STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

AIRPORTS

SPECIFICATIONS AND PROPOSAL

FOR

UST REMOVALS AND REPLACEMENTS WITH ASTS

LIHUE AIRPORT

LIHUE, KAUAI, HAWAII

STATE PROJECT NO. AK1046-31

2024

NOTICE TO BIDDERS

Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for UST REMOVALS AND REPLACMENTS WITH ASTS, LIHUE AIRPORT, LIHUE, KAUAI, HAWAII, STATE PROJECT NO. AK1046-31, 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 & TIME is June 14, 2024, 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 consists of the removal of two existing underground storage tanks (UST), serving the terminal and airfield emergency generators, and their appurtenances, replacement with two new above ground storage tanks (AST), and replacement of the existing automatic tank gauges (ATG) at the Lihue Airport, Lihue, Hawaii. The estimated cost of construction is between five hundred fifty thousand dollars ($550,000.00) and six hundred fifty thousand dollars ($650,000.00).

To be eligible for award, bidders shall possess a valid State of Hawaii General Building "A" **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/.

A virtual pre-bid conference is scheduled for May 1, 2024, at 1:00 p.m., HST. Please call Microsoft Teams to join the pre-bid conference at 1-808-829-4853,
Phone Conference ID: 480 900 463#. All prospective bidders and/or their respective representatives are encouraged to attend, however, attendance is not mandatory. All information presented at the pre-bid conference shall be provided for clarification and information only. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

A pre-bid site visit is scheduled for May 3, 2024, at 10:00 a.m., HST. Interested bidders shall contact Mr. Paul Nakasone, our Airport State Project Manager, directly via email at paul.m.nakasone@hawaii.gov, **no later than May 1, 2024, at 2:00 p.m., HST** to sign up.

All Request for Information (RFI) questions and Substitution Requests shall be submitted in HIePRO **no later than May 31, 2024, at 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 pre-bid conference, the meeting minutes, and/or 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. Maritez Marquez, our Airports State Project Manager at (808) 838-8808, or via email at maritez.a.marquez@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.

EDWIN H. SNIFFEN
Director of Transportation

HIePRO RELEASE DATE: April 26, 2024

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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.

SPECIAL PROVISIONS

The following additional amendments to the General Provisions are applicable to this project:

1.3 DEFINITIONS is amended as follows:

1. The following definition shall be deleted in its entirety and replaced 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.

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

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. Requests shall be submitted via email to the Contact person listed in HIePRO for the solicitation and also posted as a question in HIePRO under the question/answer tab referencing the email with the request. The request must be posted in HIePRO no later than fourteen (14) 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. 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 with the proposal. The record of each bidder and respective bid shall be open to public inspection.** 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.**

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 is amended by deleting (a) and replacing it with:

"(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; 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 105, 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 OF 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.

4.12 UTILITIES AND SERVICES is amended as follows:

Add the following after the last paragraph:

"(e)Repairs and Outages.

(1) The Contractor shall have available on 24-hour call sufficient specialty contractors, such as electrical and plumbing contractors, to repair any damage to existing facilities that might occur as a result of construction operations regardless of when the damage might occur.

(2) Outage: Written requests for power outage, communication changes, and water and sewer connection outages shall be submitted to the Engineer at least seven (7) days in advance or as specified in other sections of these specifications. Outages will be restricted to non-peak operational hours between midnight and 6:00 a.m."

5.16 SUBCONTRACTING is amended as follows:

Add the following after the last paragraph:

"(e) The Specialty Items of work for this project are as follows:

Electrical
Fuel Systems"

7.21 PUBLIC CONVENIENCE AND SAFETY - is hereby added to the General Provisions:

"It shall be especially noted by the Contractor that the area directly adjacent to the existing in use runways and taxiways, is an extremely hazardous area and that very strict controls will apply throughout the entire period required to complete all work within 500 feet from the edge of an in use runway and 180 feet from the edge of an in use taxiway.

The Contractor shall familiarize himself with the Airport Certification Manual available for review at the Airport Manager's Office and shall comply with its requirements.

The Contractor is responsible for the security of access points to the Airport Operational Area that are located within the limits of construction and will be fined $1,000 per incident for any breach of security at these locations. All gates leading into the AOA shall be kept locked and if required to be open, the Contractor shall provide professional security guards to attend gates. The guards must be approved by the Director and shall be required to attend a training session conducted by the Airport Manager prior to gate assignment."

8.8 LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE THE WORK OR PORTIONS OF THE WORK ON TIME: The General Provisions is hereby amended to include the following:

The schedule of liquidated damages provided in Section 8.8 of the General Provisions in these specifications shall be amended to include the following:

FOUR HUNDRED FIFTY DOLLARS ($450.00) per calendar day for failure to complete the work within the duration (calendar days) noted on Proposal Schedule page P-1.

8.20 LIMITATION OF OPERATIONS: is hereby added to the General Provisions:

"The following limitations shall be observed by the Contractor when operating within 75 feet from the edge of any taxiway.

General - The Contractor shall schedule his operations to minimize interference with the movement of aircraft or passengers as may be required by the Engineer. The Contractor shall be responsible to alert all of his personnel to the location of power and signal cables installed for the operation of the airport. The Contractor shall control his operations in a manner to preclude any possible damage to those cables. Utility companies shall be notified by the Contractor one week before commencement of work. The Contractor shall give notice to the Engineer in writing, at least 168 hours before operating within 75 feet from the edge of any taxiway and the Engineer will assure himself that the Airport Management personnel are notified in sufficient time to publish the warning (NOTAM). The Contractor shall immediately repair any damages to the existing perimeter fence to prevent inadvertent entry to the Airport Operation Area (AOA).

Work in Vicinity of Runways and Taxiways in Use - Under the terms of this contract, it is intended that work shall be completed without disturbing the paved surface of existing runways and taxiways, unless shown otherwise on the plans. Aircraft traffic shall not be interrupted. The Contractor shall schedule to work within 75 feet of the taxiway as directed by the Airport Management. No ruts, holes, or open trenches of 3 inches or more in depth and no objects or material 3 inches or more in height shall be permitted within the safety area when the airfield is in operation in conformance to Federal Aviation Regulation Part 139. The Contractor is also informed that Airport Zoning Regulations dictate that a 'clear zone' be maintained 500 feet on each side of an active runway, to be known as a hazardous area. The Contractor shall comply with all regulations governing ground operations within hazardous areas. The following FAA Advisory Circulars or later versions and FAA Regulations specify these requirements:

AC 150/5210-5C	Painting, Marking, and Lighting Vehicles Used on an Airport, dated August 2007
AC 150/5340-1J	Standards for Airport Markings
AC 150/5370-2E	Operational Safety on Airports During Construction, dated 1/17/03
FAA Regulations	Objects Affecting Navigable Airspace Part 77

The Contractor shall keep all personnel and equipment off the areas not specifically designated for work under this Contract. At all times when the Contractor's equipment is not in use, the equipment shall be moved outside the hazardous areas to an area designated by the Engineer. Under no condition shall equipment be parked or material stored within the hazardous areas.

Failure on the part of the Contractor to abide by the above will result in suspension of work.

Authority of Control Tower Personnel - With the exception of actual construction methods, the airport control tower personnel will have full authority to control the Contractor's movements within the existing taxiway. When required, the Contractor shall maintain a constant radio vigil within all work areas and in addition shall keep at least one flagman on duty with the radio man. When notified by the control tower to temporarily halt operations, it shall be the duty of the flagman, through the use of appropriate methods (lighted flares shall not be used under any circumstances), to notify all operators of equipment and other personnel to cease work and move men and equipment off of hazardous areas.

Contractor shall provide, at his own expense, the necessary radio and equipment including a radio equipped mobile vehicle to maintain contact with control tower personnel at all times during job performance. A transceiver operating at a frequency designated by the Engineer to communicate with the Control Tower.

Marking of Hazardous Areas - The Engineer will designate areas that are hazardous for aircraft. The Contractor shall provide red blinker lights spaced not more than 50 feet apart around all hazardous areas and areas of work within 75 feet of any taxiway. Such systems shall be subject to approval by the Engineer. The Contractor shall have personnel on call 24 hours per day for the emergency maintenance of hazard markings.

The Contractor shall provide red flags not less than 20 inches square in addition to the red blinker lights. When danger flags are made of fabric, a wire stiffener shall be used to hold the flags in an extended position. Flags shall be so mounted that they do not produce a hazard. The red danger flags shall be spaced not more than 50 feet apart around all areas of work within 75 feet of any taxiway.

All systems proposed by the Contractor for lighting and barricading shall be submitted to the Engineer for review prior to installation. The Contractor shall install all flags, lighting and barricades as required by the Engineer. Such systems shall be subject to approval by the Engineer.

Storage of Equipment and Materials - At the end of each working shift, all of the Contractor's equipment shall be withdrawn to an area designated by the Engineer. The Contractor shall park all equipment in an orderly fashion and place a sufficient number of red flasher lights to identify these areas. Materials stored within the airport shall be so placed and the work shall, at all times, be so conducted as to cause no greater obstruction to the air and ground traffic than is considered necessary by the Engineer. No runways, taxiways or roadways shall be closed or opened, except by permission of the Engineer.

Blasting Operations - The Contractor shall notify the Engineer at least three (3) days before performing blasting operations as to the extent and timing of such operations, so that the Control Tower and other concerned parties can be informed.

Utilities - The Contractor shall provide for the protection of all utilities from damages in areas to be traversed by his vehicles and equipment. If required, buried cables and utility lines shall be protected by mounding earth over the cables or by any other method approved by the Engineer.

The Contractor shall notify representatives of the owner, agencies, and other

affected organizations at least 48 hours prior to working in any area containing the facilities of these organizations.

Failure to notify the owning organization will prevent authorization to work in a specific area.

Archaeological Features - Any archaeological features such as petroglyphs, burial sites, and artifacts discovered or unearthed during the performance of the work shall immediately be brought to the attention of the Engineer and all work that would damage or destroy these features shall be discontinued. The Engineer will decide, after proper investigation, to salvage or abandon such artifacts."

8.21 OPERATION OF CONTRACTOR'S MOTOR VEHICLE AND PERSONNEL IN RESTRICTED AIR OPERATIONS AND MOVEMENT AREAS is hereby added to the General Provisions:

"The Contractor shall conform with the all sections of the "State of Hawaii, Department of Transportation, Airports , Contractor's Training Guide" pertaining to access and operation in the Airport Operation Area (AOA) hereinafter described as follows:

"A. Motor Vehicles in Airport Operation Area

For safety reasons, the operation of motor vehicles in the AOA must conform with all applicable State Airport rules and regulations."

B. Motor Vehicle Access Permit

Each motor vehicle operated in the AOA is required to:

1. Meet all State licensing registration and safety requirements and be specifically licensed for operation in the AOA.

2. Meet all insurance requirements.

3. Be restricted to operation by those persons qualified to drive the vehicle and in possession of a current Ramp Driver's License and applicable Motor Vehicle Operator's License.

C. The operators of motor vehicles in the AOA shall be responsible for meeting the following insurance requirements.

1. Licensed Vehicles

As a condition for authorization to enter the AOA, the Contractor shall provide evidence of vehicle liability insurance in the form of a Certificate of Insurance issued by an authorized insurance carrier. Automobile Liability and general Liability (combined single limit, Bodily Injury and Property Damage, per occurrence) shall be required in the applicable minimum limits specified below:

a. Daniel K. Inouye International Airport

(1) Standard AOA clearance.... $5,000,000

(2) Limited AOA clearance..... $1,000,000

Limited AOA clearance is defined as operations restricted to Diamond head and Ewa Concourses second level roadways and connecting third level main terminal roadway only, with entry and exit via Security Access Point "C" (Primary) and Access Point "A" (Secondary)

b. Other Airports

Standard AOA clearance.....$1,000,000

Standard AOA clearance is defined as any portion of a public Airport from which the public is restricted by fences or appropriate signs and not leased or demised to anyone for exclusive use and shall include runways, taxiways, all ramp and apron areas, aircraft parking and storage areas, fuel storage areas, maintenance areas, and any other area of a public Airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft or used for embarkation or debarkation of passengers.

2. Unlicensed Vehicles

Airport Liability (or General Liability) shall be required in the applicable minimum limits specified below:

a. Daniel K. Inouye International Airport, Kahului Airport and Kona International Airport at Keahole

AOA clearance..... $5,000,000

b. All other Airports

AOA clearance..... $1,000,000

3. Specifically name the State of Hawaii as additionally insured.

4. Indicate that the Airport Engineer will be provided with a 30-day written prior notice of policy cancellation or material change in coverage or conditions.

D. Operator's Permit

1. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Airport Motor Vehicle operator's permit issued by the State of Hawaii, Department of Transportation, Airports .

2. Operator's permits will only be issued to persons who apply through the Airport District Security Office and pass a written exam covering those portions of the Airport Rules and Regulation relating to the operation of vehicles in Airport Operations Areas.

E. Authorized Vehicles

1. Only vehicles considered operationally safe and necessary for the performance of this contract may be allowed to operate in the AOA.

2. All motor vehicles must be painted in such a manner so as to be easily identifiable and must carry the Contractor's name on each side. These signs may be of a temporary nature applied to the side windows or doors.

   The lettering shall be in bold characters of a minimum of four (4) inches in height and one and one-half (1-1/2) inches in widths, the height of logos should be a minimum of six (6) inches.

3. The Contractor's operations on, over, across, and/or immediately adjacent to any runway and/or taxiway at a towered airport shall require the use of two-way radio communication. The Contractor shall obtain the necessary equipment at his own expense.
4. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Motor Vehicle Operator's Permit issued by the Airport Manager.

   a. The Motor Vehicle Operator's Permit will be issued only to persons who apply through the Airport Security Section and pass a written exam covering those portions of the Airport Rules and Regulations relating to the operation of vehicles in the AOA.

   b. Permits issued may be suspended or revoked for cause at any time by the Airports .

F. Airport Operation Area Construction Pass

1. Issuance of Airport Operation Area (AOA) Construction Passes shall be limited to contractors, subcontractors, companies, organizations, individuals engaged in authorized and approved construction activity which requires a continuing need for entry into the AOA or Airfield Movement Areas. Request letters for such passes must be made to the Airport District Manager's Office in accordance with the Contractors Training Guide or applicable District requirements.

2. As a condition for security area clearance, applicants must comply with Transportation Security Regulation 1542 which requires a ten-year background Criminal History Records Check for those individuals employed under this contract.

G. Access to Movement Areas

1. Movement areas shall mean all of the runways and taxiways of the Airport which are utilized for taxiing, takeoff, and landing of aircraft.
   a. Any vehicle which requires access to the movement area shall be equipped with operational radio equipment capable of positive two-way contact with Tower/Ground Control.

   b. Operators of vehicles in movement areas must possess knowledge and familiarity with restricted and airfield movement areas, operational rules, regulations, and procedures, or be under direct escort by individuals meeting all of the above requirements.

2. Vehicle Operations on Movement Areas

a. No vehicle shall proceed across any runway unless specifically cleared by Tower/Ground Control.

b. The operator of a vehicle in the movement area shall not leave his vehicle unless continuous radio contact is maintained with the Tower/ Ground Control while he is away from his vehicle.

c. Any vehicle proceeding onto the movement area between the hours of sunset and sunrise shall be equipped with an overhead flashing light which is visible for one (1) mile, unless such vehicle is being escorted by another vehicle so equipped.

d. All vehicles operated on the movement area between sunrise and sunset except those being escorted, shall operate an overhead amber or red flashing beacon visible for at least one (1) mile; or display a flag at least three (3) feet square with orange and white checkered squares of not less than one (1) foot on each side.

H. Runway and Taxiway Closure

1. Requests for runway or taxiway closures, or for any work which affect operational conditions at the airport must be made in writing through the Airport Engineering Branch.

2. Temporarily closed runways require placement of yellow "X" markings (constructed of material such as fabric or plywood or other acceptable material) on top of the runway identification numerals at both ends of the closed runway.

3. Taxiway closures require placement of barricades with alternate orange and white markings at each end of the closed taxiway segment. Barricades must be supplemented with flashing red lights. The intensity of the lights and spacing for barricades, and lights must adequately define and delineate the hazardous area.

I. Gate Guards Furnished by Contractors

1. If a contractor is permitted by the airport to maintain operational control of an AOA Access Gate, entry through such gate shall be controlled by the posting of a gate guard.

a. Written instruction will be provided, outlining the guard's duties to enforce those requirements and provisions prescribed by the airport's security program to include all personnel and vehicle entry and access requirements.

b. Procedures will be established to identify the actions which will be undertaken by the guard in calling for assistance.

c. An approved emergency communications procedure will be established.

J. Compliance

1. The contractor shall comply with all regulations and rules governing the

Air Operations Areas during construction, as specified in the following or later versions:

a. Hawaii Revised Statutes, Title 19, Administrative Rules for Public Airports.
b. Federal Aviation Administration Advisory Circular AC 150/5340 1J
c. Marking of Paved Areas on Airport; AC 150/5370-2E, Operational Safety on Airports During Constructions.

K. Enforcement Authorization

Act 21, Section 1, Section 261-17(a), HRS; Federal Aviation Administration Regulations, Part 139, Part 107.

L. Right of Rejection or Revocation

The State of Hawaii, Airports , reserves the right to withhold, deny or revoke any airport security clearance, licenses or permits to any individual or organization who fails to meet the prescribed or required access area clearance criteria to include background investigation information, or fails to observe or comply with established rules, regulations, and directives.

It should be clearly understood that such denial or revocation is based solely on airport security or safety considerations and does not in any way constitute a determination by the State with regard to private employment by any individual or organization."

- END OF SECTION -

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

HONOLULU, HAWAII

SPECIFICATIONS

PART II

TECHNICAL PROVISIONS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010 - DESCRIPTION OF WORK

PART I - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified this Section.

1.02 SUMMARY

A. Section Includes:

1. Location of the work
2. Hours of work
3. Safety
4. Operation of airport facilities during construction
5. Disposal of excess soil materials
6. Construction stakes, lines and grades
7. Special project requirements

1.03 VEHICLE PARKING

Parking passes are subject to approval by the Airport Manager and availability of parking spaces. All costs associated with obtaining parking passes, if there is any, shall be the responsibility of the Contractor.

1.04 PROVISIONS FOR FIELD OFFICE/STORAGE SPACE

Pending the availability of space on airport property, the State will issue Revocable Permit(s) to the Contractor for the use of the space, assessed at a monthly fee of $25 for each Revocable Permit issued. The space(s) may be used for a field office, staging of materials and equipment, vehicle parking or other uses subject to the approval of the State. All spaces shall be subject to the requirements of Section 01561 - CONSTRUCTION SITE POLLUTION CONTROL.

Since space on airport property is extremely limited, the State does not guarantee that space(s) provided to the Contractor will be in close proximity to the project site. The State will make every effort to provide the Contractor with space on airport property, however, should the State determine that no space is available for such use(s), the

responsibility shall then be on the Contractor to find space outside of airport property.

1.05 LOCATION OF THE WORK

A. The work to be performed under this contract is located at Lihue Airport, Lihue, Kauai, Hawaii.

B. Conditions:

1. The Main Terminal and airport roadways shall remain operational at all times. Any damages to existing areas caused by the Contractor shall be repaired by the Contractor at no cost to the State.

2. Upon execution of the contract, the Contractor, at their cost, shall obtain all permits required for this project.

1.06 HOURS OF WORK

A. Work can be performed at the construction site at any time over a 24-hour period without considerable disruption to airport operations or other adjacent tenants. Noise, including demolition work, shall occur from 10:00 p.m. to 6:30 a.m., and water proofing shall be done from 1:30 p.m. to 10:00 p.m. Contractor shall coordinate other work activities with the Engineer for the hours between 6:30 a.m. to 1:30 p.m. Submit a proposed construction schedule to Engineer for review and approval within 30 calendar days prior to start of work. The Contractor shall coordinate their schedule with the Engineer if rescheduling of work or intermittent work is required, such work shall be performed at no extra cost to the State. If the Contractor elects to work overtime, compensation for State employees and for construction management consultant as authorized by the State shall be the Contractor's obligation to pay in accordance with Section 7.6 – “Overtime and Night Payment for State Inspection Services” of the General Provisions of Construction Projects (2016).

B. Contractor shall clean work areas at the end of each working shift. Rubbish, loose materials, etc. shall be disposed of daily. **Tools and equipment shall not be left unattended during work hours.** This includes tools left in unlocked vehicles, in the bed of pickup trucks, or in unlocked job sites. TSA citations may result in fines in excess of $13,000 per violation and the confiscation of AOA badges. Materials shall be safely secured and stored in an area designated by the Airport Manager.

1.07 SAFETY

A. The Contractor shall take the necessary precautions to protect his workers and other personnel from injuries. The rules and regulations promulgated by the Occupational Safety and Health Acts are applicable and made a part of these specifications.

B. Barricades and warning signs shall be erected by the Contractor in the work area to properly protect all personnel in the area.

B. During the progress of the work debris, empty crates, waste, material drippings, etc., shall be removed by the Contractor at the end of each workday, and the work area shall be left clean and orderly.

C. Based on the impacts of the project to airport operations, participation and attendance at meetings with various airport stakeholders may be required to fulfill the project's adherence to Safety Management System (SMS) requirements.

D. As applicable, the contractor will be required to file a Safety Plan Compliance Document (SPCD) with the Federal Aviation Administration's (FAA) OE/AAA website (https://oeaaa.faa.gov/oeaaa/external/portal.jsp).

1.08 OPERATION OF AIRPORT FACILITIES DURING CONSTRUCTION

A. The Contractor shall coordinate the phases of work under this contract with the Engineer to permit the continuing operation of existing Airport facilities and to minimize disruption to pedestrian and vehicular traffic.

B. Utility Maintenance: During the construction of this contract, existing utility services serving occupied or used facilities shall not be disrupted except where authorized in writing by authorities having jurisdiction. Contractor shall provide temporary services during interruptions to existing utilities, as acceptable to the Engineer. Damages to the existing utility facilities by the Contractor will be repaired at the Contractors expense.

C. Outages for water, power, communications, air conditioning or any other utility, if necessary, shall be kept to a minimum and scheduled for off-peak hours, generally from 12:00 a.m. to 6:00 a.m. The Contractor shall submit written requests to the Engineer for such outages no later than fourteen (14) calendar days in advance. The request shall include a description of work and the duration of the outage. The Contractor shall not proceed with such outages until written approval is received from the State.

1.09 CONSTRUCTION STAKES, LINES AND GRADES

A. The Contractor shall perform all construction layout and reference staking necessary for the proper control and satisfactory completion of all structures, grading, paving, drainage, sewer, water, and all other appurtenances required for the completion of the work.

B. Existing horizontal and vertical survey control points for the project are shown on the plans. The Contractor shall verify the location of all control points prior to the start of construction.

C. The Department will not be responsible for delays in setting stakes and marks.

D. All control points and stakes or marks which the Engineer may set shall be preserved by the Contractor. If such control points, stakes or marks are destroyed or disturbed by the Contractor, the cost of replacing such stakes or marks will be charged against the Contractor and deducted from payments due the Contractor.

E. The Contractor shall be responsible for the placement and preservation of adequate ties to all control points whether established by the Contractor or by the Engineer.

F. All original, additional or replacement stakes, marks, references and batter-boards which may be required for the construction operations, shall be furnished, set and properly referenced by the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade of all features of the work. Any errors or apparent discrepancies found in previous surveys, the plans and specifications shall be called to the Engineer's attention by the Contractor for correction or interpretation prior to proceeding with the work.

G. Before construction is started on any structure which is referenced to an existing structure or topographical feature, the Contractor shall check the pertinent locations and grades of the existing structures or topographical features to determine whether the locations and grades shown on the plans are correct.

H. All construction staking shall be performed by qualified personnel under the direct supervision of a person with an engineering background who is experienced in the direction of such work and is acceptable to the Engineer.

I. All stakes and markers used for control staking shall be of the same quality as used by the Department for this purpose. For slope limits, pavement edges, gutter lines, et cetera, where so called "working" stakes are commonly used, stakes of different quality may be acceptable.

J. The Department may check the Contractor's control of the work at any times as the work progresses. The Contractor will be informed of the results of these checks, but the Department by doing so will in no way relieve the Contractor of his responsibility for the accuracy of the layout work. The Contractor shall at his expense correct or replace any deficient or inaccurate layout and construction work. If, as a result of these deficiencies or inaccuracies, the Department is required to make further studies, redesign, or both, all expenses incurred by the Department due to such deficiencies or inaccuracies, will be deducted from any payments due the Contractor.

K. The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, and transportation incidental to the accurate and satisfactory completion of this work.

Unless otherwise provided, all requirements imposed by this section and

performed by the Contractor shall be considered incidental to the various contract items and not separate or additional payment will be made thereof.

1.10 SPECIAL PROJECT REQUIREMENTS

A. Upon receipt of the Contract, the Contractor shall process and return the Contract to the State' Contract Office within five (5) calendar days.

B. The State intends to issue the Notice to Proceed for the Project to the Contractor upon approval of the Contract by the Director. The Contractor shall be able to commence work on this date.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

A. No measurement shall be made for the items in this Section.

4.02 BASIS OF PAYMENT

A. Work under this section, except for services associated with Safety Risk Management activities and Unforeseen Conditions, shall be considered incidental to and included in the bid prices for the various items of work in this project. Participation in Safety Risk Management activities including but not limited to the attendance and participation in Safety Risk Management meetings led by either the State or FAA Air Traffic Organization (ATO), construct-ability review of Construction Safety and Phasing Plans (CSPP), development or revisions of CSPP plans for the project works, or to accommodate another concurrent airport project or airport operations, etc. The allowance is an estimate, and the amount shall not exceed the maximum amount shown in the proposal schedule. Payment shall be the actual cost as invoiced by the Contractor.
Additional charges by the Contractor for overhead, coordination, profit, insurances, incidental expenses, and any other markups shall not be allowed. These shall be included in the Contractor's lump sum bid price.

Item No.	Description	Unit Price
01010.1	Safety Risk Management Activities	Allowance
01010.2	Unforeseen Conditions	Allowance

END OF SECTION

SECTION 01210 - ALLOWANCES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.

1.02 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise the Contracting Officer of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. Purchase products and systems selected by the Contracting Officer from the designated supplier.

1.03 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.04 LUMP SUM ALLOWANCES

A. Use the lump sum allowance only as directed by the Contracting Officer for purpose scheduled in Part 3 below, and only by Change Orders that indicate amounts to be charged to the allowance.

1. Lump sum allowances to cover lump sum payments to another party shall not include contractor’s overhead, profit, and related costs. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs. These shall be included in the Contract Sum.

2. Contractor's overhead, profit, and related costs for products and equipment ordered by State under the lump sum allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

3. At Project closeout, credit unused amounts remaining in the lump sum allowance to State by Change Order.

1.05 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to the State, after installation has been completed and accepted.

1. If requested by the Contracting Officer, prepare unused material for storage by State when it is not economically practical to return the material for credit. If directed by the Contracting Officer, deliver unused material to State's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the prices bid for the various items of work in this project.

END SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this section.

1.02 PROJECT DOCUMENTATION

The contract will not be considered complete until required submittals have been received and accepted by the State.

At the discretion of the Project Manager, the number of copies to be submitted may differ from that specified in this Section.

1.03 DETAILED CONSTRUCTION SCHEDULE

A. The Contractor shall submit a detailed construction schedule to the Engineer for review, no later than 30 calendar days after execution of the contract. The detailed construction schedule shall be based on a detailed critical path analysis of construction activities and sequence of operations needed 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) type in the form of an arrow diagram and activity listing or comprehensive bar graph. 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

B. The construction 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 approval 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 of any proposed change in the schedule and shall furnish the Engineer with a revised schedule and cash flow diagram within 15 calendar days after approval of such change.

The schedule shall be kept up to date, taking into account the actual progress of work and shall be updated, if necessary, every 30 calendar days. 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.

Upon commencing work, the Contractor shall submit at the start of each week to the Engineer for review, a detailed three (3) week construction schedule.

C. 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 with 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 cost 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.

D. The Contractor shall submit to the Engineer one (1) reproducible and three (3) prints of the detailed construction schedule and of each revised schedule submitted thereafter.

1.04 SCHEDULE OF VALUES

A. The Contractor shall submit the Schedule of Values to the Engineer for review, no later than 30 calendar days after execution of the Contract.

B. Format and Content: Use Proposal Schedule and/or the Project Specifications table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item 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 principle work or subcontract amounts down into several smaller identifiable items of work.

C. Identification: Include 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

D. 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

E. 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

F. Round amount to nearest whole dollar; the total shall equal the contract sum.

G. 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.

H. 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.

1.05 OTHER SUBMITTALS REQUIRED BEFORE CONSTRUCTION

The Contractor shall submit the following items prior to or at the pre-construction meeting or unless otherwise noted:

A. Name, residence phone number, addresses and scope of authority for the following persons:

1. Superintendent

2. Contractor's authorized representative to sign documents

3. Two (2) additional persons who can be contacted during non-working hours for emergencies.

4. Field Office location and phone numbers (cellular, pager, fax, etc.)

B. Name of Safety Officer

C. Notice of Materials to be furnished

D. Three (3) copies each of Certificates of Insurance. The State of Hawaii shall be named as additionally insured. The project number and project title shall be referenced in the Description of Operations/Locations/Vehicles. If canceled, 30 days written notice to the State of Hawaii must be given. If certificates are not correct, work cannot proceed.

E. Three (3) copies each Insurance and Tax Rates.

F. List of apprentices who will be working on the project supported with the Statement of Apprenticeship or copy of the Apprenticeship Agreements registered with the State Board, for each apprentice.

G. List of equipment to be used on the job. Designate maximum working height and capacity of equipment involved and their respective rental rates.

H. Three (3) copies of an expenditure (cash flow) plan consisting of an anticipated work completion graph plotting contract time and gross payment anticipated.

1.06 SHOP DRAWINGS, SAMPLES, CATALOG CUTS, AND CERTIFICATES

A. Submittal Schedule: Prior to the submission of any shop drawings or submittals, the Contractor shall submit to the Engineer for review, a submittal schedule. The schedule shall identify the subject matter of each submittal, the corresponding specification section number and the proposed date of submission. During the progress of work, the Contractor shall revise and resubmit the submittal schedule as directed by the Engineer.

B. The Contractor shall submit for review to the Engineer, or to a representative designated by the Engineer, six (6) copies of all shop drawings,

samples, catalog cuts and certificates. Three (3) copies will be returned to the Contractor with information of review action. The Contractor shall submit additional quantities for their subcontractor's or supplier's use. Each shop drawing, certificate of compliance, sample, and equipment list shall be checked and certified correct by the Contractor and shall be identified with the applicable information specified hereinafter under "Submittal Identification."

Items are to be reviewed prior to commencing fabrication or delivery of material to the job site.

C. Each copy of the drawings, certificates, catalog cuts, and lists reviewed by the Engineer will be stamped "REVIEW ACTION" with the appropriate action noted therein. The review of the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Acceptance of such drawings will not relieve the Contractor the responsibility of conforming to the contract drawings and specifications or for any error or omission which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. Each shop drawing submitted for review shall have, in the lower right-hand corner just above title, a white space 4" x 4" in which the Engineer can place the stamp and indicate action taken. The Contractor shall also inform their subcontractors to provide this space in their preparation of shop drawings.

1.07 MAINTENANCE DATA AND OPERATING INSTRUCTIONS

Six (6) copies of maintenance data and operating instructions shall be submitted by the Contractor at the conclusion of the equipment installation. The manuals shall be assembled in one or more binders, each with a title page, typed table of contents, and heavy section dividers with numbered plastic index tabs. The binders shall be a minimum of 2 inches thick, three ring, "D slant" with hard covers. All data shall be punched for binding and composition and printing shall be arranged so that punching does not obliterate any data. The project number, project title, and Airport shall be inserted in the front and backbone binder cover.

The Contractor shall submit a draft to the Engineer for review prior to the submission of the final copies.

The manual shall include separate sections describing each equipment. Provide a general description of the equipment, instructions for operation, maintenance, recommended inspection points and periods for inspection, testing, adjustments, calibration procedures with illustrations, wiring diagrams, trouble shooting situations and solutions, and repair methods in a practical, complete, and comprehensive manner.

For each equipment, include information on detailed parts listings (part numbers and costs) with the manufacturer's name, address, contact person, e-mail address and phone/fax numbers. Provide the contact name, address, e-mail address and phone/fax numbers of the distributor in the State of Hawaii for each equipment.

Include a separate section on warranty information on all products and equipment. Provide this information in a tabular format with a listing on all products and equipments with warranty start and completion dates for each item.

Include separate sections on all approved submittals, test reports, certifications, etc.

All information shall be arranged in a logical, orderly sequence. Manuals submitted by the manufacturer will not be accepted.

1.08 TEST REPORTS

Six copies of test reports for any material used in this Contract shall be submitted when specified or required by the Engineer.

1.09 SUBMITTAL IDENTIFICATION

A. To avoid rejection and to clarify each submittal, the General Contractor shall have a rubber stamp made up in the following format:

B. _____
General Contractor's Name

PROJECT TITLE: _____
AIRPORT: _____
STATE PROJECT NO: _____
AIP PROJECT NO: _____
THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR AND IS CERTIFIED CORRECT AND IN COMPLIANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.

