ANCHOR.

EPOXY ANCHOR DETAIL

NO SCALE

B
SE001

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

GENERAL NOTES & TYP. DETAILS

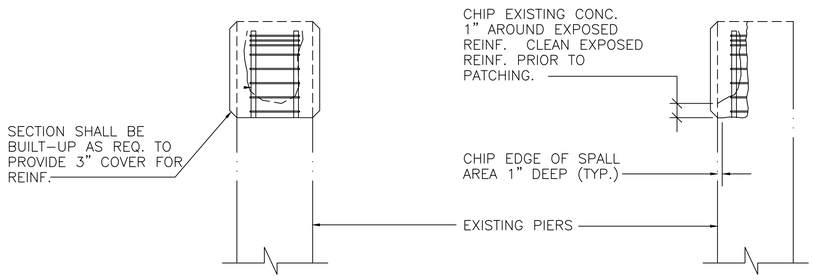
SE001

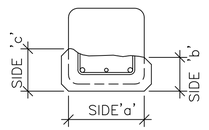
DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7692 email alec@tanimureng.com
Honolulu, Hawaii 96813 Fax: (808) 537-4622

FEBRUARY 2018

FILE: Site 4 EMERGENCY Repairs Structural.dwg
DATE REV.: 08/02/2018



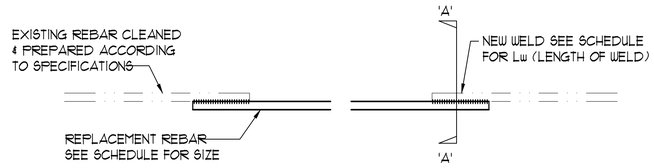


SECTION

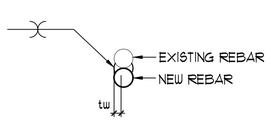
TYP. REPAIRED COND.

REINF. WELD LENGTH TABLE	
BAR SIZE	lw MIN. WELD LENGTH (EACH SIDE)
#8	*6"
#7	*5"
#6	*4"
#5	3"
#4	2"
#3	2"

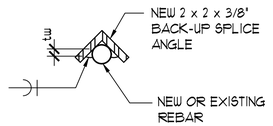
*TO BE WELDED TO L2 x 2 x 3/8"



LAP SPLICE FOR #5 BARS & SMALLER

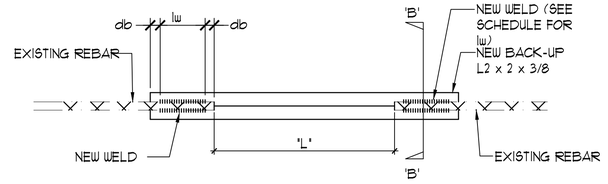


SECTION 'A-A'

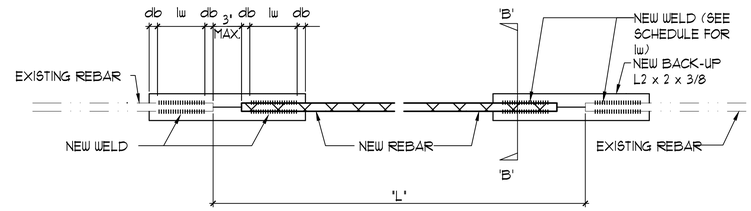


SECTION 'B-B'

tw = db/3
db = BAR DIAMETER
lw = LENGTH OF WELD (SEE SCHED.)



SPLICE WHEN 'L' IS 24" OR LESS



SPLICE WHEN 'L' IS GREATER THAN 24"

ANGLE SPLICE FOR #6 BARS & GREATER

SPALL REPAIR - COLUMN

NO SCALE

A
SE101

REBAR REPLACEMENT DETAIL

SCALE: 3/4" = 1'-0"

B
SE101

0' 1' 2' 3' 4'
3/4" = 1'-0"

FILE: Site 4 EMERGENCY Repairs Structural.dwg
DATE REV.: 08/02/2018

SE101

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

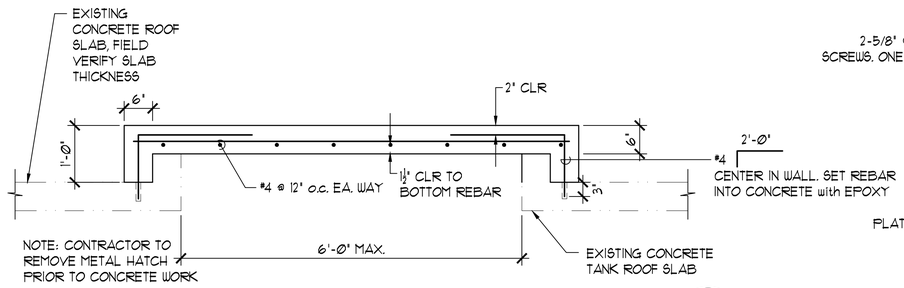
JOB NO.

TYP. DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7928 email alec@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9022

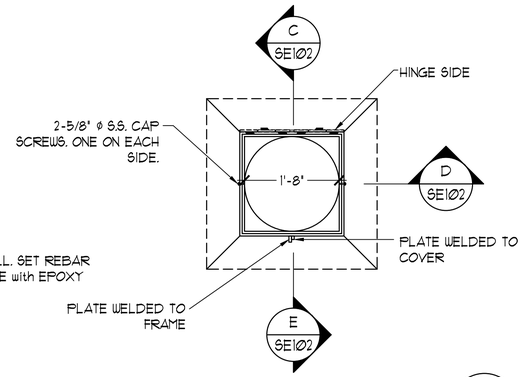
FEBRUARY 2018



PERMANENT CLOSURE OVER LARGE HATCH

A SE102

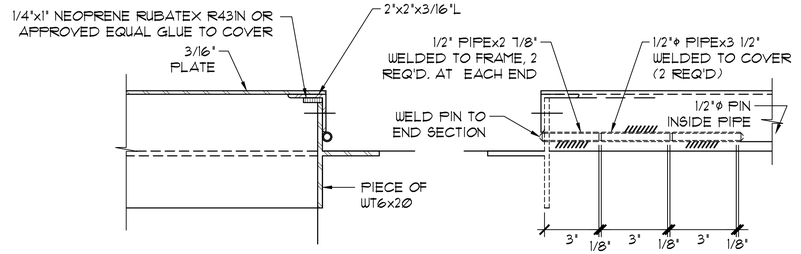
SCALE: 3/4" = 1'-0"



PLAN - NEW SMALL HATCH COVER

B SE102

SCALE: 3/4" = 1'-0"



SECTION

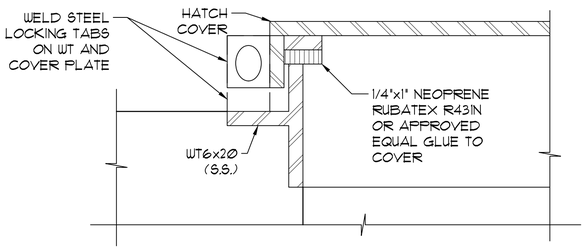
ELEVATION

* ALL STEEL TO BE STAINLESS.

NEW HATCH HINGE DETAIL

C SE102

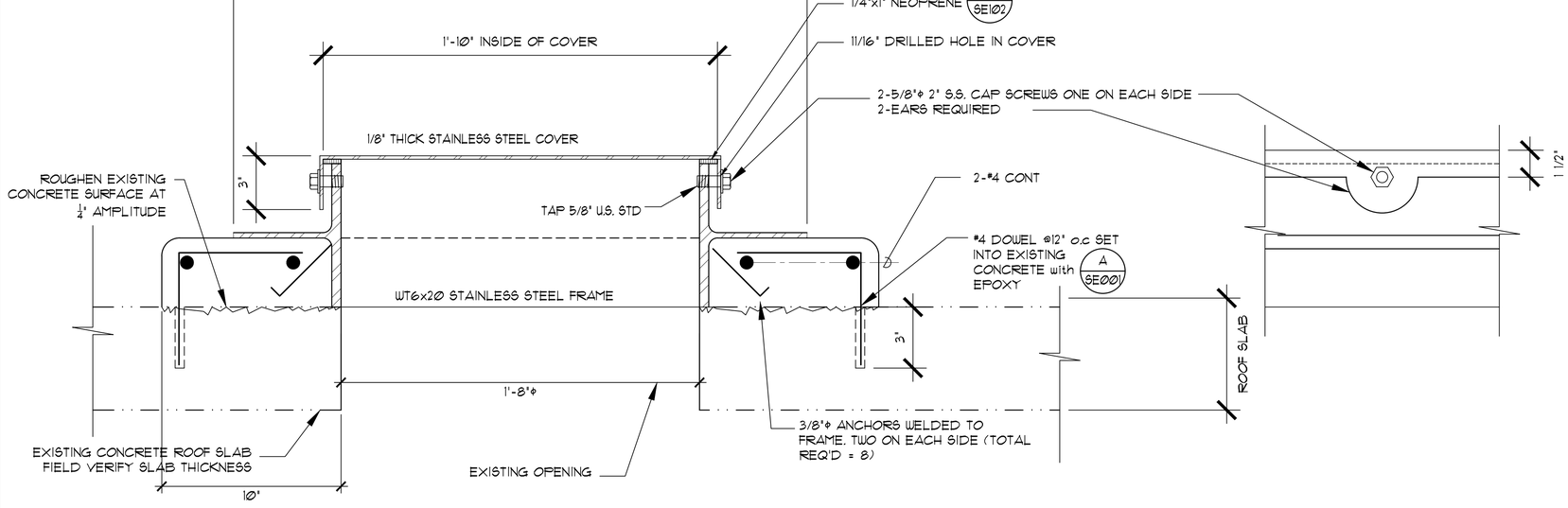
SC: 3" = 1'-0"



GASKET DETAIL AT NEW HATCH

E SE102

SC: 3" = 1'-0"



DETAIL OF NEW SMALL HATCH SQUARE COVER AND CURB

D SE102

SC: 3"=1'-0"

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 3" 6" 1'
3" = 1'-0"

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SE102

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

HATCH DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
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Honolulu, Hawaii 96813 Fax: (808) 537-4622

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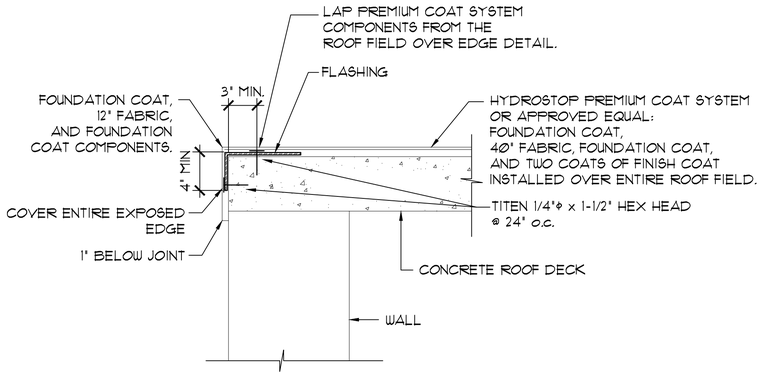
DATE REV.: 08/02/2018



NOTE: ALL METAL FLASHING SEGMENTS SHOULD BE SOLDERED

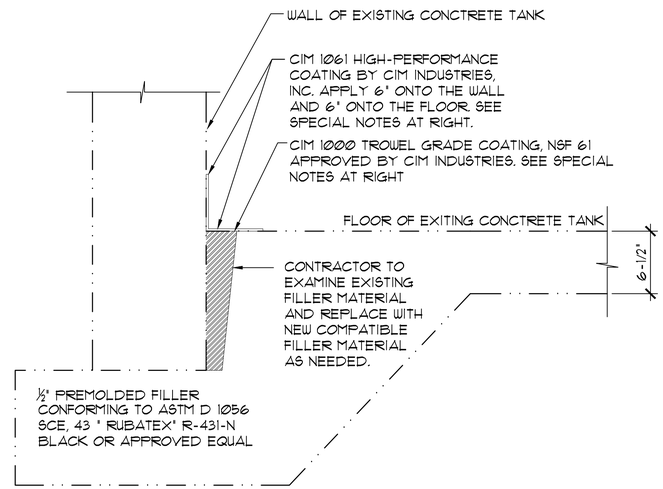
NOTE: OVER BARE CONCRETE COVER WITH "BARRIERGUARD" SLURRY @ RATE OF 200 SF/GAL.

NOTES:

1. ALL FLASHING SHALL BE DESIGNED FOR THE APPLICABLE CONDITIONS. METAL THICKNESS, FASTENERS AND ALL LAPPING SHALL BE AS SPECIFIED BY THE ROOF DESIGNER.
2. REFER TO THE SPECFICIATIONS FOR SPECFIC EXECUTION REQUIREMENTS
3. PREMIUM COAT SYSTEM- FOUNDATION, COAT, FABRIC, FOUNDATION COAT, AND FINISH COAT COMPONENTS.
4. FOUNDATION COAT - COMBINED COVERAGE (2COATS) AT MINIMUM RATE OF 40 SF/GALLON.
5. FINISH COAT- COMBINED COVERAGE (2COATS) AT MINIMUM RATE OF 70 SF/GALLON.
6. PRIMING- REFER TO HYDROSTOP SPECIFICATIONS FOR DECK PRIMING REQUIREMENTS.

