

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

SPECIAL PROVISIONS, SPECIFICATIONS, PROPOSAL
FOR
REPLACE ARFF STATION EMERGENCY GENERATOR
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

STATE PROJECT NO. CM1222-53

MAY 2023

NOTICE TO BIDDERS

(Chapter 103D, HRS)

SEALED BIDS for REPLACE ARFF STATION EMERGENCY GENERATOR, KAHULUI AIRPORT, KAHULUI, MAUI, HAWAII, PROJECT NO. CM1222-53, will begin as advertised on May 17, 2023, in HiePRO. Bidders are to register and submit bids through HiePRO only. See the following HiePRO link for important information on registering: <https://hiepro.ehawaii.gov/welcome.html>.

Deadline to submit bids is June 15, 2023, 2:00 P.M., Hawaii Standard Time (HST). The complete bid Proposal Schedule shall be uploaded into HiePRO prior to bid opening date and time. All other required confidential and proprietary documents shall be uploaded separately. Failure to upload the bid Proposal Schedule into HiePRO shall be grounds for the rejection of the bid. Bids received after said due date and time shall not be considered.

The scope of work consists of the replacement of the emergency generator and associated equipment with a higher capacity generator system. The work will also include abatement and proper disposal of hazardous materials. The estimated cost of construction is between \$2,250,000 and \$2,750,000.

To be eligible for award, bidders must possess a valid State of Hawaii General Engineering "A" license or General Building "B" license at the time of bidding.

The GENERAL PROVISIONS dated 2016 applicable to this project are available on the internet at <http://hidot.hawaii.gov/administration/con/>.

A pre-bid conference is scheduled for May 23, 2023, 9:00 A.M. HST. Due to the impacts of COVID-19, the pre-bid will be held via Microsoft Teams teleconference. All bidders that wish to attend must send an email indicating their interest to Mr. Steve Tagupa, our Airports State Project

Manager, at steve.tagupa@hawaii.gov. They will be added to the Teams attendance list and will be sent an invitation email with a Teams web-link. This will allow each person to attend the pre-bid via the internet. The invitation will also contain teleconference information so they may call in instead. The deadline to sign up for the pre-bid teleconference is two (2) working days prior to the date of the pre-bid conference.

A site visit is scheduled for May 23, 2023, 2:00 P.M. HST. Please contact ARFF Captain Nolasco at Kahului Airport by phone at (808) 872-3841 once you arrive at the ARFF Station.

ALL requests for information shall be received in writing via HIEPRO prior to the Question Due Date in the General Information of the HIEPRO solicitation. Questions received after the deadline will not be addressed. Verbal requests for information will not receive a response.

Apprenticeship Preference. A 5% bid adjustment for bidders that are parties to apprenticeship agreements pursuant to §103-55.6, HRS, is applicable to this project.

Employment of State Residents on Construction Procurement Contracts. Compliance with §103B-3, HRS is a requirement for this project whereby a minimum of 80% of the bidder's and subcontractors' work force (including any listing of pre-approved subcontractors) on this project must consist of Hawaii residents.

Campaign contributions by State and County Contractors. Contractors are hereby notified of the applicability of §11-355, HRS, 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 §103D-701, HRS and §3-126, HAR.

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 will affirmatively ensure that the contract entered into pursuant to this advertisement will 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 Mr. Steve Tagupa, our Airports State Project Manager at (808) 838-8805 or by email at steve.tagupa@hawaii.gov.

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



EDWIN H. SNIFFEN
Director of Transportation

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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 seventeen (17) calendar days before the bid opening date, not including 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:

"The bidder shall submit the proposal in HIEPRO. The proposal shall be UPLOADED to HIEPRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Original (wet ink) proposal documents are not required to be submitted. The award will be made based on proposals uploaded in HIEPRO. Any and all other additional documents explicitly designated and labeled as CONFIDENTIAL OR PROPRIETARY shall be UPLOADED SEPARATELY to HIEPRO. **If there is a conflict between this specification and its 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 bid security shall be included with its bid 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. A bidder may withdraw or modify a proposal after the bidder submits the proposal in HIEPRO. Withdrawal or modification of proposal must be completed before the time set for the receiving of bids."

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 (C-13)
Plumbing (C-37) or Fuel Dispensing (C-37f)"

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."

8.20 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
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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 Division, 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 Division.
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 Division.

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 Division, 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
AIRPORTS DIVISION

SPECIFICATIONS

PART II — TECHNICAL PROVISIONS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01000 - DESCRIPTION OF WORK

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 SCOPE OF WORK

- A. The work includes but is not limited to the following tasks at the Airfield Rescue & Fire Fighting (ARFF) Station at Kahului Airport, Maui.
 - 1. Replacement of the existing generator system and associated electrical equipment as noted in the contract plans and specifications
 - 2. Installation of a new above ground storage tank and associated piping to the new emergency generator system
 - 3. Work on the exiting electrical distribution system to accommodate the new emergency generator system
 - 4. Commissioning of the new emergency generator system and associated electrical equipment.
 - 5. Any other work as noted in the contract plans and specifications
- B. The work to be performed under this Contract shall also include preparing and obtaining all permits required to complete this project and other related works as called for on the plans and these specifications.

1.03 PERMITS

- A. The Contractor is responsible for any permits, if required, before starting the construction. DOTA anticipates that the following permits will be required for this project.

- 1) None anticipated at this time.

If any of these permits are found to be unnecessary, the Contractor shall provide documentation from the appropriate permitting agency showing that the permit is not required for this project before any construction operations take place.

- B. The Contractor is responsible for the preparation and submittal of application document(s) to the appropriate permitting agency, payment of application fee(s), and all other work necessary to obtain all required permit(s) prior to starting construction operations at the project site. Construction operations shall not start until all required permits are approved by the appropriate permitting agencies and copies submitted to the Engineer for the record.
- C. Bidders are responsible for researching and confirming which permits are and are not necessary for this project. Bidders shall exercise due diligence in researching what permits, if any, are required beyond those mentioned in Part 1.3(A) above. If a permit beyond those mentioned in Part 1.3(A) above is found to be necessary for this project, then bidders shall factor the additional cost of obtaining this permit into their bid. Permits that are found to be required after bid opening shall be obtained at no additional cost to the State.
- D. All fines levied against this project as a result of failing to apply for a required permit prior to starting work shall be borne entirely by the Contractor.
- E. All work necessary for researching permits, determining their necessity for this project, preparation and submittal of permit application document(s), payment of application fee(s), etc. up to the issuance of the approved permit(s) are considered incidental to the Contract.

1.04 ALLOWANCE

- A. Allowance includes, but not limited to, works required for environmental measures, when required by the regulation(s); unforeseen conditions and other measures, such as temporary traffic controls, temporary safety measures, security measures, and material short supply when approved by the Engineer.
- B. Use the allowance only as directed by the Engineer for the airport's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- C. Contractor's overhead, profit, and related costs for products and equipment ordered by the Airport under the contingency 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.
- D. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- E. At project closeout, any unused amounts remaining in the Allowance will be credited back to the State.

1.05 HOURS OF WORK FOR CONSTRUCTION

- A. Work hours for construction are subject to the following:

1. Normal work hours for Kahului Airport are between 8:00 AM to 5:00 PM Monday to Friday. Bidders shall not assume that they will be given work windows during these hours. The Airport reserves the right to adjust work hours in order to provide minimum interruption to Airport Operations with no additional cost to the State.
 2. Work hours shall be coordinated with the Airport Manager to provide minimum interruption to facility operations while performing work.
 3. The Contractor will be required to shift to night work hours, at no additional cost to the State, for any work that negatively impacts airport operations especially passenger movement and or comfort. Night work hours may be from Sunday night to Friday morning 10:00 PM to 6:00 AM the following day. However, starting and ending times as well as duration may be adjusted by the Airport Manager depending on the actual flight schedules and airport operational considerations. Contractor vehicles and equipment are not allowed on the aircraft apron fronting the terminal from midnight to 6:00 AM.
 4. Work hours shall be coordinated with the Airport Manager in order to protect the general public and airport employees from excessive dust and noise levels unless protective measures are taken by the Contractor (e.g. noise and/or dust control) to reduce the impact to a level acceptable to the Airport Manager.
- B. The Contractor shall work continuously throughout the project duration. The Contractor shall apply and receive approval from the Engineer in writing of all work occurring outside of normal work hours. 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 State representatives, as authorized by the State, shall be in accordance with Article VII, Section 7.5 of the General Provisions.

1.06 SITE VISIT

- A. The Contractor shall visit the work site and verify all conditions pertinent to the Contract he/she is bidding on.

1.07 COORDINATION

- A. The Contractor shall coordinate the work of different trades and shall be solely responsible for fulfillment of requirements specified herein.

1.08 SAFETY

- A. The Contractor shall take all necessary precautions to protect all his and/or her workmen and all 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. During the progress of the work, all 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. Outage: Written requests for power outage shall be submitted to the Engineer at least seven (7) days in advance or as specified in other sections of these specifications. Outage will be restricted to non-peak operational hours.
- D. Barricades and warning signs shall be erected by the Contractor in the work area to properly protect all personnel in the area.

1.09 VEHICLE PARKING

- A. Subject to availability of space and approval by the Airport Manager, the Contractor may request parking for their vehicles. The Contractor shall submit the parking requests for themselves and any subcontractors to the Airport Manager through the Engineer for review. Upon approval by the Airport Manager, a maximum of two (2) temporary parking passes per subcontractor and maximum of three (3) passes for the General Contractor will be issued at the Contractor's cost. At the Airport Manager's discretion, the parking passes are good for either three (3) months or six (6) months and must be renewed before the passes expire.
- B. All passes will be signed out and become the responsibility of the General Contractor. The General Contractor will distribute the parking passes among their subcontractors.
- C. Additional parking passes beyond the temporary parking passes may be purchased. These passes are subject to approval by the Airport Manager and availability of parking spaces.
- D. All costs associated with obtaining parking passes shall be incidental to the Contract.

1.10 PROVISIONS FOR FIELD OFFICE/STORAGE SPACE

- A. Bidders shall not assume that a field office and or storage space will be available on the Airport Property by the Notice to Proceed date. Pending the availability, the State may issue a permit to the Contractor for the use of a space within the Airport Property, at no charge, to be used specifically for a field office and/or storage of materials and equipment. 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 at no additional cost to the State.

1.11 PROTECTION OF EXISTING STRUCTURES AND IMPROVEMENTS

- A. The Contractor shall preserve and protect all structures, equipment, and vegetations on/or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this Contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will

remain in place. If any limb or branches of trees are broken during Contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Engineer.

- B. The Contractor shall protect from damage all existing improvements and utilities at/or near the work site.

1.12 TEMPORARY CONSTRUCTION SIGNS

- A. The Contractor shall install temporary construction signs where the presence of planned construction areas will obstruct the existing signage or cause the closing of an existing method of egress or ingress and/or as directed by the State. Such signs shall be in accordance with the Department of Transportation – Airports Signage and Graphics Manual, highway standards for construction warning signs for background and text colors (white letters on fluorescent yellow background). Signs may be mounted on suitable approved material other than aluminum panels. The Contractor will be responsible to fabricate and install such signs. Costs related to this activity will be considered as incidental to and included in the bid price for the various items of work in this project.

1.13 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 power, communications 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. Per note 25 on Sheet E-001 of the plans, the Contractor shall provide a temporary portable generator for the purpose of powering mission critical ARFF equipment that must remain operational during any outages. The Contractor shall also provide any accessories required to connect that ARFF equipment to the temporary generator. Providing and operating the temporary generator, fuel, and the required accessories shall be incidental to the contract.
- D. The Contractor shall preserve access to the adjacent fuel dispensing system and firefighting foam dispensing systems. 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.

1.14 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. 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.
- C. 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.
- D. The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, and transportation incidental to the accurate and satisfactory completion of this work.
- E. 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.

1.15 OPERATIONS AND STORAGE AREAS

- A. Storage & staging areas may be available on a limited basis. Due to the number of projects in progress or projected to be in progress, the State does not guarantee the availability of such areas on airport property. The Contractor may request storage & staging area(s) within AOA fence once the Notice to Proceed date is set.
- B. The Contractor shall confine all operations (including storage of material) on the Airport premises to areas authorized or approved by the Engineer. The Contractor shall hold and save the Airports Division free and harmless from liability of any nature occasioned by the Contractor's performance.
- C. The Contractor shall use only established roadways. When materials are transported in prosecuting the work, vehicle shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local laws or regulations. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, and roadways.

1.16 CLEANING UP

- A. The Contractor shall keep the work area, including storage areas, free from accumulations of waste materials, at all times. Before completing the work, the Contractor shall remove from the work and premises any rubbish, tools, scaffolding, equipment, and materials that are not the property of the Airports Division. Upon completing the work, the Contractor shall leave the work area in clean, neat, and orderly condition satisfactory to the Engineer.

1.17 VERIFICATION OF DIMENSIONS

- A. The Contractor shall be responsible for the coordination and proper relation of his work to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Owner's Representative of any discrepancy between the field measurements and the plan dimensions before performing any work.

1.18 STANDARDS & CODES

- A. Wherever references are made in the contract to the respective standards, specifications and advisory circulars in accordance with which work is to be performed or tested, it is to be understood that the edition or revision of the standards, specifications and advisory circulars in effect on the date of the bidder's proposal shall apply unless otherwise expressly set forth in the contract. Unless otherwise specified, reference to such standards is solely for technical information.
- B. In case of conflict among any such referenced standards and codes or between any such standard(s) or code(s) and the requirements of the Contract, the stricter requirement shall govern.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAVEMENT

4.01 METHOD OF MEASUREMENT

- A. Work under this section will be measured for payment and paid for at the pre-approved contract price. All work specified in the contract plans and specifications shall be paid for at the Contract LUMP SUM PRICE for Bid Item No. 01000.4 (Construction Work) except for work specified as part of allowance items or work specified as part of other LUMP SUM pay items (Sections 01561, 01562, and 01700). The Contract Price shall be full

compensation for all materials, labor, tools, equipment, and all other incidentals necessary to complete the work.

4.02 BASIS OF PAYMENT

- A. All payments shall be full compensations for all work described under this Section, and all materials, labors, tools, equipment, and incidentals needed to complete the Contract.
- B. Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01000.1	Temporary Traffic Signs & Controls	Allowance (ALLOW)
01000.2	Unforeseen Site Conditions	Allowance (ALLOW)
01000.3	Material Short Supply	Allowance (ALLOW)
01000.4	Construction Work	Lump Sum (ALLOW)

END OF SECTION

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work under separate contracts.
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and drawing conventions.
8. Miscellaneous provisions.

B. Related Requirements:

1. SECTION 01580 TEMPORARY FACILITIES AND UTILITIES for limitations and procedures governing temporary use of Owner's facilities.

C. Conflicts:

1. In the event of conflicts between the requirements of this Section and any other Section of this Specification the stricter requirement in the judgement of the State Project Manager shall govern.

1.02 PROJECT INFORMATION

A. Project Identification: Project CM1222-53 Replace ARFF Station Emergency Generator

1. Project Location: Kahului Airport
1 Keolani Place Kahului, HI 96732.
Telephone (808) 872-3830

B. Owner: State of Hawaii Airport System owned and operated by the State of Hawaii, Department of Transportation, Airports Division

1. Owner's Representative: Mr. Marvin Moniz, Maui Air District Manager

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and described in Section 01000, Part 1
- B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.04 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
 - 1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's tenants, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.05 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day- to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than ten working days in advance of activities that will affect Owner's operations.

1.06 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of

authorities having jurisdiction.

- B. On-Site Work Hours: Coordinate work hours with the Airport Manager
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than ten working days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations. Contractors shall submit an "Outage Request Form" at Daniel K. Inouye International Airport and a written request at all other airports.
- D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- E. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.07 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. ~~DIVISION 4-~~ GENERAL REQUIREMENTS: Requirements of Sections in Division 1— apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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 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.

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 award 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 award 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, Department of Transportation, Airports Division 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 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 accepted 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 by the Engineer and State Project Manager.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing

requirements are the responsibility of the Engineer. All inspection and test reports shall be stamped and signed by a licensed professional engineer.

B. DESCRIPTION OF PROGRAM

1. General Description. The Contractor shall establish a Quality Control Program to perform work quality inspections and control testing on all materials and items of work required by the technical specifications, including those performed by subcontractors. This program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The program shall be effective for control of all construction work performed under this Contract, 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 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 within thirty (30) calendar days after the date of award.
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 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 program, including work quality inspection and control testing on materials 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 Licensed Engineer of the Contractor, or a consultant engaged by the Contractor. The CQCSM shall have a minimum of 10 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.

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 either be an engineer, engineering technicians, or experienced craftsman with qualifications in the appropriate fields and shall have a minimum of 7 years of experience in their area of expertise. The Quality Control Technician shall be on the project full time and shall have no production duties.

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 1.05E.

- b. Performance of quality control tests as required by the Contractor's program.
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 part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan 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, as a minimum, include the following:

1. specification item number;
2. Item description (e.g., plant control, concrete cylinder tests);
3. Test type (e.g., concrete compressive strength);
4. Test standard (e.g., ASTM or AASHTO test number, as applicable);
5. Test results and adjustments made (e.g., to meet specification tolerance requirements; and,)
6. Responsibility (e.g., plant technician, independent lab).

The testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665.

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 inspections or tests have been performed, including type, results of inspections or test; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and/or 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.

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. Compliance with approved submittals;
 - c. Proper storage of materials and equipment;
 - d. Proper operation of all equipment;
 - e. Adherence to plans and technical specifications;
 - f. Review of quality control tests; and
 - g. 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 stamped and signed by the licensed professional engineer 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. Test Reports. The Contractor shall be responsible for establishing a system which will record all off-site and on-site control test results. 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. Remedial action and retest results.

Test results shall be submitted to the Engineer and State Project Manager within one (1) week of testing. The test reports shall be stamped and signed by the licensed professional engineer 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.

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.

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

J. NONCOMPLIANCE

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 authorized representative at the site of the work, shall be considered sufficient notice.

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:

1. 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).

2. Order the Contractor to stop operations in accordance with Section 8.10 – “Suspension of Work” of the General Provisions for Construction Projects (2016).
3. Determine work performed by the Contractor during periods of noncompliance to be unacceptable and subject to 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 01533 - BARRICADES

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.

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

REPLACE ARFF STATION EMERGENCY GENERATOR
KAHULUI AIRPORT
PROJECT NO. CM1222-53

BARRICADES
01533-1
r02/02/23

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 - ENVIRONMENTAL CONTROLS

PART I – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Provisions, Special Provisions, and Technical Provisions, apply to the work specified in this section. Special attention is directed to the following Articles:
1. State of Hawaii, Air and Water Transportation Facilities Division, General Provisions for Construction Projects, Article VI, Control of Materials, Paragraph 6.8 Non-Conforming Materials.
 2. State of Hawaii, Air and Water Transportation Facilities Division, General Provisions for Construction Projects, Article VII, Legal Relations and Responsibility to Public, Paragraph 7.14 Pollution Control and Protection of Archeological Historical, and Burial Sites.
 3. State of Hawaii, Air and Water Transportation Facilities Division, General Provisions for Construction Projects, Article VII, Legal Relations and Responsibility to Public, Paragraph 7.17 Contaminated or Hazardous Items and Material; Regulated Items and Material; Waste.
 4. Section 01561 Construction Site Runoff Control Program.
 5. Section 01562 Management of Contaminated Media.
- B. The latest version of the State of Hawaii, Department of Transportation, Airports Division (DOTA) Construction Activities BMP Field Manual.

1.2 ENVIRONMENTAL PROTECTION

With the exception of those measures set forth elsewhere in these specifications, environmental protection shall consist of 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 which adversely affect human health or welfare, unfavorably alter ecological balances of importance to human life, affect other species of importance to man, or degrade the utilization of the environment for aesthetic and recreational purposes.

1.3 APPLICABLE REGULATIONS

In order to provide abatement and control of environmental pollution arising from the construction activities of the Contractor and their Subcontractors in the performance of this contract, the work performed shall comply with the intent of all applicable Federal, State, and Local laws and regulations concerning environmental pollution control and abatement, including, but not limited to, the following regulations:

- A. State of Hawaii, Department of Health, Administrative Rules, Chapter 55, WATER POLLUTION CONTROL; Chapter 54, WATER QUALITY STANDARDS.
- B. State of Hawaii, Department of Health, Administrative Rules, Chapter 59, AMBIENT AIR QUALITY, Chapter 60.1, AIR POLLUTION CONTROL.
- C. State of Hawaii, Department of Health, Administrative Rules, Chapter 42, VEHICULAR NOISE CONTROL.
- D. State of Hawaii, Department of Health, Administrative Rules, Chapter 46, COMMUNITY NOISE CONTROL.
- E. State of Hawaii, Occupational Safety and Health Standards, Title 12, Department of Labor and Industrial Relations, Subtitle 8, Division of Occupational Safety and Health, Part 3 Construction Standards, Chapter 145 Asbestos.
- F. Environmental Protection Agency, Code of Federal Regulations Title 40, Part 61, Subpart M (Revised Subpart B), NATIONAL EMISSION STANDARDS FOR AIR POLLUTANTS and Subpart B, NATIONAL EMISSION STANDARDS FOR ASBESTOS; Final Rule dated November 20, 1990.
- G. State of Hawaii, Department of Health, Title 11, Chapter 501, Asbestos Requirements.
- H. U.S. Department of Labor - Occupational Safety and Health Administration (OSHA) Asbestos Regulations, Code of Federal Regulations Title 29, Parts 1910, 1915 and 1926, Occupational Exposure to Asbestos, Final Rule dated August 10, 1994.

1.4 SUBMITTALS

The Contractor shall submit the following items within 30 calendar days after the Notice to Proceed Date:

- A. Submit proposed means, methods, techniques and procedures to be used for environmental control.
- B. Submit a State of Hawaii Department of Health Asbestos Notification of Demolition and Renovation Form for all demolition projects (including facilities which no asbestos is present) and renovation projects per HAR 11-501.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 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, and all other work areas within or without the project limits free from dust which would cause a hazard to the work or operations of other Contractors, or to persons or property. Industry-accepted methods of stabilization suitable for the area involved, such as sprinkling or similar methods, will be permitted. Chemical or oil treating shall not be used.
- C. Burning on Airport property shall not be permitted.

3.2 WATER POLLUTION CONTROL

- A. Wastes: The Contractor shall not deposit, at the airport site or in its vicinity, solid waste or discharge liquid waste, such as fuels, lubricants, bituminous waste, untreated sewage, and other pollutants which may contaminate the body of ground water.
- B. Spillages: No petroleum products, bituminous materials, or other deleterious substances, including debris, are allowed to fall, flow, leach, or otherwise enter the sewage systems or storm drains. All spills shall be immediately reported by following the instructions found on the Spill Reporting Fact Sheet for the appropriate airport and completing the Spill Reporting Form. The Spill Reporting Fact Sheet and Form can be found at:

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

Any fines assessed to DOTA, as a result of Contractor's spillages or the Contractor's failure to report spillages, shall be paid by the Contractor.

Reference Specification Section 01562, Paragraph 3.3(C) Release Reporting for additional information and requirements.

- C. Erosion: The Contractor shall provide any necessary temporary drainage, dikes, and similar facilities to prevent erosion damage to the site. Run-off shall be controlled to prevent damage to the surrounding area.

3.3 NOISE CONTROL

- A. At all times keep objectionable noise generation to a minimum by:
 - 1. Equipping air compressors with silencing packages.
 - 2. Equipping jackhammers with silencers on the air outlet.
 - 3. Equipment that can be electrically driven instead of gas or diesel is preferred. If noise levels on equipment cannot reasonably be brought down to criteria, listed as follows, either the equipment will not be allowed on the job or use time will have to be scheduled subject to approval of the Engineer.
 - 4. All construction vehicles and equipment on the project operating between 10:00 p.m. and 7:00 a.m. shall be equipped with an ambient noise sensing variable volume backup alarm system. The system shall be in compliance with Title 29 of the Code of Federal Regulations, Part 1926.601(b)(4)(i).
- B. Objectionable noise received on neighboring properties is defined as any noise exceeding the noise limits of State Regulations (Title 11, Hawaii Administrative Regulations, Department of Health, Chapter 46 – Community Noise Control) or City and County of Honolulu ordinance, as stated below, or as any noise causing a public nuisance in a residential area, as determined by the State and community representatives, or by the nuisance provisions of local ordinances.
 - 1. The noise limitations established are as set forth in the following table after any applicable adjustments provided for herein are applied:

RECEIVING PROPERTY

<u>Noise Source</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Airport	50 dBA	65 dBA	70 dBA

- 2. Between the hours of 6:00 pm to 5:00 am on weekdays and weekends, the noise limitations above may be exceeded for any receiving property by no more than:
 - a. Five dBA for a total of 15 minutes in any one hour period; or
 - b. Ten dBA for a total of 5 minutes in any one hour period; or
 - c. 15 dBA for a total of 1.5 minutes in any one hour period.
- C. In addition to the noise controls specified, demolition and construction activities conducted within 1,000 feet of residential areas may have additional noise controls required.
- D. The Contractor and its subcontractor operations shall, at all times, comply with all

State of Hawaii and City and County of Honolulu requirements.

- E. For work conducted within Airport buildings, noise levels from work activities shall not exceed 85 dBA on the slow scale at the project boundary.

3.4 DISPOSAL

Construction waste, such as crates, boxes, building materials, pipes, and other rubbish shall be properly disposed of at a licensed landfill. Please consult with the local landfill to ensure that objects meet the specific landfill's requirements for size, type, etc. Other areas or methods proposed by the Contractor will be approved only if the Engineer determines that their effect on the environment is equal to or less than those described herein.

3.5 HAZARDOUS MATERIALS CONTROL

- A. The use of hazardous materials, i.e., asbestos and PCB, in the construction of this project shall be strictly prohibited. Any corrective action to remove and replace the hazardous material and contaminated work shall be at the sole expense of the Contractor.

B. DEFINITIONS

1. HAZARDOUS SUBSTANCE – Any substance designated pursuant to Section 311(b)(2)(A) of the Clean Water Act; any element, compound, mixture, solution, or substance designated pursuant to Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act; any toxic pollutant listed under Section 307(a) of the Clean Water Act; any hazardous air pollutant listed under Section 112 of the Clean Air Act, as amended (42 U.S.C. §§7401-7626); any imminently hazardous chemical substance or mixture regulated under Section 7 of the Toxic Substances Control Act, as amended (15 U.S.C. §§2601-2671), oil, trichloro propane, and any other substance or pollutant or contaminant designated by rules adopted pursuant to this chapter (Chapter 128D, Hawaii Revised Statutes)
2. OIL – Oil Waste of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, oil mixed with waste, crude oil or any fraction or residue.
3. POLLUTANT OR CONTAMINANT – Any element, substance, compound, or mixture, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformation, in such organism or their offspring.

PART 4 – MEASUREMENT AND PAYMENT

4.1 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, Construction Site Runoff Control Program.

END OF SECTION

SECTION 01561 – CONSTRUCTION SITE RUNOFF CONTROL PROGRAM

PART 1 – GENERAL

1.1 DESCRIPTION

This Section describes the following:

- (A) The Contractor shall comply with the following referenced documents:
- State of Hawaii, Department of Transportation, Airports Division (DOTA) Construction Activities Best Management Practices (BMP) Field Manual, in developing, installing, and maintaining Site-Specific BMPs for all projects.
 - DOTA's Storm Water Programs (SWMPP) for the Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG), as applicable.
 - Hawaii Administrative Rules (HAR) Chapters 11-54, 11-55, and 11-60.
 - Honolulu's City and County "Rules Relating to Water Quality" for all projects on Oahu. Use respective Soil Erosion Guidelines for Maui, Kauai and Hawaii projects.
 - Applicable Federal, State and Local Permit Conditions.
 - All other documents referenced in this Section.

For any conflicting requirements between the referenced documents and applicable bid documents, the stricter requirement will prevail and govern. Should a requirement not be clearly described within the applicable bid documents, notify the Engineer immediately for interpretation. For the purposes of clarification, "applicable bid documents" include the construction plans, specifications, and Permits.

- (B) Detailed plans, diagrams, and written Site-Specific Best Management Practices (BMPs); construction, maintenance, and repair of temporary water pollution, dust, and erosion control measures at the project site, including local material sources, work areas, and haul roads; removal and disposal of hazardous wastes; control of fugitive dust (defined as uncontrolled emission of solid airborne particulate matter from any source other than combustion).
- (C) Work associated with construction stormwater, dewatering, and hydrotesting activities and compliance with conditions of the Notice of General Permit Coverage (NGPC) or National Pollutant Discharge Elimination System (NPDES) permit(s) authorizing discharges associated with construction stormwater, dewatering, and hydrotesting activities.
- (D) Potential pollutant identification and mitigation measures, listed in Appendix A for use in the development of the Contractor's Site-Specific BMP.

Requirements of this Section also apply to construction support activities including: concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas,

material storage areas, excavated material disposal areas, and borrow areas located both inside and outside of 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.

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

PART 2 PRODUCTS

2.1 MATERIALS

Comply with applicable materials described in the current DOTA "Construction Activities BMP Field Manual" and Section 3 and 4 of the current City and County of Honolulu "Storm Water Best Management Practice Manual." Refer to FAA Advisory Circulars and DOTA District, 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 both 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. It is recommended that stolons, sprigs, or plugs be used to avoid providing hazardous species with a readily available food source. The use of seeds shall not be allowed.

Alternative grass species shall only be applied with the approval of the DOTA Environmental Section. This includes, but 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. The grass label or tag shall be provided to the DOTA Environmental Section.

Irrigation of these grass shall be done during the hours of darkness to avoid providing another hazardous wildlife attractant.

- (B) Fertilizer and Soil Conditioners. Fertilizer and soil conditioners shall conform to Hawaii Standard Specifications for Road and Bridge Construction 2005 or latest edition, Subsection 619.02(H)(1) – Commercial Fertilizer. Fertilizers shall not be applied during inclement weather or rain events.

The use of alternative types of fertilizer and soil conditioners shall be subject to the approval of the DOTA Environmental Section.

- (C) Hydro-mulching. Hydro-mulching used as a temporary stabilization measure shall consist of specially processed fiber which shall form a homogeneous slurry after addition and agitation in hydro-mulch applicator equipment.
1. Mulches shall be recycled materials including bagasse, hay, straw, wood cellulose bark, wood chips, or other material acceptable to the DOTA Environmental Section. Mulches shall be clean and free of noxious weeds and deleterious materials.
 2. Potable water shall meet the requirements of Hawaii Standard Specifications for Road and Bridge Construction 2005 or latest edition, Subsection 712.01 – Water. Submit alternate sources of irrigation water to the Engineer for acceptance by the DOTA Environmental Section if deviating from 712.01 – Water.
 3. Soil and Mulch Tackifier shall meet the requirements and installation in accordance with portions of Hawaii Standard Specifications for Road and Bridge Construction 2005 or latest edition, Section 641 – Hydro-Mulch Seeding, including 641.02(D) – Soil and Mulch Tackifier. The use of seeds in the hydro-mulch mixtures shall not be allowed.

Alternative materials or methods to control, prevent, remove, and dispose pollution are allowable if acceptable to the DOTA Environmental Section.

PART 3 EXECUTION

3.1 PRECONSTRUCTION REQUIREMENTS

- (A) Water Pollution, Dust, and Erosion Control Meeting.
Schedule a water pollution, dust, and erosion control meeting with the Engineer after the Site-Specific BMP Plan is submitted to the Engineer and accepted in writing by the DOTA Environmental Section. 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, applicable subcontractors, Engineer, DOTA Environmental Section and/or any authorized representatives of the designated attendees. The meeting will discuss the sequence of work, and plans and proposals for water pollution, dust, and erosion controls.
- (B) Water Pollution, Dust, and Erosion Control Submittals.
Submit a Site-Specific BMP Plan within 30 calendar days of Contract Execution to the Engineer for acceptance by the DOTA Environmental Section. Submission of the complete and acceptable Site-Specific BMP Plan is the sole responsibility of

the Contractor, and additional contract time will not be issued for delays due to incompleteness.

Include the following:

1. Written description of activities to minimize water pollution and soil erosion into drainage systems, sewer systems, and State waters. Include proposed means, methods, techniques, and procedures to be used for environmental control. BMP shall include, but not limited to, the following:
 - a. An identification of potential pollutants and their sources.
 - b. A list of all materials and heavy equipment to be used during construction.
 - c. Descriptions of the methods and devices used to minimize the discharge of pollutants into drainage systems, sewer system, and State waters.
 - d. Details of the procedures used for the maintenance and subsequent removal of any erosion or siltation control devices.
 - e. Methods of removing and disposing hazardous wastes encountered or generated during construction.
 - f. Methods of removing and disposing concrete and asphalt pavement cutting slurry, concrete curing water, and hydro-demolition water.
 - g. Spill Control and Prevention, and Emergency Spill Response Plan.
 - h. Fugitive dust control, including dust from earth-disturbing, hauling, grinding, sweeping, or brooming off operations, or combination thereof.
 - i. Methods of storing and handling of oils, paints, and other products used for the project.
 - j. Material storage and handling areas, and other staging areas, including storage of reinforcing steel and building material.
 - k. Concrete truck washouts.
 - l. Concrete waste and asphalt concrete waste control.
 - m. Fueling and maintenance of vehicles and other equipment.
 - n. Tracking of sediment offsite from project entries and exits.

- o. Litter management. Prevention of Foreign Object Debris (FOD) is essential.
 - p. Sanitary/Septic Waste Management and Facilities.
 - q. Stockpiles of Aggregates, Soils, Asphalt Concrete Material, Concrete Waste, and Asphalt Concrete Waste.
 - r. Methods of Handling and Removal of Contaminated Soils and Groundwater encountered or generated during construction.
 - s. Methods and Procedures for Dewatering.
 - t. Methods and Procedures for Hydro-Testing.
 - u. Methods and Practices for proper Housekeeping, including excessive sawdust; concrete spill prevention and removal; and collection and removal of building materials waste, such as tie wires, reinforcing steel, and lumber.
 - v. Other factors that may cause water pollution, dust, and erosion control.
2. Plans indicating location of water pollution, dust and erosion control devices; plans and details of BMP measures and devices to be installed or utilized; identify areas of soil disturbance in cut and fill; indicate areas used for construction staging and storage, including items (1) through (22) above, storage of aggregate (indicate type of aggregate), asphalt cold mix, soil or solid waste, equipment and vehicle parking, and areas where vegetative practices are to be implemented. Indicate intended drainage pattern on plans. Include flow arrows. Include separate drawing for each phase of construction that alters drainage patterns.
 3. Dates when BMP measures will be installed and removed.
 4. Name(s) of specific individual(s) designated responsible for the Contractor's Construction Site Runoff Control Program. Include cellular and business telephone numbers, fax numbers, and e-mail addresses. These individuals shall be available 24 hours a day, 7 days a week.
 5. Description of fill material to be used.
 6. For projects with an NGPC or NPDES Permit for Construction Activities, submit information to address all sections in the Storm Water Pollution Prevention Plan (SWPPP), as described in HAR Chapter 11-55, Appendix C, Section 7.

7. For projects with an NGPC or NPDES Permit, submit information required for compliance with the conditions of the Notice of General Permit Coverage (NGPC)/NPDES Permit.
8. Date and sign the Site-Specific BMP Plan.

Modify, as necessary, and resubmit amended Site-Specific BMP plans and construction schedules to the Engineer for acceptance by DOTA Environmental Section. Modify the Site-Specific BMP Plan to address, but not limited to, the following.

1. To correct conditions that develop during construction which were unforeseen during the design and pre-construction stages.
2. Changes to the Contractor's Means and Method of Construction.
3. Omitted conditions that should have been allowed for in the accepted Site-Specific BMP Plan.
4. A Site-Specific BMP measure that replaces an accepted Site-Specific BMP measure that was not satisfactorily performing.
5. Revised dates of installation and/or removal of Site-Specific BMP measures.

The modifications shall be submitted to the Engineer and accepted in writing by DOTA Environmental Section before implementing the revised Site-Specific BMPs in the field. Amendments to the Site-Specific BMP Plan shall be included with the original Site-Specific BMP Plan.

A copy of the accepted original Site-Specific BMP Plan and all accepted amended Site-Specific BMP Plans, with the signed certification by the authorized representative listed in the NGPC or NPDES Permit, 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, DOTA Environmental Section, DOTA's Third Party Inspector, and/or DOH/EPA Representative.

- (C) Discharges of Stormwater Associated with Construction Activities. If the project scope consists of ground disturbing activities and the total work area, including all construction support activity areas (i.e. storage and/or staging areas), is one acre or more, an NPDES Permit authorizing Discharges of Storm Water Associated with Construction Activity (CWB-NOI Form C) or Individual Permit authorizing stormwater discharges associated with construction activity is required from the Department of Health Clean Water Branch (DOH-CWB).

Do not begin construction activities until all required conditions of the permit are met and submittals detailed in Subsection 01561.3.1(B) – Water Pollution, Dust, and Erosion Control Submittals are completed, submitted to the Engineer and accepted in writing by the DOTA Environmental Section.