ITEM NO. _____

SUBMITTAL NUMBER _____
DATE RECEIVED _____
SPECIFICATION SECTION # _____
SPECIFICATION PARAGRAPH # _____
DRAWING NUMBER _____
SUBCONTRACTOR NAME _____
SUPPLIER NAME _____
MANUFACTURER NAME _____

CERTIFIED BY _____ (Contractor's Signature, Date)
(Contractor's Name and Title)

C. This stamp "filled in" should appear on each reproducible shop drawing, on the cover sheet of copies of test and mill reports, certificates of compliance, catalog cuts, brochures, etc. The stamp should be placed on a heavy stock paper

merchandise (approximately 3" x 6") and one tag tied to each sample submitted for approval. The tag on the samples should state what the sample is, so that if the tag is accidentally separated from the sample, they can be matched up again. The back of this tag will be used by the Engineer for receipt, approval, and log stamp for any comments that relates to the sample.

D. Submission Number: Each submission is to be sequentially numbered in the space provided in the Contractor's stamp. Correspondence and transmittal will refer to this number.

E. The Contractor shall ensure that all submittals, including shop drawings, are complete and in conformance to the requirements of the Contract specifications prior to submission to the State for review and acceptance. Incomplete submittals will not be processed by the State and returned to the Contractor for correction. Any cost impacts and delays in the Project schedule as a result of incomplete submittals shall be the responsibility of the Contractor.

1.10 AS-BUILT DRAWINGS

As-built drawings shall conform to the requirements of Section 5.8 - "Coordination Between the Contractor and the State" of the General Provisions for Construction Projects (2016), and the following requirements:

The Contractor shall maintain on the job site a set of full-size contract drawings, marking them in red to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed construction. (Section 5.8 (a) Drawings and Special Provisions of the General Provisions for Construction Projects.)

Where a choice of material or method is permitted herein or where variations in scope of character of work from that of the original contract or authorized, the drawings shall be marked to define the construction actually provided. Where equipment installation is involved, the size, manufacturer's name, model number, power input or output characteristics as applicable shall be shown on the as-built drawings.

The representation of such changes shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as necessary to clearly portray the as-built construction.

The drawings shall be maintained and updated on a daily basis. The Contractor shall stamp, sign, and date each sheet with the following stamp:

AS-BUILT DRAWINGS/SPECIFICATIONS

This certifies that the dimensions and details shown on this sheet reflect the dimensions and details, and specifications as constructed in the field.

_____

CONTRACTOR'S NAME

_____

Signature Date

Monthly and final payments to the Contractor shall be subject to prior approval of the drawings. On completion of the work, both sets of marked-up drawings shall be delivered to the Engineer and shall be subject to approval before acceptance.

1.11 GUARANTEES

Guarantee periods shall start at time of acceptance in writing by the State.

All guarantees and warranties shall be made out to the "State of Hawaii." Supplier and subcontractor guarantees shall be co-signed by the Contractor.

The Contractor is solely responsible for coincidence or non-coincidence of factory warranties or equipment guarantees, and the Contractor's own warranties and guarantees as required by the contract. The Contractor is solely responsible for scheduling and coordinating the installation of equipment and materials so as to take maximum advantage of factory warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The GENERAL PROVISIONS of the Contract, including SPECIAL PROVISIONS and General Requirements of the Specifications, apply to the work specified in this section.

1.02 SUMMARY

A. Section Includes:

1. Coordination and project conditions.

2. Pre-demolition meetings.

3. Pre-testing meetings.

4. Pre-installation meetings.

5. Cutting and patching.

1.03 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various sections of Specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirements and coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, electrical equipment.

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs. In finished areas, conceal pipes, ducts, and wiring within construction.

D. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

E. After State occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of State's activities.

1.04 PRE-DEMOLITION MEETINGS

A. When required in individual specification sections, convene pre-demolition meetings at Project site prior to commencing work of specific section.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review existing conditions.

2. Determine extent and nature of work and means, methods, techniques, sequences and procedures to be used.

3. Record existing conditions by taking photos of important project elements.

4. Review coordination with related work.

E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

1.05 PRE-TESTING MEETINGS

A. When required in individual specification sections, convene pre-testing meetings at Project site prior to commencing work of specific section for field testing.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review existing conditions of items to be tested.

2. Determine extent and nature of work and means, methods, techniques, sequences and procedures to be used.

3. Record existing conditions by taking photos of important project elements.

E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

1.06 PRE-INSTALLATION MEETINGS

A. When required in individual specification sections, convene pre-installation meetings at project site prior to commencing work of specified section.

B. Require attendance of parties directly affecting, or affected by, Work of specified section.

C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.

2. Review coordination with related work.

E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:

1. Structural integrity of element.

2. Integrity of weather-exposed or moisture-resistant elements.

3. Efficiency, maintenance, or safety of element.

4. Visual qualities of sight exposed elements.

C. Execute cutting, fittings, and patching to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.

2. Uncover Work to install or correct ill-timed Work.

3. Remove and replace defective and non-conforming Work.

4. Remove samples of installed Work for testing.

5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

I. Identify hazardous substances or conditions exposed during the Work to Engineer to decision or remedy.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this Section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 01400 - CONTRACTOR QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 CONTRACTOR QUALITY CONTROL PROGRAM

A. GENERAL

The Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

1. Adequately provide for the production of acceptable quality materials.

2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

3. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

The Contractor shall be prepared to discuss and present, at the pre-construction conference, his/her understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed and approved by the Engineer and State Project Manager. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed and approved.

B. DESCRIPTION OF PROGRAM

1. General Description. The Contractor shall establish a Quality Control Program to perform inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control

Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

2. Quality Control Program**.** The Contractor shall describe the Quality Control Program in a written document which shall be reviewed and approved by the Engineer and State Project Manager prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review no later than thirty (30) calendar days after execution of the Contract.

3. The Quality Control Program shall be organized to address, as a minimum, the following items:

   a. Quality control organization;
   b. Submittals schedule;
   c. Inspection requirements;
   d. Quality control testing plan;
   e. Documentation of quality control activities; and
   f. Requirements for corrective action when quality control and/or acceptance criteria are not met.
   g. A listing of the definable features of work for the project.

   The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

C. QUALITY CONTROL ORGANIZATION

The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization that is not a part of the production organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel. The organizational chart shall identify all quality control staff by name and function and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. At the top of the chart, an overall Contractor Quality Control System Manager, CQCSM, shall be named and his/her subordinates shall follow thereafter.

The quality control organization shall consist of the following minimum personnel:

1. Contractor Quality Control System Manager. The CQCSM shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCSM shall have a minimum of 5 years of experience in airport and/or paving and building construction and shall have had prior

quality control experience on a project of comparable size and scope as the contract. The CQCSM shall be on the project full time and shall have no production duties. The CQCSM shall NOT be the point of contact for the production organization.

The CQCSM shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications including authority to independently stop any work not in compliance with the contract. The CQCSM shall report directly to a responsible officer of the construction firm, such officer not being the project superintendent or foreman. The CQCSM may supervise the Quality Control Program on more than one project provided that person can be at the job site within 2 hours after being notified of a problem and a Quality Control Technician is present on the job site full time.

2. Quality Control Technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate fields and shall have a minimum of 2 years of experience in their area of expertise.

   The quality control technicians shall report directly to the CQCSM and shall perform the following functions:

   a. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by Section 1.02E.
   b. Performance of all quality control tests as required by the technical specifications and Section 1.02F.

3. Staffing. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

   All personnel shown on the organizational chart shall have, in resume form, all information regarding their education, any licenses, their present position, previous work experience, etc. included in the Quality Control Program written documentation. These resumes shall be verified by the CQCSM.

D. SUBMITTALS SCHEDULE

The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, material certifications, color samples) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format

and shall include:

1. Specification item number:

2. Item description;

3. Description of submittal;

4. Specification paragraph requiring submittal; and

5. Scheduled date of submittal.

E. INSPECTION REQUIREMENTS

Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work.

Before any definable feature of work is started, the CQCSM shall notify the Engineer and State Project Manager of such work at least 48 hours in advance. Upon notification, the Engineer or State Project Manager shall determine if a meeting shall be held to discuss the condition of the work area, material and equipment status, what is to be expected and any questions or possible problems. No definable feature work shall commence without the consent of the Engineer and State Project Manager.

F. QUALITY CONTROL TESTING PLAN

As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, a minimum, include the following:

1. Specification item number;

2. Item description (e.g., concrete cylinder test);

3. Test type (e.g., concrete compressive strength);

4. Test standard (e.g., ASTM or AASHTO test number, as applicable);

5. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated);

6. Responsibility (e.g., plant technician, independent lab); and

7. Control requirements (e.g., target, permissible deviations).

The testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Engineer and State Project Manager shall be provided the opportunity to witness quality control sampling and testing. The CQCSM shall make every effort to inform the Engineer and State Project Manager at least 24 hours, or more if stated in the specifications, before such testing occurs.

All quality control test results shall be documented by the Contractor as required by Section 1.02G.

G. DOCUMENTATION

The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer and State Project Manager daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCSM.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

1. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and Subcontractor operations on a form acceptable to the Engineer and State Project Manager. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

    a. Technical specification item number and description and location of work performed;
    b. A comprehensive breakdown of the work force including the number of workers and total hours for each trade.
    c. Compliance with approved submittals;
    d. Proper storage of materials and equipment;

e. Proper operation of all equipment;
f. Adherence to plans and technical specifications;
g. Review of quality control tests; and
h. Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the CQCSM. The Engineer and State Project Manager shall be provided at least one copy of each daily inspection report on the workday following the day of record.

2. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all quality control test results. Daily test reports shall document the following information:

a. Technical specification item number and description;
b. Test designation;
c. Location;
d. Date of test;
e. Control requirements;
f. Test results;
g. Causes for rejection;
h. Recommended remedial actions; and
i. Retests.

Test results from each day's work period shall be submitted to the Engineer and State Project Manager prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the CQCSM.

H. CORRECTIVE ACTION REQUIREMENTS

The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

I. SURVEILLANCE BY THE ENGINEER AND STATE PROJECT MANAGER

All items of material and equipment shall be subject to surveillance by the Engineer or State Project Manager at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer or State Project Manager at the site for the same purpose.

Surveillance by the Engineer or State Project Manager does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

J. NONCOMPLIANCE

1. The Engineer or State Project Manager will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or State Project Manager or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.

2. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the Contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer or State Project Manager, the Engineer or State Project Manager may:

    a. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors in accordance with Section 8.4 – “Character and Proficiency of Workers” of the General Provisions for Construction Projects (2016).
    b. Order the Contractor to stop operations in accordance with Section 8.10 – “Suspension of Work” of the General Provisions for Construction Projects (2016).
    c. Determine work performed by the Contractor during periods of noncompliance to be unacceptable and subject to inspection, removal or non-payment in accordance with Section 5.12 – “Removal of Non-Conforming and Unauthorized Work: Performance of Corrective or Remedial Work” of the General Provisions for Construction Projects (2016).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the prices bid for the various items of work in this project.

END OF SECTION

SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Provisions of the contract, including the General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.03 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS

A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:

a. Asphaltic concrete paving

b. Concrete
c. Equipment
d. Wiring

2. Construction Waste:

a. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

1) Paper.
2) Cardboard.
3) Boxes.
4) Plastic sheet and film.
5) Polystyrene packaging.
6) Wood crates.
7) Plastic pails.
8) Conductors.

1.05 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within fourteen (14) days of date established for the Notice to Proceed.

1.06 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices. The Honolulu Program of Waste Energy Recovery (H-POWER) by the City and County of Honolulu is the only acceptable incinerator in Oahu.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.07 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review requirements for documenting quantities of each type of waste and its disposition.
2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
3. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
4. Review waste management requirements for each trade.

1.08 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis.

B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.

2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.

3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.

3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility or crush asphaltic concrete paving and screen.

B. Concrete: Break up and transport paving to concrete recycling facility or crush concrete and screen.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

F. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

J. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

L. Carpet Tile: Remove debris, trash, and adhesive.

1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

3.06 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction. The Honolulu Program of Waste Energy Recovery (H-POWER) by the City and County of Honolulu is the only acceptable incinerator.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. H-POWER will take the architectural canopy fabric made of mostly vinyl. Contractor can contact Scale House at 808-682-0261. H-POWER requires an account with Contractor.

B. Burning: Do not burn waste materials in Airport ground.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

PART 4 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will be paid for at the Contract Lum Sum Price.

Item No.	Item	Unit
01524.1	Construction Waste Management	Lump Sum

END OF SECTION

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

SPECIFICATIONS

SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT

APPENDIX A

TABLE 1: WASTE IDENTIFICATION

Material	Est. Qty.	Est. tons*	Point of Generation	Comments/Assumptions

* Avg volume-to-weight conversions are:

Mixed waste	5.7 yds/ton
Wood	6.7 yds/ton
Cardboard	20 yds/ton
Drywall	4 yds/ton
Rubble	1.4 yds/ton

TABLE 2: WASTE REDUCTION WORK PLAN

Material	**S/R/D** *	Est Qty S/R/D (tons)	Actual Qty S/R/D(tons)	Handling and Transport Procedures	Destination (Name, address, phone) **

*S Salvage/Reuse
R Recycle
D Dispose

** For materials sent for recycling or disposal, send to facilities currently permitted by the DOH, Solid Waste Section (808) 586-4226.
No solid waste management permit required for on-site processing of clean waste concrete, provided the processed product meets the "inert fill material" definition in Chapter 342H, HRS.
Solid Waste Management Permit required if destination site accepts for processing such waste materials (eg. Clean waste concrete) from other sites.

TABLE 3: COST/REVENUE **ANALYSIS**

Material	Est Cost of Disposal(1)	Est Revenue from Salvaqe/Recvcle(2)	Est Cost of Sal-vaqe/Recvcle(3)	Est Net Savings/Cost (1)+(2)-(3)

SECTION 01533 - BARRICADES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 BARRICADES

A. The Contractor shall take precaution to protect people and property from injury and damage. He shall erect barricades to delineate his work areas and provide the appropriate signing, hazard lights, and temporary paint striping per the safety plan as approved by the Engineer, to aid public and airport pedestrian and vehicular traffic around his work areas. Barricades shall be traffic cones, delineators, blinker barricades, caution tape, sawhorses, plywood barricades or other barriers as approved by the Engineer to effectively provide proper protection.

B. The Contractor shall be responsible for his own security and protection of his property, including mobilization yard barricades.

C. Barricades, in general, shall be neat and in good condition, as required for protection. In areas frequented by the general public, the barricades shall be visually presentable and plywood partitions shall be painted. Where dust is a problem, the Contractor shall erect floor to ceiling dust proof partitions

D. The Contractor shall coordinate and sequence this work with the Engineer to permit the continuing operation of the existing Airport facility. Barricades shall be removed upon the completion and acceptance of work and the premises left clean and operational.

E. The Contractor shall be responsible for securing access into and out of the barricaded areas.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT & PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 01560 – GENERAL ENVIRONMENTAL, HEALTH, & SAFETY CONTROLS

PART I – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

This section addresses the prevention of environmental pollution as the result of construction operations under this contract. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare, unfavorably alter ecological balances of importance to human life, adversely affect other species of importance, or degrade the utilization of the environment for aesthetic and recreational purposes.

1.03 REFERENCES

All work shall conform to the most recent edition of the following Federal, State, and Local regulations, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program
http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program

1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.

B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) https://health.hawaii.gov/heer/

C. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)

1. Chapter 46, Community Noise Control.

2. Chapter 59, Ambient Air Quality.

3. Chapter 60.1, Air Pollution Control.

4. Chapters 260.1, 261.1, 262.1, 263.1, 264.1, 265.1, 266.1, 268.1, 270.1, 271.1, 273.1, and 279.1, Hazardous Waste Management.

5. Chapter 451, State Contingency Plan.

6. Chapter 501, Asbestos Requirements.

D. CFR Title 40, Protection of the Environment, Chapter I, Environmental Protection Agency.

E. CFR Title 42, Public Health, Chapter I, Public Health Service, Department of Health and Human Services.

1.04 SUBMITTALS

A. The Contractor shall submit the following items as required:

1. Individual Wastewater System (IWS) Final Report: For projects involving the construction of an individual wastewater system, an IWS Final Report is required to be submitted to the DOTA Engineering Branch, Environmental Section (AIR-EE) for approval, prior to submitting to DOH Wastewater Branch and prior to project closeout.

2. Underground Injection Control (UIC) Well Final Report: For new drainage well construction and existing drainage well modification, a UIC Well Final Report is required to be submitted to AIR-EE for review and approval, prior to submitting to DOH Safe Drinking Water Branch (SDWB), and prior to project closeout. The Final Report shall also be submitted within the deadline specified on the UIC Approval to Construct. If a project involves abandoning an existing drainage well, written instructions shall be obtained from DOH SDWB and a copy provided to AIR-EE prior to backfilling the demolished well. All supporting documentation requested by DOH post demolition work shall be completed and provided to AIR-EE for review prior to submitting to DOH SDWB.

3. AST (Flammable/Combustible Liquid) Tank Installation: Provide signed record of Final Inspection issued by County Fire Department.

4. Waste Manifests: If a project will generate hazardous waste, the Contractor shall prepare waste manifests in accordance with HAR 11-262 and provide records to AIR-EE.

B. The Contractor shall comply with all applicable regulations and maintain records of permits, licenses, certificates, and other environmental regulatory requirement correspondence. Submit copies of permits, licenses, certifications, inspection reports, releases, notices, receipts for fee payments, correspondence, records, and similar documents, established for compliance with environmental regulations bearing on performance of the work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 AIR POLLUTION CONTROL

A. Emission: The Contractor shall not be allowed to operate equipment and vehicles that show excessive emissions of exhaust gases until corrective repairs or adjustments are made, as determined by the Engineer.

B. Dust: The Contractor, for the duration of the contract, shall maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, graded areas, staging and storage areas, and all other work areas within or outside the project limits free from dust that would cause a hazard or nuisance to the work or operations of other Contractors, or to persons or property. Industry-accepted methods, that meet requirements of DOTA Construction BMP Field Manual as noted in Specification 01561 and that meet stabilization suitable for the area or materials involved.

C. Burning on Airport property shall not be permitted.

3.02 SPILL CONTROL

A. The Contractor shall follow the DOTA Construction Site Runoff Program and relevant documents, such as the Construction BMP Field Manual to implement BMPs to prevent spills and leaks and report and cleanup spills and leaks immediately, as required.

3.03 DISPOSAL

A. All unusable debris and waste material shall be hauled away to an appropriate local landfill. Contractor shall control dust during loading operations.

B. Contractor shall consult with the landfill and conduct any required waste characterization to ensure that waste meets the landfill's requirements for size, type, etc.

C. No burying of debris or waste materials, except for materials that are specifically indicated elsewhere in these specifications as suitable for backfill, shall be permitted on the project site.

D. Contractor shall manage all construction materials, debris, and waste in a manner that prevents Foreign Object Debris (FOD) from reaching the airfield, where it could be an aircraft safety hazard.

3.04 HAZARDOUS MATERIALS CONTROL

Hazardous materials shall be properly stored and handled. The use of prohibited hazardous materials, e.g., asbestos, lead paint, and polychlorinated biphenyls (PCBs), in the construction of this project shall be strictly prohibited. Any corrective action to remove and replace hazardous material and contaminated work areas shall be at the sole expense of the Contractor.

3.05 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall at all times comply with all State of Hawaii and Federal rules and regulations related to occupational health and safety and develop and follow a Health and Safety Plan describing measures the Contractor will employ to protect the health and safety of their employees. Include measures required to protect the public from dangers associated with their work.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified in this Section shall not be measured nor paid for separately but shall be considered incidental to item 01561.1, Construction Site Pollution Controls.

END OF SECTION

SECTION 01561 – CONSTRUCTION SITE POLLUTION CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

A. This Section describes procedures for the proper application of management and engineering controls at State of Hawaii, Department of Transportation, Airports (DOTA) construction sites so that pollutants do not impact any storm drainage system, State water, soil, or groundwater.

B. The Contractor shall supply all labor, materials, and equipment necessary for the management of stormwater during construction and to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.

C. This Section also applies to construction support activities including concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas, material storage areas, excavated material disposal areas, borrow areas, waste management facilities, sanitary facilities, material storage areas, and temporary equipment fueling locations, regardless of their proximity to the Airport Property and State Right-of-Way. For areas serving multiple construction projects or operating beyond the completion of the construction project in which it supports, the Contractor shall be responsible for securing the necessary permits, clearances, and documents, and following the conditions of the permits and clearances, at no cost to the State.

D. The Contractor shall be responsible for all subcontractors, suppliers, and vendors, and shall ensure that the means and methods of construction activities of subcontractors, suppliers, and vendors are in full compliance with this Section.

E. The Contractor shall examine and be familiar with documents related to stormwater management at the airports and shall comply with related requirements for construction stormwater control. Should a requirement not be clearly described within the construction plans, specifications, permits and other applicable bid documents, notify the Engineer immediately for interpretation.

1.03 REFERENCES

All work shall conform to the most recent edition of the following, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program
http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program

1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.

2. DOTA Environmental Requirements for Construction Projects Standard Operating Procedures.

3. DOTA Stormwater Management Plans (SWMPs) for the Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG), as applicable.

4. DOTA Industrial SWPPPs for the HNL, OGG, and the Lihue Airport (LIH), as applicable.

B. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)
https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/

1. Chapter 54, Water Quality Standards

2. Chapter 55, Water Pollution Control

3. Chapter 451, State Contingency Plan

C. United States (U.S.) Code of Federal Regulations (CFR), Title 40, Chapter I: Environmental Protection Agency.

D. Hawaii Revised Statutes (HRS), Part I, Chapter 128D, “Environmental Response Law”.

PART 2 – PRODUCTS

2.01 MATERIALS

Comply with applicable materials described in the current DOTA Construction Activities BMP Field Manual. Refer to FAA Advisory Circulars and DOTA District Office, including Wildlife Hazard Management Plan, for additional guidance and conditions. In addition, materials shall comply with the following:

A. Grass: The FAA and USDA recommend the following grass species when requiring grass: “No-Mow” bermudagrass (“Green Velvet”) (Cynodon dactylon) or Seashore paspalum (Paspalum vaginatum). These species possess higher than average drought resistance, saline soil tolerances, and most importantly, do not produce seed heads attractive to the majority of hazardous avian species. Use stolons, sprigs, or plugs to avoid providing hazardous species with a readily available food source. The use of seeds is generally not allowed.

Alternative grass species shall only be applied with the approval by the Engineer

after consultation with United States Department of Agriculture (USDA) airport representative. This includes, but is not limited to, sodding, cuttings, and planting. Grass shall be a quick-growing species. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover.

B. Irrigation: Any required irrigation shall be done after dark to reduce instances of water becoming a hazardous wildlife attractant.

PART 3 – EXECUTION

3.01 PRE-CONSTRUCTION REQUIREMENTS

Do not begin construction activities until all submittals detailed in this Subsection are completed, submitted to the Engineer, and accepted in writing by AIR-EE.

A. Water Pollution, Dust, Sediment, and Erosion Control Meeting: Schedule a water pollution, dust, sediment, and erosion control meeting with the Engineer after all documents required by AIR-EE are submitted to the Engineer and accepted in writing by AIR-EE. The meeting shall be scheduled a minimum of 14 calendar days prior to the Start Work Date. At a minimum, the meeting shall be attended by the Contractor, subcontractors whose work may provide an impact to stormwater or site environmental conditions, Engineer, AIR-EE, and any authorized representatives of the designated attendees. The meeting will discuss the sequence of work and plans and proposals for water pollution, dust, sediment, and erosion controls.

B. Land Disturbance Calculations: The Contractor is responsible for calculating the total land disturbance for the life of the project and complying with all environmental requirements associated with the total land disturbance calculated. Disturbance of land is defined by Hawaii Department of Health as “the penetration, turning, or moving of soil or resurfacing of pavement with exposure of the base course or the exposure of bare soil or ground surface, including the land surface exposed by construction roads, baseyards, staging areas, demolition, headquarters, and parking areas. It does not include grass or weed cutting, bush or tree trimming or felling that leaves soil or ground intact. It includes ‘grubbing’ in its normal meaning of the use of equipment to knock down and push vegetation out of the way, typically uprooting vegetation and disturbing the ground surface.”

Land disturbing activities that shall be included in the disturbance area calculation shall follow the guidance provided in the Environmental Requirements for Construction Projects Standard Operating Procedures.

C. Site-Specific BMP (SSBMP) Plan or Stormwater Pollution Prevention Plan (SWPPP): The Contractor shall submit a SSBMP Plan (for projects disturbing less than one acre) or SWPPP (for projects disturbing one acre or more) using the latest DOTA template for acceptance by AIR-EE. If a SSBMP Plan or SWPPP was prepared by the Designer, the Contractor shall revise the plan using

the latest template to include additional information required of the Contractor and any changes the Contractor proposes. The SSBMP Plan or SWPPP shall include site-specific temporary BMPs following requirements and practices outlined in DOTA's "Construction Activities BMP Field Manual." All AIR-EE comments shall be resolved and the SSBMP Plan or SWPPP approved prior to the start of land-disturbing activities, including those activities that are needed for the implementation of the BMPs. Submission of the complete and acceptable SSBMP Plan or SWPPP is the sole responsibility of the Contractor, and additional contract time will not be issued for delays due to incompleteness.

D. SSBMP Plan/SWPPP Modifications: Modify, as necessary, and resubmit amended SSBMP Plan or SWPPP and construction schedules to the Engineer for acceptance by AIR-EE. Amendments to the SSBMP Plan or SWPPP shall be made under the following circumstances at a minimum:

1. Conditions that develop during construction that were unforeseen during the design and pre-construction stages that could impact stormwater, soil, or groundwater.

2. Changes to the Contractor's Means and Methods of Construction that could impact stormwater, soil, or groundwater.

3. Omitted conditions that should have been allowed for in the accepted documents.

4. A SSBMP Plan measure that replaces an accepted SSBMP Plan measure that was not satisfactorily performing.

5. Revised dates of installation and/or removal of SSBMP Plan measures.

SSBMP Plan/SWPPP modifications shall be submitted to the Engineer and accepted in writing by AIR-EE before implementing the revised site-specific BMPs in the field. Amendments to the SSBMP Plan or SWPPP shall be included with the original SSBMP Plan or SWPPP and documented in the Amendment Log.

E. Documentation: A copy of the accepted original or amended SSBMP Plan or SWPPP, with the signed certification by the authorized representative filed with DOH for SWPPPs, shall be kept on site or at an accessible location so that it can be made available at the time of an on-site inspection, or upon request by the Engineer, AIR-EE, DOTA's designated authorized representative, and/or DOH/EPA Representative.

F. NPDES Construction Permit: If the total land disturbance for the life of the project, including all construction support activity areas, is one acre or more, coverage under an NPDES Permit Authorizing Discharges of Storm Water Associated with Construction Activity (NPDES Construction Permit) authorizing stormwater discharges associated with construction activity is required from the Department of Health, Clean Water Branch (CWB).

1. Do not begin land-disturbing activities until the CWB has issued an Individual NPDES Permit or NGPC. Conduct land-disturbing activities in accordance with the conditions of the NPDES Permit and/or NGPC.

2. The Contractor shall submit a Notification of Start to CWB a minimum of seven calendar days before the start of construction and provide AIR-EE with a record of submittal.

3. Before construction begins, the Contractor shall assign one of their personnel as the Duly Authorized Representative, in accordance with Section 15 of Appendix A, Chapter 1155. The Duly Authorized Representative is responsible for compliance with the NPDES Construction Permit (i.e., operations of the construction project) and shall certify, sign, and date various documents, including the SWPPP and SWPPP inspection documents.

G. Solid Waste Disclosure: Submit the Solid Waste Disclosure Form for Construction Sites, if applicable, to the DOH Solid Waste Branch as specified on the form within 7 calendar days before the start of construction activities and provide a copy to the Engineer. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer. This shall also include documentation from any intermediary facility where solid waste is stored, handled or processed.

H. NPDES Hydrotesting Permit: If hydrotesting activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Hydrotesting Waters Permit authorizing discharges associated with hydrotesting is required from the CWB. Do not begin hydrotesting activities until the CWB has issued an Individual NPDES Permit or NGPC for hydrotesting. Conduct Hydrotesting operations in accordance with the conditions of the NPDES Permit and/or NGPC.

I. NPDES Dewatering Permit: If dewatering activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Dewatering Permit authorizing discharges associated with dewatering is required from the CWB. Do not begin dewatering activities until the CWB has issued an Individual NPDES Permit or NGPC for dewatering. Conduct dewatering operations in accordance with the conditions of the permit or NGPC.

J. Construction BMP Training: All Contractor’s and subcontractor’s employees on the project shall complete the DOTA Construction BMP Training prior to entering the construction site and every calendar year thereafter. All Contractor and subcontractor personnel involved with construction project responsibilities shall also be trained on the site-specific BMPs that are utilized during construction and spill response. Records of completion and/or training roster sign-in sheet shall be up to date and included in the SWPPP or SSBMP Plan. Additional training required by AIR-EE shall be at no additional time or cost to the project. There are two training options:

1. All Contractor and subcontractor employees involved with construction project responsibilities watch the DOTA Construction BMP Training Video located on the DOTA Construction Site Runoff Control Program webpage and complete the DOTA Construction BMP Training Survey with a passing score, or

2. The Contractor and subcontractor supervisors/managers watch the DOTA Construction BMP Training Video located on the DOTA Construction Site Runoff Control Program webpage, complete the DOTA Construction BMP Training Survey with a passing score, then train all employees involved with construction project responsibilities and submit a sign-in roster documenting all employees trained at the bottom of the DOTA Construction BMP Training Survey.

   DOTA Construction BMP Training Survey:
   https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-bmp-training-survey/

K. Construction Connection, Discharge, and Surface Runoff Permit: The Contractor shall complete the Contractor's section of the Construction Connection, Discharge, and Surface Runoff Permit and submit to AIR-EE for review. All AIR-EE comments shall be resolved prior to the start of land-disturbing activities.

3.02 CONSTRUCTION REQUIREMENTS

A. Construction Start: Do not expose or disturb surface area of earth material or initiate any land-disturbing activities until submittals detailed in Subsection 01561.3.01 – Pre-construction Requirements are completed, submitted to the Engineer and accepted in writing by AIR-EE. Once installation of BMPs is allowed, a Pre-construction BMP Inspection is conducted, and all deficiencies that are noted during the inspection shall be corrected prior to any other ground disturbance.

B. BMP Installation and Maintenance: Provide, install, maintain, monitor, repair and replace BMPs as needed to maintain efficacy. Address all inspection comments received from the Engineer, AIR-EE, and/or DOTA's designated authorized representative.

C. Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff, and wind before the end of each work day. Coordinate and schedule the work to the maximum extent possible to minimize the amount of exposed or disturbed surface area of earth material.

D. Install and maintain stabilized construction entrances/exits, including any wheel washes, to minimize tracking of dirt and mud onto roadways, sidewalks, and other paved areas. Restrict traffic to stabilized construction entrance areas only. Clean dirt, mud, or other material tracked onto the road, sidewalk, or other paved area by the end of the same day in which the track-out occurs. If tracking is excessive or sediment is being transported farther along the pavement or

sidewalk by other vehicles traveling outside of the construction site, conduct cleaning and sweeping immediately. Modify stabilized construction entrances/exits, as needed, to prevent mud from being tracked onto road. Stabilize entire access roads if necessary.

E. Maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, and all other work areas within the project limits free from dust that would cause a hazard to the work, airport operations, operations of other contractors, or to persons or property. If chemicals are used as soil stabilizers for erosion and dust control, submit the manufacturer's product data sheets of the chemicals to the Project Manager for acceptance by AIR-EE. Oil treating shall not be used. Dust screens and fabrics are not allowed to be mounted on, or to inhibit the view of, the TSA and AOA Security Fences.

F. Cover exposed surfaces of materials completely with tarpaulin or a similar device when transporting aggregate, soil, excavated material, or other materials that may be a source of fugitive dust.

G. Protect ditches, channels, and other drainageways leading away from cuts and fills at all times by:

1. Hydromulching cuts and fills that may erode.

2. Installing check dams or other silt control devices.

3. Other methods acceptable to AIR-EE.

H. Clean up and remove any pollutant that is attributed to the Contractor. Care shall be taken to ensure that no petroleum/chemical products, bituminous materials, or other deleterious substances, including debris, are allowed to fall, flow, leach, or otherwise enter the sewage systems or storm drains. Deposition of solid waste or the discharge of liquid waste, such as fuels, lubricants, bituminous waste, untreated sewage and other pollutants that may contaminate stormwater, surface waters, soil, or groundwater shall not be permitted.

I. Disturbed Area Stabilization: Immediately initiate stabilization of exposed soil areas upon completion of land-disturbing activities for areas where disturbance has permanently or temporarily ceased on any portion of the site. Land-disturbing activities have permanently ceased when clearing and excavation within any area of the construction site that will not include permanent structures has been completed. Land-disturbing activities have temporarily ceased when clearing, grading, or excavation within any area of the site will not resume for a period of 14 or more calendar days, but such activities will resume in the future. The term "immediately" is used in this Section to define the deadline for initiating stabilization measures. "Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the land-disturbing activities have temporarily or permanently ceased.

1. After the initiation of stabilization, stabilization activities shall be completed according to the following timeline:

    a. For projects with an NPDES Construction Permit:

        - For construction areas discharging into waters not impaired for nutrients or sediments, complete installation of stabilization measures within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.

        - For construction areas discharging into nutrient or sediment impaired waters, complete installation of stabilization measures within 7 calendar days after the temporary or permanent cessation of land-disturbing activities.

    b. For projects without an NPDES Construction Permit, complete stabilization within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.

J. Notice of Cessation: For projects with an NPDES Construction Permit, the Contractor shall submit a Notice of Cessation to CWB within seven calendar days after the end of the month that the project was completed and provide AIR-EE with a record of submittal.

