SPECIFICATIONS AND PROPOSAL

FOR

NEW BOAT LIFT IMPROVEMENTS

PIER 1, HILO HARBOR, HAWAII

JOB P50217

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HARBORS

NOTICE TO BIDDERS

Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for **NEW BOAT LIFT IMPROVEMENTS, PIER 1, HILO HARBOR, HAWAII, JOB NO. P50217**, will begin as of the HIePRO Release Date. Bidders shall register and submit complete bids through HIePRO only. Refer to the following HIePRO link for important information on Vendor Registration: https://hiepro.ehawaii.gov/welcome.html.

The solicitation plans, specifications, proposal, and additional documents designated or incorporated by reference shall be available in HIePRO.

HIePRO OFFER DUE DATE AND TIME is June 4, 2026, at 2:00 p.m., Hawaii Standard Time (HST). **Bidders shall submit and upload the complete proposal to HIePRO prior to the offer due date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents as part of their proposal. The record of each bidder and their respective proposal shall be open to public inspection. FAILURE TO UPLOAD THE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION.**

The scope of work generally consists of the installation of a new pre-engineered elevator boat lift structure and its foundation, trenching for electrical conduits, installation of electrical connections for the boat lift, and restoration of asphalt concrete pavement, chain link fencing, gates and other miscellaneous site elements. Each boat lift track will be mounted on a concrete pile cap supported by micropile below. The estimated cost of construction is $350,000 to $450,000.

To be eligible for award, bidders shall possess a valid State of Hawaii General

Engineering "A" license **at the time of bidding**.

The Hawaii Department of Transportation, Air and Water Transportation Facilities Division, 2016 GENERAL PROVISIONS FOR CONSTRUCTION PROJECTS, applicable to this project are available on the internet at: http://hidot.hawaii.gov/administration/con/.

All Request for Information (RFI) questions and Substitution Requests shall be submitted in HIePRO **no later than May 14, 2026, 2:00 p.m., HST.** RFI questions received after the stated deadline shall not be addressed. Substitution Requests received after the stated deadline shall not be considered. Verbal RFI(s) shall not receive a response. All responses to RFI questions shall be provided for clarification and information only and issued by formal addendum. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

If there is a conflict between the solicitation and information stated in the responses to RFI questions, the solicitation shall govern and control, unless as amended by formal addendum.

Apprenticeship Preference. A five percent bid adjustment for bidders that are party to apprenticeship agreements pursuant to HRS § 103-55.6 is applicable to this project.

Employment of State Residents on Construction Procurement Contracts. Compliance with HRS § 103B-3 is a requirement for this project whereby a minimum of 80 percent of the bidder's work force on this project shall consist of Hawaii residents.

Campaign Contributions by State and County Contractors. Contractors are hereby notified of the applicability of HRS § 11-355 which states that campaign contributions are prohibited from specified State or County government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, contact the Campaign Spending Commission at (808) 586-0285.

Protests. Any protest of this solicitation shall be submitted in writing to the Director of

Transportation, in accordance with HRS § 103D-701 and Hawaii Administrative Rules § 3-126.

The Equal Employment Opportunity Regulations of the Secretary of Labor implementing Executive Order 11246, as amended, shall be complied with on this project.

The U.S. Department of Transportation Regulation entitled "Nondiscrimination in Federally Assisted Programs of the U.S. Department of Transportation", Title 49, Code of Federal Regulations (CFR), Part 21, is applicable to this project. Bidders are hereby notified that the Department of Transportation shall affirmatively ensure that the contract entered into pursuant to this advertisement shall be awarded to the lowest responsible bidder without discrimination on the grounds of race, color, national origin, or sex (as directed by 23 CFR, Part 200).

For additional information, contact Ms. Da Teng, Project Manager, by phone at (808) 587-1961, or by email at da.teng@hawaii.gov.

The State reserves the right to reject any or all proposals and to waive any defects in said proposals in the best interest of the public.

Dreanalee Kalili

DREANALEE K. KALILI
Deputy Director of Transportation for Harbors

HIePRO RELEASE DATE: April 30, 2026

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INSTRUCTIONS FOR CONTRACTOR'S LICENSING

"A" general engineering contractors and "B" general building contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project *(See, HRS § 444-7 for the definitions of an "A" and "B" project.)*, respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license *(An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32.)*. The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

S P E C I A L P R O V I S I O N S

I. The "General Provisions" are amended as follows:

A. ARTICLE I - TERMS, ABBREVIATIONS, AND DEFINITIONS

1.3 DEFINITIONS

1. Section 1.3 Definitions: The definition for "Subcontractor" is amended by deleting it and replacing it with the following:

   "Subcontractor – An individual, partnership, firm, corporation, or joint venture, or other legal entity, as licensed or required to be licensed under Chapter 444, Hawaii Revised Statutes, as amended, which enters into an agreement with the Contractor to perform a portion of the work."

2. Add the following to 1.3 Definitions.

   a. "HAWAII ePROCUREMENT SYSTEM (HIePRO) - The State of Hawaii eProcurement System for issuing solicitations, receiving proposals and responses, and issuing notices of award."

   b. "PROPOSAL (OR BID) - The offer of a Bidder, on the prescribed HDOT form, to perform the work and to furnish the labor and materials at the prices quoted."

B. ARTICLE II – STANDARD PROVISIONS FOR COMPETITIVE SEALED BIDS AND AWARDS

2.7 REQUEST FOR SUBSTITUTION OF SPECIFIED MATERIALS AND EQUIPMENT BEFORE BID OPENING is amended as follows:

1. The last sentence in the first paragraph (line 147 to 152) shall be replaced with the following:

"Where a bidder intends to use a material or equipment of an unspecified brand, make, or model, the bidder must submit a request to the Department for review and approval at the earliest date possible. As specified in the Notice to Bidders, all requests shall be posted as a question in HIePRO under the "Question and Answer" tab. Supporting documents for specific request shall be emailed to the Project Manager specified in the Notice to Bidders. Request must be posted in HIePRO and supporting documents received by the Project Manager no later than twenty-one (21) calendar days before the bid opening date."

2. The first sentence in the second paragraph (line 154 to 156) shall be replaced with the following:

"It shall be the responsibility of the bidder to submit sufficient evidence based upon which a determination can be made by the Department that the alternate brand is a qualified equivalent."

2.8 PREPARATION AND DELIVERY OF BID is amended as follows: Last Paragraph (line 189 to 192) shall be replaced with the following:

"**Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered.** Original (wet ink, hard copy) proposal documents are not required to be submitted. **Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Do not include confidential and/or proprietary documents with the proposal.** The record of each bidder and respective bid shall be open to public inspection.

FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified."

2.11 BID SECURITY

"(a) Unless directed otherwise in the invitation for bids, each bid shall be accompanied by bid security which is intended to protect the Department against the failure or refusal of a bidder to execute the contract for the work bid or to supply the required performance and payment bonds. Bid security shall be in an amount equal to at least five percent of the base bid and additive alternates. Bid security shall be in one of the following forms:

(1) A deposit of legal tender;
(2) A valid surety bid bond, underwritten by a company licensed to issue bonds in the State of Hawaii, in the form and composed, substantially, with the same language as provided herewith and signed by both parties; or
(3) A certificate of deposit; credit union share certificate; or cashier's, treasurer's, teller's, or official check drawn by or a certified check accepted by a bank, savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA) and payable at sight or unconditionally assigned to the Department. These instruments may be utilized only to a maximum of one hundred thousand dollars ($100,000.00). If the required amount totals over one hundred

thousand dollars ($100,000.00), more than one instrument not exceeding one hundred thousand dollars ($100,000.00) each and issued by different financial institutions shall be accepted.

If bidder elects options (1) or (3) above for its bid security, said bid security shall be in its original form and shall be submitted before the bid deadline to the Contract Office, Department of Transportation, Aliiaimoku Hale, 869 Punchbowl Street, Room 103, Honolulu, Hawaii 96813. Original surety bid bonds do not need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be included with its bid submitted and uploaded to HIePRO."

2.12 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS is amended by deleting 2.12 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS in its entirety and replacing with the following:

"2.12 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS. Bids may be modified or withdrawn prior to the bid opening date and time. Withdrawal or revision of proposal shall be completed and submitted and uploaded to HIePRO prior to the bid opening date and time"

2.14 PUBLIC OPENING OF BIDS is amended by deleting 2.14 PUBLIC OPENING OF BIDS in its entirety.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

SPECIFICATIONS

PART I

GENERAL PROVISIONS

The Hawaii Department of Transportation AIR and WATER Transportation Facilities Division General Provisions for Construction Projects dated 2016 is not physically included in these specifications. The General Provisions are available at

http://hidot.hawaii.gov/administration/con/

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HARBORS

SPECIFICATIONS

PART II

TECHNICAL PROVISIONS

ARTICLE X - PROJECT DESCRIPTION

10.0 CONTENTS

This Article X includes the following subsections:

10.1 GENERAL

The work to be done under this contract shall include the furnishing of all labor, materials and equipment, and the supervision and services necessary to construct, complete in place, ready for use, all items of work in accordance with the drawings and these specifications. The Bid shall include the total work as shown or specified.

Bidders are encouraged to examine the existing conditions at the project site to familiarize themselves with the nature and extent of work involved. For questions and clarification of the work involved, call the Harbors Project Manager, Ms. Da Teng, phone no. (808) 587-1961 or at da.teng@hawaii.gov.

10.2 SCOPE OF WORK

In general, the work shall include but not be limited to the following items of work:

(A) Mobilization and Demobilization - Sixty percent (60%) of the mobilization and demobilization lump sum bid price in the Proposal Schedule shall be paid to the Contractor upon completion of mobilization at the work site. The remaining forty percent (40%) shall be provided upon demobilization from the work site and fulfilling all Contract requirements.

(B) Environmental protection – Includes all materials, labor, maintenance, reporting necessary to prepare and provide the following: detailed Site-Specific Best Management Practice plan; compliance with all applicable federal and other state and county permit conditions; all other requirements noted in the contract plans and specifications.

(C) New Work – Includes ALL items included in the Contract Documents to a new pre-engineered elevator boat lift structure and its foundations (two concrete pile caps with micropiles), trenching for electrical conduits, installation of electrical connections for the boat lift, constructing chain link fences and gates, restoration of AC pavements, includes all materials/equipment, fabrication, shipping and transportation, site work, trenching, backfilling, AC pavement repair, permits, testing, reporting, phasing, sequencing, coordination with Hawaii District operations, utility coordination and installation, site coordination and improvements, offsite disposal of dewatering materials, temporary measures and controls, demolition, removals, relocation, salvaging, reinstallation, coordination, and all incidentals as required and necessary to prepare the site and to construct the Work and all its systems complete and in place. Contractor to submit a schedule of values for review and approval.

10.3 DIRECTOR

The term "Director" as used in these Specifications shall mean the Director of Transportation or his authorized representative.

10.4 HARBORS CONSTRUCTION ENGINEER

The term "Harbors Division Construction Engineer," "Harbors Construction Engineer," "Construction Engineer" or "Engineer," as used in these Specifications shall mean the Construction Engineer for Harbors Division, State Department of Transportation, or his or her authorized representative.

10.5 (Not Used)

10.6 CONTRACTOR'S RESPONSIBILITY

(A) General: The Contractor shall make direct application to the proper utility companies for water, electric power, and telephone service for its use during construction of this project, and shall pay for all connections, service charges, and all costs for construction and ultimate removal of all temporary service line extensions into the site.

The Contractor shall comply with all applicable Federal, State and County laws, including Hawaii Public Health regulations, and all local laws and regulations concerning pollution control and abatement. No burning of debris and/or waste materials shall be permitted on the project site. The Contractor shall be responsible for all dust control. Dust shall be kept within acceptable levels at all times. Noise shall be kept within acceptable levels at all times in accordance with the State of Hawaii Department of Health requirements.

The Contractor shall be responsible for all damages to harbor and adjacent facilities caused by the Contractor's operations as well as those of its sub-contractors, suppliers, and any other parties associated with its work. The Contractor shall, at their own expense, make prompt restitution for damages to items caused by their operations or negligence. The Contractor shall hold the State and its Consultants harmless for all claims from such loss or injury.

The Contractor shall provide, erect, and maintain warning signs, lights, barricades, fences, crowd control barriers, and/or other means as necessary to prevent unauthorized persons and the general public from wandering onto the construction area where they may suffer injury or create a hazard to the construction operations or the work. The Contractor shall take all necessary precautions for safety in his operations and to prevent injury to his employees and to others having lawful access to the construction area. This work shall be done at no cost to the State and shall be considered incidental to the various item of work.

The Contractor shall coordinate all work with the Harbors Division Construction Engineer and District Manager and shall conform to all harbor regulations affecting their operations.

The Contractor shall verify conditions in the field prior to ordering any materials. The existing conditions are based on the best available information. The Contractor shall make no claim for extra compensation should actual existing conditions differ from those shown on the plans and specifications.

(B) Safety Requirements: The Contractor must be familiar with, and shall at all times conform to, all applicable health and safety regulations, including all OSHA standards. The Contractor shall submit, to the Harbors Engineer, a Health and Safety Plan within (30) calendar days after the award of contract for review and acceptance. The Contractor shall not be allowed to commence work until the Health and Safety Plan has been accepted by the Harbors Engineer.

The Contractor shall require its employees, subcontractors, and agents to comply with all applicable Federal, State, and local health and safety laws and regulations.

Acceptance of the Health and Safety Plan by the Harbors Construction Engineer shall not relieve the Contractor from its responsibility of complying with Federal, State and local occupational health and safety laws and regulations. The Contractor is solely responsible for its compliance, and ensuring that its employees, subcontractors and agents also comply, with all applicable Federal, State and local occupational health and safety laws and regulations.

The Contractor shall be familiar with any and all Federal, State and local safety and drug-free workplace regulations and shall comply with all applicable provisions and amendments. Failure to do so will result in immediate discontinuation of any, or all, parts of the operation that are in violation until compliance is achieved.

(1) Precautions at the Jobsite: The Contractor shall take all necessary precautions to protect the workers, invitees and the public, and shall provide, where reasonable and necessary, barriers, guards, temporary bridges, respiratory equipment and lights. The Contractor shall require all personnel to wear hard hats, safety boots, and appropriate clothing while in any work area. In addition, personnel shall utilize safety harnesses, lines, and other restraint devices as required when working at either excessive heights or depths as defined by OSHA regulations. The Contractor must provide bull rails, or portable concrete barriers (jersey barrier or k-rail) per DOT Highway Standard Plan T-42 or equal accepted by the Harbors Construction Engineer, along unprotected waterside edges of aprons and bulkheads, except where vehicles are prohibited.

When working around existing piping or conduit, the Contractor shall first tone the area to determine underground line locations. Special care shall be taken during excavation to avoid all buried lines, cables, utilities, cathodic protection cables and conduit, and to maintain the minimum distance from existing cables, conduits and pipe.

(2) Fire Safety: The Contractor's personnel shall be familiar with location and use of firefighting equipment, including blankets, extinguishers, hose and dry powder agents. Smoking materials or other sources of flame or heat should be immediately extinguished in the event of any accident or equipment failure resulting in the release of flammable vapor or liquids. Fire safety equipment shall be provided by the Contractor as may be required by the local, State or Federal authorities.

The Contractor shall not store equipment or park vehicles in a way that obstructs fire lanes nor blocks fire exits from office structures, equipment buildings, or fenced areas.

(3) Mechanical Safety: Dangerous parts of equipment shall be indicated by safety colors or warning signs. Extreme care shall be exercised in operating mobile or moving equipment.

(4) First Aid: The Contractor shall ensure that all employees are aware of the locations and use of first aid equipment. Local emergency telephone numbers for ambulance, fire department and law enforcement agencies shall be posted in prominent places. The Contractor shall provide all necessary first aid equipment, including a first aid kit in its vehicles.

(5) Firearms and Alcohol: Absolutely under no circumstances shall un-prescribed, controlled substances, alcohol or firearms of any type be present or carried in vehicles by Contractor's personnel. Any of these items found in the possession of any person shall be grounds for immediate removal from the jobsite and/or dismissal of that person from the job.

(6) Accidents: In the event that an accident or injury occurs at the jobsite, the Contractor shall immediately notify the State of the occurrence. A complete accident report, including photographs of the accident site, shall be provided to the State within two (2) weeks of the occurrence.

(7) Jobsite Invitees: The Contractor shall be responsible for the safety of the personnel of any of its Subcontractors, vendors, suppliers, agents or other invitees who enter the job site area and the Contractor shall require said invitees to comply with the requirements of this Section. The Contractor shall notify the State of invitees in advance.

10.7 STANDARD SPECIFICATIONS AND APPROVED EQUAL

The term "Standard Specifications," as used in these Technical Provisions of these Specifications, shall mean the "Hawaii Standard Specifications for Road and Bridge Construction, Department of Transportation Highways Division, Honolulu, Hawaii, 2005," and all subsequent amendments.

The term "approved equal" as used in the Technical Provisions of these Specifications and Plans shall mean "an equal approved by the Director in writing."

These specifications and/or plans may specify equipment, articles or materials under a trade name or the name of a manufacturer and his information catalog. The use of alternatives or substitutions of equal quality and characteristics for the purpose intended will be permitted, upon acceptance of the Director, in accordance with the requirements of the General Provisions.

Please note that these requirements include certain deadlines for requests on use of alternatives before bid opening and/or justification for substitutions after the bid opening. The Director also reserves the right to deny any request he deems irregular or not in the best interests of the State.

10.8 PERMITS

The Contractor is responsible for complying with all permit requirements for the project and it shall ensure that all permits remain valid and that all permits are renewed in a timely manner, throughout the duration of the project.

(A) Work Permit: The Contractor shall obtain all permits for all operations on piers, wharves, and aboard vessels including welding and burning. The Contractor shall obtain the permits required for this work directly from the District manager. The Contractor shall apply and obtain the Ashore and Vessel Hot Work Permit from Harbors Division Hawaii District.

(B) Noise Permit: That Contractor shall apply for, and obtain, a Community Noise Permit and/or Variance, for any work that the contract requires, or the contractor proposes, to perform outside of normal working hours; whichever is required by the State of Hawaii Department of Health for such work and is responsible for providing any submittals and materials, and to undertake all efforts and tasks, required by the Department of Health for Permit and/or Variance approval.

(C) The Contractor also shall consult applicable County, State, and other governmental agencies for required permits, charges and fees. The Contractor shall apply for, and obtain, any permits necessary for it to perform all work required under the contract and is responsible for preparing

and furnishing any information needed to complete any permit applications, as well as for paying any permit filing fees and charges, imposed by the permitting agencies as conditions for approval.

The Contractor shall submit one (1) PDF copy of all permits to the Harbors Construction Engineer no later than two working days after receipt of any approved permit.

The Contractor must comply with all conditions and requirements imposed by all clearances and permits listed above, or obtained for and in association with the project, and the Plans and Specifications.

10.9 SHOP DRAWINGS

The Contractor shall prepare shop drawings and submit PDF files to the Engineer for review. Hard copies are not required. Review of shop drawings is for general conformance with the design concept of the project contract documents and does not relieve the Contractor of his responsibility to provide all work in accordance with the Plans and Specifications.

The Contractor shall prepare, thoroughly check, and submit to the Engineer for review and approval, shop drawings detailing the permanent and temporary work. The Contractor shall submit shop drawings for review in a timely manner, at the earliest possible date.

The Contractor shall not make changes to the accepted shop drawings without the written approval of the Engineer. The State will return the shop drawings within a reasonable amount of time, a minimum of two (2) weeks, depending on the complexity of the review. An extended review period shall not be used as a basis of a claim for extra compensation or contract time extensions.

10.10 MODIFICATIONS TO PLANS AND SPECIFICATIONS

The Contractor and his Subcontractors must submit in writing any requests for modifications to the Plans and Specifications. Shop drawings that are submitted to the design professional for his review do not constitute "in writing" unless it is brought to the attention of the design professional that specific changes are being suggested. In any event, changes to the Plans and Specifications by means of shop drawings become the responsibility of the person initiating the changes. The Contractor shall be responsible for coordinating and making all necessary revisions to the work of all trades to suit the modifications requested.

Construction changes completed without written acceptance by the Harbor's Construction Engineer will be at the Contractor's risk. All costs associated with unauthorized construction changes shall be the responsibility of the Contractor.

10.11 (Not Used)

10.12 LAYOUT OF WORK

The Contractor shall layout his work from reference points and bench marks indicated on the plans and shall be responsible for all measurements in connection therewith. The Contractor shall furnish all equipment and materials required to establish and maintain all lines and grades as called for in the plans or as required in the process of construction. The Contractor shall be responsible for the proper and accurate layout of the work and for the preservation of stakes and other marks. All survey work shall be performed by a Surveyor licensed in the State of Hawaii.

10.13 TESTING

The Contractor shall hire an independent certified testing agency to perform all testing required under these specifications. Testing agency shall be subject to the acceptance of the Director. The Contractor shall be responsible for costs associated with testing, and for the submittal of test results.

Testing results shall be submitted for review by the State's Construction Engineer in a timely manner so as not to affect the construction schedule.

10.14 HARBOR OPERATIONS

All work shall be coordinated with the Harbors Construction Engineer. Before work is started, the Contractor shall submit a work schedule to the Director for acceptance.

Bidders can obtain information on scheduled shipping activities from www.portcall.com and as confirmed by the Harbors Division Hawaii District Manager. Shipping activities will take precedence over the Contractor's activities. The Contractor shall be aware of the shipping schedule in advance of submitting a bid. The Contractor's construction schedule shall incorporate potential down times that may result from schedule conflicts with construction activities.

The Contractor shall be aware of all harbor activity occurring at each pier and shall suspend work in order to accommodate all harbor operations.

The Contractor shall ensure that their bid price includes the cost to cover all delays in their work, demobilization costs, and remobilization costs, due to vessel schedules.

Arrangements for work and storage areas within the harbor area shall be made with the Engineer and District Manager. The Contractor shall be responsible for maintaining the work and storage areas and, if necessary, shall restore these areas to their original condition at his expense and to the satisfaction of the Harbors

Division in the event any damage results from his operations. The Contractor shall conduct the work in a manner that will not interrupt or otherwise interfere with full operations of the adjoining existing facilities. The Contractor shall at his own expense, make prompt restitution for damages to these facilities, and payment for loss or injury suffered by users thereof, caused by the Contractors operations or negligence, holding the State harmless therefrom.

The Contractor shall give the Harbors Division District Manager and the Construction Engineer at least 2 weeks prior notice at each location, whenever its work will render a portion of the pier unusable.

10.15 WATERWAYS

The Contractor shall use all proper precautions and methods of procedure in his operations to ensure that no debris or other deleterious materials be allowed to fall, flow or otherwise enter State waters, or drainageways or drainage systems that discharge into State waters. The Contractor shall notify the State Department of Health and the State's Construction Engineer of any petroleum, oil, or hazardous material spills immediately. Any petroleum or oil spills shall be immediately remediated to the satisfaction of the Director.

10.16 AS-BUILT DRAWINGS

(A) Description:

1. As-built drawings shall refer to those documents maintained and annotated by the Contractor during construction and shall be defined as (1) a neatly and legibly marked set of contract drawings showing the final location of piping, structures, equipment, electrical conduits, outlet boxes and cables; (2) additional documents such as RFI responses, schedules, lists, drawings, and electrical and instrumentation diagrams included in the specifications; additional documents placed on reproducible vellum (post-contract drawings); and (3) Contractor layout and installation drawings

2. As-built drawings shall be full-sized and maintained in a clean, dry, and legible condition. As-built drawings shall not be used for construction purposes and shall be available for review by the Construction Engineer on a monthly basis and may hold up payment if not maintained. The review will take place during normal working hours at the Contractor's field office.

(B) General:

1. The Contractor shall keep a record of all field changes that occur during the project on two (2) full-sized sets of the contract plans to be kept at

the job site. No partial payments will be allowed unless these changes are reflected on both sets of plans, and the plans must be current and kept up to date.

2. The Contractor shall be responsible for furnishing its own 100 percent (full) size as-built drawings set based on the latest Contract Documents. The Contractor shall incorporate any post contract drawings issued under Field Orders, responses to Requests for Information, or as part of Contract Change Orders, into both copies of the as-built plans.

3. Marking of the as-built drawings shall be kept current and annotations, to the as-built drawings, shall be done at the time the material and equipment are installed. These annotations shall be made with an erasable colored pencil conforming to the following color code:
   a. Additions and deletions shall be marked in red
   b. Comments, as well as dimensions, shall be marked in blue

4. All deviations from the contract drawings as a result of any and all Addenda, Field Orders, Requests for Information (RFI's) and approved Contract Change Orders shall be annotated on all affected drawings.

5. Annotations to the as-built drawings shall reference the specific Addendum number, Field Order number, Request for Information number, or the Contract Change Order number. Annotations without these reference numbers will not be considered complete.

(C) Submittals:

At the completion of the work, the Contractor shall transmit both copies and PDF/A files of the as-built drawings to the Harbors Construction Engineer as a Submittal. The Contractor shall stamp both sets of drawings with the words "As-Built Drawings" and said stamp shall include a statement signed by the Contractor certifying that the drawings accurately and completely reflect the work as constructed. The stamp format and wording shall be submitted to the Construction Engineer for prior acceptance. Final payment, as well as full payment for Demobilization, will not be released until both copies of the As-Built Drawings and PDF/A files are received and accepted by the Construction Engineer.

10.17 BEST MANAGEMENT PRACTICES

(A) The Contractor must follow standard best management practices (BMPs) for air pollution, water pollution, noise and solid waste control, as required by Federal, State and County regulations, to protect the environment from the effects of construction activity, including prohibiting any construction debris or other deleterious materials to fall, flow or otherwise enter the

water.