- (D) Discharges Associated with Hydrotesting Activities. If hydrotesting activities require effluent discharge into State waters or drainage systems, an NPDES Hydrotesting Waters Permit (CWB-NOI Form F) or Individual Permit authorizing discharges associated with hydrotesting is required from the DOH-CWB.

Do not begin hydrotesting activities until the DOH-CWB has issued an Individual NPDES Permit or Notice of General Permit Coverage (NGPC). Conduct Hydrotesting operations in accordance with the conditions of the permit or NGPC.

- (E) Discharges Associated with Dewatering Activities. If dewatering activities require effluent discharge into State waters or drainage systems, an NPDES Dewatering Permit (CWB-NOI Form G) or Individual Permit authorizing discharges associated with dewatering is required from the DOH-CWB.

Do not begin dewatering activities until the DOH-CWB has issued an Individual NPDES Permit or Notice of General Permit Coverage (NGPC). Conduct dewatering operations in accordance with the conditions of the permit or NGPC.

- (F) Solid Waste Disclosure. Submit the Solid Waste Disclosure Form for Construction Sites, if applicable, to the Engineer within 30 calendar days of Contract Execution or upon the discovery of the solid waste. 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 should also include documentation from any intermediary facility where solid waste is handled or processed.

- (G) Construction BMP Training. The Contractor's representative(s), identified in Section 01561.3.1(B)(4), responsible for the Contractor's Construction Site Runoff Control Program, site managers, and appropriate subcontractors' personnel shall be properly trained on environmental compliance by attending a designated DOTA training seminar (e.g. HDOT's Protect Our Water Conference) or viewing the DOTA construction and post-construction training available at:

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

Submit completed Training Roster and Construction Training Quizzes to the DOTA Environmental Section (fax: 808-838-8017 or email to dot.air.environmental@hawaii.gov) prior to the start of construction activities.

Individual workers must be trained on their site-specific BMPs by the Contractor's representative(s) and managers who are knowledgeable in the proper

manufacturer's installation, maintenance, and repair of the BMP product, or the manufacturer's authorized instructor. The Contractor shall keep training logs updated and readily available.

- (H) Health and Safety Plan. A site-specific Health and Safety Plan for excavation work conducted in the known or suspected area of contamination shall be prepared and submitted at least 15 calendar days prior to initiating any excavation work. The Plan shall be applicable to Federal and State regulations.

The Contractor shall retain and pay for the services of a Certified Industrial Hygienist (CIH), certified by the American Board of Industrial Hygiene, to certify training, and review and approve the Health and Safety Plan, excavation procedures, including the determination of the need for personal protective equipment.

The Health and Safety Plan shall describe methods, techniques, and phases for handling the contaminated soil and groundwater, if present, including:

1. A sequence of operations.
2. Method of excavation, transporting, and disposal.
3. Soil Stockpiling and Groundwater Storage procedures.
4. Proposed equipment.
5. Provisions to ensure that chemical and petroleum constituent concentrations, both airborne and in the soil, are below the Department of Health Environmental Action Level (EAL), Permissible Exposure Limit (PEL) and below the Lower Explosive Limit (LEL). Provide soil testing, air monitoring, personnel monitoring, and air sampling to ensure worker safety as determined by CIH. If airborne concentrations exceed the PEL or the LEL at the control area boundary, then, work must stop immediately and the Engineer and DOTA Environmental Section notified.

3.2 CONSTRUCTION REQUIREMENTS

Do not begin work until submittals detailed in Subsection 01561.3.1(B) – Water Pollution, Dust, and Erosion Control Submittals are completed, submitted to the Engineer and accepted in writing by the DOTA Environmental Section, and required conditions of the NPDES Permit and other applicable permits are met.

Do not expose or disturb surface area of earth material, or initiate any ground-disturbing activities (including clearing and grubbing) until BMPs are installed, functional and accepted in writing by DOTA Environmental Section and/or their designated authorized representative. Only the soil, to the extent that is required to install the BMP measures and devices, shall be disturbed and minimized to the extent possible.

Install, maintain, monitor, repair and replace BMPs, such as for water pollution, dust, and erosion control; installation, monitoring, and operation of hydrotesting activities; removal and disposal of hazardous waste indicated on plans, concrete cutting slurry, concrete curing water; or hydro-demolition water. Address all comments received from the Engineer, DOTA Environmental Section and/or DOTA's Third-party inspector.

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

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.

Immediately *initiate* stabilizing exposed soil areas upon completion of earth disturbing activities for areas permanently or temporarily ceased on any portion of the site. Earth-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. Earth-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 earth-disturbing activities have temporarily or permanently ceased.

Any of the following types of activities constitutes *initiation of stabilization*:

1. Prepping the soil for vegetative or non-vegetative stabilization;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Planting the exposed area;

4. Starting any of the activities in items (1) – (3) above on a portion of the area to be stabilized, but not on the entire area; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadline for completing initial stabilization activities.

After the initiation of stabilization, stabilization activities shall be completed by the following deadline.

1. For projects with an NGPC or NPDES Permit for Construction activities:
 - (a) For construction areas discharging into waters not impaired for nutrients or sediments, complete stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.
 - (b) For construction areas discharging into nutrient or sediment impaired waters, complete stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities.
2. For projects without an NGPC or NPDES Permit for Construction activities, complete stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.

Any of the following types of activities constitutes completion of stabilization activities:

1. For vegetative stabilization, all activities necessary to initially plant the area to be stabilized; and/or
2. For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

If the Contractor is using vegetative cover for temporary or permanent stabilization and is unable to meet the deadlines above due to circumstances beyond the Contractor's control, the Contractor shall notify and provide documentation of the circumstances to the Engineer for acceptance by DOTA Environmental Section. The Contractor shall include in their documentation the schedule that the Contractor will follow for initiating and completing stabilization. If agreed to by DOTA Environmental Section, the Contractor may, instead, comply with the following stabilization deadlines:

1. Immediately initiate, and complete within the timeframe shown above, the installation of temporary non-vegetative stabilization measures to prevent erosion;
2. Complete all soil conditioning, planting, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on the site.

Follow the applicable requirements of the contract documents including Hawaii Standard Specifications for Road and Bridge Construction 2005 or latest edition, Section 619 and Section 641, as amended.

Where necessary to prevent erosion on the planted area, immediately install non-vegetative erosion controls that provide cover (e.g., mulch, rolled erosion control products) to the area while vegetation is becoming established.

Protect exposed or disturbed surface area with mulches or hydro-mulch with no seeds. Spray mulches at a rate of 2,000 pounds per acre. Add tackifier to mix at a rate of 85 pounds per acre. For hydro-mulch, use the ingredients and rates required for mulches. Apply fertilizer, if applicable, per the manufacturer's recommendations. Mulches, hydro mulch, and/or fertilizers shall not be applied during inclement weather or rain events. Submit recommendations from a licensed Landscape Architect when deviating from the application rates above or manufacturer's recommendations.

Install velocity dissipation measures when exposing erodible surfaces greater than 15 feet in height.

BMP measures shall be in place and operational at the end of each work day or as required by Section 01561.3.1(B).

Install and maintain stabilized construction entrances, 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, then, conduct cleaning and sweeping immediately. Modify stabilized construction entrances, as needed, to prevent mud from being tracked onto road. Stabilize entire access roads if necessary.

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 which would cause a hazard to the work, airport operations, operations of other contractors, or to persons or property. Chemicals may be used as soil stabilizers for erosion and dust control. Submit the manufacturer's product data sheets of the chemicals to the Engineer for acceptance by the DOTA Environmental Section. Oil treating shall not be used. When using water for dust control, only potable water, that conform to Hawaii Standard Specifications for Road and Bridge Construction 2005 or latest edition, Subsection 712.01 – Water, shall be used. Dust screens and fabrics are not allowed on, or inhibit the view of, the TSA and AOA Security Fences.

Cover exposed surface 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.

Provide temporary slope drains of rigid or flexible conduits to carry runoff from cuts and embankments. Provide portable flume at the entrance. Shorten or extend temporary slope drains to ensure proper function.

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

1. Hydro-mulching the lower region of embankments in the immediate area.
2. Installing check dams and siltation control devices.
3. Other methods acceptable to the DOTA Environmental Section.

Provide for controlled discharge of waters impounded, directed, or controlled by project activities or erosion control measures.

Cleanup and remove any pollutant that is attributed to the Contractor. Deposit of solid waste or the discharge of liquid waste, such as fuels, lubricants, bituminous waste, untreated sewage and other pollutants which may contaminate the body of ground water shall not be permitted. Care shall be taken to ensure that no petroleum products, bituminous materials, or other deleterious substances, including debris, are allowed to fall, flow, leach, or otherwise enter the sewage systems or storm drains.

Burning of matter or waste material on Airport property shall not be permitted.

The use of hazardous materials is prohibited without the approval of the Engineer. Any corrective actions to remove and replace the hazardous material and contaminated work shall be at the sole expense of the Contractor. Hazardous materials shall be properly stored and handled.

3.3 INSPECTIONS

For all projects with earth-disturbing activities, including construction support activity areas, the following inspections shall be conducted:

- (A) Initial Inspection of BMPs. Prior to the start of construction activities, the DOTA Environmental Section, or their designated authorized representative, will conduct an initial site inspection of the BMPs.

The Contractor shall submit their request for this inspection in writing to the Engineer. The inspection is subject to the availability of the DOTA Environmental Section or their designated authorized representative.

Prior to this inspection, only the soil, to the extent that is required to install the BMP measures and devices, shall be disturbed. During the inspection, the inspector will note any deficiencies in the BMP measures and devices, including identifying any site conditions that have the potential to result in the discharge of pollutants. The

Contractor is responsible for the correction of the deficiencies. Corrective Action shall be documented and submitted to the Engineer for acceptance by the DOTA Environmental Section and/or their designated authorized representative. The deficiencies must be corrected and accepted before construction activities are allowed to commence.

Initial Inspections shall be conducted separately for each new construction phase, new work areas, and additional construction support areas that occur during the construction period.

- (B) Contractor's Inspection of BMPs. Commencing immediately after the Initial BMP Inspection and until the acceptance of the Final BMP Inspection, the Contractor shall conduct inspections of the sites to ensure that BMPs are effective and activities do not have the potential of causing a polluted discharge.

The Contractor's Inspections shall be conducted at the following intervals:

1. Weekly.
2. Within 24 hours of any rainfall of 0.25 inch or greater which occurs in a 24-hour period.

The Contractor shall use on-line rainfall measurements data sources and providers. Rainfall measurements shall be taken from the same airport as the location of the project or within one (1) mile distance from the disturbed areas. Submit the identity of the provider, with the location of their measuring device, to the Engineer for approval by DOTA Environmental Section.

In lieu of using any on-line rainfall provider or if there are no measuring device of an on-line provider on the airport or within one (1) mile from the disturbed area, the Contractor shall furnish and install a rain gauge in a secure location prior to field work including installation of site-specific BMPs. Provide a rain gauge with a tolerance of at least 0.05 inches of rainfall. Install the rain gauge on the project site in an area that will not deter rainfall from entering the gauge opening. Do not install in a location where rain water may splash into the rain gauge. The rain gauge installation shall be stable and plumbed. Maintain rain gauge and replace any rain gauge that is stolen, does not function properly or accurately, is worn out, or needs to be relocated. Do not begin field work until the rain gauge is installed and Site-Specific BMPs are in place. Rain gauge data logs shall be readily available.

Submit rain gage data logs weekly with the Contractor's BMP Inspection Report to the Engineer for acceptance by the DOTA Environmental Section.

3. When existing erosion control measures are damaged or not operating properly as required by Site-Specific BMP.

Prepare a written report of the inspection and submit a copy of the report within 24-hours to the Engineer for acceptance by the DOTA Environmental Section. The report must include any deficiencies of the Site-Specific BMPs observed and the correction of these deficiencies. Corrective actions can be documented in a separate report and submitted upon completion of the corrective actions. Submit the report(s) to the Engineer for acceptance by DOTA Environmental Section.

The initiation of the work to repair or correct the deficiency shall begin immediately. However, except for those deficiencies that pose an immediate threat for the discharge of pollutants to the drainage system, surface waters, or receiving water, if the deficiency is identified at a time in the day in which it is too late to initiate the work, the initiation of the work shall begin on the following day.

After the initiation of the work to repair or correct the deficiency, the work shall be completed as follows:

1. If the deficiency poses an immediate threat for the discharge of pollutants to the drainage system, surface waters, or receiving waters, the work to fix the deficiency shall be completed by the close of the same day of discovery of the deficiency. Examples of these deficiencies included, but not limited to, illicit discharge, absence of perimeter controls in an area with evidence of sediment transporting off-site, and spills near a drain or waterway that have not been cleaned.
2. If the deficiency poses a significant threat for the discharge of pollutants to the drainage system, surface waters, or receiving waters, the work to fix the deficiency shall be completed by five (5) calendar days or before the next forecasted rain event, whichever is sooner. Examples of these deficiencies include, but not limited to, perimeter controls that are not functional or require maintenance, drain inlet protections that are not functional or require maintenance, installation of a new pollution prevention control, and deficiencies requiring significant repair for the correction of the deficiency.
3. If the deficiency does not pose a threat for the discharge of pollutants to the drainage system, surface waters, or receiving waters, but are not in strict conformance with the SWPPP, SSBMP Plan, or DOTA's Construction Activities BMP Field Manual, the work to correct the deficiency shall be completed by ten (10) calendar days or within the time specified by the Engineer, whichever is sooner. These deficiencies include all deficiencies except those deficiencies included in (1) and (2), above.
4. If it is infeasible to complete the correction of the deficiency or installation of a new pollution prevention control within the respective timeframe above,

notify the Engineer who will consult with DOTA Environmental Section. Document why it is infeasible to complete the work within the required timeframe. Complete the work as soon as practicable and as agreed to by both the Engineer and DOTA Environmental Section.

Retain copies of these inspection reports on-site or at an accessible location for the duration of the project so that they can be made available at the time of an on-site inspection, or upon request by the Engineer, DOTA Environmental Section, DOTA's Third Party Inspector, and/or DOH/EPA Representative. Present these inspection reports to the DOTA's Third-Party Inspectors at the time of their inspection for review.

- (C) Final Inspection / Post-construction BMP Initial Inspection. The DOTA Environmental Section, or their designated authorized representative, shall conduct a Final Inspection / Post-Construction BMP initial inspection when the Contractor has completed construction, including installing permanent BMPs and stabilizing exposed soil.

The Contractor shall submit the request for this inspection in writing to the Engineer. The inspection is subject to the availability of the DOTA Environmental Section or their designated authorized representative.

All deficiencies noted must be addressed before the Contractor can remove temporary BMPs and close the site. The Contractor is responsible for correction of the deficiencies. Corrective Action shall be documented and submitted to the Engineer for acceptance by the DOTA Environmental Section. Any deficiencies noted during the final inspection must be corrected before the State will issue the project final acceptance and make final payment.

Partial Final Inspection of construction phases or partial areas of the project shall be conducted during the construction of the project for areas that are to be transferred for DOTA's use.

- (D) Routine Inspections Conducted by DOTA. The Contractor's designated representative specified in Subsection 01561.3.1(B)(4) shall address any Site-Specific BMP deficiencies brought up by the Engineer or their authorized representative (i.e. Quality Control Engineer, Project Inspector, etc.) taking all reasonable measures to minimize or prevent discharge of pollutants until a permanent solution is installed and made operational.

The initiation of the work to repair and correction of the deficiency shall be completed within the same timelines as required in Subsection 01561.3.3(B).

- (E) DOTA's SWMPP Inspections. *For Projects located at the Daniel K. Inouye International Airport (HNL) or the Kahului Airport (OGG)* that have a NGPC or NPDES Permit, or disturb one acre or more, including the construction support activity areas, the following additional inspections shall be conducted:

1. Third-Party Inspections. The DOTA Environmental Section's Third-Party inspector will conduct routine inspections. Third-party inspections shall be conducted monthly. The frequency of the inspections may increase if deficiencies are identified as determined by the inspector. Deficiencies must be corrected within the timeline defined in DOTA's SWMPP, Section C, Construction Site Runoff Control Program, which can be downloaded from the website:

<http://hidot.hawaii.gov/airports/doingbusiness/engineering/environmental/construction-site-runoff-control-program/>

The Contractor shall be responsible for the correction of ALL deficiencies identified during any of the above inspections. Corrective Action shall be documented and submitted to the Engineer for acceptance by the DOTA Environmental Section or their designated authorized representative.

If the Contractor fails to satisfactorily address Site-Specific BMP 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 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 monthly progress payment.

Failure to apply 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.

For all citations or fines received by the DOTA for non-compliance, including non-compliance with NGPC/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, or the State shall deduct all incurred costs from the Contractor's monthly progress payments.

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 will make the appropriate deductions from the Contractor's monthly progress payment.

PART 4 MEASUREMENT AND PAYMENT

4.1 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.

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01561.1	Construction Site Runoff Control Program	Lump Sum

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

1. 20% of the line item price shall be paid upon DOTA Environmental Section's acceptance in writing of the Site-Specific BMP Plan and the satisfactory completion of the Initial Inspection of BMPs defined in Section 01561.3.3(A), above.
2. 60% 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 located at the Daniel K. Inouye International Airport (HNL) or the Kahului Airport (OGG) that have a NGPC or NPDES Permit, or disturb one (1) acre or more, including construction support activity areas, payments shall be made only after the DOTA's Third-Party Inspection defined in Section 01561.3.3(E), above, have been satisfactorily completed and accepted by the DOTA Environmental Section. Any deficiencies classified as Major or above will result in the withholding of monthly progress payments for this line item.

3. The remaining 20% of the line item price shall be paid after all BMP measures have been satisfactorily removed.

Payment will be made only after the satisfactory completion of the Final Inspection / Post-Construction BMP Initial Inspection defined in Section 01561.3.3(C), above, and acceptance of the Post-Construction BMPs by the DOTA Environmental Section.

Liquidated Damages, up to \$25,000 per day (Appendix B), 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.

Appendix A

The current DOTA's Construction Activities Best Management Practices (BMP) Field Manual can be found on DOTA's Environmental Website at

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

The manual is periodically updated and should be downloaded via the website to ensure that the latest version is applied. The manual identifies potential pollutant sources and BMPs that should be used to mitigate pollutants.

Additional information and requirements for stormwater programs at all airports can also be found at the above website, including additional requirements for Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG).

Appendix B Liquidated Damages Schedule for Non-Compliances.

Non-Compliance	Amount
Failure to submit a Notice of Intent or otherwise obtain a permit for Staging and/or Storage Area beyond the project limits.	\$1,000 per calendar day per violation.
Failure to comply with the conditions specified in the Notice of General Permit Coverage (NGPC) or Individual NPDES Permit, or any other applicable permit.	\$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 install a BMP specified by the SSBMP Plan or SWPPP, or permit.	\$2,000 per calendar day per violation.
Failure to properly install or maintain appropriate Site-Specific BMPs in accordance with applicable plans, permits, and guidance documents.	\$2,000 per calendar day per violation.
<p>Failure to have an accepted Amendment to the SSBMP Plan or an accepted Amendment to the SWPPP prior to implementation of the proposed BMPs.</p> <p>Note: Advance review and acceptance can be provided via email which will satisfy this non-compliance. However, the written Amendment must still be formally submitted for certification and signature by the authorized representative identified in the NGPC or NPDES Permit.</p>	\$2,000 per calendar day per violation.
Failure to conduct required inspections.	<p>\$1,000 for each of the first ten violations,</p> <p>\$2,500 for each of the next ten violations,</p> <p>\$5,000 for each subsequent violation.</p>
Failure to submit required reports such as BMP inspection reports, rain gauge data logs, etc.	<p>\$500 per calendar day for the first ten days of each violation,</p> <p>\$1,000 per calendar day for the next ten days of each violation,</p> <p>\$2,500 per calendar day for each subsequent day of violation.</p>

Non-Compliance	Amount
Any “major” or “critical” non-compliance violation with the applicable plans, permits, and guidance documents.	Up to \$25,000 per calendar day per 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 a previous Verbal Notification, Warning Letter, or Notice of Apparent Violation (NAV).

Liquidated Damages may be assessed for the following:

- Non-compliances listed in the Table, herein, included in Appendix B.
- Non-compliances have not been corrected in the timeframes noted.
- Corrective actions are not completed after a Verbal Notification, Warning Letter, or Notice of Apparent Violation 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 Engineer and DOTA Environmental Section along with documentation on how the deficiency was corrected. The Engineer and DOTA Environmental Section 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.

END OF SECTION

SECTION 01562 – MANAGEMENT OF CONTAMINATED MEDIAS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

The General Provisions, Special Provisions, and General Requirements of the Specifications apply to the work specified in this section.

1.2 DESCRIPTION AND SCOPE OF WORK

- A. This Section describes procedures for the management of contaminated media (soil, groundwater, and soil vapor) that may be disturbed during excavation activities associated with this project.
- B. The Contractor shall supply all labor, materials, and equipment necessary for the removal, temporary storage, testing, handling, soil backfilling and management of contaminated media to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.
- C. The Contractor shall examine the State of Hawaii, Department of Transportation, Airports Division (DOTA) Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (DOTA EHE-EHMP) and, if included as part of these specifications, the Environmental Site Assessment (ESA) Phase II, to understand the conditions that may affect work and performance. Should the Contractor deviate from the DOTA EHE-EHMP or ESA, the Contractor shall be responsible to prepare a DOH required Construction EHMP (C-EHMP) utilizing the C-EHMP Addendum Template or most recent version provided by DOH, also known as a Site-Specific EHMP. Any deviation will require approval by the State of Hawaii, Department of Health (HDOH) and DOTA Environmental Section (DOTA AIR-EE) prior to implementation, using the forms provided in Appendix B of the DOTA EHE-EHMP. The forms should detail deviations from standard practices in the text and explain how those deviations will be protective of human health and the environment. The forms should be submitted to HDOH and DOTA AIR-EE for review and approval if deviations are requested or if notifying of a release.
- D. It should be noted that the DOTA EHE-EHMP is for Contaminants of Potential Concern (COPCs) which include, but not limited to, the following:
- Petroleum Substances, e.g., TPH, TPH-g, TPH-d, TPH-o, BTEX, and PAHs.
 - Chlorinated Solvents, e.g., VOCs
 - Polychlorinated Biphenyls (PCBs)
 - Pesticides, e.g., chlordane
 - Heavy Metals, e.g., Arsenic, Barium, Cadmium, Total Chromium, Lead, Mercury, Selenium, and Silver.

In addition, free product (e.g., gasoline, diesel fuel, fuel oils, lubricating oils, benzene, toluene, xylenes) may be encountered in areas of previous petroleum releases.

Should the ESA Phase II identify contaminants other than those listed above or there is a risk to human health and/or the environment (such as indoor air quality in an occupied building), the Contractor shall be responsible to revise, update, and finalize the C-EHMP Addendum. The Contractor shall coordinate with, as well as have their C-EHMP approved by HDOH prior to the start of any ground disturbing activities.

1.3 REFERENCES

- A. Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan dated July 2019, or its latest edition.
- B. DOTA's Storm Water Management Program Plan (SWMPP) for the Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG), including DOTA's Construction Activities BMP Field Manual dated August 2019, or its latest edition.
- C. All work under this contract shall be performed in strict accordance with all applicable Federal, State, and local regulations, standards, and codes governing contaminated media.
- D. The most recent editions of any relevant regulations, standards, documents, or codes shall be in effect, including, but not limited to, the following. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.
 - 1. 29 CFR 1910, "Occupational Safety and Health Standards".
 - 2. 29 CFR 1926, "Safety and Health Regulations for Construction".
 - 3. 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards A".
 - 4. 40 CFR 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System".
 - 5. 40 CFR 261, "Identification and Listing of Hazardous Waste".
 - 6. 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste".
 - 7. 40 CFR 302, "Designation, Reportable Quantities, and Notification".
 - 8. 49 CFR 172, Subpart E, "Labeling".
 - 9. 49 CFR 172, Subpart F, "Placarding".
 - 10. 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).
 - 11. The Hazard Evaluation and Emergency Response Office Technical Guidance Manual (TGM) for Implementation of the State Contingency Plan (Interim Final, June 21, 2009).

- 12. Hawaii Hazardous Waste Laws and Regulations (HRS Chapter 342J, HAR Title

- 11, Chapters 260.1–279.1).
13. Hawaii Solid Waste Laws and Regulations (HRS Chapters 342H and I, HAR Title 11, Chapter 58.1).
 14. Hawaii Underground Storage Tank Laws and Regulations (HRS Chapter 342L; HAR Title 11, Chapter 280.1).
 15. Hawaii Water Quality Standards (HAR Title 11, Chapter 54).
 16. Hawaii Ambient Air Quality Standards (HAR Title 11, Chapter 59).
 17. Hawaii Occupational Safety and Health Standards (HAR Title 12, Subtitle 8).
 18. Hawaii Department of Health, Office of Hazard Evaluation and Emergency Response. Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater. Website URL: <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/EALs>. Fall 2011 (and updates).
 19. Hawaii Department of Health, Office of Hazard Evaluation and Emergency Response. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material. Website URL: <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/technical-guidance-and-fact-sheets>. October 8, 2017 (and updates).
 20. Hawaii Department of Health, Office of Hazard Evaluation and Emergency Response. Construction EHMP Addendum Template, available from AIR-EE.
 21. U.S. Environmental Protection Agency (EPA): Comprehensive Environmental Restoration, Compensation, and Liability Act, Section 107(1), 1980, exemption for cleanup of legally applied pesticide products.

PART 2 – PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT & SIGNAGE

- A. Provide workers with Personal Protective Equipment (PPE) according to the Contractor’s PPE Assessment.
- B. Provide warning signs and labels to protect the workers and the public.

2.2 POLYETHYLENE SHEETING

Sheet plastic shall be new, and clear or black with at least 20-mil thickness. A 6-mil plastic sheet can be used to cover the stockpiles.

PART 3 – EXECUTION

3.1 GENERAL WORK PROCEDURES

Replace ARFF Station Emergency Generator
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- A. Prior to beginning work, the Contractor, the Contractor's Qualified Environmental Professional, and DOTA Engineer or its representative shall discuss the approved Work Plan, as described in Paragraph 3.2 below, including work procedures and safety precautions.
- B. Communicate any existing, potential, or new hazards to workers before a job begins or as necessary. The workers shall be aware of the need for proper safety procedures and be familiar with the Contractor's Work Plan.
- C. Boundaries shall be established at each area where soil excavation is to be performed. The area shall be clearly identified to prevent unauthorized entry. Establish a control area by completely enclosing/roping-off the area where contaminated soil excavation, removal, stockpiling and disposal operations will be performed.
- D. Provide physical boundaries around the control area by roping-off the area to ensure that airborne concentrations of COPC will not exceed permissible exposure limits outside the control area.
- E. Where applicable, caution signs shall be placed at the entrances to each work area, located such that approaching personnel may read the signs and take necessary precautions before entering the work area. No one will be permitted in the work area unless the person is provided with appropriate training and protective equipment.
- F. It should be noted that, in some cases, the contamination may not be identifiable through visual and/or olfactory observation (e.g., soil contaminated with metals, PCBs, pesticides, etc.) and contaminant-specific field screening techniques may need to be implemented.
- G. Measure, monitor, and record worker exposure to toxic materials or harmful agents as necessary.
- H. Follow Decontamination regulations and procedures as necessary.
- I. Soil excavation activities, grading, and any disturbance of impacted soil may cause a potential exposure to Contractor's employees and the general public due to fugitive dust. The routes of exposure of 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.
- J. The Contractor shall test residual soils not used as backfill for COPC. Soils with concentrations above regulatory and/or unrestricted use environmental action levels shall be disposed of in accordance with regulatory requirements.
- K. 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 HDOH Office of Hazard Evaluation and Emergency Response (HEER Office) and provide a copy of the forms to the DOTA Engineer and DOTA AIR-EE.

3.2 PRECONSTRUCTION REQUIREMENTS

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

1. Contractor's Work Plan for Known or Suspected Areas of Contaminated Media:

a. The Contractor shall submit their work plan which shall include, but not limited to, a Site-Specific Health and Safety Plan (HASp) or if needed, a C-EHMP. The work plan shall describe the procedures, engineering controls, and methods the Contractor will use during the excavation, temporary storage, handling, treatment, backfilling, and disposal of soil and/or water at the project site. The plan shall also include soil stockpiling and segregation, testing, contaminated soil and water quality testing, contaminated soil and water disposal procedures, backfilling procedures, personal protection requirements, work area isolation, construction barriers, wetting methods, decontamination procedures, and emergency procedures. The work plan shall be in accordance to all applicable Federal, State, and local regulations and latest amendments.

For locations within the airport which DOTA has already established a Site-Specific EHMP from previous projects, the DOTA's Site-Specific EHMP, shall govern, where applicable.

b. The plan shall include the names of the Contractor's and their subcontractor's qualified personnel who will be supervising or managing the management of contaminated materials at the site. Include the personnel's phone number and qualifications.

c. The plan shall include the name(s) of the Contractor's Qualified Environmental Professional, including their qualifications.

d. Proposed schedule of work.

e. A sketch identifying the location of temporary soil stockpiling and water storage devices, including pipes and appurtenances, if applicable.

f. A map showing the location of the work and nearest medical facilities and hospitals.

g. A copy of this Work Plan must be on the construction site and available at all times.

h. The Work Plan shall be amended to reflect changes to the site or work conditions, as needed.

B. QUALIFIED ENVIRONMENTAL PROFESSIONAL

The Contractor shall employ a Qualified Environmental Professional who possesses

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five (5) years, minimum, experience providing environmental oversight for the management of contaminated media during construction activities. The Environmental Professional shall assist in the preparation of the Contractor's Work Plan by reviewing the work procedures, including the determination of the need for PPE, and to provide environmental oversight during construction. The Environmental Professional shall be identified in the Work Plan, including a list of their environmental qualifications, for approval by DOTA AIR-EE.

C. CONTRACTOR TRAINING

The Contractor and its subcontractors shall implement safe work places and practices by eliminating, mitigating, or protecting against existing or potential hazards to the workers who may be exposed to harmful, hazardous, and toxic materials and substances, including contaminated water and soil.

3.3 CONSTRUCTION REQUIREMENTS

A. SOIL EXCAVATION AND STOCKPILING

1. Notify the HDOH Clean Water Branch (CWB) at least 90 calendar days prior to disturbing contaminated soil from known areas of contamination. Notify the HDOH HEER Office at least seven (7) calendar days prior to construction activities that could disturb known contaminated soil.
2. The HDOH HEER Office shall be immediately notified if contaminated soils are encountered. The disturbance of contaminated soil shall be performed in accordance with the Contractor's approved Work Plan, the DOTA EHE-EHMP, or a C- EHMP Addendum where applicable. HDOH HEER Office will determine whether additional sampling is required. Provide a location map with Global Positioning System (GPS) coordinates and approximate depth (bgs) at which the contaminated soils were encountered to the DOTA Engineer and DOTA AIR-EE.
3. During excavation and disturbance of impacted soil, all workers, supervisory personnel, subcontractors, and consultants must take precautionary measures as necessary to prevent exposure of the workers and the general public to chemicals of concern (COCs) by contaminated soil dust and inhalation of associated vapors.
4. The Contractor's Qualified Environmental Professional shall direct the segregation of the soil into three (3) separate soil piles: Pile No. 1 will consist of clean soil; Pile No. 2 will consist of soil excavated from areas found to be contaminated or suspected to be contaminated; and Pile No. 3 will consist of soil that is grossly contaminated. Contaminated soil stockpiles, suspected contaminated soil stockpiles, and grossly contaminated soil stockpiles shall be placed onto 20-mil plastic sheeting. Underlay edges of the plastic sheeting with bermed soil. Ensure that the height of the bermed soil will be sufficient to prevent stormwater runoff from breaching it. Place the excavated soil inside the bermed area on top of the plastic sheeting. Cover the stockpiles with 6-mil plastic sheeting in the bermed area to mitigate dust concerns caused by wind and prevent contact with rainwater and stormwater runoff. Secure the plastic cover

with sufficient ballast and place sediment control devices along the entire toe of each stockpile.

5. Each stockpile shall not exceed 100 cubic yards and shall be located away from drainage features, surface waters, and stormwater drainage paths. Or, the soils can be placed in watertight containers, such as 20-yard steel roll-off bins, drums, etc. These containers shall be covered.
6. The Contractor shall have representative soil samples taken from each stockpile (Pile No. 1, 2, and 3) and tested in accordance with HDOH guidelines, standards, and regulations, such that the soil sample report, prepared by the Contractor's Qualified Environmental Professional, can specifically state one of the following:
 - a. "The soil is not a regulated hazardous waste and is acceptable for disposal at a HDOH permitted facility."; or
 - b. "The soil is acceptable for unrestricted reuse."

Sampling and testing of the stockpiles shall be, at a minimum, in accordance to the latest edition of the HDOH's *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material*. The Contractor's Qualified Environmental Professional 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 approaches. Appropriate decision unit (DU) volumes for larger stockpiles of soil should be discussed with the HDOH HEER Office on a case-by-case basis.

The Contractor shall also confirm, with the HDOH permitted facility, the facility's sampling requirements, as well as their standards for disposal.

7. 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/disposal facility.
8. For any soils hauled off Airport property, the Contractor shall be responsible for the legal disposal of any soil. The Contractor shall implement and maintain the following:
 - a. A form, signed by the Contractor and haul truck driver. The form shall contain the following information:
 - i. The date the material is being taken off Airport property.
 - ii. The name of the haul trucking company.
 - iii. The haul truck number and license plate number.
 - iv. The quantity of material being loaded into the haul truck.
 - v. The disposal facility or location of where the material is to be taken.
 - vi. The time the truck left the project site.
 - b. The form and waste manifest from the HDOH permitted facility shall be provided to the Engineer or its representative by the close of the next

working day. The Contractor shall verify that the quantity of material loaded into the truck, as indicated on the form, exactly matches the quantity of material disposed at the HDOH permitted facility, as indicated on the waste manifest.

- c. The Contractor shall maintain a log that summarizes each form and waste manifest for ease of tracking and monitoring.
- d. **All forms, waste manifest, and summary log shall be a condition of payment being made to the Contractor and shall be submitted with each progress payment. Failure to submit the above and/or should any quantity of material loaded into the truck, as indicated on the form, not exactly match the quantity of material disposed at the HDOH permitted facility, as indicated on the waste manifest, shall be reason for the State to withhold payment to the Contractor.**

9. Excavated soils can be reused onsite (within the construction site boundaries) with the prior approval of the DOTA AIR-EE, HDOH HEER Office, and subject to the following conditions:

- a. Representative soil samples have been taken and tested in accordance with HDOH standards and regulations.
- b. The contaminated soil can only be reused within proximity of its original excavation.
- c. The contaminated soil is placed within areas more than 150 meters from surface water and drainage features.
- d. The contaminated soil cannot be placed beneath or within the footprint of a planned building structure.
- e. The contaminated soil can only be placed at an elevation above the tidally influenced high water table and at least 1-foot below the finish surface grade. The more highly impacted soil should be placed at the bottom of the excavation and the cleanest soil at the top of the excavation. At least 1-foot of clean soil must be placed as the final backfill layer at the top. The excavation shall then be capped with an impervious layer, such as concrete and asphalt.
- f. The contaminated soil cannot contain any free oil, oil sheens, oil stains, or total petroleum hydrocarbon (TPH) concentrations exceeding 5,000 parts per million (ppm).
- g. The contaminated soil is not considered a hazardous waste pursuant to Federal and State laws.
- h. Contaminated soil shall not be reused in areas that are uncontaminated.

10. Excavated soils can be reused offsite (off Airports property) with the prior

approval of the DOTA AIR-EE, HDOH HEER Office, and subject to the following conditions:

- a. Representative soil samples have been taken and tested in accordance with HDOH standards and regulations.
 - b. The work shall be performed in accordance to the latest edition of the HDOH's *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material*.
 - c. A signed agreement with the receiving facility acknowledging the test results of the soil samples and acceptance of the soil is required to be submitted to the DOTA Engineer and DOTA AIR-EE ten (10) calendar days prior to hauling of the soil to the receiving facility.
 - d. The contaminated soil shall not contain any free oil, oil sheens, oil stains, or total petroleum hydrocarbon (TPH) concentrations exceeding 5,000 parts per million (ppm).
 - e. The contaminated soil is not considered a hazardous waste pursuant to Federal and State laws.
11. All soil that is reused onsite or offsite shall be included in the Closeout Report. The report shall include, at a minimum, a copy of the signed agreement from the receiving facility accepting the soil, a copy of the soil test results, the quantity of soil received by the facility, a location map of the reused soil including GPS coordinates of its limits, the depth and thickness of the soil's placement, a brief description of the purpose of the soil's re-use, and photos of the site conditions after placement has been completed.

B. GROUNDWATER MANAGEMENT

Soil and groundwater may be impacted by petroleum hydrocarbons, dissolved metals, and/or pesticides, and may be encountered during soil excavation.