FLASHING AND ROOF COATING DETAIL — A / SE103

SC: 1 1/2"=1'-0"

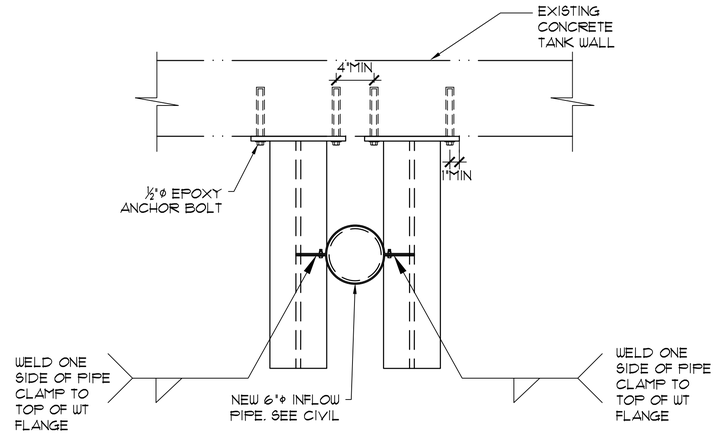


SPECIAL NOTES FOR CIM 1000 AND CIM 1061:

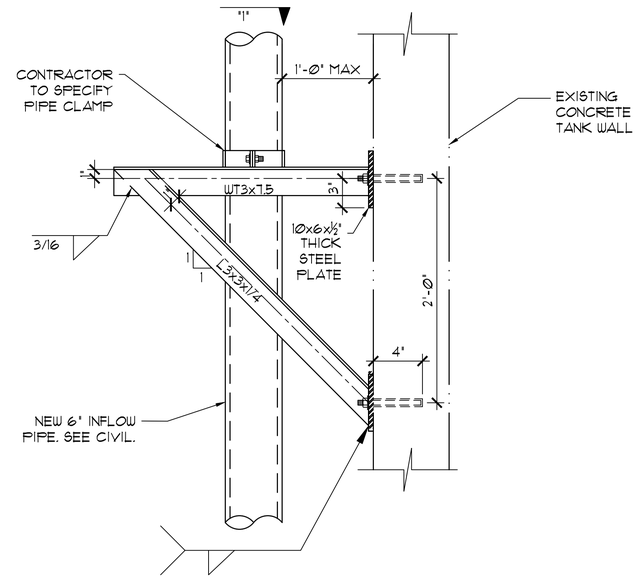
1. PREPARE THE CONCRETE, ROUGHEN SURFACE, AND APPLY PRIMER AND BOND AGENT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. FILL THE 2" BY 3" WIDE TAPERED GAP WITH THE CIM 1000 TROWEL GRADE.
3. ALLOW THE CIM 1000 TROWEL GRADE TO CURE A MINIMUM OF 12 HOURS (AT 70 DEGREES F.) BEFORE APPLYING THE 60 ML CIM 1061, 6 INCHES ONTO THE WALL AND 6 INCHES ONTO THE FLOOR.
4. REFER TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR MORE DETAILED SURFACE PREPARATION, MIXING, INSTALLATION, AND CURING INFORMATION.
5. CONTRACTOR SHALL BE AWARE OF THE POT LIFE OF THE PRODUCTS AND APPLICATION SHALL NOT BE PERFORMED IN DIRECT SUNLIGHT OR DURING INCREASED TEMPERATURES.

WATERPROOFING AT TANK FLOOR BOTTOM JOINT — B / SE103

SC: 1 1/2"=1'-0"



"I" INFLOW SUPPORT PLAN VIEW



INFLOW SUPPORT DETAIL — C / SE103

SC: 1 1/2"=1'-0"

0' 6" 1' 2'

1 1/2" = 1'-0"

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

WATERPROOF AND SUPPORT DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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SE103

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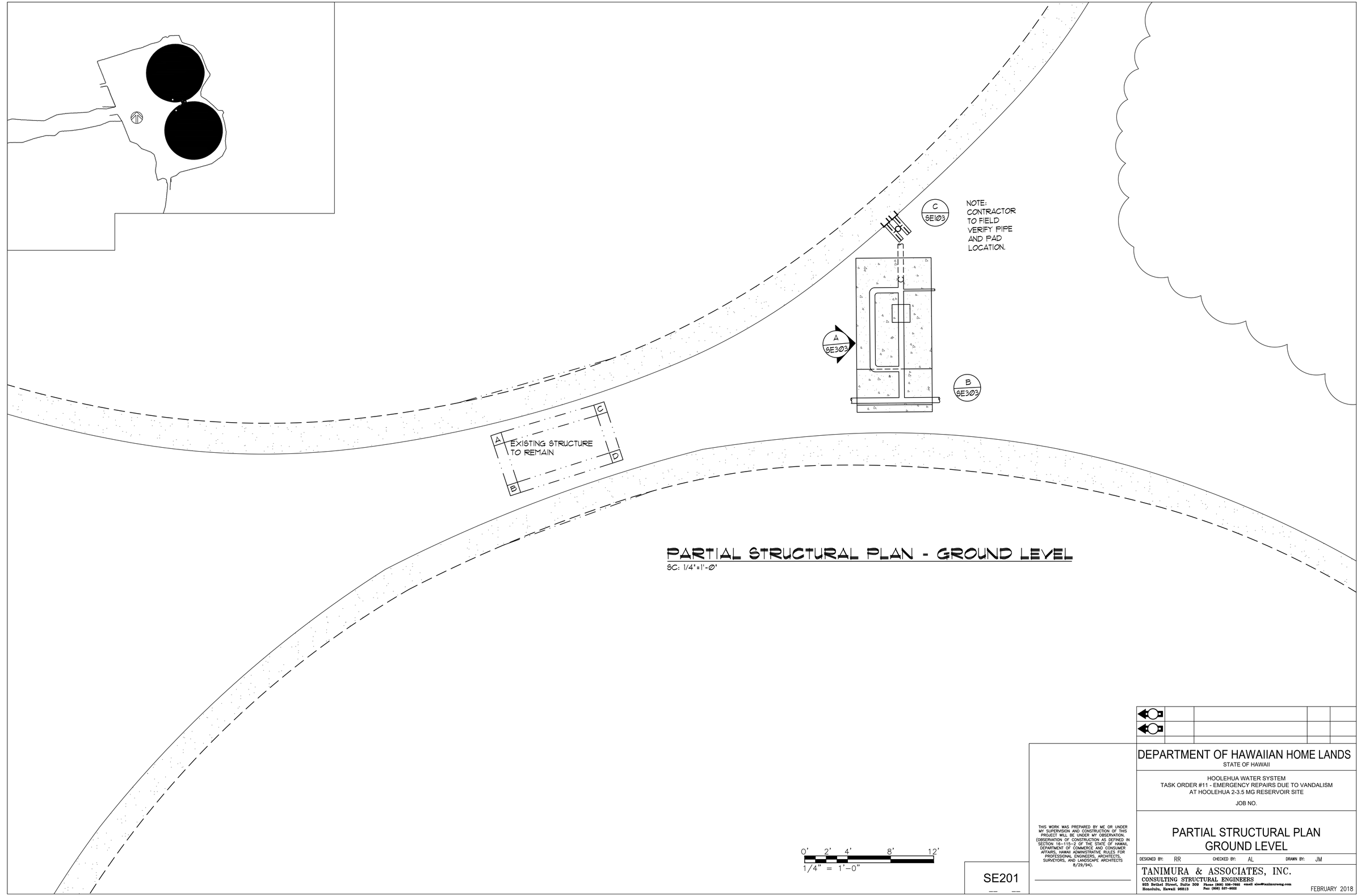

PARTIAL STRUCTURAL PLAN - GROUND LEVEL

SC: 1/4"=1'-Ø"

0' 2' 4' 8' 12'

1/4" = 1'-0"

SE201

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

PARTIAL STRUCTURAL PLAN
GROUND LEVEL

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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EXISTING LARGE HATCH

A SE1Ø2

NEW RAILING

B SE3Ø2

BEYOND HATCH

FOR BALANCE OF RESERVOIR ROOF PLAN SEE SE2Ø2

A SE3Ø2

NEW RAILING

EXISTING STRUCTURE BELOW TO REMAIN

A B C D

EXISTING FENCE TO REMAIN

A SE3Ø1

NEW RAILING

EXISTING LADDER TO BE REPLACED BY OTHERS

A SE3Ø2

AT INSIDE BOTTOM OF TANK

B SE1Ø3

A SE1Ø3

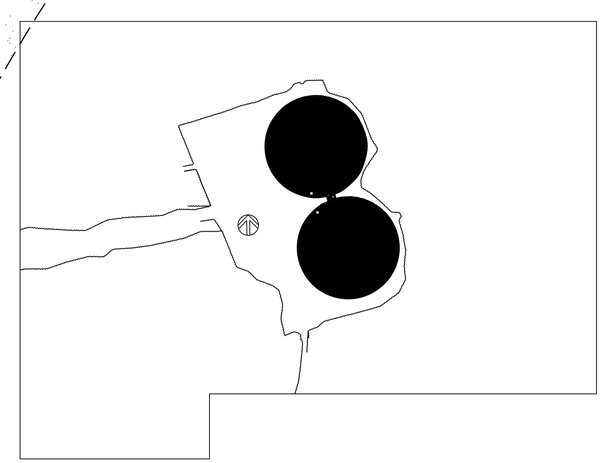
NEW RAILING

B SE3Ø2

12'-Ø" MIN BEYOND HATCH

CLOSE EXISTING LARGE HATCH

A SE1Ø2



NEW CONCRETE CURB AND STAINLESS STEEL COVER OVER EXISTING OPENING

C SE1Ø2

PARTIAL STRUCTURAL PLAN - EXISTING RESERVOIR ROOF

SC: 1/4"=1'-Ø"

0' 2' 4' 8' 12'

1/4" = 1'-0"

SE202

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

PARTIAL STRUCTURAL PLAN
EXISTING RESERVOIR ROOF

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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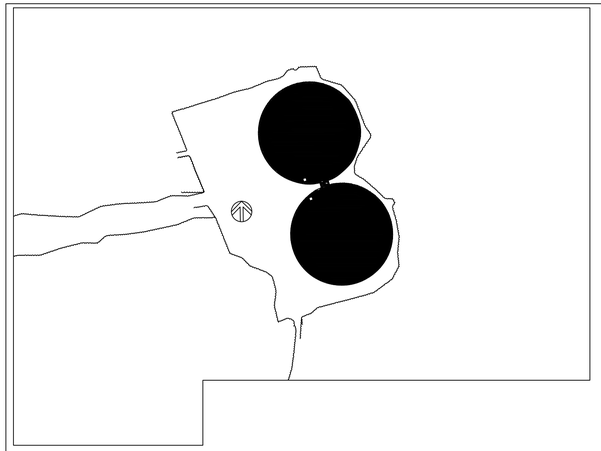

NEW CONCRETE CURB AND STAINLESS STEEL COVER OVER EXISTING OPENING

C / SE202

AT INSIDE BOTTOM OF TANK

B / SE203

A / SE203

FOR BALANCE OF RESERVOIR ROOF PLAN SEE SE201

PARTIAL STRUCTURAL PLAN - EXISTING RESERVOIR ROOF

SC: 1/4"=1'-0"

EXISTING LARGE HATCH

A / SE202

NEW RAILING

B / SE302

12'-0" MIN BEYOND HATCH

EXISTING STRUCTURE BELOW TO REMAIN

EXISTING FENCE TO REMAIN

NEW RAILING

A / SE302

NEW RAILING

EXISTING LADDER TO BE REPLACED BY OTHERS

A / SE302

A / SE302

0' 2' 4' 8' 12'

1/4" = 1'-0"

SE203

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

PARTIAL STRUCTURAL PLAN
EXISTING RESERVOIR ROOF

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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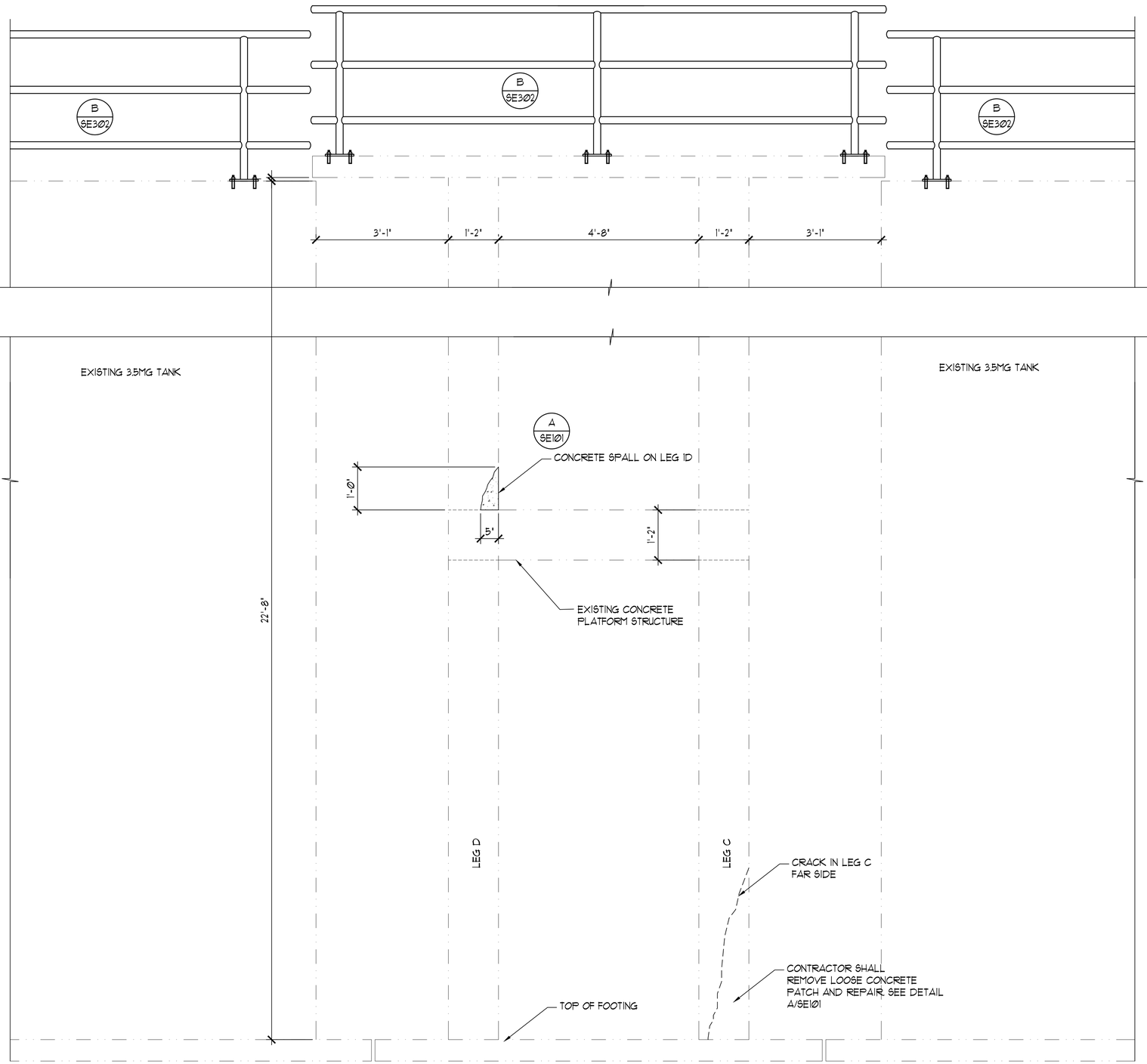

CONCRETE STRUCTURE REPAIR ELEVATION

SCALE: 3/4" = 1'-0"

CONCRETE REPAIR NOTES:

1. REMOVE ALL DETERIORATED CONCRETE UNTIL ONLY SOUND CONCRETE REMAINS.
2. WHERE REINFORCING IS EXPOSED, CHIP CONCRETE AROUND THE BAR SUCH THAT THERE IS A MINIMUM OF ONE INCH BETWEEN THE BAR AND THE SURROUNDING CONCRETE.
3. CLEAN EXPOSED REINFORCING TO BARE METAL.