(B) The Contractor shall submit a site-specific best management practices (BMP) plan to the Construction Engineer before work begins. The plan shall satisfy the (applicable) requirements of ARTICLE XIII - TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL. The plan shall describe and detail all methods and procedures to be used to prevent air and water pollution, including preventing any materials, wastes and debris from entering any adjacent storm drain system and harbor waters to the satisfaction of the Harbors Division and the State of Hawaii Department of Health (DOH). The Contractor shall revise the BMP plan, at no additional cost to the State, should it be determined by the Construction Engineer and DOH that the plan is insufficient to prevent pollution.

(C) The Contractor shall comply with the Clean Water Act and the State Harbors Division Stormwater Management Program. No pollutant is allowed to be discharged directly or indirectly through the Harbors small MS4 or other potential pathway into harbors waters.

(D) All groundwater that is removed as part of dewatering activities shall be removed off site in a tanker truck and properly discharged in accordance with State and County laws.

(E) In case of release of hazardous substance, oil, or encounter of contaminated soil, the Contractor shall notify appropriate facility personnel, emergency response agencies, and regulatory agencies following notification procedures, and shall notify Harbors Construction Engineer immediately (i.e. within 24 hours). Contact information must be in locations that are readily accessible and available.

(F) The Contractor shall reimburse the State of Hawaii within 30-day for the full amount of all outstanding costs incurred by the State of Hawaii and Federal government agencies for all citations or fines received as a result of the Contractor’s non-compliance with regulations.

10.18 CONSTRUCTION ACCESS

(A) General: The Contractor shall show all access routes to and from the construction site, including specific travel routes within the project area. The access routes shall be accepted by the Construction Engineer prior to the start of construction.

Access for construction vehicles will be allowed at the main entry of the project area, or as directed by the Harbors Construction Engineer. The Contractor shall be responsible for ensuring that access is controlled in such

a manner as to allow the safe passage of construction vehicles to and from the site.

The access routes will not be measured or paid for separately but will be considered incidental to the various contract items in the Proposal Schedule.

The State does not warrant or guarantee that areas, beyond or outside of the project limits, except as indicated below, and of such size and location that meets the requirements desired by the Contractor for work or storage, will be available to the Contractor within or for the duration of the project. The Contractor is solely responsible for assessing its requirements for work and storage area(s) and for securing such work or storage areas, outside of or beyond the project limits, if it deems that such areas are necessary for it to perform the contract work. The Contractor shall conduct the work in a manner that will not interrupt or otherwise interfere with full operations of the adjoining existing facilities. The Contractor shall at his own expense, make prompt restitution for damages to these facilities, and payment for loss or injury suffered by users thereof, caused by the Contractor's operations or negligence, holding the State harmless therefrom.

The Contractor shall coordinate access with the Harbors Hawaii District Manager and Construction Engineer. If the Contractor is required to use an alternative access, the State shall not incur any additional cost on the designated access. The Contractor shall comply with all of Harbors Division security and safety requirements. For additional information, see Section 10.21.

All Contractor personnel who are intending to work on site will be required to have an active Transportation Worker Identification Credential (TWIC) card.

10.19 WORKING HOURS

The Contractor shall coordinate his work to minimize interferences with harbor operations. All work shall be coordinated and scheduled with the Harbors Construction Engineer.

10.20 CONSTRUCTION SCHEDULES

The Contractor shall submit within ten (10) calendar days after award of contract, the following schedules:

(A) Detailed Construction Schedule:

i) The detailed construction schedule shall be based on a detailed critical path analysis of construction activities and sequence of operations

noted for the orderly performance and completion of any separable parts of any work and all work in accordance with the Contract. The schedule shall be Critical Path Method (CPM) in the form of an arrow diagram and activity listing. The network diagram shall show in detail and in orderly sequence all activities on a time scale, their descriptions, durations and dependencies, necessary and required to complete all work and any separable parts thereof. The schedule shall show in detail the following information for each activity:

1. Identification by code numbers and description;
2. Duration;
3. Craft and Equipment;
4. Earliest start and finish dates;
5. Latest start and finish dates;
6. Total and free float time; and
7. Highlighted Critical Path

ii) The schedule shall be complete in all respects, covering in addition to activities at the site of work, off-site activities such as design, fabrication, and procurement of equipment; the scheduled delivery dates of such equipment; submittal and acceptance of shop drawings and samples; ordering and delivery of materials; inspections; and testing. The schedule shall also include a manpower forecast by crafts. The detailed construction schedule shall be supplemented by a three-week schedule prepared by the Contractor and submitted to the Engineer on a weekly basis. The Contractor shall promptly inform the Engineer with a revised schedule and cash flow diagram within ten (10) calendar days after acceptance of such change.

iii) The Contractor shall coordinate with the Engineer regarding phasing of any of the work, and to ensure that such phasing will not affect the operations of the harbor, the electrical system, water system, or any other aspect of the harbor operations. The schedule shall reflect all phasing. The Contractor shall provide temporary lighting as required, and as noted in the contract plans and Technical Provisions.

iv) The schedule shall be kept up to date, considering the actual progress of work and shall be updated at a minimum every thirty (30) calendar days, or if any significant changes are made. The updated schedule shall, as determined by the Engineer, be sufficient to meet the requirements for the completion of the separable parts of work and the entire projects as set forth in the contract.

v) If at any time during the progress of the Work, the Contractor's actual progress appears to the Engineer to be inadequate to meet the requirements of the contract, the Engineer will notify the Contractor of such imminent or actual noncompliance of the contract. The Contractor

shall thereupon take such steps as may be necessary to improve his progress and the Engineer may require an increase in the labor force, the number of shifts, and/or overtime operations, days of work and/or the amount of construction plants all without additional costs to the State. Neither such notice by the Engineer nor the Engineer's failure to issue such notice shall relieve the Contractor from his obligation to achieve the quality of work and rate of progress required by the contract. Failure of the Contractor to comply with instructions of the Engineer under these provisions may be grounds for determination by the State that the Contractor is not prosecuting work with such diligence as will assure completion within the times specified. Upon such determination, the State may employ labor and equipment and charge the Contractor for the cost thereof, including depreciation for plant and equipment or may terminate the Contractor's right to proceed with the performance of the contract, or any separable part thereof, in accordance with the applicable provisions of the contract.

vi) The Contractor shall submit to the Engineer one (1) electronic file (pdf) of the detailed construction schedule and of each revised schedule submitted thereafter.

(B) Schedule of Cost Loading and Cash Flow Projection:

i) Along with the Project Schedule submittal, and each Monthly Updated Project Schedule and subsequent revisions, the Contractor must also submit a Schedule of Cost Loading and Cash Flow Projection which shall show the following:

a. The amount(s) billed for each of the previous months, the amount(s) being billed in the current month, and the anticipated amount(s) to be billed for each item during each of the remaining months for the duration of the project, for each of the individual bid items as well as the total amount of work.

b. Running total amount of work completed for each of the previous months, the running total amount of work completed as of the current month, and running total amounts expected to be accomplished at each of the remaining months of the project.

c. Retainage amount withheld for each of the previous months, for the current amount, and amount anticipated to be withheld for each of the remaining months of the project.

d. The net payment requests, accounting for amounts paid to date, retainage and monies withheld if any, for the previous months, the current month, and expected net payment requests for each of the remaining months of the project.

ii) The Schedule shall be shown in tabular format and in graphic format.

iii) There must be a strict correlation between the Detailed Construction Schedule and the Schedule of Cost Loading and Cash Flow Projection. The timeline(s) when individual bid items are being shown as billed against, and billed for the full amount, on the Schedule of Cost Loading and Cash Flow Projection must be match the dates when activities associated with these bid items are shown to occur, and be completed, on the Detailed Construction Schedule.

iv) The Engineer may, at its sole discretion, request the Contractor to explain in detail the procedure used to develop the Schedule. The procedure is subject to the review and acceptance of the Engineer. Receipt and acceptance of the Schedule and Summary methodology is a condition precedent to the making of any payments under the Contract. Therefore, failure to submit an acceptable methodology for the Schedule, as well as a Schedule based on a methodology accepted by the Engineer, shall be cause for withholding any progress payments due under this Contract.

v) The Contractor must submit an updated Schedule of Cost Loading and Cash Flow, with each payment request, as a prerequisite for payment on any monthly invoice.

vi) When an activity is deemed substantially complete by the Engineer, then such activity will no longer be treated as an activity affecting the critical path or successor activities on the Project. The cost of correction of any punch-list items associated with substantially completed activities will be covered by withheld retention or other amounts deemed by the Engineer to be adequate to cover such costs.

(C) Schedule of Values

i) Format and Content: Use the Project Proposal Schedule as a guide to establish the format for the Schedule of Values. Provide at least one line for each Specification Section. Provide a breakdown of the contract sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal work of subcontractor amounts down into several smaller identifiable items of work.

ii) Identification: Use the following Project identification on the schedule of values:

1. Project name and location
2. Project number
3. Contractor’s name and address

4. Contract No.
5. Date of submittal

iii) Arrange the Schedule of Values in tabular form with separate columns to indicate the following items listed:

1. Related Specification Section or Division
2. Description of work
3. Dollar value and percent complete

iv) Correlate line items in the Schedule of Values with other required administrative schedules and forms including:

1. Construction Schedule
2. Application for Payment forms including continuation sheets
3. List of Subcontractors
4. List of principle suppliers and fabricators
5. Schedule of submittals

v) Round amount to nearest whole dollar; the total shall equal Proposal Schedule Line Item and combined to equal the total contract sum.

vi) Provide a separate line item in the Schedule of Values for each part of the work where Applications for Payment may include materials or equipment, purchased, fabricated or stored, but not yet installed.

vii) Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment or when Change Orders or Construction Change Directives result in a change in the Contract Sum.

10.21 HARBOR SECURITY

The Contractor shall submit required documentation, including TWIC and approved Facility Access Request forms of all contractor's and sub-contractor's employees, their representatives, suppliers, manufacturers, and alike, and of all necessary vehicles needing access to the project site to the Harbors Division Construction Engineer and District Manager before starting work on the project. The documentation will include the following:

(A) Authorized personnel's first name, middle initial(s), and last name by company name.

(B) Vehicle(s) license plate number(s) by company name.

(C) Security personnel used to control perimeter access must be an employee of an established security guard company doing business in the State of Hawaii for at least the past 12 months. Each guard providing security services for the project shall have, at a minimum, been successfully trained in accordance with the Maritime Transportation Security Act of 2002, MTSA 109 and 33 CFR (Code of Federal Regulations) Part 105.210, Facility personnel with specific security duties. Contractor shall submit a letter to verify qualifications and/or copies of proof of successful training for each assigned security guard.

In addition, for each workday, Harbors security procedures will be as follows:

(A) The State will designate at least one access control point to the project site. Contractor may use the State designated access point during the normal working hours defined in the General Provisions. If the Contractor desires to use an alternate or additional access point(s), or utilize the State designated access point beyond the above indicated normal working hours, a request shall be submitted to the Harbors Construction Engineer at least seven (7) days prior to such action. The request shall identify the location of the alternate access point(s) and/or extended hours of work. Harbors acceptance of the request must be obtained prior to executing the request.

(B) The Contractor will be responsible for all coordinating, hiring and costs associated with providing any and all security guards to secure the site (to the satisfaction of the State) while the project is on-going (see Item C, above). The State shall bear no additional costs for security. Upon every entry, each employee must present and possess a valid photo identification (ID) card. If additional guards are required at an existing State controlled access point due to contractor activity, then the State will contact and coordinate the hiring of an additional guard(s). In this case, the Contractor shall be responsible for all costs with providing additional guards. All situations are upon acceptance of Harbors and solely at contractor's cost.

(C) In the event Harbors Division receives any USCG Notice of Violation (NOV) and/or civil penalties as a result of negligence on the part of the Contractor, its sub-contractors, their representatives, suppliers and manufacturers, the Contractor shall assume full responsibility for said NOVs and/or penalties.

(D) Contractor’s vehicles must be identified with a company logo and will be subject to search. Any employee’s personal belongings will also be subject to search.

(E) If the Contractor wishes to remove any fencing or open any locked gates, they shall coordinate with and request acceptance from the Harbors Construction Engineer and District Manager. If acceptance is granted, the Contractor shall then be responsible for securing open fencing or gate(s)

immediately after entering, or posting security guard(s) (see Item C, above) to monitor ingress and egress. The State shall bear no additional costs for additional labor, materials and/or security guards required for such actions.

(F) (Not Used)

(G) By the end of each day, the Contractor shall re-erect and/or restore all fencing/barrier/perimeter security measures to the satisfaction of the Construction Engineer and/or the District Manager. Electricity and lighting shall also be restored and in satisfactory working order, to no less than pre-construction conditions, by the end of each day, to the satisfaction of the Construction Engineer and/or District Manager.

(H) Under no circumstances shall perimeter security be compromised. If determined by the State, and solely by the State, that the contractor has left the project site in a condition that compromises security of the harbor, the State reserves the right to make the necessary arrangements to provide and/or enhance perimeter security, including restoration of electrical power and lighting, all at the sole expense of the contractor.

(I) At times, the maritime security level for the State of Hawaii and/or the general color-coded security level for State of Hawaii may be temporarily elevated. In these events, the contractor may be prohibited to access the project site and may be required to stop work as directed by either the Harbors Division's Construction Engineer or District Manager. The Harbors Division will consider impacts to the work and schedule as a result of prolonged work stoppages longer than 1 week (7 calendar days) in accordance with Articles 8.5 and/or 8.10 of the General Provisions.

(J) Under the federal Maritime Transportation Security Act (MTSA) and the federal Security and Accountability for Every (SAFE) Port Act all individuals desiring unescorted access to a regulated harbor facility must be required to possess a Transportation Worker Identification Credential (TWIC), proof of MARSEC Awareness training, a valid government issued picture ID card, a valid reason for entry, and a valid driver's license for the drivers of any of their vehicles. The State reserves the right to issue a ninety (90) day suspension of authorized access and entry into the project site to Contractor's and subcontractor's employees, their representatives, suppliers, manufacturers, and authorized personnel needing access to a TWIC controlled site if they have violated or compromised site security. The above mentioned staff are responsible and will be held accountable for any Notice of Violations, fines, and any civil penalties imposed by the United State Coast Guard (USCG) MTSA inspectors if found at fault. The State shall not be responsible for any additional costs or loss of construction time as a result of the suspension(s). The Transportation Worker Identification Credential application can be found on the internet at the following website:

http://www.tsa.gov/for-industry/twic. The process for obtaining a TWIC can take an extended period of time. The Contractor will not be granted an extension in contract time if the construction work is delayed by the TWIC process.

(K) Maritime Security Awareness training is mandatory for all personnel entering the Harbor facility. The Contractor shall ensure all its employees, representatives, subcontractors, vendors, and all alike, requiring access to the harbor area for this project, have been trained before entering the Harbor's property. Prior to starting work on this project, the Contractor shall provide a list of names of all employees, representatives, subcontractors, vendors, and alike, together with a letter attesting that all personnel have received this training to the Harbors District Manager and Construction Engineer. All employees, representatives, subcontractors, vendors, and alike, shall wear their respective company's identification card bearing the company's name, the individual's first and last name, and middle initial (s), and recent photograph of the individual on the front of the identification card at all times while on Harbor's property.

With the possible exception of paragraph I above, all other requirements indicated shall be considered incidental to the project, for the life of the project, and shall be provided by the contractor at no additional cost to the State.

Security services initiated and requested by the State. It is not intended for security services required by the bidder for their work.

10.22 (Not Used)

10.23 (Not Used)

10.24 MEASUREMENT AND PAYMENT

All items shown on the plans and included in the specifications, along with all incidentals or items not indicated in a specific Measurement and Payment section, shall be included in the Lump Sum Bid Items for Item No.3 in the Bid Schedule. Bidders shall review the Measurement and Payment sections in each Article to confirm payment procedures.

END OF ARTICLE

ARTICLE XI – REQUIRED SUBMITTALS

11.1 GENERAL

This Article describes the Contractor submittals that are required for this project. In general, they include but are not necessarily limited to shop drawings, product and material data sheets, safety data sheets, work plans and schedules, etc., as specified and required by the plans and specifications. As soon as possible after award of the contract, the Contractor shall submit for approval, all required submittals to the Construction Engineer at 79 S. Nimitz Highway, Honolulu, Hawaii 96813. After the State's acceptance of the submittals, the Contractor shall promptly and timely order the materials for the project so as to not delay the construction schedule and progression of work.

11.2 REQUIRED SUBMITTALS

The Contractor shall submit for review and approval one PDF file of each required submittal listed below. The Contractor shall consider this list to be the minimum required and shall be responsible for all submittals required by this contract as may be specified elsewhere on the plans and/or specifications.

Article X – Project Description

(A) Site Specific Best Management Practices Plan
(B) Inventory List
(C) Schedule of Values
(D) Test Results
(E) Shop Drawings
(F) Site Specific Bolt Lift Shop Drawings and Calculations (Stamped by a Structural Engineer Licensed in the State of Hawaii).
(E) Permits
(F) Construction Schedule and Schedule of Cost Loading/Cash Flow Projection
(G) Construction Access Routes
(H) Health and Safety Plan
(I) Harbors Security Documentation
(J) As Built Drawings

See also, submittal requirements as described in the following Articles:
Article XIII – Temporary Water Pollution, Dust, and Erosion Control
Article XIV – Demolition, Removal and Relocation
Article XV – Utility Excavation and Backfill
Article XVI – Aggregate Base Course
Article XVII – Asphalt Concrete Pavement
Article XVIII – Pavement Markings

Article XIX – Chain Link Fences and Gates
Article XX – Cast-In-Place Concrete
Article XXI – Boat Lift
Article XXII – Structural Steel
Article XXIII – Micropile
Article XXIV – Electrical Work

Additional submittal requirements may be discussed in other Articles or Specification Sections not listed above.

11.3 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for Required Submittals shall not be measured.

The Contractor shall consider all work associated with this Article to be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XII – MOBILIZATION AND DEMOBILIZATION

12.1 GENERAL

This work shall include the furnishing of equipment, labor and materials to perform all work in conjunction with mobilization and demobilization for the job in accordance with this Article of the Specifications.

12.2 DESCRIPTION

(A) Mobilization shall include the setting up and preparing for use, all plant, equipment and materials at the jobsite, for the project.

(B) Demobilization shall include the removal of all Contractor's plant, equipment and surplus materials from the jobsite. The cleanup of the jobsite, satisfactory to the Director, shall also be included in this article.

12.3 EXECUTION

The Contractor shall pay the amount shown in the Schedule of Liquidated Damages, as amended by the Special Provisions, for each calendar day delayed in demobilizing completely from outside of the construction limits by the specified date. The terms governing the assessment of liquidated damages, as specified in the General Provisions, and as amended by the Special Provisions, shall be applicable to the Contractors delay in demobilizing from the site by the specified date.

12.4 BASIS OF MEASUREMENT AND PAYMENT

Sixty percent (60%) of the mobilization and demobilization lump sum bid price in the Proposal Schedule shall be paid to the Contractor upon completion of mobilization at the work site. The remaining forty percent (40%) shall be provided upon demobilization from the work site. Mobilization and demobilization line item not to exceed 6% of the sum of all items excluding the bid price of this item.

ITEM NO.	PAY ITEM	PAY UNIT
1	Mobilization and demobilization (not to exceed 6% of the sum of all items excluding the bid price of this item)	L.S.

END OF ARTICLE

ARTICLE XIII – TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL

13.1 DESCRIPTION

This section is required for all work, including the Contractor's storage sites. It describes the following:

(A) A detailed site-specific Best Management Practice (BMP) Plan including diagrams and narratives; constructing, maintaining, and repairing temporary water pollution, dust, and erosion control measures at the project site including local material sources, work areas and access roads; removing and disposing of wastes and hazardous wastes; and control of fugitive dust (defined as uncontrolled emission of solid airborne particulate matter from any source other than combustion). Additionally, all projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors are subject to State of Hawaii, Department of Transportation (HDOT) Harbors Division, Stormwater Management Plan (SWMP) requirements, unless exempted, and are subject to Harbors Stormwater BMP inspections. If any requirement conflicts with those administered by State of Hawaii, Department of Health (HDOH), the Contractor shall follow the more stringent requirement.

(B) Compliance with applicable federal and other state permit conditions.

(C) Work associated with dewatering and hydrotesting activities and compliance with conditions of the NPDES general permit coverage authorizing discharges associated with construction activities dewatering and hydrotesting.

13.2 GENERAL REQUIREMENTS

In order to provide for the control of water pollution, dust, and erosion arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, the work performed shall comply with all applicable federal, state, and local laws and regulations concerning water pollution control including, but not limited to, the following regulations:

(A) State of Hawaii, HDOH, Hawaii Administrative Rules (HAR) Chapter 11-54 – Water Quality Standards and Chapter 11-55 – Water Pollution Control.

(B) For projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors ONLY, HDOT Harbors Division, Stormwater Management Plan.

(C) For projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors ONLY, City and County of Honolulu (CCH), Rules Relating to Water Quality.

(D) For projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors ONLY, CCH, Storm Water BMP Manual for Construction.

(E) 40 CFR Part 110, Environmental Protection Agency (EPA), Discharge of Oil.

(F) 40 CFR Part 117, EPA, Determination of Reportable Quantities for Hazardous Substances.

(G) 40 CFR Part 261, EPA, Identification and Listing of Hazardous Waste.

(H) 40 CFR Part 302, EPA, Designation, Reportable Quantities, and Notification.

(I) 49 CFR Part 171, U.S. Department of Transportation, Hazardous Materials Regulations.

13.3 MATERIALS

Materials shall conform to the following when applicable:

(A) Slope Drains. Slope drains may be constructed of pipe, fiber, mats, erosion control fabric, geotextiles, rubble, Portland cement concrete, bituminous concrete, plastic sheets, or other materials acceptable to the Construction Engineer.

(B) Grass. Grass shall be quick growing species such as rye grass, Italian grass, or cereal grasses. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover. Alternative grasses are allowable if acceptable to the Construction Engineer.

(C) Fertilizer and Soil Conditions. Fertilizer and soil conditioners shall be a standard commercial grade acceptable to the Construction Engineer.

(D) Silt Fences. Silt fences shall be synthetic filter fabric mounted on posts and embedded in compacted ground in compliance with American Society for Testing and Materials (ASTM) D6462-03, Standard Practice for Silt Fence Installation.

(E) Berms. Berms shall be gravel or sand wrapped with geotextile material. Alternate materials are allowable if acceptable to the Construction Engineer.

(F) Alternate materials or methods to control, prevent, remove, and dispose of pollution are allowable if acceptable to the Construction Engineer.

13.4 CONSTRUCTION

(A) Preconstruction Requirements

i) **Temporary Water Pollution, Dust, and Erosion Control Meeting.** The contractor shall be required to submit a site-specific BMP Plan to the Construction Engineer and address all comments by the Construction Engineer. After the Plan is accepted in writing by the Construction Engineer, the Contractor shall schedule a meeting with the Construction Engineer before the start of construction work to discuss the sequence of work, and plans and proposals for water pollution, dust, and erosion control.

ii) **Temporary Water Pollution, Dust, and Erosion Control Submittals.** The Contractor shall submit the site-specific BMP Plan to the Construction Engineer prior to the start of work for review of compliance with this Article. A site-specific BMP Plan template is available online at https://hidot.hawaii.gov/harbors/malamaikeawakai/, under **HDOT Harbors Construction and Post-Construction Programs – Documents and Forms**.

a. Written site-specific BMP Plan shall include the following as applicable:

1) Identification of potential pollutants and their sources and other factors that may cause water pollution, dust, and erosion.

2) A list of all material and heavy equipment to be used during construction. Vehicles and equipment shall be well maintained and free from any type of fluid leaks.

3) Construction schedule.

4) Name(s) of specific individual(s) designated responsible for water pollution, dust and erosion controls on the project site. Include home, business, and cellular telephone numbers, fax numbers, and e-mail addresses.

5) Descriptions of the methods and devices used to eliminate certain pollutants (e.g., wastewater, fuels, solvents, detergents, toxic or hazardous substances) from discharging into state waters and drainage systems, and provide details of BMP(s) to be installed or utilized. Indicate approximate dates when BMP(s) will be installed and removed.

6) Description of maintenance and subsequent removal of BMP(s).

7) Method(s) of removal and disposal of solid and regulated hazardous wastes encountered or generated during construction. The Contractor is advised to procure regulated hazardous materials on an as-needed basis, as feasible. All excess regulated hazardous materials at the conclusion of this project shall remain the property of the Contractor and shall be removed from HDOT Harbors Division property upon the completion of the project.

8) Method(s) of removing and disposing concrete and asphalt pavement cutting slurry, concrete curing water, and hydrodemolition water.

9) Method(s) of containing, removing and disposing of demolition dust and debris to minimize the discharge of these pollutants into state waters and drainage systems.

10) Spill kit contents and location.

11) Fugitive dust control, including dust from grinding, sweeping, or brooming off operations or combination thereof.

12) Method(s) of storing and handling of regulated hazardous materials (e.g. oils, paints) and other products used for the project. Safety Data Sheets (SDS) for all regulated hazardous materials used during construction activities shall be kept on-site throughout the duration of the project and readily available upon inspection. All containers of regulated hazardous materials should be provided with secondary containment during storage. Regulated hazardous materials not specifically needed in the execution of this project shall not be brought or stored on site. As feasible, the Contractor is encouraged to use products that do not contain any regulated constituents. The use of green products is encouraged.

13) Method(s) of concrete washout/waste control.

14) Method(s) of managing material stockpiles to minimize erosion and dust.

15) Good housekeeping practices.

    a) Minimize tracking of sediment offsite from project entrances and exits.

    b) Litter management. The Contractor shall have a comprehensive housekeeping policy and shall actively enforce housekeeping requirements. Housekeeping items include, but are not limited to, cups, cans, bottles and other forms of lightweight litter, unattended containers of hazardous materials, concrete debris (e.g. dust, chips, and other sweepings), and discarded articles of disposable Personal Protective Equipment (e.g., earplugs, dust masks, and gloves). Employees who are specifically tasked with housekeeping duties shall be identified by name.

    c) The Contractor should provide and maintain covered waste receptacles. No construction debris or other refuse that is generated as a result of project activities is to be disposed in HDOT Harbors Division-owned waste receptacles.

