

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

SPECIAL PROVISIONS, SPECIFICATIONS,
AND PROPOSAL FOR
JRF ARFF STATION RENOVATIONS
KALAELOA AIRPORT
KAPOLEI, OAHU, HAWAII

STATE PROJECT NO. CO4420-33

2024

NOTICE TO BIDDERS
Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for **JRF ARFF STATION RENOVATIONS, KALAELOA AIRPORT, KAPOLEI, OAHU, HAWAII, PROJECT NO. CO4420-33**, will begin as of the HiePRO Release Date. Bidders shall register and submit complete bids through HiePRO only. Refer to the following HiePRO link for important information on Vendor Registration:
<https://hiepro.ehawaii.gov/welcome.html>.

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

HiePRO OFFER DUE DATE & TIME is October 4, 2024, at 2:00 p.m., Hawaii Standard Time (HST). **Bidders shall submit and upload the complete proposal to HiePRO prior to the offer due date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HiePRO. Bidders shall not include confidential and/or proprietary documents as part of their proposal. The record of each bidder and their respective proposal shall be open to public inspection. FAILURE TO UPLOAD THE PROPOSAL TO HiePRO SHALL BE GROUNDS FOR REJECTION.**

The scope of work consists of Aircraft Rescue and Fire Fighting (ARFF) Station Renovations at Kalaeloa Airport. Renovations include the hallway, dining area, kitchen, pantry, watch/alarm room, electrical room, men's and family restrooms, and apparatus and maintenance bay. The estimated cost of construction is between \$1,000,000.00 and \$1,500,000.00.

To be eligible to bid, bidders must possess a valid State of Hawaii General Building "B" License **at the time of bidding.**

The Hawaii Department of Transportation, Air and Water Transportation Facilities

Division, 2016 GENERAL PROVISIONS FOR CONSTRUCTION PROJECTS, applicable to this project are available on the internet at: <http://hidot.hawaii.gov/administration/con/>.

A pre-bid conference is scheduled for September 18, 2024, at 2:00 p.m., at the Kalaeloa Airport ARFF Station at Building 116 Midway Street, Kapolei, Hawaii 96707. All prospective bidders and/or their respective representatives are encouraged to attend, however, attendance is not mandatory. Persons needing special accommodations at the pre-bid conference due to a disability may contact Benton Ho, Project Manager, by phone at (808) 838- 8804, or by email at benton.ho@hawaii.gov. All information presented at the pre-bid conference shall be provided for clarification and information only. Any amendments to the solicitation shall be made by formal addendum and posted in HlePRO.

All Request for Information (RFI) questions and Substitution Requests shall be submitted in HlePRO **no later than September 20, 2024, at 2:00 p.m., HST**. RFI questions received after the stated deadline shall not be addressed. Substitution Requests received after the stated deadline shall not be considered. Verbal RFI(s) shall not receive a response. All responses to RFI questions shall be provided for clarification and information only and issued by formal addendum. Any amendments to the solicitation shall be made by formal addendum and posted in HlePRO.

If there is a conflict between the solicitation and information stated in the pre-bid conference, the meeting minutes and/or the responses to RFI questions, the solicitation shall govern and control, unless as amended by formal addendum.

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

Employment of State Residents on Construction Procurement Contracts. Compliance with HRS § 103B-3 is a requirement for this project whereby a minimum of 80 percent of the

bidder's work force on this project shall consist of Hawaii residents.

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

Protests. Any protest of this solicitation shall be submitted in writing to the Director of Transportation, in accordance with HRS § 103D-701 and Hawaii Administrative Rules § 3-126.

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

The U.S. Department of Transportation Regulation entitled "Nondiscrimination in Federally Assisted Programs of the U.S. Department of Transportation", Title 49, Code of Federal Regulations (CFR), Part 21, is applicable to this project. Bidders are hereby notified that the Department of Transportation 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 Benton Ho, Project Manager, by phone at (808) 838-8804, or by email at benton.ho@hawaii.gov.

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



CURT T. OTAGURO
Deputy Director of Transportation for Airports

HIePRO RELEASE DATE: September 4, 2024

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INSTRUCTIONS FOR CONTRACTOR'S LICENSING

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

SPECIAL PROVISIONS

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 (HlePRO) - 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 HlePRO for the solicitation and also posted as a question in HlePRO under the question/answer tab referencing the email with the request. The request must be posted in HlePRO no later than fourteen (14) calendar days before the bid opening date.