K. Changes to Land-disturbing Activities: The Contractor shall be responsible to prepare a new SWPPP or SSBMP Plans or amend existing SWPPP or SSBMP Plans if changes to the project or to the Contractor's activities result in land-disturbing activities additional to those previously approved:

1. Land-disturbing activity outside of the approved limits is NOT allowed until approval and proper permits are received. Revised documents, including an updated SWPPP or SSBMP Plan, shall be submitted to and approved by AIR-EE prior to conducting additional land-disturbing activities.

2. If coverage under an NPDES Construction Permit is needed, no activity in the additional area may occur until the additional permit coverage is granted:

    a. If the project was already granted coverage under an NPDES Construction Permit, additional coverage shall be obtained from CWB for the additional area, either by adding the area to existing project documents, and applying for NPDES Construction Permit coverage for the entire project OR by creating new documents and obtaining separate NPDES Construction Permit coverage for the additional area.

    b. If the new disturbed area will result in the total disturbed area

equaling one (1.0) acre or more for a project without existing NPDES Construction Permit coverage, NPDES Construction Permit coverage shall be obtained from CWB that will cover all land-disturbing activities anticipated for the life of the project.

3.03 INSPECTIONS

Refer to the DOTA Construction Site Runoff Program for information pertaining to AIR-EE BMP inspections (pre-construction, routine, and final). Contractor self-inspections shall occur based on the frequency outlined in the SSBMP Plan and, if applicable, NPDES Permit (HAR 11-55) and SWPPP requirements.

A. Corrective Actions: The Contractor shall be responsible for the correction of all deficiencies identified during any of the above inspections.

1. If the Contractor fails to satisfactorily address inspection deficiencies, the DOTA reserves the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor will be fully responsible for all related cost and time. The State will charge the Contractor such incurred costs plus any associated project engineering costs and will make appropriate deductions from the Contractor's progress payment. Additionally, DOTA can issue liquidated damages for deficiencies not resolved to DOTA's satisfaction and for illicit discharges or contaminant discharges to soil, groundwater, surface water, or State waters (see Appendix A).

2. Failure to install or maintain site-specific BMP measures may result in the assessment of liquidated damages (Appendix B). Depending on the severity of the deficiencies, additional enforcement actions, such as suspension of work and/or termination of the contract (with the Contractor's Surety being fully responsible for all additional costs incurred by the State), can be conducted and assessed against the Contractor.

3. For all citations or fines received by the DOTA for non-compliance, including non-compliance with NPDES Permit conditions, the Contractor shall reimburse the State within 30 calendar days for the full amount of outstanding cost that the State has incurred. The State may deduct incurred costs from the Contractor's progress payments; however, the Contractor shall be responsible for reimbursing the State if the costs exceed remaining payments owed to the Contractor.

4. The Contractor shall be responsible for all citations, fines and penalties levied by DOH or EPA against the State due to the Contractor's failure to satisfactorily address site-specific BMP deficiencies and/or any Contractor's illicit discharges. The State may make the appropriate deductions from the Contractor's progress payment.; however, the Contractor shall be responsible for reimbursing the State if the costs of correction exceed remaining payments owed to the Contractor.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

The work specified in this Section will be paid for at the contract lump sum price. Payment shall be full compensation for work prescribed in this Section and contract documents, including but not limited to, all labor, materials, tools, equipment, and all incidentals necessary to install, maintain, monitor, repair, replace, modify, and remove site-specific BMP measures.

Item No.	Item	Unit
01561.1	Construction Site Pollution Controls	Lump Sum

Partial payments shall be paid in the Monthly Progress Payment as follows:

A. 20% of the line item price shall be paid upon the satisfactory completion of the Pre-construction BMP Inspection and associated corrective actions accepted by AIR-EE or their designated authorized representative, as described in Section 01561.3.03(A), above.

B. 70% of the line item price shall be paid in equal monthly payments over the duration of the contract. Failure to satisfactorily apply, maintain, or modify BMP measures and devices, and/or submittals shall result in the withholding of monthly progress payments for this line item.

For projects that will disturb one acre or more of land, or will be part of a larger common plan of development that will disturb one acre or more of land, payments shall be made only after Routine BMP Inspections described in Section 01561.3.03 above have been satisfactorily completed, and associated corrective actions accepted by AIR-EE or their designated authorized representative.

C. The remaining 10% of the line item price shall be paid after all temporary BMP measures have been satisfactorily removed.

Payment will be made only after the satisfactory completion of the Final BMP Inspection and associated corrective actions accepted by AIR-EE or their designated authorized representative, and acceptance of the Post-construction BMPs by AIR-EE or their designated authorized representative.

Liquidated Damages, up to $25,000 per day (Appendix A), shall be assessed for each non-compliance of the BMP requirements described in this Section. The Contractor shall not be entitled to recover any Liquidated Damages assessed, even after the deficiencies have been corrected.

The Liquidated Damages cited in Appendix A are in excess of reimbursement for any citations, fines, or penalties levied by any regulatory agency against the State due to the Contractor's violations of clean water regulations or standards.

Appendix A. Liquidated Damages Schedule for Non-Compliances

Non-Compliance	Amount
Failure to obtain coverage under an NPDES Construction Permit for construction activities associated with a project that will disturb one acre or more of land, or will be part of a larger common plan of development that will disturb one acre or more of land, as defined by DOH.	$1,000 per calendar day per violation.
Failure to obtain coverage under an NPDES Hydrotesting Permit for hydrotesting activities that will require effluent discharge into State waters or drainage systems.	$1,000 per calendar day per violation.
Failure to obtain coverage under an NPDES Dewatering Permit for dewatering activities that will require effluent discharge into State waters or drainage systems.	$1,000 per calendar day per violation.
Failure to comply with the conditions specified in an NPDES Permit, or any other applicable permit.	$1,000 per calendar day per violation.
Failure to schedule a Pre-construction BMP Inspection and receive acceptance of all associated corrective actions prior to conducting land-disturbing activities.	$1,000 per calendar day per violation.
Failure to provide corrective actions accepted by AIR-EE or their designated authorized representative by the deadlines identified in the BMP inspection report.	$1,000 per calendar day per violation.
Failure to have the accepted SSBMP Plan and amendments or the accepted SWPPP and amendments available at a project construction site.	$1,000 per calendar day per violation.
Failure to properly install or maintain a BMP specified by the SSBMP Plan, SWPPP, contract drawings and documents, or permit.	$2,000 per calendar day per violation.

Non-Compliance	Amount
Failure to have an accepted amendment to the SSBMP Plan or an accepted amendment to the SWPPP prior to implementing changes to previously accepted BMPs. Note: Advance review and acceptance can be provided to satisfy this non-compliance. However, for projects with an NGPC or NPDES permit, the written amendment shall still be formally submitted for certification and signature by the authorized representative identified in the NGPC or NDPES Permit.	$2,000 per calendar day per violation.
Failure to conduct required inspections.	$1,000 for each of the first ten violations, $2,500 for each of the next ten violations, $5,000 for each subsequent violation.
Failure to maintain required records such as BMP inspection reports, rain gauge data logs, etc.	$500 per calendar day for the first ten days of each violation, $1,000 per calendar day for the next ten days of each violation, $2,500 per calendar day for each subsequent day of violation.
Any violation resulting in a polluted discharge.	Up to $25,000 per calendar day per violation.
Note: Liquidated Damages shown in the Table shall be assessed at the discretion of the DOTA.	

Assessment of Liquidated Damages for Non-Compliance:

The Contractor may be assessed liquidated damages by issuance of an Enforcement Letter. The Enforcement Letter shall indicate the amount of liquidated damages that are assessed for the non-compliances which shall be deducted from the Contractor's next progress payment. The Enforcement Letter will be sent electronically via e-mail and a hard copy to the Contractor's designated representative(s), identified in Section 01561.3.01(2)(d), responsible for the Contractor's Construction Site Runoff Control Program. An Enforcement Letter may be issued with or without previous verbal notifications, written warnings, or official enforcement letters (i.e. Warning Letter or Notice of Violation (NOV).

Liquidated Damages may be assessed for the following:

- Non-compliances listed in the Table, herein, included in Appendix A.
- Non-compliances have not been corrected in the timeframes noted.
- Corrective actions are not completed after a verbal notification, written warning (email or formal letter), or NOV is issued.
- Contractors are non-responsive to DOTA's directives.
- Repeated non-compliance.
- A polluted discharge has occurred.

The number of days used for the liquidated damages calculations shall start on the day that the non-compliance was required to be corrected and shall end on the day that the non-compliance is corrected and accepted. If DOTA's personnel are not able to go out in the field to verify that the BMP deficiencies are corrected in the timeframe specified, the Contractor can send photographs showing the corrected deficiency via e-mail to the DOTA Engineer and AIR-EE along with documentation on how the deficiency was corrected. The DOTA Engineer and AIR-EE may visit the site to verify the corrective actions are acceptable. If the corrective actions are acceptable, then the clock stops on the day that the documentation was received.

The Contractor shall not be entitled for compensation for any liquidated damages or penalty, fine, or citations assessed and deducted from the Contractor's progress payments, even after corrective actions have been taken.

END OF SECTION

SECTION 01562 – MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

A. This Section describes procedures for the management of known and/or unknown contaminated media (e.g., soil, sediment, groundwater, soil vapor, and building materials) and disposal and on-site reuse of either contaminated or uncontaminated soil/sediment (referred to herein as “soil”), that may be disturbed or generated during excavation or demolition activities, or other construction activities associated with this project.

B. All soil shall be treated as potentially contaminated until it is determined otherwise.

C. The Contractor shall supply all labor, materials, and equipment necessary for the removal, temporary storage, testing, handling, backfilling and management of soil and contaminated media to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.

D. The Contractor shall follow the State of Hawaii, Department of Transportation, Airports (DOTA) Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (DOTA EHE-EHMP), a Construction-Environmental Hazard Management Plan (C-EHMP) Addendum, or a Site-Specific C-EHMP, whichever applies to the project.

E. The Contractor and their Qualified Environmental Professional shall review any site-specific investigation reports (e.g., Phase II Environmental Site Assessment [ESA]) or construction management plans, etc.) to understand the conditions that may affect work performance.

F. Qualified Environmental Professional: The Contractor shall employ a Qualified Environmental Professional (QEP) who possesses a minimum of five (5) years of experience providing environmental oversight for the management of contaminated media during construction activities, who shall assist in the preparation of the Contractor’s C-EHMP (Site-Specific or Addendum). The QEP shall be identified in the applicable EHMP document.

G. Should the Contractor deviate from the DOTA EHE-EHMP, C-EHMP Addendum, or Site-Specific EHMP, the Contractor shall be responsible to prepare or modify any existing Hawaii Department of Health (DOH) required C-EHMP (Site-specific

or Addendum). Any deviation from construction EHMPs will require approval by DOH and the DOTA Engineering Branch, Environmental Section (AIR-EE) prior to implementation. The Contractor shall detail deviations from standard practices and explain how those deviations will be protective of human health and the environment.

H. The primary contaminant-related hazards addressed by the DOTA EHE-EHMP or a C-EHMP include, but are not limited to, the following Contaminants of Potential Concern (COPCs):

- Petroleum-related Hydrocarbons, e.g., TPH-g, TPH-d, TPH-o, BTEX, and PAHs
- Constituents of light distillate fuels and/or Chlorinated Solvents (together considered volatile organic compounds or VOCs)
- Polychlorinated Biphenyls (PCBs)
- Pesticides, e.g., Chlordane, Dieldrin
- Metals, e.g., Arsenic, Barium, Cadmium, Total Chromium, Lead, Mercury, Selenium, and Silver
- Per- and Polyfluoroalkyl Substances (PFAS)

In addition, free petroleum product (e.g., gasoline, aviation gasoline, diesel fuel, jet fuel, motor oils, lubricating oils) may be encountered in soil or groundwater in areas of previous petroleum releases.

Soil vapor may be present from volatile COPCs present in subsurface soil or groundwater.

Should changes in site conditions or additional site information identify contaminants or risks to human health and/or the environment not addressed by the DOTA EHE-EHMP or C-EHMP (Site-Specific or Addendum), the Contractor shall be responsible to revise, update, and finalize a C-EHMP (Site-Specific or Addendum), to be reviewed and approved by AIR-EE and the DOH Hazard Evaluation and Emergency Response (HEER) Office.

The Contractor shall coordinate with AIR-EE, as well as have any C-EHMP (Site-Specific or Addendum) approved by the HEER Office, prior to the start or continuation (in the case of an Addendum) of any related ground disturbing activities.

1.03 REFERENCES

All work shall conform to the latest edition of the following, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program

https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/

1. DOTA EHE-EHMP

2. DOTA Construction Best Management Practices (BMP) Field Manual

B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) https://health.hawaii.gov/heer/

1. Technical Guidance Manual (TGM) for Implementation of the State Contingency Plan (including updates).

2. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material.

3. HEER Office Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater.

4. HEER Office Construction EHMP and EHMP Addendum Template

C. State of Hawaii Administrative Rules, Title 11, DOH https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/

1. Chapter 54 Water Quality Standards

2. Chapter 58.1 Solid Waste Management Control

3. Chapter 59 Ambient Air Quality Standards

4. Chapter 11-260.1-279.1 Hazardous Waste Management: General Provisions

5. Chapter 280.1 Underground Storage Tanks

6. Chapter 451 State Contingency Plan

D. The Hawaii Environmental Response Law (Hawaii Revised Statutes [HRS] Chapter 128D) and the State Contingency Plan (Hawaii Administrative Rules [HAR] Title 11, Chapters 451-1–451-24).

E. American Petroleum Institute (API) RP 2219 https://www.api.org/oil-and-natural-gas/health-and-safety/refinery-and-plant-safety/occupational-safety/rp-2219

F. United States Code of Federal Regulations (CFR), Title 29: Labor https://www.ecfr.gov/current/title-29

G. CFR, Title 40: Protection of the Environment https://www.ecfr.gov/current/title-40

1. Part 50, “National Primary and Secondary Ambient Air Quality Standards A”.

2. Part 122, “EPA Administered Permit Program: The National Pollutant Discharge Elimination System”.

3. Part 261, “Identification and Listing of Hazardous Waste”.

4. Part 263, “Standards Applicable to Transporters of Hazardous Waste”.

5. Part 302, “Designation, Reportable Quantities, and Notification”.

H. CFR, Title 49: Transportation
https://www.ecfr.gov/current/title-49

1. Part 171, “General Information, Regulations, and Definitions”.

2. Part 172, “Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans”.

I. U.S. EPA Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), Section 107(1), exemption for cleanup of legally applied pesticide products.
https://www.epa.gov/enforcement/superfund-enforcement-authorities

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 GENERAL WORK PROCEDURES

A. Prior to beginning work, the Contractor, the Contractor’s Qualified Environmental Professional, and the Engineer or their representative shall review and discuss all available information pertaining to contamination or potential contamination at the work site.

B. It should be noted that, in some cases, the contamination (e.g., soil contaminated with metals, PCBs, pesticides, PFAS, etc.) may not be identifiable through visual and/or olfactory observation, and contaminant-specific field screening techniques may need to be implemented.

C. Potential or suspected contaminated media from separate locations or sources shall not be mixed or placed together without the approval of the Qualified Environmental Professional and AIR-EE.

D. The removal, transfer, or handling of explosive or flammable media shall be conducted using explosion-proof pumps and equipment. If a vacuum truck is

used for removal of liquids or residues, the area of operation for the vacuum truck shall be vapor free. Discharge the vacuum pump exhaust gases through a hose of adequate size and length downwind of the truck and tank area. Vacuum truck operating and safety practices shall conform to API RP 2219. Collect tank residues in drums, tanks, or tank trucks labeled according to 49 CFR 171 and 49 CFR 172 and dispose of as required by regulation.

E. Follow Decontamination regulations and procedures as necessary.

F. Soil excavation, grading, and any disturbance of contaminated soil may cause a potential exposure to Contractor's employees and the public from the release of vapors or fugitive dust. The routes of exposure to dusts are by inhalation, ingestion, and dermal contact. The Contractor shall use engineering controls such as water spraying and wind barriers to control fugitive dust. The Contractor shall use engineering controls to mitigate the release and exposure to soil vapors.

G. The Contractor shall test excavated soil for the presence of COPC and managed in accordance with this Section and relevant guidance and regulations.

H. Report construction activities in areas with contaminated soil or groundwater by completing the appropriate forms in the DOTA EHE-EHMP, Appendix B.3 Construction Activities Release Response Plan. Submit the forms to the DOH Office of Hazard Evaluation and Emergency Response (HEER) Office and provide a copy of the forms to the Engineer and AIR-EE.

I. All correspondence with DOH and other regulatory agencies must include the Engineer and AIR-EE.

3.02 PRECONSTRUCTION REQUIREMENTS

A. Submit the following a minimum of 30 calendar days prior to beginning any ground disturbing activities, for approval by AIR-EE.

1. The Contractor's revisions to the C-EHMP Addendum or Site-Specific C-EHMP completed in the design phase, or creation of a C-EHMP addendum if deviating from the DOTA EHE-EHMP, that includes, but is not limited to:

a. Procedures, engineering controls, and methods the Contractor will use during the excavation, soil stockpiling and segregation, temporary storage, testing, handling, treatment, backfilling, and disposal of contaminated media, work area isolation, construction barriers, dust control, decontamination, and emergency management.

b. Names of the Contractor's and their subcontractor's qualified personnel who will be supervising or managing contaminated materials at the site. Include the personnel's phone number and

qualifications.

c. Name(s) of the Contractor's Qualified Environmental Professional, including their qualifications.

d. Proposed schedule of work.

e. Location map of temporary contaminated stockpiles and other contaminated media storage, including infrastructure such as pipes and appurtenances, if applicable.

f. All documents required as part of the appendices to the DOTA EHE-EHMP (e.g., health and safety plan and completing the management plans in the appendices) or C-EHMP (Site-Specific or Addendum) applicable appendices (e.g., health and safety plan, construction material documents, etc.).

3.03 CONSTRUCTION REQUIREMENTS

A. Soil Excavation and Stockpiling:

1. Notify the HDOH HEER Office at least 90 calendar days prior to disturbing contaminated soil at "HEER Sites" as defined HI DOH e-Permitting System - Notification of Construction Activities (HEER Office). Version 1.6 (hawaii.gov) or most recent version available. Obtain AIR-EE's review and concurrence prior to submittal to DOH.

2. The disturbance of contaminated media shall be performed in accordance with the DOTA EHE-EHMP or the Contractor's approved C-EHMP (Site-Specific or Addendum), where applicable. The HEER Office and AIR-EE shall be immediately notified if contaminated media not previously known or anticipated is encountered. The HEER Office will determine whether additional sampling is required. The Contractor shall provide a location map with Global Positioning System (GPS) coordinates and approximate depth below ground surface at which contaminated media were encountered to the Engineer and AIR-EE.

3. Any soil stockpile shall not exceed 100 cubic yards unless approved in the applicable C-EHMP document. If deviating from the plan, approval from DOH is required. Soils placed in watertight containers shall be covered with plastic sheeting or positioned under a roof when not in active use. Soil stockpiles and containers shall be located at least 50 feet from drainage features, surface waters, and stormwater drainage paths.

4. Any liquid-phase oil or free product associated with the contaminated soil shall be drained prior to stockpiling. If feasible, the free product should be separated from the soil, properly stored, profiled, and disposed of at an approved recycling or disposal facility.

B. Soil Testing and Disposal:

The contractor shall test all soil generated during excavation, demolition, or other construction activities. Sampling and testing of stockpiles shall be, at a minimum, in accordance with the latest edition of the DOH's Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material. The Contractor's QEP shall direct the soil sampling collection and testing methods in accordance with the most current guidelines. Stockpiles shall be tested using multi-increment (MI) sampling methodology in accordance with the TGM. Alternative sampling approaches, and appropriate decision unit (DU) volumes for large volume soil stockpiles, should be discussed with AIR-EE and may be utilized on a case-by-case basis when approved by the HEER Office.

Note that in accordance with DOTA policy, no soil from airport property shall be reused offsite, even if the soil appears acceptable for unrestricted reuse based on testing conducted. Exceptions to this policy may only occur with the written approval of the Engineer and AIR-EE.

1. Offsite Soil Disposal

   a. The Contractor shall confirm the disposal facility's sampling requirements, as well as their standards for disposal.

   b. Soil that is a regulated hazardous waste shall be disposed at an approved United States Environmental Protection Agency (EPA) regulated facility.

   c. Soil that is above the Hawaii Department of Health (DOH) Tier 1 Environmental Action Levels (EAL) for unrestricted use but not a regulated hazardous waste shall be disposed of at a DOH or EPA permitted disposal facility (i.e., landfill), unless on-site reuse is approved by the Engineer and AIR-EE as described below.

   d. For any contaminated media removed from Airport property to an approved facility, the Contractor shall be responsible for its legal disposal.

2. On-site Soil Reuse

   a. The Contractor shall test all soils designated for on-site reuse. Soil that does not exceed applicable DOH Tier 1 Environmental Action Levels (EAL) for unrestricted use may be reused on-site (within construction site boundaries) with AIR-EE approval.

   b. Soil with contaminants that exceed DOH Tier 1 EALs may be approved for on-site (within construction site boundaries) reuse with written approval from AIR-EE and when the following conditions are met:

i. Contaminated soil is reused within other contaminated areas in the proximity of its original location.

ii. Contaminated soil is reused no less than 150 meters from the nearest surface water or surface water inlet.

iii. Contaminated soil is reused at an elevation above the tidally influenced high water table, and at least one foot below the finish surface grade, with the most contaminated soil placed at the bottom of the excavation and cleanest soil toward the ground surface. A minimum of one foot of clean soil shall comprise the final, top backfill layer and, unless waived by DOTA and DOH, an impervious layer shall cap this top layer.

iv. Contaminated soil is not reused within or beneath the footprint of a permanent building structure.

v. Contaminated soil to be reused cannot contain free oil, oil sheens, oil stains, or total petroleum hydrocarbons (TPH) concentrations exceeding 5,000 milligrams per kilogram (mg/kg).

C. Groundwater Management: Groundwater may be contaminated by petroleum hydrocarbons, dissolved metals, PFAS, VOCs, and/or pesticides, and may be encountered during soil excavation or dewatering activities.

1. If contaminated groundwater is discovered at a previously unknown source or site on the project, the Contractor shall immediately notify the Engineer, AIR-EE, and HEER Office. Provide a location map with GPS coordinates and approximate mean sea level depth of the groundwater at which the contamination was encountered.

2. The disturbance of contaminated groundwater shall be performed in accordance with the DOTA EHE-EHMP, or C-EHMP (Site-Specific or Addendum), where applicable. The HEER Office will determine whether additional sampling is required.

3. If free product is present in the extracted groundwater, it shall be separated from the groundwater, profiled, and disposed of at an DOH-approved recycling/disposal facility. Free product shall not be moved from one excavation to another. Engineering measures shall be taken to prevent the transfer of the free product during dewatering. Water contaminated with free product shall not be discharged from a dewatering pit.

4. Releases of contaminated groundwater to surface water bodies or areas beyond the work area is prohibited.

5. Groundwater shall only be re-infiltrated in the ground with the prior approval of AIR-EE and HEER Office. Under circumstances where contaminated groundwater cannot be re-infiltrated, proper disposal at a licensed facility shall be conducted. Notification to the appropriate agencies and other pertinent information related to the discharge shall be conducted by copying the Engineer and AIR-EE on all correspondence and copies of correspondence provided upon request.

6. The Contractor is responsible for the legal disposal or discharge of groundwater that is not re-infiltrated and shall provide AIR-EE with copies of waste manifests.

7. For groundwater containerized and removed from Airport property, the Contractor shall have representative samples taken and tested in accordance with DOH guidelines, standards, and regulations. A copy of the groundwater test results shall be submitted to AIR-EE. The groundwater shall not be disposed offsite without the approval of the Engineer and a written approval from the DOH-permitted facility receiving the groundwater indicating that they acknowledge the groundwater test results and providing their approval to dispose the groundwater at their facility. Transport off-site shall occur in DOT-approved containers or mobile tanks. Documentation for the removal of containerized groundwater is required in the Close-Out Report detailed in Section 3.04.

8. With approval from AIR-EE and oversight from the QEP, small volumes of groundwater may be disposed via evaporation from a constructed (lined) pond or basin, with solid residuals properly tested and disposed in accordance with this specification.

9. Release Reporting: Encountering previously unknown contaminated soil or groundwater during subsurface construction activities is considered a release and shall be reported to the HEER Office. Copies of the DOH Release Report, DOH-issued Release Number, and email correspondence (if applicable), shall be furnished to the Engineer and AIR-EE. The Contractor shall be responsible for release reporting and AIR-EE shall be included on all correspondence with the HEER office.

10. Contractor shall comply with DOTA and HEER Office requirements. A written report shall be provided to the HEER Office. The Hawaii Hazardous Substance Written Follow-up Notification Form is provided in the DOTA EHE-EHMP, Appendix B.1. Photos shall be included to document the incident. The Contractor shall keep a copy of the completed Form B.1 and provide copies of the written report to the Engineer and AIR-EE.

11. Report all leaks and spills immediately to AIR-EE, DOTA personnel, and regulatory agencies in accordance with the airport-specific DOTA Spill Reporting Fact Sheet available via the DOTA Construction Site Runoff Control Program Webpage at https://hidot.hawaii.gov/airports/doing-

business/engineering/environmental/construction-site-runoff-control-program/.

Releases that occur during construction activities or releases due to unforeseen events (spills) shall be reported immediately.

D. Underground Storage Tanks (USTs) and Utility Pipes:

1. For any UST or pipeline, whether unexpectedly discovered or a planned removal, the nature of the UST or pipeline and whether they are inactive shall be determined prior to removal. Immediately notify the Engineer, AIR-EE and HEER Office of any unexpected encounter with a UST or buried piping.

2. The Contractor shall record field observations of the UST and pipelines. These observations shall include, but are not limited to, the following:

   a. Location relative to fixed landmarks, including GPS coordinates. Provide a location map that shows the UST and pipelines that were encountered. The map shall include a North arrow and a scale.

   b. Depth, diameter, length, and type of piping. Describe the condition of the pipe.

   c. Volume and type of fuel or product, including analytical laboratory reports for the product recovered.

   d. Beginning and ending fluid levels, if applicable.

   e. Flow rates, if applicable.

   f. Direction of flow.

   g. Detailed photographs.

   h. Detailed description of actions taken following the discovery, such as cutting, product removal, and disposal.

3. Provide records of the field observations to the Engineer, AIR-EE, and HEER Office.

4. The removal of all USTs must comply with HAR § 11-280.1, and all correspondence related to identification, removal, and documentation must be provided to the Engineer and AIR-EE. Only personnel knowledgeable and trained in pipeline and UST removal shall cut, drain, and remove USTs and pipelines. Hazardous conditions, particularly those created by explosive vapors and releases of product to the environment, shall be mitigated prior to removal activities. If any waste

pipe or UST components are to be stored on-site prior to disposal, the area shall be lined with polyethylene plastic sheeting, 20 mil or thicker, and bermed to contain any free product. Provisions shall be in place to contain viscous products that may liquify after exposure to atmospheric heating. The waste pipe segments shall be drained of any residual product and stored on appropriate dunnage with the ends of the pipe sealed or covered to protect the interior of the pipe from contact with rainwater and wind.

5. All removed pipelines and USTs shall be properly disposed or recycled.

6. The Contractor shall prepare and submit a UST Removal Report, including the results of all sampling activities required under HAR § 11-280.1, to the Engineer, AIR-EE, and the DOH SHWB (UST Program).

3.04 POST-CONSTRUCTION REQUIREMENTS

A. Submit a Project Close-out Report within 30 calendar days after work is completed. The Close-out Report shall contain the following applicable contents:

1. A signed letter certifying that the removal and disposal of all contaminated materials were completed in accordance with the DOTA EHE-EHMP or Contractor's approved C-EHMP (Site-Specific or Addendum), and all applicable Federal, State, and local rules and regulations.

2. All approved DOTA EHE-EHMP deviation request forms. (Reference Appendix B of the DOTA EHE-EHMP.)

3. Any Site-Specific EHMP(s) or Long-term EHMP(s). For locations at an airport for which DOTA has already established a Site-Specific EHMP from previous projects, the DOTA's Site-Specific EHMP shall remain applicable, with any approved amendments resulting from a change in site conditions due to construction.

4. All testing and laboratory results, including chain of custody, for any soil/sediment, groundwater, soil vapor, or other media sampling and analysis.

5. Any results from air monitoring.

6. Record of Field Observations, including location map with GPS coordinates, limits, and depths of any contaminated media (soil, groundwater, etc.) that were encountered at previously unknown source or sites on the project. Include a copy of the completed Hawaii Hazardous Substance Written Follow-up Notification form that was submitted to DOH and all other associated documents.

7. If contaminated soil was disposed off-site (off Airport Property), include

the following:

a. A copy of the signed agreement from the receiving facility acknowledging the sample test results and indicating acceptance of the soil.

b. Documentation of the quantity of soil received by the facility.

c. Copies of the test results of the soil sampling.

d. All certifications, disposal forms, waste manifests, and summary logs.

8. If any soil was approved for reuse on-site (within the construction site boundaries), at a minimum, include the following:

a. Copies of the test results of the soil sampling.

b. The quantity of soil that was re-used on-site.

c. Location map of the re-used soil. Include GPS coordinates of its emplaced limits.

d. A brief description of the purpose of the reused soil (e.g., general fill, utility trench backfill material, etc.). Include the depth and thickness of its placement.

e. Photos of the site after placement of the re-use soil has been completed.

9. Record of Field Observation of any unanticipated UST or pipeline discovered during construction activities, including a copy of the completed DOH Notice of Intent to Close Underground Storage Tanks form, UST Closure Report, and all other associated documents.

10. The Close-out Report may be distinct to each contaminated media type/source. For sites with multiple contaminated media types/sources, Close-out Reports for each contaminated media type can be submitted separately or combined into a project-wide compilation of reports.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work specified in this Section will be paid at the unit price measurement noted below.

Item No.	Item	Unit
01562.1	Management of Contaminated Media, Soil Disposal, and Soil Reuse	Allowance

Payment shall be full compensation for work prescribed in this Section and contract documents and stipulated below.

Lump Sum items will be paid in accordance with the bid price upon approval of completed work under that line item by the Engineer. Should any unforeseen conditions arise, payment shall be made by an allowance, as directed by the Engineer.

For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other mark-ups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.

Should the DOTA receive reports of any illegal dumping of material, and if illegal dumping is confirmed to have occurred, the DOTA will assess a Liquated Damages amount of $5,000 per truck per day, until the illegally dumped material has been cleaned up or the incident has been remedied to the satisfaction of the Engineer with the DOH's concurrence. The Contractor shall not be entitled to recover any Liquidated Damages assessed, even after the non-compliance has been corrected.

The Contractor shall be responsible for reimbursing DOTA for all citations, fines, and penalties levied by DOH, EPA, Department of Labor and Industrial Relations, or any other regulatory agency against the State due to the Contractor's failure to properly manage contaminated medias, including non-compliance with the DOTA EHE-EHMP, DOTA Site-Specific EHMP, or and Site-specific C-EHMP or C-EHMP Addendum. The Contractor shall reimburse the State within 30 calendar days for the full amount of any outstanding cost that the State has incurred. The State may deduct all incurred costs from the Contractor's monthly progress payments; however, the Contractor shall be responsible for reimbursing the State if the costs of correction exceed remaining payments owed to the Contractor.

If the Contractor fails to satisfactorily address the non-compliance item, DOTA reserves the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor shall be fully responsible for all cost and time. The State shall charge the Contractor such incurred costs plus any associated

project engineering costs and shall make appropriate deductions from the Contractor's monthly progress payment.

END OF SECTION

SECTION 01565 – SECURITY MEASURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

The Contractor shall incorporate the State's airport security measures as part of his work. The Contractor shall adhere to established and enhanced security procedures, as mandated by the State and FAA, throughout the course of this Contract.

1.03 SUBMITTALS

Submit a security plan that addresses the conditions set forth in this Contract. Said plan shall contain, at a minimum, a plan of the project scope with locations of construction barricades with secured entry/exits, identification of locations requiring guards, Contractor measures to ensure security of worksite and personnel and procedures to ensure the containment of the worksite from unauthorized personnel. This package shall be submitted within 14 calendar days after execution of the Contract.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 SECURITY

A. Obtain airport security identification badges for all employees working on this project and Air Operations Area (AOA) decals for all vehicles entering the AOA area in accordance to the requirements Section 01800. All requests for badges and AOA decals shall be submitted in writing to the Airport District Manager through the Engineer within 14 calendar days after execution of the Contract. Only authorized personnel working on this project shall be allowed to obtain badges. The Contractor shall be responsible to pay for all costs associated with complying with airport security requirements, including obtaining airport security identification badges.

Currently, the fee to obtain a new airport identification badge is $100.00, but due to the changing fee structure of these services, the Contractor shall inquire with the Daniel K. Inouye International Airport AOA badge and ramp license office at (808) 836-6548. For other Airport Districts cost inquiries should be made the District Manager's office.

If access is required to the Honolulu International Arrivals Building, inquiries shall be made to the Bureau of Customs and Border Patrol at (808) 861-8642 for additional bonding requirements.

B. The Contractor shall comply with all existing and proposed airport security initiative requirements. Contractor may be subject to civil penalties up to $35,000.00 for each security violation.

C. The Contractor shall protect work areas from theft, vandalism, and unauthorized entry. Ensure that proper methods are undertaken to secure tools, materials, and equipment from the public.

D. All vehicles entering the AOA through any of the Airport Access Check Points may be subject to search. The Contractor shall allow extra time for these inspections and be able to provide personnel, as required, to assist Airport security personnel during the inspections.