16) Provide plan(s)/drawing(s) showing location of followings when applicable:

    a) Boundaries of the property and the locations where construction activities will occur, including:

        i) Locations where earth-disturbing activities will occur (noting any sequencing of construction activities);

        ii) Approximate slopes and drainage patterns with flow arrows before and after the construction;

        iii) Locations where sediment, soil, or other construction materials will be stockpiled;

        iv) Locations of any contaminated soil or contaminated soil stockpiles;

        v) Locations of any crossings of state waters;

        vi) Designated points on the site where vehicle will exit onto paved roads;

vii) Locations of structures and other impervious surfaces upon completion of construction; and

viii) Locations of construction support activity areas.

b) Locations of all state waters, including wetlands and indicate which water bodies are listed as impaired.

c) The boundary lines of any natural buffers.

d) Topography of the site, existing vegetative cover, and features (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of stormwater onto, over, and from the site property before and after major grading activities.

e) Stormwater discharge locations, including locations of any storm drain inlets on-site and in the immediate vicinity of the site to receive stormwater runoff from the project; and locations where stormwater will be discharging to state waters (including wetlands).

f) Locations of all potential pollutant-generating activities.

g) Locations of stormwater control measures; and

h) Locations where chemicals will be used and stored.

17) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Parts 110, 117, or 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

18) The Contractor shall date and sign the site-specific BMP Plan.

(b) The Contractor shall keep the accepted Plan on-site or at an easily accessible location throughout the duration of the project. Revisions to the Plan shall be included with the original plan. The Contractor shall obtain written acceptance from the Construction Engineer before revising BMP. An updated Plan shall be kept on-site throughout the remainder duration of the project.

The Contractor shall follow guidelines in the "*The City and County of Honolulu Storm Water Best Management Practice Manual – Construction*," (dated November 2011) in developing, installing, and maintaining BMP for the project. Additionally, the Contractor shall follow applicable CCH *Rules Relating to Water Quality* **for all projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors**, and use respective Soil Erosion Guidelines for other Maui, Kauai and Hawaii County projects. Information can be found at the respective County websites.

(B) **Construction Requirements are as follows.**

(1) No work shall be allowed to begin until submittals detailed in Subsection 209.03 (A)(2) – Temporary Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Construction Engineer. The Contractor shall prevent pollutants from entering state waters. These efforts shall address areas such as those that drain to water, are over water, or drain to storm drains adjacent and in the area of the project site. The Contractor shall design, operate, implement, and maintain the Plan to ensure that stormwater discharges associated with construction activities will not cause or contribute to a violation of applicable state water quality standards.

(2) All projects at Honolulu, Kalaeloa Barbers Point, and Kahului Harbors are subject to HDOT Harbors Division SWMP requirements for construction at those harbors unless the project meets a specified exemption class. The requirements include, but are not limited to, construction site BMP initial, recurring (i.e. every two weeks from October through March and every two months otherwise), and final inspections at the frequencies outlined in the SWMP. No grading or land disturbance activities are allowed until the initial BMP inspection is completed and required BMPs are found to be properly installed.

(3) Address all comments received from the Construction Engineer.

(4) Modify and resubmit plans and construction schedules to correct conditions that develop during construction which were unforeseen during the design and pre-construction stages.

(5) Coordinate temporary control provisions with permanent control features throughout the construction and post-construction period.

(6) BMP shall be in place and operational until the construction is completed and accepted by Harbors.

(7) Install and maintain either or both stabilized construction entrances and wheel washes to minimize tracking of dirt and mud onto roadways. Restrict traffic to stabilized construction areas only. Clean dirt, mud, or other material tracked onto the road immediately. Modify stabilized construction entrances to prevent mud from being tracked onto roadways.

(8) Chemicals may be used as soil stabilizers for either or both erosion and dust control if acceptable to the Construction Engineer.

(9) Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be a source of fugitive dust.

(10) Cleanup and remove any pollutant that can be attributed to the Contractor.

(11) Install or modify BMP due to change in the Contractor's means and methods, or for omitted condition that should have been allowed for in the accepted site-specific BMP Plan or a BMP that replaces an accepted site-specific BMP that is not satisfactorily performing.

(12) Properly maintain BMP.

(13) Remove, replace or relocate any BMP that must be removed, replaced or relocated due to potential or actual flooding, or potential danger or damage to the project or public.

(14) The Contractor's designated representative specified in Subsection 209.03(A)(2)(d) shall address any BMP concerns brought up by the Construction Engineer within 24 hours of notification, including weekends and holidays. Should the Contractor fail to satisfactorily address these concerns, the Construction Engineer reserves the right to employ outside assistance or use the Construction Engineer's own labor forces to provide necessary corrective measures. The Construction Engineer will charge the Contractor such incurred costs plus any associated project engineering costs. The Construction Engineer will make appropriate deductions from the Contractor's monthly progress estimate. Failure to apply BMP shall result in either or both the establishment and increase in the amount of retainage due to unsatisfactory progress or withholding of monthly progress payment. Continued failure to apply BMP may result in one or more of the following: The Contractor being fully responsible for all additional costs incurred by HDOT Harbors Division including any fines levied by HDOH, suspension of the Contract, or cancellation of the Contract.

(C) **Hydrotesting Activities**. If work includes removing, relocation or installing waterlines, and the Contractor elects to flush waterline or discharge hydrotesting effluent into state waters or drainage systems, obtain a Notice of General Permit Coverage (NGPC) authorizing discharges associated with hydrotesting waters from the HDOH Clean Water Branch (CWB). If a permit is required, prepare and submit permit application (CWB-Notice of Intent (NOI) Form F) to the HDOH CWB.

Do not begin hydrotesting activities until the HDOH CWB has issued a NGPC. Hydrotesting operations shall be in accordance with conditions in the NGPC. Submit a copy of the NPDES Hydrotesting Waters Application and Permit to the Construction Engineer.

(D) **Dewatering Activities**. If excavation of backfilling operations requires dewatering, and the Contractor elects to discharge dewatering effluent into state waters or existing drainage systems, the Contractor shall obtain an NGPC authorizing discharges associated with construction activity dewatering from the HDOH CWB. If a permit is required, prepare and submit permit application (CWB-NOI Form G) to the HDOH CWB.

Do not begin dewatering activities until the HDOH-CWB has issued an NGPC. Conduct dewatering operations in accordance with the conditions in the NGPC. Submit a copy of the NPDES Dewatering Application and Permit to the Construction Engineer.

13.5 PAYMENT

Payment for Temporary Water Pollution, Dust, and Erosion Control shall not be measured and shall be included in the Lump Sum Bid Item No. 2 in the Bid Schedule.

No progress payment will be authorized until the Construction Engineer accepts in writing the site-specific BMP Plan or when the Contractor fails to maintain the project site in accordance with the accepted BMP Plan.

The Contractor shall reimburse the State of Hawaii within 30-day for the full amount of all outstanding costs incurred by the State of Hawaii for all citations or fines received as a result of the Contractor’s non-compliance with regulations.

END OF ARTICLE

ARTICLE XIV – DEMOLITION, REMOVAL AND RELOCATION

14.1 DESCRIPTION

The work includes the following items:

1. Demolition and/or removal of existing mooring cleats, foundations, pullboxes, and conductors and other items as shown in the contract plans and described herein.

2. Backfilling resulting trenching, holes and pits.

3. Disposal of designated material within the spoil area.

4. Disconnecting, capping or sealing site utilities.

5. Salvaging items for reuse by Owner or to be used in other phases of the proposed project.

6. Temporary relocation of utilities and other facilities, as required.

14.2 SUBMITTALS

Inventory List: Submit a list of items to be removed and/or salvaged and deliver to Engineer prior to start of demolition.

14.3 QUALITY ASSURANCE

1. Regulatory Requirements: Comply with governing EPA/HDOH notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

2. Pre-demolition Conference. The following items shall be discussed:

   a. Review items to be salvaged and returned to Harbors District Office.

14.4 CONSTRUCTION REQUIREMENTS

1. Trenches, holes, depressions, and pits left by the removal of such improvements shall be backfilled in accordance with these specifications.

2. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Division 1 Section "Temporary Facilities and Controls."

3. Protect adjacent buildings and facilities from damage due to demolition

activities.

4. Protect existing site improvements, appurtenances, and landscaping to remain.

5. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

6. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

7. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.

8. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.

9. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

10. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

11. The Contractor shall contact the Hawaii One Call Center prior to any ground disturbing activities at 1-866-423-7282 or http://callbeforeyoudig.org. Regardless of what is shown or not shown on the As-Built Plans and/or Utility Company records, the Contractor shall be responsible for conducting his own investigation including, but not limited to, toning for underground utilities as necessary, probing and potholing for all utility locations to ensure existing underground utilities are not damaged. The Contractor shall also coordinate with Harbors Maui District Office to review the GIS utility plans, if available.

12. The Contractor shall ensure that all Best Management Practices (BMP) are in-place prior to the start of construction.

14.5 DISPOSAL OF REMOVED MATERIAL

All material resulting from demolition and removal shall become the property of the Contractor and shall be removed from the project site and disposed of at County approved locations.

14.6 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for Demolition, Removal and Relocation of the various items described in the Article shall not be measured.

The Contractor shall consider all work associated with this Article shall be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XV – UTILITY EXCAVATION AND BACKFILL

15.1 GENERAL

The work consists of furnishing equipment, materials, labor and appliances to perform all work in connection with excavation, backfill and compaction necessary for the job in accordance with this Article of the specifications and the Hawaii Standard Specifications, Sections 204, 206, 703.20, and 703.21.

This section describes the following:

(A) Excavating and backfilling trenches for utilities pipes (including but not limited to electric, water, sewer, telephone, data, cable television, oil, and gas lines) and conduits (including roadway and sign lighting, traffic signal, and other communications systems).

(B) Excavating and backfilling for utility structures and appurtenances.

(C) Disposing of surplus non-contaminated material from excavations.

(D) Provide and install asphalt primer, hot asphalt and fabric waterproofing membrane system where specified on the contract drawings

15.2 REFERENCES

(A) Hawaii Standard Specifications for Road and Bridge Construction, State of Hawaii, 2005, as amended.

(B) ARTICLE XIV – DEMOLITION, REMOVAL AND RELOCATION

15.3 MATERIALS

Materials shall conform to the following sections of 2005 Hawaii Standard Specifications for Road and Bridge Construction when applicable:

Trench Backfill Material	703.21
Cullet and Cullet-Made Materials	717

Trench backfill material shall include mixture of aggregate and cullet. When cullet is not produced on the project island, or material unit price of cullet is greater than material unit price of structure backfill or greater than material unit price of trench backfill, cullet may be excluded for that backfill application. Before excluding cullet, submit availability and pricing

documentation.

Trench gravel backfill material shall conform to AASHTO M 43, size number 67. When tested in accordance with AASHTO T 96, the LA abrasion shall not exceed 40 percent at 500 revolutions.

Controlled Low-Strength Material (CLSM) in accordance with Section 314 – Controlled Low-Strength Material (CLSM) for Utilities and Structures of 2005 Hawaii Standard Specifications for Road and Bridge Construction may be used in place of trench and structure backfill material, subject to the Engineer's acceptance. Where CLSM is allowed, provide drainage system to accommodate underground water seepage. CLSM will not be allowed as trench backfill when installing aluminum and aluminum-coated pipe conduits.

Provide plastic marking tape that is acid and alkali-resistant polyethylene film, 6- inches wide with 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 tape is buried up to 3-feet deep. Manufacture tape specifically for marking and locating underground utilities. Provide metallic core of tape encased in a protective jacket or provided with other means to protect it from corrosion. Tape shall conform to the following colors and shall 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 System; Green: Sewer Systems.

Structural Backfill shall be per Subsection 703.20 of the standard specifications. Only Structural Backfill Material A is allowed for backfilling of drainage structures and light pole foundations.

15.4 EXECUTION

(A) Structure and Trench Excavation

i) General: Notify the Engineer ten (10) working days before excavating for structures and trenches.

The Contractor shall be responsible for the stability of temporary open cuts during construction of structures or trenches and shall take appropriate measures to meet OSHA requirements.

Excavate in such a manner as to prevent damage to pavements, sidewalks, structures, landscaping, and other improvements. Excavate immediately before installation of conduit and other appurtenances. Stockpile excavated material

in a location that shall not cause damage, obstruct vehicular and pedestrian traffic, or interfere with surface drainage.

In excavation operations, do not disturb ground below elevations indicated in the contract documents. If ground below elevations indicated in the contract documents is disturbed, excavate disturbed ground until undisturbed ground is reached. Backfill this area with Class D concrete until required foundation elevation is reached.

Keep foundation excavation dry by draining, bailing, pumping, or driving sheathings.

When material from excavation does not meet quality requirements specified for backfill in accordance with Article 18.3 – Materials, furnish conforming material, as required.

Deposit remaining structure or trench excavation material that is not used as backfill, in roadway embankments in accordance with Subsection 203.03(B)(1) and Subsection 203.03(B)(3) of 2005 Hawaii Standard Specifications for Road and Bridge Construction.

Excavation for structures shall be adequate to accommodate the new structure at the specified elevation. Excavation shall conform to Subsection 206.03(A) of the standard specifications.

The contractor is responsible for design, construction and inspection of any shoring required for excavations in conformance with OSHA requirements and shall be sufficient in strength to prevent movement of the soil held in place by the shoring.

Due to anticipated soft and/or loose subsurface soil conditions, some movement of soil around the underground structure excavations should be anticipated due to changes in the earth stresses during and after construction, especially during extraction of a sheet pile system, where utilized.

The Contractor shall contact the Hawaii One Call Center prior to any ground disturbing activities at 1-866-423-7282 or http://callbeforeyoudig.org. Regardless of what is shown or not shown on the As-Built Plans and/or Utility Company records, the Contractor shall be responsible for conducting his own investigation including, but not limited to, toning for underground utilities as necessary, probing and potholing for all utility locations to ensure existing underground utilities are not damaged. The Contractor shall also coordinate with Harbors

Maui District Office to review the GIS utility plans, if available.

(B) Structure and Trench Backfill

Do not deposit fill material against back of foundations and manholes until test samples indicate that concrete has developed strength required in Subsection 503.03(E) of 2005 Hawaii Standard Specifications for Road and Bridge Construction.

Cure test samples under conditions similar to those affecting the structure. Continue backfilling so that excessive unbalanced loads are not introduced against the structure.

Place backfill material in uniform horizontal layers not exceeding 8-inches in loose thickness, before compaction. Moisten and compact each layer of backfill until relative compaction of not less than 95 percent is achieved in accordance with Subsection 203.03(C)(2) of 2005 Hawaii Standard Specifications for Road and Bridge Construction. The Engineer may reduce 95 percent compaction requirement in situations where such compaction is not feasible.

When the Engineer cannot use field density test, compact each layer of backfill with vibratory or other accepted equipment on granular backfill material.

Compaction of backfill material by ponding or jetting will not be allowed.

Where the bottom of the utility pipe is located within 12-inches or below normal ground s level, use trench gravel backfill material to at least 12- inches above pipe or to bottom of pavement structure. Gravel material shall be completely encapsulated by geotextile conforming to Subsection 716.03 of 2005 Hawaii Standard Specifications for Road, Bridge, and Public Works Construction.

When required, place sufficient fill at structures, utility pipes, and conduits ahead of other grading operations to permit public traffic to cross.

Compact backfill material in the following areas to a relative compaction of not less than 90 percent:

i) Footings not beneath surfacing.

ii) Other locations where the documents indicate 90 percent relative compaction for structure or trench backfill.

Place plastic marking warning tapes for appropriate type of utility

directly above pipe, within a depth of 3-feet from finish grade, unless otherwise indicated in the contract documents.

Backfill below and against structures shall be compacted to 95% relative compaction per Subsection 203.03(C)(2) and in conformance with Subsection 206.03(B) of the Standard Specifications.

Backfill to the elevation of the pavement aggregate subbase or the elevation where installation of CLSM is to occur as indicated on the contract documents.

CLSM shall be provided for backfill against structures where detailed. The Contractor shall get written approval to use CLSM backfill in a location not specifically specified in the project documents.

Contractor shall submit CLSM mix design for review at least two weeks prior to pouring.

Furnish batch/delivery tickets to the Construction Engineer at the time CLSM is poured or no later than when the truck leaves the work area where the CLSM was poured.

15.5 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for utility excavation and backfill as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XVI – AGGREGATE BASE COURSE

16.1 GENERAL

This work shall consist of constructing aggregate base course on a prepared subbase course in accordance with the requirements of the Contract or as established by the Engineer.

16.2 GENERAL REQUIREMENTS

The provisions of Section 304 - Aggregate Base Course of the Standard Specifications shall apply except as hereinafter modified:

(A) Sections 304.04 Method of Measurement and 304.05 Basis of Payment are deleted.

16.3 SUBMITTALS

(A) Submit certificate of compliance with these specifications and material data for the base course material.

(B) Soils Testing: The compaction of the base course shall be tested by an independent testing agency. All test results shall be attested to by a Civil Engineer licensed in the State of Hawaii and shall be submitted to the Construction Engineer for approval. The cost of soils testing shall be borne by the Contractor. A field density test shall be made throughout the area for each 1,500 square feet of each compacted layer. However, at a minimum, one field density test shall be conducted within the auto storage area, and another at the new maintenance building location. All test results must be approved before the Contractor can proceed with placing additional layers of base course or pavement materials.

16.4 PAYMENT

Measurement and payment for aggregate base course as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XVII – ASPHALT CONCRETE PAVEMENT

17.1 DESCRIPTION

This work shall consist of constructing asphalt concrete pavement on a prepared base course, in accordance with the requirements of the contract.

17.2 GENERAL REQUIREMENTS

The provisions of Section 401 — Hot Mix Asphalt (HMA) Pavement of the “Standard Specifications" shall apply except as hereinafter modified:

(A) 401.04 Measurement and 401.05 Payment are deleted.

17.3 PAYMENT

Measurement and payment for asphalt pavement as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XVIII – PAVEMENT MARKINGS

18.1 DESCRIPTION

This work shall consist of furnishing, installing, and removing pavement markers, in accordance with the requirements of the contract.

18.2 GENERAL REQUIREMENTS

The provisions of Section 629 — Pavement Markings of the “Standard Specifications" shall apply except as hereinafter modified:

(A) 629.04 Measurement and 629.05 Payment are deleted.

18.3 PAYMENT

Measurement and payment for asphalt pavement as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XIX – CHAIN LINK FENCES AND GATES

19.3 GENERAL

This work shall consist of constructing chain link fences and gates in accordance with the requirements of the contract or as established by the Engineer.

19.4 GENERAL REQUIREMENTS

The provisions of Section 607 – Chain Link Fences and Gates of the Standard Specifications shall apply except as hereinafter modified:

(A) Section 607.03 Construction by adding the following:

i) Fence Removal

1. Remove the fence as specified or indicated in the Drawings. The Contractor is responsible for complete removal of the fencing system unless noted otherwise.

2. All removed material shall be removed from the site at the end of the day and disposed of at an approved disposal site.

3. The security of the site shall be the responsibility of the Contractor. The site shall be secured at all times. Any damaged or stolen items while the site is under the control of the Contractor for this project shall be repaired or replaced at no additional cost to the State.

ii) Barbed Wire. Barbed wire shall be 4-point using 12-1/2 gauge twisted galvanized steel wire. Barbed wire support arms shall be designed to fit on top of the fence posts and the top of the gate frame."

(B) Sections 607.04 Method of Measurement and 607.05 Basis of Payment are deleted.

19.5 PAYMENT

Measurement and payment for chain link fences and gates as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XX – CAST-IN-PLACE CONCRETE

20.1 GENERAL

The work shall include the furnishing of all labor, materials and equipment necessary to construct, complete in place, all cast-in-place concrete as shown on the plans and as specified herein.

20.2 MATERIALS

(A) Portland Cement - shall conform to "Standard Specifications for Portland Cement", ASTM C150, Type II.

(B) Aggregates for Concrete - shall conform to "Standard Specifications for Concrete Aggregates" ASTM C33, except that local aggregates that have been shown by tests or actual service to produce concrete of required strength, durability and wearing qualities, may be used when approved by the Director.

(1) Fine Aggregate - Coral beach sand or basalt sand and No. 4 crushed rock of close grained, hard, bluish gray lava rock. Fine aggregate shall be clean, free from salt, vegetable loam, earth, elongated piece, disintegrated rock or other deleterious substances.

(2) Coarse Aggregate - Broken stone obtained from clean, hard, blue lava rock or other approved inert materials of similar characteristics, free from disintegrated stone and all adherent coatings. Size of aggregate shall be 1-inch.

(C) Water – used in mixing concrete shall be clean salt-free, potable water.

(D) Admixture

(1) Water reducing and/or water reducing and set retarding admixture shall be Daracom 100 manufactured by W.R. Grace & Co., or approved equal and shall conform to ASTM C494, Type F or G, and shall be mixed in all concrete in accordance with directions of manufacturer.

(2) Corrosion inhibiting admixture shall be calcium nitrite based DCI-S manufactured by W.R. Grace Co. or approved equal and shall be mixed in all concrete at a rate of 2.5 gallons per cubic yard or as otherwise recommended by the manufacturer.

(E) Reinforcing Steel - shall be deformed intermediate grade ASTM A615, Grade 60 and epoxy coated in accordance with ASTM A775. Welded wire fabric shall conform to ASTM A775 and shall be galvanized.

(E) Reinforcing Steel (under water) - shall be deformed stainless steel bars confirming ASTM A955, Grade 60.

(G) Epoxy Grout and Epoxy Bonding Compound - shall be two component resins, polysulfide free, high modulus, high strength epoxy adhesive. Mix with quartz granules when grouting anchor bolts. Epoxy shall be "Sikudur Hi-Mod" as manufactured by Sika Chemical Co. or other approved equal.

20.3 TESTING AND INSPECTION

(A) Mill Laboratory Test, Reports and Affidavits - Furnished by the manufacturer, certifying that all materials delivered to the project conform to these specifications.

(B) Compressive Strength and Slump Tests: The Contractor shall obtain the services of an approved independent testing laboratory to make and test cylinder specimens for compressive strength in accordance with ASTM C39 and slump of concrete in accordance with ASTM C143.

Four test cylinders shall be taken for each compressive strength test at a frequency of one set for every 100 cubic yards of concrete, and as directed due to any apparent change of consistency or as deemed appropriate by the Director. One specimen shall be tested at 7 days, two at 28 days, and one shall be held in reserve in the event that additional testing is required. The concrete shall be considered acceptable if the average of both cylinders tests at 28 days meets or exceeds the specified design compressive strength (f'c) and neither test specimen falls more than 500 psi below that strength.

Should tests reveal that concrete is deficient in strength, additional testing of the remaining cylinder and, if directed, testing of core samples of in-place concrete shall be accomplished at no additional cost to the State.

20.4 CONCRETE MIX DESIGN

(A) All concrete shall consist of Portland Cement - Type I/II, fine and coarse aggregate, admixture and water.

(B) All concrete shall have a 28 day compressive strength of 4,000 psi.

For 28 day compressive strengths, the cement content in bags of cement per cubic yard of concrete shall be 6.50 bags for 4,000 psi concrete. Water cement ratio shall not exceed 0.40. If Concrete is to be placed via tremie method, “Seal” class concrete shall be used.

(C) Submit concrete mix design to the Engineer for approval. Note that concrete strength requirement is minimal only. No claim for extra compensation for the furnishing of concrete of greater strength in order to accomplish other requirements above specified will be considered by the Engineer.

20.5 CONSTRUCTION

(A) Concrete

(1) Concrete shall not segregate nor cause bleeding. It shall work readily into corner and angles of form and around reinforcement without segregation of materials or an excess of water on the surface. It shall produce exposed surfaces of uniform color and smooth appearance without honeycomb.

(2) Ready-Mix Concrete -shall conform to ASTM C94 with certificates furnished by the mixing plant that concrete has a 28 day compressive strength and maximum slump as specified above. Delivery tags with each load shall indicate yardage of concrete, amount of water and amount of cement. Plant shall have sufficient capacity so that the construction schedule can be maintained. The time elapsing between the introduction of the mixing water between the cement and the mixing aggregate and placing of the concrete in final position in the form shall not exceed 45 minutes.

(3) Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie. A tremie shall consist of a tube having a diameter of not less than 10 inches, constructed in sections having flanged couplings fitted with gaskets. The tube shall be equipped with a receiving hopper at the top. The tremie shall be supported so as to permit free movement of the discharge end so as to permit rapid lowering when necessary to retard or stop the flow of concrete. The tremie tube shall be kept full to the bottom. When a batch is dumped into the hopper, the flow of concrete shall be induced by slightly raising the discharge end, always keeping it in the deposited concrete.

The flow shall be continuous until the work is completed.

(B) Forms

(1) Forms shall be constructed to slopes, lines, shapes and dimensions shown, installed and maintained plumb and straight and sufficiently tight to prevent leakage, and securely braced and shored to prevent displacement, and to safely support construction loads. Falsework shall be designed with adequate strength, rigidity and durability to successfully resist movement from wave action of the season; to safely carry the full load of fresh concrete and all construction loads without any settlement or deflection; to rigidly hold their shape and position under internal vibration of fresh concrete.

(2) In no case shall the finished product deviate from established lines, grades and dimensions in excess of those tolerances listed in Section 203 of the ACI Standard Recommended Practice for Formwork (ACI 347-63). Any such deviation in excess of the allowable tolerance will be just cause for rejection of the finished product. Exposed concrete surfaces shall be formed with new sound Plywood or lined with "Form Ply" or approved equal. Plywood shall be commercial standard Douglas Fir, moisture resistant concrete form plywood not less than 5-ply and at least 5/8" thick. Forms shall be coated with a bond breaking material prior to the placement of reinforcing steel.