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

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

2.8 PREPARATION AND DELIVERY OF BID is amended as follows:

Last Paragraph (line 189 to 192) shall be replaced with the following:

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

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

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

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

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

- (1) A deposit of legal tender;
- (2) A valid surety bid bond, underwritten by a company licensed to issue bonds in the State of Hawaii; or
- (3) A certificate of deposit; credit union share certificate; or cashier’s, treasurer’s, teller’s, or official check drawn by or a certified check accepted by a bank, savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA) and payable at sight or unconditionally assigned to the Department. These instruments may be utilized only to a maximum of one hundred thousand dollars (\$100,000.00). If the required amount totals over one hundred thousand dollars (\$100,000.00), more than one instrument not exceeding one hundred thousand dollars (\$100,000.00) each and issued by different financial institutions shall be accepted.

“If bidder elects options (1) or (3) above for its bid security, said bid security shall be in its original form and shall be submitted before the bid deadline to the Contract Office, Department of Transportation, Aliiaimoku Hale, 869 Punchbowl Street, Room 105, Honolulu, Hawaii 96813. Original surety bid bonds do not need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be included with its bid submitted and uploaded to HlePRO.”

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

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

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

4.12 UTILITIES AND SERVICES is amended as follows:

Add the following after the last paragraph:

“(e)Repairs and Outages.

- (1) The Contractor shall have available on 24-hour call sufficient specialty contractors, such as electrical and plumbing contractors, to repair any damage to existing facilities that might occur as a result of construction operations regardless of when the damage might occur.
- (2) Outage: Written requests for power outage, communication changes, and water and sewer connection outages shall be submitted to the Engineer at least seven (7) days in advance or as specified in other sections of these specifications. Outages will be restricted to non-peak operational hours between midnight and 6:00 a.m.”

5.16 SUBCONTRACTING is amended as follows:

Add the following after the last paragraph:

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

Garage door and window shutters (C-5a)
Electrical (C-13)
Fire and burglar alarm (C-15a)
Asbestos (C-19)
Fire protection (C-20)
Flooring (C-21)
Painting and decorating (C-33)
Plumbing (C-37)
Structural steel (C-48)
Tile (C-51)
Waterproofing (C-55)”

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 77

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

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

an area designated by the Engineer. Under no condition shall equipment be parked or material stored within the hazardous areas.

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

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

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

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

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

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

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

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

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

The Contractor shall notify representatives of the owner, agencies, and other affected organizations at least 48 hours prior to working in any area containing the facilities of these organizations.

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

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

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

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

"A. Motor Vehicles in Airport Operation Area

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

B. Motor Vehicle Access Permit

Each motor vehicle operated in the AOA is required to:

1. Meet all State licensing registration and safety requirements and be specifically licensed for operation in the AOA.
2. Meet all insurance requirements.
3. Be restricted to operation by those persons qualified to drive the vehicle and in possession of a current Ramp Driver's License and applicable Motor Vehicle Operator's License.

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

1. Licensed Vehicles

As a condition for authorization to enter the AOA, the Contractor shall provide evidence of vehicle liability insurance in the form of a Certificate of Insurance issued by an authorized insurance carrier.

Automobile Liability and general Liability (combined single limit, Bodily Injury and Property Damage, per occurrence) shall be required in the applicable minimum limits specified below:

a. Daniel K. Inouye International Airport

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

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

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

b. Other Airports

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

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

2. Unlicensed Vehicles

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

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

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

b. All other Airports

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

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

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

D. Operator's Permit

1. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Airport Motor Vehicle operator's

permit issued by the State of Hawaii, Department of Transportation, Airports .

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

E. Authorized Vehicles

1. Only vehicles considered operationally safe and necessary for the performance of this contract may be allowed to operate in the AOA.
2. All motor vehicles must be painted in such a manner so as to be easily identifiable and must carry the Contractor's name on each side. These signs may be of a temporary nature applied to the side windows or doors.

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

3. The Contractor's operations on, over, across, and/or immediately adjacent to any runway and/or taxiway at a towered airport shall require the use of two-way radio communication. The Contractor shall obtain the necessary equipment at his own expense.
4. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Motor Vehicle Operator's Permit issued by the Airport Manager.
 - a. The Motor Vehicle Operator's Permit will be issued only to persons who apply through the Airport Security Section and pass a written exam covering those portions of the Airport Rules and Regulations relating to the operation of vehicles in the AOA.
 - b. Permits issued may be suspended or revoked for cause at any time by the Airports .