E. If required by the State, the Contractor will be responsible for the posting of guards at access points where the construction traffic may compromise the integrity of the airport security. Payment for posting of security guards required by the State shall be paid for as an allowance item in the Proposal Schedule. The Contractor shall submit the name and qualifications of the security company to the Engineer for review prior to hiring the security company. The security company shall have extensive experience in working on airports and knowledgeable in airport security procedures within the State of Hawaii.

PART 4 - MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

No measurement shall be made for the items in this Section.

4.02 BASIS OF PAYMENT

Work under this Section, except for posting security guards, shall be considered incidental to, and included in the bid prices for the various items of work in this project.

Posting of security guards required by the State shall be paid for under an allowance item in the Proposal Schedule. The allowance is an estimate, and the amount shall not exceed the maximum amount shown in the proposal schedule. Additional charges by the Contractor for overhead, coordination, profit, insurances, and other incidental expenses shall not be allowed. These shall be included in the Contractor’s lump sum bid price.

Item No.	Description	Unit Price
01565.1	Security Measures	Allowance

END OF SECTION

SECTION 01580 - TEMPORARY FACILITIES AND UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this section.

1.02 DESCRIPTION

This item shall consist of arranging and maintaining all utilities including, but not limited to, water, electricity, sewage disposal and telephone communications in the work area which the Contractor and Engineer deems necessary to meet the requirements of the work under the contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 TEMPORARY UTILITIES DURING CONSTRUCTION

A. Water and Sanitation: The Contractor shall provide temporary drinking water and sanitary facilities for the field personnel. The facilities shall be in accordance with the applicable health regulations and shall be maintained clean and operable until the conclusion of the construction work.

B. Telephone: The Contractor shall a have a telephone available for the State's use for communications with field personnel. Cellular telephones are acceptable. The Contractor shall install the telephone immediately upon starting work and maintain service until the project is completed. All costs associated with obtaining and maintaining telephone service shall be borne by the Contractor.

C. Electricity: Contractor shall obtain or provide temporary electric power and shall pay for all connections and energy charges incurred during construction.

D. Metering: Water and electrical services shall be metered and payment for meters and services shall be borne by the Contractor. Temporary connections for water shall include installation of a meter and backflow preventer at the point of connection according to State standards at the Contractor's cost. The Contractor shall submit requests for temporary connections in writing to the Engineer 14 calendar days prior to the connection and shall include a description of work and a sketch of the proposed installation.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 01700 – MOBILIZATION, DEMOBILIZATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this section.

1.02 GENERAL REQUIREMENTS

A. Section 699 of "Hawaii Standard Specifications for Road, Bridge, and Public Works Construction, 2005," are hereby incorporated into and made a part of these specifications by reference unless otherwise modified hereinafter.

1.03 MOBILIZATION

A. The Contractor shall mobilize and transport his construction plant and equipment including materials and supplies for operation to the site of work, construct temporary buildings and facilities as necessary, and assemble the equipment at the site as soon as possible after receipt of Notice to Proceed, subject to the provisions of the General Provisions.

1.04 DEMOBILIZATION

A. The Contractor shall demobilize and transport his construction plant and equipment including materials, supplies and temporary buildings off the site as soon as possible after construction is completed. Demobilization shall include all cleanup required under this contract and as directed by the Engineer. Demobilization and final cleanup shall be completed prior to final acceptance.

1.05 PERFORMANCE BOND

A. The Contractor shall file and pay for the performance and payment bonds according to Section 3.5 of the Special Provisions, except that the value of the bonds shall equal one hundred percent (100%) of the amount of the contract basic bid amount plus one hundred percent (100%) of the amount of the extra work.

Payment for the Contractor’s bond premium will be made as part of mobilization in accordance to the terms stated in Part 4 below.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

A. Mobilization shall not be measured for payment. The maximum bid allowed for "Mobilization" is an amount not to exceed six (6) percent of the sum of all items (excluding this item and all Allowances). If the proposal submitted by the bidder indicates an amount in excess of the allowable maximum, the indicated amount or amounts shall be reduced to the allowable maximum; the "Sum of All Items," in the proposal schedule shall be adjusted to reflect any such reduction. For the purposes of comparing bids and determining the contract price to be inserted in the contract awarded to the bidder, if any is so awarded, the "Sum of All Items" adjusted in accordance with the foregoing shall be used and the bidder's proposal shall be deemed to have been submitted for the amounts as reduced and adjusted in accordance herewith."

B. Demobilization will not be measured for payment.

4.02 BASIS OF PAYMENT

A. Mobilization will be paid for at the contract lump sum price under Mobilization. Partial payment will be made as follows:

1. When 2 1/2 percent of the original contract amount is earned, 50 percent of the bid amount will be paid.

2. When 5 percent of the original contract amount is earned, 75 percent of the bid amount will be paid.

3. When 10 percent of the original contract amount is earned, 100 percent of the bid amount will be paid.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.

Item No.	Description	Unit Price
01700.1	Mobilization (Not to exceed 6% of sum of all items, excluding this item, all allowances and force account items)	Lump Sum

END OF SECTION

SECTION 01715 - EXISTING CONDITIONS - HAZARDOUS MATERIALS SURVEY

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the Owner's Hazardous Materials Survey for the project, which is provided for the Contractor's information.

B. Related Sections include the following:

1. SECTION 01330 – SUBMITTAL PROCEDURES

1.02 RELATED DOCUMENT

A. This section includes the results of the State's survey for asbestos materials and lead paint and is provided for the Contractor's information.

1.03 ASBESTOS-CONTAINING MATERIAL

A. The structures to be renovated or modified under this contract were surveyed for the presence of asbestos-containing materials (ACM). A copy of the survey report is included in this Section.

1. The report is included, even when no ACM was found, for the Contractor's information. Review the attached report for the basis on which a negative ACM finding was made. Contractor may perform further survey at its own expense, if ACM not shown in the report is suspected in the areas of the building in which work will be performed. If ACM is found, notify the Engineer immediately. The State will reimburse the Contractor or the testing cost if ACM is found.

2. If there is ACM outside of the areas in which work will be performed, this ACM shall not be disturbed in any way.

B. If applicable, notify employees, Subcontractors and all other persons engaged in the project of the presence of asbestos in the existing building in accordance with the requirement of Chapter 110, Article 12-110-2 (f)(1)(B) of the Occupational Safety and Health Standards, State of Hawaii.

C. In the event that work is required in any building or buildings on the site other than the one designated within the project scope, request copies of the asbestos survey report(s) for such building(s) from the Engineer. Based on the information contained in the additional survey(s), notify affected personnel per paragraph 1.03B.

1.04 LEAD CONTAINING PAINT

A. If applicable, inform employees, Subcontractors and all other persons engaged in the project that lead-based paint (LBP) and lead-containing pain (LCP) may be present in
B. the existing building and at the job site. If work outside of the original scope is conducted or suspected lead painted material not provided in the survey is identified, stop work and inform the Engineer. No reimbursements for Contractor conduction

additional testing will be allowed. Follow the requirements of all applicable HDOH, OSHA Requirements, and with 29 CFR 1926.62

C. Review the attached lead testing data which identify locations if LCP was found. Lead testing was for design purposes only and the results do not satisfy any requirements of OSHA 29 CFR 1926.62

1.05 POLYCHLORINATED BIPHENYLS (PCBs) and MERCURY-CONTAINING MATERIAL

A. PCB-containing light ballasts and mercury-containing materials were not surveyed in the work area.

B. Notify employees, Subcontractors and all other persons engaged in the project that PCB and mercury-containing material may be present in the existing building and at the job site. Conduct work in accordance with the requirements of 29 CFR 1910.1000 and 40 CFR 261.

PART 2 - PRODUCTS

(NOT APPLICABLE TO THIS SECTION)

PART 3 - EXECUTION

3.01 SURVEY (Not performed)

PART 4 - PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the prices bid for the various items of work in this project.

END OF SECTION

SECTION 01800 – SPECIAL REQUIREMENTS FOR CONTRACTORS ON THE AOA

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Provision of the Contract, including the General Provisions for Construction Projects (2016) and General Requirements of the Specifications, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

A. Provide all materials, labor, equipment, and tools necessary to complete the Special Requirements for Contractors on the Air Operations Area (AOA).

B. The requirements of the Section are essential for ensuring public and worker safety on this project; hence, the Contractor shall comply with all requirements of this section when performing work on the AOA. Should the Contractor fail to comply with any requirement of this section; work may be delayed or temporarily suspended without contract time extensions. Liquidated damages or fines may result. All liquidated damages or fines resulting from violations due to improper activity, inattention, or failure to comply with required airport procedures; shall be borne by the Contractor.

1.03 PROJECT LIMITATIONS

A. The project normal working hours shall refer to SECTION 01010 – DESCRIPTION OF WORK. The Contractor shall work continuously during the project duration. No work shall be performed during State Holidays or when weather conditions restrict construction from occurring.

1.04 AOA SECURITY REQUIREMENTS

A. AOA Access Points: The Contractor will be assigned only one access point for each work phase, and shall ensure that all of their personnel, vehicles, and equipment enter and exit the AOA only through the assigned access point.

All vehicles entering the AOA through any of the Airport Access Check Points may be subject to search. The Contractor shall allow extra time for these inspections and be able to provide personnel, as required, to assist Airport security personnel during the inspection.

If the State deems an emergency situation has rendered the assigned access point unusable the Contractor will be assigned a temporary access point for the remaining workday. Should the original assigned access point remain unusable for a prolonged period, the Contractor will be assigned a new access point the following day and shall be responsible for all requirements at the new assigned access point.

B. The Contractor shall comply with all existing and proposed airport security initiative requirements. Contractor may be subject to civil penalties up to $35,000.00 for each security violation.

C. The Contractor shall protect work areas from theft, vandalism and unauthorized entry. Ensure that proper methods are undertaken to secure tools, materials and equipment from the public.

D. AOA Access Gates: Should the Contractor's assigned AOA access point be through an unguarded gate, the Contractor shall be responsible for the following:
    1. Obtain the AOA access gate key(s) from the Airport Security Office (a $500.00 deposit is required per key).
    2. Provide all gate guards required. Each gate guard shall possess the following expertise:
        a. Familiarity with all of the AOA security access clearance requirements.
        b. Knowledge related to AOA access badge, AOA vehicle decal, and airport vehicle operator requirements.
        c. A communication device and specific instructions to call for assistance whenever problems occur.
    3. Proper control of the AOA access gate in accordance with all required airport security procedures.
    4. Close the AOA access gate during prolonged periods of inactivity; and close and lock whenever the AOA access gate is not in use, or is unattended.

1.05 AOA OPERATIONAL SAFETY REQUIREMENTS

A. It is the explicit intent of this contract that the safety of aircraft, and all of the personnel and equipment under the Contractor's jurisdiction, be the highest priority; hence, the Contractor shall carefully plan the operations of all personnel and equipment under their jurisdiction to provide for the free and unobstructed movement of all aircraft on the AOA, and to provide for the uninterrupted operation of visual and electronic signals used to guide aircraft while all personnel and equipment under their jurisdiction traverses the AOA.

B. With the exception of actual construction methods, the Federal Aviation Administration (FAA), Airport Traffic Control Tower (ATCT) will have full authority to control the Contractor's movements within the existing movement area. If the FAA, ATCT notifies the Contractor to temporarily halt operations, the Contractor shall effectively notify all personnel and equipment under its jurisdiction, without using lighted flares, to cease all work and move all equipment and themselves away from hazardous areas.

C. The Contractor is responsible for all of their movements on the AOA. Should the State deem that an escort, flagman, or driver fails to perform their duties, that escort, flagman, or driver may be terminated, or suspended and required to undergo additional training

1.06 AOA COMMUNICATION DEVICES: The contractor shall have at least two (2) people on the aoa possessing monitoring the following fully charged communication devices:

A. A two-way radio capable of communicating on frequencies 118.90 (Tower) and 121.90 (Ground); with a spare charged battery and

B. A cellular telephone, with a listing of all required emergency contact numbers.

1.07 AOA TRAVEL ROUTE: The contractor will be assigned only one (1) travel route per work phase, and shall ensure that all of their personnel, vehicles, and equipment traverses the aoa only along the assigned travel route.

Should the state deem that an emergency situation has caused the assigned travel route to become unusable the contractor will be assigned a temporary travel route for the duration needed and shall be responsible for all requirements associated with the new assigned travel route.

1.08 AOA AUTHORIZED VEHICLES: Only vehicles considered safe, and required to complete the contracted work will be allowed to operate on the AOA. Each vehicle operating on the aoa shall be authorized, possessing:

A. An AOA vehicle decal obtained from the Airport Security Office and displayed on the driver's side front bumper (use of an AOA temporary vehicle permit is not allowed).

B. Insurance coverage as required by Article 7.1 of the General Provisions, and further amended by the Special Provisions.

1.09 VEHICLE AND EQUIPMENT REQUIREMENTS ON THE AOA: Each vehicle and driven piece of equipment shall possess the following when operating or staging on the AOA.

A. An AOA vehicle decal operations occurring at night, or during periods of poor visibility, shall require a flashing amber beacon mounted atop each vehicle /equipment's highest point.

B. Daylight operations with clear visibility, shall require a checkered orange and white flag attached to a staff that is mounted to each vehicle and/or equipment in lieu of a flashing amber beacon. The flag shall be at least a three-foot square with a checker pattern of international orange and white squares that are at least one-foot on each side.

C. Two placards shall be on both sides of each vehicle or equipment at all times to identify the vehicle or equipment owner. Placards shall contain the company name in letters at least four-inches (4") tall, or six-inch (6") minimum-sized company logo. All additional equipment marking, lighting and positioning that may be required by the faa.

1.10 AOA DRIVERS: All people operating a vehicle or any driven piece of equipment on the aoa shall possess the following license, permit and expertise:

A. Current and valid Hawaii State Driver's License.

B. Current and valid Airport Vehicle Operator's Permit.

C. Complete Airport Familiarization.

D. An understanding and ability to identify the following:
   1. All RSA's (Runway Safety Area), TWSA's (Taxiway Safety Area).
   2. All AOA Markings, Lighting, and Signing.
   3. The Need for Control of DOD (Foreign Object Debris).
   4. All AOA Equipment for Aircraft.
   5. All AOA Critical Areas.
   6. All AOA Travel Routes for the Various Work Places.

E. An understanding and ability to follow all ground vehicle operation and communication requirements while operating on the AOA.

F. Successful completion of all AOA driver training require by the Airport Operations Manager.

1.11 AIRPORT VEHICLE OPERATOR'S PERMIT: Airport vehicle operator's permit shall only be issued to people that apply through the airport security office, and pass a written exam covering portions of the airport rules and regulations related to vehicle operations on the aoa.

1.12 AOA ESCORTS: While operating on the aoa, the contractor shall provide at least one escort for every five (5) vehicles and/or equipment under their jurisdiction. The airport operations manager shall approve all escorts prior to any work commencing; hence, each escort shall possess:

A. All AOA Driver Requirements.

B. Both AOA Communications Devices previously specified.

C. Knowledge about the assigned access points and travel routes for the project.

D. Successful completion of all AOA driver training required by the Airport Operations Manager. Each escort shall pass an exam given by the Airport Operations Manager, which demonstrates they possess an understanding and ability to follow all ground vehicle operation and communication requirements while operating on the AOA.

1.13 AOA TRAFFIC CONTROL: THE CONTRACTOR SHALL FURNISH AND PROVIDE THE FOLLOWING TRAFFIC CONTROL DEVICES TO BLOCK OFF ENTRANCES OF WORKING AREA:

A. Runway Lighted X's: Wherever working within an RSA.

B. Low-Profile Barricades: Low-profile barricades shall be any one of the following: however, if option a or b is selected, the Contractor shall be responsible for water filling and emptying these types of barricades as part of their contracted work.
   1. Neubert Aero Corporation's reusable Airport Low-Profile Barricade Model No. NAC-PC 2410 with at least one battery-powered red barricade light, or
   2. Multi-Barrier Safety Barricade Model No. AR-10x96 with at least one Multi- Barrier 360 degree solar-powered light, or
   3. Constructed barricades as indicated on plans.
   4. All Low-profile barricades shall be spaced fifteen (15) feet on center, and used as follows:
      a. Restrict aircraft from taxiing into work areas: Barricades shall extend across the full TWY/RWY width, with one (1) barricade places on the TWY/RWY centerline.
      b. Channel aircraft around work areas: Barricades shall be placed ten (10) feet away from active RSAs/TWSAs.

C. Reflective Cones: Reflective cones shall be used to demarcate AOA travel routes and locations where vehicles shall yield to aircraft.

1.14 AOA FOD CONTROL: The contractor shall keep all work areas, aoa travel routes, and all adjacent areas clean at all times. Unless otherwise stated in this contract, or otherwise directed by the airport manager, the contractor shall properly haul and dispose all removed pavement materials and collected debris to a site off the airport. The state will require remedial cleaning from the contractor whenever their fod control operations are unsatisfactory. Upon receipt of notification, the contractor shall be ready to start remedial cleaning at the jobsite within one-hour. Notification by telephone will be deemed as official.

1.15 AOA FLAG PERSONS: Should the plans require flag persons along the aoa travel route, each flag-person shall possess:

A. AOA Driver as state in Sections 1.05.E.3, 1.05.E.4, and 1.05.E.6.

B. Both AOA Communication Devices previously specified in Section 105.A.

C. A traffic directing LED (Light-Emitting Diode) Light Baton.

D. A broom and dustpan to assist in AOA FOD Control.

1.16 AIRPORT STAGING AREAS: The contractor shall only stage its vehicles and equipment at state approved areas. No vehicle or equipment shall park within four (4) feet of a security fence. Demarcation of the staging area shall be as follows:

A. Weighted Lighted Barricades shall be placed around the staging area perimeter at a maximum of twenty feet (20') on center.

B. Yellow Barrier Tape with the words "CAUTION DO NOT ENTER" continuously printed on the tape shall be used with barricades to demarcate the staging area perimeter.

1.17 COORDINATION OF CONSTRUCTION ON THE AOA

A. Work on the AOA requires RWY and TWY closures that demand proper notification to numerous agencies responsible for public safety; thus, the Engineer shall receive the following sufficiently accurate information from the Contractor.

B. Maximum height equipment: Equipment height shall be submitted to the State at

least thirty-five (35) consecutive calendar days prior to construction. Construction shall not commence until the State receives confirmation from the FAA. All reported heights shall be the maximum heights among all vehicles or equipment used to compete the contracted work, and includes proper notification to the State whenever the reported maximum heights are to be exceeded.

C. Detailed work schedule: See SECTION 01300 – SUBMITTALS.

D. Cancellations: The Contractor shall only cancel work through the Engineer, Airport Operations Manager, or Airport Duty Manager. Whenever a cancellation is not made and the Contractor is not at the assigned AOA Access Point within thirty (30) minutes of the start time; all Contractor closures for the remaining workweek will be cancelled. The Contractor shall reimburse the State six hundred dollars ($600.00) for every work cancellation the State deems unjustified. This reimbursement is to compensate the State for all unnecessary costs related to cancelling existing and coordinating new closures.

1.18 CONSTRUCTION LIGHTING REQUIREMENTS

A. Should any part of the work area lack sufficient sunlight; the Contractor shall provide sufficient artificial lighting to permit the work and inspection to be carried out efficiently, thoroughly, safely, and satisfactorily. Work and inspections shall not be performed with only flashlight and/or vehicle/equipment headlights. All lights shall be positioned so they do not blind aircraft pilots, or FAA-ATCT controllers. All wiring for electrical lights and power shall be properly installed, maintained, securely fastened and kept as far as possible from telephone and signal wires. The Contractor shall submit a lighting plan to the Engineer for all work phases that shall be subject to approval.

1.19 ENVIRONMETAL AND HEALTH REQUIREMENTS

A. The Contractor shall perform the following in accordance with all applicable federal, state, local, and airport rules and regulations related to environmental pollution control, abatement, and fire code.

B. Airport water: Airport water shall not be drawn from a top lacking a reverse pressure principal backflow prevention device. Water valves shall be opened and closed so that water hammers are not produced.

C. Waste Disposal: Waste disposal shall be performed properly. Materials shall not be burned, and construction wastes shall not be disposed into Airport storm water or sewer systems.

D. Restoration: Completely restore, to an acceptable condition; staging area, work area, AOA travel routes, and areas adjacent to the aforementioned.

E. When the Contractor damages and existing Airport perimeter fence, the Contractor shall perform immediate repairs on the fence to prevent inadvertent entry and maintain Airport Security.

F. Vehicle/equipment leaks and material spills: Shall be handled by the following five-step process, and pertains to all fluids other than potable water:

1. All leaked or spilled fluids shall immediately be kept from entering the Airport storm water and sewer systems.
2. All fluid leaks or spills shall be respectively fixed or stopped, immediately after ensuring that the fluids are kept out of the Airport storm water and sewer systems.
3. All areas containing the leaks or spills shall be properly cleaned and restored.
4. Dispose all wastes per Section 1.08.B.
5. Submit proper documentation to the State showing that all leaks or spills were properly cleaned and disposed.

G. Erosion control: The Contractor shall provide any essential temporary drainage, dikes, and similar facilities to prevent erosion damage to the site. Run-off shall be controlled to prevent damage to the surrounding areas.

H. Dust control: The Contractor shall positive measures to ensure that dust is properly controlled without chemicals and/or oil treatments.

I. Noise control: Noise control shall be within the levels that comply with all applicable regulations.

1.20 OTHER REQUIREMENTS

A. The Contractor shall also comply with the following requirements should they arise:

B. Any new TSA (Transportation Security Administration) security requirements.

C. Any additional operational safety requirement generated by the FAA.

D. Provide additional lights along AOA travel routes should the Engineer deem additional safety enhancements are needed.

E. Any new environmental and health requirements generated by the EPA (Environmental Protection Agency) or DOH (Department of Health).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT & PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

DIVISION 2 - SITE CONSTRUCTION

SECTION 02050 - DEMOLITION AND REMOVAL WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 SUMMARY

A. The work to be performed under this section shall include the furnishing of all labor, tools, equipment and incidentals necessary to perform all demolition and removal work indicated on the drawings or required for the reception of the new construction specified. This work also includes the salvaging of designated materials for reuse.

B. All materials resulting from demolition work, except as indicated or specified otherwise, shall become the property of the Contractor at the time of demolition and shall be removed from the limits of the school property and disposed of at an approved facility in accordance with City, State, and Federal regulations. Remove rubbish and debris from the job site daily, unless otherwise directed by the Engineer.

1.03 GENERAL REQUIREMENTS

Section 202 of “2005 Standard Specifications for Road and Bridge Construction", is hereby incorporated into and made a part of these specifications by reference unless otherwise modified hereinafter with the exception of paragraphs “Method of Measurement” and “Basis of Payment”.

1.04 PERMIT AND FEES

The Contractor shall obtain and pay for all necessary permits and certificates for demolition and removal work prior to commencement of work.

1.05 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS.

1. Landfill Disposal or Recycling Site: Submit the name of the approved Department of Health and Federal disposal facility to be used for this project.

2. Landfill Disposal or Recycling Manifest: Submit certified disposal and recycling manifests documenting proper transit and disposal of demolition materials. Receipt of certified manifests shall be a requirement prior to progress payment for disposal or recycling. Submit manifests with the Contractor Daily Progress Report.

3. Plans and Procedures: Submit a plan and list of procedures for performing the demolition and removal work.

1.05 JOB CONDITIONS

A. Condition of existing structures: The State assumes no responsibility for the actual condition of items or portions of structures to be removed.

B. Do not interfere with the use of adjacent occupied spaces. Maintain free and safe passage to and from occupied spaces. Provide temporary barricades and other forms of protection as required to protect building occupants and general public from injury due to demolition work.

C. Storage or sale of removed items on site will not be permitted.

D. Protection: Provide temporary barricades and other forms of protection as required to protect the general public from injury due to selective removal work and to maintain security.

1. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or elements to be removed, and adjacent facilities or work to remain.

2. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.

3. Life safety procedures and provisions shall be in conformance with all applicable Federal, State, and County regulations, including OSHA.

E. Damages: Promptly repair damages caused to adjacent facilities or areas by removal work at no cost to the State.

F. Traffic: Conduct demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. Use of explosives will not be permitted.

H. Dust and Erosion Control: Contractor shall comply with the requirements of the State of Hawaii, Department of Health

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

The Drawings show general information only. Contractor shall examine the site to determine exact existing conditions, character, extent of the work to be performed and demolition operations required to complete the new work. The Contractor shall exercise every precaution to preserve and protect existing improvements to remain or to be removed by others.

3.02 INSPECTION

Prior to commencement of selective demolition work, Contractor shall inspect areas in which work will be performed. Contractor shall photograph existing conditions to document structure surfaces, equipment or surrounding properties which could be misconstrued as damaged as a result of the selective demolition work; file with the Engineer prior to starting work.

3.03 EXISTING UTILITY LINES

A. The existence of underground utility lines other than those approximately shown is not definitely known. The Contractor shall be responsible for toning, probing, obtaining as-built drawings, etc., to determine existing utility locations prior to any demolition work. The Contractor shall promptly repair all damaged utilities at no cost to the State.

B. The Contractor shall serve proper notice and consult with the Engineer regarding any temporary disconnections of electrical or other utility lines in the area which may be required for the removal work, and all such lines where necessary shall be properly disconnected before commencing with the work.

3.04 DEMOLITION

A. All work shall be executed as indicated on the plans, with due consideration for all items to remain.

B. Limits of pavement removal shall be as shown on the plans or as directed by the Engineer. Saw cut along the excavation line to produce a uniform break line both vertically and horizontally. Remove paving so as to prevent spalling, cracking or other damage to adjacent paving which is to remain. The Contractor shall at his own expense remove and replace damaged pavement outside the limits of removal. Reuse of demolished concrete or asphalt paving for on-site rubble fill may be acceptable as directed by the Engineer.

C. Removal of existing fences and railings shall include foundations below grade.

D. Any open trenches, holes, depressions and pits left open at the end of the working day shall be covered by steel plates.

E. If unanticipated mechanical, electrical or structural elements which conflict with the intended function or design are encountered, investigate and measure both

nature and extent of the conflict. Submit report to the Engineer in written, accurate detail. Pending receipt of directive from the Engineer, rearrange selective demolition schedule as necessary to continue overall job progress without delay.

3.05 REPAIR OF WORK

Damage resulting from removal work shall be repaired by the Contractor at his expense. The condition of all existing exposed surfaces shall be equal to or better than that that existed before the removal work. Where the method of repair work is not indicated or specified, the Contractor shall perform the repair work in accordance with the limits of generally accepted trade standards.

3.06 SALVAGE OF REMOVED ITEMS

The Contractor shall remove and stockpile/store all items as specified on the plans. All items not specified to be salvaged shall be disposed of as specified in Section 3.07 - DISPOSITION OF MATERIAL.

3.07 DISPOSITION OF MATERIAL

A. All materials resulting from removal work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the limits of State property at the Contractor's expense to an approved solid waste or recycle disposal site.

1. Remove rubbish and debris from the jobsite daily, unless otherwise directed; do not allow accumulations outside any buildings or roadways.

2. The Contractor shall transport and legally dispose of materials off site in compliance with Federal, State and local hauling and disposal regulations.

3. Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas.

4. The Contractor shall provide to the Engineer certified disposal manifests for all materials which are disposed of off-site.

B. If hazardous materials are encountered during demolition operations, comply with applicable State, Federal and local regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

C. Burning of removed materials is not permitted on the project site.

3.08 CLEAN-UP AND REPAIR

A. Any disturbance to road beds, landscaped areas,, etc., shall be restored to original condition. The Contractor shall take care to avoid damage to immediate and surrounding areas and protect property, vehicles, etc.

B. In landscaped areas, remove grass in a manner that will allow replacement close to its original condition. Use a drop cloth or similar ground cover at all times to contain and hold removal of earth, plantings, etc., whether on concrete, asphalt, lawn, and/or landscaped areas.

C. Any concrete or asphalt removed shall be replaced in as close to original condition as possible, and within the limits of generally accepted trade standards. When re-grassing is required, the grass used shall match the surrounding area.

D. The Contractor, at his/her expense, shall repair damage resulting from removal work. The condition of all existing exposed surfaces shall be equal to or better than that which existed before the removal work. Where the method of repair work is not indicated or specified, the Contractor shall perform the repair work in accordance with the limits of generally accepted trade standards.

E. Remove all evidence of demolition work and leave the premises clean, neat, and orderly.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02050.1	Demolition and Removal Work	Lump Sum (L.S.)

END OF SECTION

SECTION 02120 - RESTORING PAVEMENTS AND OTHER IMPROVEMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 DESCRIPTIONS

A. All restoration work on pavements and other improvements such as concrete pads, sidewalks, curbs and gutters shall conform to the requirements under the Revised Ordinances of the respective Counties, as amended; under the Hawaii Revised Statutes, as amended, and under these specifications.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS.

B. Manufacturer's product literature: Submit manufacturer's product literature including description of material for concrete mix design, asphalt concrete pavement mix design, grass seeds, fertilizer and other materials used for this Project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials used for restoration work shall be equal or better in quality than the materials being replaced. They shall match the existing improvements in texture and color wherever possible. Unless specified otherwise, asphalt concrete shall be Mix #4.

B. Materials shall be in accordance with the following sections of the Standard Specifications for Public Works Construction dated September 1986 of the Department of Public Works, County of Kauai, as amended, except as amended in the plans and specifications here within. Paragraphs concerning Measurement and Payment in the standard specification sections are not applicable to this project.

1. Aggregate Base Course .....Section 31
2. Asphalt Surface Treatment .....Section 33
3. Asphalt Concrete Pavement .....Section 34
4. Concrete Sidewalk .....Section 42

PART 3 - EXECUTION

3.01 GENERAL

Before proceeding with the restoration work, the pavement shall be power saw cut to provide clean, solid, vertical joints. Concrete sidewalk and concrete pavement shall be cut with a power saw along straight lines.

3.02 EXECUTION

A. Asphalt Concrete Pavement

1. The asphalt concrete mixture shall be placed on the prepared base and compacted to 95% of its maximum density. The minimum compacted thickness shall be 2-1/2 inches or match existing thickness, whichever is greater. The finished surface shall be slightly humped not to exceed 3/8-inch for pavement width of less than 2 feet and 3/4-inch for width greater than 2 feet.

B. Sidewalks and Concrete Slabs

1. In replacing sidewalks and concrete pads, the junctions with the existing improvements shall be along straight lines, preferably along the scored lines or joints.

2. Where more than one-half the width of the scored block of the sidewalk is to be restored, the entire scored block shall be removed and reconstructed with concrete 4 inches minimum thickness.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Restoration of pavements and other improvements shall not be measured and paid for directly, but shall be considered incidental and included in the unit price bid for various bid items.

END OF SECTION

SECTION 02210 - EARTH MOVING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Excavation for slab on grade.

1.02 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.

2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.

2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock ex

cavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,090 lbf and stick-crowd force of not less than 18,650 lbf measured according to SAE J-1179.

2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 48,510-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.

I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by an independent geotechnical testing agency, according to ASTM D 1586.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.03 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by DOT-A and then only after arranging to provide temporary utility services according to requirements indicated.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies and DOT-A to shut off services if lines are active.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations at no additional cost to the DOT-A.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

J. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.02 CONTROLLED LOW-STRENGTH MATERIAL

A. Controlled Low-Strength Material: Low-density, self-compacting, flowable concrete material as follows:

1. Portland Cement: ASTM C 150, Type I/II or ASTM C 595, Type IL/IIL.

2. Fly Ash: ASTM C 618, Class C or F.

3. Normal-Weight Aggregate: ASTM C 33, 3/4-inch nominal maximum aggregate size.

4. Foaming Agent: ASTM C 869.

5. Water: ASTM C 94/C 94M.

6. Air-Entraining Admixture: ASTM C 260.

B. Produce conventional-weight, controlled low-strength material with 140-psi compressive strength when tested according to ASTM C 495.

2.03 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.

2. Yellow: Gas, oil, steam, and dangerous materials.

3. Orange: Telephone and other communications.

4. Blue: Water systems.

5. Green: Sewer systems.

PART 3 – EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Clearing and Grubbing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Clearing and Grubbing," during earthwork operations.

3.02 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.03 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 6 inches outside of minimum required dimensions of concrete cast against grade.

b. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.

c. 6 inches beneath bottom of concrete slabs on grade.

d. 6 inches beneath pipe in trenches, and the greater of 6 inches wider than pipe or 42 inches wide.

3.04 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.05 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.06 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

3.07 SUBGRADE INSPECTION

A. Notify Engineer and DOT-A when excavations have reached required subgrade.

B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.

2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.

3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.

E. Reconstruct subgrades damaged by rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.08 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Engineer.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

3.09 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.

2. Surveying locations of underground utilities for Record Documents.

3. Testing and inspecting underground utilities.

4. Removing concrete formwork.

5. Removing trash and debris.

6. Removing temporary shoring and bracing, and sheeting.

7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

8. Place backfill on subgrades free of mud.

3.11 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

D. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the utility pipe or conduit.

E. Backfill voids with satisfactory soil while installing and removing shoring and bracing.

F. Place and compact final backfill of satisfactory soil to final subgrade elevation.

G. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.

H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy.

2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698.

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off DOT-A property.

PART 4 – MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Items shall be measured per cubic yard.

4.02 BASIS OF PAYMENT

The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work. Reinforcing steel shall be included in this payment.

Item No.	Description	Unit
02210.1	Earth Moving (Excavation)	LS

All other structural concrete work specified in this section shall be considered incidental to and included in the bid prices for the various items of work in the project.