DAMAGE CHART FOR BRIDGE STRUCTURE

ITEM	LOCATION	AREA (SF)	DESCRIPTION
1	D	1	SPALL DAMAGE
2	A	1	SPALL DAMAGE
3	C	4 LF	HAIRLINE CRACK

0' 1' 2' 3' 4'
3/4" = 1'-0"

A
SE301

SE301

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

CONCRETE STRUCTURE REPAIR ELEV.

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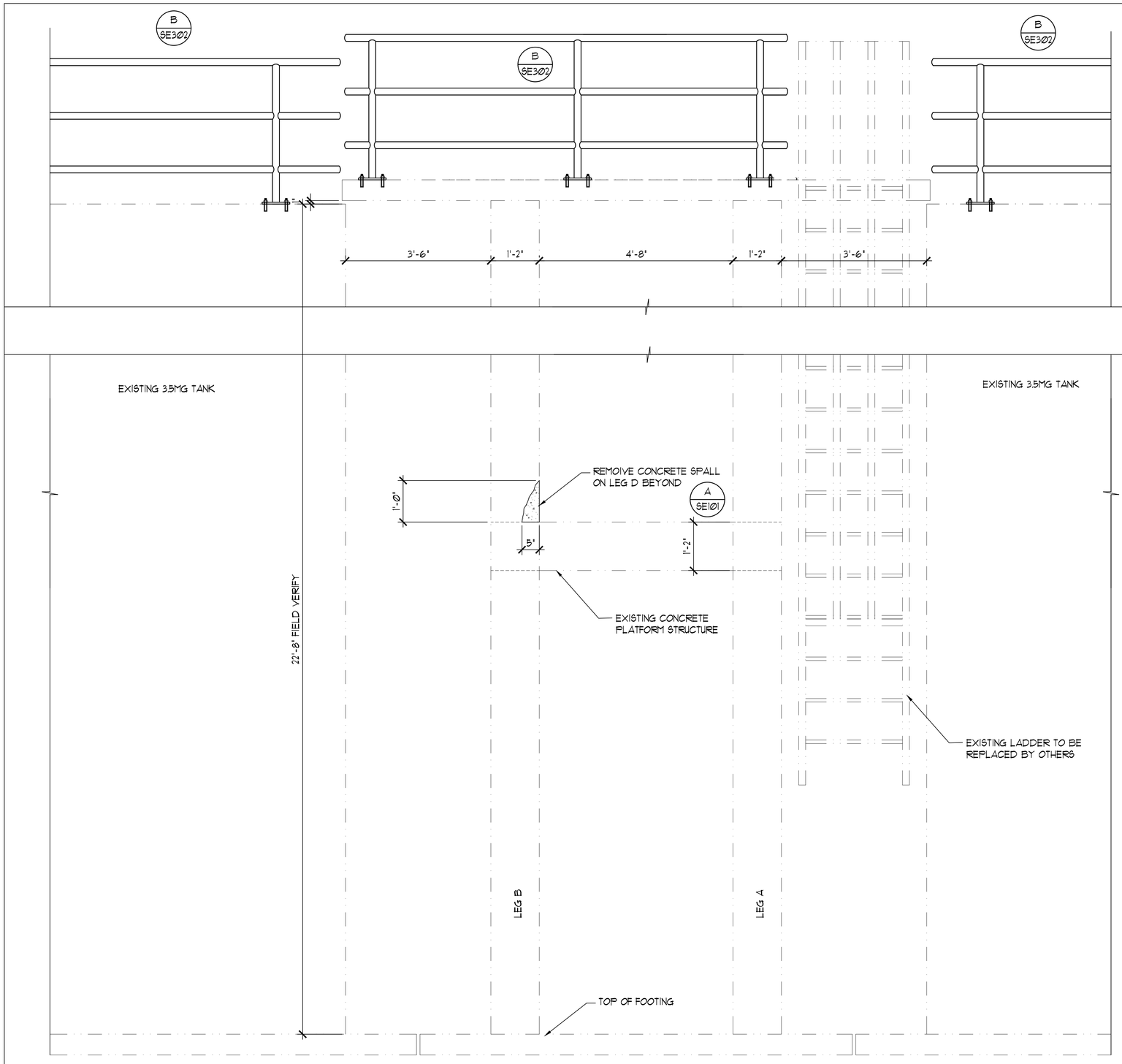
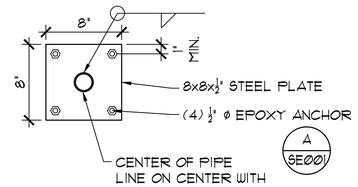


CONCRETE STRUCTURE REPAIR ELEVATION

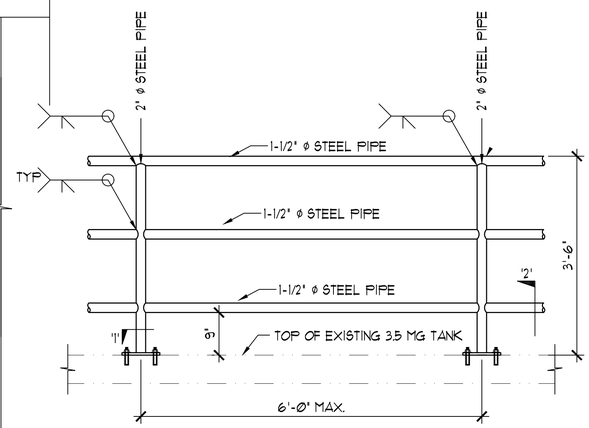
SCALE: 3/4" = 1'-0"

A
SE302



'1' BASE PLATE DETAIL

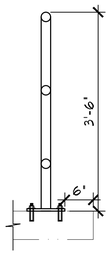
SC: 1 1/2"=1'-0"



NEW RAILING ELEVATION

SCALE: 3/4" = 1'-0"

B
SE302



'2' SECTION AT NEW RAILING

SC: 3/4"=1'-0"

DAMAGE CHART FOR BRIDGE STRUCTURE

ITEM	LOCATION	AREA (SF)	DESCRIPTION
	D	1	SPALL DAMAGE
1	A	1	SPALL DAMAGE
2	C	4 LF	HAIRLINE CRACK
3			

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

SE302

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

CONCRETE STURCTURE REPAIR ELEV.

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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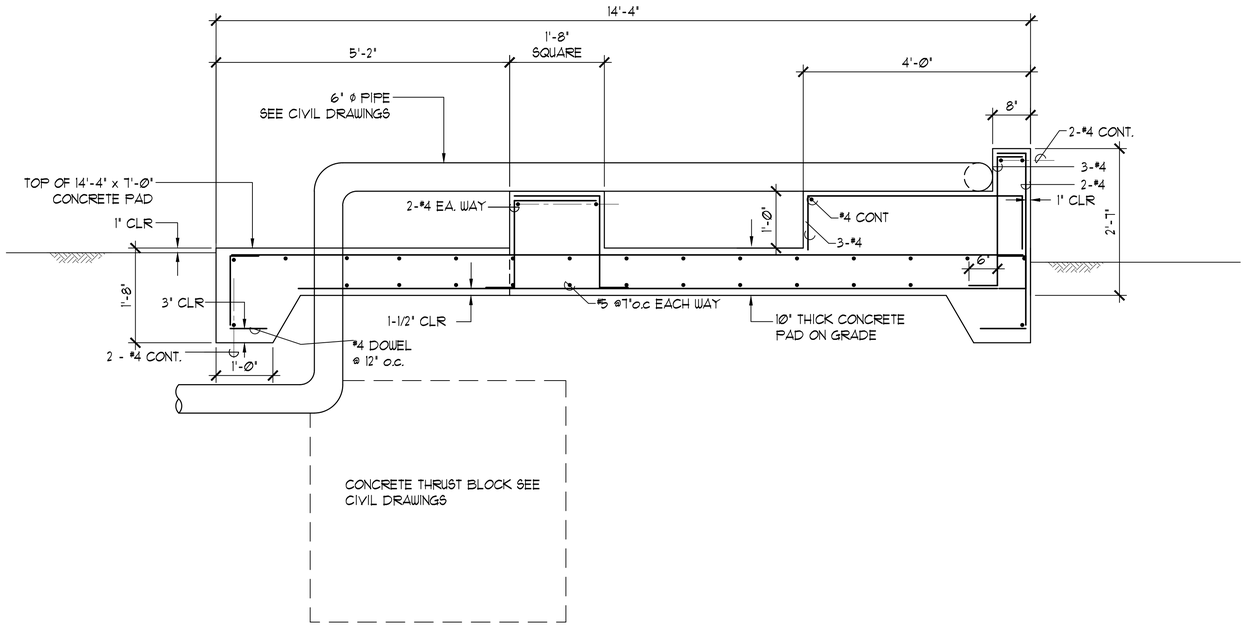
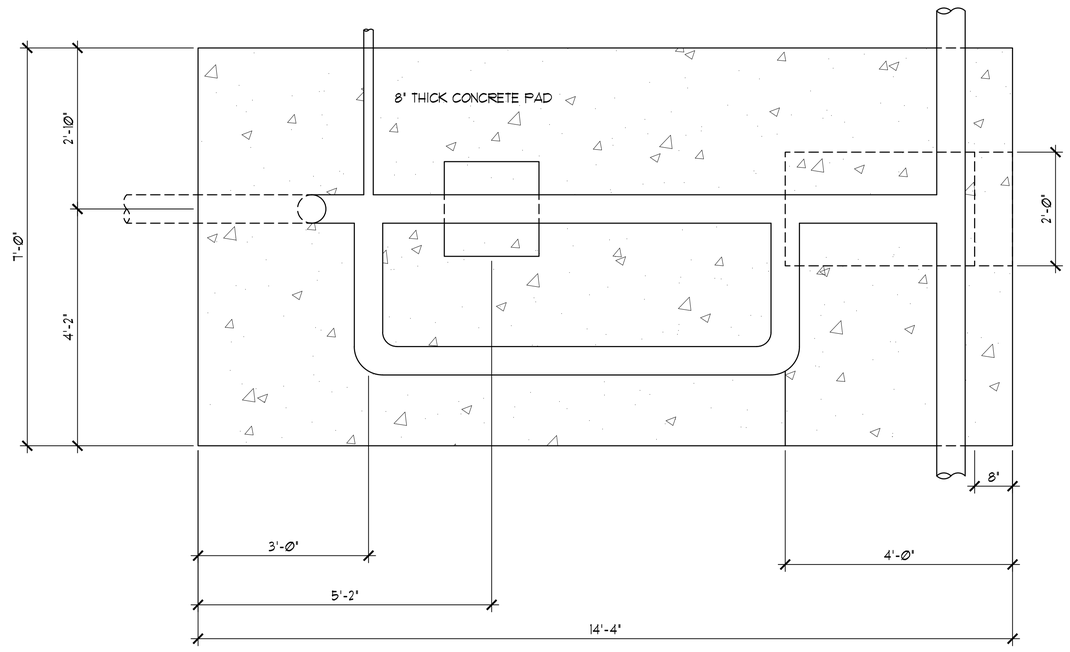


SECTION AT CONCRETE PAD

SCALE: 3/4" = 1'-Ø"

A SE3Ø3



CONCRETE PAD - PLAN

SCALE: 3/4" = 1'-Ø"

B SE3Ø3

0' 1' 2' 3' 4'

3/4" = 1'-0"

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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FEBRUARY 2018

SE303

FILE: Site 4 EMERGENCY Repairs Structural.dwg
DATE REV.: 08/02/2018

GENERAL NOTES

1. PROVIDE POLYOLEFIN 200LB TEST PULLCORD IN ALL EMPTY CONDUITS, UNLESS OTHERWISE NOTED.

2. ALL ELECTRICAL EQUIPMENT ENCLOSURES AND EQUIPMENT MOUNTING HARDWARE FOR OUTDOOR INSTALLATION SHALL BE TYPE 316 STAINLESS STEEL, UNLESS OTHERWISE NOTED.

3. WHERE POSSIBLE CONCEAL ALL RACEWAYS IN WALL OR ABOVE CEILINGS. GROUT, PATCH AND PAINT AFFECTED AREAS TO MATCH ADJACENT FINISH. WHERE RACEWAYS AND BOXES ARE EXPOSED, PAINT RACEWAYS AND BOXES TO MATCH ADJACENT FINISH.

4. EXPOSED CONDUITS SHALL BE ROUTED ALONG THE EDGES OF WALLS AND CEILINGS WHERE POSSIBLE TO MINIMIZE WALL SPACE OCCUPIED BY CONDUITS.