F. Airport Operation Area Construction Pass

1. Issuance of Airport Operation Area (AOA) Construction Passes shall be limited to contractors, subcontractors, companies, organizations, individuals engaged in authorized and approved construction activity which requires a continuing need for entry into the AOA or Airfield Movement Areas. Request letters for such passes must be made to the Airport District Manager's Office in accordance with the Contractors Training Guide or applicable District requirements.
2. As a condition for security area clearance, applicants must comply with Transportation Security Regulation 1542 which requires a ten-year background Criminal History Records Check for those individuals employed under this contract.

G. Access to Movement Areas

1. Movement areas shall mean all of the runways and taxiways of the Airport which are utilized for taxiing, takeoff, and landing of aircraft.
 - a. Any vehicle which requires access to the movement area shall be equipped with operational radio equipment capable of positive two-way contact with Tower/Ground Control.
 - b. Operators of vehicles in movement areas must possess knowledge and familiarity with restricted and airfield movement areas, operational rules, regulations, and procedures, or be under direct escort by individuals meeting all of the above requirements.
2. Vehicle Operations on Movement Areas
 - a. No vehicle shall proceed across any runway unless specifically cleared by Tower/Ground Control.
 - b. The operator of a vehicle in the movement area shall not leave his vehicle unless continuous radio contact is maintained with the Tower/ Ground Control while he is away from his vehicle.
 - c. Any vehicle proceeding onto the movement area between the hours of sunset and sunrise shall be equipped with an overhead flashing light which is visible for one (1) mile, unless such vehicle is being escorted by another vehicle so equipped.
 - d. All vehicles operated on the movement area between sunrise and sunset except those being escorted, shall operate an overhead amber or red flashing beacon visible for at least one (1) mile; or display a flag at least three (3) feet square with orange and white checkered squares of not less than one (1) foot on each side.

H. Runway and Taxiway Closure

1. Requests for runway or taxiway closures, or for any work which affect operational conditions at the airport must be made in writing through the Airport Engineering Branch.
2. Temporarily closed runways require placement of yellow "X" markings (constructed of material such as fabric or plywood or other acceptable material) on top of the runway identification numerals at both ends of the closed runway.
3. Taxiway closures require placement of barricades with alternate orange and white markings at each end of the closed taxiway segment. Barricades must be supplemented with flashing red lights. The intensity of the lights and spacing for barricades, and lights must adequately define and delineate the hazardous area.

I. Gate Guards Furnished by Contractors

1. If a contractor is permitted by the airport to maintain operational control of an AOA Access Gate, entry through such gate shall be controlled by the posting of a gate guard.
 - a. Written instruction will be provided, outlining the guard's duties to enforce those requirements and provisions prescribed by the airport's security program to include all personnel and vehicle entry and access requirements.
 - b. Procedures will be established to identify the actions which will be undertaken by the guard in calling for assistance.
 - c. An approved emergency communications procedure will be established.

J. Compliance

1. The contractor shall comply with all regulations and rules governing the Air Operations Areas during construction, as specified in the following or later versions:
 - a. Hawaii Revised Statutes, Title 19, Administrative Rules for Public Airports.
 - b. Federal Aviation Administration Advisory Circular AC 150/5340 1J
 - c. Marking of Paved Areas on Airport; AC 150/5370-2E, Operational Safety on Airports During Constructions.

K. Enforcement Authorization

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

L. Right of Rejection or Revocation

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

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

- END OF SECTION -

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HONOLULU, HAWAII

SPECIFICATIONS

PART I

GENERAL PROVISIONS

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HONOLULU, HAWAII

SPECIFICATIONS

PART II

TECHNICAL PROVISIONS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010 - DESCRIPTION OF WORK

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Description of Work: Renovation of the ARFF Station at the Kalaeloa Airport, Kapolei, Oahu, Hawaii.

B. Section includes:

1. Provision for field offices/storage space
2. Location of the work
3. Hours of work
4. Safety
5. Operation of airport facilities during construction
6. Construction stakes, lines and grades.
7. Special project requirements

1.04 PROVISIONS FOR FIELD OFFICE/STORAGE SPACE

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

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

1.05 LOCATION OF THE WORK

- A. The work to be performed under this contract is located at the (ARFF) Station 3 at the Kalaeloa Airport, Kapolei, Hawaii.
- B. Conditions:
 - 1. The Main Terminal and airport roadways shall remain operational at all times. Any damages to existing areas caused by the Contractor shall be repaired by the Contractor at no cost to the State.
 - 2. Upon execution of the contract, the Contractor, at their cost, shall obtain all permits required for this project.

1.06 HOURS OF WORK

- A. Workhours shall be Monday to Friday between 7:00 am and 6:00 pm unless otherwise approved. Work may be performed at the construction site without considerable disruption to airport operations or other adjacent tenants. Any ground floor hallway or space blockages must be limited to 4 hours while sealing penetrations in those locations.