1. The disturbance of contaminated groundwater shall be performed in accordance with the approved Work Plan, DOTA EHE-EHMP, or Site-Specific EHMP, where applicable. HDOH HEER Office will determine whether additional sampling is required.
2. If contaminated groundwater is uncovered at a previously unknown source or site on the project, the Contractor shall immediately notify the DOTA Engineer, DOTA AIR-EE, and HDOH HEER Office of its discovery. Provide a location map with GPS coordinates and approximate depth of the groundwater (bgs) at which the discovery was encountered.
3. During excavation and disturbance of impacted groundwater, all workers, supervisory personnel, subcontractors and consultants must take precautionary measures as necessary to prevent exposure of the workers and the general public to COCs and inhalation of associated vapors. Free product, sheen, and impacted groundwater must be managed properly.

4. Groundwater that exhibits evidence of possible contamination, i.e., odor, visual sheen, free product, coloration, and PID measurement, shall be properly stored when removed from the ground. Storage devices shall be watertight and leak-free to prevent discharge of the water into the surrounding ground, drainage system, and surface waters.

When disconnecting pipes and hoses from storage devices and equipment, residual waters contained in the pipes and hoses shall also be prevented from discharging into the surrounding ground, drainage system, and surface waters.

5. Representative water samples shall be taken and tested in accordance with Federal and State guidelines, standards, and regulations.
6. If free product is present in the extracted groundwater, it must be separated from the groundwater, profiled, and disposed of at an HDOH 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. Under no circumstances shall water contaminated with free product be discharged from a dewatering pit.
7. At least once daily, remove oil observed floating on the groundwater during excavation activities using a vacuum truck, absorbent pad, or other methods approved by HDOH HEER Office. Excavations shall not be backfilled until the floating oil is removed to the maximum extent practicable, which is when further use of vacuum trucks, absorbent pads, or other approved methods do not result in further floating oil removal. Backfilling of any excavation shall not occur without concurrence from DOTA AIR-EE and HDOH HEER Office.
8. Avoid any releases of contaminated groundwater to surface water bodies or areas beyond the work area.
9. Groundwater shall only be re-infiltrated in the ground with the prior approval of DOTA AIR-EE and HDOH HEER Office, and subject to the following conditions:
 - a. Within 200-feet of its original location or source and returned to the same aquifer which is not a current or potential drinking water source. Re-infiltration shall not contaminate uncontaminated areas.
 - b. More than 150 meters from surface waters, drainage features, and drainage structures.
 - c. Groundwater does not contain any gross contaminants.
 - d. If petroleum free product is present in the groundwater, the free product shall be removed prior to transfer of the groundwater to the re-infiltration site. Free product shall be removed at least once daily until no free product is observed after 24 hours. The free product shall be disposed at an HDOH-approved facility.
 - e. Groundwater is not considered a hazardous waste pursuant to Federal and State law.

- f. Re-infiltration shall be conducted at a slow enough rate so that it does not flow past the designated infiltration area, enter storm drains, or impact surface water in the area.
 - g. If discharging to a re-infiltration trench, the trench must not be an underground injection control (UIC) well by HDOH's Safe Drinking Water Branch (SDWB) definitions. If some part of the trench system is deemed to be a UIC well, then the whole system shall be considered an injection well.
 - h. Advance clearance from HDOH SDWB is required if a re-infiltration trench is deeper than 10 feet.
 - i. If a UIC well is used for re-infiltration, the Contractor is responsible to obtain the necessary permits, including, but not limited to, HDOH's UIC Permit. The Contractor shall meet and comply with all permit requirements, including, but not limited to, well construction, placement, use, and closure.
10. Under circumstances where contaminated groundwater cannot be re-infiltrated, proper disposal must be conducted with the prior approval of the DOTA AIR-EE, HDOH SDWB, HDOH Solid and Hazardous Waste Branch (SHWB), and HDOH HEER Office. This is also subject to the following conditions:
- a. Discharge to the local or municipal sanitary sewer system after acquiring appropriate permit(s) from City and County (if applicable and if allowable by the receiving governmental agency) prior to discharge. If discharge water was generated within contaminated areas, additional coordination with HDOH HEER Office is required, and Aquatic Habitat Criteria (Chronic Toxicity) shall apply to discharge within these areas, in addition to any criteria applicable to the National Pollutant Discharge Elimination System (NPDES) permit or pretreatment facility. Water discharged to a sanitary sewer may be required to meet Water Quality Standards.
 - b. Notification to the appropriate agencies and other pertinent information related to the discharge must be provided upon request.
 - c. The Contractor is responsible for the legal disposal or discharge of any groundwater that is not re-infiltrated, and shall provide the DOTA AIR-EE with copies of waste manifests.
 - d. For any groundwater hauled off Airport property, the Contractor shall have representative samples taken and tested in accordance with HDOH guidelines, standards, and regulations. A copy of the groundwater test result shall be submitted to DOTA AIR-EE. The groundwater shall not be disposed offsite without the approval of DOTA AIR-EE and the HDOH permitted facility that is receiving the groundwater. Furnish documentation from the receiving facility indicating that they acknowledge the groundwater test results, including their approval to dispose the groundwater at their facility.

C. RELEASE REPORTING

Encountering previously unknown, suspected, or confirmed contaminated soil or groundwater during subsurface construction activities is considered a release and shall be reported to HDOH HEER Office (phone: 808-586-4249, or after hours at 808-236-8200). Copies of the HDOH Release Report, HDOH issued Release Number, and email correspondence (if applicable), shall be furnished to the DOTA Engineer and DOTA AIR-EE.

1. Upon the discovery of contaminated soil and/or groundwater, the Contractor shall immediately notify the DOTA Engineer, DOTA AIR-EE, and HDOH HEER Office.
2. A reportable release of hazardous substances or contaminated soil or groundwater may be indicated by, but not limited to, any of the following:
 - A petroleum sheen on the groundwater in an excavation.
 - Any free product that appears on groundwater.
 - Visual or olfactory evidence of contamination (e.g., unusual discoloration, buried containers, fumes, unknown liquids).
3. Comply with DOTA and HDOH HEER Office requirements. A written report shall be provided to the HDOH 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 DOTA Engineer and DOTA AIR-EE.
4. If free product is encountered, report the release in accordance with HAR § 11-451.

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

1. Report all spills to immediately to AIR-EE, State Engineer, and appropriate airport personnel and regulatory agencies (if applicable) following the DOTA Spill Reporting Fact Sheets for each airport. Spill Reporting Fact Sheets can be found on DOTA's Environmental Webpage for Construction site Runoff at <https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/>.
2. In the event of a release of a hazardous substance that causes an imminent threat to human health or the environment, the first call shall be to 911.
3. Small spills of petroleum or hazardous substances (less than 25 gallons) which are capable of being cleaned up within 72 hours and do not threaten ground or surface waters shall be cleaned up immediately.
4. Report spills of a certain size (e.g., volume of greater than 25 gallons or not contained within 72 hours), per HAR § 11-451, to HDOH HEER Office and the National Response Center immediately. Comply with the HDOH HEER Office requirements. A written report shall be provided to the HDOH HEER Office within

30 calendar days of a Reportable Quantity spill cleanup. 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, the HDOH issued Release Number, and email correspondence (if applicable) to the DOTA Engineer and DOTA AIR-EE.

5. Any spill that enters a body of water, onto an adjoining shoreline, or discharges into the storm drain system, HDOH CWB must also be immediately notified and the National Response Center notified within 24 hours. Report significant spills to the U.S. Coast Guard.

D. FINAL CLEANUP

1. When work which disturbs contaminated soil has been completed, the State will visually inspect the work area for evidence of contaminated materials and direct the Contractor to clean and remove remaining contaminated materials. The Contractor shall not dismantle the work area boundaries prior to authorization by the State.
2. Any equipment which contacts contaminated materials shall be cleaned with a water spray immediately upon completion of work. The wash location shall be located immediately adjacent to the contaminated area. All wash water and solid waste shall be disposed of in accordance with the Work Plan. The wash water shall not be allowed to discharge into the drainage system and surface waters.

E. AIR MONITORING

1. Air monitoring shall be conducted when petroleum-contaminated soil (PCS), contaminated groundwater, free product, or chlorinated solvents (e.g., PCE, TCE, etc.) is present in an excavated area. The monitoring shall include both work area and perimeter measurements of volatile organic compound (VOC) vapors. Appropriate response actions shall be taken in conformance to Federal and State regulatory requirements and guidelines. The response actions shall include ensuring that on-site workers have the appropriate level of PPE and the general public is not affected adversely.
2. Air monitoring shall be conducted with a conventional photoionization detector (PID) to measure total VOC vapor concentrations. If high levels of benzene are anticipated, an Ultra-Rae PID, which is benzene-specific, shall also be used.
3. If toxic gases are a potential concern, air monitoring of the lower explosive limit (LEL) shall be conducted using a multi-gas meter to determine if a hazardous atmosphere exists.
4. Air monitoring shall be conducted for at least three (3) full 8-hour shifts to establish a negative exposure assessment for worker's exposure to airborne contaminants. After the establishment of the negative worker's exposure, periodic monitoring shall be conducted once every seven (7) calendar days to document worker exposure for the duration of the contaminated soil work.

5. Work area and perimeter air monitoring shall be conducted throughout the entire duration of the contaminated soil work to ensure unprotected personnel are not exposed above permissible exposure limits at all times. If the outside boundary levels are at or exceed permissible exposure limits, work shall be stopped, and the Contractor's Qualified Environmental Professional and DOTA Engineer shall be immediately contacted to address the situation causing the increased levels.
6. Submit air sampling results to the DOTA Engineer within five (5) calendar days after the samples are collected, signed by the testing laboratory employee performing the air monitoring.

F. UNDERGROUND STORAGE TANKS (UST) AND UTILITY PIPES

1. For any UST or pipeline discovered or planned removal, the nature of the UST or pipeline, and whether they are inactive, shall be determined prior to removal. Immediately notify the DOTA Engineer and DOTA AIR-EE of the discovery.

If unanticipated petroleum pipelines are discovered, contact HDOH HEER Office within 24 hours after encountering them.

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 must include a North arrow and a scale.
 - b. Depth, diameter, length, and type of pipe, if applicable. Describe the condition of the pipe.
 - c. Type of fuel or product, including analytical laboratory reports for the product that is recovered.
 - d. Beginning and ending fluid levels, if applicable.
 - e. Volume of each type of product removed.
 - f. Flow rates, if applicable.
 - g. Direction of flow.
 - h. Detailed photographs.
 - i. Detailed description of actions taken following the discovery, such as, cutting, product removal, and disposal.

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

3. Prior to removal of a UST, the Contractor shall prepare and submit to the DOTA Engineer, for review by DOTA AIR-EE, a Site-Specific plan. All work associated

with USTs shall be in compliance with HAR § 11-280.1 requirements, and HDOH HEER Office and HDOH SHWB requirements.

The contractor shall also complete the HDOH *Notice of Intent to Close Underground Storage Tanks* form and submit it to the DOTA Engineer for submission to HDOH SHWB (UST Section) by DOTA AIR-EE.

Prior to the removal of the UST, the Contractor shall receive approval from DOTA AIR-EE and HDOH HEER Office.

4. The UST or pipeline segment must be drained of its content or determined that it is empty of liquids or flammable vapors prior to the removal. Any petroleum fluids recovered must be representatively sampled and tested to determine how they can be recycled or disposed in full accordance with HAR § 11-58.1 and § 11-260–279, and any other Federal and State regulations.
5. Only personnel knowledgeable and trained in pipeline and UST removal shall cut, drain, and remove USTs and pipelines. Prior to cutting, plastic sheeting and absorbent material shall be placed below and adjacent to the cutting location. Any residual fluid in the UST or pipeline must be properly contained on the sheeting and prevented from discharging into the surrounding soil or entering any drainage system and surface waters.
6. The cut-off ends of the pipeline segments, that remain in-place, must be filled with concrete and appropriately sealed to prevent any potential leakage and contact with groundwater.
7. If the waste pipe or UST are to be stored onsite prior to disposal, the area shall be lined with polyethylene plastic sheeting, 10 mil or thicker, and bermed to contain any free product. Some viscous products may appear to be immobile, however, after exposed to atmosphere heating, can liquefy. The waste pipe segment shall be 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.
8. All removed pipelines and USTs shall be properly disposed or recycled.
9. For USTs, a UST Removal Report including all sampling activities required under HAR § 11-280.1 shall be prepared and submitted to the DOTA Engineer, DOTA AIR-EE, and HDOH SHWB (UST Section).

3.4 POST-CONSTRUCTION REQUIREMENTS

A. Submit the following within 30 calendar days after work is completed.

1. Close-out Report

- a. A signed certificate stating that the removal and disposal of all contaminated materials were completed in accordance with the Contractor's approved Work Plan or C-EHMP Addendum, and all applicable Federal, State, and local rules and regulations.

- b. All approved DOTA EHE-EHMP deviation request forms. (Reference Appendix B of the DOTA EHE-EHMP.)
- c. All Site-Specific EHMP, if applicable.
- d. All testing, laboratory results, and reports for any soil, groundwater, soil vapor, UST, pipeline, and other samplings taken.
- e. All disposal forms, waste manifests, and summary logs.
- f. Any results from project air monitoring.
- g. 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 HDOH and all other associated documents.
- h. If any contaminated soil was removed offsite (off of Airport Property), at a minimum, include the following:
 - A copy of the signed agreement from the receiving facility acknowledging the test result of the soil samples and indicating acceptance of the soil for reuse.
 - Copies of the test results of the soil sampling.
- i. If any contaminated soil was re-used onsite (within the construction site boundaries), at a minimum, include the following:
 - Copies of the test results of the soil sampling.
 - The quantity of soil that is re-used on-site.
 - Location map of the re-used soil. Include GPS coordinates of its limits, if the area is accessible.
 - A brief description of the purpose of the re-used soil (e.g., general fill, utility trench backfill material, etc.). Include the depth and thickness of its placement.
 - Photos of the site after placement of the re-use soil has been completed.
- j. Record of Field Observation of any unanticipated UST or pipeline discovered during construction activities, including a copy of the completed HDOH *Notice of Intent to Close Underground Storage Tanks* form and all other associated documents.

The Close-out Report shall be by each individual contaminated media and shall include all appropriate documentations. The Close-out Reports for each contaminated media can be submitted separately or combined in a 3-ring binder with divider tabs.

PART 4 – MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT AND PAYMENT

Work under this Section will be paid for under the various contract items as shown below.

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.

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01562.1	Management of Contaminated Medias	Allowance

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 Liquidated Damage amount of \$5,000 per truck per day, until the illegal dumped material has been cleaned up or the incident has been remedied to the HDOH’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 also be responsible for all citations, fines, and penalties levied by HDOH or EPA 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 C-EHMP Addendum. The Contractor shall reimburse the State within 30 calendar days for the full amount of outstanding cost that the State has incurred, or the State shall deduct all incurred costs from the Contractor’s monthly progress payments.

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 award 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 stated in the Special Provisions, Paragraph 8.21 – “Operation of Contractor’s Motor Vehicle and Personnel in Restricted Air Operations and Movement Areas”. 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 award 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.

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 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 AND DEMOBILIZATION

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 GENERAL REQUIREMENTS

- A. Section 699 of "Hawaii Standard Specifications for Road, Bridge, and Public Works Construction, 1994," 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 2.24 of the General 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.
- B. 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 Applicable)

PART 3 - EXECUTION (Not Applicable)

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.
 - 4. Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.
- B. Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01700.1	Mobilization <i>Not to exceed 6% of sum of all items, excluding This item, all allowances and force account items.</i>	Lump Sum (LS)

END OF SECTION

SECTION 01715 - EXISTING CONDITIONS - ASBESTOS / LEAD / HAZARDOUS MATERIAL SURVEY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 SUMMARY

- A. This Section includes hazardous material survey for asbestos and lead-containing materials, for the ARFF Station Misc. Repairs & Improvements at Kahului Airport, in Kahului, Island of Maui, and is provided for the Contractor's information.
- B. Related Sections include the following:
 - 1. SECTION 13282 – LEAD PAINT CONTROL MEASURES for requirements of work which disturbs lead- and cadmium-containing paints which, for the purpose of this Section, is defined as paint with any measurable levels of lead or chromium.
 - 2. Section 13289 – LEAD TESTING AND MONITORING for requirements for work monitoring and clearance for compliance.

1.03 ASBESTOS

- A. Asbestos-containing materials (ACM) were not confirmed to be present in the project area, based on sampling and analysis of eight suspected materials. Therefore, no special provisions apply.
- B. If unforeseen or suspected ACM are discovered and must be disturbed as part of this project, the material shall be assumed positive until tested to determine if asbestos is present. Contractor shall follow applicable rules and regulations pertaining to the handling, removal, and disposal of asbestos.

1.04 LEAD CONTAINING PAINT

- A. Inform employees, subcontractors, and other persons engaged in the project that lead- and cadmium-containing paints are present in the project area. Comply with the requirements of Federal, State, and local regulations, and requirements herein.
- B. Review the attached paint survey data which identify locations where LCP was found. Lead testing was for design purpose only, and the results do not satisfy any of the requirements for worker exposure assessment or waste disposal.

- C. Contractor may conduct additional lead testing of existing painted surface at his/her own expense.
- D. Comply with applicable rules and regulations pertaining to the handling, removal, and disposal of paints containing lead and or cadmium.

1.05 ARSENIC

- A. Arsenic-containing materials were not observed in the project area. Therefore, no sampling was conducted.
- B. If unforeseen and suspected arsenic-containing materials are discovered and must be disturbed as part of this project, the material shall be assumed positive until tested to determine if arsenic is present. Comply with applicable rules and regulations pertaining to the handling, removal, and disposal of arsenic-containing materials and waste.

PART 2 – PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 HAZARDOUS MATERIAL SURVEY

- A. *Targeted Hazardous Material Survey Report for ARFF Station Misc. Repairs & Improvements at Kahului Airport, Kahului, Maui, Hawaii*, 46 pages, dated January 27, 2023, prepared by MNA Environmental.
- B. Review existing survey report(s) attached to this section and verify and understand the locations and volumes of hazardous materials and waste.

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 price bid for the various items of work in this project.

END OF SECTION

ATTACHMENT TO SECTION 01715
MNA ENVIRONMENTAL
HAZARDOUS MATERIALS INSPECTION REPORT

**TARGETED HAZARDOUS MATERIAL SURVEY REPORT
FOR
COFFMAN ENGINEERS, INC
ARFF STATION
KAHULUI AIRPORT, MAUI**

MNA PROJECT 3208_2

JANUARY 27, 2023



MNA Environmental

Environmental Studies and Consulting Services

98-025 Hekaha Street, Suite 215A, Aiea, Hawaii, USA 96701 • 808.484.9214

This report is prepared for:

Coffman Engineers, Inc.
745 Fort Street, Suite 400
Honolulu, Hawaii 96813

TARGETED HAZARDOUS MATERIAL SURVEY REPORT
FOR
ARFF STATION MISC. REPAIRS & IMPROVEMENTS AT
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

State of Hawaii Project No. CM1222-53

MNA Project 3208_2

January 27, 2023



Herbertson Santos
Report writer
Industrial Hygienist
(HIASB-4191, 11/23/2023)



Keanu Joseph
Industrial Hygienist
(HIASB-5247, 09/02/2023)



Myounghee Noh, CIH, CSP
Principal

Myounghee Noh & Associates, L.L.C., dba MNA Environmental
Design, Studies, and Consulting Services
98-025 Hekaha Street, Suite 215A, Aiea, HI 96701
Tel (808) 484-9214
www.noh-associates.com

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CONTRIBUTORS

Project Manager	Herbertson Santos
Certified Inspectors	Herbertson Santos, Keanu Joseph
Data Quality Control	Danny Falanug
Report Writer/Drafter	Herbertson Santos
Technical Editor/QC	Jessica Walsh

EXECUTIVE SUMMARY

In December 2022, Myounghee Noh & Associates, L.L.C. dba MNA Environmental (MNA), was retained by Coffman Engineers, Inc., to conduct a targeted hazardous material survey at the ARFF Station at Kahului Airport, Maui, Hawaii. Targeted were those areas anticipated to be disturbed during the planned miscellaneous repairs and improvements project.

The objective of the survey was to identify the presence, extent, and conditions of hazardous materials in the areas anticipated to be disturbed, so that the information can be incorporated in the design.

On 09 December 2022, MNA conducted this hazardous material survey and identified 19 suspect building materials. Based on sampling and analysis of 24 asbestos/bulk and 22 heavy metal-suspected paint chip samples, MNA provides the following summary:

- No asbestos-containing materials (ACM) were found in the project area.
- Four lead-containing paints (LCP) were confirmed in the project area. None of the paints contained mercury:
 - **White paint** in fair condition, **250 milligrams per kilogram (mg/kg)** and **860 mg/kg, on metal conduit and pipe in the Generator Room**, approximately 120 linear feet. This paint also contained **cadmium** at **20 mg/kg**.
 - **Red paint** in fair condition, **2,600 mg/kg** and **2,700 mg/kg, on metal generator motor in the Generator Room**, approximately 120 linear feet.
 - **Gray paint** in fair condition, **860 mg/kg** and **990 mg/kg, on metal exterior catwalk**, approximately 200 square feet.
 - **Tan paint** in fair condition, **43 mg/kg** and **100 mg/kg, on metal exterior pole**, approximately 100 square feet.
- No suspect arsenic-containing materials were observed in the project area.

Based on the visual survey and sampling and analysis of suspect bulk materials and paints, special hazard control measures are warranted for work involving lead paint. These control measures are briefly described in Section 9 Recommendations for Renovation and Construction Work. General dust and respirable crystalline silica, and runoff controls and environmental protection are also warranted.

Paint samples were analyzed for lead, cadmium and mercury content only. There is a potential for the presence of other hazardous chemicals in the lead-free or low-lead paint coatings, such as arsenic, zinc, and other metals and chemical substances. Suspect asbestos materials may contain other hazardous substances, such as silica and other mineral fibers. Contractor must anticipate hazards and take all appropriate measures to prevent exposure of site workers, airport workers, the public, and the environment.

Contractors must verify, prior to bidding, the location and volumes of potentially hazardous materials and determine the appropriate dust and hazard control measures based on the area and material to be disturbed. Quantities of materials provided in this report are based on visual approximations only during the survey and should not be used for bidding purposes.

Analytical results provided in this report do not meet the requirements for waste characterizations. Contractor must coordinate with permitted landfills for waste characterization requirements.

Worker protection from exposures to respirable crystalline silica is enforced by the Occupational Safety and Health Administration (29 CFR 1926.1153; 29 CFR 1910.1053). All appropriate engineering controls must be implemented, and personal protective equipment may be considered as added protection.

1.0 INTRODUCTION

Myounghee Noh & Associates, L.L.C. dba MNA Environmental (MNA), under an agreement with Coffman Engineers, Inc., conducted a targeted hazardous material survey at the ARFF Station at Kahului Airport, Kahului, Maui.

MNA’s survey was conducted in support of the planned miscellaneous repairs and improvements project. Targeted were those areas anticipated to be disturbed by the repair and improvement work, as follows (Table 1):

- Hazardous building materials due to the suspected presence of asbestos or arsenic.
- Paints suspected of containing lead, cadmium, or mercury.



ARFF Station
December 2022

Table 1. Anticipated Design Scope of Work

Area	Work Anticipated
Terminal 1	
ARFF Station	<ul style="list-style-type: none"> • Install a complete integrated generator system. The system consists of a diesel generator set with related component accessories. • Remove all unused piping and ductwork unless specifically indicated as “abandon in place”; all abandoned piping and ductwork shall be capped at both ends • All fasteners, supports, hangers, spring isolators, and miscellaneous steel items including, but not limited to, bolts, nuts, screws, rods, plates, and angles, etc., shall be galvanized unless otherwise noted or specified.

2.0 SAMPLING AND SURVEY METHODS

On 09 December 2022, State of Hawaii-certified building inspectors, Herbertson Santos and Keanu Joseph, conducted the building material survey. The inspectors performed a visual assessment of the project site, identified materials suspected of containing asbestos or heavy metals, and collected samples of these materials. Inspector certifications are presented in Appendix A.

2.1 Identifying Homogeneous Materials

The inspectors identified building materials with the same appearance, color, and substrate as homogeneous materials. Interior homogeneous materials are considered unique per building and building floor, while exterior building materials are considered unique structure. Building materials with the same characteristics (appearance, color, and substrate), as an identified homogeneous material, should be considered to possess the same hazard characteristics, unless specifically identified as otherwise in the report. As an example, if red paint on metal is found to be lead-containing paint (LCP), then all identical red paint on metal in the survey area should be treated as LCP. Table 2 provides an overview of sampling and a summary of hazardous materials identified.

Table 2. Summary of Sampling and Results

Materials Sampled	Samples Submitted/ Inspected	Suspect Material Locations	Identified Hazardous Materials
ARFF Station			
Asbestos in bulk material	24	Base, containment, diesel tank, floor, pipe, sidewalk, tank, wall, window frame	None
Lead in paint	22	Catwalk, conduit, containment, generator, generator motor, pipe, pole, tank, tank support, wall	4 LCP (43 mg/kg – 2,700 mg/kg)
Cadmium in paint	11		1 LCP also contained Cadmium (20 mg/kg)
Mercury in paint	11		None
Arsenic in bulk	0	--	None

LCP – Lead-Containing Paint, <5,000 mg/kg
mg/kg – milligrams per kilogram (equivalent to parts per million)

2.2 Building Material Sampling

Bulk and paint samples were collected using a decontaminated chisel, razor, or hammer in a manner that minimized airborne dust. The inspectors collected triplicate samples for asbestos and duplicate samples for heavy metals. No suspected arsenic-containing building materials were identified in the project area. Samples were placed in sealable plastic bags, labeled with a unique identification number, and recorded on a chain-of-custody. For each sample, the date, sample appearance, analyte, and sample location were recorded on a field data form. Asbestos samples were transported under chain-of-custody to LA Testing in South Pasadena, California. Paint samples were delivered under chain-of-custody to Hawaii Analytical Laboratory in Honolulu, Hawaii.

3.0 LABORATORY INFORMATION

LA Testing analyzed the asbestos samples by polarized light microscopy using the Environmental Protection Agency (EPA) Method 600/R-93/116. LA Testing, South Pasadena, is certified by:

- National Voluntary Laboratory Accreditation Program (NVLAP), certification 200232-0

- State of Hawaii Department of Health (HDOH), certification L-01-034
- American Industrial Hygienist Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP), certification 102814

Hawaii Analytical Laboratory analyzed the lead samples by flame atomic absorption spectroscopy using the NIOSH Method 7082m, cadmium by EPA Method 3051m/7000Bm, and mercury by EPA Method 3051m/7471Bm. Hawaii Analytical Laboratory, Honolulu, is certified by:

- NVLAP, certification 200655-0
- HDOH, certification L-14-002
- AIHA ELLAP, certification 101812

4.0 ASBESTOS RESULTS

Materials determined to contain greater than, or equal to, 1% asbestos are considered regulated asbestos-containing material (ACM) under the National Emission Standards for Hazardous Air Pollutants (NESHAP) as specified in 40 Code of Federal Regulations (CFR) Part 61 Subpart M. The U.S. Occupational Safety and Health Administration (OSHA) Asbestos General Industry and Construction Standards also define ACM as 1% asbestos or more by volume under 29 CFR 1910.1001 and 29 CFR 1926.1101, respectively. However, any measurable levels of asbestos fibers are considered to be a health concern, in an uncontrolled work environment.

Five homogeneous materials suspected of containing asbestos were identified and sampled, generating 15 samples for analysis. None of the samples contained measurable levels of asbestos. Therefore, it is concluded that no ACM is present in the area anticipated to be disturbed (Table 3).

Table 3. Asbestos-Containing Material Determination

Rooms	Locations	HM ID	Material Color	Material	Substrate	Result	Condition	Estimated Quantity
Generator Room	Walls	1	Beige	Paint/skim coat	CMU	ND	Poor	120 sq. ft.
Generator Room	Containment walls	2	Beige	Paint/skim coat	Concrete	ND	Good	60 sq. ft.
Exterior	Window frame	3	Gray	Caulking	CMU	ND	Poor	120 ln. ft.
Diesel Room	Walls	4	White	Paint/skim coat	CMU	ND	Fair	300 sq. ft.
Exterior	Diesel tank, pipe	5	Clear	Caulking	Concrete	ND	Good	5 sq. ft.
Exterior	Tank	6	Tan	Paint/skim coat	Concrete	ND	Good	100 sq. ft.
Generator Room	Floor	7	Gray	Concrete	None	ND	Fair	100 sq. ft.
Exterior	Base, sidewalk	8	Gray	Concrete	None	ND	Fair	250 sq. ft.

Good – Material is in an "as installed" condition. It is usable as is and may show cosmetic wear and tear or fading.

Fair – Material is functional for its installed purpose but shows initial signs of deterioration beyond the cosmetic.

Poor – Material shows significant deterioration and may not be functional for its installed purpose. The binding of the material has decreased integrity as indicated by peeling, cracking, or crumbling of the material.

Abbreviations and Acronyms

CMU – Concrete Masonry Unit

ND – Not Detected

sq. ft. – Square Feet

HM ID – Homogeneous Material Identifier

ln. ft. – Linear Feet

The suspected ACM descriptions and identifiers are provided in Appendix B. Sample location drawings are provided in Appendix C. Photographs of suspected materials are presented in Appendix D. Laboratory analytical reports, chain-of-custody, and field data forms are provided in Appendix E.

5.0 HEAVY METAL RESULTS

The U.S. Department of Housing and Urban Development (HUD) and the EPA define paint containing 5,000 milligrams per kilogram (mg/kg), or 0.5% by weight, or more of lead to be lead-based paint (LBP). OSHA considers paint containing any measurable concentration of lead to be LCP and a health concern. When lead is detected in a multi-layer sample, it is assumed that all layers represented by the sample contain lead at the same concentration. The disturbance of cadmium is regulated by 29 CFR 1926.1127, the OSHA Cadmium Construction Standard. The OSHA General Industry and Construction Standards also regulate mercury under 29 CFR 1910 Subpart H, I, and Z; and 29 CFR 1926 Subpart D and E. Paints are determined to be hazardous when any measurable amount of lead, cadmium, or mercury is determined by laboratory analysis.

Eleven paints suspected of containing lead were identified and sampled, generating 22 paint chip samples. Four LCP were identified in the survey area, with sample results ranging from 43 mg/kg to 2,700 mg/kg. One of the LCP also contained cadmium at 20 mg/kg. None of the samples were found to contain mercury.

Table 4. Heavy Metal-Containing Paint Determination

Rooms	Locations	HM ID	Material Color	Substrate	Pb	Cd	Hg	Condition	Estimated Quantity
					(mg/kg)				
Generator Room	Walls	9	Beige	CMU	<40	<10	<4	Poor	120 sq. ft.
Generator Room	Containment walls	10	Beige	Concrete	<40	<10	<4	Fair	60 sq. ft.
Generator Room	Generator	11	Black	Metal	<40	<10	<4	Fair	60 sq. ft.
Generator Room	Conduits, pipes	12	White	Metal	250 - 860	20	<4	Fair	120 ln. ft.
Generator Room	Generator motor	13	Red	Metal	2,600 - 2,700	<10	<4	Fair	80 sq. ft.
Diesel Room	Wall	14	White	CMU	<40	<10	<4	Fair	300 sq. ft.
Diesel Room	Pipe	15	White	Metal	<40	<10	<4	Poor	12 ln. ft.
Exterior	Catwalk	16	Gray	Metal	860 - 990	<10	<4	Fair	200 sq. ft.
Exterior	Tank support	17	White	Metal	<40	<10	<4	Poor	100 sq. ft.
Exterior	Pole	18	Tan	Metal	43- 100	<10	<4	Poor	100 sq. ft.
Exterior	Tank	19	Beige	Metal	<40	<10	<4	Good	120 sq. ft.

Bold values indicate results above the detection limit.

Good – Material is in an "as installed" condition. It is usable as is and may show cosmetic wear and tear or fading.

Fair – Material is functional for its installed purpose but shows initial signs of deterioration beyond the cosmetic.

Poor – Material shows significant deterioration and may not be functional for its installed purpose. Paint is bubbling or peeling over 20% or more of surface area and no longer protects the substrate.

Abbreviations and Acronyms

CMU – Concrete Masonry Unit
 HM ID – Hazardous Material Identifier
 LCP – Lead-Containing Paint, <5,000 mg/kg
 In. ft. – Linear Feet
 mg/kg– milligrams per kilogram or parts per million
 sq. ft. – Square Feet

Suspected heavy metal-containing paint descriptions and identifiers are provided in Appendix B. Sample and hazardous material location drawings are in Appendix C. Photographs of suspected LCP are presented in Appendix D. Laboratory analytical reports, chain-of-custody, and field data forms are provided in Appendix E.

6.0 SUMMARY OF SURVEY RESULTS

MNA conducted a targeted hazardous material survey at ARFF Station at Kahului Airport, Kahului, Island of Maui. MNA’s survey was conducted in support of the planned miscellaneous repairs and improvements project (design scope in Table 1).

Based on the analysis of eight asbestos-suspected materials and eleven heavy metal-suspected paints, MNA provides the following summary:

Summary of Hazardous Material Findings

	ACM	LCP	LBP	Cd	Hg	Arsenic
ARFF Station						
Diesel Room		☐				
Generator Room		☐		☐		
Exterior		☐				

☐ indicates presence of hazardous material
 None of the suspected paints contained cadmium, chromium, or mercury above laboratory reporting limits.
 ACM – Asbestos-Containing Material
 Cd – Cadmium
 Hg – Mercury
 LBP – Lead-Based Paint, ≥5,000 mg/kg
 LCP – Lead-Containing Paint, <5,000 mg/kg

7.0 RECOMMENDATIONS FOR RENOVATION AND CONSTRUCTION WORK

It is required that properly trained employees perform demolition and construction work that disturbs hazardous materials, in a manner protective of the site workers, the public, facility users, and the environment. The following recommendations address OSHA and other applicable federal requirements. These recommendations provide guidance for the management of hazardous building materials and control of occupational and environmental hazards associated with operations, maintenance, renovation, and demolition. These recommendations are based on information gathered during the hazardous materials survey. These recommendations are not intended to constitute a formal work plan but are intended to provide a starting point for the development of a work plan.

7.1 Asbestos-Containing Materials

Based on sampling and analysis of eight homogeneous materials at the ARFF Station, no ACM were identified in the project areas during this survey. Therefore, no special asbestos control measures are provided.

7.2 Lead-Containing Paints

Employees involved in renovation or demolition activities that disturb lead-, cadmium-, and mercury- containing paints must conduct work in general accordance with 29 CFR 1926.62 OSHA Lead in Construction Standard and 29 CFR 1926.1127 OSHA Cadmium in Construction Standard. The OSHA General Industry and Construction Standards also regulate mercury under 29 CFR 1910 Subpart H, I, Z; and 29 CFR 1926 Subpart D and E. Work practices that would trigger these requirements include, but are not limited to, sanding, blasting, welding, cutting, scraping, and spot/whole paint removals. For each project, the contractor must determine the appropriate safety measures based on the area to be disturbed, the concentrations of known lead, cadmium, and/or mercury, and the paint condition. Applicable work practice guidelines involving the disturbance of lead paints are summarized, but are not limited to:

- Contractors must anticipate heavy metal hazards and utilize appropriate engineering controls and personal protective equipment (PPE).
- Employees must utilize respiratory protection until the initial air monitoring assessment documents safe working levels of airborne lead (29 CFR 1926.62[d][1] and [2][i][A]), airborne cadmium (29 CFR 1926.62[d][1]), and airborne mercury (29 CFR 1926.95).
- An exposure assessment should be carried out when employees are disturbing LCP and cadmium-containing paints to ensure that they are not exposed to airborne lead concentrations greater than the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and 5 $\mu\text{g}/\text{m}^3$ for cadmium averaged over an 8-hour period. Additional periodic exposure monitoring may be required if the Action Level, 30 $\mu\text{g}/\text{m}^3$, averaged over an 8-hour period is exceeded.
- PEL for mercury is 0.1 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), averaged over an 8-hour period. Additional periodic exposure monitoring may be required if the Action Level averaged over an 8-hour period is exceeded.
- Employees must implement stringent dust control procedures to prevent airborne dust containing heavy metals.
- Employees must clean the work area thoroughly using wet methods and a high-efficiency particulate air (HEPA) vacuum. Dry sweeping or air blowing of debris and dust containing heavy metals must be avoided.
- Lead- and/or cadmium-containing debris must be segregated from other wastes, collected, and containerized. Wastes must be characterized per State of Hawaii requirements, including a determination of the waste as hazardous or non-hazardous. Heavy metal-containing waste must be handled and disposed of in accordance with applicable requirements.

- Visually inspect and verify the work area to ensure potentially hazardous debris and dust has been properly removed and the project site is free of lead and/or cadmium hazard.
- Conduct clearance in accordance with contract specifications.

7.3 Arsenic-Containing Materials

No suspected arsenic-containing materials were identified in the project areas during this survey. Therefore, no special arsenic control measures are provided.

8.0 LIMITATIONS

Industry standard effort was made to identify suspected hazardous building materials during the limited survey at the project area. However, this does not imply a guarantee that all suspected building materials and hazardous materials were identified by this assessment because certain building materials and/or surfaces may be hidden by walls, flooring/concrete slab, partitions, other building components, or existing equipment. If any previously unforeseen suspected materials become known, such as any hazardous chemicals in the heavy metal or heavy metal-free paint coatings, additional assessment may be required prior to the planned miscellaneous repairs and improvements project.