5. PLANS DO NOT INDICATE COMPLETE EXISTING ELECTRICAL CONDITIONS. CONTRACTOR SHALL VISIT JOBSITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND EXTENT OF DEMOLITION AND NEW WORK PRIOR TO THE START OF CONSTRUCTION.

6. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL VISIT JOBSITE AND REPORT ANY DISCREPANCIES AND/OR DIFFERENCE IN DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE OWNER.

7. CONTRACTOR SHALL RESOLVE ALL DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. NO EXTRA PAYMENT SHALL BE ALLOWED ON ACCOUNT OF WORK MADE NECESSARY BY CONTRACTOR'S FAILURE TO VISIT THE SITE AND/OR FAILURE TO RESOLVE DISCREPANCIES AND QUESTIONS.

8. BEFORE ANY ELECTRICAL OR TELECOM WIRING IS CUT, CONTRACTOR SHALL VERIFY USAGE OF WIRING TO ENSURE THAT SERVICES ARE NOT DISCONTINUED TO OTHER SPACES.

9. REMOVE ALL EXISTING EXPOSED CONDUIT AND WIRES NOT TO REMAIN IN SERVICE; CONCEALED RACEWAYS NO LONGER REQUIRED SHALL BE CUT, CAPPED AND ABANDONED IN PLACE WITH ALL WIRES REMOVED.

10. PROVIDE METAL SEALS FOR ALL ABANDONED RACEWAY OPENINGS IN BOXES, CABINETS, AND EQUIPMENT ENCLOSURES; SEALS SHALL RETAIN NEMA RATING OF REMAINING BOXES, CABINETS, AND EQUIPMENT ENCLOSURES.

11. FOR EXISTING CIRCUITS WHERE SOME ELECTRICAL ITEMS ARE REMOVED, CONTRACTOR SHALL PROVIDE ALL NECESSARY RACEWAYS, WIRES, BOXES, ETC., PER NEC REQUIREMENTS, TO ENSURE ELECTRICAL CONTINUITY AND PROPER OPERATION OF REMAINING CIRCUIT COMPONENTS.

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	FLEXIBLE CONDUIT, LIQUIDTIGHT
	CONDUIT OR DUCTLINE BELOW REF. FL. OR GROUND
	STUB, CAP & MARK CONDUITS WITH CONCRETE MARKER
E-OH	NEW OVERHEAD UTILITY LINES BY MECO
NOH	NEW OVERHEAD ELECTRICAL LINES
A C 2-4E 1-2T	ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; ITEMS IN CIRCLE INDICATES DUCT SECTION TYPE, WITH DUCT COMPLEMENTS NOTED BELOW (TYPE "A" DUCT INDICATED WITH 2-4"E DUCTS, AND TYPE "C" DUCT WITH 1-2"T DUCT; E=ELECTRIC, T=TELEPHONE, A=ANTENNA CABLE C=CONTROLS, I=INSTRUMENTATION); SEE SHEET E-4 FOR DUCT SECTION DETAILS AND REQUIREMENTS
	ELECTRICAL PANELBOARD
J	JUNCTION BOX, CEIL. MTD., 4-11/16" NOM.
J	JUNCTION BOX, WALL MTD., 4-11/16" NOM.
C	OUTDOOR SECURITY CAMERA, FIXTURE TYPE AS INDICATED.
	OUTDOOR LIGHT FIXTURE, WALL MTD. FIXTURE TYPE AS INDICATED.
LA-25W	LIGHT FIXTURE DESIGNATIOR, INDICATES TYPE "LA" WITH 55W LAMP, SEE LIGHT FIXTURE SCHEDULE
CA-25W	CAMERA DESIGNATOR, INDICATES TYPE "CA" WITH 25W CAMERA, SEE LIGHT FIXTURE SCHEDULE
E	EQUIPMENT CONNECTION
	2'X4' MECO CONCRETE HANDHOLE PER MECO REQUIREMENTS AND APPROVAL
	13" X 24" PULLBOX PER SANDWICH ISLES COMMUNICATION REQUIREMENTS AND APPROVAL
	12" X 20" ELECTRICAL PULLBOX SIMILAR TO MECO STANDARD PULLBOX REQUIREMENTS
WP	DENOTES "WEATHERPROOF"
SS	DENOTES "TYPE 316 STAINLESS STEEL"
DL	DENOTES "DAMP LOCATION"

NOTE:
NO HASH MARKS ON CONDUITS INDICATE 2 WIRES; -|||- INDICATES 3 WIRES; -||||- INDICATES 4 WIRES, ETC.

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

DWG. NO.
E-1
SHEET 1 OF XX

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

GENERAL NOTES AND ELECTRICAL SYMBOLS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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OCTOBER 2017

SANDWICH ISLES COMMUNICATIONS' CONSTRUCTION NOTES
DECEMBER 9, 2016

GENERAL:

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH SPECIFICATIONS AND REQUIREMENTS OF THE RURAL UTILITIES SERVICES (RUS) AND SANDWICH ISLES COMMUNICATIONS (SIC), WHICH COMPLIES WITH ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL REQUIREMENTS.

ALL MATERIALS USED MUST BE APPROVED AND (OR) ACCEPTED BY SANDWICH ISLES COMMUNICATIONS, INC..

CONTRACTOR MAY REFER TO THE RUS WEBSITE (HTTP://WWW.RURDEV.USDA.GOV/RUSTELECOMPROGRAMS.HTML) FOR REGULATIONS, BULLETINS, FORMS, ETC.

CONTACT THE HAWAII ONE CALL CENTER AT (866) 423-7287 FOR LOCATING EXISTING UNDERGROUND FACILITIES PRIOR TO BEGINNING ANY EXCAVATION.

THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY FOR PROSECUTION OF THE WORK.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WORK SCHEDULES WITH ALL UTILITY COMPANIES, COUNTY, OR STATE AGENCIES REQUIRED FOR THIS PROJECT. THIS IS TO INCLUDE COORDINATION OF ANY INSPECTION AND SPECIFICATIONS BY THOSE UTILITY COMPANIES, COUNTY, OR STATE AGENCIES.

THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS RELATING TO THIS PROJECT BEFORE COMMENCING THE REQUIRED WORK.

THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES AND/OR CONDITIONS WHICH WOULD PREVENT HIM FROM FULFILLING THE TERMS OF THIS CONTRACT.

ALL SIC PULLBOXES THAT THE CONTRACTOR ENTERS FOR INSTALLATION OF FACILITIES MUST BE CLEARED OF STANDING WATER AND DEBRIS. CONTRACTOR SHALL ORGANIZE EXISTING CABLE FACILITIES, TO INCLUDE ADDING CABLE RACKS AND TYING DOWN EXISTING CABLE, IN ORDER TO ACCOMMODATE NEW FACILITIES BEING PLACED. CLEANING AND ORGANIZING OF PULLBOXES SHALL BE DONE TO THE SATISFACTION OF THE PROJECT MANAGER.

THE CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS TO THE OWNER AT COMPLETION OF THE PROJECT. AS-BUILT DRAWINGS REFER TO DOCUMENTS MAINTAINED AND ANNOTATED BY THE CONTRACTOR DURING CONSTRUCTION AND INCLUDE ANY CHANGES OR NEW INFORMATION FOUND OR ADDED THROUGHOUT CONSTRUCTION OF THE PROJECT.

CONDUITS:

1. ALL UNDERGROUND PVC CONDUITS, SWEEPS, COUPLINGS, ADAPTERS AND BELL ENDS SHALL BE SCHEDULE 40, UNLESS OTHERWISE SPECIFIED.

2. ALL HIGH DENSITY POLYETHYLENE CONDUITS SHALL BE SDR 11. TYPICAL 3-PACK UNIT INCLUDES THREE 1.5-INCH SDR 11 RATED CONDUITS IN THE COLORS OF BLACK, RED, AND ORANGE, UNLESS OTHERWISE SPECIFIED. ALL CONDUITS TO BE PRESSURE TESTED AT 120 PSI. FUSION SPLICING OF THE CONDUIT SHALL BE ACCEPTABLE ONLY WHEN PULLING JOINTS THROUGH BORES. ALL COUPLINGS SHALL BE DOUBLE "E-LOC" MANUFACTURED BY ETOC SPECIALTY PRODUCTS, INC.

3. MAIN CONDUIT RUNS, EXCEPT RISER CONDUITS, SHALL BE CONSTRUCTED WITH MINIMUM 6-FOOT RADIUS CURVES, UNLESS OTHERWISE APPROVED BY THE PROJECT MANAGER.

4. AFTER THE CONDUITS ARE INSTALLED, A ROUND SOLID MANDREL NOT LESS THAN 12-INCHES IN LENGTH AND HAVING A DIAMETER OF 1/4-INCH LESS THAN THE INSIDE DIAMETER OF THE CONDUIT SHALL BE PULLED THROUGH EACH CONDUIT. THE SIC PROJECT MANAGER SHALL BE PRESENT DURING ALL MANDREL TESTING. SUFFIXES LISTED IN RUS 515B FOR CONDUITS ARE APPLICABLE.

5. INSTALL MULETAPE IN ALL PVC CONDUITS TWO (2) INCH DIAMETER AND LARGER. THE NEPTCO MULETAPE (OR APPROVED EQUAL) IS AVAILABLE IN 3,000FT., 6,500FT., AND 10,000FT. REELS FROM WESTINGHOUSE ELECTRIC SUPPLY COMPANY (WESCO), THE NEPTCO MULETAPE IS PRE-LUBRICATED AND PRINTED WITH SEQUENTIAL FOOTAGE MARKINGS. PVC CONDUITS WITH A DIAMETER OF 1.5-INCH OR LESS SHALL HAVE A POLY-LINE (P-LINE) INSTALLED. ALL DUCTS SHALL BE SEALED AFTER MULETAPE/P-LINE HAS BEEN INSTALLED, FOLLOWING THE SPECIFICATIONS BELOW.

6. ALL CONDUITS AND DUCTS SHALL BE PROPERLY SEALED USING COMMSCOPE, JACKMOON DUCT SEALS, APPLICABLE BUSHING SLEEVES AND BLANK DUCT PLUGS. THE CONDUIT DIAMETER, INSIDE DIAMETER AND CABLE SIZE(S) SHALL BE TAKEN INTO CONSIDERATION WHEN ORDERING AND INSTALLING "JACKMOON" DUCT SEALS.

   COMMSCOPE JACKMOON SEALS SHALL BE:
   2-INCH CONDUIT: TRIPLEX DUCT SEALS, SERIES 70
   3-INCH CONDUIT: TRIPLEX DUCT SEALS, SERIES 136
   3.5-INCH AND LARGER CONDUIT: QUADPLEX DUCT SEALS, SERIES 136

   ALL OTHER DUCTS SHALL HAVE COMMSCOPE, BLANK JACKMOON PLUGS TO KEEP THEM FREE OF WATER AND DEBRIS.

7. CONDUIT STUBS FROM HANDHOLES TO INDIVIDUAL RESIDENTIAL LOTS SHALL BE SCHEDULE 40 PVC, 1-INCH DIAMETER AND EXTENDED 5-FEET BEYOND PROPERTY LINE. CAP AND SEAL END AND MARK LOCATIONS WITH ABOVE GROUND MARKER.

8. ALL CONDUITS SHALL ENTER MANHOLES AT A 90 DEGREE ANGLE AND SHALL EXTEND INTO THE MANHOLE AS FOLLOWS: CONDUITS DESIGNATED FOR FIBER SHALL EXTEND 12-INCHES INTO THE MANHOLE. ALL OTHER CONDUITS SHALL BE FLUSH WITH THE INSIDE WALL AND INCLUDE BELL ENDS. ANY EXCEPTIONS SHALL ONLY BE PERMITTED WHEN SPECIFIED BY THE PROJECT MANAGER.

9. ALL CONDUITS ENTERING MANHOLES OR HANDHOLES SHALL BE GROUTED BETWEEN THE CONDUITS AND SIDEWALL, INSIDE AND OUT. ALL CONDUITS WILL ENTER THE MANHOLES AND HANDHOLES ON THE PROPERTY SIDE AT ALL TIMES UNLESS OTHERWISE SPECIFIED BY THE PROJECT MANAGER.

10. BACKFILL AND COMPACTION FOR DUCTLINE TRENCHES, MANHOLES AND HANDHOLES, SHALL BE IN ACCORDANCE WITH:

    A. STATE HIGHWAY DEPARTMENT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION WITH LATEST AMENDMENTS, IF CONSTRUCTION IS LOCATED UNDER A STATE STREET OR ROAD, OR LOCATED IN PRIVATE PROPERTY.

    B. THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, DATED 1994, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, WITH LATEST AMENDMENTS; COUNTY OF KAUAI, MAUI, OR HAWAII, AS THE CASE MAY BE, IF CONSTRUCTION IS LOCATED UNDER COUNTY STREETS AND ROADS.

11. BACKFILLING SHALL BE SUBJECT TO THE APPROVAL OF THE SIC PROJECT MANAGER, THE AUTHORIZED REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII AND/OR DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, COUNTY OF KAUAI, MAUI OR HAWAII, AS THE CASE MAY BE.

12. A THIRD PARTY GEOTECHNICAL ENGINEER, LICENSED AND INSURED IN THE STATE OF HAWAII, MUST CERTIFY THAT THE EXCAVATED AREA MEETS THE GOVERNING AGENCIES AND/OR OWNERS STANDARDS FOR BACKFILL AND COMPACTION.

13. EXCAVATED MATERIAL MAY BE REUSED AS BACKFILL, PROVIDING THAT IT CONFORMS TO REQUIREMENTS OF TYPE "A" AND TYPE "B" BACKFILL, AS REQUIRED WITHIN THE STANDARD SPECIFICATIONS. A WRITTEN SOILS REPORT OF CONFORMANCE BY A LICENSED THIRD PARTY GEOTECHNICAL ENGINEER IS NEEDED PRIOR TO BACKFILL USING THE EXCAVATED MATERIAL.