Submit a proposed construction schedule to Engineer for review and approval within 14 calendar days prior to start of work. The Contractor shall coordinate their schedule with the Engineer if rescheduling of work or intermittent work is required, such work shall be performed at no extra cost to the State. If the Contractor elects to work overtime, compensation for State employees and for construction management consultant as authorized by the State shall be the Contractor's obligation to pay in accordance with Section 7.6 – "Overtime and Night Payment for State Inspection Services" of the General Provisions of Construction Projects (2016).

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

1.07 SAFETY

- A. The Contractor shall take the necessary precautions to protect his workers and other personnel from injuries. The rules and regulations promulgated by the Occupational Safety and Health Acts are applicable and made a part of these specifications.
- B. Barricades and warning signs shall be erected by the Contractor in the work area to properly protect all personnel in the area.

- C. During the progress of the work debris, empty crates, waste, material drippings, etc., shall be removed by the Contractor at the end of each work day, and the work area shall be left clean and orderly.
- D. Contractor shall take the necessary fall protection precautions for safe ladder and/or life operation and use.
- E. Contractor may need to supply additional lighting such as headlamps or flashlights to properly see some penetrations.

1.07 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. Contractor shall inspect and scan all existing surfaces and concrete structures prior to coring, cutting, or otherwise modifying them. Contractor shall notify Engineer if scanning shows that following the plans will result in damage to utilities or structural reinforcement. If relocation of concrete modifications called for in the plans is feasible to complete work, contractor shall propose such relocation to Engineer for approval before proceeding.
- D. Outages for water, power, communications, air conditioning or any other utility, if necessary, shall be kept to a minimum and scheduled for off-peak hours, generally from 12:00 a.m. to 6:00 a.m. The Contractor shall submit written requests to the Engineer for such outages no later than fourteen (14) calendar days in advance. The request shall include a description of work and the duration of the outage. The Contractor shall not proceed with such outages until written approval is received from the State.

1.10 SPECIAL PROJECT REQUIREMENTS

- A. Upon receipt of the Contract, the Contractor shall process and return the Contract to the State' Contract Office within five (5) calendar days.
- B. The State intends to issue the Notice to Proceed for the Project to the Contractor within 35 calendar days after bid opening. The Contractor shall be able to commence work on this date or as soon as practicable.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. All work specified in the contract plans and specifications shall be paid for at the Contract LUMP SUM prices for Bid Item 01010.1 except for work specified as part of other LUMP SUM pay items. The Contract Price shall be full compensation for all materials, labor, tools, equipment, and all other incidentals necessary to complete the work.

- B. Work under this Section will not be measured for payment but will be paid for at the contract LUMP SUM PRICE for item 01010.1 for the “JRF ARFF Station Renovations.”

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01010.1	JRF ARFF Station Renovations	LUMP SUM (LS)

END OF SECTION

SECTION 01210 - ALLOWANCES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. 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.

1.03 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.

1.04 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.

1.05 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.

1.06 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to the State, after installation has been completed and accepted.
 1. If requested by the Contracting Officer, prepare unused material for storage by State when it is not economically practical to return the material for credit. If directed by the Contracting Officer, deliver unused material to State's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

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

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. The allowances itemized below are estimates and the amount shall not exceed the maximum amount shown in the proposal schedule.
- B. Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01210.1	Unforeseen Conditions	Allowance (ALLOW)
01210.2	Security Measures	Allowance (ALLOW)

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

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

1.03 DETAILED CONSTRUCTION SCHEDULE

- A. The Contractor shall submit a detailed construction schedule to the Engineer for review, no later than thirty (30) calendar days after execution of the Contract. At the discretion of the Project Manager, the number of copies to be submitted may differ from that specified in this Section. 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 fifteen (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 thirty (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 two (2) 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 thirty (30) calendar days after execution of the Contract.
- B. Format and Content: Use 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
- A. The Contractor shall submit the following items prior to or at the pre-construction meeting or unless otherwise noted:
1. Name, residence phone number, addresses and scope of authority for the following persons:
 - a. Superintendent
 - b. Contractor's authorized representative to sign documents
 - c. Two (2) additional persons who can be contacted during non-working hours for emergencies.
 - d. Field Office location and phone numbers (cellular, pager, fax, etc.)
 2. Name of Safety Officer
 3. Notice of Materials to be furnished
 4. Three (3) copies each of Certificates of Insurance. The State of Hawaii shall be named as additionally insured. If canceled, thirty (30) days written notice to the State of Hawaii must be