Paint samples were analyzed for lead, cadmium, and mercury content only. There is a potential for the presence of other hazardous chemicals in the lead-free or low-lead paint coatings, such as chromium, arsenic, zinc, and other metals and chemical substances. Suspected asbestos materials may contain other hazardous substances, such as silica. Contractor must anticipate hazards and take all appropriate measures to prevent exposure of workers and environment.

Material quantities provided in this report are based on visual approximations taken at the time of the survey only and should not be used for bidding purposes. It is the Contractor's responsibility to verify the material quantities and volume of waste prior to bidding.

Analytical results provided in this report do not meet the requirements for waste characterizations. Contractor must coordinate with permitted landfills for waste characterization requirements.

Worker protection from exposures to respirable crystalline silica is also enforced by the OSHA (29 CFR 1926.1153; 29 CFR 1910.1053). All appropriate engineering controls must be implemented, and PPE may be considered as added protection.

APPENDIX A: INSPECTOR CERTIFICATIONS

Herbertson Santos

Keanu Joseph

State of Hawai'i
Lead Based Paint Activities Certification

Expiration Dates:

Inspector-	11/29/2025
Supervisor-	n/a
Risk Assessor-	n/a
Project Designer-	n/a
Worker-	n/a

Santos
Herbertson
 Certification # PB-0902




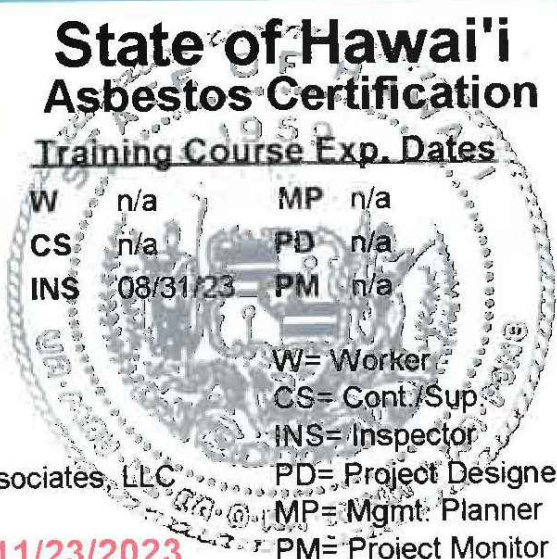

State of Hawai'i
Asbestos Certification

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	08/31/23	PM	n/a

Santos
Herbertson
 Myounghee Noh and Associates, LLC
HIASB-4191
 State Exp. Date **11/23/2023**

W= Worker
 CS= Cont./Sup.
 INS= Inspector
 PD= Project Designer
 MP= Mgmt. Planner
 PM= Project Monitor







State of Hawai'i
Lead Based Paint Certification

Expiration Dates: 1959

Inspector- 11/28/2025
 Supervisor- n/a
 Risk Assessor- n/a
 Project Designer- n/a
 Worker- n/a

Joseph Keanu S.
 Certification # PB-1331


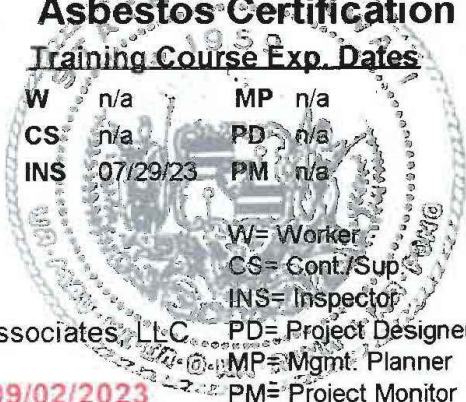
State of Hawai'i
Asbestos Certification

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	07/29/23	PM	n/a

W= Worker
 CS= Cont./Sup
 INS= Inspector
 PD= Project Designer
 MP= Mgmt. Planner
 PM= Project Monitor

Joseph Keanu S.
 Myounghee Noh & Associates, LLC
HIASB-5247
 State Exp. Date **09/02/2023**


**APPENDIX B: HOMOGENEOUS MATERIALS IDENTIFIED AND
SAMPLE TYPES COLLECTED**

Homogeneous Materials Identified and Sample Types Collected

HM ID	Rooms	Locations	Material Color	Material	Substrate	Asb	Pb (mg/kg)	Cd (mg/kg)	Hg (mg/kg)	Condition	Estimated Quantity
1	Generator Room	Wall	Beige	Paint/skim coat	CMU	ND				Poor	120 sq.ft.
2	Generator Room	Containment, wall	Beige	Paint/skim coat	Concrete	ND				Good	60 sq.ft.
3	Exterior	Window frame	Gray	Caulking	CMU	ND				Poor	120 ln.ft.
4	Diesel Room	Wall	White	Paint/skim coat	CMU	ND				Fair	300 sq.ft.
5	Exterior	Diesel tank, pipe	Clear	Caulking	Concrete	ND				Good	5 sq.ft.
6	Exterior	Tank	Tan	Paint/skim coat	Concrete	ND				Good	100 sq.ft.
7	Generator Room	Floor	Gray	Concrete	None	ND				Fair	100 sq.ft.
8	Exterior	Base, sidewalk	Gray	Concrete	None	ND				Fair	250 sq.ft.
9	Generator Room	Wall	Beige	Paint	CMU		<40	<10	<4	Poor	120 sq.ft.
10	Generator Room	Containment, wall	Beige	Paint	Concrete		<40	<10	<4	Fair	60 sq.ft.
11	Generator Room	Generator	Black	Paint	Metal		<40	<10	<4	Fair	60 sq.ft.
12	Generator Room	Conduit, pipe	White	Paint	Metal		LCP 250 - 860	Cd 20	<4	Fair	120 ln.ft.
13	Generator Room	Generator motor	Red	Paint	Metal		LCP 2,600 - 2,700	<10	<4	Fair	80 sq.ft.
14	Diesel Room	Wall	White	Paint	CMU		<40	<10	<4	Fair	300 sq.ft.
15	Diesel Room	Pipe	White	Paint	Metal		<40	<10	<4	Poor	12 ln.ft.
16	Exterior	Catwalk	Gray	Paint	Metal		LCP 860 - 990	<10	<4	Fair	200 sq.ft.
17	Exterior	Tank support	White	Paint	Metal		<40	<10	<4	Poor	100 sq.ft.
18	Exterior	Pole	Tan	Paint	Metal		LCP 43 - 100	<10	<4	Poor	100 sq.ft.

Homogeneous Materials Identified and Sample Types Collected

19	Exterior	Tank	Beige	Paint	Metal		<40	<10	<4	Good	120 sq.ft.
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Bold values indicate results above the reporting limit.

All asbestos found to be chrysotile.

Abbreviations and Acronyms

Asb - Asbestos

mg/kg - milligrams per kilogram, equivalent to parts per million

CMU - Concrete Masonry Unit

ND - Not Detected

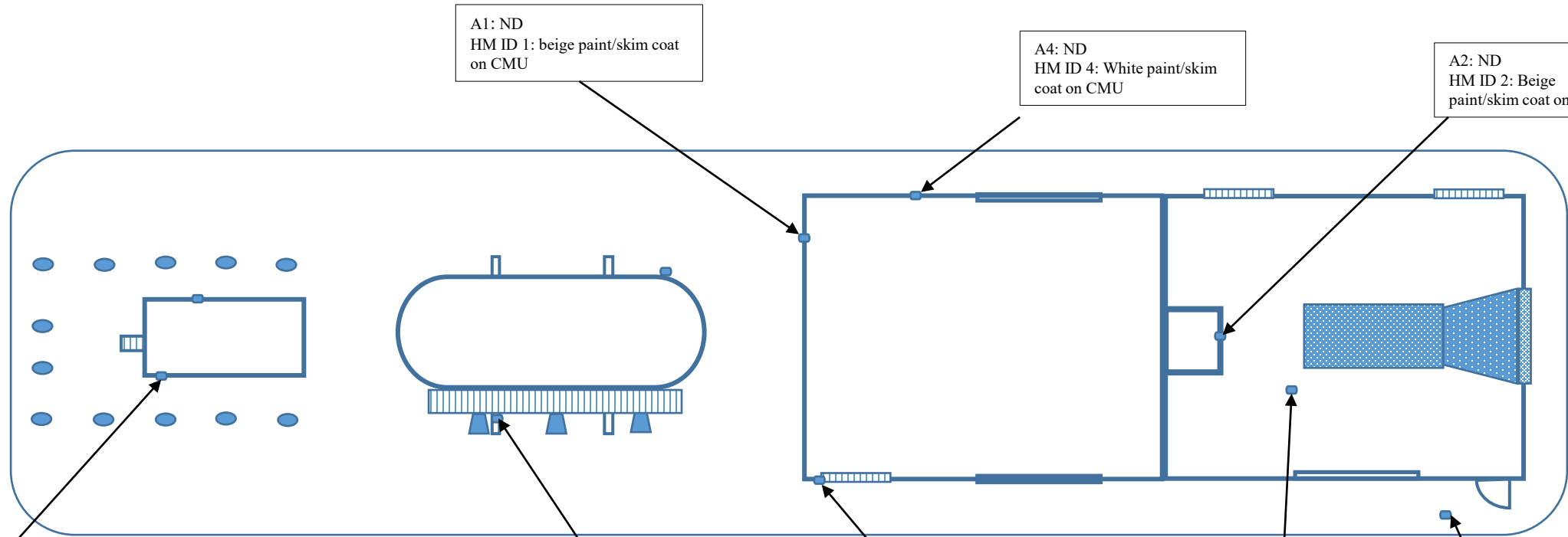
HM ID - Homogeneous Material Identifier

Pb - Lead

LCP - Lead-Containing Paint <5,000 mg/kg

**APPENDIX C: SAMPLE AND HAZARDOUS MATERIAL LOCATION
DRAWINGS**

List of Drawings	
Asbestos Sample Locations	C-1
Heavy Metal Paint Sample and Hazardous Material Locations	C-2



A1: ND
HM ID 1: beige paint/skim coat on CMU

A4: ND
HM ID 4: White paint/skim coat on CMU

A2: ND
HM ID 2: Beige paint/skim coat on CMU

A6: ND
HM ID 6: Tan paint/skim coat on concrete

A5: ND
HM ID 5: Clear caulking on Concrete

A3: ND
HM ID 3: Gray caulking on CMU

A7: ND
HM ID 7: Gray concrete floor

A8: ND
HM ID 8: Gray concrete sidewalk

Legend and Notes

ND – None detected
CMU – Concrete Masonry Unit
HM ID – Hazardous Material Identifier

REPLACEMENT OF BACKUP GENERATOR AT OGG ARFF STATION

Hazardous Material Sample Locations
ARFF STATION, MAUI AIRPORT
Sheet Number C-1



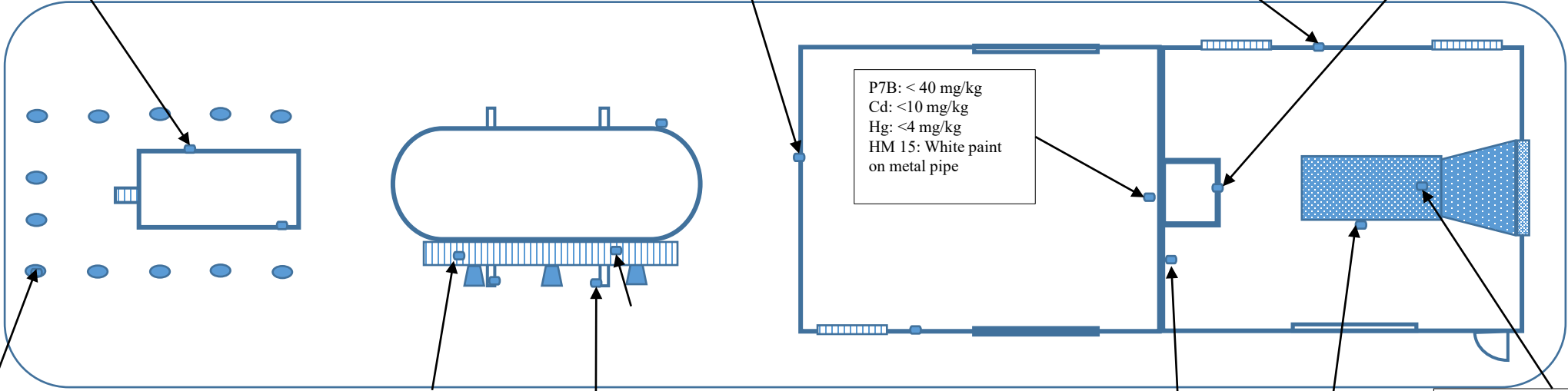
Myounghee Noh & Associates, L.L.C.

P11: < 40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 19: Beige
paint on metal tank

P6: <40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 14: White paint on CMU
wall

P1: < 40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 9: Beige paint
on CMU

P2: <40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 10: Beige paint on
concrete



P7B: < 40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 15: White paint
on metal pipe

P10: LCP 43-100 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 18: Tan paint on
metal pole

P8: LCP 860-990 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 16: Gray paint on
metal catwalk

P9: < 40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 17: White
paint on metal tank
support

P4: LCP 250 – 860 mg/kg
Cd: **20 mg/kg**
Hg: <4 mg/kg
HM ID 12: White paint on
metal conduits

P3: <40 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 11: Black
paint metal generator

P5: LCP 2,600 – 2,700 mg/kg
Cd: <10 mg/kg
Hg: <4 mg/kg
HM ID 13: Red paint on
metal motor

Legend and Notes

Bold values indicate results above the detection limit

HM ID – Hazardous Material Identifier

mg/kg – milligrams per kilogram

CMU – Concrete Masonry Unit

REPLACEMENT OF BACKUP GENERATOR AT OGG ARFF STATION

Hazardous Material Sample Locations

ARFF STATION, MAUI AIRPORT

Sheet Number C-2



Myounghee Noh &
Associates, L.L.C.

APPENDIX D: PHOTOGRAPHS



HM ID: 1
AARF Station

Interior
Beige paint and skim coat on CMU wall.

Non-ACM



HM ID: 2
AARF Station

Interior
Beige paint and skim coat on concrete
containment.

Non-ACM



HM ID: 3
AARF Station

Exterior
Gray caulking on window frame.

Non-ACM



HM ID: 4
AARF Station

Interior
White paint and skim coat on CMU wall.

Non-ACM



HM ID: 5
AARF Station

Exterior
Clear caulking on concrete.

Non-ACM



HM ID: 6
AARF Station

Exterior
Tan paint and skim coat on concrete.

Non-ACM



HM ID: 7
AARF Station

Interior
Gray concrete on floor.

Non-ACM



HM ID: 8
AARF Station

Exterior
Gray concrete on floor.

Non-ACM



HM ID: 9
AARF Station

Interior
Beige paint on CMU.

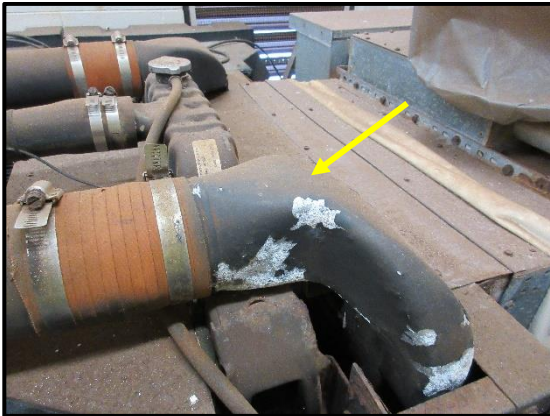
Non-LCP



HM ID: 10
AARF Station

Interior
Beige paint on concrete containment.

Non-LCP



HM ID: 11
AARF Station

Interior
Black paint on metal pipe.

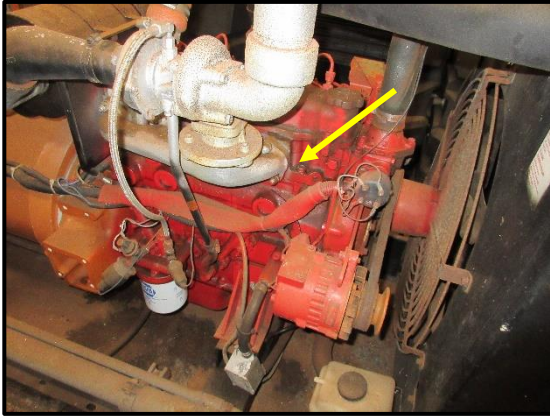
Non-LCP



HM ID: 12
AARF Station

Interior
White paint on conduit pipe.

LCP
3208-P4A: 250 mg/kg
3208-P4B: 860 mg/kg



HM ID: 13
AARF Station

Motor
Red paint on metal.

LCP
3208-P5A: 2,600 mg/kg
3208-P5B: 2,700 mg/kg



HM ID: 14
AARF Station

Interior
White paint on CMU wall.

Non-LCP



HM ID: 15
AARF Station

Interior
White paint on metal pipe.

Non-LCP



HM ID: 16
AARF Station

Exterior
Gray paint on metal.

LCP
3208-P8A: 990 mg/kg
3208-P8B: 860 mg/kg



HM ID: 17
AARF Station

Exterior
White paint on metal.

Non-LCP



HM ID: 18
AARF Station

Exterior
Tan paint on metal pole.

LCP
3208-P10A: 43 mg/kg
3208-P10B: 100 mg/kg



HM ID: 19
AARF Station

Exterior
Beige paint on metal tank.

Non-LCP

APPENDIX E: LABORATORY ANALYTICAL REPORTS



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@lateesting.com

LA Testing Order: 322224778

Customer ID: 32MYOU50

Customer PO: 3208_2

Project ID:

Attention: Herbertson Santos
Myounghee Noh & Associates, LLC
99-1046 Iwaena Street
Suite 210A
Aiea, HI 96701

Phone: (808) 484-9214

Fax:

Received Date: 12/14/2022 10:30 AM

Analysis Date: 12/20/2022 - 12/21/2022

Collected Date: 12/09/2022

Project: 3208_2

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
3208-A1A <small>322224778-0001</small>	Generator Rm - Wall	Gray/White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A1B <small>322224778-0002</small>	Generator Rm - Wall	Gray/White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A1C <small>322224778-0003</small>	Generator Rm - Wall	Gray/White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A2A <small>322224778-0004</small>	Generator Rm	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A2B <small>322224778-0005</small>	Generator Rm	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A2C <small>322224778-0006</small>	Generator Rm	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3A-Foam <small>322224778-0007</small>	Ext. - Window Frame	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3A-Padding <small>322224778-0007A</small>	Ext. - Window Frame	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3B-Foam <small>322224778-0008</small>	Ext. - Window Frame	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3B-Padding <small>322224778-0008A</small>	Ext. - Window Frame	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3C-Foam <small>322224778-0009</small>	Ext. - Window Frame	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A3C-Padding <small>322224778-0009A</small>	Ext. - Window Frame	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A4A <small>322224778-0010</small>	Diesel Rm - Wall	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A4B <small>322224778-0011</small>	Diesel Rm - Wall	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A4C <small>322224778-0012</small>	Diesel Rm - Wall	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A5A <small>322224778-0013</small>	Ext - Pipe	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/20/2022 16:26:43



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@lateesting.com

LA Testing Order: 322224778

Customer ID: 32MYOU50

Customer PO: 3208_2

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
3208-A5B 322224778-0014	Ext - Pipe	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A5C-Caulk 1 322224778-0015	Ext - Pipe	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A5C-Caulk 2 322224778-0015A	Ext - Pipe	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A6A 322224778-0016	Ext. - Tank	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A6B-Plaster 322224778-0017	Ext. - Tank	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A6B-Skim Coat 322224778-0017A	Ext. - Tank	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A6C 322224778-0018	Ext. - Tank	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A7A 322224778-0019	Generator Rm - Floor	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A7B 322224778-0020	Generator Rm - Floor	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A7C 322224778-0021	Generator Rm - Floor	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A8A 322224778-0022	Ext. - Base	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A8B 322224778-0023	Ext. - Base	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
3208-A8C 322224778-0024	Ext. - Base	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

John Talley (10)

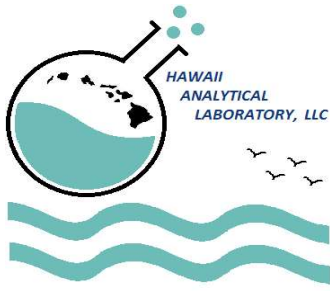
Rafael Palacios (19)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore LA Testing recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 12/20/2022 16:26:43



Hawaii Analytical Laboratory ANALYTICAL REPORT

Wednesday, December 21, 2022

Ms. Myounghee Noh
 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294264	3208-P1A	< 40	mg/kg	12/20/2022
Comments				
202294265	3208-P1B	< 40	mg/kg	12/20/2022
Comments				
202294266	3208-P2A	< 40	mg/kg	12/20/2022
Comments				
202294267	3208-P2B	< 40	mg/kg	12/20/2022
Comments				
202294268	3208-P3A	< 40	mg/kg	12/20/2022
Comments				
202294269	3208-P3B	< 40	mg/kg	12/20/2022
Comments				
202294270	3208-P4A	250	mg/kg	12/20/2022
Comments				
202294271	3208-P4B	860	mg/kg	12/20/2022
Comments				
202294272	3208-P5A	2600	mg/kg	12/20/2022
Comments				

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Ms. Myounghee Noh
 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294273	3208-P5B	2700	mg/kg	12/20/2022
Comments	Sample limited (<0.25g), final volume was adjusted to meet client's requested DL.			
202294274	3208-P6A	< 40	mg/kg	12/20/2022
Comments				
202294275	3208-P6B	< 40	mg/kg	12/20/2022
Comments				
202294276	3208-P7A	< 40	mg/kg	12/20/2022
Comments				
202294277	3208-P7B	< 40	mg/kg	12/20/2022
Comments				
202294278	3208-P8A	990	mg/kg	12/20/2022
Comments				
202294279	3208-P8B	860	mg/kg	12/20/2022
Comments				
202294280	3208-P9A	< 40	mg/kg	12/20/2022
Comments				
202294281	3208-P9B	< 40	mg/kg	12/20/2022
Comments				
202294282	3208-P10A	43	mg/kg	12/20/2022
Comments				
202294283	3208-P10B	100	mg/kg	12/20/2022
Comments				
202294284	3208-P11A	< 40	mg/kg	12/20/2022
Comments				

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Ms. Myounghee Noh
Myounghee Noh & Associates, LLC
99-1046 Iwaena St. Suite 210A
Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294285	3208-P11B	< 40	mg/kg	12/20/2022
Comments				

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Ms. Myounghee Noh
 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Recoverable Cadmium

EPA Method: 3051m / 7000Bm

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294264	3208-P1A	< 10	mg/kg	12/20/2022
Comments				
202294265	3208-P1B	< 10	mg/kg	12/20/2022
Comments				
202294266	3208-P2A	< 10	mg/kg	12/20/2022
Comments				
202294267	3208-P2B	< 10	mg/kg	12/20/2022
Comments				
202294268	3208-P3A	< 10	mg/kg	12/20/2022
Comments				
202294269	3208-P3B	< 10	mg/kg	12/20/2022
Comments				
202294270	3208-P4A	< 10	mg/kg	12/20/2022
Comments				
202294271	3208-P4B	20	mg/kg	12/20/2022
Comments				
202294272	3208-P5A	< 10	mg/kg	12/20/2022
Comments				
202294273	3208-P5B	< 9	mg/kg	12/20/2022
Comments	Sample limited (<0.25g), final volume was adjusted to meet client's requested DL.			
202294274	3208-P6A	< 10	mg/kg	12/20/2022
Comments				
202294275	3208-P6B	< 10	mg/kg	12/20/2022
Comments				

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Ms. Myounghee Noh
 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Recoverable Cadmium

EPA Method: 3051m / 7000Bm

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294276 Comments	3208-P7A	< 10	mg/kg	12/20/2022
202294277 Comments	3208-P7B	< 10	mg/kg	12/20/2022
202294278 Comments	3208-P8A	< 10	mg/kg	12/20/2022
202294279 Comments	3208-P8B	< 10	mg/kg	12/20/2022
202294280 Comments	3208-P9A	< 10	mg/kg	12/20/2022
202294281 Comments	3208-P9B	< 10	mg/kg	12/20/2022
202294282 Comments	3208-P10A	< 10	mg/kg	12/20/2022
202294283 Comments	3208-P10B	< 10	mg/kg	12/20/2022
202294284 Comments	3208-P11A	< 10	mg/kg	12/20/2022
202294285 Comments	3208-P11B	< 10	mg/kg	12/20/2022

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 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Recoverable Mercury (Manual Cold-Vapor Technique) #

EPA Method: 3051m / 7471Bm

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294264	3208-P1A	< 4	mg/kg	12/20/2022
Comments				
202294265	3208-P1B	< 4	mg/kg	12/20/2022
Comments				
202294266	3208-P2A	< 4	mg/kg	12/20/2022
Comments				
202294267	3208-P2B	< 4	mg/kg	12/20/2022
Comments				
202294268	3208-P3A	< 4	mg/kg	12/20/2022
Comments				
202294269	3208-P3B	< 4	mg/kg	12/20/2022
Comments				
202294270	3208-P4A	< 4	mg/kg	12/20/2022
Comments				
202294271	3208-P4B	< 4	mg/kg	12/20/2022
Comments				
202294272	3208-P5A	< 4	mg/kg	12/20/2022
Comments				
202294273	3208-P5B	< 4	mg/kg	12/20/2022
Comments Sample limited (<0.25g), final volume was adjusted to meet client's requested DL.				
202294274	3208-P6A	< 4	mg/kg	12/20/2022
Comments				
202294275	3208-P6B	< 4	mg/kg	12/20/2022
Comments				

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 Myounghee Noh & Associates, LLC
 99-1046 Iwaena St. Suite 210A
 Aiea HI 96701

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Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

Total Recoverable Mercury (Manual Cold-Vapor Technique)

EPA Method: 3051m / 7471Bm

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202294276 Comments	3208-P7A	< 4	mg/kg	12/20/2022
202294277 Comments	3208-P7B	< 4	mg/kg	12/20/2022
202294278 Comments	3208-P8A	< 4	mg/kg	12/20/2022
202294279 Comments	3208-P8B	< 4	mg/kg	12/20/2022
202294280 Comments	3208-P9A	< 4	mg/kg	12/20/2022
202294281 Comments	3208-P9B	< 4	mg/kg	12/20/2022
202294282 Comments	3208-P10A	< 4	mg/kg	12/20/2022
202294283 Comments	3208-P10B	< 4	mg/kg	12/20/2022
202294284 Comments	3208-P11A	< 4	mg/kg	12/20/2022
202294285 Comments	3208-P11B	< 4	mg/kg	12/20/2022

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Ms. Myounghee Noh
Myounghee Noh & Associates, LLC
99-1046 Iwaena St. Suite 210A
Aiea HI 96701

Phone Number: (808)484-9214
Facsimile:
Email: mnoh@mnaenvironmental.com

Lab Job No: 202211576
Date Submitted: 12/14/2022
Project Name: 3208_2, Kahului Airport Generator Bldg., 12/9/22

All Quality Control data are acceptable unless otherwise noted.

MRL for lead air is 5ug.

MRL for lead wipe is 10ug.

MRL for lead paint or soil is 40 mg/kg for a 0.25g sample.

General Comments

The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. Modifications to this methodology may have been made based upon the analyst's professional judgment and / or sample matrix effects encountered. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document proficiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions

> This testing result is greater than the numerical value listed.

< This testing result is less than the numerical value listed.

= Analytical methods marked with an "#" are not within our AIHA LAP, LLC Scope of Accreditation.

MRL = Method Reporting Limit.

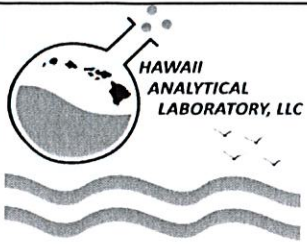


Anne Antin
Quality Control Manager

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2017. AIHA LAP, LLC is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 - 20181015

3615 Harding Avenue, Ste. 308, Honolulu, HI 96816 - Telephone: (808) 735-0422 - Fax: (808) 735-0047

Page 8 of 8



3615 Harding Avenue, Suite 308
 Honolulu, HI 96816
 Ph: 808-735-0422 - Fax: 808-735-0047
 https://analyzehawaii.com

New Client?

Report To* : Herbertson Santos
 Company : MNA Environmental
 Address* : 99-1046 Iweana Street Suite 210A
 Aiea, HI, 96701
 Phone / Cell No.* : 808-484-9214
 Report results to : Herbertson Santos
 Email / Fax : hsantos@mnaenvironmental.com

Invoice To* : Kealohilani Serrao
 Company :
 Address* :
 Phone / Cell No.* :
 Purchase Order No. : ~~3340-1~~ 3208-2
 Email Invoice To : kserrao@mnaenvironmental.com

Need Results By*:

- 5 Working Days (WD)
- 4 WD
- 3 WD
- 2 WD
- 24 hours
- 6 hours or less
- 4 hours or less
- 1-2 hours

Site/Project Name: ~~Waipupe Housing~~ ^{to} Kahului Airport Generator Bldg Client Project No.: ~~3340-1~~ 3208-2 Verbal results? Sampled By & Certif. #: Herbertson Santos

Special Instructions: PLM POSITIVE STOP Instructions:
 + stop / SAMPLE
 + stop / LAYER
Lab Report No.:
 202211576

Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab Sample(s) No.:
1 3208-PIA	Please see field form sheets	12/9/22	chip		Pb, Cd, Hg	MNA 822	202294264
2 3208-PIB							202294265
3							202294266
4							202294268
5							202294270
6							202294272
7							202294274
8							202294276
9							202294278
10							202294280
11 3208-PIIA							202294282
12 3208-PIIB							202294284

Relinquished By (Print and Sign) <i>Herbertson Santos</i>	Date/Time 12/10/22	Received By (Print and Sign) Kayla Maher	Date/Time 12-14-22A10:27 RCVD
--	-----------------------	---	----------------------------------

*Sample description can be paint chips, concrete, specific sample collection location, etc...
 If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
 All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
 *Required fields, failure to complete these fields may result in a delay in your samples being processed.

via HAC via USPS via drop box via FedEx via pick up
 awb#: 173-.....
 Page: 1 of 1

202211576

Hazardous Homogeneous Materials and Sampling Survey Field Form: Lead Paint

Project Number: 3208_2

Location: Kahului Airport Generator Bldg Inspector Initials:

Survey Dates and Times:

HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
9	generator Bldg	1	generator Rm	wall	Beige	P	CMU	G F (P)	120	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 1 A		generator Rm ↓								
3208-P 1 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
10	generator Bldg	1	generator Rm	wall, containment	white to Beige	P	CC CMU-18	G (F) P	75 60	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 2 A		generator Rm ↓		wall ↓						
3208-P 2 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
11	generator Bldg	1	generator Rm	generator	Black	P	CMU	G (F) P	60	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 3 A										
3208-P 3 B										

Hawaii Analytical Laboratory

Hazardous Homogeneous Materials and Sampling Survey Field Form: Lead Paint

Project Number: 3208 2

Location: Kahului Airport Generator Bldg Inspector Initials:

Survey Dates and Times:

HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
12	generator Bldg	1	generator Rm	Pipe, conduit	white	P	M	G (F) P	120	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 4 A		generator Rm ↓		pipe ↓						
3208-P 4 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
13	generator Bldg		generator Rm	generator motor	Red	P	M	G (F) P	80	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 5 A		generator Rm ↓		motor ↓						
3208-P 5 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
14	generator Bldg		Diesel Rm	wall	white	P	cm	G (F) P	300	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 6 A		Diesel Rm ↓		wall ↓						
3208-P 6 B										

Hazardous Homogeneous Materials and Sampling Survey Field Form: Lead Paint

Project Number: 3208 2

Location: Kahului Airport Generator Bldg Inspector Initials:

Survey Dates and Times:

HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
15	generator AARF station	15	Diesel Rm	pipe	white	P	M	G F (P)	12	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 7 A		Diesel Rm ↓		pipe ↓						
3208-P 7 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
16	g AARF station		EXT	cut walk	gray	P	M	G (F) P	200	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 8 A		EXT ↓		cutwalk ↓						
3208-P 8 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
17	AARF station		EXT	tank support	white	P	M	G F (P)	100	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 9 A		EXT ↓		support ↓						
3208-P 9 B										

Hawaii Analytical Laboratory

202211576

Hazardous Homogeneous Materials and Sampling Survey Field Form: Lead Paint

Project Number: 3208 2

Location: Kahului Airport Generator Bldg Inspector Initials:

Survey Dates and Times:

HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
18	AARF station		ext	poles	Tan	P	M	G F P	100	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 10 A		ext ↓		pole ↓						
3208-P 10 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
19	AARF station		ext	Tank	Peige	P	M	G F P	120	
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P 11 A		ext ↓		Tank ↓						
3208-P 11 B										
HM ID	Building	Flr.	Rooms	Locations	Material Color	Material	Substrate	Condition	Area Sq. ft or L. ft	Hatch Color
								G F P		
Sample ID		Room Sampled		Sample Location		PIC ID	Notes			
3208-P A										
3208-P B										

Hawaii Analytical Laboratory

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13282 - LEAD PAINT CONTROL MEASURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 SUMMARY

- A. Contractor shall review the existing lead and other heavy metal survey data provided as part of SECTION 01715 - EXISTING CONDITIONS - ASBESTOS/LEAD/HAZARDOUS MATERIAL SURVEY and verify the locations and quantities of paints containing lead and or cadmium.
- B. Lead- and cadmium-containing paints were identified in the Kahului Airport ARFF Station Misc. Repairs & Improvement project areas as follows:
 - 1. White paint on metal conduits and pipes, 250 mg/kg – 860 mg/kg for lead, and 20 mg/kg cadmium
 - 2. Red paint on metal generator motor, 2,600 mg/kg – 2,700 mg/kg for lead.
 - 3. Gray paint on metal catwalk, 860 mg/kg – 990 mg/kg for lead.
 - 4. Tan paint on metal pole, 43 mg/kg – 100 mg/kg for lead.
- C. For the purpose of this Section, all paints with measurable levels of lead are considered Lead-Containing Paint (LCP), which shall be removed or disturbed in a manner protective of the site workers, airport personnel, the public, and the environment, in accordance with applicable rules and regulations.
- D. Total paint removal is not anticipated; however, any LCP to be disturbed shall be removed and controlled to prevent exposures to the site workers, airport personnel, the public, and the environment.
- E. Implement appropriate engineering controls and safety measures to prevent site workers, other trades, airport personnel, public, and environmental exposures to lead hazards.
- F. Inform employees, subcontractors, and other persons conducting work for this project, that interior and exterior surfaces of the existing building associated with this project have lead- and or chromium-containing paints. Initiate and maintain applicable programs necessary to execute the work in accordance with the contract requirements, and Federal, State, and local rules and regulations.

- G. Ensure that work generating lead containing debris conforms to the following applicable Federal, State and local rules and regulations.
 - 1. 29 CFR 1926.62 – Occupational Safety and Health Administration (OSHA)
 - 2. HAR 12-148.1-1 – Hawaii Occupational Safety and Health (HIOSH) rules.
 - 3. 40 CFR Part 61 – Environmental Protection Agency (EPA) National Emission Standards of Hazardous Air Pollutants (NESHAP).
 - 4. 40 CFR 239 through 282 – EPA Resource Conservation and Recovery Act (RCRA) of 1976, amended in 1980 and 1984, as applicable.
- H. Initiate and maintain safety precautions and programs necessary to keep the work place safe for employees and subcontractors.
- I. Landfill may require a representative sampling of the waste stream for a Toxicity Characteristic Leaching Procedure (TCLP) test. Coordinate with the permitted landfill for disposal requirements. For bidding purpose, assume that waste generated from the project is not hazardous and will be accepted by the local permitted landfill. For unforeseen hazardous waste, requiring off-island shipping, Contractor may be given equitable adjustment for the disposal cost only (testing cost will be in base bid), as determined by the Contracting Officer
- J. Costs incurred due to Contractor's inability to control hazards shall be borne solely by Contractor, including but not limited to, medical, legal, public and regulatory relations, investigation, clean-up, monitoring, and reporting.

1.03 COORDINATION WITH OTHER SECTIONS

Contractor shall refer to SECTION 01715 – EXISTING CONDITIONS and SECTION 13289 – LEAD TESTING AND MONITORING for requirements of work when disturbing LCP.

1.04 LEAD-BASED PAINT FIELD TESTING

- A. Contractor reserves the right to conduct existing paint testing for lead, utilizing X-Ray Fluorescence (XRF) analysis or Atomic Absorption Spectrophotometry Analysis (AAS); however, XRF data is not considered useable for worker exposure assessments.
- B. Testing shall be conducted by a State of Hawaii-certified LBP Inspector or Risk Assessor, at the Contractor's expense.
- C. Test results shall be presented to the Contracting Officer for evaluation. Contractor's work practices, air monitoring and clearance requirements may be modified in accordance with paint test results.