    A. TYPE A BACKFILL IS DEFINED AS BEACH SAND, EARTH OR EARTH AND GRAVEL. MAXIMUM PARTICLE SIZE SHALL BE 1-INCH AND MIXTURE SHALL NOT CONTAIN MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

    B. TYPE B BACKFILL IS DEFINED AS BEACH SAND, EARTH OR EARTH AND GRAVEL. MAXIMUM PARTICLE SIZE SHALL BE 1/2-INCH AND MIXTURE SHALL NOT CONTAIN MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

14. ALL CONDUIT RUNS SHALL HAVE A 3-INCH NON-METALLIC WARNING TAPE PLACED 12-INCHES ABOVE THE CONDUIT RUN. THE TAPE SHALL READ "CAUTION BURIED FIBER OPTIC CABLE BELOW".

MANHOLES AND HANDHOLES:

1. ALL MANHOLES SHALL HAVE HS20-44 TRAFFIC LOADING COVERS (UNLESS OTHERWISE NOTED). HANDHOLES SHALL HAVE 20K TRAFFIC LOAD RATED COVERS.

2. ALL MANHOLE AND HANDHOLE COVERS SHALL HAVE COVER LOGO TO READ "SIC".

3. ALL MANHOLE AND HANDHOLE COVER BOLTS SHALL BE STAINLESS STEEL 3/4-INCH PENTAHEAD, UNLESS OTHERWISE NOTED.

4. ALL MANHOLES AND HANDHOLES ARE SPECIFIED AS FOLLOWS:

    A. UM35 AND UM46 MANHOLE - CONSISTS OF A REINFORCED CONCRETE MANHOLE WITH CAST IRON LID AND RISERS (IF REQUIRED). ALL MANHOLES ARE UNDER MASTER PURCHASE AGREEMENT WITH HAWAII PRECAST, INC. LOCATED IN CAPTAIN COOK, HAWAII (808-326-7730).

    B. UH35 AND UH46 HANDHOLE - CONSISTS OF A REINFORCED CONCRETE HANDHOLE WITH TRAFFIC RATED HINGED COVERS (UH35) OR SIX TRAFFIC RATED SLIP-NOT COVERS (UH46) AND RISERS (IF REQUIRED). ALL HANDHOLES ARE UNDER MASTER PURCHASE AGREEMENT WITH HAWAII PRECAST, INC. LOCATED IN CAPTAIN COOK, HAWAII (808-326-7730).

    C. UHC30X48X33 HANDHOLE (PULLBOX) - CONSISTS OF A TWO-TIER ARMORCAST POLYMER CONCRETE BOX & COVER ASSEMBLY. PART NUMBER (A6001430TA-SIC4).

    D. UHC13X24X30 HANDHOLE (PULLBOX) - CONSISTS OF AN ARMORCAST POLYMER CONCRETE BOX & COVER ASSEMBLY. PART NUMBER (A6001946TA-SIC1).

5. ALL MANHOLES AND HANDHOLES TO BE ORDERED WITH ALL HARDWARE, INCLUDING CABLE RACKS, STEPS AND LOCKS.

6. SET MANHOLE OR HANDHOLE ON A LEVEL AREA, IN THE BOTTOM OF THE EXCAVATION, ON A 4-INCH LAYER OF CRUSHED ROCK, FOR DRAINAGE PURPOSES.

7. THE BASE OF ALL MANHOLES AND HANDHOLES WILL BE PLACED LEVEL. SOME MANHOLES HAVE ADJUSTABLE FRAMES. ALL VOIDS CREATED DURING INSTALLATION MUST BE FILLED WITH MORTAR MIX OR CONCRETE. THIS IS ESPECIALLY TRUE FOR MANHOLES AND HANDHOLES SET IN ROADWAYS.

8. BEFORE BACKFILLING AND COMPACTING, MAKE SURE COVERS ARE IN PLACE AND SECURE. LAYER 6-INCHES TO 8-INCHES OF BACKFILL MATERIAL AROUND THE MANHOLE OR HANDHOLE. TAMP EACH INDIVIDUAL LAYER OF BACKFILL MATERIAL. CONTINUE THE LAYERING AND "TAMPING" UNTIL FINAL GRADE IS ACHIEVED.

9. THE TOPS OF ALL MANHOLES AND HANDHOLES SHALL BE FLUSH TO GRADE IN PAVED AREAS OR 1-INCH ABOVE FINISH GRADE IN NON-PAVED AREAS, UNLESS OTHERWISE SPECIFIED BY PROJECT MANAGER.

10. PROVIDE A 5/8-INCH DIAMETER X 8-FOOT COPPER CLAD GROUND ROD AT HANDHOLES AND MANHOLES AS SPECIFIED ON THE DRAWINGS OR AS DIRECTED BY THE PROJECT MANAGER.

11. FIELD MODIFICATIONS ARE ACCOMPLISHED BY USING A FINE TOOTHED SAW. RACKS OR OTHER EQUIPMENT MAY BE SECURED TO THE SIDE OF THE VAULT BY USE OF TOGGLE BOLTS, MOLLY BOLTS, ETC. AND MUST BE APPROVED BY THE PROJECT MANAGER.

SIC CONSTRUCTION NOTES
UTILITY POLE INSTALLATION:

1. ALL AERIAL WORK SHALL BE IN STRICT ACCORDANCE WITH SPECIFICATIONS AND REQUIREMENTS OF THE RURAL UTILITIES SERVICES (RUS) BULLETIN 1753F-152.

2. UTILITY POLES SHALL BE PRESERVED UTILIZING THE PENTACHLOROPHENOL (PENTA) TYPE TREATMENT.

3. UTILITY POLES SHALL BE TERMITE PROTECTED UTILIZING TERMIMESH POLESOCK'S OR EQUIVALENT. POLESOCK'S SHALL EXTEND NO MORE THAN EIGHT INCHES ABOVE GROUND AND BE SECURED WITH STAINLESS STRAPPING. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

4. THE POLE HOLE SHALL BE OF SUFFICIENT DIAMETER TO PERMIT THE POLE TO SETTLE FREELY TO THE BOTTOM OF THE HOLE WITHOUT TRIMMING THE BUTT AND STILL HAVE SUFFICIENT SPACE BETWEEN THE POLE AND THE SIDE OF THE HOLE TO PERMIT PROPER TAMPING OF THE BACKFILL AT EVERY POINT AROUND THE POLE, AND THROUGHOUT THE ENTIRE DEPTH OF THE HOLE.

5. THE POLE HOLE SHALL NOT EXCEED TWO TIMES THE DIAMETER OF THE POLES BUTT DIAMETER.

6. BACKFILL SHALL BE THOROUGHLY TAMPED THE FULL DEPTH OF THE POLE HOLE. EARTH MUST BE BANKED AROUND THE POLE TO A MINIMUM HEIGHT OF SIX INCHES ABOVE GROUND LEVEL.

7. POLES SHALL BE SET PLUMB EXCEPT AT CORNERS WHERE THEY SHALL BE SET AND RAKED AGAINST THE LOAD SO THAT THE POLE TOP WILL BE IN LINE AFTER THE LOAD IS APPLIED. THE RAKE POLE SHALL NOT EXCEED SIX INCHES FOR EACH TEN FEET OF POLE LENGTH AFTER THE CONDUCTORS ARE INSTALLED AT THE REQUIRED TENSION. DEADEND SHALL BE SET SO AS TO BE PLUMB AND IN LINE AFTER THE LOAD IS APPLIED.

8. POLE LIGHTNING PROTECTION SHALL BE A #6 AWG BARE COPPER WIRE IN ACCORDANCE WITH SIC/RUS CONSTRUCTION PRACTICES.

9. SUSPENSION STRAND / HARDWARE SHALL BE CLASS C GALVANIZED STEEL UTILITY GRADE FOR CORROSION AREAS.

10. GUY GUARDS, YELLOW IN COLOR SHALL BE PLACED ON ALL DOWN GUYS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

SANDWICH ISLES COMMUNICATIONS NOTES

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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OCTOBER 2017

DWG. NO. E-2
SHEET 2 OF XX

LAST EDIT
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OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=300'

NORTH

300' 150' 0 300' 600' 900'

SCALE: 1"=300'

GRAPHIC SCALE

DWG. NO. E-3

SHEET 3 OF XX

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

OVERALL ELECTRICAL SITE PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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LAST EDIT
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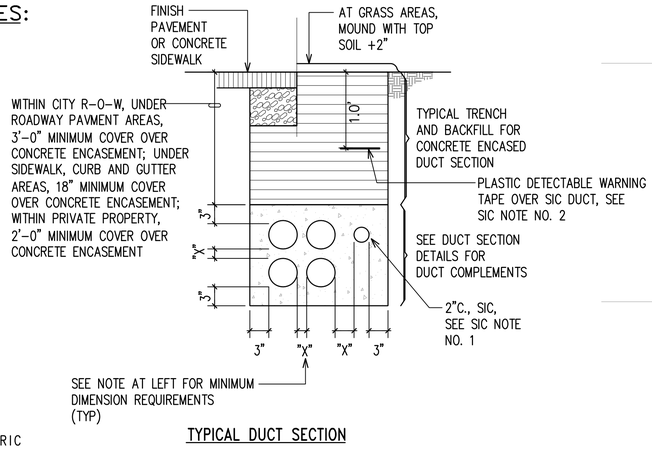
DUCT SECTION BACKFILL NOTES:

TYPE "A" BACKFILL – EARTH & GRAVEL. ROCK SIZE TO BE 1" MAX. & THE MIXTURE TO CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES. 95% COMPACTION.

TYPE "B" BACKFILL – EARTH & GRAVEL. MIXTURE MUST PASS A 1/2" MESH SCREEN & CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES. 95% COMPACTION.

NOTE – IF NORMAL MATERIAL AT BOTTOM OF TRENCH IS NOT TYPE "B", AN ADDITIONAL 3" SHALL BE EXCAVATED & TYPE "B" BACKFILL PROVIDED.

CONCRETE – 3" ENCASEMENT, 3000 psi COMPRESSIVE STRENGTH @ 28 DAYS.



TYPICAL DUCT SECTION

DESIGNATION DESCRIPTIONS

ELEC = UTILITY CO. PRIMARY OR SECONDARY ELECTRIC
TEL = UTILITY CO. TELEPHONE
PWR = PRIMARY OR SECONDARY ELECTRIC
CTL = CONTROL
SIG = INSTRUMENTATION OR ANTENNA CABLE

MINIMUM "X" DIMENSION
DUCT SEPARATION REQUIREMENTS

ELEC – ELEC = 1 1/2"

ELEC – TEL = 3"

TEL – TEL = 1 1/2"

ELEC – CTL/SIG = 3"

TEL – CTL/SIG = 1 1/2"

PWR – CTL/SIG = 3"

ELEC – PWR = 1 1/2"

TEL – PWR = 3"

PWR – PWR = 1 1/2"

CTL/SIG – CTL/SIG = 1 1/2"

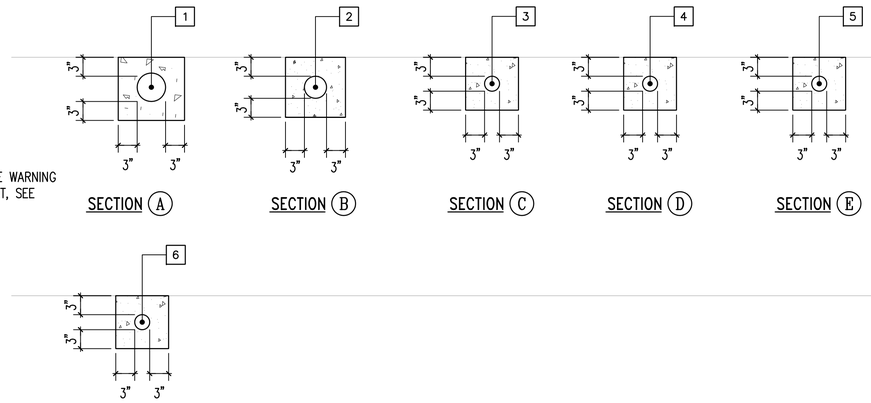
MINIMUM OF 3" CONCRETE ENCASEMENT AROUND DUCTBANK

WHERE DUCTLINE CROSSES OVER WATER LINE, PROVIDE THE FOLLOWING:

1. 6" MINIMUM SEPARATION BETWEEN DUCTLINES AND WATER LINE.
2. PROVIDE CONCRETE JACKET AROUND DUCTLINES.
3. PROVIDE ONLY TYPE "B" BACKFILL AROUND WATER LINE.

SANDWICH ISLES COMMUNICATION (SIC) DUCTLINE NOTES:

1. CONTRACTOR SHALL PLACE NEPTCO WP 1800P MULETAPE, OR APPROVED EQUAL, IN EACH DUCT THROUGHOUT ITS ENTIRE LENGTH WITH PROTRUSIONS OF 2 FEET IN MANHOLES AND HANDHOLES AT EACH END, AND 1 FOOT IN PULLBOXES. MULETAPE IS RATED FOR 1800 LB PULL AND HAS FOOTAGE MARKINGS FOR MEASURING DUCT LENGTHS.
2. CONTRACTOR SHALL PLACE 8-MIL ORANGE COLORED PLASTIC WARNING TAPE, NOT LESS THAN 4" WIDE, ENTIRE LENGTH OF TRENCH FOR ALL UNDERGROUND INSTALLATIONS. TAPE SHOULD READ "WARNING-STOP DIGGING-CALL SIC, COMMUNICATIONS CABLE BURIED BELOW, FAILURE TO COMPLY COULD RESULT IN LEGAL ACTION".