No construction loads exceeding the structural design loads shall be supported upon any unshored portion of the structure under construction.

(C) Reinforcement

(1) Reinforcing steel bars and wire fabric shall be provided in sizes, lengths and configurations as indicated on the plans and shall be thoroughly cleaned before placing and again before placing of concrete to remove loose mill scale, rust, oil and all coatings that will destroy or reduce the bond. All items shall be accurately positioned and secured in place as indicated on the plans and as herein specified.

Annealed steel wire of not less than 16 gage shall be used to secure reinforcement. Reinforcement shall be placed in

specified positions not exceeding the ACI Building Code (ACI 318-71). Unless otherwise noted, cleaning, bending and placing of reinforcement shall be done in accordance with the standard practice of the Concrete Reinforcing Steel Institute. Splicing of bars, except where shown, will not be permitted without the approval of the Director. Splices where permitted, shall be lapped 40 bar diameters unless otherwise noted on the drawings.

(2) Concrete cover over reinforcing shall be provided as follows:

Concrete cast against and permanently exposed to earth..... 3"
Concrete exposed to the environment ……..……2”
Formed sides of concrete utility boxes ..... 2"
All others ..... 2"

(3) All reinforcement shall be observed by the Harbors Construction Engineer prior to closing of forms. This, however, shall not be construed to relieve the Contractor of his responsibility to place all reinforcing in accordance with the plans.

(D) Epoxy Coated Reinforcement

(1) Materials:

(a) Corrosion Protection Coatings: One-part, heat curable, thermosetting powdered epoxy in compliance with specifications listed in paragraph (2).

(b) Accessory Materials: Products used for patching and repair shall be compatible with applicable fusion bonded epoxy coating.

(2) Submittal:

(a) Submit coating manufacturer’s letter of certification that the product meets the requirements of specifications listed in paragraph (2).

(b) Submit coating applicator’s letter of certification that the product meets the requirements of specifications listed in paragraph (2).

(3) Quality Assurance:

(a) Applicator with three (3) years minimum experience.

(b) Fabricator with three (3) years minimum experience.

(4) Factory Tests

(a) Provide test results of epoxy coating.

(b) Application tests and inspections shall be in accordance with ASTM A 775.

(5) Delivery, Storage, Handling and Installation: Handling and hoisting of epoxy coated rebars shall be handled carefully to prevent damage to the coating. Use nylon lifting slings or padded wire rope slings. Coated bars shall be stored on padded cribbing and shall not be dragged over the ground or other bars. During concrete pour, walking on bars should be to a minimum and concrete placement equipment shall be set-up and moved carefully to minimize coating damage. Bar supports shall be plastic or wire coated with epoxy or vinyl. Tie wires shall be epoxy or plastic coated.

All parts of mechanical connections on epoxy coated steel, including steel splice sleeves, bolts, and nuts, wherever applicable shall be coated in accordance with manufacturer's recommendations.

All parts of damaged epoxy coating shall be repaired and patched in accordance with manufacturer's recommendations.

(E) Inserts -Provide and install all concrete anchors, bolts, pipe sleeves of polyvinyl chloride pipe, Class 150, and other fastening devices required and as shown on the plans. All anchors and bolts shall be hot dipped galvanized. Such embedment shall be securely fastened and rigidly held against movement during other work and the placing of concrete.

(F) Depositing Concrete

(1) No concrete shall be placed in the absence of the Harbors Construction Engineer who shall be given one day advance notice of placing of concrete.

(2) All sawdust, chips and other construction debris, extraneous matter and excessive water shall be removed from interior of forms. Surfaces shall be clean before placing of concrete.

(3) Concrete shall be deposited as nearly as practicable in its final position. In no case shall vibrators be used to transport concrete inside the forms. Concrete shall be thoroughly

compacted by use of high frequency internal vibrators so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all pockets which may cause honeycombing, pitting or planes of weakness.

(4) Use no concrete that has partially hardened or become contaminated by foreign materials or been retempered.

(5) Generally, carry on concreting as a continuous operation until placing of an individual section is completed.

(G) Curing and Protection -Concrete shall be cured for a period of not less than seven days by water curing or use of curing compounds.

(1) Water Curing -Concrete shall be kept wet by mechanical sprinklers, by ponding, or by any other approved method which will keep the surface continuously wet.

(2) Curing Compound -Concrete surfaces shall be sealed with liquid membrane compound conforming to AASHTO Designation M148. Curing compound shall not darken the concrete surface and shall be used in strict accordance with the manufacturer's recommendations.

(H) Finishing of Surface -After the concrete has been placed, struck off, consolidated and leveled, the concrete shall not be worked until ready for floating. Floating shall begin when the water sheen has disappeared. The surface shall then be consolidated with power driven floats of the impact type. The slab shall then be steel trowelled to light trowelled finish of uniform smooth texture. The slab shall then be given a light broom finish.

(I) Finishing of Formed Surfaces -Surfaces of pile caps beneath pier deck shall have all exterior ties removed to a depth of at least one and one-half inches below the surface of the concrete and the resulting holes or depressions cleaned and filled with epoxy grout. Any rock pockets and honeycombing shall be cleaned and filled with epoxy grout. Joint marks and fins shall be smoothed off.

(J) Shrinkage, temperature, and all other cracks in concrete and cement materials shall be repaired by the Contractor at no additional payment whether or not the cracks result from defective work of normal causes such as expansion, shrinkage, deflection, and settlement. Contractor shall submit his proposed methods and schedule of repairs for review before starting work.

(K) Crack repair shall restore the full structural integrity of the previously uncracked section. Repair methods shall include epoxy injection, epoxy patching, and other approved methods.

(L) Repair work shall be finished to match and blend with surrounding areas and shall be made to preclude recurrence of cracks at the repair or other locations. Repair work shall include grooving and joint sealing, elastomeric paint and other methods.

(M) Contractor shall repair all cracks before the final acceptance of the project by the Owner. Cracks on the deck surface shall be repaired before the placement of A.C. wearing surface. Contractor shall again repair all old, recurring, and new cracks one year after the date of final acceptance.

(N) Leveling grout under base plates:

(1) Grout shall not be installed beneath the boat lift foundation anchor plates. The leveling nuts shall remain exposed.

(2) Type 316 stainless steel wire mesh shall be attached around the perimeter of the base plate that shall extend down to and touch the top of concrete foundation. The purpose of the mesh is to keep debris and insects from gathering beneath the base plate.

(3) The wire mesh shall be attached to the side of the base plate on all four sides with two stainless steel screws per side.

20.6 CLEANUP

The Contractor shall clean up all concrete and cement materials, equipment and debris upon completion of any portion of the concrete work and upon completion of the entire concrete and related work.

20.7 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for Cast-In-Place Concrete and the various items described in this Article shall not be measured. The Contractor shall consider all work associated with this Article shall be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XXI – BOAT LIFT

21.1 GENERAL

This work shall include design, fabrication, and erection, and one Pre-engineered Aluminum Boat Lift. The Pre-engineered Aluminum Boat Lift configuration is as shown on the contract documents

21.2 GENERAL REQUIREMENTS

The Pre-engineered Aluminum Boat Lift shall be the Platinum Elevator Boat Lift (16,000 lbs. capacity) by IMM Quality Boat Lifts or approved Equivalent. The boat lift shall be installed vertically in accordance with the manufacturer's recommendations.

21.3 QUALITY ASSURANCE

(A) Components of the Pre-engineered Aluminum Boat Lift shall be made by a firm regularly engaged in the manufacture of these components.

(B) Installation of the Pre-engineered Aluminum Boat Lift shall be performed by personnel with experience with the brand and type of Pre-engineered Aluminum Boat Lift proposed for the project.

21.4 DESIGN CRITERIA AND MATERIAL

(A) Design, fabrication and erection of boat lift shall conform to the AASHTO LRFD Bridge Design Specifications and applicable design criteria by the State of Hawaii Department of Transportation.

(B) All primary structural members shall be 6061-T6 Aluminum and Stainless Steel Type 316 L.

21.5 SUBMITTALS

(A) Submit Site-Specific design shop drawings, stamped by a Structural Engineer licensed in the State of Hawaii, indicating proposed materials, installation sequence, and anchorage details to the Engineer for approval prior to fabrication.

(B) Submit Site-Specific design structural calculations for elevator lift and connections, stamped by a Structural Engineer licensed in the State of Hawaii.

21.6 PAYMENT

Measurement and payment for Pre-engineered Aluminum Boat Lift as described in the Article shall not be measured.

The Contractor shall consider all work associated with this Article shall be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XXII – STRUCTURAL STEEL

22.1 GENERAL

22.1.1 SUMMARY

A. This Section includes the following:

1. Structural steel.

2. Grout.

22.1.2 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

22.1.3 SUBMITTALS

A. Submit in accordance with Article XI – “Required Submittals”.

B. Product Data: For each type of product indicated.

C. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, chamber, holes, and other pertinent data.

2. Include embedment drawings.

3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.

D. Welding certificates.

E. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:

1. Structural steel includes chemical and physical properties.

2. Bolts, nuts, and washers including mechanical properties and chemical analysis.

3. Shop primers.

4. Non-shrink grout.

22.1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.5 Bridge Welding Code and AWS D1.6 Structural Welding Code - Stainless Steel of the American Welding Society.

B. Comply with applicable provisions of the following specifications and documents:

1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."

22.1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.

1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

22.1.6 COORDINATION

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide diagrams, sheet metal templates, instructions, and directions for installation.

22.2 PRODUCTS

22.2.1 STRUCTURAL-STEEL MATERIALS

A. Stainless steel: ASTM A240, TYPE 316L

B. Welding Electrodes: E316L for Stainless Steel. Comply with AWS requirements.

22.2.2 BOLTS, CONNECTORS, AND ANCHORS

A. Unheaded Anchor Rods: ASTM A 307, Grade A

1. Configuration: Hooked.

2. Nuts: ASTM A 563 hex carbon steel.

3. Plate Washers: ASTM A 36/A 36M carbon steel.

4. Washers: ASTM F 436 hardened carbon steel.

5. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

B. Stainless Steel Bolts - Type 316.

22.2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

22.2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

1. Camber structural-steel members where indicated.

2. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.

3. Mark and match-mark materials for field assembly.

4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

5. Welds not accomplished in an approved fabricator's shop shall have special inspection.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Holes: Provide holes required for securing other work to structural steel.

1. Cut, drill, or punch holes perpendicular to steel surfaces.

2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.

3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

22.2.6 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 and D1.6 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

22.2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces to be field welded.

2. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

22.2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M where indicated. Fill vent holes and grind smooth after galvanizing.

22.3 EXECUTION

22.3.1 EXAMINATION

A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

22.3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

22.3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

B. Base Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base plates. Clean bottom surface of base plates.

    1. Set base plates for structural members on wedges, shims, or setting nuts as required.

    2. Weld plate washers to top of base plate.

    3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base plate before packing with grout.

    4. Promptly pack grout solidly between bearing surfaces and base plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

    1. Level and plumb individual members of structure.

    2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

22.3.4 FIELD CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

22.3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds.

B. Welded Connections: Field welds will be visually inspected according to AWS D1.1.

1. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

C. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

22.3.6 REPAIRS AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories and abutting structural steel.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

20.4 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for Structural Steel and the various items described in this Article shall not be measured. The Contractor shall consider all work associated with this Article shall be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

ARTICLE XXIII – MICROPILE

23.1 GENERAL CONDITIONS

A. This section shall govern constructing micropiles to the required locations, capacity and dimensions, in place complete, as indicated on the plans and as specified herein. The work shall consist of installing two production micropiles. The Contractor shall furnish all labor, materials, testing, special inspection and equipment required for completing the work.

23.2 REFERENCES: The latest publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American Society for Testing and Materials (ASTM)

1. ASTM A 955 - Deformed and Plain Stainless-Steel Bars for Concrete Reinforcement

2. ASTM C 109 – Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50 mm Cube Specimens)

3. ASTM C 845 – Expansive Hydraulic Cement

4. ASTM C 1107 – Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

5. ASTM D 1143 – Standard Test Methods for Deep Foundations Under Static Axial Compressive Load

6. API RP 13B-1 – Recommended Practice for Field Testing Water-based Drilling Fluids

B. Geotechnical Engineering Exploration Report by Kokua Geotech, dated October 18, 2024 (attached at the end of this Article)

23.3 SUBMITTALS: All required submittals shall be submitted not less than 30 workdays prior to initiating the work.

A. Submit in accordance with Article XI Required Submittals.

B. Product Data: For each type of product indicated.

C. Shop Drawings: Submit shop drawings for micropiles not less than 30 workdays prior to initiating the work. Indicate placement of reinforcement including centralizers.

1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

2. Indicate locations, sizes, type, and arrangement of reinforcement.

3. Include arrangement of static micropile reaction frame, frame and micropile bracing, reaction micropile, equipment, and instrumentation. Submit structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

4. Corrosion protection system for reinforcing.

D. Welding certificates.

E. Design Mixes: For each grout mix, include design compressive strength and revised mix proportions when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

F. Material Certificates: For stainless steel micropiles and accessories; stainless steel reinforcement; and grout admixtures from manufacturers.

G. Mill Test Reports: For steel and stainless steel, stainless steel casing, and accessories; stainless steel reinforcement.

H. Manufacturer's Recommended Handling Procedures and Installation Instructions: Submit procedures and installation instructions for placement of micropiles, including detailed narrative describing the drilling equipment, drilling, handling, and erecting procedures, placement of steel casing, reinforcement and grout, and methods to be used and all aspects of this work.

I. Load Test: Submit detailed test procedures, including equipment and instrumentation required for the work.

J. Test Report: Submit certified test reports for grout strength in accordance with ASTM C 109.

K. Certificates: Certification identifying cement, brand name, type, mill location, and quantity to be used.

L. Drilling Equipment Data: Include type, make, and weight.

M. Micropile Installation Records: Submit micropile installation records as specified herein.

N. Qualifications:

1. At the time of bid opening, the micropile contractor shall have successfully installed permanent micropiles in similar subsurface geotechnical conditions to those specified for the project for at least five (5) years and shall submit the following:

a. List containing at least five (5) completed projects on which they have installed micropiles in similar terrain and subsurface conditions. A description of each project including a reference shall be included in the list. The references shall include the individual's name, current phone number, and company name.

b. Detailed narrative describing the construction means and methods to be used and all aspects of this work.

2. Prior to the start of the micropile construction, the Contractor shall submit a list identifying the drill operators and on-site supervisors who will be assigned to this project. The list shall contain a summary of each individual's experience in sufficient detail that the State can determine if the individual has satisfied the following qualifications:

a. Micropile Contractor's Drill Operators and On-site Supervisors: At least (5) years of experience in installing micropiles direct experience on at least five (5) completed micropiling projects similar to the scope of work and in similar terrain and subsurface conditions as this project.

b. The use of consultants and/or manufacturer representatives does not satisfy the above qualification requirements.

c. Micropile work shall not start nor order materials until the State has accepted the Contractor's qualifications and installation methods.

d. The State may suspend the micropile construction if the micropile Contractor substitutes unqualified personnel for accepted personnel during construction. If work is suspended due to substitution of unqualified personnel, the Contractor shall be fully liable for any and all additional costs resulting from the suspension of work and no adjustment in contract time resulting for the suspension of work will be allowed.

23.4 DEFINITION

A. Micropiles shall be defined as small diameter, high capacity drilled and grouted piles. Each pile shall consist of permanent steel casing, an inner steel reinforcement, centralizers, and cement grout that is tremmied into the drill holes as the steel casings are partially withdrawn and/or injected during post grouting.

23.5 SITE CONDITIONS

A. Verify locations of existing underground utilities and structures prior to micropile work. If man-made obstructions are encountered in the drilling work, the Contractor shall stop operations in such areas and immediately notify the Engineer.

23.6 INSPECTION

A. Inspections shall be provided by a Civil Engineer, licensed in the State of Hawaii with at least 8 years of experience practicing geotechnical engineering, specifically micropile construction and installation. The Engineer shall be retained by the Contractor but not on the staff of the Contractor, at no cost to the State. The Engineer shall observe the installation of the micropiles and observe the performance of the load test by the Contractor, and accept or reject the micropile load test. The Contractor shall notify the Civil Engineer a minimum of 5 days prior to starting work. Micropile installation, including the performance of the load test shall not be conducted without the presence of the Civil Engineer.

23.7 MICROPILE RECORDS

A. Prior to the start of the micropile construction, the Contractor shall submit the following to the State for review:

1. Proposed reaction frame and associated equipment including calibration data for jack pressure gauge and load cell to be used for the reaction micropile load test. The calibration tests shall be performed on the jack and pressure gauge as a unit by an independent testing laboratory within 180 calendar days of the static load testing.

B. During micropile installations, the Contractor shall maintain and submit to the State the following information within two (2) workdays after the completion of each micropile:

1. Detailed drilling records and logs of the date of drilling, equipment used, driller's name, actual hole sizes and depths, drilling rates and any unusual conditions.

2. Grouting records indicating the grouting dates, cement type, grout mix, measured specific gravity, quantity injected, and grout pressures at the point of injection, including any post grouting performed. The grout pump or pump line shall be equipped with a metering device to measure the flow rate of the grout pumped into the micropile. The metering device shall be working properly at all times. Micropile installation shall be suspended if the metering device is not working properly.

3. As-built drawings showing the micropile locations, elevations of top and bottom of the casing and reinforcing steel, total pile length, and casing length.

C. Immediately report to the State any unusual conditions encountered during the micropile construction.

23.8 MICROPILE LENGTHS AND QUANTITY

A. Base bids upon the number, size and lengths of micropiles as indicated in the contract documents. Should the total number of micropiles and length vary from that indicated in the contract documents and approved and accepted by the state, an adjustment in contract price will be made based on the unit price per linear foot.

23.9 MATERIALS

A. Grout: ASTM C 1107 or C845, Type K, hydraulic-cement grout or expansive hydraulic cement, a minimum compressive strength (from cubes) of 5,000 psi at 28 days in accordance with ASTM C109. The grout shall contain suitable admixtures to control bleeding and improve flowability.

C. Water: Clean, fresh, potable, and free from injurious amounts of mineral and organic substances.

D. Reinforcing Steel: All-thread reinforcing steel shall conform ASTM A955, Grade 75, Type 316L stainless steel encased in pre-grouted poly corrugated tubes from the manufacturer.

E. Reaction Micropile Reinforcing Steel: All-thread reinforcing steel shall conform ASTM A615, Grade 75.

F. Permanent Micropile Steel Casing: Conform to the physical properties of ASTM A312, Type 316L.

G. Reaction Micropile Steel Casing: Conform to the physical properties of ASTM A53, Type E or S, Grade B.

H. Centralizers: Fabricated from plastic or material that is non-detrimental to the reinforcing steel and poly corrugated sheathing. Wood shall not be used. The centralizer shall be able to support the reinforcing so a minimum of 2-inch of grout cover is provided around the reinforcing bar for the micropiles, 1-inch of grout cover is provided around the poly corrugated sheathing for the s, and shall permit grout to freely flow up the drill hole.

G. Other Materials: All other materials, not specifically described but may be required for a complete and proper installation of all micropiles shall be selected by the Contractor, subject to the acceptance of the State.

23.10 CONSTRUCTION DETAILS

A. Protection of Existing Structures: The Contractor shall control his operations to prevent damage to existing structures and utilities. Preventive measures shall include, but are not limited to, selecting construction methods and procedures that will reduce the amount of cave-ins, over-cuts, and excessive

grout losses, and monitoring and controlling the vibrations from construction activities such as drilling of micropiles.

B. Site Conditions: The project's terrain consists of steep slopes and undulated areas with numerous shrubs, living and fallen trees, and soft muddy areas. All safety systems for equipment and personnel, including but not limited to safety railings, fall arresting systems, and other temporary shoring shall be incidental to construction.

C. Subsurface Site Conditions: The likely subsoil profile are thin layers of fill material and residual soil atop extremely weathered basalt. The Contractor shall account for these conditions by selecting suitable drilling and grouting methods that will produce micropiles that satisfy or exceed the design load requirements, while reducing the potential for excessive grout losses or grout takes.

23.11 CONSTRUCTION METHODS

A. General: The Contractor shall perform the micropile installations through whatever materials are encountered, to the locations, capacity, load test requirements, and dimensions as shown in the plans or otherwise required by the specifications. Install the reinforcements and grout within 48 hours after the holes are drilled to minimize potential for sloughing and caving. The Contractor's methods and equipment shall be suitable for the intended purpose and materials encountered.

B. Drilling Equipment shall be capable to drill straight and clean holes to the minimum design nail bar hole diameter or greater as necessary to properly install and grout the nail bar at the specified locations and inclinations per the contract. Drill rigs shall have the capability of anchorage installation grout placement through the use of grout tubes, drill casing, or hollow-stem augers. Sufficient casing and hollow-stem-auger lengths shall be available on site to maintain uninterrupted installation of nail bars. Where hard drilling conditions such as rock, cobbles, boulders, or other hard obstructions are encountered, a down hole pneumatic hammer drill rig and suitable drill bit shall be available on site to drill for nail assemblies.

C. Grouting equipment: Grout shall be produced with high-speed, high-shear mixers. The grouting equipment shall be equipped with a pressure gauge to monitor grout pressures and a gauge to measure grout volume injected. An additional in-line pressure gauge shall be installed at the point of injection. Both pressure gauges shall be capable of measuring pressures of at least twice the actual grout pressures anticipated by the Contractor. The grouting equipment shall be capable of thoroughly mixing and producing a grout free of lumps and undispersed cement and shall be able to pump the grout in a continuous operation.

23.12 PERMANENT STEEL CASING

A. Field welded splices for micropile casings shall be allowed. Welds shall be complete joint penetration welds and conform to the requirements of AWS D1.6 and AWS D10.11. If threaded splices are used, the minimum casing wall thickness shall be 0.710 inches.

23.13 SOIL CUTTINGS AND FLUIDS

A. Suitable equipment and approved methods shall be used to contain and dispose the soil cuttings and fluids from the drilling and grouting in accordance with City, State and Federal environmental pollution regulations and requirements.

23.14 REINFORCING STEEL PLACEMENT

A. Non-corrosive centralizers shall be used for reinforcing bars. The centralizers shall be placed at a spacing as required to maintain grout cover but not exceeding 9 feet. The bottom centralizer shall be located 24 inches of the bottom of the micropile and the top centralizer shall be located 12 inches from the top of the micropile or casing. The maximum distance between the center of the rebar and the center of the casing shall not exceed 1/8 inch.

B. Reinforcing steel shall only be spliced with mechanical couplers specifically manufactured for splicing bars and capable of achieving and transmitting the ultimate tensile and compressive strength of the bar. The coupler material shall match the reinforcing steel properties. Contractor shall follow the reinforcing steel manufacturer's specifications for corrosion protection. The contractor shall submit mechanical coupler data to the State for approval.

23.15 GROUTING

A. The grouting in each micropile shall be placed by starting from the deepest point in the drill hole and working upward. Grout shall be pumped through grout tubes, pipes, or drill rods. The grout pressures and grout takes shall be controlled to reduce the amount of ground heave and excessive grout takes. Additional post grouting shall be performed as determined by the Contractor, to obtain the required pile capacity.

B. No testing or any other type of loading shall be applied to the micropiles until the grout has reached the minimum 28-day compressive strength.

23.16 GROUT QUALITY CONTROL

A. One set of grout specimens shall be taken for each micropile installed. Each set shall consist of six cubes. Grout specimens shall be cured under laboratory conditions. Cubes shall be tested in accordance with ASTM C 109. Strength tests shall be made for two cubes at 3 days, two cubes at 14

days, and two cubes at 28 days. If the strength tests of one or more cubes of a set from a micropile or are at 10 percent or more below the required compressive strength required at 28 days, the micropile or shall be abandoned and replaced by micropiles placed adjacent to the abandoned micropile or as directed by the State at the Contractor's expense. All tests shall be made by an independent testing laboratory (accredited testing laboratory) approved by the State and paid for by the Contractor. If a micropile is abandoned and moved, the contractor shall also revise all members, components, and the pipe alignment accordingly due to revised location at the Contractor's expense.

B. The Contractor shall provide the State with mud balance specific gravity test results from one sample taken at the beginning of each micropile, and reaction micropile grout pour. The mud balance specific gravity testing procedures shall conform to API RP 13B-1.

23.17 CONSTRUCTION TOLERANCES

A. The following construction tolerances apply to micropiles:

1. The vertical alignment of the micropiles shall not deviate from plumb by more than 1/8 inch per foot of depth.

2. The top elevation of the micropiles shall not deviate from the plan top of connection elevation by more than ¼ inch.

3. The rebar shall fully engage and extend past the top of the nut by at least 1 inch and shall maintain at least 1 inch of clearance from the bottom of the PVC pipe or pipe connection.

23.18 CLEAN UP

A. Upon completion of work, remove all materials, tools, scaffolding, refuse and debris generated by the work from premises, leaving premises in clean and satisfactory condition.

B. Daily Clean Up: Remove rubbish and debris from site daily, unless otherwise directed. Do not allow accumulations at the site. Store materials that cannot be disposed of daily in areas specified by the State.

23.19 MICROPILE LOAD TEST

A. Two (2) production micropiles shall be installed and tested using the equipment and methods proposed by the Contractor.

B. The Contractor shall furnish all materials, equipment and tools necessary to perform the load test. The Geotechnical Engineer retained by the Contractor will be present to observe the performance of the load test by the Contractor.

C. The Contractor shall proof test the production micropile in accordance with ASTM D1143, Procedure A and as modified herein.