1.05 SUBMITTALS

- A. Submit in accordance with SECTION 01300 - SUBMITTAL PROCEDURES.
- B. Contractor shall submit a Lead Hazard Control Plan 20 calendar days prior to lead disturbance work, including but not limited to:
 - 1. A clear scope of work
 - 2. Description of methods to control lead hazards and dust
 - 3. A sketch of lead hazard control area and staging area for waste containers, equipment, and supplies
 - 4. Site Supervisor and/or Competent Person's name, contact number, and certifications
 - 5. Written Hazard Communication (HAZCOM) program, including worker training records
 - 6. Written Respiratory Protection Program
 - 7. Medical surveillance records
 - 8. Written Emergency Procedures Plan
 - 9. Product specifications and safety data sheets (SDS)
 - 10. Waste disposal plan
- C. Within 10 days of waste disposal, Contractor shall submit the following:
 - 1. A copy of the Hazardous Waste Disposal Log and the completed waste manifest, if applicable, or landfill receipt
 - 2. Field records including daily field notes and photographs
 - 3. Sampling and analysis results

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Polyethylene Bags and Sheets: 6 mil minimum thickness in sizes required to accomplish the work involving hazard controls.
- B. Other Materials: Provide materials, such as, but not limited to, rags, lumber, plywood, fasteners, duct tape, and sealant which may be required to properly prepare and complete the work.

2.02 TOOLS AND EQUIPMENT

- A. HEPA Vacuuming Equipment: Vacuuming equipment utilizing High Efficiency Particulate Air (HEPA) filters.

PART 3 - EXECUTION

3.01 PREPARATION PRIOR TO DISTURBANCE OF LEAD-CONTAINING PAINT

- A. Document existing paint chips or debris prior to work (indoors and outdoors), as applicable.
 - 1. If there are any paint chips or debris in the project area, pre-clean horizontal surfaces within the work area prior to disturbing existing LCP.
 - 2. Treat paint chips or debris collected during pre-cleaning and during project related activities as lead-containing waste.
- B. Prevent lead-containing dust during work performance using wet methods and equipment with HEPA collection devices. If visual inspection, air monitoring, or clearance by Competent Person, IH, or the Contacting Officer indicates that control measures are inadequate, Contractor shall stop work, clean up the affected area, and implement enhanced engineering controls at no additional cost to the State.
- C. Establish a lead control area. Isolate and protect the portions of the area not within the scope of work using 6-mil polyethylene sheeting, or equivalent.
- D. Pre-work visual inspection: Inspect the immediate project and adjacent areas for the presence of paint chips or debris and document the physical conditions with photographs and narratives. This documentation will serve as baseline conditions to which final visual clearance will be compared.
- E. Demarcate the exterior lead control area using lead warning tape.
 - 1. Lead warning tape shall be at least 20 feet away from the closest painted surface being disturbed.
 - 2. Lead warning tape may be placed closer only if existing structural conditions prevent a 20-foot space between the lead warning tape and the working surface.
 - 3. Place 6-mil polyethylene drop sheets around exterior surfaces.
 - 4. Secure drop sheets so that wind, rain, or other forces will not dislodge the sheets.
 - 5. Drop sheets shall extend horizontally, where applicable, at a distance sufficient to capture debris containing paint and substrates.

6. Drop sheets shall be periodically cleaned and kept free of debris. Water captured by the drop sheet shall be contained and treated as lead-contaminated.

3.02 CONFORMANCE

A. Occupational Safety and Health Administration (OSHA) rules

1. Contractor shall ensure that work executed in this project is in accordance with the requirements of 29 CFR 1910.1025 and 29 CFR 1926.62.
2. Cost associated with the execution of work in accordance with these OSHA rules shall be the Contractor's responsibility.
3. Negative exposure assessment, air monitoring and testing cost shall be borne by the Contractor.

B. EPA Toxic Substance Control Act (TSCA)

1. Contractor shall implement good housekeeping methods to confine the spread of airborne lead dust when conducting work on painted surfaces.
 - a. Doors and windows shall be closed and temporary barriers, using 6 mil polyethylene sheeting, will be set up to prevent the spread of wind blown dust.
 - b. Minimum 6 mil polyethylene shall be placed on the floors and walls, minimum 10-feet on each side of where disturbance is anticipated.
2. At the end of each work day, Contractor shall remove visible debris and dust, HEPA vacuum, and wet-wipe below and around existing horizontal and vertical surfaces where disturbance of hazardous material was conducted.
3. Carpeted areas shall be lined with 6 mil polyethylene sheeting prior to the start of work and HEPA vacuumed after completion, as applicable.

C. EPA Resource Conservation and Recovery Act (RCRA) of 1976, amended in 1980 and 1984.

1. The project site may fall into the category of Conditionally Exempt Small Quantity Generator (CESQG) if the facility generates less than 100 kilograms/month or 220 pounds/month of hazardous waste. Complete the Hazardous Waste Disposal Log provided in Appendix A of this Section.
2. Under the requirements for a CESQG, the generator:
 - a. Must identify painted surfaces with LCP or assumed LCP, and the hazardous waste or acute hazardous waste generated at each site.
 - b. Not store more than 1,000 kg or 2,200 pounds of hazardous waste, or

assumed hazardous waste, at each site at any time.

- c. Can dispose of the waste in a municipal solid waste (MSW) landfill provided that, if required by landfill, TCLP results meet the landfill criteria, 5.0 milligrams per liter (mg/L) lead and 1.0 mg/L cadmium.
- d. Must dispose of the waste material at an EPA approved landfill off-island that accepts such waste if the TCLP results indicate that the material is hazardous waste (i.e. test results did not meet the waste characterization criteria, such as ignitability, corrosivity, reactivity, and toxicity). Refer to <https://www.fedcenter.gov/assistance/facilitytour/hazardous/whatis/flowchart/>

3. Treatment of assumed to be Lead-Containing Debris:

- a. Debris resulting from Contractor's work, such as cutting, scraping, drilling, coring, chipping, or sanding, of known or assumed LCP surfaces, shall be segregated from the rest of the construction debris.
- b. Hazardous waste and assumed to be hazardous waste amounts exceeding the CESQG limit shall follow RCRA regulations for Small Quantity Generator or Large Quantity Generator.

4. Disposal of Lead-containing Paint Debris:

- a. LCP or assumed LCP debris generated by the Contractor must conform to the requirements of this section.
 - 1) Paint debris with TCLP lead concentration below 5.0 mg/L and TCLP cadmium below 1.0 mg/L may be disposed of at a municipal solid waste landfill that accepts such waste.
 - 2) Disposal of this demolition debris on private land is prohibited, unless it is permitted by the State and the EPA.
 - 3) Paint debris with TCLP lead and cadmium concentrations at or above 5.0 mg/L and 1.0 mg/L, respectively, must be disposed of as hazardous waste at an EPA-approved landfill off-island that accepts such waste.
- b. Accumulation and mixing of hazardous waste of one generator (facility) with that of another generator is prohibited.
- c. Disposal shall be in accordance with the permit requirements of the Municipal Solid Waste Landfill.
- d. Contractor shall be responsible for costs related to the disposal of assumed LCP debris and hazardous paint chip waste.

3.03 ACTIVITIES DISTURBING LEAD-CONTAINING PAINT

- A. Conduct LCP surface preparation as required for this project and minimize lead-containing dust using wet methods and HEPA equipment. If visual inspection indicates control measures are inadequate, the Competent Person must stop work, notify the Contracting Officer, conduct clean-up, and implement enhanced engineering controls immediately at no additional cost to the State.
- B. Do not execute dry removal or dry sweeping. Waste or paint debris generated during removal shall be promptly staged or packaged, and shall not accumulate uncontrolled at any time. Lead-containing waste shall be properly marked and stored in secure containers appropriate for storing lead-containing waste.
- C. Do not allow lead-containing waste to be stored outside of the lead control area, in a high traffic unsecured area, or where the waste could interact with rain or wind and create a secondary hazard or contamination.

3.04 LEAD CONCENTRATIONS IN THE WORK AREA

- A. Maximum permissible exposure to airborne concentrations of lead within the project area shall be 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) air. Stop work whenever this limit is exceeded, and Competent Person shall remedy the condition prior to commencing work.
- B. Instruct and train each worker in proper respiratory use.
 - 1. Require that each worker always wear a respirator, properly fitted on the face, in the work area from the start of any operations which may cause airborne lead dust until the work area passes the required clearance.
 - 2. Use respiratory protection appropriate for the lead dust levels encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.
- C. Air Purifying Respirators: Provide half-face or full-face type respirators.
 - 1. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with the National Institute for Occupational Safety and Health (NIOSH) Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2. In addition, a chemical cartridge section may be added.
 - 2. Non-Permitted Respirators: Do not use single use, disposable or quarter-face respirators.
 - 3. Require that respiratory protection be used whenever there is any possibility of LCP disturbance, intentional or accidental.
 - 4. Require that a respirator be worn by anyone in a lead control area at all times when LCP is disturbed.

5. Regardless of Lead-Containing Dust Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with HEPA filters.

D. Fit Testing

1. Initial Fitting: Provide initial fitting of respirators during a respiratory protection training. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.
2. On an Annual Basis or When Personnel Has Lost or Gained 20 or More Pounds: Check the fit of each worker's respirator using irritant smoke. Valid fit test certificates shall be included in the Lead Hazard Control Plan which shall be maintained onsite.
3. Upon Each Wearing: Require that each time an air purifying respirator is donned, it will be checked for proper fitting with a positive and negative pressure seal checks in accordance with the manufacturer's instructions or ANSI Z88.2 (2015).

E. Type of Respiratory Protection Required

1. Provide respiratory protection as appropriate. Higher levels of protection may be provided as determined by Competent Person or workers themselves. Determine the proper level of protection by dividing the expected or actual airborne lead dust levels in the work area by the "protection factors" given below.
2. Consider the following unless air monitoring results indicate greater protection is necessary. Refer to the Protection Factors table for choice of respirators.
 - a. Loose equipment cleaning prior to removal in uncontaminated area: Half-face dual cartridge-type respirator or per Competent Person's discretion.
 - b. Plastic installation which does not disturb LCP: Half-face dual cartridge-type respirator or per Competent Person's discretion.
 - c. Removing or cleaning items or plastic installation when such operation may disturb lead paints or lead dust: Half-face dual cartridge-type respirator.

- F. Areas: Contractor's Competent Person and IH shall frequently inspect the controlled areas and adjacent areas. Contractor activities shall not adversely impact the indoors or outdoors air and horizontal surfaces and ground of the project site.

3.05 STOP ACTION LEVELS

- A. Inside Work Area: Maintain airborne levels in the work area of less than the Stop Action Level given below for the type of respiratory protection in use.
- B. If the lead dust levels rise above this figure for any sample taken, enhance work procedures to lower ambient dust levels.
- C. If lead dust levels for any work shift or 8-hour period exceeds the Stop Action Level, stop work except corrective action, and the Competent Person shall notify the Contracting Officer. After correcting the cause of lead dust levels, recommence work only after approval by the Competent Person. Competent Person shall document all decisions and follow-up actions and include them in the closeout report.

3.06 PROTECTIVE CLOTHING

- A. Furnish personnel exposed to lead-containing dust with disposable protective whole body clothing, head covering, gloves, and foot coverings. Furnish disposable plastic or rubber gloves to protect hands from lead.

PROTECTION FACTORS

RESPIRATOR TYPE	PROTECTION FACTOR
Air purifying: Negative pressure respirator HEPA filter Half facepiece	Up to 500 µg/m ³
Powered-air purifying respirator (PAPR): Negative pressure respirator HEPA filter Full facepiece	Up to 2,500 µg/m ³
PAPR Positive pressure respirator HEPA filter Half or full facepiece or Type C supplied air: Positive pressure respirator Continuous-flow half or full facepiece	Up to 5,000 µg/m ³

3.07 WARNING SIGNS AND LABELS

- A. Provide warning signs at approaches to the lead control areas.
- B. Locate signs at such a distance that personnel may read the sign and take necessary precautions before entering the area
- C. Provide and affix labels to impermeable bags, lead waste drums, and other containers containing lead materials, scrap, waste, or debris.
- D. Signs and labels shall comply with the requirements of 29 CFR 1910.1025.

3.08 TOOLS

Filters on vacuums and exhaust equipment shall be absolute HEPA filters and UL 586 labeled.

3.09 AIR MONITORING

- A. Employee Monitoring: Contractor's Competent Person shall monitor employees' exposure to lead in accordance with OSHA requirements.
 - 1. Contractor shall collect air samples from employees' breathing zones during each shift, for the duration of the paint-, building substrate-, and concrete-disturbing work.
 - 2. Contractor shall collect samples from at least 25% of workers conducting paint-, building substrate-, and concrete-disturbing tasks, and not less than two workers.
- B. Environmental Sampling During Paint Removal Work. An independent qualified Industrial Hygienist (IH) retained by the Contractor will conduct area air sampling daily, on each shift.
 - 1. Sufficient area monitoring shall be conducted to verify unprotected personnel are not exposed at or above the action level, 30 micrograms per cubic meter air.
 - 2. If action level is reached, stop work and correct conditions causing the elevated airborne lead dust levels. Resume only after approval of the IH.
 - 3. Cost of retesting due to Contractor's inability to control lead dust shall be borne by Contractor.
 - 4. For outdoor operations, IH shall determine the location and number of samples to be taken.

Work area and Adjacent:

LEAD

STOP ACTION LEVEL ($\mu\text{g}/\text{m}^3$)	RESPIRATOR REQUIRED	PROTECTION FACTOR
50	Half-face APR	10
5,000	PAPR or Type C, Continuous flow	100
50,000	Type C, Pressure demand	1,000

- C. If the high lead air concentrations were the result of Contractor's failure of work area isolation measures, initiate the following actions:

1. Decontaminate the affected area(s).
 2. Require that respiratory protection be worn in affected area until the area is cleared.
- D. If the high reading was the result of other causes, initiate corrective action as determined by the IH.
- E. Effect on Contract Sum. Complete corrective work with no change in the Contract Sum if lead-containing dust levels exceeding $30 \mu\text{g}/\text{m}^3$ were caused by Contractor's activities. Costs involving delay, re-cleaning, additional lead air monitoring and quality control, investigation, and reporting shall be borne by Contractor.

3.10 ANALYTICAL METHODS

- A. NIOSH 7082 method shall be used in analyzing air samples. Filters used shall be in accordance with the referenced method.
- B. NIOSH 9100 series method shall be used in analyzing lead wipe samples.

3.11 AIR SAMPLE MEDIA

Lead Sample Cassettes. Air samples will be collected on 37 millimeter (mm) cassettes with 50 mm extension cowl with 0.8 micrometer cellulose ester membrane.

3.12 LABORATORY TESTING

- A. Services of a testing laboratory shall be employed by the IH. Lead air sample results will be made available within 24 hours upon receipt of laboratory analytical results.
- B. Contracting Officer will have access to air monitoring tests and clearance results at all times.

3.13 CLEAN UP

- A. Maintain surfaces of the lead control area free of accumulations of paint chips and dust. Prevent the spread of dust and debris; keep waste from being distributed over the general project area.
1. Do not dry sweep the area.
 2. When the paint removal, demolition, or renovation is completed:
 - a. Clean visible lead paint contamination by vacuuming with a HEPA vacuum followed by wet mopping and wiping.
 - b. Contractor shall certify that the work was completed in accordance with OSHA 29 CFR 1910.1025, and that there are no visible accumulations of lead-containing paint and dust in the project areas.

- c. Competent Person and IH shall visually inspect the affected surfaces for residual lead paint chips and accumulated lead-containing dust after the work is completed.
 - d. Contractor shall re-clean areas showing paint dust or residual lead paint chips to the Contracting Officer's satisfaction.
- B. Contractor is responsible for the restoration and cleaning of any areas outside the work area impacted by or contaminated by lead-containing dust or debris generated by the Contractor's work, such as removal, handling, or storage of lead-containing waste. Contractor shall perform remedial cleaning and restoration of these areas, if any, at no additional cost to the State.

3.14 CLEARANCE

- A. Pre-demolition inspection shall be conducted jointly by the Competent Person and the IH after painted surface treatment and prior to demolition of structures. Clearance will be granted when the Competent Person and IH agree that the subsequent demolition will generate no visible emission of lead- or cadmium-containing paint dust or debris.
- B. Final visual inspection shall be conducted by the Competent Person and the IH after demolition is completed and all dust/debris is removed offsite. No visible paint dust, paint chips, or debris with paints shall remain.

3.15 DISPOSAL

- A. Landfill may require characterization of the waste generated during the removal work, where a representative sample is analyzed for TCLP analysis.
 - 1. If analytical result indicates the TCLP level is below the EPA guideline or within the landfill acceptance criteria, the waste generated from the project can be disposed of as general construction and demolition (C&D) debris.
 - 2. If the TCLP test fails or the result exceeds the landfill acceptance criteria, the waste shall be treated as hazardous waste and be disposed of in a RCRA permitted landfill. Contact Contracting Officer for EPA ID number.
- B. Contracting Officer will review the TCLP results to determine the hazard characteristics. If the waste is determined to be RCRA hazardous waste, the waste shall be disposed of at an off-island EPA-approved facility.
- C. Submit a copy of the TCLP analytical results to Contracting Officer prior to request for EPA ID number. Hazardous Waste Manifest and Landfill Receipt shall be submitted prior to the final billing.

3.16 GENERAL

- A. Waste is to be hauled by a waste hauler with required licenses from State and local authority with jurisdiction.

- B. Protect interior of truck or dumpster with Critical and Primary Barriers.
- C. Carefully load containerized or bagged waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to ensure that no unauthorized persons have access to the material. If required by DOT, vehicles shall be placarded with Department of Transportation labels.
- D. Do not store containerized or bagged waste outside of the work area. Take containers from the work area directly to a sealed truck or dumpster.
- E. Do not transport lead waste materials on open trucks. If waste material is to be transported in drums, label drums with the same warning labels as the bags.
- F. Coordinate with landfills in advance of transport and of the quantity of material to be delivered.
- G. After completion of hauling and disposal of demolition waste and paint waste, if separated, submit a copy of waste manifest, chain of custody form (if applicable), and waste storage facility receipt to the Contracting Officer. Final contract payment shall not be made until completed disposal documents are submitted.

3.17 RECORDKEEPING

- A. Complete and submit a copy of the Project Hazardous Waste Log to the Contracting Officer. See Appendix B of this Section.
- B. Maintain accurate documentation of the site activities. Be prepared at all times to present real time information upon regulators' and State visits.
- C. Contractor's Competent Person shall be onsite at all times.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Except for the hazardous waste as indicated in Part 3.15, work performed under this Section shall not be measured or paid for separately, but shall be considered incidental to the lump sum price bid for the item of which it is a part in the Bid Schedule.

END OF SECTION

APPENDIX A

HAZARDOUS WASTE DISPOSAL LOG

(NAME OF PROJECT)

Street Address

City, State, Zip Code

YEAR	DESCRIPTION OF HAZARDOUS WASTE	APPROXIMATE WEIGHT IN POUNDS	SPECIAL HANDLING
JANUARY			
FEBRUARY			
MARCH			
APRIL			
MAY			
JUNE			
JULY			
AUGUST			
SEPTEMBER			
OCTOBER			
NOVEMBER			
DECEMBER			

By

Signature

Print Name

APPENDIX B

PROJECT HAZARDOUS WASTE LOG
(Contractor to complete one per facility site)

PROJECT:

STATE JOB NO. _____

START DATE: _____ COMPLETION DATE: _____

GENERAL CONTRACTOR:

ADDRESS: _____

TELEPHONE: _____ FAX NUMBER: _____

NAME OF SUPERINTENDENT FOR THIS PROJECT:

NAME OF GENERATOR (FACILITY):

ADDRESS: _____

TELEPHONE: _____ FAX NUMBER: _____

DESCRIPTION OF HAZARDOUS WASTE:

APPROXIMATE WEIGHT (IN POUNDS):

MONTHLY DISPOSAL LOG:

MONTH: _____ WEIGHT IN POUNDS: _____

MONTH: _____ WEIGHT IN POUNDS: _____

MONTH: _____ WEIGHT IN POUNDS: _____

DISPOSAL SITE: _____

CONTRACTOR DISPOSING OF HAZARDOUS WASTE:

ADDRESS: _____

TELEPHONE: _____ FAX NUMBER: _____

DISPOSAL CONTRACTOR IS A (CHECK ONE OF THE FOLLOWING):

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR

SMALL GENERATOR

LARGE GENERATOR

APPROVAL:

STATE DESIGNATED COMPETENT PERSON: _____

COMPANY: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

SIGNATURE DATE

SECTION 13289 – LEAD TESTING AND MONITORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 SUMMARY

- A. This Section describes Contractor's responsibility for compliance while conducting work which disturbs lead- and or cadmium-containing paint for the Kahului Airport ARFF Station Misc. Repairs & Improvements Project, Kahului, Island of Maui. Related sections are:
1. SECTION 01715 – EXISTING CONDITIONS – ASBESTOS/LEAD/HAZARDOUS MATERIAL SURVEY for general requirements and the hazardous material survey
 2. SECTION 13282 – LEAD PAINT CONTROL MEASURES for requirements of work which disturbs lead- and or cadmium-containing paints.
- B. Implement appropriate engineering controls and safety measures to prevent site workers, airport personnel, other trades, the public, and the environment from exposure to hazardous materials, such as airborne lead dust, cadmium dust, or silica.
- C. Costs incurred due to Contractor inability to control hazards shall be borne by Contractor, including but not limited to, investigations, medical, legal, regulatory and public relations, clean-up, monitoring, and reporting.
- D. An independent qualified industrial hygiene (IH) firm, retained by the Contractor, will conduct the monitoring during the Contractor's work which disturbs paint coatings, building materials, and concrete. IH firm shall have no affiliation with Abatement Contractor, if Abatement Contractor is hired by Contractor.

1.03 GENERAL REQUIREMENTS

- A. Testing and workers' breathing zone monitoring shall be conducted by the Contractor for the purpose of:
1. Verifying compliance with the applicable codes, regulations and laws regarding disturbance of paints and building materials with potential hazards, such as lead, cadmium, or silica.
 2. Ensuring that the legally required documentation is collected in a timely manner.

3. Providing engineering controls during project.

1.04 TESTING/ AIR MONITORING/ INDUSTRIAL HYGIENE SUPERVISION AND AIR MONITORING

- A. Industrial hygiene supervision and boundary air monitoring shall be performed by an independent qualified IH firm retained by the Contractor. The laboratory used for sample analysis shall be proficient in:
1. The National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) program.
 2. The National Lead Laboratory Accreditation Program (NLLAP) for lead.
- B. Air monitoring and project supervision will be conducted under the direction of an Industrial Hygienist (IH) who has minimum 5 years of experience in hazard abatement project management. On-site monitoring may be conducted by a competent and qualified IH Technician with a minimum of 2 years of experience in lead abatement and/or the relevant hazardous material abatement, provided activities are conducted under the supervision of the IH.
- C. Aforementioned air monitoring and project supervision shall not remove the Contractor's responsibility for his/her worker protection and required documentations.

1.05 COORDINATION

Coordinate with the IH/Project Monitor for the testing and monitoring requirements included in Section 13282 – LEAD PAINT CONTROL MEASURES for testing/air monitoring and all applicable Federal, State, and local regulations.

1.06 PRE-CONSTRUCTION CONFERENCE

- A. Hold conference prior to construction and shall be conducted by the Contracting Officer assisted by the Competent Person.
1. Attendance: Present also shall be the Contractor, Competent Person, IH, and Building Representative(s). If an Abatement Contractor is retained by General Contractor, a representative of the General Contractor shall also attend.
 2. Agenda:
 - a. Review final schedule for project.
 - b. Verify legal requirements and special conditions and constraints.
 - c. Verify compliance with pre-construction requirements.
 - d. Obtain copies of all mandatory notifications.

- e. Inspect sample respiratory equipment and other hazard abatement equipment.
- f. Review procedures and responsibilities.
- g. Clarify the scope of work and its best impact on the users of the building.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 COMPETENT PERSON RESPONSIBILITIES

- A. Contractor's Competent Person shall prepare a Lead Hazard Control Plan per Section 13282 Paragraph 1.05 B. State and training certifications shall be valid and reflect the anticipated workers on site.
- B. If required by the landfill, Competent Person shall provide proof of waste characterization and disposal documents. In the event that the waste is determined to be hazardous, inform Contracting Officer, obtain EPA ID number, and request equitable adjustment to the contract.
- C. Refer to Sections 13282, and part 3.03, below, for additional responsibilities.

3.02 CONTRACTOR RESPONSIBILITIES

- A. Submit complete work plans for review and concurrence by the Contracting Officer. Refer to Section 13282 for requirements of the work plan.
- B. Contractor shall be responsible for providing the daily personal air monitoring and necessary records for all of the Contractor's employees for the duration of the project as required by OSHA (29 CFR 1926.62) and all other applicable laws.
- C. Contractor shall obtain the OSHA required reports for personnel air monitoring as part of the contract.
- D. Contractor shall be responsible for daily personal air samples that shall be collected on at least 25% of the Contractor's personnel performing removal work on similar tasks and for the duration of the project. Submit within 5 working days to the Contracting Officer.
- E. Contractor is solely responsible for protecting their workers, other personnel, and the public from any work activities at the work site and property regardless of the testing and monitoring conducted by the Contractor's IH.

- F. Costs involving investigations, air monitoring, legal, medical, regulatory and public relations, testing, and reporting due to Contractor inability to control hazards shall be borne by Contractor, and shall be deducted from the final contract payment.
- G. Accommodate additional testing performed by the IH; however, this shall not remove Contractor's responsibility of monitoring required by law and contract specifications.
- H. For final cleanup and decontamination following gross removal, remove the final polyethylene sheeting, or drop cloth, but leave the coverings for critical barriers, such as doors, windows, air ducts, etc., until successful clearance is obtained.
- I. Lead Clearance by Visual Inspection
 - 1. IH retained by the Contractor and the Contractor's Competent Person shall conduct visual inspection.
 - 2. No visible emissions of paint dust or debris with paints.

3.03 MONITORING AND INSPECTION BY COMPETENT PERSON

A. Duties of the Competent Person

- 1. Photographic Record of Project: Record work with representative photos. Photos shall become the property of the State and are to be accompanied by a detailed log.
- 2. Project Log: Competent Person shall be on site at all times and maintain daily field logs detailing key activities during LCP-related work and submit a summary of project activities to the Contracting Officer within 10 days of completion. Incorporate daily field reports with other project data into a final closeout report.
- 3. Visual Inspection of Controlled Areas: Conduct inspections of controlled areas, during the actual work performance, to document the work practices employed. Verify that scheduled abatement or mitigation work is completed, and the area was properly and promptly cleaned and ready for other trades involved in the project.
- 4. Change Order: If changes are necessary once construction begins, review request for change and make a recommendation for approval. Per Section, 13282, removal activities and disposal of wastes will not be measured or paid separately, except for the hazardous waste determined by the waste characterization.

B. Site Monitoring by Competent Person

- 1. Onsite personnel air monitoring as required by OSHA, and the project specifications.

2. Monitoring of decontamination procedures at control area entry/exit and of cleanup after each shift.
3. Monitoring of controlled area maintenance and waste handling.
4. Interface with IH, Designer of Records, representatives of regulatory agencies, and the Contracting Officer.
5. Ensure workers are trained, engineering controls in place, and proper respiratory protection is utilized by personnel within control areas.
6. Relay to the Contracting Officer any discrepancies in Contractor's action with provisions of project specifications.

3.04 TESTING/AIR MONITORING

- A. IH retained by the Contractor shall have authority to stop work or to exercise engineering controls during the project.
- B. IH may conduct additional testing and air monitoring at his/her discretion.
- C. Monitoring activities will be documented and submitted to the Contracting Officer with test results, interpretations, follow-up actions, and final resolutions.

3.05 SAMPLE DESIGN

- A. The following is a typical sampling design per control area during the construction. Number of sample quantities and volume may vary.
- B. Work Area Samples: Low volume samples of a maximum of 480 liters each shall be taken in the work area. Ambient air samples shall be taken outside of work area to assess and ensure that engineering controls are effective and that the persons entering the work area are properly protected from airborne hazards. If monitoring results inside and outside the controlled area indicate airborne concentrations greater than $30 \mu\text{g}/\text{m}^3$ air for lead, correct the condition(s) causing the increase and maintain the ambient conditions to below the action level.
- C. Barrier Samples: As applicable, two samples may be taken per barrier.
- D. Environmental Samples: Each removal area shall be controlled so that airborne dust cannot escape into trade, airport personnel, and public access areas. Per the IH's discretion, high volume or low volume samples per controlled area will be taken.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work involving worker monitoring, waste characterization, and OSHA and EPA

compliance shall not be measured or paid for separately but shall be considered incidental to the lump sum price bid for the item of which it is a part in the Bid Schedule.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15011 – GENERAL MECHANICAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 SUMMARY

- A. Work included: Applies to all work of DIVISION 15 - MECHANICAL.
- B. The GENERAL PROVISIONS of the Contract, including SPECIAL PROVISIONS and General Requirements of the Specifications apply to work specified in this Section.

1.03 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 system 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.

1.04 SUBMITTALS

- A. Submittals required in this and other sections of Division 15 – MECHANICAL, shall conform to the General Mechanical Provisions and following additional requirements. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimension, capacity, project specification and paragraph reference, applicable industry, and technical society reference standards, years of satisfactory service, and other information necessary to

establish contract compliance of each item the Contractor proposes to provide. Photographs of existing installations are unacceptable and will be returned without approval. Submittals for each section of Division 15 - MECHANICAL, shall be complete. Incomplete submittals will be returned without review.

1. **Manufacturer's Catalog Data:** Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts. Each submittal shall clearly identify equipment to be provided. Information not pertaining to equipment shall be deleted or crossed out.
2. **Shop Drawings:**
 - a. Provide at least six sets of shop drawings for each Section of Division 15 - MECHANICAL. Shop Drawings shall use a minimum scale of 1/4 inch per foot on drawing sheets the same size as contract drawings. Include floor plans, sectional views, wiring diagrams, and installation details of submitted equipment, and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, drawings shall be revised to show accepted equipment and resubmitted.
 - b. At least one set of shop drawings shall be produced on standard 36"x24" full sized sheets. These drawings shall include all revisions to the shop drawings. The contractor shall submit the original shop drawings when submitting "AS-BUILT DRAWINGS".
 - c. When shop drawings have substantial changes from the design to the point that compliance with "AS-BUILT DRAWINGS" of this Section become impractical, the approved shop drawing shall be substituted for the contract drawing and the intent of "AS BUILT DRAWINGS" paragraph implemented using the approved shop drawings.
3. **Manufacturer's Instructions:** Where installation procedures or part of installation procedures are required to be in accordance with the manufacturer's instructions, submit printed copies of those instructions with product submittals. All products or items that carry manufacturer's warranty shall be installed in accordance with manufacturer's instructions. Installation of the item shall not proceed until the manufacturer's instructions are received. Failure to submit shall be cause for rejection of the equipment or material. When manufacturer's instructions and these specifications have different requirements, the more stringent requirement shall prevail. However, if the requirements are conflicting, it is the Contractor's responsibility to notify the Engineer and Officer in Charge in writing prior to procurement and installation

4. All but not limited to, the following items shall be installed in accordance with the manufacturer's instructions and these bid documents.
 - a. Exhaust fan
 - b. Louvers
 - c. Vibration Isolators
 - d. Aboveground and Underground Fuel Piping
 - e. Above Ground Fuel Tank
 - f. Day Tank
 - g. Generator Exhaust Silencer
5. Certificates and Compliance: Submit a certificate of compliance from the manufacturer for approval for products, finishes, and equipment as specified in the technical sections whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance. The certificates shall identify the manufacturer, the products, equipment, or materials, and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to the requirements specified.
6. Reference Standards Compliance: Where equipment for materials is specified to conform to industry and technical society reference standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), American Society of Mechanical Engineers (ASME), and Underwriters Laboratories (UL), submit proof of such conformance. If an organization uses a label or listing to indicate compliance with a particular reference standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.
7. Independent Testing Organization Certificate: In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Engineer and Officer in Charge.
8. Operation and Maintenance Manuals: When specified in subsequent Sections of Division 15 - MECHANICAL, the Contractor shall submit six complete sets of operating and maintenance manual on all equipment and the system as a whole. Each set shall be permanently bound with table of contents and shall have a hard cover. One complete set shall be furnished at the time the test procedure is submitted, and the remaining sets shall be furnished before the contract is completed. The following identification shall be inscribed on the covers: the words "OPERATING AND MAINTENANCE MANUALS," the project name, location of the building, name of the Contractor, telephone number, and date. Flysheet shall be provided for piece of equipment and each subject. The instruction sheets shall be approximately 8-1/2 by 11 inches, with large sheets of drawings folded in. The instructions shall include, but shall not be limited to the following:
 - a. Identify each equipment with tag number, manufacturer's name, model, serial number, capacity, location, and area or rooms served.
 - b. Manufacturer's Data

- 1) Approved equipment submittal.
 - 2) Manufacturer's wiring and control diagrams, with data to explain the detailed operation and control of each component.
 - 3) Manufacturer's operating and maintenance manuals for each piece of equipment, including lubrication instructions.
 - 4) Parts lists and recommended spare parts.
 - 5) Manufacturer's bulletins, cuts and descriptive data. Applicable data shall be indicated by highlight, arrows, or underlining. Non-applicable data shall be crossed out.
- c. System layout showing piping, valves, and controls.
 - d. Source of service and replacement parts.
 - e. A control sequence describing startup, operation, shutdown, restarting after power failure.
9. Operating Instructions: Submit text of posted operating instructions for each system and principal item of equipment as specified in the technical sections.
10. As-Built Drawings:
- a. The Contractor shall maintain at the job site one (1) 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.
 - b. Where a choice of material or method is permitted herein or where variations in scope or character of work from that of the original contract is authorized, the drawings shall be marked to define the construction actually provided.
 - c. Where equipment installation is involved, the size, manufacturer's name, model number, power input or characteristic as applicable shall be shown on the as-built drawings.
 - d. 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.
 - e. The drawings shall be maintained and updated on a daily basis. The Contractor shall sign, and date each sheet to certify that the dimensions and details shown on the drawings reflect the dimensions and details, and specifications as constructed in the field.
 - f. The drawings shall show existing conditions and new work shown on the design drawings. Except that the new work shown shall be the as-built condition. Drawings shall include the equipment schedules with the installed equipment data.
 - g. Submit the following to the Engineer for review and approval:
 - 1) Job site marked-up drawings.
 - 2) Incorporate into electronic drawing files all construction variations and information required by subparagraph a through e above and submit final as-built drawings plotted with ink on 4-mil double matted mylar.

- 3) Electronic files of as-built drawings in AutoCAD 2000 or later DWG format on compact disc. Electronic files shall be vector graphics, scanned raster images are not acceptable.

1.05 QUALITY ASSURANCE

- A. Material and Equipment Qualifications: Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for two-years prior to bid opening. The two-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures during the two-year period.
- B. Alternative Qualifications: Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.
- C. Manufacturer's Nameplate: Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.
- D. Modification of References: In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Design Engineer, or City, County, or State Building Officials.

1.06 SUBSTITUTIONS

- A. Substitutions shall be subject to the requirements of these specifications and the General Provisions for Construction Projects (2016). Supporting data shall be furnished for all substitutions. Redesign of architectural, 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 support, insulation, controllers, motor, starters, electrical wiring and conduit, and any other additional equipment required by the system at no additional cost to the State.

1.07 VERIFICATION OF DIMENSIONS

- A. The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working

conditions, to verify all dimensions in the field, and to advise the Engineer and Officer in Charge of any discrepancy before performing any work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Officer in Charge. Replace damaged or defective items. Rusted pipe, fittings, and accessories delivered or installed at the job site will be rejected.
- B. Materials and equipment shall be stored in weather protected locations and covered to prevent dust or moisture damage. Damage to materials or equipment due to contractor's neglect shall be repaired or replaced at the expense of the Contractor.

1.09 INSTRUCTION TO PERSONNEL

- A. When specified in other sections, furnish the services of competent instructors to give full instruction to the designated personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.10 POSTED OPERATING INSTRUCTIONS

- A. Provide for each system and principal item of equipment as specified in the technical sections for the use of the operation and maintenance personnel. The operating instructions shall include the following:
 - 1. System Descriptive Information: Wiring diagrams, control diagrams, piping diagrams, control sequence and operating points for each principal system and item of equipment. Post instructions where directed.
 - 2. Equipment Instructions: Attach to or post adjacent to each principal item of equipment and include directions.
 - a. Start up, proper adjustment, operating, lubrications, and shutdown procedures.
 - b. Safety precautions, procedure in the event of equipment failure.
 - c. Other areas as recommended by the manufacturer of each system or item of equipment.

- d. Print or engrave, and frame under glass or in approved laminated plastic. Operating instructions exposed to the weather shall be made of weatherproof materials or enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.11 SAFETY REQUIREMENTS

- A. Fully enclose or properly guard belts, pulleys, chains, gears, couplings, projecting setscrews, keys, rotating parts, and other power transmission apparatus, located where persons can come in close proximity thereto. Provide positive means of locking out equipment so that equipment cannot be accidentally started during maintenance procedures. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of the type specified. Ensure that access openings leading to equipment are large enough to carry through routine maintenance items such as filters and tools.