DUCT SECTION DETAILS AND REQUIREMENTS

NOT TO SCALE

DUCT AND WIRE SCHEDULE

NO.	DUCT SIZE	WIRE SIZE	DESTINATION OR USE
1	3"	SEE ONE-LINE DIAGRAM	SECONDARY POWER FROM MECO POLEMOUNTED TRANSFORMER TO NEW METER
2	2"	PC (SEE SIC NOTE NO. 1)	TELEPHONE CABLES BY SIC
3	1"	2#12, 1#12 GND	POWER TO POLE MOUNTED LIGHT
4	1"	6#12, 1#12 GND	POWER TO ELECTRICAL PULLBOX
5	1"	CAT6 CABLE	CAMERA VIDEO STREAM CABLE BACK TO TELEPHONE CABINET
6	1"	CAT6 CABLE	ANTENNA CABLE
7			
8			

NOTES:
1. ALL CONCRETE ENCASED DUCTS SHALL BE SCHEDULE 40 PVC.
2. PC INDICATED PROVIDE PULLCORD.

DWG. NO.
E-4
SHEET 4 OF XX

KRAIG K. OTANI
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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

DUCT SECTION DETAILS AND REQUIREMENTS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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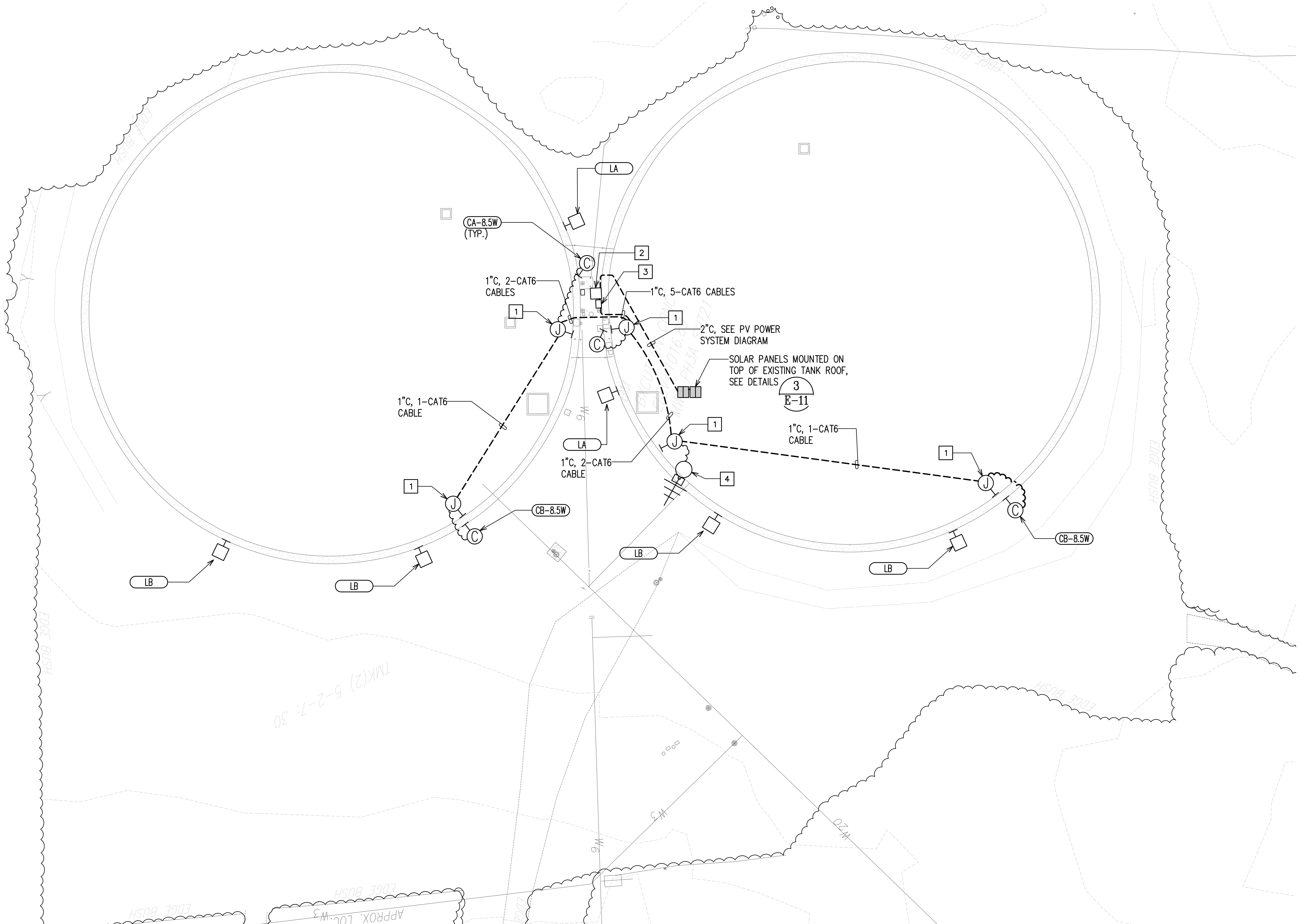

1 / E-5 HOOLEHUA RESERVOIR ELECTRICAL SITE PLAN

SCALE: 1"=20'

NORTH

NOTES:

1. 6"SQ X 6"D NEMA 4XSS JUNCTION BOX CHANNEL MOUNTED.
2. BATTERY ENCLOSURE SECURED TO CONCRETE PAD WITH STAINLESS STEEL HARDWARE; AS REQUIRED. ENCLOSURE DMENSIONS SGALL BE SIZED TO ACCOMODATE THE BATTERIES BEING PROVIDED.
3. CONTROLS CABINET.
4. RADIO ANTENNA MOUNTED TO TANK. UBIQUITY PBE-5AC-500 WIRELESS BRIDGE OR PRE-APPROVED EQUAL. CONTRACTOR TO ADJUST IN FIELD TO CONNECT WITH KANAKALOLOA CEMETERY SITE
5. CAMERAS TO BE MTD. 15' AFF.
6. LIGHT FIXTURES TO BE MTD. AT TOP OF TANK.
7. CONDUIT SHALL BE SUPPORTED BY TYPE 316 UNISTRUT CHANNELS THAT ARE MOUNTED TO THE TANK. PROVIDE STAINLESS STEEL MOUNTING HARDWARE AS NECESSARY. UNISTRUT SHALL BE MIRO 16-BASE STRUT-12 OR APPROVED EQUAL..

20' 10' 0 20' 40' 60'

SCALE: 1"=20'

GRAPHIC SCALE

DWG. NO. E-5

SHEET 5 OF XX

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DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

HOOLEHUA WATER SYSTEM

TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

HOOLEHUA RESERVOIR ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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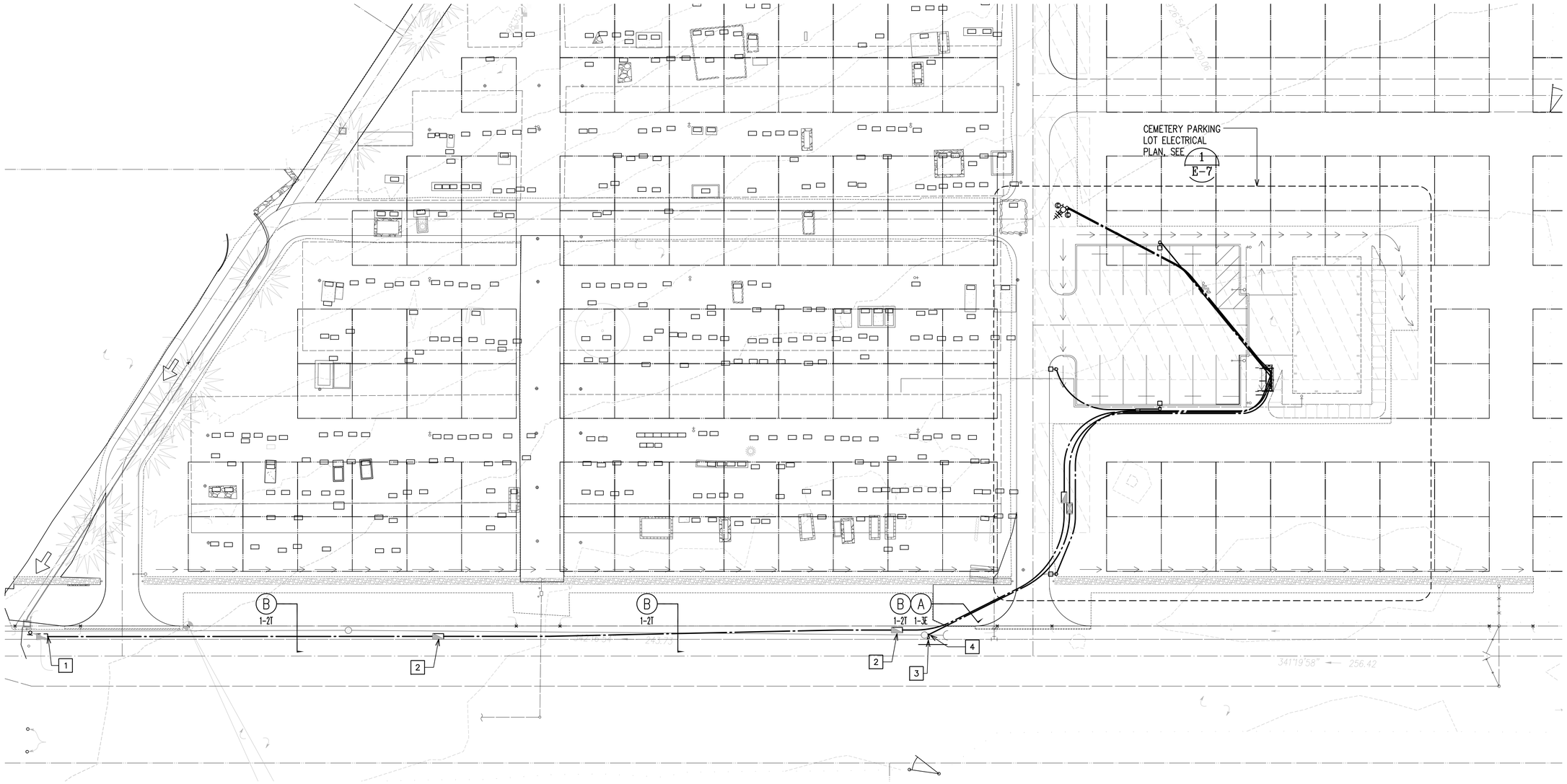


1 KANAKALOLOA CEMETERY SITE PLAN

E-6 SCALE: 1"=20'

NORTH

NOTES:

1. BREAK AND PATCH EXISTING SIC PULLBOX AND EXTEND SIC DUCTLINES AS INDICATED.
2. NEW 2'X4' SIC PULLBOX.
3. EXISTING MECO UTILITY POLE WITH PROPOSED POLE TOP TRANSFORMER (BY MECO).
4. LONG RADIUS BEND CONDUIT RISER UP POLE PER MECO REQUIREMENTS AND APPROVAL.

20' 10' 0 20' 40' 60'

SCALE: 1"=20'

GRAPHIC SCALE

DWG. NO. E-6

SHEET 6 OF XX

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

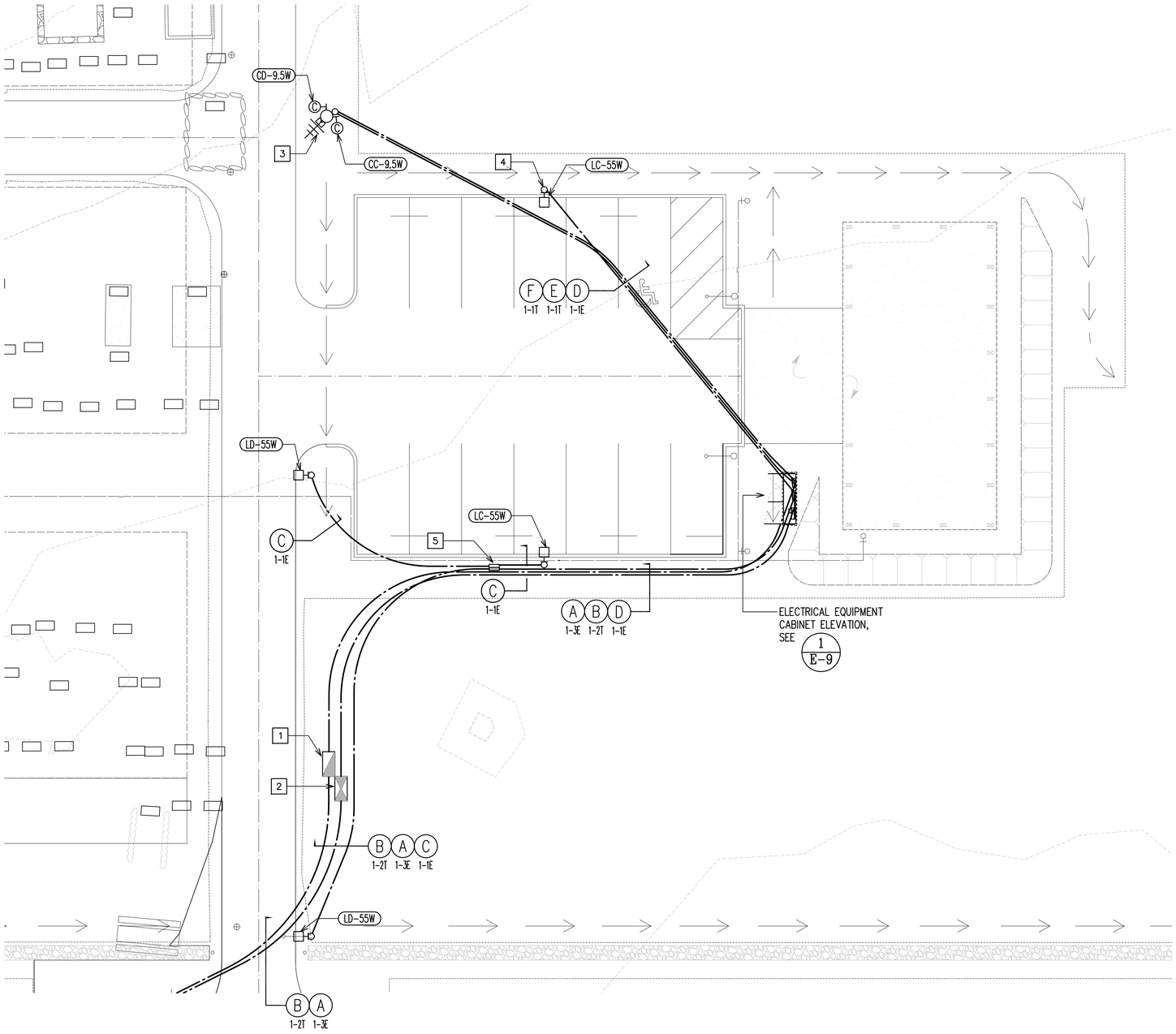
KANAKALOLOA CEMETERY SITE PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

OCTOBER 2017

LAST EDIT
Z:\ACAD\PROJECTS\217131\DOS-KANAKALOLOA CEMETARY SITE PLAN XREFS: KKO-STAMP=Z:\ACAD\PROJECTS_PE_ STAMP\KKO-STAMP ACAD-214027-01 C-BASE=\\XREF\216085-01 TOPO_2017 07 20 ACAD-214027-01 TOPO=\\XREF\ACAD-214027-01 TOPO X217131-ALBOKGN0=\\XREF\X217131-ALBOKGN0 __X217131-ALELEC=\\XREF__X217131-ALELEC



NOTES:

1. NEW 2'X4' SIC PULLBOX.
2. NEW 2'X4' MECO PULLBOX.
3. NEW RADIO ANTENNA MOUNTED TO POLE. UBIQUITY PBE-5AC-500 WIRELESS BRIDGE OR PRE-APPROVED EQUAL. CONTRACTOR TO ADJUST IN FIELD TO CONNECT WITH HOOLEHUA RESERVOIR.
4. SEE POLE DETAIL ON SHEET 1/E-11. TYPICAL OF ALL LIGHT AND CAMERA POLES.
5. NEW 12" X 20" ELECTRICAL PULLBOX.