D. The pullout tests should consist of subjecting the micropile to at least 150 percent of the design load. The micropile should be loaded in 12.5 percent design load increments, and each load should be held for at least 5 minutes. The maximum test load should be held for a minimum of 10 or 60 minutes. Pullout test on the selected micropiles is an integral part of the design of the micropile foundation system. Therefore, we recommend conducting the pullout tests under the observation of a Kokua Geotech LLC representative.

E. The micropile is considered acceptable if the total movement measured is less than 0.04 inches.

F. Within two (2) workdays after completion of the micropile load test, the Contractor shall submit detailed test results, in accordance with ASTM D1143. Spreadsheet of load and deformation reading shall be submitted.

23.20 REVISED INSTALLATION PROCEDURE

A. Should the load test fail to produce acceptable test results, the Contractor shall modify his installation procedures and install replacement production and reaction piles and perform additional compression load tests at his expense until acceptable results are obtained.

B. Contractor shall submit a revised installation procedure to the State for review. Installation of the micropiles will not be permitted to continue until the revised procedure is accepted by the State.

C. Installation of production micropiles shall follow the same installation methods and procedures as those used in the successful micropiles and load test. Modifications to the installation methods and procedures may require installation of additional sacrificial micropiles and additional load tests at no additional cost to the State.

23.21 BASIS OF MEASUREMENT AND PAYMENT

Measurement and payment for micropile and the various items described in this Article shall not be measured. The Contractor shall consider all work associated with this Article shall be incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

GEOTECHNICAL ENGINEERING EXPLORATION

NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

OCTOBER 18, 2024

Prepared for:
KAI HAWAII, INC.

PROJECT NO. 022724-00

Kokua Geotech LLC
Soil and Foundation Engineering

October 18, 2024
Project No. 022724-00

KAI Hawaii, Inc.
50 S. Beretania Street, #C-119C
Honolulu, HI 96813

Attention: Mr. Bryan Lum

Subject: **Geotechnical Engineering Exploration**
New Boat Lift Improvements at Hilo Harbor
Hilo, Island of Hawaii

Dear **Mr. Lum**:

We are pleased to submit this report entitled "Geotechnical Engineering Exploration, New Boat Lift Improvements at Hilo Harbor, Hilo, Island of Hawaii" prepared for the design of the project.

The purpose of our field exploration and this report was to observe and evaluate the general subsurface conditions at accessible locations at the project site to formulate geotechnical recommendations to assist in the design of the project. Our work was performed in general accordance with the scope of services outlined in our fee proposal dated April 30, 2024.

Our findings and recommendations are summarized as follows:

1. Our field exploration at the project site generally encountered surface fill materials overlying lagoonal deposits and coralline detritus materials extending down to the maximum depth explored of about 43.5 feet below the existing ground surface. In addition, the boring was drilled in an existing parking area and encountered approximately 2.5 inches of asphaltic concrete overlying about 4 inches of base material.

   The surface fill materials were encountered to a depth of about 10 feet below the existing ground surface and generally consisted of very dense sandy gravel and medium dense silty gravel with some sand. Lagoonal deposits generally consisting of medium dense clayey sand/gravel and soft to medium stiff silty clay with some sand were encountered underlying the surface fill materials to a depth of about 35 feet below the existing ground surface.

Coralline detritus materials generally consisting of medium dense to very dense sand with a little silt were encountered underlying the lagoonal deposits and extended down to the maximum depth explored of about 43.5 feet below the existing ground surface.

2. We encountered groundwater in the drilled boring at a depth of about 7.2 feet below the existing ground surface at the time of our field exploration. Due to the proximity of the project site to the Pacific Ocean, groundwater levels are expected to vary with tidal fluctuations. In addition, groundwater levels may change due to seasonal precipitation, surface water runoff, and other factors.

3. Based on the subsurface conditions anticipated at the project site and our engineering analyses, we believe the near-surface soils at the harbor floor would not provide adequate foundation support for the elevator boat lift without appreciable settlements and differential settlements under the anticipated loads. Therefore, we recommend utilizing a deep foundation system to support this structure.

   Based on our evaluation, we recommend the deep foundation support system for the new elevator boat lift consist of micropiles extending through the compressible lagoonal deposits and deriving load bearing support from the underlying coralline detritus materials anticipated at greater depths.

4. Based on availability of local equipment, we envision a micropile system with a minimum grout bulb diameter of 5.5 inches (minimum drill bit size) may be used for foundation support of the new elevator boat lift. We recommend designing each micropile based on an allowable compressive load capacity of 15 kips for the 5.5-inch diameter micropiles. The allowable compressive load capacity for the micropiles is for supporting dead-plus-live loads and may be increased by one-third (1/3) for transient loads, such as wind or seismic forces.

5. We anticipate the load supporting capacity of the micropile foundation would be derived primarily from skin friction between the micropile shaft and the coralline materials anticipated underlying the project site. We also recommend using permanent steel casing for the micropiles that extend through the compressible lagoonal deposits to the top of the coralline materials.

6. To achieve the allowable compressive load capacity of 15 kips with a factor of safety of 2, we believe the 5.5-inch diameter micropiles would need a minimum bonded zone of 10 feet below the permanent casing and into the underlying coralline materials encountered in our boring.

7. Based on topographic survey information provided, we anticipate an existing mudline elevation along the harbor floor of approximately -12 feet MSL. Therefore, we recommend a minimum micropile tip elevation of about -37 feet MSL based on a total micropile length of about 25 feet installed on an assumed working grade of about -12 feet MSL.

8. The construction plans and specifications for the project should be forwarded to us for review to determine whether the recommendations contained in this report are adequately reflected in those documents. If this review is not made, Kokua Geotech LLC cannot assume responsibility for misinterpretation of our recommendations.

9. Kokua Geotech LLC should also be retained to monitor the micropile installation, site grading, utility line installation and backfill, and other aspects of earthwork construction to determine whether the recommendations of this report are followed. The recommendations presented herein are contingent upon such observations.

   If the actual exposed subsurface soil conditions encountered during construction differ from those assumed or considered in this report, Kokua Geotech LLC should be contacted to review and/or revise the geotechnical recommendations presented herein.

Detailed discussion of our findings and geotechnical engineering recommendations are contained in the body of this report. We appreciate the opportunity to be of service for this project. Should you have any questions concerning this report, please contact our office.

Very truly yours,

Kokua Geotech LLC

Xiaobin (Tim) Lin, P.E.
President

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GEOTECHNICAL ENGINEERING EXPLORATION
NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

SECTION 1.0 INTRODUCTION

We have performed a geotechnical engineering exploration for the *New Boat Lift Improvements at Hilo Harbor* project in Hilo on the Island of Oahu, Hawaii. The location of the project and general vicinity are shown on the Project Location Map, Plate 1.

The purpose of our exploration was to observe and evaluate the general subsurface conditions at accessible locations at the project site to formulate geotechnical recommendations to assist in the design of the project. This report summarizes the findings and presents our geotechnical recommendations resulting from our site reconnaissance, field exploration, laboratory testing, and engineering analyses for the project. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

1.1 PROJECT CONSIDERATIONS

The project generally involves a new elevator boat lift at the Hilo Harbor in Hilo on the Island of Hawaii. Based on the information provided, we understand the elevated boat lift is planned on the southeastern side of the existing Pier 1 Container Terminal overlooking Radio Bay and will be supported by foundations installed at the harbor floor adjacent to an existing bulkhead wall. A layout of the project site is shown on the Site Plan, Plate 2.

Based on the conceptual design plan provided, we anticipate the new elevator boat lift will generally consist of a pile-mounted aluminum structure with tracks supported by either shallow spread footings, drilled shafts, or pile caps with micropile foundations. In addition, we understand vertical loading at each footing is estimated to be approximately 15 kips.

1.2 PURPOSE AND SCOPE OF WORK

The purpose of our services was to generally explore and evaluate the subsurface soil conditions at accessible locations at the project site to provide geotechnical recommendations

to assist in the design of the project. Our work was performed in general accordance with our fee proposal dated April 30, 2024. The scope of work for this exploration included the following items:

1. Coordination of boring stake-out by our engineer and utility clearances/toning by our subcontractor.
2. Mobilization and demobilization of a trailer-mounted drill rig and two operators from the Island of Oahu to the project site and back.
3. Drilling and sampling of one borehole extending to a depth of about 43.5 feet below the existing ground surface.
4. Coordination of the field exploration and logging of the borehole by our field engineer.
5. Laboratory testing of selected samples obtained during the field exploration as an aid in classifying the materials and evaluating their engineering properties.
6. Analyses of the field and laboratory data to formulate geotechnical recommendations for design of the project.
7. Preparation of this report summarizing our work on the project and presenting our findings and recommendations.
8. Coordination of our overall work on the project by our project engineer.
9. Quality assurance and client/design team consultation by our principal engineer.
10. Miscellaneous work efforts such as drafting, word processing, and clerical support.

Detailed descriptions of our field exploration methodology are presented in the following section and the Log of the Boring in Appendix A. Results of the laboratory tests performed are presented in Appendix B.

END OF INTRODUCTION

SECTION 2.0 SITE CHARACTERIZATION AND FINDINGS

2.1 GENERAL SITE GEOLOGY

The Island of Hawaii was formed by the eruptive activity of five major shield volcanoes: Kohala, Mauna Kea, Hualalai, Mauna Loa, and Kilauea. Kohala has been long extinct while Mauna Kea has had some activity during recent geologic time. Hualalai last erupted in Year 1801 and Mauna Loa and Kilauea are both considered to be active. The project site is on the northeastern flank of the Mauna Loa Shield Volcano, which had been built up by the successive accumulation of basaltic lava flows and pyroclastic materials.

Based on the geologic maps of the Island of Hawaii (Sherrod and others, 2007), the general area of the project site is underlain by Lava Flows (Qk3) of Ka`u Basalt from the Mauna Loa Volcano. In general, the lava formation observed near the site appears to consist of both a`a and pahoehoe type flows, which spread and ponded as they approached the ocean. A`a lava is typically characterized by a porous, rough, and irregular flow surface resembling a jagged accumulation of rock fragments including cobbles and boulders. Pahoehoe is characterized by a smooth, rope-like or billowy surface and an internal structure of vesicular (porous) rock.

Cavities are commonly encountered in basaltic lavas, especially pahoehoe type lava. Cavities form when the lava is still in a molten state, and they represent both lava tubes (intra-flow cavities) and blisters and pockets (inter-flow cavities). Lava tubes form when molten lava drains from the cooling flow, leaving a hollow tube-like structure, which may extend for a large longitudinal distance along the flow. Blisters and pockets are generally smaller in horizontal extent.

We understand the land surrounding the Hilo Harbor area was reclaimed from the bay by the placement of fill over existing lagoonal deposits and/or calcareous sediments (also known as coralline detritus). Alluvial deposits associated with the Wailuku River underlie the lagoonal deposits and calcareous sediments. Basalt formation from the recent Mauna Loa lava flows may be encountered at greater depths below the alluvial deposits.

2.2 SITE DESCRIPTION

The project site is on the southeastern side of the existing Pier 1 Container Terminal at the Hilo Harbor in Hilo on the Island of Hawaii. In general, the new boat lift is planned to be installed on the harbor floor adjacent to an existing sheet pile bulkhead wall. Based on the information provided, we understand the harbor floor is approximately 20 feet below the top of the existing sheet pile bulkhead wall.

In general, the topography of the project site appears to be relatively flat. Based on a topographic survey plan provided, we anticipate existing ground surface elevations to range from approximately +8 feet Mean Sea Level (MSL) at the top of the bulkhead wall to approximately -12 feet MSL at the harbor floor where the new boat lift foundations will be installed.

At the time of our field exploration, the area behind the bulkhead wall generally consisted of an access road and parking areas covered with asphaltic concrete pavements separated by a chain link fence.

2.3 FIELD EXPLORATION

We explored the subsurface conditions at the project site by drilling and sampling one boring, designated as Boring No. 1, extending to a depth of approximately 43.5 feet below the existing ground surface. The boring was drilled utilizing a trailer-mounted drill rig equipped with continuous flight augers and coring/rotary wash tools. The approximate boring location is shown on the Site Plan, Plate 2.

Our engineer classified the materials encountered in the boring by visual and textural examination in the field in general accordance with ASTM D2488, Standard Practice for Description and Identification of Soils, and monitored the drilling operations on a near continuous (full-time) basis. These classifications were further reviewed visually and by testing in the laboratory. Soils were classified in general accordance with ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

Soil samples were obtained in general accordance with ASTM D1586 by driving a 2-inch OD standard penetration sampler with a 140-pound hammer falling 30 inches. The blow counts needed to drive the sampler the second and third 6 inches of an 18-inch drive are shown as the "Sampling Resistance" on the Log of Boring at the appropriate sample depths. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.

2.4 SUBSURFACE CONDITIONS

Our boring generally encountered surface fill materials overlying lagoonal deposits and coralline detritus materials extending down to the maximum depth explored of about 43.5 feet below the existing ground surface. In addition, the boring was drilled in an existing parking area and encountered approximately 2.5 inches of asphaltic concrete overlying about 4 inches of base material.

The surface fill materials were encountered to a depth of about 10 feet below the existing ground surface and generally consisted of very dense sandy gravel and medium dense silty gravel with some sand. Lagoonal deposits generally consisting of medium dense clayey sand/gravel and soft to medium stiff silty clay with some sand were encountered underlying the surface fill materials to a depth of about 35 feet below the existing ground surface.

Coralline detritus materials generally consisting of medium dense to very dense sand with a little silt were encountered underlying the lagoonal deposits and extended down to the maximum depth explored of about 43.5 feet below the existing ground surface.

We encountered groundwater in the drilled boring at a depth of about 7.2 feet below the existing ground surface at the time of our field exploration. Due to the proximity of the project site to the Pacific Ocean, groundwater levels are expected to vary with tidal fluctuations. In addition, groundwater levels may change due to seasonal precipitation, surface water runoff, and other factors. Graphic representations of the materials encountered are presented on the Log of Boring, Appendix A.

2.5 LABORATORY TESTING

Moisture Content (ASTM D2216) determinations were performed on selected samples as an aid in the classification and evaluation of soil properties. The test results are presented on the Log of the Boring at the appropriate sample depths.

One Atterberg Limits test (ASTM D4318) was performed on a selected soil sample to evaluate the liquid and plastic limits. The sample tested generally had a very high Plasticity Index (PI) of about 35 and plotted as high plasticity clay (CH) on a Standard Plasticity Chart. The test results are summarized on the Log of Boring at the appropriate sample depth. Graphic presentation of the Atterberg Limits test result is provided on Plate B-1.

Three Sieve Analysis tests (ASTM C117 and C136) were performed on selected soil samples to evaluate the gradation characteristics of the soil and to aid in soil classification. Graphic presentations of the grain size distributions are provided on Plate B-2.

2.6 SEISMIC DESIGN CONSIDERATIONS

Based on the International Building Code, 2018 Edition (IBC 2018) and American Society of Civil Engineers Standard ASCE/SEI 7-16 (ASCE 7-16), the project site may be subject to seismic activity, and seismic design considerations will need to be addressed. The following sections provide discussions on the seismicity, the potential for liquefaction, and soil profile for seismic design at the project site.

2.6.1 EARTHQUAKES AND SEISMICITY

In general, earthquakes that occur throughout the world are caused by shifts in the tectonic plates. In contrast, earthquake activity in Hawaii is linked primarily to volcanic activity. Therefore, earthquake activity in Hawaii generally occurs before or during volcanic eruptions. In addition, earthquakes may result from the underground movement of magma that comes close to the surface but does not erupt. The Island of Hawaii experiences thousands of earthquakes each year, but most are so small that they can only

be detected by sensitive instruments. However, some of the earthquakes are strong enough to be felt, and a few cause minor to moderate damage.

In general, earthquakes associated with volcanic activity are most common on the Island of Hawaii. Earthquakes directly associated with the movement of magma are concentrated beneath the active Kilauea and Mauna Loa Volcanoes on the Island of Hawaii. Because the majority of the earthquakes in Hawaii (over 90 percent) are related to volcanic activity, the risk of seismic activity and degree of ground shaking diminishes with increased distance from the Island of Hawaii.

The Island of Hawaii has experienced numerous earthquakes greater than Magnitude 5 (M5+); however, earthquakes are not confined only to the Island of Hawaii. To a lesser degree, the Island of Maui also has experienced earthquakes greater than M5+. Therefore, moderate to strong earthquakes have occurred in the County of Maui. The effects of earthquakes occurring on the Islands of Hawaii and Maui may be felt on the Island of Oahu. For example, small landslides occurred on the Island of Oahu as a result of the Maui Earthquake of 1938 (M6.8). Some houses on the Island of Oahu were reportedly damaged as a result of the Lanai Earthquake of 1871 (M7+).

In the last 150 years of recorded history, we are not aware of earthquakes greater than Magnitude 6 that have occurred on the Island of Oahu. An earthquake of Magnitude 4.8 to 5.0 occurred along the Diamond Head Fault in 1948 on the Island of Oahu. The moderate tremor resulted in broken store windows, ruptured building walls, and broken underground water mains.

2.6.2 LIQUEFACTION POTENTIAL

Based on the IBC 2018 and ASCE 7-16, the project site should be evaluated for the potential for soil liquefaction. Soil liquefaction is a condition where saturated cohesionless soils located near the ground surface undergo a substantial loss of strength due to the build-up of excess pore water pressures resulting from cyclic stress applications induced by

earthquakes. In this process, when the loose saturated sand deposit is subjected to vibration (such as during an earthquake), the soil tends to densify and decrease in volume causing an increase in pore water pressure.

If drainage is unable to occur rapidly enough to dissipate the build-up of pore water pressure, the effective stress (internal strength) of the soil is reduced. Under sustained vibrations, the pore water pressure build-up could equal the overburden pressure, essentially reducing the soil shear strength to zero and causing it to behave as a viscous fluid. During liquefaction, the soil acquires sufficient mobility to permit both horizontal and vertical movements, and if not confined, will result in significant deformations.

Soils most susceptible to liquefaction are loose, uniformly graded, fine-grained sands and loose silts with little cohesion. The major factors affecting the liquefaction characteristics of a soil deposit are as follows:

FACTORS	LIQUEFACTION SUSCEPTIBILITY
Grain Size Distribution	Fine and uniform sands and silts are more susceptible to liquefaction than coarse or well-graded sands.
Initial Relative Density	Loose sands and silts are most susceptible to liquefaction. Liquefaction potential is inversely proportional to relative density.
Magnitude and Duration of Vibration	Liquefaction potential is directly proportional to the magnitude and duration of the earthquake.

Our boring encountered surface fill materials overlying lagoonal deposits and coralline detritus materials generally consisting of medium dense clayey sand/gravel, soft to medium stiff silty clay, and medium dense to very dense sand with a little silt to a depth of about 43.5 feet below the existing ground surface.

In general, our analyses indicate that these soils are generally not susceptible to liquefaction due to their clayey nature. We anticipate potentially liquefiable sandy soils

with little cohesion may be present underlying the project site; however, we believe that these materials occur in isolated pockets and are not continuous across the entire site.

2.6.3 SOIL PROFILE

Based on the subsurface materials encountered at the project site, the average penetration resistance (N-values) of the subsurface materials, and the geologic setting of the area, we anticipate that the project site may be classified from a seismic analysis standpoint as being a "Stiff Soil Profile" site corresponding to a Site Class D soil profile type based on Chapter 20 of ASCE 7-16.

Based on Site Class D, the following seismic design parameters were estimated and may be used for seismic analysis of the project.

SUMMARY OF SEISMIC DESIGN PARAMETERS	
Mapped MCE Spectral Response Acceleration, S_S	1.500g
Mapped MCE Spectral Response Acceleration, S_1	0.600g
Site Class	D
Peak Ground Acceleration, PGA	0.500g
Site Modified Peak Ground Acceleration, PGA_M	0.550g

END OF SITE CHARACTERIZATION AND FINDINGS

SECTION 3.0 DISCUSSION AND RECOMMENDATIONS

Based on the results from our field exploration, the project site is generally underlain by surface fill materials overlying lagoonal deposits and coralline detritus materials extending down to the maximum depth explored of about 43.5 feet below the existing ground surface. In addition, the boring was drilled in an existing parking area and encountered approximately 2.5 inches of asphaltic concrete overlying about 4 inches of base material.

The surface fill materials were encountered to a depth of about 10 feet below the existing ground surface and generally consisted of very dense sandy gravel and medium dense silty gravel with some sand. Lagoonal deposits generally consisting of medium dense clayey sand/gravel and soft to medium stiff silty clay with some sand were encountered underlying the surface fill materials to a depth of about 35 feet below the existing ground surface.

Coralline detritus materials generally consisting of medium dense to very dense sand with a little silt were encountered underlying the lagoonal deposits and extended down to the maximum depth explored of about 43.5 feet below the existing ground surface.

We encountered groundwater in the drilled boring at a depth of about 7.2 feet below the existing ground surface at the time of our field exploration. Due to the proximity of the project site to the Pacific Ocean, groundwater levels are expected to vary with tidal fluctuations. In addition, groundwater levels may change due to seasonal precipitation, surface water runoff, and other factors.

Based on the subsurface conditions anticipated at the project site and our engineering analyses, we believe the near-surface soils at the harbor floor would not provide adequate foundation support for the elevator boat lift without appreciable settlements and differential settlements under the anticipated loads. Therefore, we recommend utilizing a deep foundation system to support this structure.

Based on our evaluation, we recommend the deep foundation support system for the new elevator boat lift consist of micropiles extending through the compressible lagoonal deposits and deriving load bearing support from the underlying coralline detritus materials anticipated at greater depths.

Detailed discussion of these items and our geotechnical recommendations for design of the new elevator boat lift, utility trenches, and other geotechnical aspects of the project are presented in the following sections.

3.1 ELEVATOR BOAT LIFT FOUNDATIONS

As discussed above, we believe the near-surface soils at the harbor floor would not provide adequate foundation support for the new elevator boat lift without appreciable settlements and differential settlements under the anticipated loads. Therefore, we recommend utilizing a deep foundation system to support this structure.

Based on our evaluation, we recommend the deep foundation support system for the new elevator boat lift consist of micropiles extending through the compressible lagoonal deposits and deriving load bearing support from the underlying coralline detritus materials anticipated at greater depths.

In general, a micropile consists of a small diameter (usually less than 12 inches) drilled and grouted pile with steel reinforcing. The micropile foundation typically is constructed by drilling a borehole, placing reinforcing steel in the hole, and grouting the borehole. Micropiles are desirable because they can be installed readily in access restrictive environments and in numerous soil types and ground conditions. In addition, installation of the micropiles generally causes minimal disturbance to the adjacent structures, the adjacent soils, and the environment.

Based on availability of local equipment, we envision a micropile system with a minimum grout bulb diameter of 5.5 inches (minimum drill bit size) may be used for foundation support of the new elevator boat lift. We recommend designing each micropile based on an allowable compressive load capacity of 15 kips for the 5.5-inch diameter micropiles. The allowable

compressive load capacity for the micropiles is for supporting dead-plus-live loads and may be increased by one-third (1/3) for transient loads, such as wind or seismic forces.

Based on the anticipated subsurface conditions at the project site, we anticipate the load supporting capacity of the micropile foundation would be derived primarily from skin friction between the micropile shaft and the coralline materials anticipated underlying the project site. We also recommend using permanent steel casing for the micropiles that extend through the compressible lagoonal deposits to the top of the coralline materials. The permanent steel casing should have an outside diameter (OD) of about 5.5 inches (same as the grout bulb size) and should provide confinement to the micropile in the area where moment demand on the micropile is greatest.

To achieve the allowable compressive load capacity of 15 kips with a factor of safety of 2, we believe the 5.5-inch diameter micropiles would need a minimum bonded zone of 10 feet below the permanent casing and into the underlying coralline materials encountered in our boring.

Based on topographic survey information provided, we anticipate an existing mudline elevation along the harbor floor of approximately -12 feet MSL. Therefore, we recommend a minimum micropile tip elevation of about -37 feet MSL based on a total micropile length of about 25 feet installed on an assumed working grade of about -12 feet MSL. Based on these assumptions, our recommendations pertaining to the preliminary micropile allowable load capacities and lengths are presented in the following table:

SUMMARY OF MICROPILE FOUNDATIONS				
Micropile Diameter (inch)	**Allowable Compressive Load Capacity** (kips)	**Minimum Micropile Tip Elevation** (feet MSL)	**Minimum Bonded Zone Length** (feet)	**Total Estimated Micropile Length Below Mudline** (feet)
5.5	15	-37	10 feet min. into coralline materials	25
Notes: 1. Min. Tip Elevation and Total Estimated Micropile Length assumes working grade of -12 feet MSL 2. Permanent casing should be used below the bottom of foundation to the top of bonded zone 3. Minimum Bonded Zone Length is the length of micropile below the bottom of permanent casing				

To facilitate the micropile drilling and ensure the quality of the grouting, we recommend advancing the steel casing to the bottom of the micropile during the drilling operation. The steel casing may be withdrawn during the grouting operation while a minimum of 5 feet of grout head is maintained above the bottom of the casing at all times. The steel casing should be withdrawn above the design casing depth and plunged back to the design casing depth.

Lateral loads imposed on the foundations should be resisted by the passive earth pressure acting against the near-vertical faces of the foundation caps. Lateral load resistance contribution from the micropile should be discounted due to the relatively small diameter of the foundation element. Passive earth pressure against the near-vertical faces of the foundation caps may be estimated using an equivalent fluid pressure of 100 pounds per cubic foot (pcf) for below groundwater conditions.

Settlements of the micropiles will result primarily from elastic compression of the micropile member and subgrade response. We estimate the total settlement of the micropile-supported foundations to be 0.5 inches or less with differential settlements between micropiles not exceeding about one-half of the total settlement. We believe these settlements are essentially elastic and should occur as the loads are applied.