1.12 ELECTRICAL WORK

- A. Provide electrical components of mechanical equipment and systems such as motors, controllers, contactors and disconnects under Division 15 -MECHANICAL, specified herein, and as necessary for complete and operable systems. These components shall meet the minimum requirements as specified in Division 16 - ELECTRICAL, and all additional requirements specified in the section covering the associated mechanical equipment. Provide interconnecting wiring for components of packaged equipment as an integral part of the equipment. Interconnecting power wiring and conduit for field erected equipment shall be as specified in Division 16 - ELECTRICAL. Control wiring and conduit shall be as specified in Division 15 - MECHANICAL.
- B. Motor control equipment forming part of motor control centers or switchgear assemblies, the conduit and wiring connecting such centers, assemblies, or other power sources to mechanical equipment shall conform to Division 16 -ELECTRICAL.

1.13 GUARANTEE

- A. All materials and equipment provided and/or installed under this section of the specifications shall be guaranteed for a period of one year from the date of final acceptance of the work by the State. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without any cost to the State. Any defective materials or inferior workmanship noticed at time of installation and/or during the guarantee period shall be corrected immediately to the satisfaction of the State.
- B. 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 or 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 commence immediately after the system/equipment startup date or Project Acceptance Date, whichever occurs first, and extend for a period of one (1) year commencing after thirty (30) consecutive days of trouble-free operation 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 manufacture's guarantee or warranty. 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.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Asbestos Prohibition: No asbestos containing materials shall be used under this section. The Contractor shall ensure that all materials incorporated in the project are asbestos-free.

2.02 AMERICAN PRODUCTS PREFERENCE

- A. Preference shall be given to American products, materials, and supplies. Foreign products may be used when it can be clearly shown to be superior.

2.03 NAMEPLATES

- A. Each item of equipment shall have manufacturer's nameplate of corrosion resistance 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 corrosion resistant metal tag 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 screws or wire, 14-gage.

2.04 TOOLS AND SUPPLIES

- A. Where specified in DIVISION 15 – MECHANICAL, special tools and supplies shall be provided. The items shall be packaged or boxed to provide protection in storage and shall be identified as to use. Tools and supplies shall be accompanied by information as to source of supply.

PART 3 - EXECUTION

3.01 QUALITY CONTROL

- A. The work shall be performed by workmen skilled in the type of work involved, under experienced supervision. Where methods of application or installation are specified by commercial standards in the Technical Sections, no departures will be permitted except as specified or as directed by the Officer in Charge.

3.02 INSPECTION AND TESTS

- A. Contractor shall give the Engineer notice one week in advance when the work is ready for inspection and test. The tests shall be performed as required in the Technical Sections. All work rejected by the Engineer shall be repaired or replaced by the Contractor at no additional cost to the State.

3.03 PROTECTION DURING STORAGE

- A. All materials and equipment shall be stored in a safe manner, secured from weather. All materials shall be stored above the ground or floor level to avoid damage by moisture.

3.04 PROTECTION OF WORK IN PROGRESS

- A. Pipe and duct 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 Officer in Charge at the expense of the Contractor. No equipment, ductwork, piping, or insulation should be installed if contaminated by dust or moisture. Objects should be cleaned or dried before installation.

3.05 PROGRESS OF WORK AND COORDINATION

- A. The work shall be coordinated with the work of other Contractors and other trades to avoid interference, preserve headroom and operating clearances, and to expedite completion of the project.

3.06 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.

3.07 PERMITS, LICENSES AND INSPECTIONS

- A. The Contractor shall obtain all permits and licenses required to perform the work, and pay all the fees therefore, and shall cooperate with all inspection required by authorities having jurisdiction. Inspection specified in the Technical Sections shall be permitted without interference. Corrections to work as a result of inspection shall be made promptly.

3.08 CODES AND STANDARDS

- A. The entire installation shall comply with the applicable requirements of the Building Code, Plumbing Code and Fire Code of the County of Maui, the Health Department Regulations, and applicable NFPA Standards.

3.09 FIELD TESTS

- A. The Contractor shall be responsible for test of the installed work, and 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 service required to perform such tests. Testing shall be as specified in technical sections of these specifications.

3.10 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 the 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 15400 - PLUMBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 MECHANICAL GENERAL PROVISIONS

- A. As specified in Sections 15011 – GENERAL MECHANICAL PROVISIONS shall apply to work specified in this Section.

1.03 DESCRIPTION OF WORK

- A. This section covers the furnishing, fabrication, delivery and installation of the plumbing system complete as shown on the drawings and as specified, including but not limit to the following:
 1. Removal of existing equipment and piping as indicated.
 2. Fuel piping and final connections to all equipment.
 3. Labeling and tagging all valves.
 4. Operating and maintenance instructions and manuals.
 5. Shop drawings and record drawings.
 6. Inspection, testing and guarantee.

1.04 ELECTRICAL WORK

- A. Electrical motor driven equipment specified herein shall be provided complete with motors, motor starters, and controls. Electric equipment and wiring shall be in accordance with Division 16 - ELECTRICAL. Electrical characteristics shall be as indicated. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for the motor control. Each motor shall be of sufficient capacity to drive the rating of the motor. Manual or automatic control and protective or signal devices required but not shown on the electrical plans, shall be provided under this section of the specifications.

1.05 CODES, ORDINANCES AND PERMITS

- A. Codes and Ordinances: The work shall be in accordance with the governing State and Local Ordinances, Codes and Regulations, including NFPA Regulations and Factory Mutual, all of which are hereby made a part of these requirements. However, when these requirements and/or drawings call for or describe materials, workmanship or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these requirements and/or drawings shall take precedence over the requirements of the said rules and regulations. The Contractor shall furnish, without any extra charge, any additional material or labor, or

both, required for compliance with these rules and regulations, although not mentioned in these requirements nor indicated on the contract drawings.

- B. Permit: The Contractor shall secure and pay for all permits, inspections and certificates of any inspection of any governmental body having jurisdiction over all or any part of the work included under this section, and/or such inspections, etc., required by these requirements.

1.06 CONTRACT DRAWINGS

- A. Contract drawings are essentially diagrammatic, indicating general layout and approximate locations towards establishing the scope for uniform estimating basis for all bidders; they are not intended to be detailed construction working drawings. Reasonable modifications to indicated locations and arrangement to suit job conditions shall not be construed as basis for requesting of additional funds from the State.
- B. Where apparatus and equipment have been indicated on the drawings, dimensions have been taken from typical equipment of the class indicated. The shop drawings shall show the details of construction and installation of the particular equipment furnished; they shall be fully dimensioned to show that the equipment and connections thereto fit the space provided with adequate maintenance space. If equipment is disapproved, drawings shall be revised to show acceptable equipment and resubmitted.
- C. Coordinate with the various trades. Where items must fit spaces previously constructed, verify measurements at the site. Coordinate with other work to insure that all required inserts, sleeves, and attachments are properly set and that adequate provision is made for installing this work.
- D. Capacities of all equipment and materials shall be not less than those indicated.

1.07 SHOP DRAWINGS

- A. Shop drawings shall be submitted in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

1.08 MATERIAL AND EQUIPMENT SUBMITTALS

- A. Material and equipment submittals shall be in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS. Material or equipment brochures shall be submitted for the following items at one time in order to demonstrate that these items of equipment have been properly coordinated and will function properly with each other:
 - 1. Above Ground Fuel Piping
 - 2. Below Ground Fuel Piping
 - 3. Above Ground Fuel Storage Tank and Accessories
 - 4. Day Tank and Accessories
 - 5. Fuel Monitoring System
 - 6. Exhaust Silencer and Piping
 - 7. Pipe Supports and Hangers

8. Equipment Supports

- B. If departures from the contract drawings are deemed necessary by the Contractor, details of such departures, including changes in related portions of the project and the reasons thereof, shall be submitted with the shop drawings. Approved departures shall be made at no additional cost to the State.
- C. Submittals shall be complete. Piecemeal submittals will be returned without review. Each submittal shall clearly identify equipment to be provided. Information not pertaining to equipment to be provided shall be deleted or crossed out.

1.09 AS-BUILT DRAWINGS

- A. As-built drawings shall be provided in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

1.10 WORKMANSHIP

- A. All materials and equipment shall be installed in accordance with the Building and Fire Codes of the County of Maui to conform with the contract documents. The system shall be installed by an experienced firm regularly engaged in the design and installation of plumbing systems in accordance with the Building and Plumbing Codes of the County of Maui. The Officer in Charge may reject any proposed installer who cannot show evidence of such qualifications. Officer in Charge approval will not relieve the Contractor from his responsibilities to perform all work in accordance with specifications to contract terms.

1.11 INSTRUCTIONS TO OWNER

- A. The Contractor shall provide the State with the necessary information concerning the care, operation and maintenance of all systems, equipment, fixtures, etc.

1.12 CONFORMANCE TO AGENCY REQUIREMENTS

- A. Where materials or equipment are specified to be approved by the Underwriters' Laboratories, Inc., the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. The label of or listing in the Underwriters' Laboratories, Inc., Building Materials List, or the Electrical Appliance and Utilization Equipment List will be acceptable as sufficient evidence that items conform to Underwriters' Laboratories, Inc., requirements.

1.13 NAMEPLATES

- A. Each major component of equipment shall be provided with a nameplate engraved with the manufacturer's name, address, and catalog or model number, serial number, and electrical data on a metal plate securely attached to the item of equipment. Construct plates of stainless steel. Install nameplates in prominent locations with nonferrous screws, nonferrous bolts, or permanent adhesive. Minimum size of nameplates must be one by 2.5 inches. Provide manufacturer's storage tank nameplates as required. Lettering must be the normal block style with a minimum 0.25 inch height. Accurately

align all lettering on nameplate. Vinyl sticker nameplates are not acceptable. [When exposed to weather, all information on the manufacturer's nameplate shall be duplicated onto an engraved brass tag, minimum 3" diameter or square, secured to an accessible interior panel of the unit.]

1.14 VERIFICATION OF DIMENSIONS

- A. The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades.
- B. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Engineer of any discrepancy before performing any work.

1.15 OMISSIONS

- A. It is the intent of the plans and specifications to provide a complete installation. Should there be omissions, the Contractor shall call the attention of the Engineer to such omissions in fifteen (15) days advance of the date of bid openings so that the necessary corrections can be made. Otherwise the Contractor shall furnish and install the omissions or discrepancies as if the same were specified and provided for.

1.16 SUBSTITUTIONS OF EQUIPMENT

- A. Substitution shall be in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.
- B. The Contractor shall assume full responsibility for proper fit, performance and additional work relating to other sections of the specifications.

1.17 QUALITY ASSURANCE

- A. Each installation Contractor must demonstrate specific installation experience in regard to the specific system installation to be performed. Each installation Contractor must have taken, if applicable, manufacturer's training courses on the installation of equipment, piping and must meet the licensing requirements in the state. Submit a letter listing prior projects, the date construction, a point of contact for each prior project, the scope of work of each prior project, and a detailed list of work performed. Provide in the letter evidence of prior manufacturer's training and state licensing.
- B. Hydrotesting plan: The Contractor must submit a detailed written plan covering all aspects of the pipeline hydrostatic testing operations, including procedures and sequencing of testing, segments of piping to be tested, fluid to be used during testing, equipment removal and isolation, hydrostatic testing pressures, safety protocols, etc.

1.18 PRODUCT DELIVERY AND STORAGE

- A. Furnish new equipment, fixtures, materials and accessories bearing the manufacturer's identification. Coordinate deliveries to avoid interference or construction delays.

Protect products during delivery, storage, installation, and the remainder of the construction period after installation.

1.19 CLEANING EQUIPMENT AND PREMISES

- A. During the process of the work, the premises shall be kept reasonably free of all debris and waste materials resulting from the work performed under the various sections of the General Contract. All such debris and rubbish shall be removed from the site.
- B. Upon completion and before final acceptance of the work, all debris, rubbish, left over materials, tools and equipment shall be removed from the site. Equipment shall be cleaned with an approved cleansing compound.

1.20 GUARANTEE

- A. The entire plumbing installation described herein shall be guaranteed in writing as a complete working unit for a period of one year from the date of acceptance in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

PART 2 - PRODUCTS

2.01 ABOVEGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS

- A. Aboveground Storage Tank
 - 1. Rectangular Aboveground Tank UL 2085 listed. Tank system shall be warranted by the manufacturer against defects in material or workmanship for 30 years following the delivery of the tank. Warranties that limit such coverage for shorter periods will not be permitted. All warranty paperwork will be completed and submitted by Contractor to both the tank and system component manufacturers, the Engineer, and Office in Charge.
 - 2. The tank system shall be manufactured and labeled in strict accordance with Manufacturer's standards. The tank system shall be subjected to the manufacturer Assurance Program.
- B. Tank components
 - 1. Primary tank shall be rectangular in shape and listed per UL Standard 142. Welds shall be continuous on all sides and exterior seams, conforming to the American Welding Society Standard for continuous weld. Prior to leaving the manufacturing facility, the primary steel tank shall be pressure tested at 5 psig for a minimum of 24 hours. All openings shall be from the top only.
 - 2. Secondary Containment and Corrosion Protection: The tank system shall include secondary containment consisting of an impervious barrier of 30 Mil (0.76 mm) High-Density Polyethylene geomembrane enclosing the primary steel tank and insulation material to contain leaks from the primary tank and isolating the primary tank from the concrete to protect against corrosion. The secondary containment shall be impervious to corrosion, including damage or failure due to microbial

infestation. Secondary containment comprised of a steel jacket not encase with concrete will not be permitted.

3. Concrete Encasement: A vaulted concrete enclosure shall encase and protect both the primary steel tank and the secondary containment. The concrete encasement shall be 6" thick with a minimum design strength of 4000 psi. The concrete design shall include the following for long-term durability: air entrainment, water-reducing admixture, and steel reinforcement. Concrete placement shall be a visually verifiable monolithic (seamless) pour to ensure the absence of voids on all sides and beneath the steel tank. The vault enclosure shall have concrete support legs of unitized monolithic construction raising the concrete enclosure a minimum of 3" above the ground to meet visual inspection requirements. A mid-level seam or other cold joint construction which could compromise the liquid tightness (secondary containment) and fire protection capability of the vault is not permitted.
4. Thermal Protection: The tank system construction shall include covering the outer surface of the primary steel tank with a minimum 1/4 inch of polystyrene foam panels and 6" thick reinforced concrete for thermal insulation to protect against temperature extremes.
5. Corrosion Protection: All steel outside the concrete encasement shall be anti-oxidant powder coated to inhibit corrosion and meet ASTM B117.
6. Leak Monitoring: A thru-tank leak detection monitoring tube terminating between the primary tank and the secondary containment shall be provided to monitor any leaks from the primary tank.
7. Spill/Overfill Containment: The tank system shall include a UL listed 15 gallon spill/overfill container manufactured as an integral part of the primary tank, surrounding the fill pipe, and protected by 2 hour fire rating of the enclosure. The spill/overfill container shall include a stick port and normally closed drain valve to release spilled product into the main tank. Exterior steel shall be anti-oxidant powder coated to inhibit rust. Overfill containment systems that are designed to release spilled product into the interstitial area will not be accepted.
8. Overfill Protection: Overfill protection shall be provided by stand-alone tank alarm.
9. Exterior Finish: The tank system exterior shall be a low maintenance architectural exterior concrete finish. Models with fiber clad or painted steel exterior tanks will not be accepted.

C. Tank venting

1. Atmospheric vent: Provide atmospheric, updraft type cap. Cap must be constructed of aluminum or carbon steel. Cap must have an internal brass or bronze insect screen, minimum 40-mesh. Cap must prevent rain, snow, or ice from entering the vent piping.
2. Emergency vent: Provide atmospheric, updraft type cap. Cap must be constructed of aluminum or carbon steel. Cap must have an internal brass or bronze insect screen, minimum 40-mesh. Cap must prevent rain, snow, or ice from entering the vent piping. For double wall or protected type tanks, provide a second emergency vent to protect the interstitial space.

D. Fuel tank monitoring system

1. Setpoints: Configure the alarm system's 4 setpoints in accordance with the following:

- a. High Level Setpoint. Produce an alarm condition when a tank's liquid level rises above 95 percent capacity.
 - b. High-High Level Setpoint. Produce an alarm condition when a tank's liquid level rises above 98 percent capacity.
 - c. Low Level Setpoint. Produce an alarm condition when a tank's liquid level drops below 15 percent capacity.
 - d. Low-Low Level Setpoint. Produce an alarm condition when a tank's liquid level drops below 10 percent capacity.
2. Leak detection: Provide leak detection sensors for secondary containment of the tank and the secondary containment of the fuel piping system. Provide a visual indicator on the fuel tank monitoring system control panel to indicate a leak. The leak detection system shall also monitor the leak sensors in the transition sumps.
 3. Fuel tank monitoring system: Install the control panel for the monitoring system in a NEMA 4 rated enclosure in accordance with NEMA 250. Fuel system level and leak indicators shall be visible with the panel door closed.
 4. Overfill tank alarm: Provide Signal Tank Alarm to sense high and low liquid levels. The tank alarm shall provide audible alarm and visual notification when storage tank is at 95% full. Provide with 36" liquid-level float switch sub-assembly, tank bung combo fitting, drop tube, wire fitting, and accessories for complete installation per manufacturer's recommendation.

E. Tank gauges

1. Mechanical gauge: Gauge must be the level sensing, mechanically actuated type that provides the tank level readout in a sealed glass cap contained in a gauge box. Gauge must be accurate to plus or minus 1/4 inch and must measure the liquid level over the full range of a tank's height. Gauge must have vapor tight seals to prevent condensation from fogging the viewing glass.

F. Accessories

1. Concrete anchor bolts: Concrete anchors must conform to ASTM A307, Grade C, hot-dipped galvanized.
2. Bolts and studs: Stainless steel and studs that conform to ASTM A193/A193M, Grade 9.
3. Nuts: Stainless steel nuts must conform to ASTM A194/A194M, Grade 8.
4. Washers: Provide flat circular washers under each bolt head and each nut. Washer materials must be the same as the connecting bolt and nut. Stainless steel washers must conform to ASTM A194/A194M, Grade 8.

2.02 FUEL SYSTEMS PIPING

- A. Types of fuel: No. 2 diesel fuel.
- B. Aboveground piping shall be 316 stainless steel.
- C. Underground piping shall be UL listed fiberglass carrier pipe with fiberglass secondary containment system. Piping shall conform to UL 971 and NFPA 30. Piping shall be

manufactured in compliance with ASTM D2996 and tested to ASTM D2992. Pipe fittings shall be UL listed.

- D. Piping shall be installed in accordance with acceptable practices in a manner to avoid damage during installation, testing, or operation. Material shall be compatible with the products stored (diesel) and shall be installed per the manufacturer's recommendation.
- E. Piping shall be tested at 150 percent of maximum operating pressure, or 50 PSIG air pressure whichever is greater for a period of one hour while all joints are soaped. If lines have held product, test all lines hydrostatically at 110 percent of maximum operating pressure, but not less than 50 psig.
- F. Manual valves: All portions of a valve coming in contact with fuel in stainless steel pipelines must be of noncorrosive material. Valves in stainless steel pipelines must be Type 304 or Type 316 stainless steel internally plated with chromium or nickel or internally electroless nickel plated. Stem and trim must be stainless steel for all valves. Valves smaller than 2 inches must have lever-type handles.
 - 1. Ball valves: Ball valves must be fire tested and qualified in accordance with the requirements of API Std 607 and API Std 608. Seal material for the fire test must be graphite, seal material for the project must be as indicated below. Ball valves must be nonlubricated valves that operate from fully open to fully closed with 90-degree rotation of the ball. Except as otherwise specified or indicated, reduced port or full port valves may be provided at the Contractor's option. Balls must be solid, not hollow cavity.
 - 2. Materials: Ball valves must be stainless steel. Ball valves must have tetrafluoroethylene (TFE) or fluoroelastetomer (FKM), commonly referred to as Viton seats, body seal and stem seals. Valves 4 inches and smaller
- G. Solenoid Valve, Fuel: Valves shall be of the two position, direct acting or pilot operated types, opened electrically as specified for use with fuel. Valve shall be provided with an explosionproof and watertight solenoid enclosure.
- H. Piping accessories
 - 1. Mechanically adjustable segmented elastomeric seals must be constructed of fuel resistant FKM elastomers and Type 316 stainless steel fasteners and hardware.
 - 2. Pipe sleeves must be installed where indicated and at all points where the piping passes through concrete construction. Such sleeves must be of sufficient inside diameter to provide a minimum clear distance between the pipe and the sleeve of 1/2-inch. Alignment of the sleeve and piping must be such that the pipe is accurately centered within the sleeve by a nonconductive centering element. The sleeve must be securely anchored to prevent dislocation. Closure of space between the pipe and the pipe sleeve must be by means of a mechanically adjustable segmented elastomeric seal. The seal must be installed so as to be flush.
 - 3. Strainers must be single basket type arranged in a simplex configuration as indicated, except as specified otherwise. Strainer body material must be stainless steel. Strainers must have removable baskets of 40 mesh wire screen with larger wire mesh reinforcement; wire must be stainless steel, Type 316. Pressure drop for

clean strainer must not exceed 3 psig at maximum design flow rate. The ratio of net effective strainer area to the area of the connecting pipe must be not less than three to one.

4. Flexible pipe connector: Flexible connectors shall be Stainless Steel and compatible with diesel. Hose shall be 322 Stainless Steel with wire braided 304 Stainless Steel. Flexible connectors shall be rated for 150 psig maximum working pressure.

I. TRANSITION SUMP

1. Transition sump shall be watertight, rated for below grade applications, traffic rated cover plate, and furnished with fuel detection sensor for leak detection in distribution piping. Material shall be compatible with the products stored (diesel) and shall be installed per manufacturer's recommendations.

2.03 DAY TANK

- A. Day tank shall be sub-base tank. Day tank shall be equipped with duplex, 2gpm, supply pumps, and a single 4gpm return pump, sensors, and controls. The day tank shall be a double wall tank. The primary storage tank must be factory-welded, steel that conforms to UL 142. The secondary containment (outer) tank must be a factory-fabricated, steel, tank that fully-encloses the primary storage tank and must conform to UL 142.

2.04 GENERATOR EXHAUST PIPING AND SILENCER

- A. Generator exhaust silencer shall be stainless steel construction, critical grade with a 25-35 dBA noise reduction. Generator exhaust piping shall be schedule 40 back steel with butt-welded joints and fittings.
- B. Generator exhaust piping and silencer shall be insulated to maintain a maximum of 120°F surface temperature on the exterior of the insulation. A flexible coupling shall be used between the generator and the exhaust piping.

1. Removable thermal wrap insulation system properties.

- a. Temperature range: 20°F – 1000°F
- b. Insulation: Type "E" glass fibers, 9 pound per cubic feet density minimum.
- c. Inner jacket: 20 oz. vermiculite coated thermal cloth.
- d. Outer jacket: 17 oz. gray or blue Teflon coated thermal cloth.
- e. Construction: 10-ply 304 stainless steel thread.
- f. Closure: High-temp Velcro with stainless steel D-rings

2. Physical Properties

- a. Surface temperature: up to 1100°F
- b. Fire resistance: Incombustible
- c. Softening point: 1500°F
- d. Strain point: 1100°F
- e. Annealing point: 1200°F

3. Thermal conductivity – K values per ASTM C177.

- a. 300°F – 0.40 k btu-in. / sq. ft. / hr. / °F
- b. 500°F – 0.50 k btu-in. / sq. ft. / hr. / °F
- c. 700°F – 0.65 k btu-in. / sq. ft. / hr. / °F

PART 3 - EXECUTION

3.01 STORAGE TANK INSTALLATION

- A. Install work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Handle storage tanks with extreme care to prevent damage during placement and install in accordance with the manufacturer's installation instructions and NFPA 30 as applicable. Inspect the exterior surface of each tank for obvious visual damage prior to and during the placement of each storage tank. Repair surface damage to a storage tank according to manufacturer's requirements before processing with the system installation.
- 1. Aboveground storage tank: Tank system shall be installed in accordance with the manufacturer's recommendations, and applicable codes NFPA 30, 30A and 31 and UFC Appendix II-F. Place tank that is less than 5,000 gallons on a level surface.
 - a. Aboveground storage tank handling: Do not handle or move the tank unless it is empty.
 - b. The tank should be protected from vandalism and accidental damage.
 - c. Tank should not be located over underground utilities or directly beneath overhead power and telephone lines.
 - 2. The tank system shall be handled, lifted, stored and installed in accordance with the manufacturer's instructions on a reinforced concrete base slab designed to support the fully loaded tank.
 - 3. Tank shall be marked on all sides with warning signs and product identification.
 - 4. System components: Properly level, align, and secure system components in place in accordance with manufacturer's instructions. Provide supports for system components, appurtenances, and pipe as required. Install anchors, bolts, nuts, washers, and screws where required for securing the work in place. Sizes, types, and spacings of anchors and bolts not indicated or specified must be as required for proper installation.
- B. Field quality control
- 1. Aboveground storage tank tightness tests: Perform tightness tests on each aboveground storage tank prior to making piping connections. Perform testing in accordance with STI 700-50-5007 (STI R912) except as modified herein. Gauges used to monitor the tests must have a scale with a maximum limit of 15 psig. Repair leaks discovered during the tightness tests in accordance with tank manufacturer's instructions. Following any repair, re-test the tank until the tank successfully passes the testing requirements of this paragraph.

2. Tank manufacturer's tests: In addition to the tests required herein, perform any additional tests (i.e., leak tests, cathodic protection verification tests, etc.) on each storage test that is required by the tank manufacturer's written test procedures. Manufacturer's tests that are redundant to tests already required by this specification will only be performed once per tank. Repair all leaks discovered during the tests in accordance with manufacturer's instructions. Following tank repairs, re-test the tank until the tank successfully passes the manufacturer's testing requirements.
 3. Tank inspection reports: Prior to system commissioning, a STI SP001 certified inspector must inspect the completed aboveground tank in accordance with STI SP001 and deliver a full report to the Officer in Charge. The report must include a record of ultrasonic thickness measurements (UTMs), exclusive of the coating, of each single wall aboveground tank shell. The report must include the tank data plate information and photograph of the tank data plate. Provide electronic copies of the tank inspection reports to Service Headquarters Service Control Points, and DLA-Energy. The paper and electronic copies of the report and UTMs must be provided to the Officer in Charge for filing with the tank's "as-built drawings." Provide inspector's STI SP001 Inspector's Certification.
- C. Demonstrations: Conduct a training session for designated Airport personnel in the operation and maintenance procedures related to the system components and system specified herein. Include pertinent safety operational procedures in the session as well as physical demonstrations of the routine maintenance operations. Furnish instructors who are familiar with the installation/system components and systems, both operational and practical theories, and associated routine maintenance procedures. The training session must consist of a total of 8 hours of normal working time and must start after the system is functionally completed, but prior to final system acceptance. Submit a letter, at least 14 working days prior to the proposed training date, scheduling a proposed date for conducting the onsite training.
- D. Tank fill tests: Flush and clean the tank before conducting the tank fill tests. For the tank fill tests, initially fill each storage tank with fuel in order to verify the tank level alarm system operates properly and the tank overflow protection device functions as designed. Stop filling each tank immediately once the overflow device operates. Do not overflow any storage tank more than the 98 percent level. Drain the system below the low liquid level setpoint to verify operation of the low level alarm. Correct and retest any problems with the level alarm system or the overflow device until each operate as specified herein. During the tests, verify that all tank gauges are calibrated and operating appropriately.
- E. Field painting: Do not paint stainless steel and aluminum surfaces. Do not coat system components or components provided with a complete factory coating. Prior to any field painting, clean surfaces to remove dust, dirt, rust, oil, and grease.

3.02 FUEL PIPING INSTALLATION

- A. General: Installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing must be in accordance with ASME B31.3 and NFPA 30, except as modified herein. Safety rules as specified in NFPA 30 and NFPA 407 must be strictly observed. Never direct bury threaded connections, socket welded connections,

unions, flanges, valves, air vents, or drains. Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible.

- B. Verification of dimensions: After becoming familiar with details of the work, verify dimensions in the field, and advise the Officer in Charge of any discrepancy before performing any work.
- C. Cleaning of piping: Keep the interior and ends of all new piping, affected by construction operations, thoroughly cleaned of foreign matter and water before and after being installed. Piping systems must be kept clean during installation by means of plugs or other approved methods. When work is not in progress, open ends of piping and fittings must be closed so that no water or other foreign substance will enter the pipes or fittings. Piping must be inspected before placing into position.
- D. Piping layout requirements.
 - 1. Pipe fabrication: Fabricate piping to measurements established on the project site and position into place without springing or forcing. Make provisions for absorbing expansion and contraction without undue stress in any part of the system. The use of flexible connectors in permanently mounted pump suction and discharge lines as a method of compensating for piping misalignment is not acceptable.
 - 2. Interferences and measurements: Provide offsets, fittings, and accessories required to eliminate interferences and to match actual system components connection locations and arrangements. Verify measurements before commencing work. Submit discrepancies for clarification before proceeding with the installations to Officer in Charge.
 - 3. Space and access: Keep piping, control tubing, which is not detailed close to structures and columns so as to take up a minimum amount of space. Ensure that access is provided for maintenance of system components, valves and gauges.
 - 4. Location: Do not place unions in locations that will be inaccessible after the completion of the work. Place unions on each side of equipment.
 - 5. Manual valves: Install isolation plug or ball valves on each side of each system equipment, at the midpoint of looped mains, and at any other points indicated or required for draining, isolating, or sectionalizing purpose
- E. Damaged or otherwise defective piping, or piping showing excessive wrench marks, shall be replaced with new materials as directed by the Architect Official in Charge.
- F. Installation of underground pipe.
 - 1. Provide a trench width equal to the pipe diameter plus six inches on each side. Separate multiple lines by at least 4 inches
 - 2. Clearances: Install pipe to be clear of contact with other pipes, pipe sleeves, casings, reinforcing steel, conduits, cables, or other metallic structures. Where pipes cross other pipes or structures with a separation of less than 6 inches, install an insulating separator. Protect the pipe from contact with a 12 inch square by one-inch thick bituminous-impregnated cane fiber board.
 - 3. Piping shall be installed in accordance with acceptable practices in a manner to avoid damage during installation, testing, or operation. Material shall be compatible

with the products stored (diesel and gasoline) and shall be installed per the manufacturer's recommendation.

3.03 PIPE SUPPORTS, HANGERS, INSERTS

- A. Install hangers and supports for all pipe work to provide for expansion and contraction, prevent vibration and maintain required grading by proper adjustment. Supports, hangers, bolts, nuts, and washers shall be galvanized unless otherwise specified.
- B. Support horizontal overhead pipes with clevis hangers, rods inserts, clamps, on suspension suitable for type of building construction.
- C. Support horizontal pipes which are close to floor with pipe rest and floor flange or pipe roll stand on piers.
- D. Support horizontal pipes from walls with "J" hooks, or hangers suspended from wall brackets.
- E. Pipes connected to equipment supported with vibration isolators shall be supported with spring isolators having a minimum static deflection equal to vibration isolator supporting the equipment but need not exceed 1-1/2" static deflection.
 - 1. Pipe 1-1/2" and smaller within ten feet run from the equipment connection shall be supported with spring isolators.
 - 2. Pipes 2" and larger within twenty feet run from the equipment connection shall be supported with spring isolators.

3.04 VIBRATION ISOLATORS

- A. Provide vibration isolators to vibrating and/or dynamic equipment and install per equipment manufacturer's instructions. Electrical conduit connections to isolated equipment shall be looped to allow free motion of isolated equipment. Provide flexible connectors at piping and ductwork that is connected to isolated equipment.

3.05 SLEEVES

- A. Contractor shall, unless otherwise specified elsewhere, furnish and install pipe sleeves for all pipes which pass through foundations, walls, partitions, floors, ceilings or roofs, in accordance with the following:
 - 1. Sleeves for piping, tubing, etc., unless otherwise modified or specified, shall be of standard schedule 40 black steel pipe with ends cut square and reamed and of sufficient length to flush with finished surfaces at both ends of sleeves.
 - 2. Sleeves for piping which pass through foundations and are below the ground shall be cast iron or ductile iron pipe. Space between pipe and sleeves (both ends) shall be thoroughly caulked with packed tarred oakum and lead wool or packed tarred oakum and poured lead to make a waterproof installation.

3.06 PUMPS

- A. The pump shall be mounted level and installed in such a manner as to allow the complete removal without dismantling or removal of piping or valves.
- B. Adjacent piping shall be carefully fitted and erected so that the pump can be installed or removed from the piping without forcing or springing.
- C. Flexible connectors and pressure gauges shall be installed at the inlet and outlet of all pumps. Isolation gate valves and strainers shall be installed at the inlets of all pumps. A check valve and plug cock shall be installed at the outlets of all pumps.
- D. After the system has been completed and pump started, the pump and system shall be checked for vibration and excessive noise and any such noise or vibration shall be immediately corrected.

3.07 PRESSURE GAUGES

- A. Pressure gauges shall be installed at the inlet and outlet of all pumps and pressure control valves.
- B. Pressure gauges shall be installed with gauge cock and pressure snubbers to provide easy replacement and protection from pressure surges.
- C. Pressure gauges shall be installed so they can be read while standing on the floor without the use of ladders.

3.08 VALVE TAGS AND INDEX

- A. Identification tags made of brass or aluminum shall indicate valve number, function, size, and working pressure and shall be installed on all valves. Tags shall be 1-1/2 inches minimum in diameter, and marking shall be stamped. Tags shall be wired to valve with 0.0808-inch diameter, No. 12 AWG, copper wires. Furnish a chart indicating location, index number and purpose of all valves for the Architect's review and approval.

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 15600 – HVAC POWER VENTILATORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 MECHANICAL GENERAL PROVISIONS

- A. As specified in Section 15011 – GENERAL MECHANICAL PROVISIONS shall apply to work specified in this Section.

1.03 DESCRIPTION OF WORK

- A. This section covers the furnishing, fabrication, delivery and installation of the ventilation systems complete, including but not limited to the following:
1. Exhaust fan and thermostat
 2. Sheet metal duct, and duct insulation
 3. Louvers
 4. Vibration Isolation
 5. Manufacturer's literature, shop drawings, and record drawings

1.04 ELECTRICAL WORK

- A. Electrical motor driven equipment specified herein shall be provided complete with motors, motor starters, and controls. Electric equipment and wiring shall be in accordance with Division 16 - ELECTRICAL. Electrical characteristics shall be as indicated. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for the motor control. Each motor shall be of sufficient capacity to drive the rating of the motor. Manual or automatic control and protective or signal devices required but not shown on the electrical plans, shall be provided under this section of the specifications.

1.05 SHOP DRAWINGS

- A. Shop drawings shall be provided in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

1.06 MATERIAL AND EQUIPMENT

- A. Material or equipment brochures shall be made in a single submittal for the following items in order to demonstrate that these items of material and equipment have been properly coordinated and will function properly with each other:

1. Ventilation Fan
2. Thermostat
3. Louvers
4. Ductwork
5. Flex duct connections
6. Diffusers and Grilles

- B. If departures from the contract drawings are deemed necessary by the Contractor, details of such departures, including changes in related portions of the project and the reasons, therefore, shall be submitted with the shop drawings. Approved departures shall be made at no additional cost to the State.
- C. Submittal shall be in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

1.07 AS-BUILT DRAWINGS

- A. The Contractor shall maintain at the job site one (1) 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.
- B. Where a choice of material or method is permitted herein or where variations in scope or 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 characteristic as applicable shall be shown on the as-built drawings.
- C. 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.
- D. The drawings shall be maintained and updated on a daily basis. The Contractor shall sign, and date each sheet to certify that the dimensions and details shown on the drawings reflect the dimensions and details, and specifications as constructed in the field. As-built drawings shall be provided in accordance with Section 15011 - GENERAL MECHANICAL PROVISIONS.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Asbestos Prohibition: No asbestos containing materials shall be used under this section. The Contractor shall ensure that all materials incorporated in the project are asbestos-free.

2.02 AMERICAN PRODUCTS PREFERENCE

- A. Preference shall be given to American products, materials, and supplies. Foreign products may be used when it can be clearly shown to be superior.

2.03 POWER ROOF VENTILATOR

A. Centrifugal Type

1. Centrifugal type roof exhaust fan shall be backward inclined aluminum wheel. Motor isolated on shock mount, corrosion resistant fasteners. Housing shall be aluminum base and structural members. A removable bird screen shall be provided. Entire unit shall be vibration isolated by means of heavy-duty neoprene sound-damping cushions to eliminate metal-to-metal contact at all points. Provide aluminum backdraft damper with fan.
2. Fan drives shall have pre-lubricated flange type ball bearings.

B. Fan Motor:

1. Provide motors with local disconnects to allow for fan and motor maintenance. Provide all motors with thermal-overload protection. For motors located in airstreams, use a totally enclosed type.

- C. Provide roof ventilator that is designed for windloads in accordance with ASCE 7 with the installed design not less than 130 miles per hour windload. Ensure that the structural bracing is properly spaced to accommodate this loading and meets the design requirements of the covering material. Ensure that ventilators are adequately reinforced and well-braced with the joints properly formed. Ensure that the edges are wired or beaded where necessary to ensure rigidity. Prevent galvanic action between different metals in direct contact by providing nonconductive separators. Make all soldering even and smooth.