1/E-7 KANAKALOLOA CEMETERY ELECTRICAL PLAN

SCALE: 1"=10'

NORTH

10' 5' 0 10' 20' 30'

SCALE: 1"=10'

GRAPHIC SCALE

DWG. NO. E-7
SHEET 7 OF XX

KRAIG K. OTANI
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No. 14288-E
HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

KANAKALOLOA CEMETERY ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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OCTOBER 2017

LIGHT FIXTURE SCHEDULE

TYPE	LAMP/ WATTS	DESCRIPTION	MANUFACTURER OR PRE-APPROVED EQUAL
LA	LED 3000'K	4.4"H X 16.1"W X 23.6"D LED ENCLOSED, LOW COPPER ALUMINUM ENCLOSURE AND MOUNTING ARM, ARCHITECTURAL GRADE TGIC POWDER COAT, STAINLESS FASTENERS, SOLAR POWRED, 100,000 HRS AT L70, TYPE II DISTRIBUTION	FIRST LIGHT SCL2 SERIES, OR PRE-APPROVED EQUAL
LB	LED 3000'K	SAME FIXTURE AS TYPE LA BUT WITH TYPE IV DISTRIBUTION	FIRST LIGHT SCL2 SERIES, OR PRE-APPROVED EQUAL
LC	55W LED 3000'K	4.125"H X 11.25"W X 16.75"D LED ENCLOSED, DIE CAST ALUMINUM HOUSING, CORROSION RESISTANT POLYESTER FINISH, TYPE II DISTRIBUTION, 120V	BEACON VPS-24L-55-3K7-3, OR PRE-APPROVED EQUAL
LD	55W LED 3000'K	SAME FIXTURE AS TYPE LC BUT WITH TYPE III DISTRIBUTION	BEACON VPS-24L-55-3K7-3, OR PRE-APPROVED EQUAL

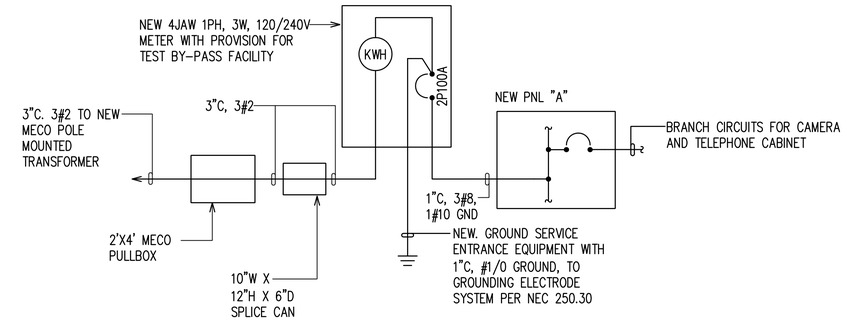
CAMERA SCHEDULE

TYPE	WATTS	DESCRIPTION	MANUFACTURER OR PRE-APPROVED EQUAL
CA	8.5W	3MP RESOLUTION AT 12 FPS, DAY & NIGHT FUNCTIONALITY, 3-9.8MM LENS , 3-YEAR WARRANTY, WALL MOUNTING BRACKET, IP66 ENCLOSURE	SARIX IBE329-IR, OR PRE-APPROVED EQUAL
CB	8.5W	3MP RESOLUTION AT 12 FPS, DAY & NIGHT FUNCTIONALITY, 3-9.8MM LENS , 3-YEAR WARRANTY, WALL MOUNTING BRACKET, IP66 ENCLOSURE, ADDITIONAL IR LED	SARIX IBE329-IR, OR PRE-APPROVED EQUAL PELCO IR-940S-30 INFRARED ILLUMINATOR, OR PRE-APPROVED EQUAL
CC	9.5W	5MP RESOLUTION AT 20 FPS, DAY & NIGHT FUNCTIONALITY, 75 DEGREE HORIZONTAL VIEW, POLE MOUNTING BRACKET, IP67 ENCLOSURE	HIKVISION DS-2CD2T55FWD-I5, OR PRE-APPROVED EQUAL
CD	9.5W	5MP RESOLUTION AT 20 FPS, DAY & NIGHT FUNCTIONALITY, 30 DEGREE HORIZONTAL VIEW, POLE MOUNTING BRACKET, IP67 ENCLOSURE	HIKVISION DS-2CD2T55FWD-I5, OR PRE-APPROVED EQUAL

NEW PANEL "A" — 100 A MAIN LUGS ONLY; 240/ 120 VOLTS, 1-PHASE, 4-WIRE; 10,000 A.I.C. INDUSTRIAL-BOLTED TYPE, CHANNEL MOUNTED

CKT. NO.	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	BREAKER POLE	BREAKER AMPS	WIRE SIZE	KVA ON BUSSES L1	KVA ON BUSSES L1	KVA ON BUSSES L2	KVA ON BUSSES L2	WIRE SIZE	BREAKER POLE	BREAKER AMPS	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	CKT. NO.
1	CAMERA	1	20	12	0.1	0.1				1	20	TELEPHONE CABINET	2
3	AREA LIGHT	1	20	12			0.3	0.0				PFB	4
5	PFB				0.0	0.0						PFB	6
	CONNECTED LOAD PER PHASE					0.2		0.3					
	DEMAND LOAD PER PHASE					0.2		0.3					

TOTAL CONNECTED LOAD (KVA)	0.5
DEMAND FACTOR	100%
TOTAL DEMAND LOAD (KVA)	0.5
HIGH LEG (AMPS)	2.5



1 / E-8 ONE-LINE DIAGRAM

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

SCHEDULES AND ONE-LINE DIAGRAM

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP.: DATE: APRIL 30, 2018

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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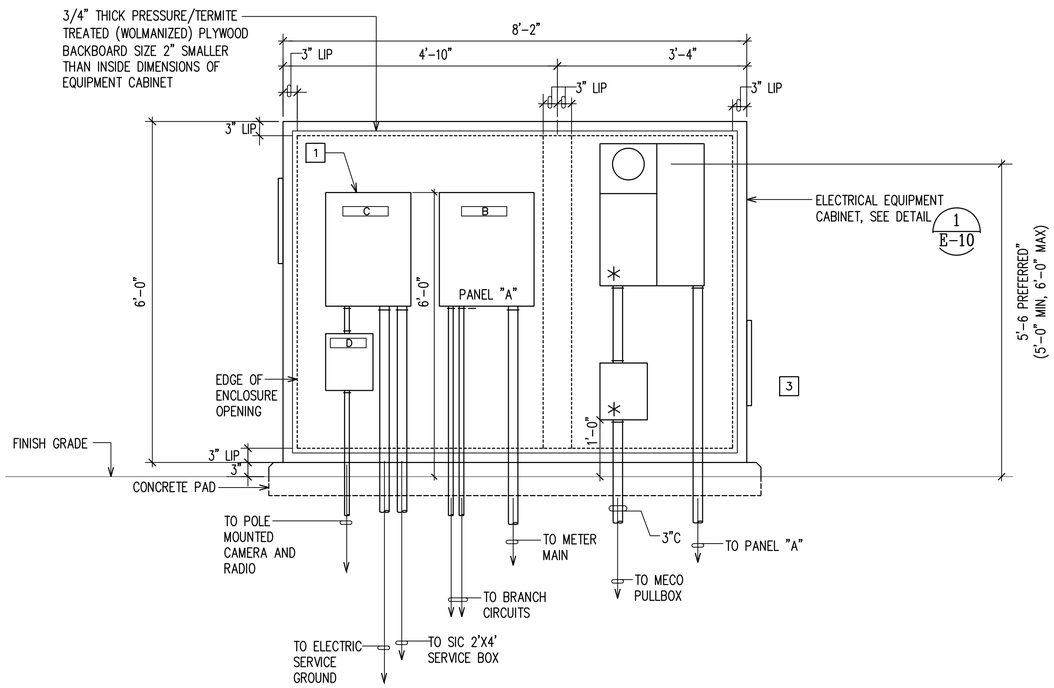
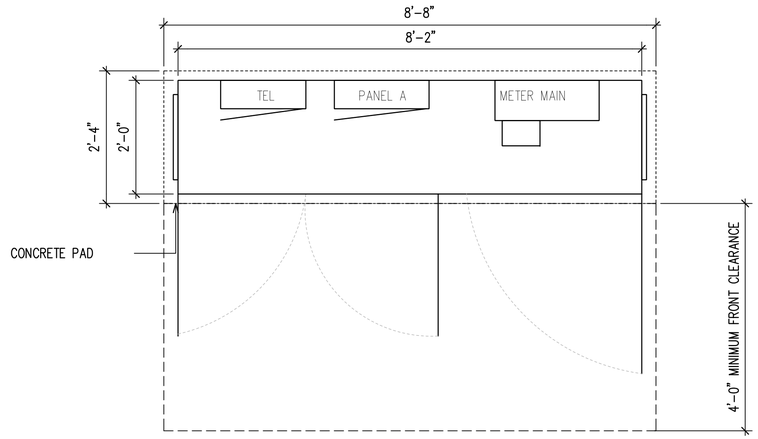
OCTOBER 2017

DWG. NO. E-8
SHEET 8 OF XX



ELEVATION



PLAN

1 E-9 ELECTRICAL EQUIPMENT CABINET ELEVATION

NOT TO SCALE

NAMEPLATES

ITEM	DESCRIPTION
A	
B	PANEL "A"
C	TELEPHONE CABINET
D	CONTROLS CABINET
E	
F	
G	
H	
J	
K	
L	
M	
N	
P	
Q	
R	
S	

ABOVE NAMEPLATES TO BE 9" X 2 1/4" X 1/8" DILECTO WITH 5/8" WHITE LETTERING & BEVELED EDGES

NOTES:

1. 18"W X 24"H X 6"D NEMA 1 TELEPHONE CABINET WITH 3/4" THICK TERMITE TREATED PLYWOOD BACKBOARD AND 3/4"C, 1#6 GND. TO ELEC. SERVICE GND ROD. PROVIDE MIN. 3'-0" SLACK ON GND CONDUCTOR AFTER BONDING GND. CONDUCTOR TO TEL. CAB. CONDUITS SHALL ENTER THE CABINET AT THE BOTTOM RIGHT AND LEFT AS SHOWN. OBTAIN SIC APPROVAL
2. COMBINATION METER SOCKET, MAIN CIRCUIT BREAKER, NEMA 1 (120/240V, 1ø, 3W SERVICE)
3. PULLBOX, SEALABLE, 10"W X 12"H X 6"D, NEMA 1
4. ALL EQUIPMENT ENCLOSURES IN EQUIPMENT CABINET SHALL BE NEMA 1 TYPE.
5. CONTRACTOR SHALL VERIFY EQUIPMENT ENCLOSURE SIZE WITH ACTUAL EQUIPMENT BEING PROVIDED.
6. PROVIDE A MINIMUM OF 4 FEET CLEAR AND LEVEL WORKSPACE CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT CABINET.
7. "*" INDICATES PROVISION FOR HECO SEALS.
8. OBTAIN HECO SHOP DRAWING APPROVAL FOR PULLBOX AND METER SOCKETS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

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LICENSED PROFESSIONAL ENGINEER
No. 14288-E
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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2018

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

ELECTRICAL EQUIPMENT CABINET ELEVATION

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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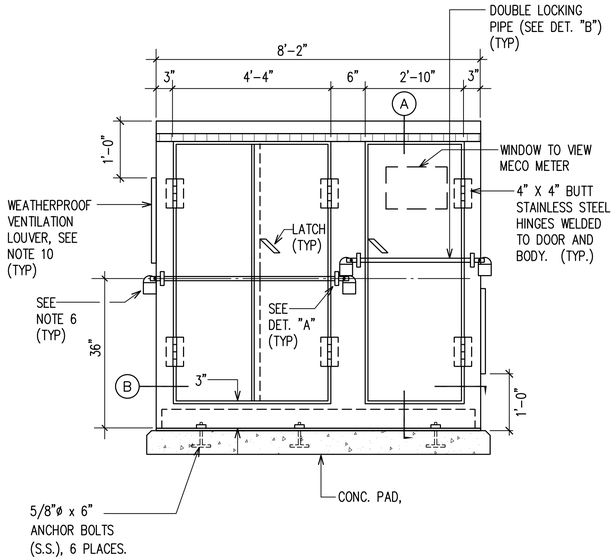
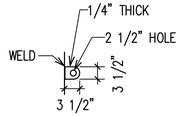
OCTOBER 2017