In order to determine whether the contractor's methods of micropile installation are adequate and to determine the ultimate compressive load capacity, we recommend performing pullout tests (proof tests) on selected micropiles during construction to confirm the load carrying capacity of the installed micropiles. We recommend testing a minimum 10 percent of the total number of micropiles for pullout.

The pullout tests should consist of subjecting the micropile to at least 150 percent of the design load. The micropile should be loaded in 12.5 percent design load increments, and each load should be held for at least 5 minutes. The maximum test load should be held for a minimum of 10 or 60 minutes. Pullout test on the selected micropiles is an integral part of the design of the micropile

foundation system. Therefore, we recommend conducting the pullout tests under the observation of a Kokua Geotech LLC representative.

A specialty contractor experienced in the construction of a micropile foundation system (minimum five projects) should perform the installation of the micropiles. Due to the specialized nature of the micropile foundation construction, observation and testing of the micropile foundation system should be designated as a "Special Inspection" item. Therefore, a Kokua Geotech LLC representative (Special Inspector) should be present to observe the geotechnical aspects of the micropile foundation construction and testing.

3.2 UTILITY TRENCHES

We envision that installation of the new underground utility lines for the elevator boat lift will generally consist of trench excavation, pipe bedding and placement, and trench backfill. All excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and state regulations. The contractor should determine the method and equipment to be used for utility trench excavation, subject to practical limits and safety considerations. In addition, the trench excavations should comply with the applicable federal, state, and local safety requirements. The contractor should be responsible for trench shoring design and installation.

Based on our boring, trench excavations will likely encounter surface fills generally consisting of medium dense to very dense silty sand and gravel. In addition, these excavation may encounter lagoonal deposits generally consisting of medium dense clayey sand/gravel and soft to medium stiff silty clay.

It is anticipated that most of the material may be excavated with normal heavy excavation equipment. However, deep excavations and excavations encountering boulders and hard coral formation may require the use of hoerams. It should be noted that coral formations typically contain localized hard and crystallized zones. Therefore, we anticipate that some difficult

excavation conditions may arise in localized areas during construction when the coral formation is encountered.

In general, we recommend providing granular bedding consisting of 6 inches of open-graded gravel, such as No. 3 Fine gravel (ASTM C33, No. 67 gradation), under the pipes for uniform support. Open-graded gravel (ASTM C33, No. 67 gradation) should also be used for the initial trench backfill up to about 12 inches above the pipes (or groundwater level) to provide adequate support around the pipes.

It is critical to use a free-draining material, such as open-graded gravel, to reduce the potential for formation of voids below the haunches of pipes and to provide adequate support for the sides of the pipes. Improper trench backfill could result in backfill settlement and pipe damage. Where groundwater is encountered, the bedding should be wrapped on all sides by non-woven filter fabric (Mirafi 180N or equivalent).

We envision soft and/or loose soils may be encountered at or near the invert elevations along portions of the new utility lines. Therefore, we recommend providing a subgrade stabilization layer consisting of 18 inches of No. 2 Rock (ASTM C 33, No. 4 gradation) wrapped in a non-woven filter fabric (Mirafi 180N or equivalent) below the bedding layer for uniform support, if soft and/or loose soils are encountered. The stabilization layer should extend beyond the sides of the pipe a minimum width of one-fourth the outside diameter of the pipe or 12 inches, whichever is greater.

Trench backfill material above the open-graded gravel may consist of general fill materials or structural fill material. In general, the excavated on-site soils may be re-used as a source of general fill, provided they are free of vegetation, deleterious materials, and rock fragments greater than 3 inches in maximum dimension. The backfill materials should be placed in maximum 8-inch level loose lifts and mechanically compacted to no less than 90 percent relative compaction to reduce the potential for appreciable future ground subsidence. The upper 2 feet

below the finished grade in areas subjected to vehicular traffic should be compacted to a minimum of 95 percent relative compaction.

3.3 DESIGN REVIEW AND CONSTRUCTION OBSERVATION SERVICES

The construction plans and specifications for the project should be forwarded to us for review to determine whether the recommendations contained in this report are adequately reflected in those documents. If this review is not made, Kokua Geotech LLC cannot assume responsibility for misinterpretation of our recommendations.

Kokua Geotech LLC should also be retained to monitor the micropile installation, site grading, utility line installation and backfill, and other aspects of earthwork construction to determine whether the recommendations of this report are followed. The recommendations presented herein are contingent upon such observations. If the actual exposed subsurface soil conditions encountered during construction differ from those assumed or considered in this report, Kokua Geotech LLC should be contacted to review and/or revise the geotechnical recommendations presented herein.

END OF DISCUSSION AND RECOMMENDATIONS

SECTION 4.0 LIMITATIONS

This report has been prepared for the exclusive use of KAI Hawaii, Inc. and their project consultants for specific application to the design of the *New Boat Lift Improvements at Hilo Harbor* project in accordance with generally accepted geotechnical engineering principles and practices. No warranty is expressed or implied. If any part of the project concept is altered or if subsurface conditions differ from those described in this report, then the information presented herein shall be considered invalid, unless the changes are reviewed, and any supplemental or revised recommendations issued in writing by Kokua Geotech LLC.

The analyses and report recommendations are based in part upon information obtained from the field boring and the assumption that subsurface conditions do not vary significantly from those observed in the boring. Variations of the subsurface conditions beyond the field boring may occur, and the nature and extent of these variations may not become evident until construction is underway. If variations then appear evident, Kokua Geotech LLC should be notified so that we can re-evaluate the recommendations presented herein.

The owner/client should be aware that unanticipated soil conditions are commonly encountered. Unforeseen subsurface conditions, such as perched groundwater, soft deposits, hard layers or cavities, may occur in localized areas and may require additional probing or corrections in the field (which may result in construction delays) to attain a properly constructed project. Therefore, a sufficient contingency fund is recommended to accommodate these possible extra costs.

The field boring locations indicated herein is approximate, having been estimated by taping from visible features shown on the Site Plan. The elevation of the boring was estimated from spot elevations shown on topographic survey plans transmitted by KAI Hawaii, Inc. on February 27, 2024. The field boring location and elevation should be considered accurate only to the degree implied by the methods used.

The stratification breaks shown on the graphic representations of the boring depict the approximate boundaries between soil types and, as such, may denote a gradual transition. Water level data from the boring was measured at the time of drilling. However, groundwater levels may change due to seasonal precipitation, tidal fluctuation, surface water runoff, and other factors. These data have been reviewed and interpretations made in the formulation of this report.

This report has been prepared solely for the purpose of assisting the design engineers in the design of the project. Therefore, this report may not contain sufficient data, or the proper information, to serve as a basis for detailed construction cost estimates.

This geotechnical engineering exploration conducted at the project site was not intended to investigate the potential presence of hazardous materials existing at the project site. It should be noted that the equipment, techniques, and personnel used to conduct a geo-environmental exploration differ substantially from those applied in geotechnical engineering.

END OF LIMITATIONS

CLOSURE

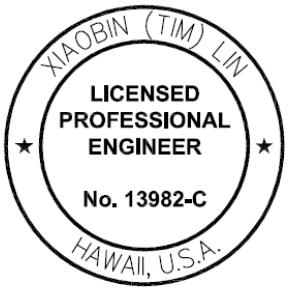
The following plates and appendices are attached and complete this report:

This report concludes our scope of work outlined in our fee proposal dated April 30, 2024. If you have any questions regarding this report or if any part of the report is not clear, please contact our office.

Respectfully submitted,

Kokua Geotech LLC

Xiaobin (Tim) Lin, P.E.
President



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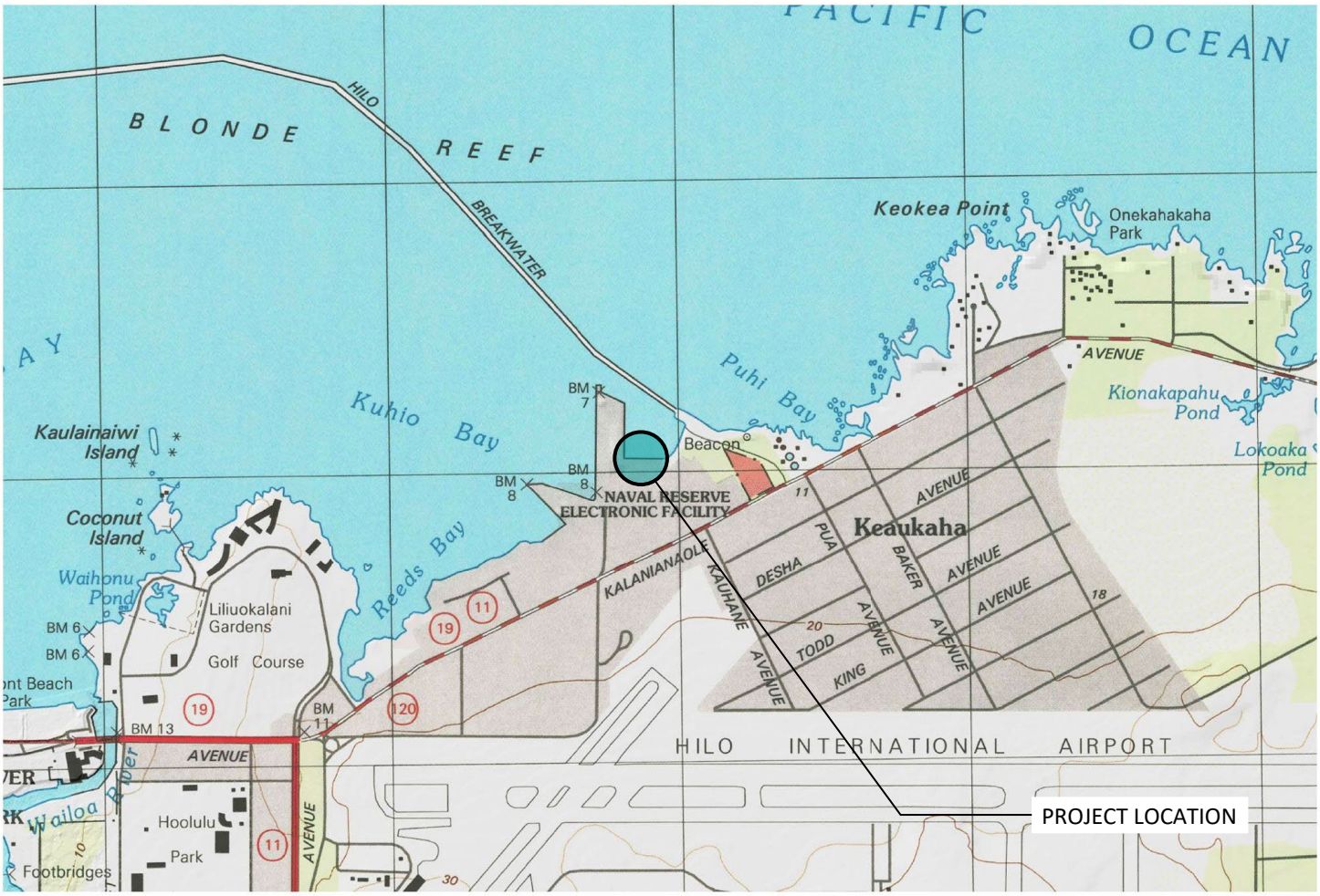
PLATES

GENERAL PROJECT LOCATION



Mercator Projection
WGS84
UTM Zone 5Q
CALTOPO

1 2 3km
0.5 1.0 1.5 mi
Scale **1:17898** 1 inch = 1492 feet

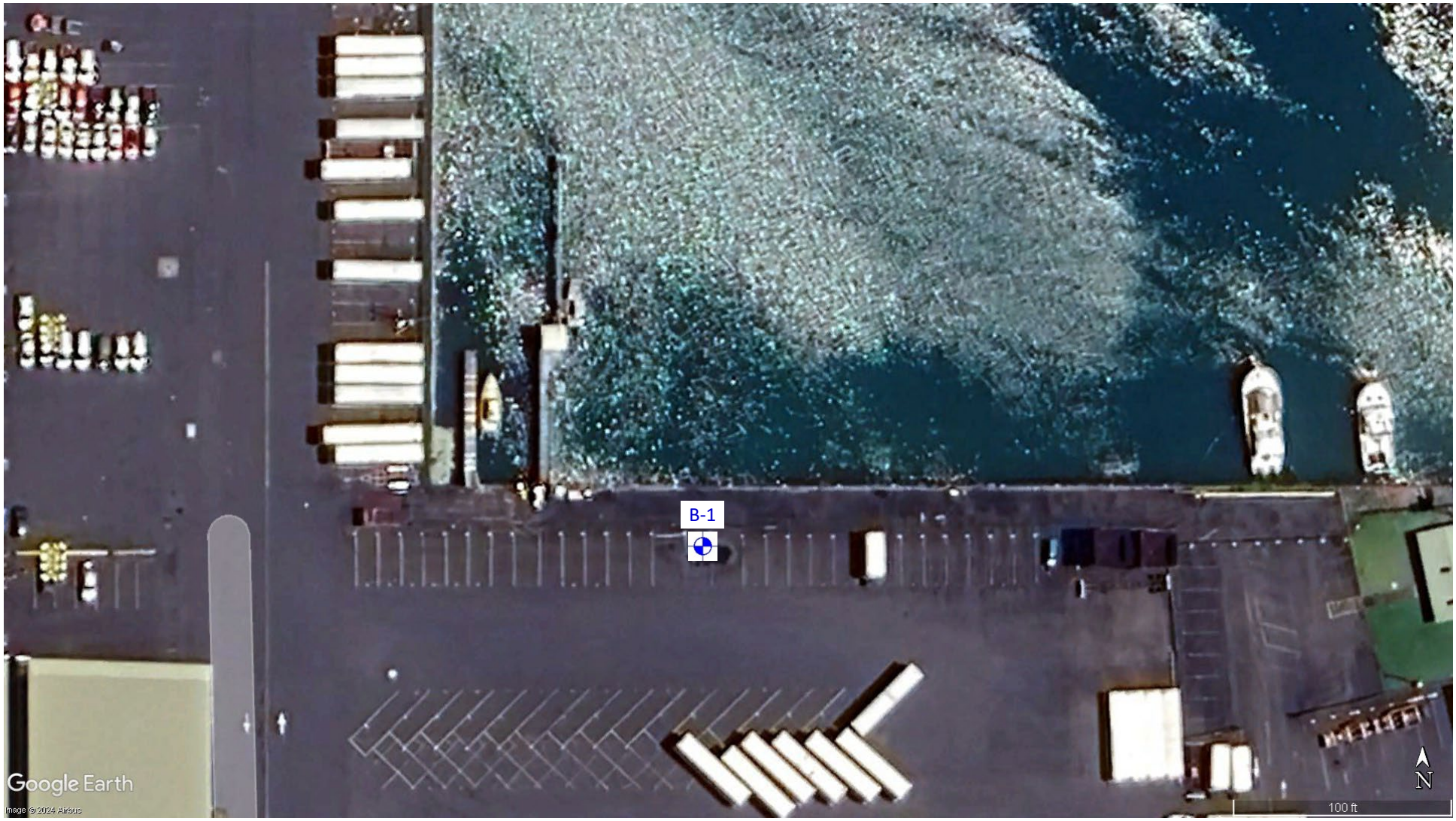
MN 9.5º

PROJECT LOCATION MAP

NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

Kokua Geotech LLC
Soil and Foundation Engineering

PROJECT NO.: 022724-00	**PLATE** 1
DATE: OCTOBER 2024	



REFERENCE: GOOGLE EARTH IMAGERY

APPROXIMATE BORING LOCATION

Kokua Geotech LLC
Soil and Foundation Engineering

SITE PLAN

NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

PROJECT NO.: 022724-00	**PLATE** 2
DATE: OCTOBER 2024	

APPENDIX A

Project: **New Boat Lift** Project Location: **Hilo Harbor, Hawaii** Project Number: **022724-00**	**Kokua Geotech LLC** 1017 N King St Honolulu, HI 96817 (808) 214-9339	Key to Logs of Borings Sheet 1 of 1

1 Elevation (feet)	2 Depth (feet)	3 Sample Type	4 Sample Number	5 Sampling Resistance, blows/ft	6 Core Recovery, %	7 RQD, %	8 U.S.C.S	9 Graphic Log	10 MATERIAL DESCRIPTION	11 Pocket Pen./Torvane, tsf	12 Water Content, %	13 Dry Unit Weight, pcf	14 Remarks and Other Tests

COLUMN DESCRIPTIONS

1 Elevation (feet): Elevation (MSL, feet).
2 Depth (feet): Depth in feet below the ground surface.
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 Sample Number: Sample identification number.
5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6 Core Recovery, %: , expressed as the amount of recovered material divided by the total length of the core run (presented as a percentage).
7 RQD, %: , expressed as a modified core recovery in which the lengths of all sound rock core piece over 4 inches in length are summed and divided by the length of the core run.
8 U.S.C.S: Type of material encountered.
9 Graphic Log: Graphic depiction of the subsurface material encountered.
10 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
11 Pocket Pen./Torvane, tsf: the reading from Poecket Penetrometer or Torvane.
12 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
13 Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
14 Remarks and Other Tests: Other Tests

FIELD AND LABORATORY TEST ABBREVIATIONS

CORR: Corrosivisty tests to assess soil corrosivity
WOR: Weight of Rods
WOH: Weight of Hammer
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SPT: Standard Penetration Test
UC: Unconfined Compression
MCS: Modified California Sampler

MATERIAL GRAPHIC SYMBOLS

Asphaltic Concrete (AC)
Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
Clayey GRAVEL (GC)
Silty GRAVEL (GM)
Poorly graded GRAVEL with Silt (GP-GM)
Clayey SAND (SC)
Poorly graded SAND with Silt (SP-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Auger sampler
Bulk Sample
3-inch-OD California w/ brass rings
CME Sampler
Grab Sample
HQ Coring
3-inch OD Modified California w/ brass liners
Pitcher Sample
PQ Coring
Probing w/Pointed Tip
2-inch-OD unlined split spoon (SPT)
Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

C:\Users\ajfel\Desktop\Working\PROJECTS\2024 Series\022724-00.P50217 New Boat Lift Improv at Hilo Harbors\LOGS\Boring Logs for Boat Lift.bg4[KG (with Coring) 12-29-18.tpl]

PLATE A-0.1

Project: **New Boat Lift** Project Location: **Hilo Harbor, Hawaii** Project Number: **022724-00**	**Kokua Geotech LLC** 1017 N King St Honolulu, HI 96817 (808) 214-9339	Log of Boring No. 1 Sheet 1 of 2

Date(s) Drilled **9/12/24**	Logged By **DR**	Checked By **AJF/SL**
Drilling Method **CF Auger & HQ Coring**	Drill Bit Size/Type **4-inch Solid Stem Auger & HQ-size Coring**	Total Depth of Borehole **43.5 feet**
Drill Rig Type **Diedrich D-25**	Drilling Contractor **Kokua Geotech LLC**	Approximate Surface Elevation **+8 feet MSL***
Groundwater Level and Date Measured **7.2 feet @11:27 AM 9/12/24**	Sampling Method(s) **SPT & HQ Coring**	Hammer Data **140 lbs. with 30-inch drop**
Borehole Backfill **Gravel & AC Patch**	Location **See Site Plan (Plate 2)**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Core Recovery, %	RQD, %	U.S.C.S	Graphic Log	MATERIAL DESCRIPTION	Pocket Pen./Torvane, tsf	Water Content, %	Dry Unit Weight, pcf	Remarks and Other Tests
8	0						GM		2.5-inch ASPHALTIC CONRETE				
							GP-GM		Brown SILTY GRAVEL with some sand, medium dense, moist (base material)				
			1	30/2" REF.					Gray SANDY GRAVEL (basaltic) with a little silt, very dense, dry to moist (fill)		12		
3	5				8		GM		Tan SILTY GRAVEL (coralline) with some sand, medium dense, moist (fill)				
			2	24							27		
-2	10				0		SC		Gray CLAYEY SAND with some gravel (coralline), medium dense, wet (lagoonal deposit)				
			3	11							42		
-7	15				0		GC		Gray CLAYEY GRAVEL (coralline) with some sand, medium dense, wet (lagoonal deposit)				
			4	13							21		Sieve -#200= 12.3%
-12	20				0		CH		Gray SILTY CLAY with a little sand, soft to medium stiff, wet (lagoonal deposit)				
			5	4							60		LL=62, PI=35
-17	25				0								

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PLATE A-1

Project: **New Boat Lift** Project Location: **Hilo Harbor, Hawaii** Project Number: **022724-00**	**Kokua Geotech LLC** 1017 N King St Honolulu, HI 96817 (808) 214-9339	Log of Boring No. 1 Sheet 2 of 2

Date(s) Drilled **9/12/24**	Logged By **DR**	Checked By **AJF/SL**
Drilling Method **CF Auger & HQ Coring**	Drill Bit Size/Type **4-inch Solid Stem Auger & HQ-size Coring**	Total Depth of Borehole **43.5 feet**
Drill Rig Type **Diedrich D-25**	Drilling Contractor **Kokua Geotech LLC**	Approximate Surface Elevation **+8 feet MSL***
Groundwater Level and Date Measured **7.2 feet @11:27 AM 9/12/24**	Sampling Method(s) **SPT & HQ Coring**	Hammer Data **140 lbs. with 30-inch drop**
Borehole Backfill **Gravel & AC Patch**	Location **See Site Plan (Plate 2)**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Core Recovery, %	RQD, %	U.S.C.S	Graphic Log	MATERIAL DESCRIPTION	Pocket Pen./Torvane, tsf	Water Content, %	Dry Unit Weight, pcf	Remarks and Other Tests
-17	25				0		GC		Gray CLAYEY GRAVEL (coralline) with some sand, medium dense, wet (lagoonal deposit)				
			6	19							57		
-22	30				0								
			7	24							35		Sieve -#200= 13.4%
-27	35				0		SP-SM		Tan SAND with a little silt, medium dense, wet (coralline detritus)				
			8	23							37		
-32	40				0				grades to very dense				
			9	57							43		Sieve -#200= 5.3%
									Boring terminated at approximately 43.5 feet below existing ground surface				
-37	45												
-42	50												

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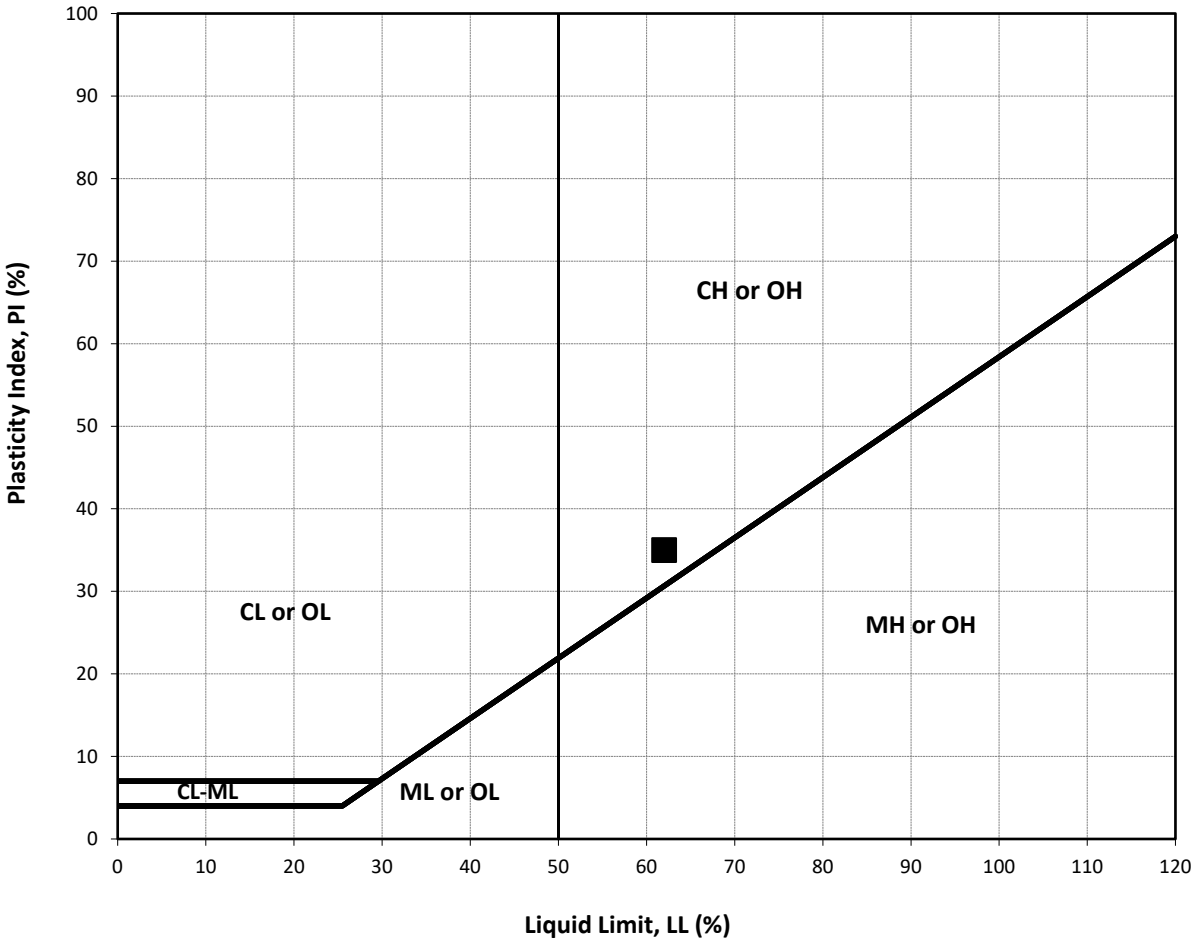
PLATE A-1

APPENDIX B

PLASTICITY CHART



Symbol	Sample	Depth (feet)	Material Description	USCS	LL	PL	PI
■	B-1	22.0 to 23.5	Gray SILTY CLAY with a little sand	CH	62	27	35