- D. Motor to be an electronic commutation (EC) motor specifically designed for fan applications. Motors shall be permanently lubricated with heavy-duty ball bearings to match the fan load and prewired to the specific voltage and phase. Internal motor circuitry shall convert AC power supplied to the fan to DC power to operate the motor. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by a potential dial mounted on the motor enclosure. Motor shall be a minimum of 85% efficient at all speeds.

- E. Provide stainless steel bolts, rivets, and other fastenings used in connection with protected metal.

- F. Provide ventilator with a horizontal mount exhaust damper constructed of 24 ga galvanized sheet with pre-punched mounting holes. Damper blades are 0.016 in roll formed aluminum with vinyl seals on the closing edge. Axle/bearing is constructed of fiberglass reinforced nylon.

- G. Ventilator Materials: Provide manufacturers' standard materials.

1. Aluminum Alloy: Provide aluminum alloy in accordance with ASTM B209 and ASTM B37.
2. Zinc-Coated Steel: Provide zinc-coated steel in accordance with ASTM A653/A653M.
3. Stainless Steel: Provide stainless steel sheet in accordance with ASTM A240/A240M.

H. Provide ventilator with roof curb constructed of 18 ga galvanized steel with wood nailer for attachment of roof flashing.

I. Exhaust fan thermostat shall be single-pole double-throw (SPDT), hermetically sealed, and wired to identified terminals. Maximum differential shall be 1°C, 2°F. Thermostats shall have manual switches as required by the application and a minimum range of 13 to 32°C, 55 to 90°F.

2.04 DUCTWORK

A. All sheet metal ducts shall be erected in a first class and workmanlike manner, true to the dimensions indicated on the drawings, unless otherwise approved, straight and smooth on the inside with neatly finished airtight joints. The ducts shall be securely anchored to the building in an approved manner and shall be so installed as to be completely free from vibration under all conditions of operation. The ducts shall be properly braced and reinforced with steel angles or other structural members. All slip joints shall be made in the direction of flow, and unless otherwise indicated on the drawings, all elbows shall have a centerline radius equal to 1-1/2 times the width of the duct or turning vanes shall be used. The sheet metal used shall be galvanized iron except as otherwise hereinafter specified. The thickness of the sheet metal and size and spacing of the stiffeners used shall be in accordance with the requirements of the latest edition of the ASHRAE Handbooks. Connections to diffusers, grilles and register faces shall be airtight.

B. Flexible Duct Connectors: Flexible connections of Dupont Hypalon-coated 26-oz. glass fabric to prevent the transmission of vibration through the ducts, shall be installed on both the supply and return sides of all fans and ventilating units, approximately where shown on drawings. Cloth used for flexible connections shall be UL approved, of heat resistant to 300°F, and shall be properly fitted to render it relatively tight. Fabric shall be a minimum of 3" wide between connection points to sheet metal. Glass fabric connections shall be Ventfabrics, Inc. "Metaledge Ventlon", or approved equal.

2.05 DIFFUSERS, REGISTERS, AND GRILLES

A. Material and Finishes: Construction of diffusers, registers and grilles shall be extruded aluminum. All supply air outlets shall be supplied with gaskets to prevent smudging. Finish shall be white enamel. Grilles shall be as manufactured by Carnes, Anemostat, Krueger, Titus, Metalaire or approved equal.

1. Exhaust Grille shall be with 1" nominal flange, 1/4" horizontal face bar spacing.

2.06 STATIONARY BLADE LOUVER

- A. Extruded Aluminum stationary horizontal chevron louver style, double drainable blades contained within the frame with double downspouts in jambs and mullions. AMCA licensed. Maximum Recommended Air Flow through Free Area: 1250 feet per minute (6.4 m/s). Water Resistance Effectiveness of 99.3% (AMCA Class A) at 50 mph. Provide with aluminum birdscreen, 1/2-inch mesh x 0.063 inch inter-crimp with removable frame. Finish shall be 70 percent PVDF: Finish shall be applied at 1.2 mil total dry film thickness. Coating shall conform to AAMA 2605.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Submit installation drawings for power wall ventilators. Install power wall ventilators in accordance with the manufacturer's installation instructions. Coordinate installation of ventilators with other work. Coordinate anchors, attachments, and other items to be built for installation as the work progresses. Rigidly install ventilators in weathertight and watertight manner that is free from vibration.
- B. Lubrication: Ensure the movable of parts of dampers and related operating hardware are lubricated in accordance with manufacturer's printed instructions and that they operate smoothly and quietly without binding.

3.02 FIELD QUALITY CONTROL

- A. Tests: After installation, test each power wall ventilator to demonstrate proper operation at indicated and specified performance requirements, including the running, balance, noise, and proper direction of fan rotation.
- B. Final Test Reports: Provide final test reports to the Officer in Charge.

3.03 CLOSEOUT ACTIVITIES

- A. Submit detailed record drawings upon completion of the installation.

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 16230 - STANDBY GENERATOR SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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. This specification covers diesel engine driven electric generating alternators rated at 150 ekW, 60Hz, 1800 rpm, 208V for Stationary applications. The generator set covered by these specifications shall be designed, tested, rated, assembled and installed in strict accordance with all applicable standards below.

B. Work includes:

1. Installation: The work includes supplying and installing a complete integrated generator system. The system consists of a diesel generator set with related component accessories and automatic transfer switches specified under a separate section.
2. Fuel System: The contractor shall provide diesel fuel for the completion of all testing.
3. System Test: A complete system load test shall be performed after all equipment is installed. Refer Section 16230 Part 3.02, START-UP AND TESTING.
4. Requirements, Codes and Regulations: The equipment supplied and installed shall meet the requirements of the NEC and all applicable local codes and regulations. All equipment shall be of new and current production by a manufacturer who has 25 years of experience building this type of equipment. Manufacturer shall be ISO9001 certified.

1.03 REFERENCES AND STANDARDS

A. The generator set covered by these specifications shall be designed, tested, rated, assembled and installed in strict accordance with all applicable standards below.

1. UL 2200: Stationary Engine Generator Assemblies
2. CSA C22.2-100: Motors and Generators
3. ISO 8528-1: Reciprocating Internal Combustion Engine Driven Alternating Current Generating Sets – Part 1: Application, Ratings and Performance

4. 2021 IBC Seismic.

1.04 DEFINITIONS

Emergency Standby: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70-percent of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

1.05 SUBMITTALS

- A. Submit in accordance with SECTION 01300 - SUBMITTALS.
- B. Product Data: Submit manufacturer's material product and finish data, installation instructions, and general recommendations for each material.
- C. Shop Drawings: Submit shop drawings of all required details of items specified herein, showing layout, profile, methods of joining and anchorage details.
 - 1. Factory published specification sheet.
 - 2. Manufacturer's catalog cut sheets of all auxiliary components such as battery charger, control panel, enclosure, etc.
 - 3. Dimensional elevation assemblies and indicate dimensions, weights, and location and size of each field connection.
 - 4. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 - 5. Wiring Diagrams: Control interconnection, Customer connections.
 - 6. Weights and dimensions, layout, and stub-up locations of electrical and fuel systems to be used for concrete pad design.
 - 7. Interconnect wiring diagram of complete emergency system, including generator, switchgear, day tank, remote pumps, battery charger, control panel, and remote alarm indications.
 - 8. Engine mechanical data, including heat rejection, exhaust gas flows, combustion air and ventilation air flows, fuel consumption, etc.
 - 9. Generator electrical data including temperature and insulation data, cooling requirements, excitation ratings, voltage regulation, voltage regulator, efficiencies, waveform distortion and telephone influence factor.
 - 10. Generator resistances, reactances and time constants.
 - 11. Generator locked rotor motor starting curves.

12. Manufacturer's documentation showing maximum expected transient voltage and frequency dips, and recovery time during operation of the generator set at the specified site conditions with the specified loads.

13. Operation and maintenance manuals.

D. Warranty: Submit manufacturer's and dealer's written warranty as noted under item entitled "WARRANTY" hereinbelow.

E. Operation and Maintenance Manuals

1.06 SYSTEM RESPONSIBILITY

A. The completed engine generator set shall be supplied by the Manufacturer's authorized distributor only.

B. The equipment supplied and installed shall meet the requirements of NEC and all-applicable local codes and regulations. All equipment shall be new, of current production. There shall be one source responsibility for warranty; parts and service through a local representative with factory trained service personnel.

C. The automatic transfer switch(es) specified in another section shall be supplied by the generator set manufacturer in order to establish and maintain a single source of system responsibility and coordination.

1.07 WARRANTY

The Contractor shall submit written warranty on the sheet metal flashing and trim for a 2-year period from the project acceptance date. The warranty shall include repair parts, labor, reasonable travel expense necessary for repairs at the job site, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of repair. Running hours shall be limited to 500 hours annually for the system warranty by both the manufacturer and servicing distributor. Submittals received without written warranties as specified will be rejected in their entirety.

1.08 SUBSTITUTION

A. Substitution Time Requirement

Requests for substitutions shall be made a minimum of ten (10) days prior to bid date. Manufacturers catalog data shall accompany each request and authorized acceptance shall be addenda only.

B. Substitution Responsibility

The power system has been designed to the specified manufacturer's electrical and physical characteristics. The equipment sizing, spacing, amounts, electrical wiring, ventilation equipment, fuel, and exhaust components have all been sized and designed around CATERPILLAR supplied equipment. Should any substitutions be made, the

General Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitutions.

1.09 PARTS AND SERVICE QUALIFICATIONS

- A. Service Facility: The engine-generator supplier shall maintain 24-hour parts and service capability within 100 miles of the project site. The distributor shall stock parts as needed to support the generator set package for this specific project. The supplier must carry sufficient inventory to cover no less than 80% parts service within 24hrs and 95% within 48 hours.
- B. Service Personnel: The dealer shall maintain qualified factory trained service personnel.
- C. Product Support
 - 1. Preventive Maintenance Agreement: The authorized Caterpillar dealer shall provide a preventive maintenance agreement using qualified factory trained service personnel, for a period of 1-year minimum. The dealer shall provide genuine Caterpillar parts and filters, shall provide all recommended fluids, dealer labor, travel labor and travel mileage to complete the suggested preventive maintenance as defined in the manufacturer's Operation and Maintenance Manual
 - 2. Standby Generator Set Extended Service Coverage: Extended Service Coverage shall be provided for a period of 5 years and shall include no deductible. Extended Service Coverage provides for 100 percent of usual and customary parts and labor costs for failures due to defects in materials and workmanship to the "as shipped consist" from the factory, excluding filters, fluids, V-belts, hoses, power take-offs, paint, batteries and clutches. Platinum Plus Extended Service Coverage provides for a rental power unit due to unscheduled failures causing unexpected downtime to the customer in excess of 48 hours from the time of diagnoses up to \$10,000 in coverage. All repairs will be performed by factory trained dealer service personnel and allows for repairer travel and mileage for all repairs up to 8 hours and 320 miles per incident. Rental coverage must be documented and covered by generator manufacturer. Supplier's third-party coverage will not be accepted.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Generator Set Requirement
 - 1. The generator sets shall be Standby Duty rated at 150 ekW (187.5 kVA), 60Hz, 1800 RPM, 3-Phase at 0.8 power factor including radiator fan and all parasitic

loads. The generator shall have a minimum starting kVA of 358 kVA with an instantaneous voltage dip of 30% per NEMA-MG1 standards

2. Generator set shall be sized to operate at the specified load at a maximum ambient temperature (in Deg F) and altitude(in m) for the environmental conditions at the given project location.
3. Standby Power Rating: Power is available for the duration of an emergency outage.
4. Average Power Output = 70% of standby power
5. Load = Varying
6. Typical Hours/Year = 200 Hours
7. Maximum Expected Usage = 500 hours/year
8. Typical Application = Standby
9. The generator shall comply with NFPA 110 and shall pick-up 100% load and restore power to the system within 10 seconds of a power outage.

B. Material and Parts: All materials and parts comprising the unit shall be new and unused.

2.02 ENGINE

- A. The engine shall be diesel fueled, four (4) cycle, water-cooled, while operating with nominal speed not exceeding 1800 RPM. The engine will utilize in-cylinder combustion technology, as required, to meet applicable EPA non-road mobile regulations and/or the EPA NSPS (New Source Performance Standards) rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178-D2 Emissions Cycle at specified kW / bHP rating.
- B. Emissions Requirements /Certifications: EPA Emergency Stationary Certified with Tier 3 emissions levels.

2.03 ENGINE GOVERNING

The engine governor shall be an electronic Engine Control Module (ECM) with 12-volt operating voltage maintain accuracy from -40 to 85 Deg C. The ECM shall be enclosed in an environmentally sealed, die-cast aluminum housing which isolates and protects electronic components from moisture and dirt contamination. The ECM should be designed to withstand shorts to +battery and –battery. The ECM shall adjust fuel delivery according to exhaust smoke, altitude and cold mode limits.

2.04 EXHAUST SYSTEM

The silencer/muffler, companion flanges, and flexible stainless-steel exhaust fitting properly sized shall be furnished and installed according to the manufacturer's recommendation. Mounting shall be provided by the contractor as shown on the drawings. The silencer shall be mounted so that its weight is not supported by the engine nor will exhaust system growth due to thermal expansion be imposed on the engine. Exhaust pipe size shall be sufficient to ensure that exhaust backpressure does not exceed the maximum limitations specified by the engine manufacturer.

2.05 GENERATOR SPECIFICATIONS

The synchronous three phase generator shall be a single bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel housing with a flex coupling. The generator shall meet performance class G2 of ISO 8528. The excitation system shall enable the alternator to sustain 300-percent of rated current based on the 150 deg C (Class H) rise rating for ten seconds during a fault condition and shall improve the immunity of the voltage regulator to non-linear distorting loads. The excitation system shall be of brushless construction and be independent of main stator windings (either permanent magnet or auxiliary windings).

2.06 VOLTAGE REGULATOR

The Automatic Voltage Regulator (AVR) shall maintain generator output voltage within +/- 0.25-percent for any constant load between no load and full load. The regulator shall be capable of sensing true RMS in three phases of alternator output voltage or operating in single phase sensing mode. The regulator shall provide an adjustable dual slope regulation characteristic in order to optimize voltage and frequency response for site conditions. The AVR shall be capable of setpoint adjustment.

2.07 CIRCUIT BREAKER

- A. Provide a generator mounted 3 Pole 100-percent rated circuit breaker, molded case, NEMA 1/IP22. Breaker shall utilize a solid-state trip unit. The breaker shall be UL/CSA Listed of IEC construction and connected to engine/generator safety shutdowns. Breaker shall be housed in an extension terminal box which is isolated from vibrations induced by the generator set. Mechanical type lugs, sized for the circuit breaker feeders shown on drawing, shall be supplied on the load side of breaker.
- B. Standard Features:
 - 1. Molded case thermal magnetic trip breaker sized for full unit output rating
 - 2. Neutral connection sized for full product ratings.
 - 3. Ground connection in the customer power wiring section.

2.08 CONTROLS – GENERATOR SET MOUNTED

- A. Provide a fully solid-state, microprocessor based, generator set control. The control shall provide all operating, monitoring, and control functions for the generator set. The control panel shall provide real time digital communications to all engine and regulator controls.
- B. Mounting: The control panel shall have the option be mounted on the generator set and include all interconnecting cables and harnesses
- C. Functional Requirements: The following functionality shall be integral to the control panel.
 - 1. The control shall include a minimum of 3-line data display
 - 2. Audible horn for alarm and shutdown with horn silence switch
 - 3. Standard ISO labeling
 - 4. Remote start/stop control
 - 5. Local run/off/auto control integral to system microprocessor
 - 6. Cooldown timer
 - 7. Speed adjust
 - 8. Lamp test
 - 9. Emergency stop push button
 - 10. Voltage adjust
- D. Digital Monitoring Capability: The controls shall provide the following digital readouts for the engine and generator. All readings shall be indicated in either metric or English units.
 - 1. Engine
 - a. Engine oil pressure
 - b. Engine oil temperature
 - c. Engine coolant temperature
 - d. Engine RPM
 - e. Battery volts
 - f. Engine hours

- g. Engine crank attempt counter
 - h. Engine successful start counter
 - i. Service maintenance interval
 - j. Real time clock
 - k. Engine exhaust stack temperature
 - l. Engine main bearing temperature
2. Generator
- a. Generator AC volts (Line to Line, Line to Neutral and Average)
 - b. Generator AC current (Avg and Per Phase)
 - c. Generator AC Frequency
 - d. Generator kW (Total and Per Phase)
 - e. Generator kVA (Total and Per Phase)
 - f. Generator kVAR (Total and Per Phase)
 - g. Power Factor (Avg and Per Phase)
- E. Alarms and Shutdowns: The control shall monitor and provide alarm indication and subsequent shutdown for the following conditions. All alarms and shutdowns are accompanied by a time, date, and engine hour stamp that are stored by the control panel for first and last occurrence:
1. Engine Alarm/Shutdown
- a. Low oil pressure alarm/shutdown
 - b. High coolant temperature alarm/shutdown
 - c. Loss of coolant shutdown
 - d. Overspeed shutdown
 - e. Overcrank shutdown
 - f. Emergency stop shutdown
 - g. Low coolant temperature alarm
 - h. Low battery voltage alarm

- i. High battery voltage alarm
 - j. Control switch not in auto position alarm
 - k. Battery charger failure alarm
2. Generator Alarm/Shutdown
- a. Generator phase sequence
 - b. Generator over voltage
 - c. Generator under voltage
 - d. Generator over frequency
 - e. Generator under frequency
 - f. Generator reverse power (real and reactive)
 - g. Generator overcurrent
 - h. Normally Inverse, Very Inverse, Extremely Inverse conditions as well as those based on Thermal Damage Curve configurations.
 - i. Generator current balance
- F. Remote Communications: The control shall include Modbus RTU communications as standard via RS-485 half duplex with configurable baud rates from 2.4k to 57.6k.

2.09 ANNUNCIATION

Remote Annunciator (NFPA 99/110, CSA 282):

- 1. Provide a remote annunciator to meet the requirements of NFPA 110, Level 1.
- 2. The annunciator shall provide remote annunciation of all points stated above and shall incorporate ring-back capability so that after silencing the initial alarm, any subsequent alarms will sound the horn.
- 3. Ability to be located up to 4000ft from the generator set

2.10 COOLING SYSTEM

The generator set shall be equipped with a rail-mounted, engine-driven radiator with blower fan and all accessories. The cooling system shall be sized to operate at full load conditions and 110 F* ambient air entering the room or enclosure (If an enclosure is specified). The generator set supplier is responsible for providing a properly sized cooling system based on the enclosure static pressure restriction.

2.11 FUEL SYSTEM

- A. The fuel system shall be integral with the engine. In addition to the standard fuel filters provided by the engine manufacturer, there shall also be installed a primary fuel filter/water separator in the fuel inlet line to the engine. All fuel piping shall be black iron or flexible fuel hose rated for this service. No galvanized piping will be permitted. Flexible fuel lines shall be minimally rated for 300 degrees F and 100 psi.
- B. Provide a UL-142 listed double walled sub-base day tank with a 70 gallon usage tank capacity. Provide day tank control panel, float switches, 2 gpm supply pump with normally closed solenoid valve and strainer, and 4 gpm overflow return pump with check valve. Footprint shall not exceed those shown on drawings.

2.12 STARTING SYSTEM

- A. Starting Motor: A DC electric starting system with positive engagement shall be furnished. The motor voltage shall be as recommended by the engine manufacturer.
- B. Jacket Water Heater: Jacket water heater shall be provided and shall be sized to ensure that genset will start within the specified time period and ambient conditions.
- C. Batteries: A lead-acid storage battery set of the heavy-duty starting type shall be provided. Battery voltage shall be compatible with the starting system.

PART 3 - EXECUTION

3.01 INSTALLATION

Install equipment in accordance with manufacturer's recommendations, the project drawings and specifications, and all applicable codes.

3.02 START-UP AND TESTING

- A. Coordinate all start-up and testing activities with the Engineer and Owner. Provide all required fuel for start-up and testing. After installation is complete and normal power is available, the manufacturer's local dealer shall perform the following:
- B. With reactive Load bank: Perform a 4-hour load bank test at a 0.8 PF at full nameplate rating. Load bank, cables and other equipment required for this test to be supplied by the genset supplier.
- C. NFPA 110 Load Test Requirements:
 - 1. Verify that the equipment is installed properly.
 - 2. Check all auxiliary devices for proper operation, including battery charger, jacket water heater(s), generator space heater, remote annunciator, etc.

3. Test all alarms and safety shutdown devices for proper operation and annunciation.
4. Check all fluid levels.
5. Start engine and check for exhaust, oil, fuel leaks, vibrations, etc.
6. Verify proper voltage and phase rotation at the transfer switch before connecting to the load.
7. Connect the generator to building load and verify that the generator will start and run all designated loads.
8. The system shall be tested under full load and monitor the following readings:
 - a. Oil pressure
 - b. Coolant temperature
 - c. Battery charge rate
 - d. AC volts
 - e. AC Amperes- all phases
 - f. Frequency
 - g. Kilowatts
 - h. Ambient Temperature

3.03 OPERATION AND MAINTENANCE MANUALS

Provide two (2) sets of operation and maintenance manuals covering the generator, switchgear, and auxiliary components. Include final as-built wiring interconnect diagrams and recommended preventative maintenance schedules.

3.04 TRAINING

Provide on-site training to instruct the owner's personnel in the proper operation and maintenance of the equipment. Review operation and maintenance manuals, parts manuals, and emergency service procedures.

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 price bid for the various items of work in this project.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16010 – INTERIOR DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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 SUMMARY

This section includes conduits, wiring, panelboards, wireways, receptacles, circuit breakers, and switches.

1.03 DEFINITIONS

Unless otherwise specified or indicated, electrical and electronics terms used in these specifications and on the drawings are as defined in IEEE 100.

1.04 SUBMITTALS

- A. Shop drawings for the following items:
 - 1. Panelboards
 - 2. Wireways
 - 3. Marking Strips
- B. Product Data for the following items:
 - 1. Receptacles
 - 2. Circuit Breakers
 - 3. Switches
- C. Test Reports for the following items:
 - 1. 600-volt Wiring Test
 - 2. Ground-fault Receptacle Test
- D. Electrical Systems Operation and Maintenance Data

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" or "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Provide equipment, materials, installation, and workmanship in accordance with NFPA 70 unless more stringent requirements are specified or indicated.
- B. Standard Products
1. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design, and workmanship and:
 - a. Have been in satisfactory commercial or industrial use for 2 years prior to bid opening including applications of equipment and materials under similar circumstances and of similar size.
 - b. Have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period.
 - c. Where two or more items of the same class of equipment are required, provide products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.
 2. Alternative Qualifications: Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.
 3. Material and Equipment Manufacturing Date: Products manufactured more than 3 years prior to date of delivery to site are not acceptable.

1.06 MAINTENANCE

Electrical Systems: Submit operation and maintenance manuals for electrical systems that provide basic data relating to the design, operation, and maintenance of the electrical distribution system for the building. Include the following:

1. Single line diagram of the "as-built" building electrical system.
2. Schematic diagram of electrical control system (other than HVAC, covered elsewhere).
3. Manufacturers' operating and maintenance manuals on active electrical equipment.

1.07 WARRANTY

Provide equipment items supported by service organizations that are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

As a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70 for all materials, equipment, and devices.

2.02 CONDUIT AND FITTINGS

Conform to the following:

1. Rigid Nonmetallic Conduit: PVC Type EPC-40, and EPC-80 in accordance with NEMA TC 2, UL 651. For underground use only.
2. Rigid Metal Conduit (RMC): UL 6, ANSI C80.1, zinc-coated steel only.
3. Electrical, Zinc-Coated Steel Metallic Tubing (EMT): UL 797, ANSI C80.3. For indoor use only.
4. Flexible Metal Conduit: UL 1.
5. Fittings for Metal Conduit, EMT, and Flexible Metal Conduit: UL 514B. Ferrous fittings: cadmium- or zinc-coated in accordance with UL 514B.
 - a. Fittings for Rigid Metal Conduit and IMC: Threaded-type. Split couplings unacceptable.
 - b. Fittings for EMT: Steel compression type.

2.03 OUTLET BOXES AND COVERS

- A. UL 514A, cadmium- or zinc-coated, if ferrous metal. UL 514C, if nonmetallic.
- B. Outlet Boxes for Telecommunications System. Provide the following:
 1. Standard type 4 11/16 inches square by 2 1/8 inches deep.
 2. Outlet boxes for wall-mounted telecommunications outlets: 4 by 2 1/8 by 2 1/8 inches deep.
 3. Depth of boxes: large enough to allow manufacturers' recommended conductor bend radii.

4. Large pull boxes. Size as noted on the drawings. NEMA 3R 316 stainless steel.

2.04 WIRES AND CABLES

- A. Provide wires and cables in accordance applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Do not use wires and cables manufactured more than 12 months prior to date of delivery to site.
- B. Conductors
 1. Provide the following:
 - a. Conductor sizes and capacities shown are based on copper, unless indicated otherwise.
 - b. Conductors No. 8 AWG and larger diameter: stranded.
 - c. Conductors No. 10 AWG and smaller diameter: solid.
 - d. Conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3: stranded unless specifically indicated otherwise.
 - e. All conductors: copper.
 2. Equipment Manufacturer Requirements: When manufacturer's equipment requires copper conductors at the terminations or requires copper conductors to be provided between components of equipment, provide copper conductors or splices, splice boxes, and other work required to satisfy manufacturer's requirements.
 3. Minimum Conductor Sizes. Provide minimum conductor size in accordance with the following:
 - a. Branch circuits: No. 12 AWG.
 - b. Class 1 remote-control and signal circuits: No. 14 AWG.
 - c. Class 2 low-energy, remote-control and signal circuits: No. 16 AWG.
 - d. Class 3 low-energy, remote-control, alarm and signal circuits: No. 22 AWG.
- C. Color Coding
 1. Ground and Neutral Conductors. Provide color coding of ground and neutral conductors as follows:
 - a. Grounding conductors: Green.
 - b. Neutral conductors: White.

- c. Exception, where neutrals of more than one system are installed in same raceway or box, other neutrals color coding: white with a different colored (not green) stripe for each.
- 2. Ungrounded Conductors. Provide color coding of ungrounded conductors in different voltage systems as follows:
 - a. 208/120 volt, three-phase
 - 1) Phase A - black
 - 2) Phase B - red
 - 3) Phase C - blue
 - b. 480/277 volt, three-phase
 - 1) Phase A - brown
 - 2) Phase B - orange
 - 3) Phase C – yellow

D. Insulation

- 1. Unless specified or indicated otherwise or required by NFPA 70, provide power and lighting wires rated for 600-volts, Type THWN/THHN conforming to UL 83 or Type XHHW conforming to UL 44, except that grounding wire may be type TW conforming to UL 83; remote-control and signal circuits: Type TW or TF, conforming to UL 83; where lighting fixtures require 90-degree Centigrade (C) conductors, provide only conductors with 90-degree C insulation or better.

E. Bonding Conductors

ASTM B1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

2.05 SPLICES AND TERMINATION COMPONENTS

UL 486A-486B for wire connectors and UL 510 for insulating tapes. Connectors for No. 10 AWG and smaller diameter wires: insulated, pressure-type in accordance with UL 486A-486B or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

2.06 DEVICE PLATES

Provide the following:

- 1. UL listed, one-piece device plates for outlets to suit the devices installed.

2. For metal outlet boxes, plates on unfinished walls: zinc-coated sheet steel or cast metal having round or beveled edges.
3. For nonmetallic boxes and fittings, other suitable plates may be provided.
4. Plates on finished walls: nylon or lexan, minimum 0.03 inch wall thickness and same color as receptacle or toggle switch with which they are mounted.
5. Plates on finished walls: satin finish stainless steel or brushed-finish aluminum, minimum 0.03 inch thick.
6. Screws: machine-type with countersunk heads in color to match finish of plate.
7. Sectional type device plates are not to be permitted.
8. Plates installed in wet locations: gasketed and UL listed for "wet locations."

2.07 SWITCHES

- A. Toggle Switches: NEMA WD 1, UL 20, single pole, three-way, totally enclosed with bodies of thermoplastic or thermoset plastic and mounting strap with grounding screw. Include the following:
1. Handles: white thermoplastic.
 2. Wiring terminals: screw-type, side-wired or of the solderless pressure type having suitable conductor-release arrangement.
 3. Contacts: silver-cadmium and contact arm - one-piece copper alloy.
 4. Switches: rated quiet-type ac only, 120/277 volts, with current rating and number of poles indicated.
- B. Disconnect Switches:

Provide heavy duty-type switches where indicated, where switches are rated higher than 240 volts, and for double-throw switches. Utilize Class R fuseholders and fuses for fused switches, unless indicated otherwise. Provide horsepower rated for switches serving as the motor-disconnect means. Provide switches in NEMA 3R 316 stainless steel enclosure as indicated per NEMA ICS 6.

2.08 RECEPTACLES

- A. Provide the following:
1. UL 498, general purpose specification grade, grounding-type. Residential grade receptacles are not acceptable.
 2. Ratings and configurations: as indicated.

3. Bodies: white as per NEMA WD 1.
 4. Face and body: thermoplastic supported on a metal mounting strap.
 5. Dimensional requirements: per NEMA WD 6.
 6. Screw-type, side-wired wiring terminals or of the solderless pressure type having suitable conductor-release arrangement.
 7. Grounding pole connected to mounting strap.
 8. The receptacle: containing triple-wipe power contacts and double or triple-wipe ground contacts.
 9. Provide weather resistant receptacles with extra duty in-use covers for receptacles installed in exterior locations.
- B. Ground-Fault Circuit Interrupter Receptacles: UL 943, duplex type for mounting in standard outlet box. Provide device capable of detecting current leak when the current to ground is 6 milliamperes or higher, and tripping per requirements of UL 943 for Class A ground-fault circuit interrupter devices. Provide screw-type, side-wired wiring terminals or pre-wired (pigtail) leads.
- C. Plugs: Provide heavy-duty, rubber-covered three-, four-, cord of required size, install plugs thereon, and attach to equipment. Provide UL listed plugs with receptacles, complete with grounding blades. Where equipment is not available, turn over plugs and cord assemblies to the Owner.

2.09 PANELBOARDS

Circuit Breakers: UL 489, bolt-on, solid state-type having a minimum short-circuit current rating equal to the short-circuit current rating of the panelboard in which the circuit breaker will be mounted. Provide with copper bussing. Breaker terminals: UL listed as suitable for type of conductor provided. Series rated circuit breakers and plug-in circuit breakers are unacceptable. Provide panelboard in NEMA 3R 316 stainless steel enclosure.

1. Multipole Breakers: Provide common trip-type with single operating handle. Design breaker such that overload in one pole automatically causes all poles to open. Maintain phase sequence throughout each panel so that any three adjacent breaker poles are connected to Phases A, B, and C, respectively.
2. Circuit Breaker with Ground-Fault Circuit Interrupter: UL 943 and NFPA 70. Provide with auto-monitoring (self-test) and lockout features, "push-to-test" button, visible indication of tripped condition, and ability to detect and trip when current imbalance is 6 milliamperes or higher per requirements of UL 943 for Class A ground-fault circuit interrupter devices.

2.10 TELECOMMUNICATIONS SYSTEM

Provide system of telecommunications wire-supporting structures (pathway), including outlet boxes, conduits with pull wires and other accessories for telecommunications outlets and pathway in accordance with TIA-569 and as specified herein.

2.11 FIELD FABRICATED NAMEPLATES

Provide field fabricated nameplates in accordance with the following:

1. ASTM D709.
2. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device as specified or as indicated on the drawings.
3. Each nameplate inscription: identify the function and, when applicable, the position.
4. Nameplates: melamine plastic, 0.125 inch thick, white with black center core.
5. Provide red laminated plastic label with white center core where indicated.
6. Surface: matte finish. Corners: square. Accurately align lettering and engrave into the core.
7. Minimum size of nameplates: one by 2.5 inches.
8. Lettering size and style: a minimum of 0.25-inch-high normal block style.

2.12 WIREWAYS

UL 870. Material: steel epoxy painted 16 gauge for heights and depths up to 6 by 6 inches, and 14 gauge for heights and depths up to 12 by 12 inches. Provide in length required for the application with screw- cover NEMA 3R 316 stainless steel enclosure per NEMA ICS 6.

2.13 FACTORY APPLIED FINISH

Provide factory-applied finish on electrical equipment in accordance with the following:

1. NEMA 250 corrosion-resistance test and the additional requirements as specified herein.
2. Interior and exterior steel surfaces of equipment enclosures: thoroughly cleaned followed by a rust-inhibitive phosphatizing or equivalent treatment prior to painting.
3. Exterior surfaces: free from holes, seams, dents, weld marks, loose scale, or other imperfections.
4. Interior surfaces: receive not less than one coat of corrosion-resisting paint in accordance with the manufacturer's standard practice.

5. Exterior surfaces: primed, filled where necessary, and given not less than two coats baked enamel with semigloss finish.
6. Equipment located indoors: ANSI Light Gray.
7. Provide manufacturer's coatings for touch-up work to match existing.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Electrical installations, including weatherproof and hazardous locations and ducts, plenums, and other air-handling spaces shall conform to requirements of NFPA 70 and IEEE C2 and to requirements specified herein.
- B. Wiring Methods: Provide insulated conductors installed in rigid steel conduit, IMC, rigid nonmetallic conduit, or EMT, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Grounding conductor: Separate from electrical system neutral conductor. Provide insulated green equipment grounding conductor for circuit(s) installed in conduit and raceways. Shared neutral, or multi-wire branch circuits, are not permitted with arc-fault circuit interrupters. Minimum conduit size: 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings: made with metal conduit in fire-rated shafts, with metal conduit extending through shafts for minimum distance of 6 inches. Firestop conduit which penetrates fire-rated walls, fire-rated partitions, or fire-rated floors in accordance with NFPA requirements.
 1. Pull Wire: Install pull wires in empty conduits. Plastic having minimum 200-pound force tensile strength. Leave minimum 36 inches of slack at each end of pull wire.
- C. Conduit Installation: Unless indicated otherwise, conceal conduit under floor slabs and within finished walls, ceilings, and floors. Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.
 1. Restrictions Applicable to EMT
 - a. Do not install underground.
 - b. Do not encase in concrete, mortar, grout, or other cementitious materials.
 - c. Do not use in areas subject to physical damage including but not limited to equipment rooms where moving or replacing equipment could physically damage the EMT.
 - d. Do not use in hazardous areas.
 - e. Do not use outdoors.

- f. Do not use in fire pump rooms.
2. **Conduit Support:** Support conduit by pipe straps, wall brackets, threaded rod conduit hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Do not exceed one-fourth proof test load for load applied to fasteners. Provide vibration resistant and shock-resistant fasteners attached to concrete ceiling. Do not cut main reinforcing bars for any holes cut to depth of more than 1 1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended-ceiling construction, run conduit above ceiling. Do not support conduit by ceiling support system. Conduit and box systems: supported independently of both (a) tie wires supporting ceiling grid system, and (b) ceiling grid system into which ceiling panels are placed. Do not share supporting means between electrical raceways and mechanical piping or ducts. Coordinate installation with above-ceiling mechanical systems to assure maximum accessibility to all systems. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. Where conduit crosses building expansion joints, provide suitable expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means. For conduits greater than 2 1/2 inches inside diameter, provide supports to resist forces of 0.5 times the equipment weight in any direction and 1.5 times the equipment weight in the downward direction.
3. **Directional Changes in Conduit Runs:** Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.
4. **Locknuts and Bushings:** Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use at least minimum single locknut and bushing. Provide locknuts with sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits and provide insulating type where required by NFPA 70.
5. **Flexible Connections:** Provide flexible steel conduit between 3 and 6 feet in length for recessed and semi recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for motors. Install flexible conduit to allow 20 percent slack. Minimum flexible steel conduit size: 1/2-inch diameter. Provide liquid tight flexible conduit in wet and damp locations for equipment subject to vibration, noise transmission, movement or motors. Provide separate ground conductor across flexible connections.
6. **Telecommunications and Signal System Pathway**

- a. Install telecommunications pathway in accordance with TIA-569.
 - b. Horizontal Pathway: Telecommunications pathways from the work area to the telecommunications room: installed and cabling length requirements in accordance with TIA-568-C.1. Size conduits in accordance with TIA-569 and as indicated.
- D. Boxes, Outlets, and Supports: Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways: cast-metal, hub-type when located in wet locations, when surface mounted on outside of exterior surfaces, when surface mounted on interior walls exposed up to 7 feet above floors and walkways, and when specifically indicated. Boxes in other locations: sheet steel, except that aluminum boxes may be used with aluminum conduit, and nonmetallic boxes may be used with nonmetallic conduit system. Provide each box with volume required by NFPA 70 for number of conductors enclosed in box. Boxes for mounting lighting fixtures: minimum 4 inches square, or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Boxes for use in masonry-block or tile walls: square-cornered, tile-type, or standard boxes having square-cornered, tile-type covers. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with outside of exterior surfaces. Provide separate boxes for flush or recessed fixtures when required by fixture terminal operating temperature; provide readily removable fixtures for access to boxes unless ceiling access panels are provided. Support boxes and pendants for surface-mounted fixtures on suspended ceilings independently of ceiling supports. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support; support sheet metal boxes directly from building structure or by bar hangers. Where bar hangers are used, attach bar to raceways on opposite sides of box, and support raceway with approved-type fastener maximum 24 inches from box. When penetrating reinforced concrete members, avoid cutting reinforcing steel.
- 1. Boxes: Boxes for use with raceway systems: minimum 1 1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets: minimum 4 inches square, except that 4 by 2-inch boxes may be used where only one raceway enters outlet. Telecommunications outlets: a minimum of 4 11/16 inches square by 2 1/8 inches deep. Mount outlet boxes flush in finished walls.
 - 2. Extension Rings: Extension rings are not permitted for new construction. Use only on existing boxes in concealed conduit systems where wall is furred out for new finish.
- E. Mounting Heights: Mount panelboards, circuit breakers, motor controller and disconnecting switches so height of operating handle at its highest position is maximum 78 inches above floor. Mount lighting switches 48 inches above finished floor. Mount receptacles and telecommunications outlets 18 inches above finished floor, unless otherwise indicated. Wall-mounted telecommunications outlets: mounted at height 60

inches above finished floor. Mount other devices as indicated. Measure mounting heights of wiring devices and outlets in non-hazardous areas to center of device or outlet.