END OF SECTION

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 GENERAL REQUIREMENTS

A. Furnish materials, labor and equipment necessary to clear or grub disturbed areas to accommodate construction operations, accumulate and dispose of all debris and waste materials, and lay out the entire work, all as indicated on the drawings and specified herein.

B. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions.

C. Obvious conditions of the site existing on the date of the bid opening shall be accepted as part of the work, even though they may not be clearly indicated on the plans and/or described herein or may vary therefrom.

D. Any debris of any kind accumulated from clearing or grubbing shall be disposed of off-site weekly and the whole area left clean. The Contractor shall be required to make all necessary arrangements related to the proposed place of disposal.

E. Burning onsite will not be permitted.

F. Dust Control: Use all means necessary to protect existing objects designated to remain and, in the event of damage, immediately make repairs and replacements necessary to the satisfaction of the Engineer at no additional cost to the State.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SEQUENCE OF WORK

All sequence of work shall be subject to the acceptance of the Engineer.

3.02 PROTECTON

A. Adequate precautions shall be taken before commencing and during the course of the work to insure the protection of life, limb and property.

B. The Contractor shall protect from damage all surrounding structures, trees, plants, grass, walks, pavements, utility boxes, etc. Any damages will be repaired or replaced by the Contractor to the satisfaction of the Engineer at no additional costs to the State.

3.03 PERMITS

The Contractor shall apply for and obtain the necessary permits prior to the commencement of work. The Contractor shall pay for all fees.

3.04 BARRICADE

A. Erect temporary barricade to prevent people and animals from entering the project area, to the extent as accepted by the Engineer. Such barricades shall not be less than 5'-0" in height. The extent of barricades may be adjusted as necessary with the acceptance of the Engineer. His work shall be accomplished to the satisfaction of the Engineer and at no extra cost to the State. Barricades shall be removed upon completion of work and the work area is left clean.

B. When necessary, the Contractor shall provide, erect and maintain lights, barriers, etc., as required by traffic and safety regulations with special attention to protection of life.

3.05 CONSTRUCTION LINES, LEVELS, AND GRADES

A. The Contractor shall verify all lines, levels and elevations indicated on the plans before any clearing, excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Engineer, and any change shall be made in accordance with the Engineer's instructions. The Contractor shall not be entitled to extra payment if he fails to report the discrepancies before proceeding with any work whether within the area affected or not.

B. All lines and grades shall be established by a Surveyor licensed in the State of Hawaii.

C. Starting of clearing and grubbing operations will be construed to mean that the Contractor agrees that the existing grades, inverts, and improvements are essentially correct as indicated.

3.06 DEMOLITION AND REMOVAL

A. Execute all work in an orderly manner, with proper safety precautions observed at all times. Provide warning signs, lights, barricades, etc. as required or as directed by the Engineer.

B. Removed material having no salvage value, as determined by the Engineer, shall become the property of the Contractor and shall be removed from the premises at no cost to the State.

C. Backfill all voids, trenches, holes, depressions and pits created by the removal of such miscellaneous improvements as required here within.

3.07 CLEARING AND GRUBBING

A. Prior to the start of actual grading operations, the site should be cleared and grubbed of vegetation, existing rubble, debris and other deleterious materials in

accordance with Section 10 – Clearing and Grubbing of the Standard Specifications for Public Works Construction, dated September 1986.

B. Any stumps and roots larger than 3 inches in diameter shall be removed to a depth not less than 18 inches below the original grade level. Fill voids with select fill to maintain indicated grade.

C. No excavation or filling shall be undertaken until area has been cleared and grubbed.

D. The Contractor shall protect from injury and damage all surrounding plants, walks, pavement, lawn, buildings, utilities, etc., and shall leave all in as good a condition as at present. Any damage to existing improvements shall be repaired or replaced by the Contractor to the satisfaction of the Engineer.

E. Recycling Green Waste: Where a commercial composting or recycling facility is available on the island on which the project is situated and where economically practical, deliver the green waste material (e.g. yard debris and tree trimming, logs and stumps, untreated wood, etc.) to a composting or recycling facility for recycling. Confirm the types and condition of acceptable green waste material with the composting facility and pay all applicable charges. Submit a copy of the receipt for disposal (e.g. tipping fees) to the Engineer.

3.08 DISPOSAL

A. All removed materials with no salvage value shall be removed from the premises. All removed material with salvage value as determined by the Engineer shall be neatly stored on the premise as direction by the Engineer.

B. Excessive accumulation of debris, rubbish and dirt will not be permitted. All material or debris shall be removed regularly from the site. A fog spray or other dust settling method shall be employed to dampen areas where there is excessive dust and dirt.

C. All items to be later reused shall be carefully removed, inspected by the Engineer, and neatly stored away. Items damaged during the removal work shall be replaced with new of the matching type, size and shape at no cost to the State.

D. Comply with Federal, State and local hauling and disposal regulations.

3.09 CONTRACT ZONE LIMITS

The Contract Zone Limits shown on the plans indicate only in general the limits of the work involved. The Contractor, however, is required to perform any and all necessary and incidental work which may fall outside of these demarcation lines. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits, except as provided hereinbefore, and not to spread his equipment indiscriminately about the area.

3.10 CLEAN-UP

Clean-up and remove all debris accumulated from construction operations from time to time, when and as directed. Upon completion of the construction work and before final acceptance of work, remove all surplus materials, equipment, etc., and leave entire job site clean and neat to the satisfaction of the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02230.1	Site Clearing	Lump Sum (L.S.)

END OF SECTION

SECTION 02370 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 GENERAL REQUIREMENTS

A. Temporary erosion and siltation control measures as described herein shall be applied to any erodible material within this project, including local material sources and work areas.

B. The Contractor shall be responsible for providing the necessary erosion control measures which are shown on the plans or which may be ordered by the State. All grading operations shall be performed in conformance with the applicable provisions of the “Water Pollution Control and Water Quality Standards” contained in the “Public Health Regulations,” State Department of Health.

C. The Contractor shall be responsible for promptly (i.e. next day after storms) removing all silt and debris resulting from his work and deposited in drainage facilities, roadways, neighboring lands, and other areas.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Submit three (3) sets of the erosion control materials for acceptance by the Engineer. Furnish all labor, materials, services, equipment and related items necessary to implement the temporary erosion control measures, submitted separately, as required by these specifications and as ordered by the Engineer during the life of the contract to control water pollution through the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

1.04 REFERENCES

Work shall be governed by the County’s “Standard Specifications for Public Works Construction” (Standard Specifications), dated 1986 as revised, except as amended in the plans and specifications herewithin. (Paragraphs concerning Measurement and Payment in the Sections are not applicable to this project.) Work shall be governed by the County’s “Standard Specifications for Public Works Construction” (Standard Specifications), dated 1986 as revised, except as amended in the plans and specifications herewithin. (Paragraphs concerning Measurement and Payment in the Sections are not applicable to this project.)

PART 2 - PRODUCTS

2.01 MATERIALS

Mulches: To be bagasse, hay, straw, fiber mats, netting, wood cellulose, bark, wood chips, or other suitable material acceptable to the Engineer, and shall be reasonably clean and free of noxious weeds and deleterious materials.

PART 3 - EXECUTION

3.01 TEMPORARY EROSION CONTROL

A. The Engineer has the authority to limit the surface area exposed by clearing and grubbing and to limit the surface area exposed by excavation, borrow and fill operations. The Engineer may also direct the Contractor to provide immediate, permanent, or temporary pollution control measures to prevent contamination of streams, lakes, ponds, drainage channels and pipes, roads, neighboring lands, and other areas.

B. Except for specified measures which may be shown on the plans, the Contractor shall determine the appropriate erosion control measures to use. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, and slope drains, and the use of temporary mulches, mats, and grassing, or the construction and use of other control devices or methods as necessary to control erosion.

C. The Contractor shall limit the surface area exposed by grubbing, stripping of topsoil, and grading to that which is necessary for him to perform the next operation and which is within his capability and progress in keeping the finish grading, mulching, grassing, and other such pollution control measures current.

D. The grubbing of the vegetative root mat and stumps and the stripping of topsoil shall be confined within the limits of grading which can be actively and continuously prosecuted within 15 calendar days. The area to be graded shall be limited to the minimum area necessary to accommodate the Contractor’s equipment and work force and shall not at any time exceed 1 acre, unless otherwise stated on plans, without prior acceptance of the Engineer.

E. Any area remaining bared or cleared for more than 10 calendar days and which is not within the limits of active construction shall be immediately hydro-mulch seeded or remedied as directed by the Engineer at the Contractor’s expense without cost to the State. All areas where finish grading has been completed shall be grassed within three calendar days after the completion of grading for that area, as applicable.

F. As applicable to the scope of work, the Contractor shall, at the end of each work operation in any one day, shape the earthwork in such a manner as to control and direct the runoff to minimize the erosion of soils. The Contractor shall construct earth berms along the top edges of embankments or along the property line with adjacent properties, streams and water channels, to intercept any runoff. Temporary slope drains shall be provided to carry runoff from the top of cuts and

fills. Temporary facilities for controlled discharges shall be provided for runoff impounded, directed, or controlled by project activities or by any erosion control measure employed.

G. The temporary erosion and siltation control measures outlined in these specifications are minimum requirements and shall not preclude the provision of any additional measures which the Contractor may deem necessary. Damages caused by the erosion of soils and the pollution of downstream areas shall be the responsibility of the Contractor and all costs for repairing, correcting, replacing and cleaning damaged or polluted facilities shall be borne by the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02370.1	Erosion and Sedimentation Control	Lump Sum (L.S.)

END OF SECTION

SECTION 02650 – UNDERGROUND STORAGE TANK CLOSURE

PART I – GENERAL

1.01 SUMMARY

A. The work consists of closure in place of one empty 1,000-gallon capacity double-walled fiberglass reinforced plastic underground storage tank (UST), associated fuel piping, and ancillary equipment.

1.02 RELATED DOCUMENTS

A. The GENERAL PROVISIONS of the Contract, including SPECIAL PROVISIONS and General Requirements of the Specifications, apply to the work specified in this section.

1.03 REFERENCES

A. All work shall be performed in accordance with applicable federal, state, and county regulations, standards, and guidance including but not limited to the following. It is the Contractor's responsibility to ensure that all work is conducted in accordance with applicable federal, state, and county regulations, standards, and guidance.

B. Hawaii Administrative Rules (HAR)

1. HAR 11-280.1, USTs.

2. HAR 12, Subtitle 8, Hawaii Occupational Safety and Health.

C. State of Hawaii Department of Health (DOH)

1. DOH Solid and Hazardous Waste Branch UST Release Response Guidance.

2. DOH Hazard Evaluation and Emergency Response (HEER) Office Technical Guidance Manual (TGM) for the Implementation of the Hawaii State Contingency Plan, Interim Final-November 12, 2008.

3. DOH HEER Office Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material, October 2017.

D. National Fire Protection Association (NFPA)

1. NFPA 30, Flammable and Combustible Liquids Code.

2. NFPA 326, Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair.

E. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

F. American Petroleum Institute (API)

1. API Closure of Underground Petroleum Storage Tanks, API Recommended Practice 1604, Fourth Edition.

2. API Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks, API Standard 2015, Eight Edition.

1.04 QUALIFICATIONS AND DOCUMENTATION

A. Contractor shall have at least five years of experience removing and closing USTs in accordance with HAR 11-280.1.

B. Contractor shall obtain the services of a Qualified Environmental Professional (QEP). The QEP shall have at least five years of experience performing UST closure assessments in accordance with HAR 11-280.1.

1.05 SUBMITTALS

A. Preconstruction Submittals: Before start of work, submit to Engineer the following documents for review and acceptance. Do not begin work until these submittals are returned with the Engineer's approval indicating that the information contained in the submittal is concurred by the Engineer.

1. DOH UST Closure Notifications: The Contractor shall submit a completed DOH Notice of Intent (NOI) to Close UST form to the Engineer for approval prior to submittal to the DOH. The Contractor is required to submit the NOI to the DOH 30 days prior to the scheduled UST closure date, as described in HAR 11-280.1. The Contractor shall verbally confirm the UST closure date with the DOH seven days prior to the scheduled closure date.

2. Kuai Fire Department (KFD) UST Closure Notification: The Contractor shall submit the KFD Closure Notification to the Engineer for approval prior to submittal to the KFD. The Contractor is required to submit the KFD UST Closure Notification to the KFD 30 days prior to the scheduled UST closure date.

3. Work Plan and Sampling/Analysis Plan (WP/SAP): The Contractor's QEP shall prepare a WP/SAP. The WP/SAP shall be submitted to the Engineer within 15 days of Notice to Proceed. At a minimum the Work Plan and Sampling/Analysis Plan shall include the following:

   a. Site description.

   b. Physical settings (including regional site geology and hydrology).

   c. Contractor name, contact information, and qualifications.

   d. QEP name, contact information, and qualifications.

   e. Project organization and contact list.

   f. Laboratory name and contact information.

   g. Project schedule.

   h. Description of UST system.

   i. Approvals and notifications.

   j. UST system removal procedures.

   k. Excavation and material handling plan.

   l. Stockpiling procedures and requirements.

   m. UST system cleaning procedures.

   n. Field screening procedures.

   o. Tank contents, soil, and stockpile sampling and analysis plan
   .

   p. Project action levels.

q. Data quality assurance and quality control plan.

r. Decontamination procedures.

s. Waste management plan.

t. Field documentation and reporting procedures.

u. Site layout map.

4. Site-Specific Health and Safety Plan (SSHP): The SSHP shall be submitted to the Engineer within 15 days of Notice to Proceed. Incorporate the requirements of 29 CFR 1926. At a minimum, the SSHP shall include the following:

a. Health and safety organization, including discussions of distribution of functions and responsibilities.

b. Organization and components of the SSHP.

c. Physical and chemical site hazard identification.

d. Basic toxicology and toxicity information.

e. Discission of the exclusion and contamination reduction zone.

f. Personal protective equipment.

g. Air quality monitoring.

h. Personnel exposure guidelines.

i. Decontamination procedures.

j. Basic first aid review.

k. Emergency contact list, response, and contingency plan.

l. Site entry and exit procedures.

B. Closeout Submittals

1. UST Closure Assessment Report: The Contractor's QEP shall prepare a UST Closure Assessment Report. The report shall be submitted to the Engineer for approval prior to submittal to the

DOH. The Contractor is required to submit the DOH UST Closure Assessment Report to the DOH within 45 days of the UST removal. At a minimum, the UST Closure Assessment Report shall include the following:

a. Executive summary.

b. Site description.

c. Physical settings (including regional site geology and hydrology).

d. Description of UST system.

e. Description of any deviations from the WP/SAP and rationale.

f. Description of UST system excavation.

g. Description of UST cleaning and disposal.

h. Field measurements.

i. Sampling procedures and analytical results.

j. Summary table of analytical results compared to project action levels.

k. Data quality assurance and quality control evaluation.

l. Description and documentation of waste disposal.

m. Conclusions and Recommendations.

n. Maps (including site location, site layout, sample location map, cross-section of UST excavation).

o. Photographs of UST removal and closure activities.

p. Laboratory reports and chain-of-custody forms.

q. Waste disposal manifests.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. The Contractor shall provide the materials and equipment required to perform this work.

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. The QEP or a representative of the QEP shall be onsite at all times during UST system closure and removal work.

B. Submit UST closure notification to Engineer, DOH, and HFD.

C. Uncover, vent, and cut open UST.

D. Clean interior of UST.

E. Excavate and remove UST, piping, and ancillary equipment.

F. Inspect interior and exterior of UST.

G. Perform UST closure assessment, collect soil samples, and analyze soil samples in accordance with DOH UST closure requirements, standards, and TGM.

H. Dispose of tank cleaning rinsate, UST, piping, and ancillary equipment in accordance with applicable federal, state, and county regulations.

I. Backfill excavations in accordance with Section 02225.

J. Pea gravel removed from the UST and piping excavations may be reused as fill in the UST system excavation if no release of diesel fuel is identified, no sign of contamination (e.g., petroleum odor or staining) is observed in the pea gravel, and the pea gravel meets the requirements of Section 02225.

K. If excavated soil is to be reused as backfill at the site it must be characterized in accordance with DOH HEER Office guidance, all DOH contaminants of concern associated with diesel fuel are below the applicable DOH HEER Office Tier 1 EALs, and the soil meets the requirements of Section 02225.

L. Excavated soil and pea gravel may not be reused off-site.

M. Dispose of excavated spoils (e.g., excavated pea gravel and soil) that are not reused to backfill the excavations.

N. Excavated spoils that will be disposed of shall be characterized and disposed of in accordance with applicable federal, state, county, and disposal facility regulations, standards, and guidelines.

O. Prepare a UST closure assessment report in accordance with DOH regulations.

P. Should a suspected release or confirmed release be identified from the UST system, the Engineer shall be notified within 24 hours of the discovery.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured or paid for separately but shall be considered incidental to and included in the various bid prices for the various work items in this project.

B. Payment for all work associated with contaminated soil including release reporting, additional testing, excavation, stockpiling, transportation, and disposal of contaminated soil shall be paid from the Force Account Item Contaminated Soil in the Proposal.

END OF SECTION

SECTION 02770 - CONCRETE WALKWAYS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 SUMMARY

The work covered by this section consists of furnishing all labor, materials, equipment tools and incidentals necessary to construct cast-in-place concrete walkways with color and finish to the line and grade shown on the Plans and as specified herein.

1.03 RELATED DOCUMENTS

A. Related work not included in this Section:

1. SECTION 03000 - CONCRETE RELATED WORK.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS.

B. Submit three (3) compressive strength 28-day tests for each day's pour as sampled and tested by the approved laboratory. The cost for all sampling, testing, and re-sampling and testing shall be borne by the Contractor.

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cubic yards, but less than 25 cubic yards.

C. Transmit Mix Delivery Slips:

1. Keep records showing time and place of each pour of concrete, together with transmit mix delivery slips certifying contents of the pour. The Contractor shall ensure that all stamps and log data are accurate, clear and legible, including the time stamp upon leaving the yard, the time of arrival at the job site, the time at the start of the unloading, the time unloading is finished, and the time of departure from the job site.

2. Deliver the records and delivery slips to the Engineer upon completion of the concrete placement work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall be in accordance with the following sections of the "Hawaii Standard Specifications for Road and Bridge Construction", date 2005, except as amended in the plans and specifications herein.

1. Forms .....503.03(C)

2. Structural Concrete 601

3. Joint Sealer 705.01

4. Joint Sealer 705.04

5. Aggregate for Untreated Base 703.06

6. Welded Wire Fabric Reinforcement 709.01

7. Dowels 709.01

8. Curing Materials 711.01

PART 3 - EXECUTION

3.01 ALIGNMENT, LAYOUT, AND PREPARATION

A. Layout the walkways as indicated.

B. Before erecting forms, the subgrade or subbase shall be graded and compacted. Wherever unsuitable material is encountered, it shall be removed and replaced with select borrow and compacted to the required elevation.

3.02 FORM CONSTRUCTION

A. Set forms to the required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of the work, and so that forms can remain in place at least 24 hours after concrete placement.

B. Check completed form work for grade and alignment to the following tolerances:

1. Top of form units: Not more than 1/8-inch in 10 feet.

2. Vertical face: Longitudinal axis, not more than 1/8-inch in 20 feet.

C. All forms, wood or metal, shall be clean and oiled prior to setting in place. The erected forms shall be adequately secure to prevent movement in any direction during placement of the concrete.

3.03 CONCRETE PLACEMENT AND CURING

A. Concrete placement shall be as specified in the DPW Standard Specifications. Reinforcing steel shall be installed as indicated.

B. Prior to pouring concrete, the prepared subgrade or subbase shall be dampened. The concrete shall be poured, spaded, and tamped thoroughly into the forms.

C. Curing and protection shall be as specified in the DPW Standard Specifications.

D. Barriers shall be erected and maintained at least 5 days to prevent accidental damage to the curb.

3.04 JOINTS

A. Joint construction shall be as specified in the DPW Standard Specifications.

B. Expansion Joints

1. Construct expansion joints as indicated.

2. The joints shall be constructed with pre-molded expansion type filler.

C. Crack Control Joints: Construct crack control joints at a spacing not to exceed 5-foot intervals.

D. Joint Sealant: Joint sealant shall be applied in accordance with the manufacturer's recommendations.

3.05 FINISHING

A. Strike-off, consolidation and tamping shall be in accordance with the DPW Standard Specifications.

B. Surface Finish: Broom finish, as shown on the Drawings. Provide non-slip finish.

C. All concrete walkways shall have a uniform color and surface texture, which shall be subject to acceptance by the Engineer.

3.06 SURFACE TOLERANCES

The finished surface of the sidewalks shall be within 0.02 foot above or below the theoretical grade.

3.07 PATCHING

Within 3 days after stripping formwork, fill and patch surface defects such as rock pockets, honeycombs, cracks, and holes. The Engineer will distinguish between concrete that requires replacement or repair and surface defects that requires patching. Permission to patch any area will not be construed as a waiver of the State's right to require complete removal of the defective work if the patching, in his opinion, does not satisfactorily restore the quality and appearance of the surface.

3.08 CLEANING

Repair and clean all curb damaged, discolored, or splashed with asphalt or concrete during construction. Damaged section shall be removed entirely and reconstructed. No patching or refinishing shall be permitted.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02770.1	Concrete Walkway	Lump Sum

END OF SECTION

SECTION 02820 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 SUMMARY

Furnish materials, labor and equipment necessary to install all chain link fences and the gates to the limits shown and as detailed on the plans and as specified herein.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS.

B. Submit manufacturer's literature and data on fence materials showing compliance with these specifications.

C. Product Data: Submit product data of construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates, including the following:

1. Fence and gate posts, rails, and fittings.

2. Chain-link fabric, reinforcements, and attachments.

3. Gates and hardware.

D. Submit shop drawings showing the locations of fences, gates, posts, rails, tension wires, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

1.04 GENERAL REQUIREMENTS

A. All work shall be in accordance with the "Hawaii Standard Specifications for Road and Bridge Construction", date 2005. Paragraphs concerning Measurements and Payments in the Sections are not applicable to this project.

1.05 QUALITY ASSURANCE

Installer Qualifications: An experienced installer who has completed chain-link fences, corrugated roof fences, and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall be in accordance with the following sections of the “Hawaii Standard Specifications for Road and Bridge Construction”, date 2005, except as amended in the plans and specifications herein.

1. Chain Link Fence Materials.....722

B. Chain Link Fence Fabric: Shall be 9 gauge, 2-inch mesh. Zinc-coating shall be by hot-dip process after fabrication but before weaving. Zinc coating shall conform to Type I, Class D coating, AASHTO M 181-98 (2002). The fence fabric mesh shall have knuckled edges at the top and bottom of the fabric.

C. Tie Wire: Shall be 13-gauge zinc-coated steel or aluminum wire. Zinc-coated steel or non-corrosive metal bands acceptable by Engineer may be used for fastening chain link fabric to posts and gate frames.

D. Tension Bar: Shall be 3/16" thick by 3/4" wide mild steel bar for attachment of fence fabric to a terminal post.

E. Brace Band: Shall be formed from steel bands at least 1/8” thick by 3/4" wide.

F. Tension Band: Shall be formed from steel bands at least 12 gauge thick by 3/4" wide.

G. Fittings:

1. Post Cap shall be of one-piece cast iron construction and shall attach securely onto their respective posts.

2. Rail Ends shall be snug, one-piece fittings for top and bottom rails with holes to receive 5/16" bolts for securing to rail end bands.

H. Composition and Finish of Metal Parts: All metal parts and fittings, including gate hardware and frames, shall be of steel, malleable iron or wrought iron and shall be galvanized by the hot-dip process, after fabrication, in conformance with ASTM A153. The coating on all parts shall be continuous and smooth; that is, free from barbs, icicles or other projections. Bolts may be cadmium-plated in conformance with ASTM A165 instead.

I. Posts, Rails, and Braces: Shall be of standard weight, hot-dipped galvanized, welded and seamless steel pipes conforming to ASTM A120 or hot-dipped galvanized pipes with chromate conversion and polyurethane coatings (“Tuf 40” by American Tube Co., Inc. or approved equal). Posts of the latter type of pipes shall be sized in accordance with and have the minimum properties shown on the plans.

J. Gates: Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under section 2.I. The fabric shall be of the same type material as used in the fence. Gates should open to an angle of at

least 90 degrees. Provide hinges designed to clamp securely to gate post, and permit gate to swing back against fence. Hinges should be such as to preclude unauthorized removal. Provide gates with combination catch and locking attachment of design acceptable to the Engineer.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. General:

1. Metal fencing and gates of the various types called for shall be erected in strict conformance with the plans and these specifications. The gates and hardware shall provide intended freedom of operation. Posts shall be plumb and in line. No splicing of posts or rails shall be accepted. End, corner, and gate posts for fences shall be braced to the nearest line post with horizontal braces. The horizontal braces shall be spaced midway between top and bottom rails and securely fastened to posts as shown on plans.

2. Horizontal rails shall be installed at the top, bottom, and midpoint of the posts or as shown on the drawings.

3. Field Touch-ups: Field welds shall be cleaned of flux and spatter and all damaged galvanizing removed, all hazardous projections ground off, properly prepared, and then heavily coated with self-curing inorganic zinc coating. Manufactured coatings shall be applied in strict accordance with manufacturer's printed specifications. Damage to existing painted surfaces shall be touched-up.

B. Fence Posts shall be spaced not more than 10 feet apart.

C. Top Rails and bottom rails for fences shall span between each end, corner, or gate post, and be securely fastened to each post with rail ends and brace bands.

D. Chain Link Fabric shall be fastened on the side of the posts as designated, and shall be mounted on the posts so that the bottom of the fabric will be no more above the existing finish grade than called for on the plans. The fabric shall be stretched taught and securely fastened to the posts. Ends of wire ties shall be bent back so as not to be a hazard. Between posts, the top edge of the fabric shall be fastened to the top rail and the lower edge to the bottom rail with tie wire of size and at spacing as called for on the plans. Tension bars extending the full height of the fence and tension bar bands shall be used for fastening fabric to end, corner, pull and gate posts.

E. Bolted Tension Bands shall be placed at top and bottom of stretcher bars and spaced at 12-inch intervals. Fastenings to line posts shall be made with tie wire of size and at spacing as called for on the plans.

F. Gate Installation: Install swing gates and gateposts in compliance with ASTM F 567. Direction of swing shall be as indicated on the drawings. Gates shall be plumb in the closed position having a bottom clearance of three (3) inches, finish grade permitting. Hinge and latch offset opening space shall be no greater than three (3) inches in the closed position.

3.02 FINAL CLEAN-UP

All exposed metal surfaces shall be clean and free of cement. All debris resulting from work of this section shall be removed from the site.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. All work specified under this Section shall be paid for at the contract lump sum price. The price shall be full compensation for all labor, materials, tools, equipment, and all incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02820.1	Chain Link Fences and Gates	Lump Sum

END OF SECTION

SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 SUMMARY

A. Section includes grass planting materials, installation, and maintenance procedures.

B. Furnish all labor, materials, equipment and tools for grass planting as specified herein. Grass shall be planted in areas indicated on the plans and as listed below:

1. All existing grassed areas that are damaged by construction operations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Graded and damaged grass areas shall be grassed with grass type equal to or similar to existing adjoining grassed areas. At the option of the Contractor, grass planting may be by seeds (plain seeding or by hydro-mulching) or by sprigs.

1. Grass seeds shall be fresh, hulled and meet the following requirements:

a. Pure Seed 95.0% minimum.
b. Crop Seed 1.0% maximum.
c. Weed 0.5% maximum.
d. Inert Material 5.0% maximum.
e. Germination 85% minimum.

B. Grass seeds shall be delivered to the site in unopened, sealed containers, labeled with the brand name and percent purity. Labeling shall indicate that the seeds passed a certified germination test no more than 12 months prior to use.

C. Grass sprigs shall be healthy living runners and stolons, a minimum of 6 inches long with at least 3 nodes. After they are dug, they shall be covered and kept moist until planted.

D. Fertilizer shall be pelleted and shall consist of the following percentages by weight of active ingredients:

1. NITROGEN 16%

2. PHOSPHATE 16%

3. POTASH 16%

E. Mulch shall be specially processed fiber containing no growth or germination-inhibiting factors. It shall be such that any addition and agitation in the hydraulic equipment with seed, fertilizer, water and other additives not detrimental to plant growth, the fibers will form a homogeneous slurry. When hydraulically sprayed on the soil, the fibers shall form a blotter-like ground cover which readily absorbs water and allows infiltration to the underlying soil.

F. Stabilizing and water retaining agent for hydro-mulching option only shall be "Verdyol Super", "Ecology Control m-Binder" or approved equal. Rate of application of "Verdyol Super" shall be 50 lbs./acre and that for "Ecology Control M-Binder" shall be 60 lbs./acre.

G. Organic amendments shall be brown, gray or black in color. It shall be free of live seeds, cuttings, fungus, spores and foul odor. It shall also not contain resins, tannin or other materials in quantities that would be detrimental to plant life. Soil amendment shall be one, or a combination of the following:

1. Burnt bagasse mix shall be a mixture of sugar cane ash, aged sugar cane trash and milled forest waste products.

2. Redwood shavings shall be a nitrogen-stabilized compost of redwood material passing through a 1/2 inch screen.

3. Peat moss.

4. Shredded hapuu shall be finely shredded hapuu fern.

5. Macadamia nut husks shall be air-classified fine husk, sifted through a 1/4 inch screen and free of shells.

6. Composted green waste shall be stabilized compost of recycled green waste material passing through a 1/2 inch screen. The material shall not contain any treated or painted woods.

H. Screened soil for repair work shall be a fertile, friable soil of loamy character and shall contain organic matter. It shall be obtained from well-drained arable land; be free from weeds, stone and debris; and shall pass a maximum 1/2 inch screen. Screened soil shall be capable of sustaining healthy plant life.

I. Water shall be potable.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Site Preparation:

1. Before tilling and adding any soil, amendments require weeds and other obnoxious vegetation be removed by manual or chemical methods.

2. The Contractor shall notify the Engineer three (3) days before soil conditioning and tilling work is to be done.

   a. A 1-inch layer of organic soil conditioner shall be placed over all planting areas. The material shall then be roto-tilled a minimum of 2 inches into the existing soil until the latter is loose and fine textured. All rocks larger than 1 inch in diameter and all debris such as stumps, roots, wire, grade stakes and other rubbish that are turned up by tilling shall be removed. Tilling shall be omitted on slopes where watering is likely to wash the soil away.

3. Any undulations or irregularities in the surface resulting from tilling or other operations shall be leveled out before planting operations are begun.

B. Planting:

1. The Contractor shall notify the Engineer three (3) days before planting of grass.

2. Immediately prior to planting operations, all planting areas shall be cleared of weeds, debris, rocks over 1/2 inch in diameter and clumps of earth that will not break up.

C. If grass seeds are used, the following procedure shall be used (Note: Contractor should exercise caution in seeding slopes where seeds may be washed away):

1. The grass seeds shall be broadcast uniformly by hand or by sowing equipment at the rate of 100 lbs/acre. Half the seeds shall be sown with the sower moving in one direction and the remainder shall be sown at right angles to the first direction.

2. The surface shall then be raked to a smooth even plane while the seeds are simultaneously worked in to the soil to a depth of about 1/2 inch.

3. The surface shall then be smoothed and compacted by means of a culti-packer, roller or other similar equipment weighing 60 to 90 pounds per lineal foot of roller.

4. The planted area shall then be watered sufficiently to provide water penetration to a depth of at least 2 inches and shall then be kept moist until roots are established.

D. Grass Planting by Sprigs:

1. Furrows shall be placed perpendicular to drainage aisles and parallel to contours on slopes and shall be spaced no more than four (4) inches apart.

2. Fresh sprigs shall be planted in each furrow a maximum of six (6) inches apart and covered with soil to a minimum depth of two (2) inches.

3. The surface shall then be smoothed and compacted by means of a culti-packer, roller or other similar equipment weighing 60 to 90 pounds per lineal foot of roller.

4. The planted areas shall be watered immediately after rolling in sufficient quantity to provide water penetration to a depth of at least two (2) inches and shall then be kept moist until roots are established.

5. The area shall then be overseeded with annual rye grass seeds at the rate of 25 lbs/acre.

E. Hydro-mulching of Grass Seeds: This work shall consist of furnishing and applying hulled proposed grass seed, fertilizer, mulch and stabilizing and water retaining agent by hydro-mulching.

1. The seeds shall be applied at the rate of 100 lbs/acre minimum. Mulch shall be applied at a rate of 500 lbs/acre minimum (31 lbs. Per 900 sq. ft.). In every application, complete and uniform coverage of the soil shall be attained.

2. First application of fertilizer shall be included with mulch and seed.

3. The hydro-mulch equipment shall be capable of mixing all the necessary ingredients to a uniform mixture and to apply the slurry to provide uniform coverage. Seed, fertilizer, mulch mix and stabilizing water retaining agent shall be applied in one operation by hydraulic equipment made specifically for this use. The equipment shall have a built-in agitation system with an operating capacity sufficient to keep the mix in uniform distribution until pumped from the tank. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with hydraulic discharge spray nozzles which provide a uniform distribution of the slurry.

4. Areas inaccessible to hydro-mulching application shall be seeded or hand sprigged and fertilized by approved hand methods.

5. Water shall be applied immediately following mulching and the planted area shall then be kept moist until roots are established.

F. The Contractor shall notify the Engineer three (3) days before application of fertilizer.

1. Fertilizer shall be distributed uniformly over planted area.

2. The first application of fertilizer shall be applied at the rate of 300 lbs/acre about two (2) weeks after grassing and shall be followed by watering. (First application of fertilizer if using hydro-mulching option shall be mixed with the seeded mulch).