SUMMARY OF ATTERBERG LIMITS (ASTM D4318) TEST RESULTS

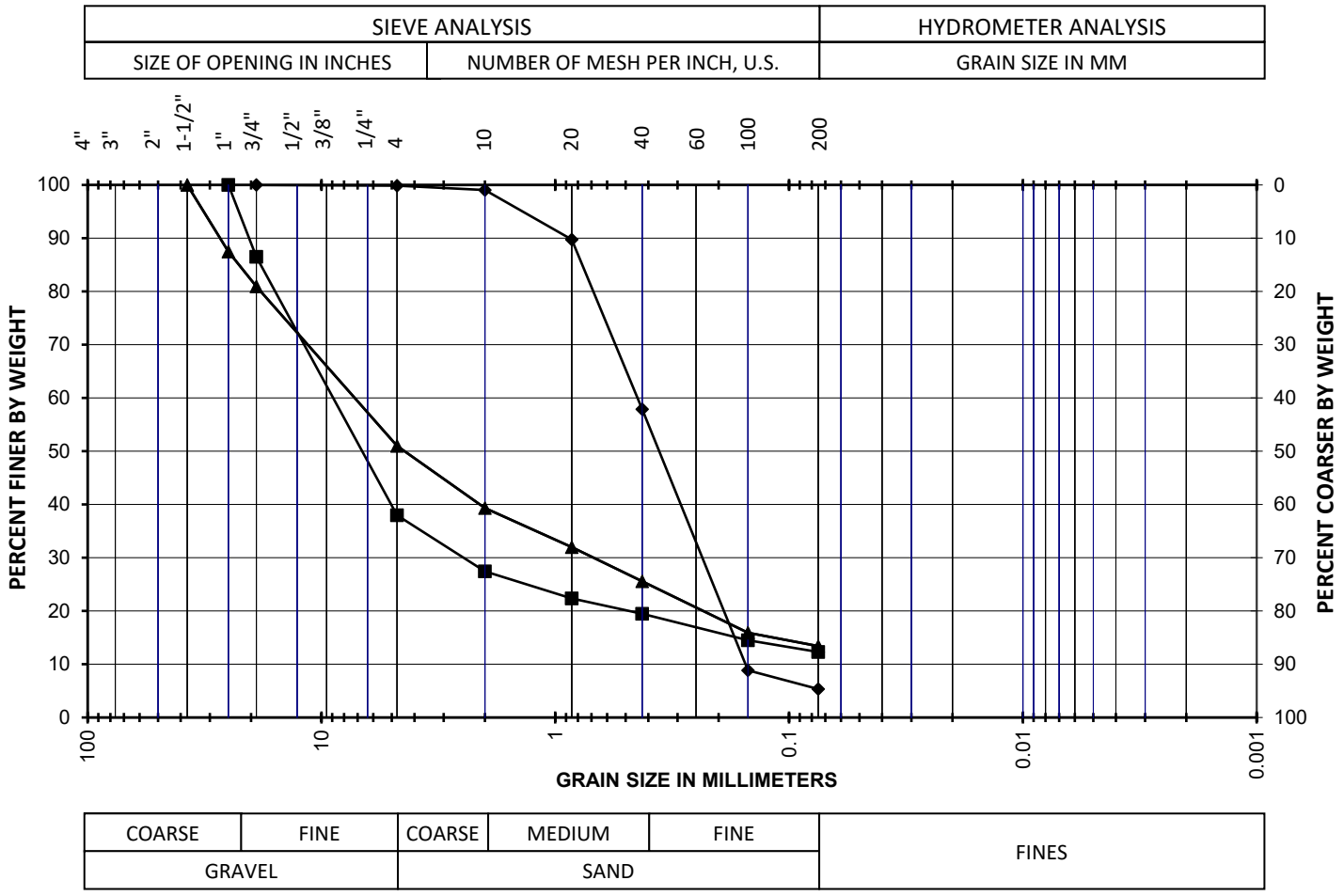
Kokua Geotech LLC
Soil and Foundation Engineering

NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

PROJECT NO.: 022724-00

DATE: OCTOBER 2024

PLATE
B-1



Symbol	Sample	Depth (feet)	USCS	Description
■	B-1	17.0 to 18.5	GC	Gray CLAYEY GRAVEL with some sand
▲	B-1	32.0 to 33.5	GC	Gray CLAYEY GRAVEL with some sand
◆	B-1	42.0 to 43.5	SP-SM	Tan SAND with a little silt

SUMMARY OF GRAIN SIZE DISTRIBUTION (ASTM C117 & C136) TEST RESULTS

NEW BOAT LIFT IMPROVEMENTS AT HILO HARBOR
HILO, ISLAND OF HAWAII

Kokua Geotech LLC
Soil and Foundation Engineering

PROJECT NO.: 022724-00

DATE: OCTOBER 2024

PLATE
B-2

ARTICLE XXIV - ELECTRICAL WORK

24.1 GENERAL

A. Description. The work under this article of the specifications consists of the furnishing and installation of all labor and materials required to complete all electrical work as indicated on the drawings and/or specified herein. The work includes but is not limited to the following:

1. Branch circuit for new boat lift.

2. Underground electrical distribution system including electric handholes, ductlines, and conductors.

3. As-built drawings.

4. Testing.

B. Work included in this Article must be completed by a valid State of Hawaii Specialty Contractor licensed “C-13” Electrical Contractor.

C. Coordination with Other Trades. During pricing and construction, Contractor shall coordinate his work with other trades to avoid omissions and overlapping of responsibilities.

D. Special Conditions.

1. Contractor shall arrange for Harbors inspection and acceptance of new work.

2. The Harbors Construction Engineer shall witness all tests. The Contractor shall schedule all testing, in writing, with the Harbors Construction Engineer, a minimum of two (2) weeks prior to testing.

E. Rules and Permits. The entire installation shall be done in strict accordance with the latest rules and regulations of the National Electrical Code (NEC), National Electrical Safety Code (NESC) and any applicable local electrical ordinances

F. Symbols. The standard electrical symbols, together with the special symbols, notes and instructions indicated on the drawings, describe the work required and are to be included as a part of these specifications.

G. Drawings and Coordination of Work. These specifications are accompanied by drawings indicating the location of work to be performed.

1. The drawings and these specifications are complementary, each to the other, and what is called for by one shall be as binding as if called for by both.

2. Every effort has been made to indicate clearly and specifically all work required to be performed by the Contractor; however, any item of material, equipment or work not specifically called for herein or on the drawings but which is required to complete the installation so that it will conform to the NEC, NESC, local laws, and the intent and meaning of the plans and specifications, shall be furnished and installed by the Contractor at no additional cost to the State.

3. Before installing, verify all dimensions and sizes of equipment at job site. Conduit routing is typical and may be altered in any logical manner. However, all changes shall be approved by the Harbors Construction Engineer and shown on “as-built” drawings.

24.2 SUBMITTALS

A. The Contractor shall submit shop drawings for approval in accordance with Article XI - REQUIRED SUBMITTALS.

1. Circuit breakers.

2. Large Junction boxes.

3. Raceways.

4. Conductors.

5. Electric Handholes.

6. Warning tape.

B. Shop drawings and catalog cuts for substitute materials shall clearly specify compliance with and/or deviation from specified material. Approval of shop drawings and catalog cuts shall not release Contractor from complying with intent of specifications and drawings. Any deviations from approved shop drawings shall have prior approval by the Harbors Construction Engineer.

C. Field Test Reports. Submit the following test results for approval in report form as stipulated in item "TESTING AND INSPECTION" hereinbelow: 600-volt wiring test.

D. Written Notification. Submit written notification of all tests as noted under item entitled "TESTING AND INSPECTION" hereinbelow.

24.3 MATERIALS AND EQUIPMENT

A. General.

1. Materials and equipment shall be new (unless otherwise specified herein)

and shall bear the inspection label of the Underwriter's Laboratories, Inc. where such inspection and labeling service is rendered for the materials and equipment in question.

2. Brand names and catalog numbers used herein to specify materials and equipment (unless otherwise noted) are to indicate the standards of design and quality required. Materials and equipment of equal quality other manufacturers will be accepted subject to the approval of the Harbors Construction Engineer.

3. Where two or more similar type items are furnished, all shall be of the same manufacture, e.g. safety switches shall be of the same manufacturer unless otherwise noted.

B. Circuit Breakers.

1. Circuit breakers shall be of the molded case type with toggle operated mechanism and thermal-magnetic overload trips, with voltage, phase, and AIC ratings matching the panelboard that the circuit breaker is being installed in. Adjustable trips shall be provided when normally available. Circuit breakers for use in existing switchboards or panelboards shall be suitable for such use.

C. Large Junction Boxes.

1. For dry interior locations, the box shall be fabricated from NEC gauge galvanized steel with matching screw-on type cover, field punched knockouts, factory primed and painted. Boxes indicated as weatherproof, for installation in damp or wet locations, or locations exposed to weather shall be NEMA 4X stainless steel (316) with continuous hinge, pad lockable, keyed alike and padlock. All screws and hardware shall be stainless steel (316).

D. Raceways.

1. Polyvinyl chloride (PVC) Schedule 40. All underground ductlines shall be concrete encased.

2. Rigid Steel Conduit: Rigid steel, zinc-coated inside and outside, for use with threaded fittings. ANSI C80.1.

E. Wire and Cable.

1. Conductors. All conductors shall be copper, No. 12 AWG minimum. No. 8 AWG and larger diameter shall be stranded; No. 10 AWG and smaller shall be solid. Do not provide wires and cables manufactured more than 12 months prior to the date of delivery to the site. Aluminum conductors shall not be provided.

2. Color Coding. Provide for feeder and branch circuit conductors. Color

shall be green for grounding conductors and white for neutral conductor. Color of ungrounded conductors shall be as follows:

208Y/120 volt, three phase:

a) Phase A - black
b) Phase B - red
c) Phase C - blue

3. Insulation. Type XHHW or RHW-2 unless otherwise specified.

4. Bonding Conductors. Solid bare copper wire for sizes No. 8 AWG and smaller diameter; Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

5. Branch Circuit Wiring. Conductors shall be of No. 10 American Wire Gauge (AWG) minimum size, except where otherwise indicated. Conductor installation shall be Type RHW-2 or VW-1; 90 degrees C rated. Minimum insulation thickness shall be 45 mils. All conductors shall be 7-strand copper, 600 volts.

F. Splices. Any splices necessary shall be compression type, mechanically firm and made only in wireway, pull boxes or handholes. Splices shall be sufficiently taped and coated to provide a completely waterproof permanent joint. An approved plastic electrical tape and waterproof coating shall be used. A minimum of two layers of tape shall be applied.

G. Electrical Tapes.

1. Insulating Tape. UL 510, plastic insulating tape, capable of performing in a continuous temperature environment of 80 degrees C.

2. Other Tapes. Tapes shall be UL listed for electrical insulation and other purposes in wire and cable splices. Terminations, repairs and miscellaneous purposes, electrical tapes shall comply with UL 510.

H. Cable Wrap. Nylon, twist-on type, ASTM D 4066 Group 2. Manufactured by Heyco Products, Inc. or approved equivalent.

I. Cable Support Grip. Wire mesh grip, tin-coated bronze wire or stainless steel wire (302 - 304). Manufactured by Hubbell or approved equivalent.

J. Warning Tape. Pre-printed polyethylene tape marked with “CAUTION BURIED ELECTRICAL LINE BELOW,” 4 mil thick, detectable foil backed, 3” minimum width.

K. Duct Seal. Pliable, non-toxic material used for application around and in conduits and to minimize moisture and rodent/insect infiltration. Must be re-enterable material allowing form removal/reapplication after initial installation. Non-drying, non-cracking, non-corrosive material that will not adversely affect raceways and conductors. Provide duct seal at all conduit risers at light poles and duct entries

at handholes.

L. Hardware, Supports, Backing, Etc. All hardware, supports, backing and other accessories necessary to install electrical equipment shall be provided. Steel materials shall be stainless steel Type 316. Channel irons shall be stainless steel Type 316, unless otherwise indicated.

M. Ground Rods. Ground rods shall be copper clad steel type, 3/4-inch diameter, 10 feet long, sectional type, and conform to UL 467.

24.4 CONSTRUCTION METHODS

A. General.

1. Workmanship subject to approval of Harbors Construction Engineer and inspectors of the utilities who shall be afforded every opportunity to determine skill and competency.

2. Construction shall conform to construction practices as recommended by American Electricians practices as recommended by American Electricians Handbook by Croft (latest edition), National Electrical Code, National Electrical Safety Code, and applicable instructions of manufacturers of equipment and materials supplied for project.

3. Electrical outages shall be granted at the convenience of the Harbors. Requests for electrical outages shall be submitted, in writing, a minimum of two (2) weeks prior to the requested outage date and shall be approved by the Harbors Construction Engineer. The request shall indicate the date and time of the requested outage, and the proposed outage duration. Contractor shall advise and/or coordinate work with the Harbors Construction Engineer, Harbors Hawaii District, and all users and tenants a minimum of two (2) weeks in advance.

B. Wiring System. Unless otherwise indicated or specified herein, wiring shall consist of single conductor cables installed in conduit in areas where permitted by the National Electrical Code.

C. Installation of Conduit.

1. Conduits with respect to size shall be installed exactly as shown on the drawings. No deviation from the plan shall be permitted except to increase the size of conduits, if necessary, to accommodate the required size and number of conductors to be installed therein.

2. Conduits shall be installed approximately where shown. The exact location of conduits and conduit supports shall be determined after careful consideration has been given to the location of other existing electrical and civil work.

3. Conduit system shall be continuous from fitting to fitting so that electrical

continuity is obtained between all conduits of the system.

4. All raceways shall be blown and swabbed after installation to remove any water then immediately sealed to prevent water infiltration during construction. Raceways must remain sealed except when pulling conductors. If water is discovered during the warranty period the Contractor shall remove water from raceways and associated boxes at no additional cost to the State.

5. Exposed conduit runs to be parallel and/or perpendicular to architectural and structural elements. Galvanized rigid steel conduit for all surface mounted conduit.

6. Provide locknuts and bushings for all raceway terminations.

D. Provide hubs for all raceway connections to boxes and enclosures exposed to weather.

E. Underground Ductlines.

1. Concrete. Concrete for electrical requirements shall be at least 3000 psi concrete with one-inch maximum aggregate conforming to the requirements of ARTICLE XX - CAST-IN-PLACE CONCRETE.

2. Earthwork. Excavation, backfilling, and pavement for repairs for electrical requirements shall conform to the requirements of the Hawaii Standard Specifications for Road and Bridge Construction, Section 204.

3. All underground ductlines shall be PVC Schedule 40. Ductlines shall be jacketed and shall be installed by qualified electricians. Coat tapered ends of ducts or conduits with sealing compound before coupling is applied to insure watertight joint. Concrete shall be poured without the use of mechanical vibrators. Tamp concrete manually with wooden rods. Thickness of concrete encasement shown is minimum and may be increased to fit actual shape of trench.

4. The top of the ductline shall be at a minimum depth as indicated on drawings.

5. Duct lines shall have a continuous slope downward toward handholes and away from buildings with a pitch of not less than 3 inches in 100 feet. Except at conduit risers, accomplish changes in direction of runs exceeding a total of 10 degrees, either vertical or horizontal, by long sweep bends having a minimum radius of curvature of 25 feet. Sweep bends may be made up of one or more curved or straight sections or combinations thereof. Manufactured bends shall have a minimum radius of 18 inches for use with conduits of less than 3 inches in diameter and a minimum radius of 36 inches for ducts of 3 inches in diameter and larger.

6. Terminate conduits in end-bells where duct lines enter handholes.

Separators shall be of precast concrete, high impact polystyrene, steel, or any combination of these. Stagger the joints of the conduits by rows and layers so as to provide a duct line having the maximum strength. After laying, bind ducts with #12 wire and anchor to prevent movement during concrete pouring. During construction, protect partially completed duct lines from the entrance of debris such as mud, sand, and dirt by means of suitable conduit plugs.

7. The concrete encasement surrounding the ductbank shall be rectangular in cross-section and shall provide at least 3 inches of concrete cover for ducts. Separate conduits by a minimum concrete thickness of 2 inches unless otherwise indicated.

F. Aboveground Conductors.

1. Mechanical means for pulling shall be torque-limiting type and not used for #2 AWG and smaller wires.

2. Pulling tension shall not exceed wire manufacturer's recommendations.

3. Where necessary, powdered soapstone or water-based wire pulling lubricant may be used as a lubricant for drawing wires through conduit. No other means of lubricating will be allowed.

4. Form neatly in enclosures for minimum of crossovers.

5. Splicing of Wire and Cable.

i. Wires shall be formed neatly in enclosures and boxes.

ii. Splice in accordance with the National Electrical Code (NEC). Make splices in conductors #10 AWG and smaller with insulated, pressure type connector. Splice conductors #8 through #4/0 with high pressure compression (indent) copper sleeve connectors. Do not use bolt-on connectors. Reinsulate splices and waterproof splices. Reinsulate splices according to wire manufacturer's instructions. Splice insulation shall be 200% in thickness of original wire insulation and of same electrical and mechanical characteristics. Tape shall be 7 mil minimum thickness vinyl plastic.

G. Underground Conductors.

1. Cable Pulling. Pull cables down grade with the feed-in point at the handhole or building of the highest elevation. Use flexible cable feeds to convey cables through the handhole opening and into the duct runs. Cable slack shall be accumulated at each handhole or junction box where space permits by training the cable around the interior to form one complete loop. Minimum allowable bending radii shall be maintained in forming such loops.

2. Lubricants for assisting in the pulling of jacketed cables shall be those specifically recommended by the cable manufacturer. The lubricant shall not be deleterious to the cable sheath, jacket, or outer coverings.

3. Cable pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer.

4. Cable Terminating. Protect terminations of insulated power cables from accidental contact, deterioration of coverings and moisture by the use of terminating devices and materials. Install all terminations of insulated power cables and cable splices in accordance with the manufacturer's requirements. Make terminations using materials and methods as indicated or specified herein or as designated by the written instructions of the cable manufacturer and termination kit manufacturer.

5. Splices for 600 Volt Class Cables. Make splices in underground systems only in accessible locations such as handholes, using a compression connector on the conductor and by insulating and waterproofing by one of the following methods suitable for continuous submersion in water.

   i. Provide cast-type splice insulation by means of molded casting process employing a thermosetting epoxy resin insulating material and apply by a gravity poured method or by a pressure injected method. The component materials of the resin insulation shall be in a packaged form ready for convenient mixing without removing from the package. Do not allow the cables to be removed until after the splicing material has completely set.

   ii. Gravity poured method shall employ materials and equipment contained in an approved commercial splicing kit which includes a mold suitable for cables to be spliced. When the mold is in place around the joined conductors, prepare the resin mix and pour into the mold. Do not allow cables to be moved until after the splicing materials have completely set.

   iii. Heat shrinkable method shall employ materials and equipment contained in an approved commercial splicing kit.

H. Grounding.

1. Provide grounding for entire electrical installation as required by Article 250 of the National Electrical Code.

2. Final connection to equipment, raceways, and other metallic parts directly exposed to ungrounded electric conductors shall be No. 12 AWG minimum, copper, NEC type TW, green insulation. Use approved bonding terminal at panels.

3. All grounding wire runs shall be routed together with circuit conductors.

4. Install green-insulated equipment grounding conductor in all conduits. Conductor sizes per Article 250 of the National Electrical Code.

5. Grounding electrodes shall be cone pointed driven ground rods driven full depth less 6 inches, installed when indicated to provide an earth ground of the value before stated for the particular equipment being grounded.

6. Make grounding connections which are buried or otherwise normally inaccessible, and excepting specifically those connections for which access for periodic testing is required by exothermite type process. Make thermit welds strictly in accordance with the weld manufacturer's written recommendations. Welds which have "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. No mechanical connector is required at thermit weldments.

7. In lieu of an exothermic type process, a compression ground grid connector of a type which uses hydraulic compression tool to provide the correct circumferential pressure may be used. Tools and dies shall be as recommended by the manufacturer. An embossing die code or other standard method shall provide visible indication that a connector has been adequately compressed on the ground wire.

8. Equipment grounding conductors shall be bare soft-drawn copper wire No. 6 AWG minimum unless otherwise indicated or specified.

I. Finishing.

1. All cutting that may be required for the complete installation of the electrical work shall be carefully performed and all patching shall be finished to match existing conditions.

2. Close unused knockouts in boxes or enclosures with metal cap.

3. Wipe clean all new exposed raceways and enclosures with rag and solvent.

J. Miscellaneous Details. Cut, drill and patch as required to install electrical system. Repair any surface damaged or marred by notching, drilling, or any other process necessary for installation of electrical work. Cutting, repairs and refinishing subject to the approval of the Harbors Construction Engineer. Need for remedial work determined by Harbors Construction Engineer as attributable to poor coordination and workmanship shall be cause for reconstruction to the satisfaction of the Engineer.

1. Touch-up all surfaces damaged by shipping, installation, etc., with paint matching original and as recommended by the paint manufacturer.

2. Repair holes left by removal of electrical equipment to match existing.

3. Furnish necessary test equipment and make all tests necessary to check for unspecified grounding, shorts, and wrong connections. Correct faulty

conditions, if any.

K. Cleaning and Repairing. During the progress of work, all rubbish, waste lumber, displaced materials, etc. shall be removed as soon as possible and upon completion of the work, Contractor shall remove from the State's property and from all public and private property, at his own expense, all temporary structures, rubbish, and waste material resulting from his operations.

24.5 TESTING AND INSPECTION - All testing shall be witnessed by the Harbors Construction Engineer. The Contractor shall schedule all testing with the Harbors Construction Engineer, in writing, a minimum of two (2) weeks prior to testing.

A. If the Harbors Construction Engineer (or his representative) shall discover any of the following errors, the Contractor, at his own expense, shall go over all similar portions of the entire job, taking the necessary or directed remedial action.

1. Impaired clearances.

2. Improper finish.

3. Improper adjustment.

B. Furnish necessary test equipment and make all tests necessary to check for unspecified grounding, shorts, and wrong connections. Correct faulty conditions, if any.

C. The Contractor shall show by demonstration in service that all circuits and devices are in operating condition. Tests shall be such that each item of control equipment will function not less than five times.

D. Wherever test or inspection reveals faulty materials or installation, the Contractor shall take corrective action, at his own expense, repairing or replacing materials or installation as directed. The materials or installation shall then be retested.

E. Test all 600V class feeder cables. Perform the following test prior to connecting to equipment:

1. Measure insulation resistance of all 600V conductors to ensure that no accidental shorts or grounds exist. All feeder cables, #10 or larger shall have insulation resistance of 1.5 megohms or higher. Insulation resistance shall be measured by 500 volts megger. Resistance of feeder cables shall be recorded and turned over in four copies to the Harbors Construction Engineer during final inspection. Proper operation of all electrical devices shall be demonstrated at request of the Harbors Construction Engineer during final inspection.

19.6 COMPLETION AND GUARANTEE

A. Completion. The entire electrical installation shall be complete in every detail as specified, ready for use and tested, free of all accidental grounds and short

circuits. The installation shall not be considered complete until “As-Built” drawings have been submitted and approved.

B. Guarantee. The Contractor shall submit a written warranty stating that all parts of the electrical system be free from defects of material and workmanship. Any defects occurring within one year after final acceptance shall be corrected by the Contractor at no cost to the State.

24.7 MEASUREMENT AND PAYMENT - Measurement and payment for electrical work as described in the Article shall not be measured. The Contractor shall consider this work incidental to Bid Item No. 3 in the Proposal Schedule.

END OF ARTICLE

Requirements of Chapter 104, HRS
Wages and Hours of Employees on Public Works Law

Chapter 104, HRS, applies to every public works construction project over $2,000, regardless of the method of procurement or financing (purchase order, voucher, bid, contract, lease arrangement, warranty, SPRB).