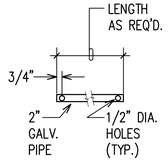
DWG. NO. E-9
SHEET 9 OF XX



ELEVATION OF CABINET

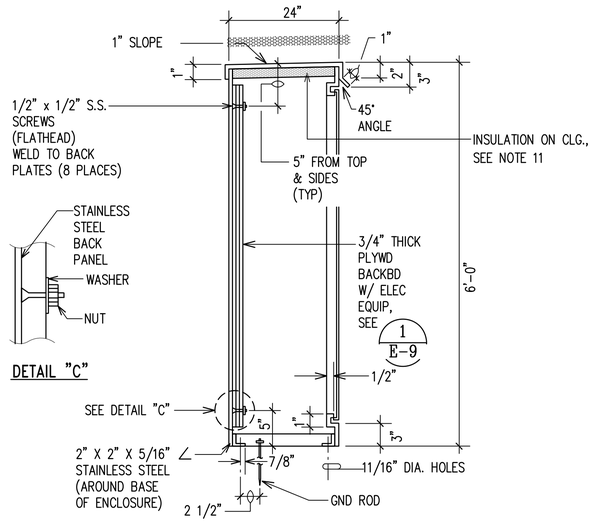


DETAIL "A"
SIDE VIEW



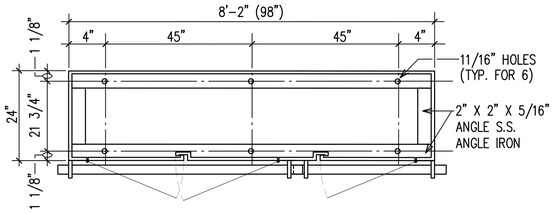
DETAIL "B"

EQUIPMENT CABINET DETAILS

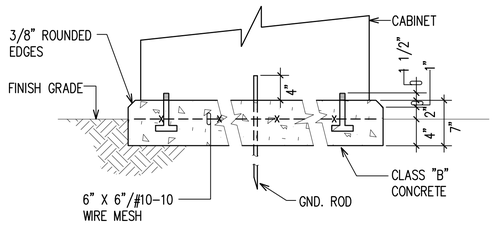


DETAIL "C"

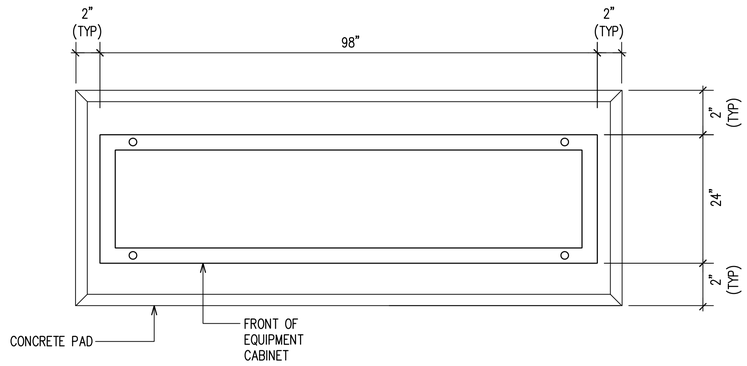
SECTION "A" THROUGH CABINET



SECTION "B"
(ANGLE FRAME)



SECTION THROUGH PAD



PLAN OF PAD

CONCRETE PAD DETAIL

EQUIPMENT ENCLOSURE NOTES:

1. CABINET TO BE PRIMED WITH ONE COAT SHOP PRIMER.
2. PLYWOOD TO BE TREATED (WOLMANIZED) PLYWOOD, EXTERIOR GRADE, 3/4" THICK.
3. CABINET SHALL BE MADE FROM 10 GAUGE TYPE 316 STAINLESS STEEL.
4. PROVIDE TWO COATS OF ACRYLIC, OUTSIDE, COLOR SHALL BE WHITE OR AS SELECTED BY THE OWNER.
5. ENCLOSURE SHALL BE NEMA 3R CONSTRUCTED WITH NEOPRENE GASKETING.
6. PADLOCKS:

   5 – CONTRACTOR FURNISHED. BRASS CORBIN SESAME COMBINATION.
7. SHOP FABRICATION DRAWINGS SHALL BE SUBMITTED FOR APPROVAL. CONTRACTOR SHALL PROVIDE HEIGHT AND WIDTH OF CABINET AS REQUIRED ACCORDING TO SIZES OF EQUIPMENT BEING INSTALLED IN CABINET. WITH EXTERIOR DOORS FULLY OPEN, ALL EQUIPMENT SHALL HAVE FRONT CLEARANCES PER N.E.C.
8. WASH CHANNEL WITH SOLUTION OF CHEMICAL PHOSPHORIC METAL ETCH & ALLOW TO DRY. APPLY 2 COATS OF GALVANIZED METAL PRIMER AND 2 COATS OF ENAMEL TO MATCH CABINET.
9. MOUNT EQUIPMENT SECURELY TO PLYWOOD BACKBOARD.
10. WEATHERPROOF VENTILATION LOUVER, 18"H X 18"W WITH REMOVABLE STAINLESS STEEL INSECT SCREEN ON THE INSIDE.
11. PROVIDE MINIMUM 1" THICK RUBATEX INSULATION WITH RUBATEX 374 COATING ON ENTIRE INTERIOR CEILING OF THE EQUIPMENT CABINET. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

1 E-10 ELECTRICAL EQUIPMENT CABINET AND CONCRETE PAD DETAILS

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE
JOB NO.

ELECTRICAL EQUIPMENT CABINET AND CONCRETE PAD DETAILS

KRAIG K. OTANI
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SIGNATURE
LICENSE EXP., DATE: APRIL 30, 2018

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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OCTOBER 2017

DWG. NO. E-10
SHEET 10 OF XX

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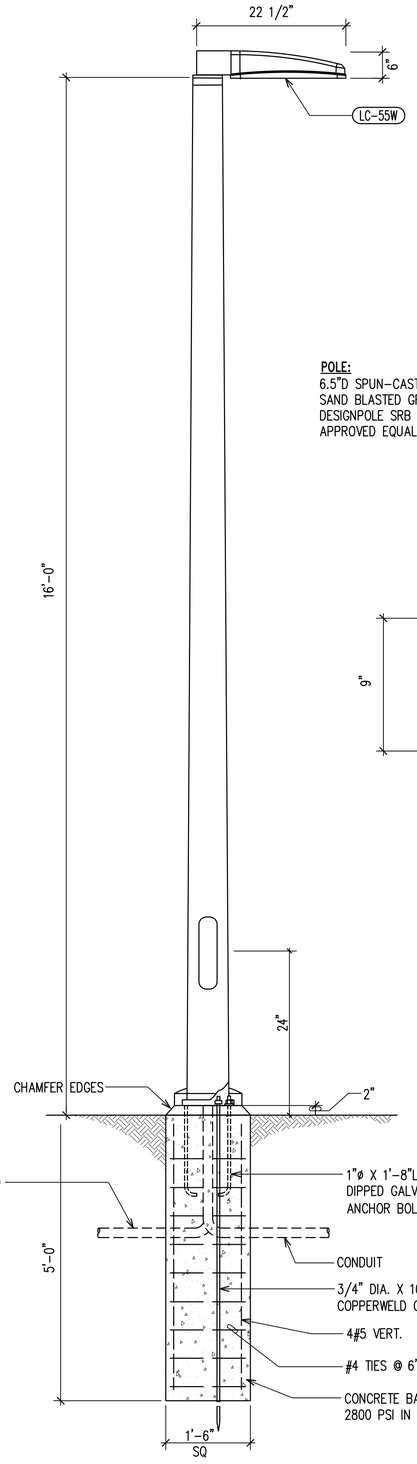
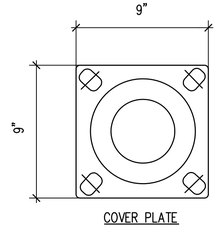
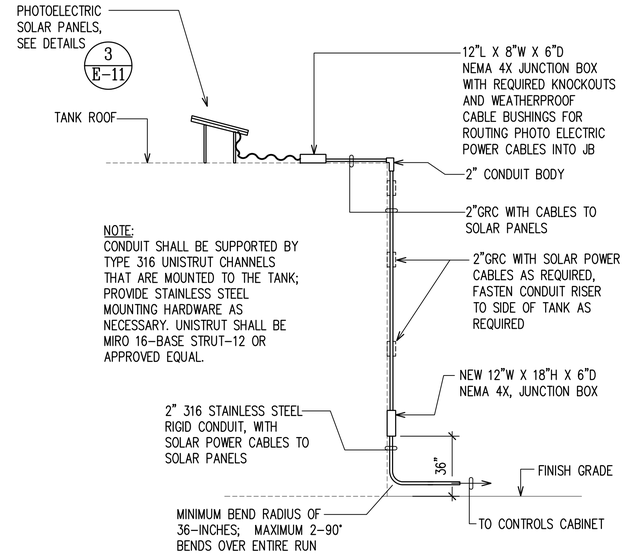


POLE:
6.5"D SPUN-CAST CONCRETE POLE
SAND BLASTED GRAY FINISH
DESIGNPOLE SRB SERIES OR
APPROVED EQUAL



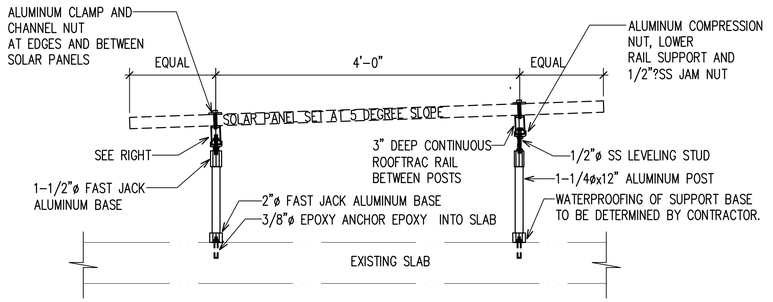
COVER PLATE

1/E-11 POLE DETAIL
NOT TO SCALE



CONDUIT FOR SOLAR POWER CABLES

2/E-11 CONDUIT MOUNTING DETAILS ON EXISTING TANK
NOT TO SCALE



NOTE: CONTRACTOR SHALL VERIFY THAT THE 3/8" EPOXY ANCHOR WILL FIT IN THE HOLE OF THE 2" DIAMETER BASE.

3/E-11 PV PANEL SUPPORT DETAIL
NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

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LICENSED PROFESSIONAL ENGINEER
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SIGNATURE
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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

HOOLEHUA WATER SYSTEM
TASK ORDER #11 - EMERGENCY REPAIRS DUE TO VANDALISM
AT HOOLEHUA 2-3.5 MG RESERVOIR SITE

JOB NO.

MISCELLANEOUS ELECTRICAL DETAILS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

DWG. NO. E-11
SHEET 11 OF XX

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
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OCTOBER 2017

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Z:\ACAD\PROJECTS\27131\DOD-ELECTRICAL SYMBOLS XREFS: KKO-STAMP=Z:\ACAD\PROJECTS_PE_ STAMP\KKO-STAMP _X216172-SYMBOLS=\XREF_X216172-SYMBOLS

State of Hawai‘i
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
Princess Ruth Ke‘elikolani Building
830 Punchbowl Street
Honolulu, Hawai‘i 96813

June 11, 2018
WAGE RATE SCHEDULE BULLETIN NO. 492
Addendum to Wage Rate Schedule Bulletin No. 491

This addendum lists changes in wage rates and effective dates subsequent to Wage Rate Schedule (WRS) Bulletin No. 491. The wage rates contained herein are recognized by the Director of Labor and Industrial Relations to be prevailing on public construction work for the purposes of Chapter 104, Hawaii Revised Statues. Wage rates listed in WRS Bulletin No. 492 remain in effect except for the changes noted in this addendum.

For additional wage rate schedules, please consult the Internet at http://hawaii.gov/labor/rs.

Questions on the schedule should be referred to the Research and Statistics Office at (808) 586-9005.

The next regular schedule will be issued on or about September 15, 2018.

LEONARD HOSHIJO
Director

STATE OF HAWAI‘I
DAVID Y. IGE, Governor

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
LEONARD HOSHIJO, Director
LOIS IYOMASA, Deputy Director

RESEARCH AND STATISTICS OFFICE
PHYLLIS DAYAO, Research & Statistics Officer

OPERATIONS MANAGEMENT INFORMATION STAFF
Janet Kaya, Supervisor
Zachariah Wadsack, Research Statistician
Elienne Yoshida, Research Statistician

In cooperation with:
WAGE STANDARDS DIVISION
PAMELA MARTIN, Administrator

WAGE RATE SCHEDULE BULLETIN NO. 492
Addendum to Wage Rate Schedule Bulletin No. 491

Classification	Current			2018			2019			2020			Remarks
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate	
* **PAINTER:**	**1/1/18**						**1/1/19**						
Painter; Spray Painter; Sandblaster or Waterblaster; Thermoplastic Striper; Paper Hanger	$66.21	$37.35	$28.86	-	-	-	$67.74	$38.35	$29.39	-	-	-	
							7/1/19						
Painter; Spray Painter; Sandblaster or Waterblaster Thermoplastic Striper; Paper Hanger	-	-	-	-	-	-	$68.44	$38.80	$29.64	-	-	-	

Comments: Overtime must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe benefits.
*** Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.**

APPRENTICE SCHEDULE BULLETIN NO. 492 June 11, 2018

Addendum to Apprentice Schedule Bulletin No. 491

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	FRINGE BENEFIT HOURLY RATE Total	Remarks
* **(Effective 1/1/18)**													
PAINTER	1000	$16.81										$9.25	
"	1000		$18.68	$20.54	$22.41	$24.28						$12.75	
"	1000						$26.15					$13.75	
"	1000							$28.01	$31.75			$14.50	

*** Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.**