3. The second application of fertilizer shall be applied at the rate of 300 lbs/acre about one week before the end of the maintenance period and shall be followed by watering.

G. Maintenance:

1. General: The Contractor shall be responsible for the proper care of the grassed areas. Maintenance shall include watering, weeding, mowing, repairing, regressing and protection, and shall be required until the entire project is accepted, but not less than a maintenance period of 90 days after planting of grass.

2. Watering: After planting of seeds or grass sprigs or mulching, the ground shall be watered as deemed necessary by the Contractor to establish a healthy growth. Watering shall be done in a manner that will prevent erosion due to the application of excessive quantities of water, and the watering equipment shall be of a type that will prevent damage to the finished surface.

3. Weeding: Weeds shall be uprooted and removed completely and in no case shall be allowed to grow and propagate more seeds. Large holes caused by weeding shall be filled with screened soil and raked level.

4. Mowing: Grass shall be mowed to a height of one (1) inch whenever the height of the grass becomes 1-1/2 inches.

5. Repairing and Re-grassing: When any portion of the surface becomes gullied or otherwise damaged and grass has failed to grow, such areas shall be repaired with screened soil and replanted with grass. Any area of one foot square or more in which grass has failed to grow after 30 days of maintenance shall be re-grassed.

6. Protection: The grassed areas shall be protected against traffic so that the grass establishes a healthy growth. Grasses areas damaged by traffic shall be replanted.

3.02 ACCEPTANCE OF GRASSING

A. At the time of acceptance, the grass shall have been well-established and shall be given a final weeding and a final mowing to a height of 1 inch. If the maintenance period has expired before acceptance of the entire project, the Contractor shall continue to maintain the grass until acceptance of the entire project. If the maintenance period should extend beyond acceptance of the entire project, the Contractor shall continue to maintain the grass until the end of the specified period of time required for maintenance.

B. At the end of the maintenance period, should there appear areas where grass has failed to grow, such areas shall be replanted with grass, re-fertilized and maintained beyond the maintenance period until a healthy growth is established.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Item No.	Item	Unit
02920.1	Lawns and Grasses	Lump Sum

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03000 - CONCRETE AND RELATED WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section.

1.02 SUMMARY

A. Furnish all labor, tools and equipment required for all concrete and related work for a complete and proper installation as indicated on the contract drawings.

B. The following sections cover work related to this work:

1. SECTION 02770 - CONCRETE WALKWAYS.

2. SECTION 03300 - STRUCTURAL CONCRETE.

1.03 GENERAL REQUIREMENTS

A. Provide concrete, forms, and reinforcement for work incidental to site and utility improvements.

B. All work shall be in accordance with the following Sections of the “Hawaii Standard Specifications for Road and Bridge Construction”, date 2005. Paragraphs concerning Measurements and Payments in the Sections are not applicable to this project.

1. Reinforcing Steel 602

2. Portland Cement 701.01

PART 2 - PRODUCTS

2.01 MATERIALS

Materials shall be as specified in related Sections of these specifications.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Furnish and install all inserts, metal ties, nailing blocks and other items to be built into the concrete before the concrete is poured.

B. Prior to the pouring of the concrete, the subgrade shall be dampened, but there shall be no puddles or pockets of mud on it. Concrete shall be poured

continuously and shall be thoroughly tamped, floated and troweled to a smooth and even surface. Walkways shall match the existing finish or shall be broom finished. The pouring and constructing of alternating blocks shall not be permitted.

C. Curing shall be accomplished by either water curing or impervious membrane curing or a combination of both and shall not be less than three (3) days. No traffic of any kind shall be allowed on the concrete for at least 10 days.

3.02 PROTECTION

A. Provide necessary safeguards and exercise caution against damage or defacement of existing and installed site improvements. Prevent vehicles from passing over sidewalks, curbs, etc., unless adequate protection is provided. Do not store materials, equipment, or operate equipment near or under the branches of existing plants or trees that are to remain, except as required for construction in those areas.

B. Provide and maintain fences or barriers as required to protect the work and provide for public safety.

3.03 CLEAN-UP

Clean up and remove all debris accumulated from construction operations for time to time, when and as directed by the Engineer. Upon completion of the construction work and before final acceptance of work, removal all surplus materials, equipment, etc., and leave entire jobsite clean and neat.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the various bid prices for the various items of work in this project.

END OF SECTION

SECTION 03300 – STRUCTURAL CONCRETE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. The General Provisions of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Slab on Grade

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.04 SUBMITTALS

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

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the DOT-A.

D. Qualification Data: For Installer.

E. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.

2. Admixtures.

3. Form materials and form-release agents.

4. Curing compounds.

5. Bonding agents.

6. Adhesives

F. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates

2. Cement

1.05 QUALITY CONTROL

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

C. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 – PRODUCTS

2.01 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.

b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.

c. Structural 1, B-B or better; mill oiled and edge sealed.

d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

C. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no material closer than 1 inch to the plane of exposed concrete surface.

2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.02 REINFORCEMENT BARS

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

2.03 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from plastic.

2.04 STRUCTURAL CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/II

2. Portland Cement: ASTM C595, Type IL/IIL

B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94 and Potable.

2.05 ADMIXTURES

A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494, Type A.

2. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

2.06 CURING MATERIALS

A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

2.07 RELATED MATERIALS

A. Expansion-and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self- expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, per ASTM D 2240

2.08 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

2. Limit water-soluble, chloride-ion content in hardened concrete to **0.06** percent by weight of cement.

B. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.

2. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.

2. Slump Limit: 5 inches (125 mm), plus or minus 1 inch (25 mm).

PART 3 – EXECUTION

3.01 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.03 REMOVING AND REUSING FORMS

A. General: Formwork for sides of parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by DOT-A.

3.04 REINFORCEMENT BARS

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.05 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by DOT-A.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.

3. Locate horizontal joints in floor slabs.

4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by DOT-A.

C. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straightedge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.07 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive broom finish.

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.09 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.10 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with for ACI 301 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.

b. Continuous water-fog spray.

c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by DOT-A. Remove and replace concrete that cannot be repaired and patched to DOT-A's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by DOT-A.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to DOT-A’s approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to DOT-A‘s approval.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Contractor will engage a qualified testing agency to perform field and prepare test reports.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency shall be as follows:

a. Samples for strength of each class of concrete placed each day shall be taken note less than once a day, nor less than ones for each 150 cubic yards of concrete, nor less than once for each 5,000 square feet of surface area for slabs.

b. If the total volume of concrete is such that the frequency of testing would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
4. Compression Test Specimens: ASTM C 31.

   a. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

5. Compressive-Strength Tests: ASTM C 39; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

   a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
   b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

6. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

8. Test results shall be reported in writing to DOT-A, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by DOT-A but will not be used as sole basis for approval or rejection of concrete.

10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by DOT-A. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by DOT-A.

11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

C. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

3.14 PROTECTION OF LIQUID FLOOR TREATMENTS

A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work. Reinforcing steel shall be included in this payment.

Item No.	Description	Unit
03300.1	Concrete Slab on Grade	Lump Sum

All other structural concrete work specified in this section shall be considered incidental to and included in the bid prices for the various items of work in the project.

END OF SECTION

DIVISION 4 - MASONRY

SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Concrete masonry units.

2. Mortar and grout.

3. Steel reinforcing bars.

4. Masonry joint reinforcement.

5. Miscellaneous masonry accessories.

1.03 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C 1314.

1.05 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

1. Clay Masonry Unit Test: For each type of unit required, according to ASTM C 67 for compressive strength.

2. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.

3. Mortar Test (Property Specification): For each mix required, according to ASTM C 109/C 109M for compressive strength.

4. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.

5. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.

6. Prism Test: For each type of construction required, according to ASTM C 1314.

1.06 SUBMITTALS

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

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

2. Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.

3. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.

4. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Qualification Data: For testing agency.

D. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include material test reports substantiating compliance with requirements.

b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.

c. For exposed brick, include test report for efflorescence according to ASTM C 67.

d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.

2. Cementitious materials. Include brand, type, and name of manufacturer.

3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

4. Grout mixes. Include description of type and proportions of ingredients.

5. Reinforcing bars.

6. Joint reinforcement.

7. Anchors, ties, and metal accessories.

E. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.

2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

F. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.07 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.09 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls and hold cover securely in place.

2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

PART 2 – PRODUCTS

2.01 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.02 CONCRETE MASONRY UNITS

A. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.

2. Density Classification: Normal weight.

3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

2.03 MASONRY LINTELS

A. General: Provide one of the following:

B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.04 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated. ASTM C595, Type IL or IIL may also be used.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C 91.

E. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

3. White-Mortar Aggregates: Natural white sand or crushed white stone.

4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: ASTM C 404.

G. Water: Potable.

2.05 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).

2.06 MISCELLANEOUS MASONRY ACCESSORIES

A. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

2.07 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.08 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

2. Use portland cement-lime, masonry cement, or mortar cement mortar unless otherwise indicated.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270 Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For reinforced masonry, use Type N.

D. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

2. Proportion grout in accordance with ASTM C 476, Table 1.

3. Provide grout with a slump of 8 to 11 inches (203 to 279 mm) as measured according to ASTM C 143/C 143M.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

2. Verify that foundations are within tolerances specified.

3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

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

3.02 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying

unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.03 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).

2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).

3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.

2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.

7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).

2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).

3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).

4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) from one masonry unit to the next.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches (50 mm))]. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.05 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.

2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.

3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.

4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Lay structural-clay tile as follows:

1. Lay vertical-cell units with full head joints unless otherwise indicated. Provide bed joints with full mortar coverage on face shells and webs.

2. Lay horizontal-cell units with full bed joints unless otherwise indicated. Keep drainage channels, if any, free of mortar. Form head joints with sufficient mortar so excess will be squeezed out as units are placed in position. Butter both sides of units to be placed, or butter one side of unit already in place and one side of unit to be placed.

3. Maintain joint thicknesses indicated except for minor variations required to maintain bond alignment. If not indicated, lay walls with 1/4- to 3/8-inch- (6- to 10-mm-) thick joints.

4. Where epoxy-mortar pointed joints are indicated, rake out setting mortar to a uniform depth of 1/4 inch (6 mm) and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.

3.06 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

1. Space reinforcement not more than 16 inches (406 mm) o.c.

2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.07 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

3.08 LINTELS

A. Install steel lintels where indicated.

1. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.

2. Provide minimum bearing of 8 inches (200 mm) at each jamb unless otherwise indicated.

3.09 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of

mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2. Limit height of vertical grout pours to not more than 60 inches (1520 mm).

3.10 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Level 1 inspections according to the "International Building Code."

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.

2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.

3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Prior to Construction: One set of tests.

D. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.

E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.

G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.

H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

I. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

8. Clean stone trim to comply with stone supplier's written instructions.

9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.12 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.

2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 2 Section "Earthwork."

3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified under this Section shall be paid for at the contract lump sum price. The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work. Reinforcing steel shall be included in this payment.

Item No.	Description	Unit
04810.1	CMU Walls	Lump Sum

All other structural concrete work specified in this section shall be considered incidental to and included in the bid prices for the various items of work in the project.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15011 - GENERAL MECHANICAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications apply to the work specified in this Section and to all work of DIVISION 15.

1.02 PLANS

A. The plans and specifications direct attention to certain required features of the materials and equipment but do not purport to cover all details entering into its design and construction. Nevertheless, the Contractor shall furnish and install the mechanical systems complete in all details and ready for operation. The mechanical systems shall be installed substantially as shown on the plans and as specified herein and shall be designed for installation in the area designated with proper space allowed for clearance and maintenance access.

B. Attention is directed to the fact that the plans are based upon certain equipment configurations and that equipment components of other approved equal manufacturers may differ from the arrangement indicated on the plans. If other approved equipment is accepted which require an arrangement different from that indicated on the plans or specified, the Contractor shall prepare and submit for approval, detailed civil, architectural, structural, environmental, mechanical and electrical drawings, layouts, calculations, and equipment lists showing all necessary changes and embodying all special features of the equipment which the Contractor proposes to furnish. The cost of such changes shall be borne by the Contractor at no increase in contract price or extension of contract time for the project.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS

B. General Requirements

1. Data Required with the Submittal: The Contractor shall submit all data sufficient to demonstrate conformance to the requirements of DIVISION 15 – MECHANICAL. The submittal shall include, but not be limited to, manufacturer's name, catalog number or designation, and the electrical and physical characteristics of the equipment. The submittal shall be in the form of printed data sheets, catalog cuts and shop drawings. Reference to manufacturer's literature without enclosing a copy of the referenced document will be considered insufficient.

Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal. Incomplete packages will be returned without a review.

2. Approval Requirements: Approval of material and equipment will be based on manufacturer's published data.

3. Identification: All submittals covering equipment shall be identified with the equipment numbers shown on the contract drawings and the system served.

4. Substitutions

   a. Substitutions shall be subject to the requirements of the General Provisions for Construction Projects (2016). Supporting data shall be furnished for all substitutions. Redesign of civil, architectural, structural, environmental, mechanical, electrical, or any other feature made necessary by the use of substitutions shall be the responsibility of and at the expense of the Contractor, and subject to approval by the Engineer.
   b. Where such approved deviation requires a different quantity and arrangement of piping, wiring, conduit, or equipment from that specified or indicated on the drawings, the Contractor shall furnish and install any such piping, structural supports, controllers, starters, electrical wiring and conduit, and any other additional equipment required by the system at no additional cost to the State.

C. List of Material and Equipment: The Contractor shall submit to the Engineer for approval six (6) sets of a complete list of proposed material or equipment. This list shall include manufacturer's name and material or equipment identification such as styles, types, or catalog numbers, to permit ready and complete identification. Catalog numbers specified herein are given for reference only. The Contractor shall furnish the latest model manufactured.

D. Shop Drawings: The Contractor shall submit to the Engineer for approval six (6) sets of prints of shop drawings in accordance with the requirements of the General Provisions for Construction Projects (2016). Shop drawings shall be submitted for equipment not completely identifiable by information contained in the list of materials and equipment.

1. The Contractor shall submit detailed shop drawings of all equipment and all materials required to complete the project. No material or equipment may be ordered, delivered to the job site or installed until the Contractor has in his possession the approved shop drawings for the particular material or equipment. The shop drawings shall be complete as described herein.

2. Approval rendered on shop drawings shall not be considered as a

guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

3. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of contract time, and no claim for extension by reason of such default will be allowed.

4. Shop drawings shall be submitted for, but not limited to, the following:

   a. Fuel Systems.
   b. All items described in specifications and on drawings.
   c. Other items as the Engineer may direct.

5. Shop drawings shall include as applicable:

   a. Identification of each piece of equipment and component.
   b. Dimensioned layouts and arrangement of equipment.
   c. Operating performance and electrical characteristics.
   d. Foundation and mounting data.
   e. Equipment clearances required for servicing and proper operation.

E. Material Safety Data Sheets (MSDS): The Contractor shall submit to the Engineer for approval six (6) sets of MSDS for materials used in this project. Contractor shall perform all work in accordance with the recommendations of the MSDS, including all tests.

F. As-Built Drawings: The Contractor shall submit to the Engineer one (1) reproducible set of all Contract Drawings corrected to reflect the "AS-BUILT" conditions of the installation. The drawings shall be kept up to date as the job progresses and shall be available for inspection at all times.

G. Certificates: The Contractor shall submit to the Engineer for approval six (6) copies of certificates, acceptance and compliance with regulations of agencies having jurisdiction. Work shall not be deemed complete until such certificates have been delivered to the Engineer. Certificates shall include the following:

1. Fuel Systems Test and Inspection (See SECTION 15193 - FUEL SYSTEMS).

H. One Year Guarantee

1. Contractor shall submit six (6) copies of a written Guarantee that all work is as specified, and shall be bound to replace material or equipment defective due to workmanship or materials. Contractor shall not be responsible, however, for defects proven to the Engineer’s satisfaction to be due to misuse, accident, lack of maintenance, improper operation, or

negligence by other parties.

2. Further, Contractor shall be held responsible for all damages to any part of the premises, building and contents caused by leaks or other defect in pipe, equipment or materials provided under the contract drawings and specifications.

3. Terms of this Guarantee are in addition to other guarantee provisions of the specifications, and do not substitute for other more stringent terms, if any.

4. The Guarantee shall extend for a period of one (1) year after the Project Acceptance Date. The Guarantee shall include all labor, materials, equipment and parts. Should equipment fail and require repair, the entire guarantee period shall be extended by the period of time it takes to repair the equipment. Furthermore, the Engineer has the option to reject any installed equipment if the Contractor violates any of the corresponding equipment manufacturer's guarantee or warranty terms. All rejected equipment shall be replaced with new equipment at no cost to the State.

5. The Installer shall submit six (6) copies of the Guarantee on material and workmanship, countersigned by the Contractor that will validate the Guarantee.

I. Operation and Maintenance Manual

1. The Contractor shall submit to the Engineer for approval six (6) hardbound (heavy-duty, "D" type, 3-ring binder) copies and six (6) compact disks (CD-R) of the Operation and Maintenance Manual on all equipment and the system as a whole. Operation and Maintenance Manual files on CD-R shall be searchable PDF files. The manual shall identify project name and number, contractor, consultant, date and all equipment provided. It shall include the equipment, manufacturer’s name and contact information (phone, facsimile, e-mail, website, and address), model and serial number, tag number, capacity, quantity of units, startup date, and their location.

2. Operation and Maintenance Manual shall be submitted for, but not limited to, the following:

   a. Fuel Systems.
   b. All items described in specifications and on drawings.
   c. Other items as the Engineer may direct.

3. Operation and Maintenance Manual shall be submitted to the Engineer for approval prior to acceptance of each installation. Manual shall include the following:

   a. Manufacturer’s Literature: Adequately indicate, highlight, arrow,

etc. project related information and delete, “X” or cross out non-applicable information.

b. Parts List: Submit a parts list and assembly diagrams showing location, number required and identification for each part and subassembly. Submit source of service and replacement parts.

c. Control and Wiring Diagrams: Submit control and wiring diagrams.

d. Operation Instructions: Submit a brief description of the system(s) with information on the proper control of the system(s) by the operator.

e. Maintenance Instructions: Submit a list of each item requiring inspection, lubrication or service with the description of the proper performance of such maintenance.

f. Maintenance Schedule: Submit a recommended schedule of maintenance activity broken down by recommended frequency of performance (i.e. weekly, monthly, quarterly, semi-annually and annually).

g. Installation Instructions: Submit installation instructions.

h. Approved Manufacturer's product data, shop drawings, test reports, certificates, and warranties.

1.04 MANUFACTURER'S INSTRUCTIONS

A. General: Furnish manufacturer's instructions and data covering installation, operation and maintenance of all materials and equipment. Submittals shall be in six (6) bound copies each.

B. Installation instructions for materials shall include precautions for handling, storage and preparation for field application. Description of other materials and tools required to complete the installation shall be included. Installation instructions for equipment shall include assembly, recommended supports, aligning and connecting for service. The instructions shall include illustrations, diagrams and step-by-step procedures. Instructions should indicate if delegated design services are recommended/required.

C. Operation and maintenance instructions shall include instructions for operation, maintenance, repair, recommended inspection points and periods for inspection in a practical, complete and comprehensive manner. The information shall be arranged in a logical, orderly sequence, including a general description of the equipment and significant technical characteristics. Test, adjustment and calibration information shall be furnished and identified to specific equipment. The instructions shall include illustrations, diagrams, and step-by-step procedures.

D. Spare Parts Data: Spare parts data shall be furnished for each item of equipment. The data shall include a complete list of parts and supplies with current unit prices and source of supply, a list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified hereinafter to be furnished as part of the contract, and a list of additional items recommended by the manufacturer to assure efficient operation

for a period of one (1) year. Components not manufactured by the equipment company such as bearings, seals, and packing shall be identified as to trade name and part and identification number. The foregoing shall not relieve the manufacturer of any responsibilities under the guarantee specified hereinbefore.

E. Identification: The data shall have complete identification throughout using equipment numbers shown on the drawings and indicating the system to which the data pertains.

PART 2 - PRODUCTS

2.01 ASBESTOS PROHIBITION

A. The use of asbestos containing materials is prohibited. The Contractor shall ensure that all materials incorporated in the project are asbestos-free unless specifically approved.

2.02 MATERIALS AND EQUIPMENT

A. Materials and equipment shall conform to the requirements of applicable Technical Specifications and publications specified therein and shall be as shown. Materials and equipment shall be new and shall be the products of manufacturers regularly engaged in the manufacturing of such products. All items shall essentially duplicate materials and equipment that have been in satisfactory use at least two (2) years in the State of Hawaii prior to bid opening and shall be supported by a service organization that is, in the opinion of the Engineer, reasonably convenient to the site of installation.

2.03 NAMEPLATES

A. Each item of equipment shall have manufacturer's nameplate of corrosion resistant metal attached in a conspicuous location. Nameplate data shall include manufacturer's name, address, model number, capacity, rating and such other performance data as required to completely identify the item. In addition, the Contractor shall provide a separate brass tag with rounded edges and corners to carry the equipment designation as shown on drawings and the installation date. Nameplate lettering shall be stamped upper case. Nameplate shall be fastened by means of corrosion resistant metal wire, 14-gage.

2.04 VALVE TAGS

A. Provide one brass tag with rounded edges and corners for each new solenoid valve to carry the solenoid valve designation as shown on the drawings or as instructed by the Engineer. Nameplate lettering shall be stamped upper case. Nameplate shall be fastened by means of wire, 14-gage.

2.05 FACTORY-APPLIED PAINT

A. Ferrous surfaces of equipment shall have baked enamel or galvanized finish as

standard with the manufacturer.

PART 3 - EXECUTION

3.01 QUALITY CONTROL

A. The work shall be performed by workers skilled in the type of work involved under experienced supervision. Where methods of application or installation are specified by commercial standards in DIVISION 15 – MECHANICAL, no departures will be permitted except as specified or as directed by the Engineer.

3.02 INSPECTION AND TESTS

A. The Contractor shall give the Engineer written notice a minimum of seven (7) days prior to inspection and tests. Tests shall be performed as required in DIVISION 15 – MECHANICAL. All work rejected by the Engineer shall be repaired or replaced by the Contractor at no additional cost to the State.

3.03 VERIFICATION OF DIMENSIONS

A. The Contractor shall check all dimensions at the site and shall establish all lines and levels. Equipment shall be located to assure proper grade for piping. The Contractor shall be responsible for correctness of all dimensions and fitting of piping and equipment into the available space. Should field measurements show conditions that require relocation of any work, such conditions shall be reported to the Engineer in advance of installation, and the work shall proceed in accordance with his decision.

3.04 PROTECTION DURING STORAGE

A. All materials and equipment shall be stored in a safe manner, secured from weather, vandalism and theft. All materials shall be stored above the ground or floor level to avoid damage by moisture.

3.05 PROTECTION OF WORK IN PROGRESS

A. Pipe openings shall be closed with caps or plugs until connections are made. Equipment shall be securely covered for protection against physical or chemical damage. In areas exposed to weather, materials unused at the end of each day's work shall be stored in weather-protected locations. Damage to materials or equipment due to the Contractor's neglect shall be repaired or replaced to the satisfaction of the Engineer by, and at the expense of, the Contractor.

3.06 PROGRESS OF WORK AND COORDINATION

A. The work shall be coordinated with the work of other contractors and other trades to avoid interferences, preserve headroom and operating clearances, and to expedite completion of the project.

3.07 INSTALLATION OF EQUIPMENT

A. Installation and adjustments shall be in accordance with the equipment supplier's written instructions. All accessories required shall be properly installed and connected. Supports shall be adequately anchored and vibration isolation shall be installed where required.

3.08 PERMITS, LICENSES AND INSPECTIONS

A. The Contractor shall obtain all permits and licenses required to perform the work, pay all required fees, and shall cooperate with all inspections required by authorities having jurisdiction. Inspections specified in DIVISION 15 - MECHANICAL shall be permitted without interference. Corrections to work as a result of inspections shall be made promptly.

3.09 PAINTING

A. The Contractor shall be responsible for complete coverage in painting all exposed surfaces.

B. The Contractor shall patch and touch-up paint all surfaces damaged and/or disturbed due to Contractor’s operations. All patching and touch-up painting shall match existing surrounding surfaces.

3.10 TECHNICAL SUPPORT

A. The mechanical equipment supplier shall be staffed with factory trained representatives fully capable of providing instruction on routine and emergency maintenance service on all system components supplied for this project.

B. Suppliers shall provide on-site instruction, when requested by the Contractor or the Engineer, at no additional cost to the State.

3.11 FIELD TESTS

A. The Contractor shall be responsible for testing of the installed work, shall provide all labor, equipment and instruments, and shall conduct pressure tests and operating tests on the piping systems and equipment. During pressure tests, all items in piping systems not designed for test pressures shall be removed from, or isolated from the system and shall be reconnected or unblocked after tests are completed. Should operating tests require the presence of manufacturer's representatives, the Contractor shall cooperate with them and shall place at their disposal all assistance, materials and services required to perform such tests. Testing shall be as specified hereinafter.

3.12 TESTING AND BALANCING

A. Prior Tests: Leave concealed work uncovered until required tests have been completed, but if construction schedule requires it, arrange for prior tests on parts

of system as approved.

B. Preliminary Tests: As soon as conditions permit, conduct preliminary or "turn-over" tests of certain equipment as directed to ascertain compliance with specified requirements. Make needed changes, adjustments or replacements as preliminary tests may indicate, prior to acceptance tests.

C. Acceptance Tests: Conduct pressure, performance and operating tests as specified for each system or equipment unit, in the presence of the Engineer, as well as representatives of agencies having jurisdiction.

D. Costs: Furnish labor, materials, instruments and bear costs in connection with all tests. Installed instruments may not be used for tests.

E. Defects: All defects disclosed as a result of the following or other tests or operations shall be promptly repaired by and at the expense of the Contractor and to the Engineer's satisfaction. Contractor shall supply all instruments, labor and tools required by tests. Any defective material, equipment and/or work shall be repaired, adjusted and replaced by new, like materials and equipment, and retested/reinspected before acceptance. Caulking of screwed joints or holes will not be accepted.

F. Certificates: Obtain certificates of approval, acceptance and compliance with regulations of agencies having jurisdiction. Work shall not be deemed complete until such certificates have been delivered to the Engineer.

G. Instructing Operating Personnel: When equipment have been placed in permanent operation, instruct operating personnel in operation and maintenance of equipment. Instruction shall include all normal operations of the system, troubleshooting, review of the Operation and Maintenance Manual and how to obtain replacement parts. Instruction shall also include answering all questions posed by staff.

H. Pressure Tests: Before testing piped systems, remove, or otherwise protect from damage, control devices and other parts, which are not designed to stand pressures used in testing piping.

I. Do not paint, cover or conceal piping, nor connect equipment before testing and obtaining approval.

J. Test piping that will be concealed, in sections as approved. Perform tests in a manner that will not leave any pipe or joint untested.

K. Testing procedures and conditions stated above shall also apply to all of the following tests:

1. Fuel System Tests (See SECTION 15193 - FUEL SYSTEMS).

2. Operating Test.

3.13 OPERATING TEST

A. After installation work has been completed, tested and approved, test equipment under normal operating conditions for periods as directed to check capacities and other details as required demonstrating that they fulfill requirements of the plans and specifications, and that they operate satisfactorily.

B. Where evidence of stoppage appears in piping or equipment, disconnect, clean, repair, and reconnect obstructed parts. Contractor shall bear costs of cutting, patching adjoining work necessitated by such cleaning and repairing.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the various bid prices for the various items of work in this project.

END OF SECTION

SECTION 15193 - FUEL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications apply to work specified in this Section.

1.02 SUMMARY

B. This Section covers the furnishing, installing and testing of a diesel fuel system.

1.03 GENERAL REQUIREMENTS

A. Prospective bidders shall visit the premises and familiarize themselves with all work details and conditions before submitting a bid. Reasonable modifications to indicated arrangements to suit actual conditions shall not constitute a basis for requesting additional funds from the State.

B. Provide all necessary labor, delegated design, materials, operations, equipment, tools and techniques required to furnish and install complete the fuel systems as and within the limits indicated.

C. Prior to ordering materials and equipment, the Contractor shall field verify all existing conditions, materials, sizes and dimensions that affect their work, and shall coordinate their work with all trades involved.

D. Submit written request for interruption of the existing fuel system not less than thirty (30) days prior to the time for which the interruption is requested.

E. Obtain all permits and pay the costs thereof, including but not limited to, County of Kauai, Kauai Fire Department Fuel Tank Permit. Arrange for inspections in sufficient time to avoid delay to the project. Provide copies of inspection reports.

F. Inform Engineer of testing date a minimum of seven (7) days prior to testing system.

1.04 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. SECTION 15011 - GENERAL MECHANICAL PROVISIONS

B. DIVISION 16 - ELECTRICAL

1.05 LAWS, RULES, REGULATIONS AND REFERENCES

A. The entire installation shall comply with the latest applicable rules and

regulations of the County of Kauai, the State of Hawaii and any other applicable laws, codes, rules and regulations whether or not specifically mentioned hereinafter.

B. Codes:

1. Building Code, State of Hawaii and County of Kauai

2. Fire Code, State of Hawaii and County of Kauai

C. References:

1. American Petroleum Institute (API) Publications

a.	API 598	Valve Inspection & Testing
b.	API 607	Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats

2. American Society of Mechanical Engineers (ASME) Publications

a.	B16.21-16	Nonmetallic Flat Gaskets for Pipe Flanges
b.	B16.39-19	Malleable Iron Threaded Pipe Unions: Classes 150, 250, and 300

3. American Society for Testing and Materials (ASTM) Publications

a.	A312-21	Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes

4. National Fire Protection Association (NFPA) Publications

a.	30-18	Flammable and Combustible Liquids Code
b.	70-17	National Electrical Code

5. Underwriters Laboratories (UL) Publications

a.	142-19	Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids
b.	567-21	Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas
c.	2085-97	Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids

1.06 SUBMITTALS

A. General: The Contractor shall submit submittals in accordance with SECTION 15011 - GENERAL MECHANICAL PROVISIONS.

B. Shop Drawings: The Contractor shall submit shop drawings showing the entire work with inverts, sleeves and dimensions. Contractor shall check project drawings to avoid interferences. No fuel system work shall commence until such plans have been approved and accepted by the Engineer. Any deviations from the shop drawings shall require approval by the Engineer.

C. Submit the following:

1. Manufacturer’s product data

2. Shop drawings

3. MSDS

4. Test reports

5. As-built drawings

6. Certificates

7. One-Year Guarantee

8. Operation and Maintenance Manual

9. Aboveground Fuel Storage Tank Manufacturer's Warranty (30-year). The Surety and the Contractor shall not be held liable beyond two (2) years from Project Acceptance Date.

1.07 NOTICES AND OTHER REQUIREMENTS

A. The Contractor shall submit to the County of Kauai, Kauai Fire Department the following:

1. Fuel tank permit application and required documents.

1.08 FUEL SYSTEMS EQUIPMENT MANUFACTURER'S REPRESENTATIVE AND SERVICE CAPABILITIES

A. Furnish the services of a manufacturer’s representative who is factory authorized and trained to perform the services specified. Manufacturer's representative shall have an office in the State of Hawaii unless Manufacturer has no representatives with an office in the State of Hawaii. The manufacturer’s representative shall furnish recommendations and shall be on-site to provide assistance on the following matters:

1. Technical direction of the erection including disassembly and reassembly if required, alignment and testing.

2. Starting equipment and furnishing instruction as to its proper care, operation and maintenance.

1.09 ELECTRICAL WORK

A. Contractor shall provide all wiring, conduits, controls, and disconnects for equipment. Contractor is responsible for coordination of size, voltage, phase, auxiliary contacts, etc. Should any equipment require electrical service or wiring other than as shown on the electrical drawings, inform the Engineer and advise the Electrical Contractor of such changes. All control devices must be installed to operate within the manufacturer's rated current and voltage. All control circuits must be through the respective equipment's disconnect to insure the control circuit being off when equipment disconnect is off. All switches, starters, wiring devices and controls mounted where exposed to weather shall have Type 316 stainless steel NEMA 4X enclosures. Wiring materials and methods shall conform to DIVISION 16 – ELECTRICAL, applicable National Electrical Codes and NEMA standards.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Fuel system equipment to be considered for bid purposes shall be from a manufacturer that has locally stocked spare parts, representation, and support of a factory authorized service organization within 500 miles of the site of installation who has serviced manufacturer's units of comparable type, size and capacity as those specified herein. The manufacturer must have other units of comparable type, size and capacity installed and operating satisfactorily in the State of Hawaii for a minimum of two (2) years prior to bid opening.

2.02 PRODUCT CARRIER PIPE AND FITTINGS

A. Stainless Steel Pipe (Aboveground): Type 316L stainless steel, ASTM A312, Schedule 40, welded joints.

B. Flange Gaskets: Provide non-asbestos compressed material in accordance with ASME B16.21, 1/16-inch thickness, full face or self-centering flat ring type. Gaskets shall contain aramid fibers bonded with styrene butadiene rubber (SBR) or nitrile butadiene rubber (NBR). NBR binder shall be used for hydrocarbon service.

C. Flexible Connectors: Flexible metal hose, corrugated type with braided wire sheath covering, close-pitch annular corrugations, rated for working pressure of at least 125 psig, 12 -inch minimum live length, threaded end connections and shall conform to requirements of UL 567. Metal for hose and braided wire sheath shall be ANSI 300 series stainless steel.