Rate of Wages for Laborers and Mechanics

- Minimum prevailing wages (basic hourly rate plus fringe benefits), as determined by the Director of Labor and Industrial Relations and published in wage rate schedules, shall be paid to the various classes of laborers and mechanics working on the job site. [§104-2(a), (b), Hawaii Revised Statutes (HRS)]

- If the Director of Labor determines that prevailing wages have increased during the performance of a public works contract, the rate of pay of laborers and mechanics shall be raised accordingly. [§104-2(a) and (b), HRS; §12-22-3(d) Hawaii Administrative Rules (HAR)]

Overtime

- Laborers and mechanics working on a Saturday, Sunday, or a legal holiday of the State or more than eight hours a day on any other day shall be paid overtime compensation at not less than one and one-half times the basic hourly rate plus the cost of fringe benefits for all hours worked. If the Director of Labor determines that a prevailing wage is defined by a collective bargaining agreement, the overtime compensation shall be at the rates set by the applicable collective bargaining agreement [§§104-1, 104-2(c), HRS; §12-22-4.1, HAR]

Weekly Pay

- Laborers and mechanics employed on the job site shall be paid their full wages at least once a week, without deduction or rebate, except for legal deductions, within five working days after the cutoff date. [§104-2(d), HRS]

Posting of Wage Rate Schedules

- Wage rate schedules with the notes for prevailing wages and special overtime rates, shall be posted by the contractor in a prominent and easily accessible place at the job site. A copy of the entire wage rate schedule shall be given to each laborer and mechanic employed under the contract, except when the employee is covered by a collective bargaining agreement. [§104-2(d), HRS]

Withholding of Accrued Payments

- If necessary, the contracting agency may withhold accrued payments to the contractor to pay to laborers and mechanics employed by the contractor or subcontractor on the job site any difference between the wages required by the public works contract or specifications and the wages received. [§104-2(e), HRS]

Certified Weekly Payrolls and Payroll Records

- A certified copy of all payrolls shall be submitted weekly to the contracting agency. [§104-3(a), HRS; §12-22-10, HAR]

- The contractor is responsible for the submission of certified copies of the payrolls of all subcontractors. The certification shall affirm that the payrolls are correct and complete, that the wage rates listed are not less than the applicable rates contained in the applicable wage rate schedule, and that the classifications for each laborer or mechanic conform with the work the laborer or mechanic performed. [§104-3(a), HRS; §12-22-10, HAR]

- Payroll records shall be maintained by the contractor and subcontractors for three years after completion of construction. The records shall contain: [§104-3(b), HRS; §12-22-10, HAR]
  - the name and home address of each employee
  - the last four digits of social security number
  - a copy of the apprentice's registration with DLIR
  - the employee's correct classification
  - rate of pay (basic hourly rate + fringe benefits)
  - itemized list of fringe benefits paid
  - daily and weekly hours worked
  - weekly straight time and overtime earnings
  - amount and type of deductions
  - total net wages paid
  - date of payment

- Records shall be made available for examination by the contracting agency, the Department of Labor and Industrial Relations (DLIR), or any of its authorized representatives, who may also interview employees during working hours on the job. [§§104-3(c), 104-22(a), HRS; §12-22-10, HAR]

Termination of Work on Failure to Pay Wages

- If the contracting agency finds that any laborer or mechanic employed on the job site by the contractor or any subcontractor has not been paid prevailing wages or overtime, the contracting agency may, by written notice to the contractor, terminate the contractor's or subcontractor's right to proceed with the work or with the part of the work in which the required wages or overtime compensation have not been paid. The contracting agency may complete this work by contract or otherwise, and the contractor or contractor's sureties shall be liable to the contracting agency for any excess costs incurred. [§104-4, HRS]

Apprentices

- Apprentice wage rates apply to contractors who are a party to a bona fide apprenticeship program which has been registered with the DLIR. In order to be paid apprentice rates, apprentices must be parties to an agreement either registered with or recognized as a USDOL nationally approved apprenticeship program by the DLIR, Workforce Development Division, (808) 586-8877, and the apprentice must be individually registered by name with the DLIR. [§12-22-6(1) and (2), HAR]

- The number of apprentices on any public work in relation to the number of journeyworkers in the same craft classification as the apprentices employed by the same employer on the same public work may not exceed the ratio allowed under the apprenticeship standards registered with or recognized by the DLIR. A registered or recognized apprentice receiving the journeyworker rate will not be considered a journeyworker for the purpose of meeting the ratio requirement. [§12-22-6(3), HAR]

Enforcement

- To ensure compliance with the law, DLIR and the contracting agency will conduct investigations of contractors and subcontractors. If a contractor or subcontractor violates the law, the penalties are: [§104-24, HRS]

  - First Violation — Equal to 25% of back wages found due or $250 per offense up to $2,500, whichever is greater.
  - Second Violation — Equal to amount of back wages found due or $500 for each offense up to $5,000, whichever is greater.
  - Third Violation — Equal to two times the amount of back wages found due or $1,000 for each offense up to $10,000, whichever is greater; and
    Suspension from doing any new work on any public work of a governmental contracting agency for three years.

  ▪ A violation would be deemed a second violation if it occurs within two years of the **first notification of violation**, and a third violation if it occurs within three years of **the second notification of violation**. [§104-24, HRS; §12-22-25(b), HAR]

  ▪ **Suspension**: For a first or second violation, the department shall immediately suspend a contractor who fails to pay wages or penalties until all wages and penalties are paid in full. For a third violation, the department shall penalize and suspend the contractor as described above, **except that if the contractor continues to violate the law, then the department shall immediately suspend the contractor for a mandatory three years. The contractor shall remain suspended until all wages and penalties are paid in full.** [§§104-24, 104-25, HRS]

- **Suspension**: Any contractor who fails to make payroll records accessible or provide requested information within 10 days, or fails to keep or falsifies any required record, shall be assessed a penalty including suspension as provided in Section 104-22(b) and 104-25(a)(3), HRS. [§104-3(c), HRS; §12-22-26, HAR]

- If any contractor interferes with or delays any investigation, the contracting agency shall withhold further payments until the delay has ceased. Interference or delay includes failure to provide requested records or information within ten days, failure to allow employees to be interviewed during working hours on the job, and falsification of payroll records. The department shall assess a penalty of $10,000 per project, and $1,000 per day thereafter, for interference or delay. [§104-22(b), HRS; §12-22-26, HAR]

- Failure by the contracting agency to include in the provisions of the contract or specifications the requirements of Chapter 104, HRS, relating to coverage and the payment of prevailing wages and overtime, is not a defense of the contractor or subcontractor for noncompliance with the requirements of this chapter. [§104-2(f), HRS]

For additional information, visit the department's website at *http://labor.hawaii.gov/wsd*
or contact any of the following DLIR offices:

Oahu (Wage Standards Division) .....(808) 586-8777
Hawaii Island.....(808) 974-6464
Maui and Kauai .....(808) 243-5322

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HARBORS

PROPOSAL

PROPOSAL TO THE
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS

PROJECT:	NEW BOAT LIFT IMPROVEMENTS PIER 1, HILO HARBOR, HAWAII
PROJECT NO.:	P50217
COMPLETION TIME:	All work shall be completed within ONE HUNDRED AND EIGHTY (180) CALENDAR DAYS from the date indicated in the Notice to Proceed (NTP) from the Department. The 180 CALENDAR DAYS are inclusive of completing all submittals and permits, and substantial completion of the work to the satisfaction of the Department of Transportation Harbors Division. NTP shall be issued upon completion of contract execution.
LIQUIDATED DAMAGES:	THREE HUNDRED AND NO/100 DOLLARS ($300.00) for each and every working day which the Contractor has failed to complete the work or portions of the work on time.
DESIGN PROJECT MANAGER:	Ms. Da Teng DOT-Harbors 79 S. Nimitz Highway Honolulu, HI 96813 da.teng@hawaii.gov (808) 587-1961
ELECTRONIC SUBMITTAL:	**Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall refer to SPECIAL PROVISIONS 2.8 PREPARATION AND DELIVERY OF BID for complete details. FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

Director of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Sir:

The undersigned Bidder declares the following:

1. It has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal.

2. It has not been assisted or represented on this matter by any individual who has, in a State capacity, been involved in the subject matter of this contract within the past two years.

3. It has not and will not, either directly or indirectly offered or given a gratuity (i.e. an entertainment or gift) to any State or County employee to obtain a contract or favorable treatment under a contract.

The undersigned Bidder further agrees to the following:

1. If this proposal is accepted, it shall execute a contract with the Department to provide all necessary labor, machinery, tools, equipment, apparatus and any other means of construction, to do all the work and to furnish all the materials specified in the contract in the manner and within the time therein prescribed in the contract, and that it shall accept in full payment therefore the sum of the unit and/or lump sum prices as set forth in the attached proposal schedule for the actual quantities of work performed and materials furnished and furnish satisfactory security in accordance with Section 103D-324, Hawaii Revised Statutes, within 10 days after the award of the contract or within such time as the Director of Transportation may allow after the undersigned has received the contract documents for execution, and is fully aware that non-compliance with the aforementioned terms will result in the forfeiture of the full amount of the bid guarantee required under Section 103D-323, Hawaii Revised Statutes.

2. That the quantities given in the attached proposal schedule are approximate only and are intended principally to serve as a guide in determining and comparing the bids.

3. That the Department does not either expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Director of Transportation, and that all increased or decreased quantities of work shall be performed at the unit prices set forth in the attached proposal schedule except as provided for in the specifications.

4. In case of a discrepancy between unit prices and the totals in said Proposal Schedule, the unit prices shall prevail.

5. Agrees to begin work within 10 working days after the date of notification to commence with the work, which date is in the notice to proceed, and shall finish the entire project within the time prescribed.

6. The Director of Transportation reserves the right to reject any or all bids and to waive any defects when in the Director's opinion such rejections or waiver will be for the best interest of the public.

The Bidder acknowledges receipt of and certifies that it has completely examined the following listed items: the Hawaii Department of Transportation, Air and Water Transportation Facilities Division General Provisions for Construction Projects dated 2016, the Notice to Bidders, the Special Provisions, if any, the Technical Provisions, the Proposal, the Contract and Bond Forms, and the Project Plans.

In accordance with Section 103D-323, Hawaii Revised Statutes, this proposal is accompanied with a bid security in the amount of 5% of the total amount bid, in the form checked below. (Check applicable bid security submitted with bid.)

_____ Surety Bid Bond (Use standard form),

_____ Cash,

_____ Cashier's Check,

_____ Certified Check, or

_____ _____.
(Fill in other acceptable security.)

The undersigned Bidder acknowledges receipt of any addendum issued by the Department by recording in the space below the date of receipt.

Addendum No. 1 _____ Addendum No. 3 _____

Addendum No. 2 _____ Addendum No. 4 _____

In accordance with Section 103D-302, Hawaii Revised Statutes, the undersigned as Bidder, has listed the name of each person or firm, who will be engaged by the Bidder on the project as a Subcontractor or Joint Contractor and the nature of work to be done by each. **The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Subcontractor or Joint Contractor.** For each listed firm, the Bidder declares the respective firm is a Subcontractor or Joint Contractor and is subject to evaluation as a Subcontractor or Joint Contractor. It is understood that failure to comply with the aforementioned requirements may be cause for rejection of the bid submitted.

Name of Subcontractor	Nature and Scope of Work
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

Name of Joint Contractor	Nature and Scope of Work
1.	
2.	
3.	

NOTES:

"None" or if left blank indicates no Subcontractor or Joint Contractor.

If more space is needed, attach additional sheets.

The undersigned hereby certifies that the bid prices contained in the attached proposal schedule have been carefully checked and are submitted as correct and final.

This declaration is made with the understanding that the undersigned is subject to the penalty of perjury under the laws of the United States and is in violation of the Hawaii Penal Code, Section 710-1063, unsworn falsification to authorities, of the Hawaii Revised Statutes, for knowingly rendering a false declaration.

_____
Bidder (Company Name)

By_____
Authorized Signature

_____
Print Name and Title

_____

_____
Business Address

_____
Business Telephone

_____
Date

_____
Contact Person (If different from above)

Phone:_____ Email:_____

NOTE:

If Bidder is a CORPORATION, the legal name of the corporation shall be set forth above, the corporate seal affixed, together with the signature(s) of the officer(s) authorized to sign contracts for the corporation. Please attach to this page current (not more than six months old) evidence of the authority of the officer(s) to sign for the corporation.

If Bidder is a PARTNERSHIP, the true name of the partnership shall be set forth above, with the signature(s) of the general partner(s). Please attach to this page current (not more than six months old) evidence of the authority of the partner authorized to sign for the partnership.

If Bidder is an INDIVIDUAL, the bidder's signature shall be placed above.

If signature is by an agent, other than an officer of a corporation or a partner of a partnership, a POWER OF ATTORNEY must be on file with the Department before opening bids or submitted with the bid. Otherwise, the Department may reject the bid as irregular and unauthorized.

PREFERENCES

Bidders agree that preferences shall be taken into consideration to determine the low bidder in accordance with said Sections and the rules promulgated, however, the award of contract will be in the amount of the bid offered exclusive of any preferences.

A. HAWAII PRODUCTS PREFERENCE

In accordance with ACT 174, SLH 2022, effective June 27, 2022, Hawaii Products Preference shall not apply to solicitations for public works construction. Therefore, the Hawaii Products Preference shall not apply to this project.

B. APPRENTICESHIP PROGRAMS PREFERENCE

In accordance with ACT 17, SLH 2009 – Apprenticeship Program, a 5% bid adjustment for bidders that are parties to apprenticeship agreements pursuant to Hawaii Revised Statutes (HRS) Section 103-55.6 may be applied to the bidder's price for evaluation purposes

Any bidder seeking this preference must be a party to an apprenticeship agreement registered with the Department of Labor and Industrial Relations at the time the offer is made for each apprenticeable trade the bidder will employ to construct the public works projects for which the offer is being made.

The bidder is responsible for complying with all submission requirements for registration of its apprenticeship program before requesting the preference.

( ) Yes, I wish to be considered for the Apprenticeship Programs Preference. I have included Certification Form(s) 1 with my bid.

C. RECYCLED PRODUCT PREFERENCE

Recycled product preference shall not apply to this proposal.

NEW BOAT LIFT IMPROVEMENTS

PIER 1, HILO HARBOR

PROPOSAL SCHEDULE – HARBORS

P50217

BID					
ITEM NO.	DESCRIPTION	QTY (a)	UNIT	UNIT PRICE (b)	TOTAL (axb)
1	Mobilization and demobilization, as described in Article XII (not to exceed 6% of the sum of all items excluding the bid price of this item)	L.S.	L.S.	L.S.	$_____
2	Temporary Water Pollution, Dust, and Erosion Control Work, as described in Article XIII	L.S.	L.S.	L.S.	$_____
3	Installation of a New Pre-Engineered Elevator Boat Lift Structure, Foundations, Electrical Systems; in Place Complete	L.S.	L.S.	L.S.	$_____
4	Additional Water Pollution, Dust and Erosion Control and other Misc. Items	FA	FA	FA	$ 50,000.00
5	Security services initiated and requested by the State. It is not intended for security services required by the bidder for their work.	FA	FA	FA	$ 50,000.00

TOTAL AMOUNT FOR COMPARISON OF BIDS $_____

Notes:

Bids shall include all Federal, State, County and other applicable taxes and fees.

The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.

Bidders shall complete all unit prices and amounts. Failure to do so shall be grounds for rejection of bid.

In case of a discrepancy between unit price and the total in said bid, the unit price shall prevail.

The TOTAL AMOUNT FOR COMPARISON OF BIDS herein shall include all labor, materials, equipment, and incidentals necessary to construct all items, complete in place, all in accordance with the plans and specifications.

Submission of a Proposal is a warranty that the bidder has made an examination of the project site and is fully aware of all conditions to be encountered in performing the work and the requirements of the plans and specifications.

The bidder's attention is directed to Section 2.11 – BID SECURITY of the "General Provisions", as amended by the Special Provisions.

The state reserves the right to cancel this project at their sole discretion.

If the lowest TOTAL AMOUNT FOR COMPARISON OF BIDS is less than, or approximately equal to the funds available for this project, an award will be made to the lowest responsible bidder.

If the TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available, the State reserves the right to negotiate with the lowest responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes, to further reduce the scope of work and award a contract thereafter. No additional compensation will be paid by the State for losses, including overhead and profit, resulting from reduced scope of work.

SURETY BID BOND

Bond No. _____

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full name or legal title of offeror)

as Offeror, hereinafter called the Principal, and

_____
(name of bonding company)

as Surety, hereinafter called Surety, a corporation authorized to transact business as a Surety in the State of Hawaii, are held and firmly bound unto

_____
(State/county entity)

as Owner, hereinafter called Owner, in the penal sum of

_____
(required amount of bid security)

Dollars ($_____), lawful money of the United States of America, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS:

The Principal has submitted an offer for

_____
(project by number and brief description)

NOW, THEREFORE:

The condition of this obligation is such that if the Owner shall reject said offer, or in the alternate, accept the offer of the Principal and the Principal shall enter into a contract with the Owner in accordance with the terms of such offer, and give such bond or bonds as may be specified in the solicitation or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof as specified in the solicitation then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed this _____ day of _____, _____

_____
Name of Principal (Offeror) (Seal)

_____
Signature

_____
Title

_____
Name of Surety (Seal)

_____
Signature

_____
Title

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

FORMS

Contents

CONTRACT

THIS AGREEMENT, made this day of _____, by and between the STATE OF HAWAII, by its Director of Transportation, hereinafter referred to as "STATE", and «CONTRACTOR», «STATE_OF_INCORPORATON», whose business/post office address is «ADDRESS», hereinafter referred to as CONTRACTOR";

WITNESSETH: That for and in consideration of the payments hereinafter mentioned, the CONTRACTOR hereby covenants and agrees with the STATE to complete in place, furnish and pay for all labor and materials necessary for "«PROJECT_NAME_AND_NO»", or such a part thereof as shall be required by the STATE, the total amount of which labor, material and construction shall be computed at the unit and/or lump sum prices set forth in the attached proposal schedule and shall be the sum of «BASIC»----DOLLARS ($«BASIC_NUMERIC») as follows:

TOTAL AMOUNT FOR COMPARISON OF BIDS……$«BASIC_NUMERIC»

which sum shall be provided from State funds, all in accordance with the specifications, the special provisions, if any, the notice to bidders, the instructions to bidders, the proposal and plans for «PROJECT_NO_ONLY», and any supplements thereto, on file in the office of the Director of Transportation. These documents, together with all alterations, amendments, and additions thereto and deductions therefrom, are attached hereto or incorporated herein by reference and made a part of this contract.

The CONTRACTOR hereby covenants and agrees to complete such construction within «WORKING_DAYS» from the date indicated in the Notice to Proceed from the State subject, however, to such extensions as may be provided for in writing under the specifications.

For and in consideration of the covenants, undertakings and agreements of the CONTRACTOR herein set forth and upon the full and faithful performance thereof by the CONTRACTOR, the STATE hereby agrees to pay the CONTRACTOR the sum of «BASIC»---DOLLARS ($«BASIC_NUMERIC») in lawful money, but not more than such part of the same as is actually earned according to the STATE's determination of the actual quantities of work performed and materials furnished by the CONTRACTOR at the unit or lump sum prices set forth in the attached proposal schedule. Such payment, including any extras, shall be made, subject to such additions or deductions hereto or hereafter made in the manner and at the time prescribed in the specifications and this contract.

An additional sum of «EXTRAS»-----DOLLARS ($«EXTRA_NUMERIC») is hereby provided for extra work.

All words used herein in the singular shall extend to and include the plural. All words used in the plural shall extend to and include the singular. The use of any gender shall extend to and include all genders.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed the day and year first above written.

STATE OF HAWAII

_____
Director of Transportation

«CONTRACTOR» (Seal)

_____
Signature

_____
Print name

_____
Print Title

_____
Date

PERFORMANCE BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

_____
(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____
DOLLARS ($_____), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above-bound Principal has signed a Contract with Obligee on _____, for the following project:_____
_____
_____
_____
_____
_____
hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in strict accordance with the terms of the Contract as said Contract may be modified or amended from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Obligee to the Surety and the Principal and subject to the limitation of the penal sum of this bond, Surety shall remedy the Default, or take over the work to be performed under the Contract and complete such work, or pay moneys to the Obligee in satisfaction of the surety's performance obligation on this bond.

Signed this _____ day of _____, _____.

(Seal) _____
Name of Principal (Contractor)

* _____
Signature

_____
Title

(Seal) _____
Name of Surety

* _____
Signature

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

PERFORMANCE BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

_____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

_____DOLLARS $_____),
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

☐ **Legal Tender;**

☐ **Share Certificate** unconditionally assigned to or made payable at sight to _____
Description:_____;

☐ **Certificate of Deposit**, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Cashier's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Teller's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Treasurer's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Official Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Certified Check** No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project:_____

_____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The Condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Obligee, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed and sealed this _____ day of _____, _____.

(Seal)_____
Name of Contractor

_____
Signature*

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

LABOR AND MATERIAL PAYMENT BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

_____,
(Name and Street Address of Bonding Company)
as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____
_____ Dollars ($_____), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above-bound Principal has signed Contract with the Obligee on _____ for the following project:_____
_____
_____
_____
_____
hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this _____ day of _____, _____.

(Seal) _____
Name of Principal (Contractor)

* _____
Signature

_____
Title

(Seal) _____
Name of Surety

* _____
Signature

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

LABOR AND MATERIAL PAYMENT BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto _____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

_____DOLLARS ($_____)
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

☐ **Legal Tender;**

☐ **Share Certificate** unconditionally assigned to or made payable at sight to_____
Description:_____

☐ **Certificate of Deposit**, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Cashier's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Teller's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Treasurer's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Official Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Certified Check** No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project:_____

_____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

AND IT IS HEREBY STIPULATED AND AGREED that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payments of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond..

Signed this _____ day of _____, _____.

(Seal)_____
Name of Contractor

_____
Signature*

_____
Title

ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

CHAPTER 104, HRS COMPLIANCE CERTIFICATE

The undersigned bidder does hereby certify to the following:

1. Individuals engaged in the performance of the contract on the job site shall be paid:

A. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and

B. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day.

2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

DATED at Honolulu, Hawaii, this _____ day of _____, 20___.

«CONTRACTOR»
Name of Corporation, Partnership, or Individual

Signature and Title of Signer

Notary Seal
NOTARY ACKNOWLEDGEMENT

Subscribed and sworn before me this
_____day of_____
Notary signature_____
Notary public, State of _____
My Commission Expires:_____

Notary Seal
NOTARY CERTIFICATION

Doc. Date: _____ #Pages: ____
Notary Name: _____ _____Circuit
Doc. Description: _____

_____
Notary signature_____
Date _____

PROVISIONS TO BE INCLUDED IN CONSTRUCTION PROCUREMENT SOLICITATIONS

1. Definitions for terms used in HRS Chapter 103B as amended by Act 192, SLH 2011:

   a. "Contract" means contracts for construction under 103D, HRS.

   b. "Contractor" has the same meaning as in Section 103D-104, HRS, provided that "contractor" includes a subcontractor where applicable.

   c. "Construction" has the same meaning as in Section 103D-104, HRS.

   d. "General Contractor" means any person having a construction contract with a governmental body.

   e. "Procurement Officer" has the same meaning as in Section 103D-104, HRS.

   f. "Resident" means a person who is physically present in the State of Hawai'i at the time the person claims to have established the person's domicile in the State of Hawai'i and shows the person's intent is to make Hawai'i the person's primary residence.

   g. "Shortage trade" means a construction trade in which there is a shortage of Hawai'i residents qualified to work in the trade as determined by the Department of Labor and Industrial Relations.

2. HRS Chapter 103B as amended by Act 192, SLH 2011–Employment of State Residents Requirements:

   a. A Contractor awarded a contract shall ensure that Hawai'i residents comprise not less than 80% of the workforce employed to perform the contract work on the project. The 80% requirement shall be determined by dividing the total number of hours worked on the contract by Hawai'i residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall count towards the calculation for this section. The hours worked by employees within shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.

EXHIBIT 1

b. Prior to award of a contract, an Offeror/Bidder may withdraw an offer/bid without penalty if the Offeror/Bidder finds that it is unable to comply with HRS Chapter 103B as amended by Act 192, SLH 2011.

c. Prior to starting any construction work, the Contractor shall submit the subcontract dollar amount for each of its Subcontractors.

d. The requirements of this section shall apply to any subcontract of $50,000 or more in connection with the Contractor; that is, such Subcontractors must also ensure that Hawai'i residents comprise not less than 80% of the Subcontractor's workforce used to perform the subcontract.

e. The Contractor and any Subcontractor whose subcontract is $50,000 or more shall comply with the requirements of HRS Chapter 103B as amended by Act 192, SLH 2011.

1) Certification of compliance shall be made in writing under oath by an officer of the General Contractor and applicable Subcontractors and submitted with the final payment request.

2) The certification of compliance shall be made under oath by an officer of the company by completing a "Certification of Compliance for Employment of State Residents" form and executing the Certificate before a licensed notary public.

3) In addition to the certification of compliance as indicated above, the Contractor and Subcontractors shall maintain records such as certified payrolls for laborers and mechanics who performed work at the site and time sheets for all other employees who performed work on the project. These records shall include the names, addresses and number of hours worked on the project by all employees of the Contractor and Subcontractor who performed work on the project to validate compliance with HRS Chapter 103B as amended by Act 192, SLH 2011. The Contractor and Subcontractors shall retain these records and provide access to the State for a minimum period of four (4) years after the final payment, except that if any litigation, claim, negotiation, investigation, audit or other action involving the records has been started before the expiration of the four-year period, the Contractor and Subcontractors shall retain the records until completion of the action and resolution of all issues that arise from it, or until the end of the four-year period, whichever occurs later. Furthermore, it shall be the Contractor's responsibility to enforce compliance with this provision by any Subcontractor.

f. A General Contractor or applicable Subcontractor who fails to comply with this section shall be subject to any of the following sanctions:

1) With respect to the General Contractor, withholding of payment on the contract until the Contractor or its Subcontractor complies with HRS Chapter 103B as amended by Act 192, SLH 2011.

2) Proceedings for debarment or suspension of the Contractor or Subcontractor under Hawai'i Revised Statues §103D-702.

3. Conflict with Federal Law: This section shall not apply if the application of this section is in conflict with any federal law, or if the application of this section will disqualify the State from receiving Federal funds or aid.

CERTIFICATION OF COMPLIANCE
FOR
EMPLOYMENT OF STATE RESIDENTS
HRS CHAPTER 103B, AS AMENDED BY ACT 192, SLH 2011

Project Title: _____

Agency Project No: _____

Contract No.: _____

As required by Hawai'i Revised Statutes Chapter103B, as amended by Act 192, Session Laws of Hawaii 2011–Employment of State Residents on Construction Procurement Contracts, I hereby certify under oath, that I am an officer of _____ and
(Name of Contractor or Subcontractor Company)
for the Project Contract indicated above, _____ was in
(Name of Contractor or Subcontractor Company)
compliance with HRS Chapter 103B, as amended by Act 192, SLH 2011, by employing a workforce of which not less than eighty percent are Hawai'i residents, as calculated according to the formula in the solicitation, to perform this Contract.

☐ I am an officer of the **Contractor** for this contract.

☐ I am an officer of a **Subcontractor** for this contract.

CORPORATE SEAL

_____
(Name of Company)

_____
(Signature)

_____
(Print Name)

_____
(Print Title)

Subscribed and sworn to me before this
_____ day of _____, 2011.

_____
Notary Public, 1st Circuit, State of Hawai'i
My commission expires: _____

Doc. Date: _____ # of Pages_____ 1st Circuit
Notary Name: _____
Doc. Description: _____
_____
_____

_____
Notary Signature Date
NOTARY CERTIFICATION

EXHIBIT 2