F. Conductor Identification:

1. Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, provide color coding by factory-applied, color-impregnated insulation. For conductors No. 4 AWG and larger diameter, provide color coding by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves.
2. Marking Strips: Provide marking strips for identification of power distribution, control, data, and communications cables in accordance with the following:
 - a. Provide white or other light-colored plastic marking strips, fastened by screws to each terminal block, for wire designations.
 - b. Use permanent ink for the wire numbers
 - c. Provide reversible marking strips to permit marking both sides or provide two marking strips with each block.
 - d. Size marking strips to accommodate the two sets of wire numbers.
 - e. Assign a device designation in accordance with NEMA ICS 1 to each device to which a connection is made. Mark each device terminal to which a connection is made with a distinct terminal marking corresponding to the wire designation used on the Contractor's schematic and connection diagrams.
 - f. The wire (terminal point) designations used on the Contractor's wiring diagrams and printed on terminal block marking strips may be according to the Contractor's standard practice; however, provide additional wire and cable designations for identification of remote (external) circuits for the Owner's wire designations.
 - g. Prints of the marking strips drawings submitted for approval will be so marked and returned to the Contractor for addition of the designations to the terminal strips and tracings, along with any rearrangement of points required.

G. Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with insulated, pressure-type connector. Make splices in conductors No. 8 AWG and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

H. Covers and Device Plates: Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster fillings are not permitted. Install plates with alignment tolerance of 1/16 inch. Use of sectional-type device plates are not permitted. Provide gasket for plates installed in wet locations.

- I. Electrical Penetrations: Seal openings around electrical penetrations through fire resistance-rated walls, partitions, floors, or ceilings in accordance with NFPA requirements.

- J. Grounding and Bonding
 - 1. Provide in accordance with NFPA 70 and NFPA 780. Ground exposed, non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, telecommunications system grounds, grounding conductor of nonmetallic sheathed cables, and neutral conductor of wiring systems.

 - 2. Grounding Connections: Make grounding connections which are buried or otherwise normally inaccessible, by exothermic weld or high compression connector.
 - a. Make exothermic welds strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. Mechanical connectors are not required at exothermic welds.

 - b. Make high compression connections using a hydraulic or electric compression tool to provide the correct circumferential pressure. Provide tools and dies as recommended by the manufacturer. Use an embossing die code or other standard method to provide visible indication that a connector has been adequately compressed on the ground wire.

- K. Equipment Connections: Provide power wiring for the connection of motors and control equipment under this section of the specification. Except as otherwise specifically noted or specified, automatic control wiring, control devices, and protective devices within the control circuitry are not included in this section of the specifications and are provided under the section specifying the associated equipment.

- L. Repair of Existing Work
 - 1. Workmanship: Lay out work in advance. Exercise care where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary for proper installation, support, or anchorage of conduit, raceways, or other electrical work. Repair damage to buildings, piping, and equipment using skilled craftsmen of trades involved.

 - 2. Existing Concealed Wiring to be Removed: Disconnect existing concealed wiring to be removed from its source. Remove conductors; cut conduit flush with floor, underside of floor, and through walls; and seal openings.

 - 3. Continuation of Service: Maintain continuity of existing circuits of equipment to remain. Maintain existing circuits of equipment energized. Restore circuits wiring and power which are to remain but were disturbed during demolition back to original condition.

3.02 FIELD FABRICATED NAMEPLATE MOUNTING

- A. Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.03 FIELD QUALITY CONTROL

- A. Furnish test equipment and personnel and submit written copies of test results.
- B. Devices Subject to Manual Operation: Operate each device subject to manual operation at least five times, demonstrating satisfactory operation each time.
- C. 600-Volt Wiring Test: Test wiring rated 600 volt and less to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of 1,000 volts DC for 600 volt rated wiring and 500 volts DC for 300 volt rated wiring per NETA ATS to provide direct reading of resistance. All existing wiring to be reused shall also be tested.
- D. Ground-Fault Receptacle Test: Test ground-fault receptacles with a "load" (such as a plug in light) to verify that the "line" and "load" leads are not reversed. Press the TEST button and then the RESET button to verify by LED status that the device is a self-test model as specified in UL 943.
- E. Phase Rotation Test: Perform phase rotation test to ensure proper rotation of service power prior to operation of new or reinstalled equipment using a phase rotation meter. Follow the meter manual directions performing the test.
- F. Provide thermal scan to check all wiring and terminations for all equipment for proper operating temperature per NETA requirements. Thermal equipment shall be calibrated to factory specifications prior to use.

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 price bid for the various items of work in this project.

END OF SECTION

SECTION 16995 - AUTOMATIC TRANSFER & BYPASS-ISOLATION SWITCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

Furnish and install automatic transfer and bypass-isolation switch (ATS/BPS) system(s) with number of poles, amperage, voltage, withstand and close-on ratings as shown on the plans. Each automatic transfer shall consist of an inherently double throw power transfer switch mechanism and a microprocessor controller to provide automatic operation. All automatic transfer and bypass-isolation switches and controllers shall be the products of the same manufacturer.

1.03 CODES AND STANDARDS

The automatic transfer switches and controls shall conform to the requirements of the following:

1. UL 1008 - Standard for Transfer Switch Equipment
2. CSA certified to CSA 22.2 No 178 – 1978 Automatic Transfer Switches
3. IEC 60947-6-1 Low-voltage Switchgear and Controlgear; Multifunction Equipment; Automatic Transfer Switching Equipment
4. NFPA 70 - National Electrical Code
5. NFPA 110 - Emergency and Standby Power Systems
6. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
7. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
8. International Standards Organization ISO 9001:2008
9. UL 508 Industrial Control Equipment

1.04 ACCEPTABLE MANUFACTURERS

Automatic transfer and bypass-isolation switches shall be ASCO 7000 Series. Any alternate shall be submitted for approval to the consulting engineer at least 10 days prior to bid. Alternate bids must list any deviations from this specification.

1.05 SUBMITTALS

- A. Submit in accordance with SECTION 01300 - SUBMITTALS.
- B. Product Data

PART 2 - PRODUCTS

2.01 MECHANICALLY HELD TRANSFER SWITCH

- A. The transfer switch shall be electrically operated and mechanically held. The electrical operator shall be a momentarily energized, single-solenoid mechanism. Main operators which include overcurrent disconnect devices, linear motors or gears shall not be acceptable. The switch shall be mechanically interlocked to ensure only two possible positions, normal or emergency.
- B. All transfer switch sizes shall use only one type of main operator for ease of maintenance and commonality of parts.
- C. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
- D. All main contacts shall be silver composition. Switches rated 800 amperes and above shall have segmented, blow-on construction for high withstand and close-on capability and be protected by separate arcing contacts.
- E. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 800 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
- F. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- G. Where neutral conductors must be switched as shown on the plans, the ATS shall be provided with fully rated neutral transfer contacts.
- H. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

2.02 BYPASS-ISOLATION SWITCH

- A. A two-way bypass-isolation switch shall provide manual bypass of the load to either source and permit isolation of the automatic transfer switch from all source and load power conductors. All main contacts shall be manually driven.
- B. Power interconnections shall be silver-plated copper bus bar. The only field installed power connections shall be at the service and load terminals of the bypass-isolation switch. All control interwiring shall be provided with disconnect plugs.
- C. Separate bypass and isolation handles shall be utilized to provide clear distinction between the functions. Handles shall be permanently affixed and operable without opening the enclosure door. Designs requiring insertion of loose operating handles or opening of the enclosure door to operate are not acceptable.
- D. Bypass to the load-carrying source shall be accomplished with no interruption of power to the load (make before break contacts). Designs which disconnect the load when bypassing are not acceptable. The bypass handle shall have three operating modes: "Bypass to Normal," "Automatic," and "Bypass to Emergency." The operating speed of the bypass contacts shall be the same as the associated transfer switch and shall be independent of the speed at which the manual handle is operated. In the "Automatic" mode, the bypass contacts shall be out of the power circuit so that they will not be subjected to fault currents to which the system may be subjected.
- E. The isolation handle shall provide three operating modes: "Closed," "Test," and "Open." The "Test" mode shall permit testing of the entire emergency power system, including the automatic transfer switches with no interruption of power to the load. The "Open" mode shall completely isolate the automatic transfer switch from all source and load power conductors. When in the "Open" mode, it shall be possible to completely withdraw the automatic transfer switch for inspection or maintenance to conform to code requirements without removal of power conductors or the use of any tools.
- F. When the isolation switch is in the "Test" or "Open" mode, the bypass switch shall function as a manual transfer switch.
- G. Designs requiring operation of key interlocks for bypass isolation or ATs which cannot be completely withdrawn when isolated are not acceptable.

2.03 MICROPROCESSOR CONTROLLER

- A. The controller's sensing and logic shall be provided by a single built-in microprocessor for maximum reliability, minimum maintenance, and the ability to communicate serially through an optional serial communication module.
- B. A single controller shall provide twelve selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to $\pm 1\%$ of nominal voltage. Frequency sensing shall be accurate to $\pm 0.2\%$. The panel shall be capable of operating over a temperature range of -20 to +60 degrees C and storage from -55 to +85 degrees C.

- C. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Sensing and control logic shall be provided on multi-layer printed circuit boards. Interfacing relays shall be industrial grade plug-in type with dust covers. The panel shall be enclosed with a protective cover and be mounted separately from the transfer switch unit for safety and ease of maintenance. The protective cover shall include a built-in pocket for storage of the operator's manuals.
- D. All customer connections shall be wired to a common terminal block to simplify field-wiring connections.
- E. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:
 - 1. EN 55011:1991 Emission standard - Group 1, Class A
 - 2. EN 50082-2:1995 Generic immunity standard, from which:
 - 3. EN 61000-4-2:1995 Electrostatic discharge (ESD) immunity
 - 4. ENV 50140:1993 Radiated Electro-Magnetic field immunity
 - 5. EN 61000-4-4:1995 Electrical fast transient (EFT) immunity
 - 6. EN 61000-4-5:1995 Surge transient immunity
 - 7. EN 61000-4-6:1996 Conducted Radio-Frequency field immunity

2.04 ENCLOSURE

- A. The ATS/BPS shall be furnished in a Type 1 enclosure unless otherwise shown on the plans.
- B. All standard and optional door-mounted switches and pilot lights shall be 16-mm industrial grade type or equivalent for easy viewing & replacement. Door controls shall be provided on a separate removable plate, which can be supplied loose for open type units.

2.05 OPERATION

- A. Controller Display and Keypad
 - 1. A four line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the serial communications input port.
 - 2. The following parameters shall only be adjustable via DIP switches on the controller:

- a. Nominal line voltage and frequency
 - b. Single or three phase sensing
 - c. Operating parameter protection
 - d. Transfer operating mode configuration (Open transition, Closed transition or Delayed transition)
3. All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

B. Voltage, Frequency and Phase Rotation Sensing

1. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout and trip setting capabilities (values shown as % of nominal unless otherwise specified):

<u>Parameter</u>	<u>Sources</u>	<u>Dropout / Trip</u>	<u>Pickup / Reset</u>
Undervoltage	N&E, 3 ϕ	70 to 98%	85 to 100%
Overvoltage	N&E, 3 ϕ	102 to 115%	2% below trip
Underfrequency	N&E	85 to 98%	90 to 100%
Overfrequency	N&E	102 to 110%	2% below trip
Voltage unbalance	N&E	5 to 20%	1% below dropout

2. Repetitive accuracy of all settings shall be within $\pm 0.5\%$ over an operating temperature range of -20 degrees C to 60 degrees C.
3. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via serial communications port access.
4. The controller shall be capable (when activated by the keypad or through the serial port) of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
5. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.
6. The controller shall include a user selectable algorithm to prevent repeated transfer cycling to a source on an installation which experiences primary side, single phase failures on a Grounded Wye – Grounded Wye transformer which regenerates voltage when unloaded. The algorithm shall also inhibit retransfer to the normal (utility) source upon detection of a single phasing condition until a dedicated timer expires, the alternate source fails, or the normal source fails completely and is restored during this time delay period. The time delays associated with this feature shall be adjustable by the user through the controller keypad and LCD.

C. Time Delays

1. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 24 VDC power supply.
2. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
3. Two time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
4. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
5. A time delay activated output signal shall also be provided to drive an external relay(s) for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 5 minute time delay in any of the following modes:
 - a. Prior to transfer only.
 - b. Prior to and after transfer.
 - c. Normal to emergency only.
 - d. Emergency to normal only.
 - e. Normal to emergency and emergency to normal.
 - f. All transfer conditions or only when both sources are available.
6. The controller shall also include the following built-in time delays for optional Closed Transition and Delayed Transition operation:
 - a. 1 to 5 minute time delay on failure to synchronize normal and emergency sources prior to closed transition transfer.
 - b. 0.1 to 9.99 second time delay on an extended parallel condition of both power sources during closed transition operation.
 - c. 0 to 5 minute time delay for the load disconnect position for delayed transition operation.
7. All time delays shall be adjustable in 1 second increments, except the extended parallel time, which shall be adjustable in .01 second increments.

8. All time delays shall be adjustable by using the LCD display and keypad or with a remote device connected to the serial communications port.

D. Additional Features

1. A three position momentary-type test switch shall be provided for the test / automatic / reset modes. The test position will simulate a normal source failure. The reset position shall bypass the time delays on either transfer to emergency or retransfer to normal.
2. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
3. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of one contact, closed when the ATS is connected to the normal source and one contact closed, when the ATS is connected to the emergency source.
4. LED indicating lights (16 mm industrial grade, type 12) shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).
5. LED indicating lights (16 mm industrial grade, type 12) shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency sources, as determined by the voltage sensing trip and reset settings for each source.
6. The following features shall be built-in to the controller, but capable of being activated through keypad programming or the serial port only when required by the user:
 - a. Provide the ability to select "commit/no commit to transfer" to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
 - b. An Inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer. The inphase monitor shall be equal to ASCO Feature 27.
 - c. The controller shall be capable of accepting a normally open contact that will allow the transfer switch to function in a non-automatic mode using an external control device.

- d. Engine Exerciser - The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:
 - 1) Enable or disable the routine.
 - 2) Enable or disable transfer of the load during routine.
 - 3) Set:
 - a) start time, .
 - b) time of day
 - c) day of week
 - d) week of month (1st, 2nd, 3rd, 4th, alternate or every)
 - 4) Set the duration of the run.

At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10-year life battery that supplies power to the real time clock in the event of a power loss will maintain all time and date information.

- 7. The following feature shall be built - into the controller, but capable of being activated through keypad programming or the communications interface port.
 - a. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which open to inhibit transfer to emergency and/or retransfer to normal. Both of these inhibit signals can be activated through the keypad or serial port.
 - b. System Status - The controller LCD display shall include a "System Status" screen which shall be readily accessible from any point in the menu by depressing the "ESC" key a maximum of two times. This screen shall display a clear description of the active operating sequence and switch position. For example,
 - Normal Failed*
 - Load on Normal*
 - TD Normal to Emerg*
 - 2min15s*

Controllers that require multiple screens to determine system status or display "coded" system status messages, which must be explained by references in the operator's manual, are not permissible.
 - c. Self Diagnostics - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on

the status input signals to the controller which may be preventing load transfer commands from being completed.

d. Data Logging – The controller shall have the ability to log data and to maintain the last 99 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory:

1) Event Logging

- a) Data and time and reason for transfer normal to emergency.
- b) Data and time and reason for transfer emergency to normal.
- c) Data and time and reason for engine start.
- d) Data and time engine stopped.
- e) Data and time emergency source available.
- f) Data and time emergency source not available.

2) Statistical Data

- a) Total number of transfers.
- b) Total number of transfers due to source failure.
- c) Total number of days controller is energized.
- d) Total number of hours both normal and emergency sources are available.

e. Communications Module – Shall provide remote interface module to support monitoring of vendor’s transfer switch, controller and optional power meter. Module shall provide status, analog parameters, event logs, equipment settings & configurations over embedded webpage and open protocol. Features shall include:

- 1) Email notifications and SNMP traps of selectable events and alarms may be sent to a mobile device or PC.
- 2) Modbus TCP/IP, SNMP, HTTP, SMTP open protocols shall be simultaneously supported.
- 3) Web app interface requiring user credentials to monitor and control the transfer switch supporting modern smart phones, tablets and PC browsers. User will be able to view the dynamic one-line; ATS controls status, alarms, metering, event logging as well as settings.

- 4) Secure access shall be provided by requiring credentials for a minimum of 3 user privilege levels to the web app, monitor (view only), control (view and control) and administrator (view, control and change settings). 128-Bit AES encryption standard shall be supported for all means of connectivity.
- 5) Shall allow for the initiating of transfers, retransfers, bypassing of active timers and the activating/deactivating of engine start signal shall be available over the embedded webpage and to the transfer switch vendor's monitoring equipment.
- 6) An event log displaying a minimum of ninety-nine (300) events shall be viewable and printable from the embedded webpages and accessible from supported open protocols.
- 7) Four (4) 100 Mbps Ethernet copper RJ-45 ports, five (2) serial ports, Termination dip-switches and LEDs for diagnostics.
- 8) DIN rail mountable.

This option shall be equivalent to ASCO accessory 72EE2

- f. External DC Power Supply – An optional provision shall be available to connect an external 24 VDC power supply to allow the LCD and the door mounted control indicators to remain functional when both power sources are dead. This option shall be equivalent to ASCO accessory 1G.

8. User-configured labels with ATS names and power sources
9. Dual 10/100 Base-T auto sensing and auto crossover Ethernet ports
10. LED indication of source acceptability, switch position, common alarm, time delay and Ethernet link activity
11. Push button for transfer/retransfer control operations and time delay bypass
12. Push buttons for Alarm Silence and Lamp Test
13. Key lock to enable and disable the transfer push button
14. Audible and visual alarm to indicate Communication Error ATS Locked Out Failure to Synchronize Extended Parallel and any of the 8 user-configured discrete inputs
15. Programmable watchdog timer that can generate a system reset upon timeout (minimum 1 sec)
16. Factory reset capability
17. 100 ms power ride-through

- E. Software Specification: The ATS Remote Annunciator shall contain embedded web pages accessible via various web browsers with the following capabilities:
1. Configuration for protocol and communications management with the ability of auto discovering transfer switches on network
 2. Ability to create and print customized labels for ATS names and power sources
 3. The ability to choose a continuous or periodic audible alarm with customizable interval time
 4. View detailed packet status counters i.e. transmitted received and dropped packets with the ability to reset counters
 5. ATS source name configuration page which allows users to configure power source names and print labels
 6. Upgrade firmware from Ethernet network without interrupting equipment operation
- F. Communications: Dual 10/100 Base-T (RJ-45) Ethernet ports are provided to support TCP/IP communications for up to eight automatic transfer switches via individual remote connectivity modules or daisy-chained serial modules into a single Connectivity Module. Additional features include:
1. Supports Full Duplex Flow Control (IEEE 802.3x)
 2. 3.3V power supply with 5V I/O tolerance
 3. Supports 3 LEDs to indicate traffic link speed and collision
- G. Mounting: The ATS Remote Annunciator is suitable for:
1. Surface mounting using mounting screws studs
 2. Flush Mount from behind a cutout section (Enclosure Door Mounting)
 3. Flush Mount from the front of a cutout section (Enclosure Door Mounting)
- H. Power Supply: The ATS Remote Annunciator shall be capable of accepting 24VDC, 120 VAC or 240 VAC power source.
- I. Environmental: The ATS Remote Annunciator shall have an Ambient Operating Temperature range of -4 ° to 158 ° F (-20 ° to +70 ° C) at 5 to 85 percent humidity and Ambient Storage Temperature of -40 ° to 185 ° F (-40 ° to 85 ° C).

2.06 WITHSTAND AND CLOSING RATINGS

- A. The ATS/BPS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS/BPS terminals with the type of overcurrent protection shown on the plans.
- B. The ATS/BPS shall be UL listed in accordance with UL 1008 and be labeled in accordance with .025 and .050 seconds, time based ratings, or appropriate short time rating(s) as applicable. ATS/BPSs which are not tested and labeled with .025 and .050 seconds time based rating(s) or appropriate short time rating(s) and have series, or specific breaker ratings only, are not acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

Install equipment in accordance with manufacturer's recommendations, the project drawings and specifications, and all applicable codes.

3.02 TESTS AND CERTIFICATION

- A. The complete ATS/BPS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
- B. The ATS/BPS manufacturer shall be certified to ISO 9001:2008 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001:2008

3.03 SERVICE REPRESENTATION

- A. The ATS/BPS manufacturer shall maintain a national service organization of company-employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- B. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

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 price bid for the various items of work in this project.

END OF SECTION

REPLACE ARFF STATION EMERGENCY GENERATOR
KAHULUI AIRPORT
STATE PROJECT NO. CM1222-53

AUTOMATIC TRANSFER
& BYPASS-ISOLATION SWITCHES
16995-13 OF 13
R05/15/2023

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

PROJECT: Replace ARFF Station Emergency Generator
Kahului Airport
Kahului, Maui, Hawaii

PROJECT NO.: CM1222-53

COMPLETION TIME: Three Hundred Sixty Five (365) Calendar
days from the date indicated in the Notice to
Proceed from the Department.

LIQUIDATED DAMAGES: Two Hundred Fifty DOLLARS (\$ 250.00)
for each and every calendar day which the
Contractor has delayed the completion of this
project.

PROJECT MANAGER: Mr. Steve Tagupa
Department of Transportation
Airport Division
Daniel K Inouye International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1880
Phone: (808) 838-8805
FAX: (808) 838-8017
Email: Steve.Tagupa@hawaii.gov

ELECTRONIC SUBMITTAL: **The bidder shall submit the proposal in HlePRO.
The proposal shall be UPLOADED to HlePRO prior
to the bid opening date and time. See SPECIAL
PROVISIONS - 2.8 PREPARATION AND DELIVERY
OF BID - for additional information.**

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.

<u>Name of Subcontractor</u>	<u>Nature and Scope of Work</u>
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____

<u>Name of Joint Contractor</u>	<u>Nature and Scope of Work</u>
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 Email

Date

Contact Person (If different from above)

Phone: _____ Email: _____

NOTE:

If Bidder is a CORPORATION, the legal name of the corporation shall be set forth above, the corporate seal affixed, together with the signature(s) of the officer(s) authorized to sign contracts for the corporation. Please attach to this page current (not more than six months old) evidence of the authority of the officer(s) to sign for the corporation.

If Bidder is a PARTNERSHIP, the true name of the partnership shall be set forth above, with the signature(s) of the general partner(s). Please attach to this page current (not more than six months old) evidence of the authority of the partner authorized to sign for the partnership.

If Bidder is an INDIVIDUAL, the bidder's signature shall be placed above.

If signature is by an agent, other than an officer of a corporation or a partner of a partnership, a POWER OF ATTORNEY must be on file with the Department before opening bids or submitted with the bid. Otherwise, the Department may reject the bid as irregular and unauthorized.

PREFERENCES

Bidders agree that preferences shall be taken into consideration to determine the low bidder in accordance with said Sections and the rules promulgated, however, the award of contract will be in the amount of the bid offered exclusive of any preferences.

A. HAWAII PRODUCTS PREFERENCE

In accordance with ACT 174, SLH 2022, effective June 27, 2022, Hawaii Products Preference shall not apply to solicitations for public works construction. Therefore, the Hawaii Products Preference shall not apply to this project.

B. APPRENTICESHIP PROGRAMS PREFERENCE

In accordance with ACT 17, SLH 2009 – Apprenticeship Program, a 5% bid adjustment for bidders that are parties to apprenticeship agreements pursuant to Hawaii Revised Statutes (HRS) Section 103-55.6 may be applied to the bidder's price for evaluation purposes.

Any bidder seeking this preference must be a party to an apprenticeship agreement registered with the Department of Labor and Industrial Relations at the time the offer is made for each apprenticeable trade the bidder will employ to construct the public works projects for which the offer is being made.

The bidder is responsible for complying with all submission requirements for registration of its apprenticeship program before requesting the preference.

Yes, I wish to be considered for the Apprenticeship Programs Preference. I have included Certification Form(s) 1 with my bid.

C. RECYCLED PRODUCT PREFERENCE

Recycled product preference shall not apply to this proposal.

PROPOSAL SCHEDULE

**REPLACE ARFF STATION EMERGENCY GENERATOR
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII
STATE PROJECT NO. CM1222-53**

Item No.	Description	Approx. Qty	Unit Price	Total
01000.1	Temporary Traffic Signs & Controls	Allowance	Allowance	\$ <u>5,000.00</u>
01000.2	Unforeseen Conditions	Allowance	Allowance	\$ <u>160,000.00</u>
01000.3	Material Short Supply	Allowance	Allowance	\$ <u>5,000.00</u>
01000.4	Construction Work	LS	LS	\$ _____
01561.1	Construction Site Runoff Control Program	LS	LS	\$ _____
01562.1	Management of Contaminated Medias	Allowance	Allowance	\$ <u>20,000.00</u>
01565.1	Security Measures	Allowance	Allowance	\$ <u>5,000.00</u>
01700.1	Mobilization (Not to exceed 6% of sum of all items, excluding this item, all allowances and force account items)	LS	LS	\$ _____
TOTAL AMOUNT FOR COMPARISON OF BIDS				\$ _____

The prices bid 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.

Notes:

1. Bids shall include all Federal, State, County and other applicable taxes.
2. The TOTAL AMOUNT FOR COMPARISON OF BIDS will be used to determine the lowest responsible bidder.
3. Bidders must complete all unit prices and amounts. Failure to do so may be grounds for rejection of bid.
4. The State reserves the right to reject any or all Proposals and to waive any defects in the best interest of the State.
5. 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.

6. If the lowest TOTAL AMOUNT FOR COMPARISON OF BIDS is less than, or approximately equal to the funds available for this project, an award will be made to the lowest responsible bidder.
7. If the lowest TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available, the State reserves the right to negotiate with the lowest responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes, to further reduce the scope of work and award a contract thereafter.
8. The bidder shall submit the proposal in HlePRO. The proposal shall be UPLOADED to HlePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Original (wet ink) proposal documents are not required to be submitted. The award will be made based on proposals uploaded in HlePRO. Any and all other additional documents explicitly designated and labeled as CONFIDENTIAL OR PROPRIETARY shall be UPLOADED SEPARATELY to HlePRO. **If there is a conflict between this specification and its HlePRO solicitation, the specifications shall govern and control unless otherwise specified.**

SUPPLEMENT TO PROPOSAL SCHEDULE

The Department recognizes that certain items of material to be incorporated into the project and/or consumed in the prosecution of the project are temporarily in short supply and beyond the control and without the fault of the Contractor. The effect of such shortages has, among other things, resulted in periodic fluctuations in the posted prices of such short supply materials, thereby making the proposal difficult for the Contractor to bid with confidence.

The only materials considered to be in short supply are asphalt cement, portland cement, reinforcing steel, structural steel and galvanized steel.

Each bidder shall submit with the proposal a written statement from the supplier of each short supply material indicating the supplier's current posted price, effective date of that price and the location of the material at that posted price (by island).

If the price of such short supply material is increased or decreased by more than 5% by the supplier prior to the completion of that contract item requiring the short supply material, the Contractor shall submit to the Department a written statement from the supplier indicating the effective date and changed price the Contractor will thereafter be charged for such short supply material. The Contractor shall also obtain whenever possible, quotations for furnishing the material from other available local suppliers. The quotations shall be obtained sufficiently in advance of the need for the material to allow review by the Department so as not to delay the work. The Contractor's request to the Department for adjusted compensation due to such changed prices will be computed only with prices in effect at the time of delivery. Only the lowest quotation obtained will be accepted by the Department. Transportation, handling, loading, processing and other similar costs will not be subject to adjusted compensation.

No adjustment to the unit bid prices will be made when the increase or decrease in the price of the short material is less than 5% of the original posted price.

If the adjustment to the unit bid price is decreased in the price of the short supply material by more than 5% of the original posted price, the State will be credited. The Contractor shall notify the State within five (5) working days in the event of such an occurrence.

When an adjustment in price is made in accordance with this section, the adjustment will be allowed only so long as the purchase price remains more or less than 5% of the original posted price.

If an increase in the price of any short supply material exceeds or is scheduled to exceed 5% of the original posted price, the Contractor must notify the State within five (5) working days before using the short supply material. Upon receipt of such notification from the Contractor, the State will direct the Contractor to either (1) authorize work to proceed as usual with the assurance that the indicated incremental price increase above the 5% will be compensable, (2) issue such change orders as the State may deem necessary to reduce further requirements of the short supply material which is to be paid at the increase price, or (3) if the material is considered to have priced itself beyond

reason or beyond what the State can pay, the State may order cessation of further use of such short supply material on the project. Such notification by the Contractor will be required at each instance of incremental price increase above the 5% limit. If the Contractor fails to notify the State of any such incremental price increase within five (5) working days before using the short supply material and continues to utilize the short supply material on the project, the State will not be responsible for payment for the incremental cost increase of which the State was not forewarned.

Computation for the adjusted compensation will be as follows:

(A) Portland Cement

If, X = Adjustment per cubic yard of concrete,

P = Portland cement content of the approved mix design expressed in hundredweight per cubic yard of concrete,

Q = Increase or decrease in the price of portland cement in dollars per hundredweight,

Then, $X = QP$

Example: Posted price of Portland cement increases from \$1.40 to \$1.70 per cwt. and the hundredweight (cwt) of concrete is 5.6 cwt per c.y., then the adjustment will be:

$$\begin{aligned}
 \$1.70 - \$1.40 &= \$0.30 \\
 (\$1.40) \times (5\%) &= \$0.07 \\
 \$0.30 - \$0.07 &= \$0.23 \\
 X &= (\$0.23) \times (5.6) \\
 &= \$1.29 \text{ per c.y. of concrete}
 \end{aligned}$$

(B) Asphalt Cement

If, X = Adjustment per ton of mix,

P = Asphalt cement content, expressed in percentage of dry weight of the aggregates, as determined and accepted by the Department for each of the design plant mixes,

Q = Increase or decrease in the price of asphalt cement, in dollars per ton,

Then, $X = Q \times (P) \div (100 + P)$

Example: Posted price of asphalt concrete increases from \$70 to \$80 per ton and the asphalt content of the A.C. mix was accepted at 6.0%, then the adjustment shall be:

$$\begin{aligned}
\$80.00 - \$70.00 &= \$10.00 \\
(\$70.00) \times (5\%) &= \$3.50 \\
\$10.00 - \$3.50 &= \$6.50 \\
X &= \$6.50 \times 6 / (100 + 6) \\
&= \$0.37 \text{ per ton A.C. mix}
\end{aligned}$$

(C) Reinforcing Steel

If, X = Adjustment for reinforcing steel,

P = Weight of reinforcing steel, expressed in hundredweight,

Q = Increase or decrease in the price of reinforcing steel in dollars per hundredweight,

Then, X = QP

Example: Posted price of grade 40 reinforcing steel increases from \$14.00 to \$15.00 per cwt and the weight of the grade 40 reinforcing steel is 80,000 pounds, then the adjustment shall be:

$$\begin{aligned}
\$15.00 - \$14.00 &= \$1.00 \\
(\$14.00) \times (5\%) &= \$0.70 \\
\$1.00 - \$0.70 &= \$0.30 \\
X &= (\$0.30) \times (800) \\
&= \$240 \text{ for grade 40 reinforcing steel}
\end{aligned}$$

The contractor shall submit to the Department original receipted bills covering the short supply material used on the project as soon as practicable after shipments are completed. The bills shall be accompanied by a tabulation on which the bills are listed in chronological order showing for each bill the quantity, the date shipped from the supplier's terminal and the price per unit at the place indicated in the posted price (reflecting any deductions for quantity shipments). These bills shall be subject to audit verification.

The Department reserves the right to alter the quantities of material to be furnished in accordance with the provisions of SP Article IV, Paragraph. 4.2.

The Department also reserves the right, during construction, to decrease or increase the scope of work, because of limitations of funds, with no adjustment in unit prices other than that specified hereinabove.

Price increases as specified hereinabove shall not exceed the remaining unpaid balance in the contract at any point in time without prior review and approval from the Engineer or designated representative.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

FORMS


SURETY BID BOND

Bond No. _____

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full name or legal title of offeror)

as Offeror, hereinafter called the Principal, and

(name of bonding company)

as Surety, hereinafter called Surety, a corporation authorized to transact business as a Surety in the State of Hawaii, are held and firmly bound unto

(State/county entity)

as Owner, hereinafter called Owner, in the penal sum of

(required amount of bid security)

Dollars (\$ _____), lawful money of the United States of America, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS:

The Principal has submitted an offer for

(project by number and brief description)

NOW, THEREFORE:

The condition of this obligation is such that if the Owner shall reject said offer, or in the alternate, accept the offer of the Principal and the Principal shall enter into a contract with the Owner in accordance with the terms of such offer, and give such bond or bonds as may be specified in the solicitation or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof as specified in the solicitation then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed this _____ day of _____, _____

Name of Principal (Offeror) (Seal)

Signature

Title

Name of Surety (Seal)

Signature

Title

PERFORMANCE BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a
surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____ DOLLARS (\$ _____), to which payment Principal and Surety bind themselves,
their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by
these presents.

WHEREAS, the above-bound Principal has signed a Contract with Obligee on
_____, for the following project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part
hereof.

NOW THEREFORE, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in
strict accordance with the terms of the Contract as said Contract may be modified or amended
from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Oblige 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 Oblige in satisfaction of the surety's performance obligation on this bond.

Signed this _____ day of _____, _____.

(Seal)

Name of Principal (Contractor)

*

Signature

Title

(Seal)

Name of Surety

*

Signature

Title

***ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC**

PERFORMANCE BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

_____ (State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

_____ DOLLARS \$ _____),
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal Tender;**
- Share Certificate** unconditionally assigned to or made payable at sight to _____
Description: _____;
- Certificate of Deposit**, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Cashier's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Teller's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Treasurer's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Official Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Certified Check** No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The Condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Obligee, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed and sealed this _____ day of _____, _____.

(Seal) _____

Name of Contractor

Signature*

Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

LABOR AND MATERIAL PAYMENT BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Oblige, in the amount of _____

_____ Dollars (\$_____), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above-bound Principal has signed Contract with the Oblige on _____ for the following project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this _____ day of _____, _____.

(Seal)

Name of Principal (Contractor)

*

Signature

Title

(Seal)

Name of Surety

*

Signature

Title

***ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC**

LABOR AND MATERIAL PAYMENT BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto _____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount
_____ DOLLARS (\$ _____)
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal Tender;
- Share Certificate unconditionally assigned to or made payable at sight to _____
Description: _____
- Certificate of Deposit, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Cashier's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Teller's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Treasurer's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Official Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Certified Check No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

AND IT IS HEREBY STIPULATED AND AGREED that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payments of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond..

Signed this _____ day of _____, _____.

(Seal) _____

Name of Contractor

Signature*

Title

ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

CHAPTER 104, HRS COMPLIANCE CERTIFICATE

The undersigned bidder does hereby certify to the following:

1. Individuals engaged in the performance of the contract on the job site shall be paid:

A. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and

B. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day.

2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

DATED at Honolulu, Hawaii, this _____ day of _____.

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: _____

**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.

- 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 Statutes §103D-702.
3. Conflict with Federal Law: This section shall not apply if the application of this section is in conflict with any federal law, or if the application of this section will disqualify the State from receiving Federal funds or aid.

**CERTIFICATION OF COMPLIANCE
FOR
EMPLOYMENT OF STATE RESIDENTS
HRS CHAPTER 103B, AS AMENDED BY ACT 192, SLH 2011**

Project Title: _____

Agency Project No: _____

Contract No.: _____

As required by Hawai'i Revised Statutes Chapter 103B, 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.

Doc. Date: _____ # of Pages _____ 1st Circuit

Notary Name: _____

Doc. Description: _____

Notary Public, 1st Circuit, State of Hawai'i
My commission expires: _____

Notary Signature

Date

NOTARY CERTIFICATION