2.03 VALVES

A. Ball Valve: Valve shall be the non-lubricated, double seated, ball type and shall be tested in accordance with API 598 and API 607. Valve shall operate from fully open to fully closed with 90-degree rotation of the ball. Valve shall be capable of 2-way shutoff. Valve shall be constructed of Type 316 stainless steel. Valves shall have one-piece bodies and shall have a minimum bore not less than 55 percent of the internal cross sectional area of a pipe of the same nominal diameter.

B. Solenoid Valve (Anti-siphoning): 2-way, normally closed (i.e. powered open), solenoid operated valve with stainless steel body and FKM elastomeric seal. 120 volt AC, 60 Hz, Type 7, explosion proof Class 1, Division 1, Group A, B, C, D enclosure. Valve shall be ASCO, Magna-Trol or approved equal.

2.04 UNIONS

A. Unions shall conform to ASME B16.39, Class 150. Union materials shall conform to ASTM A312, Grade 316. Dielectric unions shall conform to dimensional, strength, and pressure requirements of ASME B16.39, Class 150. Steel parts shall be plated. Union shall have a water-impervious insulation barrier capable of limiting galvanic current to one percent of the short-circuit current in a corresponding bimetallic joint. When dry, union shall be able to withstand a 600-volt breakdown test.

2.05 ABOVEGROUND FUEL STORAGE TANK

A. Aboveground fuel storage tank shall be rectangular, double-wall, horizontal, protected type, listed and tested in accordance with UL 2085. Capacity of the tank shall be as listed on the drawings. Tank shall be constructed in accordance with UL 142. Annular space insulation material shall be a minimum of 3-inches thick and shall be UL 2085 listed. Tank shall be lined with epoxy, coated with urethane, and furnished with stainless steel fittings. Tank shall be designed for operation at atmospheric pressure only and shall withstand an air pressure test of 1.5 to 2 psi. Both inner and outer tanks shall have openings of sufficient size to meet normal and emergency venting requirements per UL 142, UFC, and NFPA 30. Tank shall bear the UL 2085 label for “Insulated Secondary Containment Aboveground Tank for Flammable Liquids” and provided with a minimum 30-year warranty.

2.06 FUEL POLISHER

A. Fuel polisher shall be furnished in a type 304 stainless steel NEMA 4X enclosure with high-intensity stack light alarm, leak sensor, basket strainer, flow switch and secondary containment flanges. Fuel polisher shall be diesel fuel compatible.

B. Recirculation Pump: Positive displacement, ductile pump housing, TEFC motor enclosure and continuous motor duty.

C. High-Efficiency Fuel Filter: Fuel filter shall remove particulates 3-microns or less.

D. High-Efficiency Coalescer: Coalescer shall remove particulates 5 microns or less and shall have a water removal efficiency rate of 95% or more.

E. Controls: Type 316 stainless steel, NEMA 4X controller enclosure. PLC Based with operator interface touch panel. Automatic pump and anti-siphoning solenoid valve controls based on user defined start/stop times programmed on 7-day, 24-hour time clock.

2.07 FUEL STORAGE MONITORING SYSTEM

A. Underground storage tank monitoring system shall be Veeder-Root Model TLS-450 PLUS or approved equal, NEMA 4 enclosure with automatic tank gauging, tank tightness testing, manway sump leak detection, tank interstitial space hydrostatic sensor, integral printer with 5 spare rolls of printer paper, inventory probe, leak sensors, digital and analog outputs. All components of the system shall be provided by a single manufacturer.

B. The control panel shall be constructed of UL listed, electronic components. The control panel power source shall be 120 volts A.C. The tank gauge probe and sensor monitoring circuits shall be intrinsically safe circuits. Panel shall incorporate self-test system, which will permit operator verification of proper operation of fuel monitoring equipment.

C. The control panel shall include a power on light, audio and visual alarm indicator, alarm test functions, alarm dry contact and color touchscreen display. The system shall produce alarm signals for high or low tank levels and leak detection.

D. The factory assembled, internal tank gauge probe shall be fitted to the tank and shall conduct monthly automatic tank gauging and testing.

E. Tank basin space leak sensor shall be factory fabricated, with a two-wire cable long enough to locate the sensor at the bottom of the tank basin space. The sensor shall detect any liquid in the basin and trigger an alarm.

F. Hydrostatic reservoir sensor shall be factory fabricated, with dual floats to detect high and low brine level conditions in the tank reservoir. The sensor shall trigger a high or low level alarm.

G. Fuel Storage Monitoring Panel Exterior Enclosure: Enclosure shall be NEMA 4X, Type 316 stainless steel with a window to see fuel storage monitoring panel display.

2.08 FUEL STORAGE TANK ACCESSORIES

A. Fill Connection: Provide fill line with an overfill protection device that automatically shuts off fuel supply into the tank when the tank is 95 percent full and shall enter at the top of the tank. Fill line shall extend to within 6-inches from the bottom of tank. From top of tank, fill line shall extend vertically and connect to a tight fit fill adapter with a locking-type cap. Tight fit fill adapter shall be bronze,

fitted with a fluoroelastomer gasket suitable for fuel being provided.

B. Suction Connection: Provide suction line located at the opposite end of tank from fill line. Suction line shall extend to within 6-inches from the bottom of the tank.

C. Atmospheric Vent: Provide an atmospheric vent conforming to applicable requirement of NFPA 30. Vent pipe shall terminate at least 12 feet above grade or 2 feet above roofs of adjacent buildings and located so that discharged vapors will not enter building openings, under building eaves, or downspouts. Provide each tank storing products having a vapor pressure less than one psig with a flame arrestor and sized in accordance with NFPA 30.

D. Emergency Tank Vents: Provide an emergency vent conforming to applicable requirement of NFPA 30 for the primary and secondary tanks.

E. Tank Gauges: Provide each tank with a float-operated direct reading tank gauge. Gauge shall have dual tapes and floats to allow reading product level and water level independently. Provide means to wipe condensate (fogging) from viewing glass when reading gauge.

F. Sounding Rod: Provide wood sounding rod of required length, evenly graduated and marked to read level of fuel remaining in tank in inches. Rod shall be seasoned maple or other close-grained wood. Tank end of rod shall have a non-sparking cap. Provide a chart showing tank capacity in U.S. gallons in 1/8-inch increments.

G. Sounding Rod Connection: Weld a 12x12x1/4-inch thick striker plate directly below rod opening inside steel tanks.

H. Dielectric Bushings: Provide nylon dielectric bushings on metallic piping connections to steel tanks.

2.09 DAY TANK PUMP SYSTEM

A. Day tank with UL 142 secondary containment dike, duplex supply pumps, manual supply pump, return pump, and controls. Capacity of the tank shall be as listed on the drawings. Floor mounted steel tank with internal level sensors, tank mounted pumps, pump controller, hand/off/auto switches, push to test button, status lights, automatic pump start/stop controls, pump overflow controls, manual pump alternating switch, and dry contact for alarm.

B. The primary day tank pump shall automatically start and the anti-siphoning solenoid valve automatically open when the tank liquid drops below a preset low level. The pump shall stop and the valve close when it exceeds a preset high level. If the primary pump fails, the secondary pump shall start automatically and the anti-siphoning solenoid valve automatically open. High level, low level and any pump failure shall activate alarm light and alarm bell, and closure of dry contact.

C. Fuel Filter / Water Separator: Fuel filter / water separator shall have a 10-micron screen.

2.10 FIRE EXTINGUISHER AND CABINET

A. Fire Extinguisher: Provide 10 lb. U.L. listed 4A:80B:C multi-purpose dry chemical fire extinguisher with squeeze grip activator, gauge and hose within fire extinguisher cabinet.

B. Surface-mounted fire extinguisher cabinet shall be sized to house fire extinguisher required for this project. Provide cabinet with 20 gage white glossy polyester coated steel box, 20-gauge Type 304 stainless steel door and frame with continuous stainless steel hinge. Door panel shall be furnished with clear polycarbonate bubble and cam latch.

2.11 PIPING IDENTIFICATION

A. Aboveground Piping: For pipes 3/4-inch OD and larger, provide printed legends to identify contents of pipes and arrows to show direction of flow. Color code label backgrounds to signify levels of hazard. Make labels of plastic sheet with pressure-sensitive adhesive suitable for the intended application. For pipes smaller than 3/4-inch OD, provide brass identification tags 1-1/2 inches in diameter with legends in depressed, black-filled characters.

2.12 MISCELLANEOUS METALS

A. Preformed slotted channel system components used in supports and brackets shall be Type 316 stainless steel, Unistrut Corporation or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. All piping, tank, and equipment shall be properly installed in accordance with the manufacturer’s recommendations. Furnish delegated design services when recommended by manufacturer's instructions. Arrange for access to the site by written request submitted not less than seven (7) days prior to the time at which access is requested. Coordinate installation with other trades so as to eliminate or avoid conflicts and delays to the progress of the work.

2. Installation shall comply with the requirements set forth in NFPA 30.

B. Protection of Materials and Equipment: Pipe and tank openings shall be closed with caps or plugs during installation. Equipment shall be tightly covered and protected against entry of dirt, water and chemical or mechanical injury.

C. Pipe Installation

1. General: Piping system shall be stainless steel. Piping connections to equipment shall be as required by equipment manufacturer. Threaded or mechanical joints shall be allowed at termination points of product carrying lines only. When work is not in progress, close open ends of pipe and fittings so that foreign substances cannot enter. Replace pipe, fittings, or appurtenances found defective after installation. Make threaded joints with tapered threads and make tight with joint compound; compatible with intended petroleum products, applied to male threads only.

2. Handle pipe and accessories to ensure sound, undamaged condition. Piping shall be free of traps. Fit piping passing through concrete or masonry construction with sleeves. Each sleeve shall be of sufficient length to pass through entire thickness of associated structural member and large enough to provide a minimum clear distance of l/2-inch between pipe and sleeve. Sleeves through concrete may be 20-gage metal, fiber, or other approved material. Sleeves shall be located on center with piping and fastened in place. Space between sleeves and pipe shall be caulked and filled with bituminous plastic cement or mechanical caulking units designed for such use.

3. No pipe shall be hidden until it has been pressure tested, inspected and approved by the Engineer.

4. All threaded joints shall be made liquid tight with suitable sealant.

5. All piping shall be inspected inside and out before installation and no obstructions shall be allowed. Pipe ends shall be taper reamed to full I.D. and all burrs removed.

D. The Contractor shall fill the tank with #2 ultra-low sulfur diesel fuel. After all tests and inspections have been conducted, the Contractor shall refill the tank prior to final acceptance.

E. Fuel Monitoring System

1. System shall be installed in strict accordance with manufacturer’s recommendations. Location of the internal tank gauge probe and leak sensors shall be as follows:

   a. Internal tank gauge probe shall be fitted to tank opening as indicated on the drawings.
   b. Tank interstitial space liquid sensor at the bottom of tank basin space.

2. Wall mount control panel box as located on the plan.

F. Day Tank: Install day tank per manufacturer's recommendations.

G. Provide non-conducting dielectric connections when joining dissimilar metals.

3.02 TANKS

A. Tank installation shall be in accordance with NFPA 30 and performed by personnel certified by the tank manufacturer and State Regulations.

B. Visually inspect the interior of fuel storage tanks to insure it is free of debris before fuel is placed inside. Prior to entry ensure a safe atmosphere exists.

3.03 ELECTRICAL WORK

A. Provide switches and devices required for controlling electrical equipment. Pumps shall be wired and ready for connection to power circuit. Electrical installations shall conform to requirements of NFPA 70.

3.04 PIPE/EQUIPMENT SUPPORTS, HANGERS AND INSERTS

A. Provide all necessary design, calculations, labor, materials, operations, equipment, tools and techniques required to furnish and install complete the pipe/equipment supports, hangers and inserts work.

B. Install hangers and supports for all piping to provide for expansion and contraction, prevent vibration and maintain required grading by proper adjustment.

C. Field verify type of construction from which piping and/or equipment is to be suspended/supported.

D. Pipe hangers and supports shall conform to MSS SP-58.

E. Support vertical pipes at base of the pipe on every floor and at 10-foot intervals maximum.

F. Provide additional hanger pipe supports at concentrated loads and valves. Maximum of 3 feet apart at concentrated loads and valves.

G. Grind and smooth all sharp metal edges including struts and fabricated metal supports. Install end caps on the ends of all struts.

H. Horizontal Piping Support Schedule

1. Support horizontal steel piping per following schedule. Pipes shall be supported at all elbows, branches and risers. Pipes shall be insulated from contact with dissimilar metals outside of system.:

Pipe Size	Rod Diameter	Maximum Spacing
(Inch)	(Inch)	(Feet)
Up to 1-1/4	3/8	7-0
1-1/2 and 2	3/8	9-0

3.05 TESTING AND INSPECTION

A. Contractor shall furnish all labor, equipment and instruments for tests and any required retests and pay for all cost of repairing any damage resulting from such tests. Contractor shall adjust systems until they are approved. Tests shall be performed in the presence of, and to the satisfaction of, the Engineer. Qualified manufacturer's representatives shall conduct all tests and inspections for the tank piping, inventory control system, and day tank.

B. The Contractor shall notify the Engineer no less than seven (7) days in advance of any equipment testing so that arrangements can be made with the State to monitor the equipment tests.

3.06 PNEUMATIC TEST

A. Piping: Test product carrier piping under pneumatic pressure of at least 1-1/4 times designed working pressure of the particular piping system, but not less than 50 psig. Take care not to exceed pressure rating of various fittings. Maintain pressure in product carrier piping for at least two (2) hours during which time there shall be no drop in pressure in each line greater than that allowed for thermal expansion and contraction. Furnish tapped test adapted fittings that can be attached to each end of the section of line being tested that will permit direct connection to the piping from air compressor. No taps in line will be permitted. Furnish necessary equipment for testing. Gauges shall be subject to testing and approval. In the event leaks are detected, repair and repeat tests. Upon satisfactory completion of tests, relieve pressure and seal line. Keep personnel clear of piping during pneumatic testing. Isolate equipment such as pumps, tanks, and meters from piping system during tests.

B. Tank: Test the interstitial space of each tank to 3 psig. Maintain this pressure and apply soapsuds or equivalent material to the exterior of the tank. Visually inspect for leaks. Repair leaks in accordance with the manufacturer's instructions.

3.07 FLUSHING AND OPERATIONAL TEST

A. Install temporary piping or hose equipped with a strainer having not less than 40-mesh screen between supply pipe and tank fill connection on tank from which fuel is being pumped. Furnish temporary pump for flushing. Flush each system with same type of fuel intended for use in system until outflowing fuel is "clean" and "bright": clean means absence of sediment or emulsion; bright refers to fluorescent appearance of fuel that has no cloud or haze. Test each system to demonstrate performance requirements for which it was designed. Operate fuel

equipment to demonstrate capability of fuel pumps to deliver desired flow and draw storage tank contents to level of pump inlet. When a portion of each system or a piece of equipment fails to pass tests, make repairs or adjustments and repeat test until satisfactory performance is achieved. Tests shall be witnessed by the Engineer. Furnish calibrated instruments and equipment, as well as the fuel, required to clean and flush each system and to conduct tests. Replace filters upon completion of tests.

3.08 FUEL POLISHER

A. Test the fuel polisher and control system per the manufacturer's recommendations.

3.09 FUEL STORAGE MONITORING SYSTEM TEST

A. Activate fuel storage monitoring system and test in accordance with manufacturer’s instructions.

3.10 HIGH LEVEL ALARM TEST

A. Fill each tank with appropriate product and verify the high level alarm functions. Verify overfill protection device functions.

3.11 DAY TANK TEST

A. Test the day tank and control system per the manufacturer’s recommendations.

3.12 PROTECTION

A. Provide planking, plastic sheeting, or other protective covering as required to prevent damage during construction to existing building elements and equipment. Damage to materials, equipment or building due to the Contractor's neglect shall be repaired or replaced to the satisfaction of the Engineer by, and at the expense of, the Contractor. Be prepared to immediately repair any damage that does occur during any operations, so as to avoid damage to building or contents or interruption of the State’s operations.

3.13 INSPECTION

A. Acceptance of the work will not take place until after discrepancies noted by the Engineer have been corrected to the satisfaction of the Engineer.

3.14 PAINTING

A. General: The following painting shall be the responsibility of Contractor for equipment provided by him including the supports and hangers:

1. All housings and factory assembled equipment shall have a prime and finish coat applied at the factory and all damaged spots touched up after installation.

2. All piping, hangers and supports, and mechanical equipment installed under this Section shall be prime coated and also have one finish coat by Contractor providing the equipment. Equipment enclosed in drop ceilings and enclosed in pipe spaces are not considered as being exposed to view.

3. All metal surfaces shall be primed with epoxy primer, coated with an epoxy undercoat and a polyurethane topcoat. Galvanized steel shall have primer treatment prior to first coat or epoxy primer.

3.15 TECHNICAL SUPPORT

A. The fuel systems equipment supplier shall be staffed with factory trained representatives fully capable of providing instruction on routine and emergency maintenance service on all system components supplied for this project.

B. The control system supplier shall be staffed with factory trained engineers fully capable of providing instruction on routine and emergency maintenance service on all system components supplied for this project.

C. Suppliers shall provide on-site instruction, when requested by the Contractor or the Engineer, at no additional cost to the State.

3.16 USER TRAINING SESSION

A. Contractor shall provide a minimum of four (4) hours of training for user personnel. Training shall be given by the equipment manufacturer's representative. Schedule training a minimum of thirty (30) days in advance.

3.17 CLEAN UP

A. All equipment and piping shall be thoroughly cleaned in an approved manner and maintained until the final inspection.

B. Upon completion of this work, remove all debris and excess materials, tools, etc. resulting from this work from the job site and leave the location of this work broom-clean in an acceptable manner as approved by the Engineer. All fuel system equipment shall be thoroughly cleaned and ready for use.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. All work specified under this Section shall be paid for at the contract lump sum price. The contract price paid shall be full compensation for all labor, materials,

tools, equipment, and all other incidentals necessary to complete the work.

Item No.	Item	Unit
15193.1	Fuel Systems	Lump Sum

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16000 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Electrical Work: Provide all articles, materials, equipment operators, systems and services specified herein and on the Drawings and as normally required by accepted industry standard practices, including all labor taxes, fees, insurance, warranties and incidentals required to complete all electrical work.

B. In general, the following work is included:

1. Demolish existing electrical connections for plant equipment as indicated on the drawings.

2. Provide new electrical connections for duplex day tank pumps and fuel polishing system, including all below grade work, explosionproof conduit fittings, and branch breakers in existing panelboard as required.

C. Furnish required submittals and samples, operations and maintenance manuals, and “As-built” Drawings.

D. Coordinate work with other trades to avoid omissions and overlapping of responsibilities.

E. Apply for, obtain and pay for all County fees, permits, licenses, utility fees, assessments and inspections required for this work.

F. Pay for all remaining temporary electrical construction and testing power.

G. Pay for all fuel for generator tests.

H. Before bidding, visit project site, carefully review each section of the Specifications and all Drawings of this Contract. Verify details, report any error, conflicts or omissions to the Department of Transportation Airports Division (DOT-A) at least 12 calendar days before submission of bids for interpretation or clarification. If errors or omissions are not reported, Contractor shall provide necessary work at no additional cost to DOT-A to properly complete intent of Specifications and Drawings. By submitting a proposal of the work included in this contract, the Contractor shall be deemed to have made such examination and to be familiar with and accept all conditions of the job site.

1.02 SUMMARY

A. This Section includes specifications for interior and exterior electrical work.

B. The GENERAL PROVISIONS of the Contract, including SPECIAL PROVISIONS and General Requirements of the Specifications, apply to the work specified in this section.

1.03 INTENT OF SPECIFICATIONS AND DRAWINGS

A. Specifications and Drawings are prepared in abbreviated form and include incomplete sentences. Omission of words or phrases such as “the Contractor shall”, “as shown on the drawings”, “a” and “the” are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.

B. Specifications and Drawings complement each other and what is specified, scheduled or mentioned on one shall be binding as if called for by both.

C. Discrepancies and Interpretations:

1. Should the Contractor find any discrepancies in or omissions from any of the documents or be in doubt as to their meaning, he shall advise the DOT-A who will issue any necessary clarification within a time period which does not disrupt the progress of the work.

2. All interpretation and supplemental instructions will be in the form of a written addendum to the Contract Documents.

3. Should any discrepancies arise from the failure of the Contractor to notify the DOT-A, the higher quality or larger quantity of item shall prevail. DOT-A shall make the final interpretation and judgment.

4. In the event of a discrepancy between small scale drawings and large scale details, or between Drawings and Specifications, of which is in violation of any regulations, ordinances, laws or codes, the discrepancy, if known by the Contractor, shall be immediately brought to the attention of the DOT-A for a decision before proceeding with the particular work involved. Work carried out disregarding these instructions will be subject to removal and replacement at the Contractor's expense.

1.04 DEFINITIONS

A. Provide: “Furnish and install, test and deliver to the DOT-A in operating and ready to use condition.”

B. Wiring: “Provide all raceways, junction boxes, conductors, devices, protection equipment, installation of motor controllers (furnished by

others) when required, etc., including testing for a complete, operative and ready to use electrical system."

C. Equal: "Material, equipment or system, including all necessary labor, modifications and accessories satisfying the requirements of the contract documents, the design intent, and to provide features or have operating characteristics equal or better than that specified."

D. Complete: "Furnish installation that is operative, tested, and ready to use and which satisfies the intent of the contract documents, including all necessary accessories and modifications."

E. Contractor: "General Contractor responsible for all work shall assign work to Sub-Contractors. Except where noted, work of this section shall be assigned to the Electrical Sub-Contractor."

F. DOT-A: Department of Transportation – Airports Division

G. EOR: (Electrical) Engineer of Record

1.05 QUALITY ASSURANCE

A. Government and Utility Requirements: Comply with all requirements of the State of Hawaii, City and County of Honolulu, Disability and Communication Access Board (DCAB), and respective utility company rules and regulations.

B. Specifications are accompanied by environmental, civil, and mechanical drawings of the buildings, site, and diagrammatical electrical plans showing locations of outlets, feeder runs, devices and other electrical equipment. Locations are approximate and before installation, Contractor shall study adjacent construction details and make installation in the most logical manner. Prior to installation and at the direction of the DOT-A, relocate any device, equipment, feeder, or circuit within 10'-0" of the location presently shown without added cost to the DOT-A.

C. Prior to start of the rough-in work, verify all dimensions and new equipment sizes with the approved shop drawings including equipment furnished by others. Circuits and raceway routes are diagrammatic and may be altered in any logical manner. However, all changes from the contract documents shall be subject to review and acceptance of the DOT-A and indicated on the "As-built" Drawings.

D. Feeders and branch circuits for equipment furnished by others were sized for the anticipated equipment. Verify electrical requirements of all equipment furnished by others prior to rough in and prior to ordering of the electrical distribution equipment. Re-size affected feeders and branch circuits at no additional cost to the DOT-A.

E. Materials and Equipment: Materials and equipment shall conform to requirements of applicable technical specification sections, publications

specified therein and shall be as shown on the drawings. Materials and equipment shall be new and shall be the product of manufacturers regularly engaged in the manufacture of such products.

F. Substitutions:

1. Where items are specified by manufacturer's name or catalog number, substitutions require written permission by the DOT-A prior to bidding. Brand names, manufacturer's names and catalog numbers indicate the standard of design and quality required. List of substitute materials together with qualifying data shall be submitted for review at least twelve (12) working days before bid date. Failure to submit for review substitute materials prior to bidding shall mean that materials, as specified, will be provided. Substitute materials submitted and rejected shall not be resubmitted in any modified form.

2. Samples of proposed substitute items may be required and shall be submitted by the Contractor at his expense as soon as practicable after they are requested.

3. Burden of proof of equality of proposed substitutions will be the responsibility of the Contractor. Submittals shall be sufficiently detailed to permit evaluation of the proposed items. Inadequacy of submittals shall be sufficient cause to reject a proposed substitution.

4. All prospective bidders must submit descriptive information on proposed material for pre-bidding acceptance where an item is detailed but no manufacturer is named.

5. Costs to review any contractor submitted value engineering change proposals shall be paid by the Contractor.

G. Prevention of Corrosion: All metallic materials shall be protected against corrosion. Exposed metallic parts of equipment, apparatus, devices, mounting hardware, and fasteners that are provided in damp, wet, or corrosive areas shall be constructed from 316 or 316L stainless steel. All such parts as boxes, bodies, fittings, guards and miscellaneous parts shall be constructed of 316 or 316L stainless steel. The Contractor shall not join dissimilar metals that will result in deterioration due to galvanic corrosion.

1.06 DEPARTURES

A. Departures resulting from the substitution of materials or systems shall be accompanied by appropriate changes in all affected work of every trade and shall include stamped and signed drawings by a licensed engineer for any portion of the project requiring re-design. Such changes shall be done at no increase to the contract amount and shall be the responsibility of the Sub-Contractor or supplier responsible for the departures.

B. Changes proposed by the Contractor shall be based on a system approach and may be allowed if implemented without decrease in quality,

performance and operations, increase in utility costs or adverse effect on the available physical space to install the equipment. Such departures shall be submitted and noted in shop drawings for review and acceptance by the DOT-A. Departures initiated by other trades, requiring changes in the electrical system as well as other systems, shall be accompanied by appropriate changes to all affected work of every trade, at no increase in contract amount. Submission for departure shall be as follows:

EXAMPLE:

Item	Manufacturer and Catalog Number Specified	Substitute Manufacturer and Catalog Number
Cable	John Doe - No. 3200	King - No. 2200

C. The General Contractor shall be responsible to coordinate, approve and select systems that do not impose unaccounted for impacts on the electrical work. It shall be understood that after the award of contract, all departures having electrical impact, unless otherwise noted, have been reviewed and approved by the General Contractor.

1.07 SUBMITTALS

A. Submit in accordance with Section 01300 - SUBMITTALS. All submittals shall be reviewed and approved by the general contractor and the electrical contractor. Partial submittals or submittals lacking the general contractor's and electrical contractor's approvals will not be acceptable. Submit for approval six (6) complete sets of submittals as described below. Annotate descriptive data to show the specific model, type, option, and size of each item the Contractor proposes to furnish. Do not commence work until each system, including all the various components, have been approved. The EOR will review and approve all submittals. Before the materials are ordered or the work is commenced the shop drawings must be approved.

B. List of Materials and Equipment: Submit in accordance with Section 01300 - SUBMITTALS. These lists shall include manufacturer's names and material or equipment identification such as styles, types, or catalog numbers to permit ready and complete identification. Original catalog cuts or brochures shall be provided. Scanned or photocopied submittals will be rejected without review.

C. Product Data: Shall be sufficiently comprehensive and detailed to permit evaluations, otherwise the item may be rejected, and shall include, as applicable, the following:

1. Original catalog cuts or brochures shall be provided. Scanned or photocopied submittals will be rejected without review.

2. Each submittal shall contain an itemized list of each item being submitted. Each item shall be identified with the complete manufacturer's ordering number including all options.

3. Dimension outlines of all enclosures, including subbase fuel tank fillable volume.

4. Dimension drawings of components such as enclosed circuit breakers, safety disconnect switches, and generators.

5. Operating and electrical characteristics including interrupting ratings of new protection devices and equipment per unit impedances.

D. Certificate of Compliance: Where required by the section specifying the equipment, the Contractor shall submit six (6) copies of certificates of compliance in accordance with the requirements of the GENERAL REQUIREMENTS. The certificates shall include but not be limited to factory test reports.

E. Installation, Operation and Maintenance Data: Six (6) copies of installation, operation and maintenance data shall be submitted for equipment specified to require such data. The data shall be in the form of manuals and shall indicate instructions for operating, maintaining, repairing, recommended inspection points, periods for inspection, and all related spare parts in a practical, complete and comprehensive manner. The information shall be arranged in a logical, orderly sequence, including a general description of the equipment and significant technical characteristics. Test, adjustment and calibration information shall be furnished and identified to specific equipment. The installation, operation and maintenance data shall be as required by the General Requirements.

F. Acceptance Requirements: Acceptance for material and equipment will be based on manufacturer's published data. Where materials or equipment are specified to be constructed and tested, or both, in accordance with the standards of the National Electrical Manufacturers Association (NEMA) or the American National Standards Institute (ANSI), the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. A certification or published catalog specification data statement to the effect that the item is in accordance with the referenced NEMA standard by a company listed as a member company of NEMA for the section whose standards cover the item under construction, will be acceptable as sufficient evidence that the item conforms to the requirements of the National Electrical Manufacturers Association. A manufacturer's statement indicating complete compliance of each item with the applicable NEMA, ANSI or other commercial standard specified shall be submitted and will be acceptable proof of compliance. Conformance with the agency requirements does not relieve the item from complying with any other requirements of the specifications.

G. Nameplates:

1. General: In addition to standard manufacturer's nameplate, permanent corrosion resistant nameplates shall be provided for each new safety switch, contactor, telecom junction box, and other major pieces of equipment. Nameplates shall designate the function of the equipment for which they are used. The designation shall be submitted for review and acceptance with the shop drawings.

2. Material and Lettering: 1/16" thick, laminated plastic, black-white-black. Nameplate lettering shall be 1/4" high upper-case.

3. Fastening: Nameplates shall be fastened stainless steel (316) screws.

4. Hand lettering or stick-on embossed marking tape is not acceptable.

5. Provide laminated tape labeling for all new outlets on coverplates or enclosure. Identify associated panel name and circuit number.

H. Labels

1. Provide labels as required by the latest version of the National Electrical Code adopted by the County or City & County.

2. The labels shall be designed according to the following standards:

   a. UL969 – Standard for Marking and Labeling Systems.

   b. ANSI Z535.4 – Product Safety Signs and Labels.

   c. NFPA 70 (National Electric Code) – Article 110.16.

   d. NFPA 70E – Section 130.

3. Labels shall be provided for, but not limited to:

   a. Source and location of feeder serving panelboards per NEC 408.4(B).

   b. Method utilized for conductor identification per 2014 NEC 210.5(C).

   c. All telecommunication, telephone, data, and signal cables.

4. Label materials shall be provided similar to nameplates except that labels for wires, conductors, and cables shall be of the printed tape type.

I. Factory Tests and Inspection:

1. The equipment furnished shall be inspected mechanically and electrically, and all manufacturers' routine factory tests shall be

performed to verify conformance with the specified requirements. The test equipment and test methods shall conform to the requirements of standards specified. The contract price shall include cost of performing all tests.

2. The Contractor shall furnish, at time of equipment delivery, six (6) certified copies of all test results.

J. Equipment Guarantees: Installation shall be complete in every detail and ready for use. Any item furnished or provided by the Contractor developing defects within one (1) year after final acceptance by the DOT-A shall be replaced by materials, apparatus and parts including installation labor costs to make such defective portion of the completed system conform to the true intent and meaning of the drawings and specifications, without additional cost to the DOT-A. The Contractor shall guarantee all equipment provided from the date such equipment is accepted by the DOT-A, against defects in materials, design, performance and workmanship. Guarantees shall be supported by manufacturer's written warranties and shall be signed by an official of the manufacturer's organization. Replacement parts shall be delivered and repairs shall be made promptly upon receipt of notice of failure under normal and proper use and maintenance. All costs of replacement and repair shall be borne by the Contractor provided that a report substantiating such defect or failure to conform to specifications is promptly given to the Contractor.

1.08 CODES, REGULATIONS AND STANDARD SPECIFICATIONS

A. Work shall conform to the Hawaii Revised Statutes, the Ordinances of City and County of Honolulu; the International Conference of Building Officials (ICBO) International Building Code (IBC); and the latest edition of National Electrical Code (NEC).

B. Applicable rules, standards and specifications of following associations shall apply to materials, workmanship, and procedures:

American National Standards Institute (ANSI)
National Electrical Manufacturer's Association (NEMA)
National Fire Protection Association (NFPA)
Underwriters' Laboratories, Inc. (UL)

1.09 ACKNOWLEDGEMENT

A. By bidding on this project and or by providing this work the Contractor acknowledges that:

1. The Designer is not responsible for the means and methods employed by the Contractor and that the Contractor is responsible for his means and methods.

2. The Designer is not responsible for job site and worker safety and that the Contractor is responsible for job site and worker safety.

1.10 WARRANTY

A. Defective materials and workmanship shall be removed and replaced at no cost to the DOT-A. For period of one year after acceptance of work by DOT-A, materials and workmanship developing defects and malfunctions shall be repaired and/or replaced, to conform with intent of the specification and drawings, at no additional cost to the DOT-A.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials shall be new, except as specifically noted, and shall bear the label of Underwriter’s Laboratories, Inc., wherever standards have been established and label service is normally and regularly furnished by the agency. See the respective technical sections for the electrical material specifications.

PART 3 - EXECUTION

3.01 MATERIALS AND EQUIPMENT PROVIDED BY THE CONTRACTOR

A. The electrical installation shall be complete and operable and shall conform to the requirements of the contract drawings. The Contractor shall provide all electrical equipment and materials, wiring, supports and such additional parts as are necessary to make the installation complete. All Contractor furnished materials and equipment are subject to review and acceptance by the DOT-A.

3.02 PROTECTION DURING STORAGE

A. Store all materials and equipment in a safe manner. Provide weather, dehumidification, and fire protection for all materials. Store all materials above grade to avoid damage by moisture. Cover all materials to avoid damage from sunlight.

3.03 PROTECTION OF WORK IN PROGRESS

A. All electrical materials and equipment shall be completely protected during installation. Equipment shall be securely protected against physical or chemical damage. In areas exposed to weather, materials unused at the end of each day's work shall be protected by weatherproofed installations. All unprotected conduits shall be sealed to prevent water and foreign debris from entering conduits. Damage to materials and equipment due to Contractor's neglect shall be repaired or replaced by and at the expense of the Contractor.

3.04 PROGRESS OF WORK AND COORDINATION

A. The Contractor shall prepare a schedule identifying the sequence of electrical work. The electrical work shall be coordinated with the work of other Contractors and other trades. The schedule shall be submitted prior to beginning installation and shall be subject to review and acceptance by the DOT-A.

3.05 RULES

A. The entire electrical installation shall conform to the applicable rules and regulations of the State Fire Code and the standards and publications specified in the technical sections.

3.06 COORDINATION

A. The contract drawings indicate the extent and general location and arrangement of equipment, conduit and wiring. Outlets and electrical equipment shall be located so as to avoid interference with mechanical and structural features. The DOT-A may request any device, equipment, circuit, or feeder to be relocated within 10'-0" of the location shown on the Drawings before installation is initiated and without increase in contract amount.

3.07 WORKMANSHIP

A. All materials and equipment shall be installed in accordance with printed recommendations of the manufacturer and shall conform to the requirements of the contract drawings. The installation shall be accomplished by workers skilled in this type of work. For actual fabrication, installation and testing of the Electrical Work, use only thoroughly trained and experienced workmen completely familiar with items to be installed and with manufacturers' recommended methods of installation. In acceptance or rejection of installed work no allowance will be made for lack of skill on part of workmen.

B. Inspection: Skill and competency of workmanship shall be subject to the approval of the DOT-A, the State, and the City and County of Honolulu. The contractor shall open all electrical equipment, cabinets, junction boxes, and devices as required by the DOT-A or inspector for inspection. All equipment shall be de-energized prior to inspection unless voltage and current measurements are required. The Contractor shall be responsible for all electrical and arc flash safety at the project site.

3.08 FIELD TESTS

A. After the installation is completed, and at such time the DOT-A may direct, the Contractor shall conduct field tests for acceptance by the DOT-A. When the tests are specified to be performed under the supervision of the equipment manufacturer, the Contractor shall cooperate with the DOT-A during tests and shall place at the manufacturer’s disposal, all assistance, materials and services required to perform such tests. The tests shall be performed in the presence and to the satisfaction of the DOT-A. The Contractor shall furnish all necessary electric power, fuel, instruments, equipment, and personnel required for the tests and shall pay for all power and fuel.

B. Insulation Tests: The insulation of all conductors shall be tested with a megger insulation tester. Submit results of tests to the DOT-A.

C. Operating Tests: The equipment and systems shall be demonstrated to operate in accordance with the requirements of the technical sections in which the equipment or systems are specified.

D. Test all 600 volt class conductors to verify that no short circuits or accidental grounds exist. Make tests using an instrument which applies a voltage of approximately 500 volts to provide a direct reading in resistance, and measure the insulation resistance from phase to phase and phase to neutral. All test results shall be recorded and submitted to the DOT-A.

E. Wherever test or inspection reveals faulty materials or installation, 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.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 16050 – ELECTRICAL BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

A. The GENERAL PROVISIONS of the Contract, including SPECIAL PROVISIONS and General Requirements of the Specifications, apply to the work specified in this section.

B. This section provides the specifications for general electrical work. See other specification sections for more detailed specifications related to specific electrical systems.

C. The Contractor shall furnish all labor, materials, tools, equipment, electricity, fuel, shipping and delivery, and appliances required to provide all Electrical Work, complete, as indicated on the drawings and/or as specified herein. The drawings note various sizes of equipment as determined for basis of design; the electrical work, however, shall be installed to comply with the equipment furnished by the successful supplier and shall be based on the approved shop drawing submittals. The work shall include but not necessarily be limited to, the following:

1. Demolish existing electrical connections for plant equipment as indicated on the drawings.

2. Provide new electrical connections for duplex day tank pumps and fuel polishing system, including all below grade work, explosionproof conduit fittings, and branch breakers in new and existing panelboard as required.

3. Connect existing generators and demonstrate proper operation with the new fuel tank. Replace any existing generator power conductors where testing reveals insulation failure.

D. Before bidding on this work, carefully examine each of the drawings and the site. By submitting a proposal of the work included in this contract, the Contractor shall be deemed to have made such examination and to be familiar with and accept all conditions of the job site.

1.02 SUBMITTALS

A. Submit in accordance with Section 01300 - SUBMITTALS.

B. Shop drawings and catalogue cuts for substitute materials shall clearly specify compliance with and/or deviation from specified material. Certification shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; and "achieve the same end use and results as materials formulated in accordance with the referenced publications". Certifications shall simply state that the item

conforms to the requirements specified. Certificates shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official authorized to sign certificates of compliance. Review of shop drawings and catalogue cuts shall not release Contractor from complying with intent of specification and drawings. Partial or incomplete submittals will be returned without review.

C. Shop Drawings: Submit complete shop drawings and manufacturer's literature for the DOT-A's review before any work is ordered or fabricated. All submittals shall bare the approval of the general contractor and the electrical contractor. Partial or incomplete submittals or submittals lacking the general contractor's and electrical contractor's approval will be returned without review. Submit in accordance with Section 01300 - SUBMITTALS. Submit manufacturer's literature for the following:

1. Raceways

2. Conductors

3. Explosionproof raceway fittings, seals, and sealant compounds

4. Devices (ie: disconnect switches.)

5. Junction Boxes, Enclosures

D. As-Built Drawings: Submit as-built drawings as specified under Section 01300 - SUBMITTALS.

1.03 GUARANTEE AND CERTIFICATE

A. Any item of material, apparatus, equipment furnished and installed, or constructed by the Contractor showing defects in design, construction, quality or workmanship within one year from the date of final acceptance by the DOT-A shall be replaced by such new material, apparatus or parts as may be found necessary to make such defective portion of the installation conform to the true intent and meaning of the specification and/or the drawings. Such repairs or replacement shall be made by the Contractor, free of all expense to the DOT-A.

1.04 COORDINATION WITH UTILITY COMPANIES AND OTHER TRADES

A. During bidding and construction, Contractor shall coordinate his work with utilities, and other trades to avoid omissions and overlapping of responsibilities.

1.05 CODES, REGULATIONS AND STANDARD SPECIFICATIONS

A. Work shall conform to latest edition of National Electrical Code.

B. Applicable rules, standards and specifications of following associations shall apply to materials and workmanship:

American National Standards Institute (ANSI)
National Electrical Manufacturer's Association (NEMA)
National Fire Protection Association (NFPA)
Underwriters' Laboratories, Inc. (UL)

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: All materials shall be new, except as specifically noted, and shall bear the label of Underwriters' Laboratories whenever standards have been established and label service is normally and regularly furnished by the agency.

B. Raceways:

1. Conduits: EMT and galvanized rigid steel, 3/4" minimum diameter with compression or threaded fittings, respectively. Aluminum conduits shall not be used.

2. Non-Metallic Conduit: PVC Schedule 40 and sunlight-resistant epoxy resin coated fiberglass, wall thickness as indicated (ISO 9001: 2008 certified), 3/4" minimum diameter.

3. Flexible Conduit: 3/4" minimum, zinc-coated inside and outside; for damp, wet, moist, or corrosive areas -- liquid-tight with factory fittings and UV stabilized PVC jacket.

4. Explosionproof fittings and seals: Shall be used as indicated for the specific hazardous zone designation marked on the Drawings for the conduit type used. Seal and plug shall both be stainless steel. Sealing compound shall be appropriate for the hazardous zone designation per the manufacturer, and be suitable for the average annual range of ambient temperatures.

C. Conductors: Conductors shall be copper, No. 12 AWG minimum; No. 10 AWG and smaller, solid and round; No. 8 AWG and larger, 7 or 19 strands concentric. All conductors No. 6 and smaller shall be types THW for interior use or RHW for exterior use. All conductors No. 4 AWG and larger shall be type THWN-2 for interior use; or RHW-2 or USE-2 for exterior use. Conductors used for and control wiring may be sized according to the system manufacturer based on their load and voltage drop calculations and code requirements. Conductors shall be stranded copper with sunlight and oil resistant thermoset (90°C) insulation of a sufficient voltage rating for the rated generator line voltage, provided with all necessary connectors. Connector color shall correspond to the voltage system color code within this section. Provide UL listed in-line splice kit as required to interface with building interior wiring.

E. Outlet and Small Junction Boxes: Pressed, zinc-coated steel, minimum nominal size 4", minimum depth 1-1/2", with raised cover- ring for devices in concrete masonry units. Exposed boxes and weather exposed boxes shall be ferrous alloy, prime painted and enamel finished, with threaded hubs for conduit connection. Surface mounted boxes shall be smooth walled with clean 90 degree corners.

Where installed in a hazardous zone, boxes shall additionally be certified for the class, division and group indicated on the Drawings, rated for minimum NEMA 4X. Box shall be equipped with stainless steel hinges and cover bolts and neoprene gasket. Finish shall be steel with external epoxy coating.

F. Enclosures and Cabinets: Enclosures and cabinets enclosed circuit breakers, and safety disconnect switches shall be NEMA type, fabricated from galvanized steel, or as indicated, prime painted and enamel finished according to NEMA specifications. For dry interior locations, enclosures shall be NEMA 1. For exterior, damp, wet, or corrosive locations, enclosures shall be NEMA 4X stainless steel (316) with stainless steel (316) fasteners and hardware, pad lockable. Provide enclosures made of continuous welds. Enclosures made of bolted panels/parts will not be allowed.

G. Device and Cover Plates:

1. Plates for interior flush construction shall be smooth reinforced plastic, with suitable hole(s) and color to match device.

2. Device covers outlets in damp, wet, or corrosive locations shall be weatherproof with lockable stainless steel (316) covers. Covers shall permit plugs to be connected without compromising the integrity of the protective nature of the cover while in use.

H. Tumbler Switches: Single or double pole, 3 or 4 way, as required, specification grade, non-mercury, quiet, 20 amperes, 120-277 volt, UL labeled AC type, silvered contacts, ivory, tumbler switch with endurance of 10,000 make-breaks. Enclose in outlet box and device plate. Hubbell 1200 series, Bryant No. 4900 series, Arrow Hart No. 1990 series or pre-approved equal.

I. Enclosed (Individual) Circuit Breakers: Shall consist of molded plastic case circuit breaker with toggle operated mechanism and thermal-magnetic overload trips. Interchangeable trip shall be provided when available. Toggle positions "On" and "Off", engraved or embossed on body. Provide lockable NEMA 1 enclosure for interior locations and NEMA 4X stainless steel (316) enclosure for exterior, damp, wet or corrosive locations.

J. Labels: Thermal transfer or direct thermal labeling; minimum 1/8” high black lettering on white background; self-adhesive backing; sunlight, water and moisture resistant. Kroy or approved equivalent.

K. Hardware, Supports, Backing, Etc.: All hardware, fasteners, supports, backing and other accessories necessary to install electrical equipment shall be provided. Wood materials shall be "wolmanized" treated against termites, iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze. Installations in damp, wet, or corrosive locations shall be of stainless steel, 316.

L. Backfill Material:

1. Backfill Material, Type "A": Backfill material shall be non-expansive and shall consist of earth and gravel mix with gravel content consisting of 1-inch diameter maximum and not exceeding fifty percent (50%) by volume of the mix. This fill shall be used over direct buried ducts after backfill Type B has been placed.

2. Backfill Material, Type "B": Backfill material shall be non-expansive and shall consist of earth and gravel mix with gravel content consisting of 1/2-inch diameter maximum and not exceeding twenty percent (20%) by volume of the mix. This fill shall be used all around direct buried ducts.

3. Any existing underground piping or conduit that is encountered shall be properly shored and protected from damage. Any damage to existing utilities resulting from the Contractor's operations shall be repaired by him at his own expense.

M. Caulking Compound: Compound for the sealing of conduits, ducts, pipes, and sleeves shall conform with Fed. Spec. SS-S-210 and shall be of a putty-like consistency workable with the hands at temperatures as low as 35 degrees F., shall not slump at a temperature of 300 degrees F., and shall not harden materially when exposed to air. The compound shall readily calk or adhere to clean surfaces of the following: asbestos-cement conduit; vitrified clay tile; fiber conduit; fire-clay cement conduit; plastic conduit; concrete; masonry; lead; rubber; polyethylene polychloroprene; or polyvinyl-chloride sheaths of cables; and the common metals. The compound shall form a seal with the foregoing without dissolving, noticeably changing characteristics, or removing any of the ingredients. The compound shall have no injurious effect upon the hands of workmen or upon the materials.

N. Firestopping Systems: shall be UL listed or tested according to American Society of Testing Materials (ASTM) E 814 “Fire Tests of Penetration Fire Stops” and E 119 “Fire Tests of Building Construction and Materials”. T-rating and F-rating shall be at least that of the penetrated assembly. Firestopping product shall conform to construction assembly type, penetrating item type or joint opening width and movement capabilities, annular space requirements, and fire-rating involved for each separate instance. Elastomeric silicone, intumescent sealants and endothermic sealants are permitted. Manufacturer shall be

Specified Technologies Inc, HILTI, 3M, or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Rules and Permit: The entire installation shall be made in strict accordance with the latest rules and regulations of the National Board of Fire Underwriters, the currently adopted edition of the National Electrical Code and the Electrical Branch of the local Building Department. The Contractor shall obtain and pay for the electrical permit as required by local laws and rules. All work shall be inspected by the proper local authorities as it progresses. The Contractor shall pay all inspection fees and shall deliver certificates of completion and inspection to the DOT-A before final payment will be made. Costs of permits and inspection fees shall be included in the Contractor's bid price.

B. Construction Methods: Construction shall conform to construction practices as recommended by the American Electricians Handbook by Croft (latest edition), Edison Electric Institute, National Electrical Code, National fire Protection Association, National Electrical Safety Code and applicable instructions of manufacturers of equipment and material supplied for this project.

C. Materials and Workmanship: All labor and materials of every kind shall be subject to the approval of the DOT-A, who shall be afforded every facility for ascertaining the competence of such labor and examining such materials as they may deem necessary. Concealed work, handholes, and enclosures shall be reopened / opened at random as directed during inspections by the DOT-A. Materials shall be new and shall bear the listed label of the Underwriters' Laboratories, Inc. Brand names and catalog numbers used in this specification indicate the standards of design and quality required. Substitution of other brands or catalog numbers shall conform to the requirements in the Bidding Documents. All high voltage work shall be performed by qualified electricians certified to work on high voltage systems.

D. Record Drawings: The Contractor shall maintain an accurate and adequate record of each change as it occurs, regardless of how ordered.

E. Drawings and Specification: This specification is intended to cover all labor, materials and standards of workmanship to be employed in the work indicated on the Drawings and called for in the specification or reasonably implied therein. The Drawings and specification supplement one another. Any part of the work mentioned in one and not represented in the other, shall be done the same as if it has been mentioned in both. The Contractor shall not make alterations in the Drawings and specification.

F. Discrepancies and Interpretations:

1. Should the Contractor find any discrepancies in or omissions from any of the documents or be in doubt as to their meaning, he shall advise the DOT-A who will issue any necessary clarification within a time period which does not disrupt the progress of the work.

2. All interpretation and supplemental instructions will be in the form of a written addenda to the Contract Documents.

3. Should any discrepancy arise from the failure of the Contractor to notify the DOT-A, the higher quality or larger quantity of item shall prevail. The DOT-A shall make the final interpretation and judgment.

4. In the event of a discrepancy between small scale drawings and large scale details, or between the Drawings and specification, on which is in violation of any regulations, ordinances, laws or codes, the discrepancy, if known by the Contractor, shall be immediately brought to the attention of the DOT-A for a decision before proceeding with the particular work involved. Work carried out disregarding these instructions will be subject to removal and replacement at the Contractor's expense.

G. Symbols: The standard electrical symbols together with the special symbols, notes and instructions shown on the drawings indicate the work and outlets required and are all to be included as a part of this specification.

H. Coordination: This specification is accompanied by Drawings which contain floor plans of the buildings and site plans indicating locations of outlets, switch controls, service runs, and other electrical apparatus within the scope of work. These locations are approximate and, before installing, the Contractor shall study the adjacent architectural details and actually make the installation in the most logical manner. Any outlet, equipment, feeder, and circuit may be relocated within ten feet before installation at the direction of the DOT-A. The circuit routing is typical only and may be varied in any logical manner.

3.02 INSTALLATION

A. Grounding:

1. All metallic enclosures, raceways, and electrical equipment shall be grounded according to requirements of NEC Article 250. Ground and bond per the NEC and local authority having jurisdiction. Final connection to equipment, raceways, and other metallic parts directly exposed to ungrounded electric conductors shall be No. 8 AWG minimum, copper, NEC type TW, green insulation. Use approved bonding terminal at panels.

2. All grounding wire runs within building shall be routed together with circuit conductors.

3. Bond and ground all feeder conduits to panelboard enclosures.

B. Wiring System:

1. Below grade, within concrete floor slabs or within concrete walls use Schedule 40 PVC. Provide separate ground wire and rise out of ground or concrete slab with PVC and transition to galvanized rigid metal conduit within 6” of finished grade. For conduits rising out of walls, transition to EMT and galvanized rigid steel conduit as required below within 6” of emerging from the wall.

2. Above finished ground floor where exposed below 7'- 0" above finished floor use rigid steel conduit; in non-air conditioned locations use rigid steel conduit; exposed on the building exterior or beneath the building use rigid steel conduit; where exposed on exterior of the building and exposed to sunlight use rigid steel conduit.

3. Above finished ground floor where concealed in stud walls or above suspended ceilings, and not exposed to damage, use EMT with compression fittings.

4. Where exposed on the roof, in damp, wet, corrosive locations use rigid steel conduit.

5. Where located in hazardous zones, use rigid steel conduit.

6. All wiring shall be installed in conduits except as noted.

7. Conduit system shall be continuous from outlet to outlet and fitting to fitting so that electrical continuity is obtained between all conduits of the system. Where explosionproof fittings are required, they shall be located 10 feet on either side of the hazardous zone boundary, and run uninterrupted upon leaving the hazardous zone as to not permit passage of flammable vapors.

8. Conduits cut square and inner edges reamed. Butt together evenly within couplings.

9. Make bends and offsets with hickey or conduit-bending machine. Do not use vise or pipe tee. Flattened or crushed conduit not acceptable.

10. Use of running threads not permitted. Where conduits cannot be joined by standard threaded couplings, approved water-tight conduit unions shall be used.

11. Cap conduits during construction with plastic or metal-capped bushings to prevent entrance of dirt and moisture. Swab all conduits and dry before installing wires. Provide removable

watertight conduit seals on all conduits entering the building, or pad mounted equipment, where the conduit is connected handholes.

12. Pullstrings shall be placed in all empty / spare conduits ten feet in length or longer.

13. Install insulating bushings and two locknuts on each end of every conduit run at enclosures and boxes. Provide grounding bushings as required.

14. Conduit bodies shall not be used on telecom conduits.

C. 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 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. Tag all feeders and label all new branch circuits in all enclosures and devices. Identify panel name and branch circuit number.

5. Color code feeder, branch circuit, and grounding conductors. Color for grounding conductors shall be green. Color for neutral conductors shall be white except for where neutrals of more than one branch circuit grouping are installed in the same raceway or enclosure, the other neutral shall be white with a colored stripe (other than green). The color coding for three-phase and single-phase circuits shall be as follows:

208Y/120V, 3-phase, 4-wire:	Black (Phase-A) Red (Phase-B) Blue (Phase-C)
480Y/277V, 3-phase, 4-wire:	Brown (Phase-A) Orange (Phase-B) Yellow (Phase-C)

D. Splicing of Wire and Cable:

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

2. Splices made according to NEC Article 110.

3. Splices shall be reinsulated. Remove all sharp points that can pierce tape. Use Minnesota Mining and Manufacturing Co. "Scotch" #33 tape, or pre-approved equal. Splices in pull boxes shall be water-tight.

E. Boxes and Enclosures:

1. Not all boxes are shown on the Drawings. The number of conduit bends between pull points shall not be greater than four quarter bends (360 degrees total) per NEC. For telecommunication conduits the number of conduit bends between pull points shall not be greater than two quarter bends (180 degrees total). Provide additional boxes as necessary.

2. Provide outlet boxes in hollow tiles or concealed in other spaces with extensions or raised rings of such depth that metal will be flush with surrounding surfaces or openings.

3. Offset boxes, on opposite side of walls, by 6" to minimize noise transmission thru walls.

4. Boxes to be plumb and exactly flush.

F. Finishing:

1. All cutting that may be required for complete installation of the electrical work shall be carefully performed, and all patching shall be finished in first-class condition by the Contractor.

2. Close unused knockouts in boxes or enclosures with metal cap that will maintain the rating of the box or enclosure.

3. Wipe clean all exposed raceways and enclosures with rag and solvent. Unfinished raceways and enclosures shall be primed and painted and finished to blend in with the surface it is mounted on. (Do not cover nameplates.) Factory finished enclosures shall not be painted, touch up where required.

G. Miscellaneous Details:

1. 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 DOT-A approval. Need for remedial work determined by DOT-A as attributable to poor coordination and workmanship shall be cause for reconstruction to the satisfaction of the DOT-A and at no additional cost to the DOT-A.

2. Attachment of electrical equipment to wood by non-ferrous wood screws. Attachment to concrete by expansion anchors. Powder-charge-driven studs and anchors permitted only with prior approval.

3. Complete all panel circuit directories, using typewriter. Verify "room" and "use" designations before typing.

4. All grounding wire within building run in rigid steel conduit.

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

H. Trench Excavation:

1. Dimensions and locations of trenches for ductlines shall be as indicated on drawings. Trench width and depths shall be sufficient to accommodate proper installation of conduit banks.

2. Should material at bottom of trench for direct buried conduits not be equal to backfill material Type "B", the trench shall be excavated an additional 3" to permit backfilling with Type "B" backfill.

3. Where a trench is excavated on slope, sides are to be vertical, and depth measured at lowest side. All measurements are to be based on final grades.

4. Bottom of trenches to be flat and smooth.

5. Sheathing and bracing as required shall be provided to support sides of excavations from cave-ins.

6. Provide drainage and pumps to keep trenches dry.

7. Saw cut all edges of existing sidewalks and pavement before trenching.

8. Excavated material may be placed alongside trench; however, it shall not interfere with vehicular or pedestrian traffic.

9. Cover all trenches with suitable bridging material; trenches shall not be left uncovered overnight or over the weekend.

I. Backfill:

1. Duct installations shall be accepted by DOT-A prior to backfilling.

2. Should material below direct buried conduits not be equal to 3" (thickness) of backfill material Type "B", trench shall be deepened by 3", and backfilled with Type "B" backfill.

3. Backfilling shall be to finished grades indicated on accompanying drawings, and matching existing conditions.

4. Backfill material shall be completely free of wood or other debris.

5. Backfill material shall be placed in maximum of 8" layers in loose thickness before compacting. Backfill shall be thoroughly compacted with hand or mechanical tampers to 95% of ASTM D1557 maximum dry density. In no case shall tamping be accomplished by using the wheels or tracks of a vehicle.

J. Installation of Conduit and Duct Bank:

1. Bottom of trench shall be clean, smooth, well-graded.

2. Saw cut, ream and taper ducts and conduits with manufacturers' approved tool.

3. Couplings and bells shall be tight to prevent entry of dirt or concrete into ducts and conduits.

4. Apply thin coat of sealing compound on ducts and conduits at couplings and bells.

5. Stagger the joints of the conduits by rows and layers so as to provide a ductline having the maximum strength.

6. Provide spacers to maintain proper separation between ducts.

7. Except at conduit risers, changes in direction of runs exceeding a total of ten degrees, either vertical or horizontal, shall be accomplished by long sweep bends having a minimum radius of curvature of 25 feet, unless indicated otherwise. Sweep bends may be made up of one or more curved or straight sections or combinations thereof.

8. Ducts shall be clean and free from debris and rubbish.

9. After each day's work, provide temporary conduit plugs at the end of conduit banks to prevent entry of dirt, rubbish, debris, or concrete.

10. Unless indicated otherwise, install #12 AWG galvanized iron pulling wire or polypropylene cord in each conduit after testing.

11. Warning Tapes: Provide warning tapes about twelve inches below the top of the trench in the backfill. For electric ducts, provide a 6-inch wide warning tape, red in color with a black imprinted message

"CAUTION -- ELECTRIC LINE BURIED BELOW, placed 12" below finish grade over electric ducts or the concrete jacket for electric ducts for the entire length of ductline installation. Warning tape shall be constructed with a metallic core sandwiched between the printed polyethylene tape above and a clear polyethylene tape below.

K. Concrete and Brick Work:

1. Concrete, ready mixed according to ASTM C94.

2. Concrete shall be composed of fine aggregate, coarse aggregate, Portland cement, and water so proportioned and mixed as to produce a plastic, workable mixture. Fine aggregate shall be of hard, dense, durable, clean, and uncoated sand. The coarse aggregate shall be reasonably well graded from 3/16-inch to 1-inch. The fine and coarse aggregates shall be free from dirt, vegetable matter, soft fragments or other deleterious substances.

   a. Water shall be fresh, clean, and free from salts, alkali, organic matter, and other impurities. Concrete shall have compressive strength as indicated. Slump shall not exceed three inches.

   b. Retampering of concrete will not be permitted. Exposed uniformed concrete surfaces shall be given a smooth, wood float finish.

3. Convey concrete from mixer to forms rapidly to prevent segregation. Free drop shall be limited to five feet, unless authorized by inspector.

4. Placing:

   a. Clean and remove all debris before placing concrete.

   b. Place concrete only on clean damp surfaces, free from water.

   c. Place concrete in forms, in horizontal layers not exceeding 18" thickness.

5. Forming:

   a. Forms shall be of good sound lumber with sufficient strength.

   b. Forms shall be treated with non-staining form oil immediately before each use.

6. Patching: Patch all voids, pour joints and holes before concrete is thoroughly dry. Use mortar of same proportions as original concrete.

7. Curing: Curing of concrete shall be accomplished by impervious membrane method with liquid membrane compound. Apply two or

more coats to obtain a total of one gallon for each 150 square feet of concrete surface.

L. Firestopping

1. Identify all fire-rated partitions and the appropriate firestopping method for each assembly.

2. Comply with all manufacturer recommendations before, during, and after installation, including those related to environmental conditions and ventilation. Installation shall be in accordance to the fire testing reports.

3. Clean surfaces of dirt, grease, dust, or other incompatible materials that may affect bond prior to applying firestopping products. Seal all openings or voids made by penetrations to ensure an air and water resistant seal.

4. Keep areas of work accessible until inspection by authorities having jurisdiction.

M. Cleaning and Repairs:

1. During the progress of work, all rubbish, waste lumber, displaced materials, etc. shall be removed as soon as possible. Upon completion of the work, Contractor shall remove from the DOT-A's property and from all public and private property, at his own expense, all temporary structures, tools, rubbish and waste material, etc., resulting from his operations, and leave the premises in broom clean condition.

2. The Contractor shall restore all removed or damaged pavement, gutters, curbs, sidewalks, walls, sign posts, trees and landscape damaged by his operations to as near their original condition or better.

3. Concrete sidewalks, curbs and gutters shall be repaired using 3,000 psi concrete as specified herein. Sidewalk thickness and curb and gutter cross-sections shall match existing, but shall be at least six inches.

4. Contractor shall begin sodding no more than one week after ground has been compacted. In the areas where seeding is recommended, the process for seed shall begin within the same time frame. The Contractor shall be responsible for complete restoration of the re-landscaped area until such time as the area has returned to the normal conditions that were present before construction.

3.03 TESTING AND INSPECTION

A. If the DOT-A (or its representative) discovers any errors, the Contractor, at his own expense, shall go over all similar portions of the entire job, taking the necessary or directed remedial action.

B. New and temporary conductors, 600 volts and less shall be tested for insulation resistance after all wiring is completed and ready for connection to fixtures and equipment. Using a 500V megger, measure and record the insulation resistance from phase to phase and phase to neutral. The records shall be submitted to the DOT-A for review and approval.

C. The Contractor shall re-tape splices which have been bared for inspection. The Contractor shall test all portions of the electrical system furnished by him for proper operation and freedom from accidental grounds. All tests shall be subject to the approval of the DOT-A.

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

E. Existing diesel generator shall have successful operation redemonstrated with new fuel tank via the required monthly maintenance test per NFPA 110 (30/30/30 test). Routine procedure shall be as established per manufacturer's recommendations, NFPA 110, and the governing authorities. Loss of normal power shall be simulated from automatic transfer switch with the required time delays. Generator shall run from cold start for minimum 30 minutes at minimum 30% of nameplate load.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

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

PROPOSAL TO THE STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

PROJECT:	UST REMOVALS AND REPLACEMENTS WITH ASTS
PROJECT NO.:	AK1046-31
CONTRACT TIME:	All work under this Contract shall be completed within three hundred and sixty (360) CALENDAR DAYS from the date indicated in the Notice to Proceed from the State.
LIQUIDATED DAMAGES:	FOUR HUNDRED FIFTY DOLLARS ($450.00) for every calendar day for failure to complete the project in the time stated above.
PROJECT MANAGER:	Maritez A. Marquez Department of Transportation, Airports 400 Rodgers Blvd., Suite 700 Honolulu, Hawaii 96819 (808) 838-8808 maritez.a.marquez@hawaii.gov
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.	

("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.

PROPOSAL SCHEDULE

UST REMOVALS AND REPLACEMENTS WITH ASTS
LIHUE AIRPORT
LIHUE, KAUAI, HAWAII
STATE PROJECT NO. AK1046-31

Item No.	Description	Approx. Qty	Unit Price	Total
1.	**DIVISION 1 – GENERAL REQUIREMENTS**			
01010.1	Safety Risk Management Activities	ALLOW	ALLOW	$ 5,000.00
01010.2	Unforeseen Conditions	ALLOW	ALLOW	$ 10,000.00
01524.1	Construction Waste Management	LS	LS	$
01561.1	Construction Site Pollution Controls	LS	LS	$
01562.1	Additional Management of Contaminated Media, and Soil Disposal and Soil Reuse	ALLOW	ALLOW	$ 10,000.00
01565.1	Security Measures	ALLOW	ALLOW	$ 20,000.00
01700.1	Mobilization (Not to exceed 6% of sum of all items, excluding this item, all allowances and force account items)	LS	LS	$
2.	**DIVISION 2 – SITE WORK**			
02050.1	Demolition and Removal Work	LS	LS	$
02210.1	Earth Moving (Excavation)	LS	LS	$
02230.1	Site Clearing	LS	LS	$
02370.1	Erosion and Sedimentation Control	LS	LS	$

02770.1	Concrete Walkway	LS	LS	$_____
02820.1	Chain Link Fences and Gates	LS	LS	$_____
02920.1	Lawns and Grasses	LS	LS	$_____
3.	**DIVISION 3 – CONCRETE**			
03300.1	Concrete Slab on Grade	LS	LS	$_____
4.	**DIVISION 4 – MASONRY**			
04810.1	CMU Walls	LS	LS	$_____
5.	**DIVISION 15 – MECHANICAL/PLUMBING**			
15193.1	Fuel Systems	LS	LS	$_____
6.	**DIVISION 16 – ELECTRICAL**			
16010.1	Electrical Work	LS	LS	$_____

TOTAL AMOUNT FOR COMPARISON OF BIDS $_____

Notes:
The bid prices herein shall include all labor, materials, equipment, and incidentals necessary to construct all items in place, including installation and testing of equipment, complete and ready for operation, all in accordance with the plans and specifications.

Note 1: Bid shall include all Federal, State, County and other applicable taxes.

Note 2: The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.

Note 3: Bidders shall complete all unit prices and amounts. Failure to do so shall be grounds for rejection of bid.

Note 4: State reserves the right to reject any or all Bids and to waive any defects in said Bids in the best interest of the State.

Note 5: Submission of a Bid 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.

Note 6: The bidder's attention is directed to Section 2.11 – BID SECURITY and Section 2.24 – REQUIREMENTS OF CONTRACT BONDS of the "General Provisions", as amended by the Special Provisions.

Note 7: Bidders shall be paid for actual work performed as directed by the Engineer for allowance items. Bidders will not be paid overhead and profit for unused allowance funds.

Note 8: If the TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available for the project, then the State reserves the right to negotiate with the lowest, responsive, responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes (HRS), to further reduce the scope of work and award a contract thereafter.

Note 9: **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. 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 with the proposal. The record of each bidder and respective bid shall be open to public inspection.** 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.**

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.

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 _____, _____

(Seal) _____
Name of Principal (Offeror)

_____
Signature

_____
Title

(Seal) _____
Name of Surety

_____
Signature

_____
Title

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

AIRPORTS

FORMS

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)

KNOW TO ALL BY THESE PRESENTS:

That _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Principal, and

_____
(full legal 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 entered into a Contract with Obligee dated _____ for _____
_____
_ 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 (Offeror)

_____
Signature*

_____
Title

(Seal) _____
Name of Surety

_____
Signature*

*ALL SIGNATURES MUST BE
ACKNOWLEDGED BY A NOTARY PUBLIC

_____
Title

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)

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 entered into a Contract with Obligee dated _____ for _____
_____
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 material 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 judgement rendered thereon; subject to the Obligee's priority on the bond. If the full amount of the liability of the Surety on the bond is insufficient to pay the full amount of the claims, then after paying the full amount due to the Obligee, the remainder shall be distributed pro rata among the Claimants.

Signed and sealed this _____ day of _____, _____.

(Seal) _____
Name of Principal (Offeror)

_____
Signature*

_____
Title

(Seal) _____
Name of Surety

_____
Signature*

*ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

_____
Title

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 _____.

_____
Name of Corporation, Partnership, or Individual

_____
Signature and Title of Signer

Subscribed and sworn before me this
_____day of_____.

_____
Notary Public,_____ Judicial Circuit,
State of Hawaii
My Commission Expires:_____

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

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.

EXHIBIT 1