- given. If certificates are not correct, work cannot proceed.
5. Three (3) copies each Insurance and Tax Rates.
 6. 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.
 7. List of equipment to be used on the job. Designate maximum working height and capacity of equipment involved and their respective rental rates.
 8. 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." Revisions to the drawings may be made, and when deemed necessary by the Engineer during progress of the work, additional detailed drawings will be furnished to the Contractor. These additional drawings will be considered as forming part of the Contract.
- C. Items are to be reviewed prior to commencing fabrication or delivery of material to the job site.
- D. 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.
- E. The Contractor shall furnish working drawings for structures which shall consist of the

detailed plans required to control the work. The working drawings to be furnished by the Contractor shall include, but are not limited to, stress sheets, anchor bolt layouts, shop details, erection plans, cribs, cofferdams, falsework, centering, form work, and other temporary work and methods of construction.

- F. The Contractor shall be responsible for the accuracy of dimensions and details, and for agreement of dimensions and details. The Contractor shall also be responsible for the agreement and conformity of the working drawings with the plans and specifications.
- G. All working drawings shall be accepted by the Engineer prior to implementation on the project and such acceptance shall not operate to relieve the Contractor of responsibility under the Contract for the successful completion of the work.

1.07 MAINTENANCE DATA AND OPERATING INSTRUCTIONS

- A. 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.
- B. The Contractor shall submit a draft to the Engineer for review prior to the submission of the final copies.
- C. The manual shall include separate sections describing each equipment item. 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.
- D. For each equipment item, 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 piece of equipment.
- E. Include a separate section on warranty information on all products and equipment. Provide this information in a tabular format with a listing of all products and equipments with warranty start and completion dates for each item. Include separate sections on all approved submittals, test reports, certifications, etc.
- G. All information shall be arranged in a logical, orderly sequence. Manuals submitted by the manufacturer will not be accepted.

1.08 TEST REPORTS

- A. 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:

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 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 relate 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 with 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

- A. As-built drawings shall conform to the requirements of Section 5.8 - "Coordination Between the Contractor and the State" of the General Provisions and the following requirements:
- B. The Contractor shall maintain at the job site one (1) copy of the specifications, addenda, approved shop drawings, change orders and other modifications in good order and marked to record all changes made during construction.
- C. The Contractor shall maintain on the job site two (2) sets 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.
- D. Actual location of work shall be clearly recorded as the work progresses including all changes to the contract and equipment size and type. Drawings shall be available at the site at all times for inspection.
- E. The Contractor at his own expense shall incorporate all field changes, Post Construction Document (PCD) changes, etc. in a clearly legible manner utilizing the symbols of the Contract drawings onto the red-line contract drawings. All underground stubouts shall be dimensionally located from the building structure.
- F. The Contractor shall be responsible for the accuracy of dimensions and details, and for the agreement of dimensions and details. The Contractor shall also be responsible for the agreement and conformity of the working drawings with the plans and specifications.
- G. 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.
- H. 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.

- I. 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

- A. Guarantee periods shall start at time of acceptance in writing by the State.
- B. All guarantees and warranties shall be made out to the "State of Hawaii." Supplier and subcontractor guarantees shall be co-signed by the Contractor.
- C. 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.
- D. Organize guarantees and warranties into an orderly sequence based on the Table of Contents of the Project Manual.
 1. Bind guarantees and warranties in heavy-duty, 3-ring, vinyl covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 x 11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate guaranty/warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of installer.
 3. Identify each binder on the front and spine with the typed or printed title "GUARANTEE AND WARRANTIES", project name, and name of Contractor.

Additional Copies: Provide additional copies of each guaranty and warranty to include in each operation and maintenance 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 bid prices for the various items of work in this project.

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

SUMMARY

A. Section Includes:

1. Coordination and project conditions.
2. Pre-demolition meetings.
3. Pre-testing meetings.
4. Pre-installation meetings.
5. Cutting and patching.

1.02 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, electrical equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs. In finished areas, conceal pipes, ducts, and wiring within construction.
- D. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

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

1.03 PRE-DEMOLITION MEETINGS

- A. When required in individual specification sections, convene pre-demolition meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review existing conditions.
 - 2. Determine extent and nature of work and means, methods, techniques, sequences and procedures to be used.
 - 3. Record existing conditions by taking photos of important project elements.
 - 4. Review coordination with related work.
- E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

1.04 PRE-TESTING MEETINGS

- A. When required in individual specification sections, convene pre-testing meetings at Project site prior to commencing work of specific section for field testing.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.

- D. Prepare agenda and preside at meeting:
 - 1. Review existing conditions of items to be tested.
 - 2. Determine extent and nature of work and means, methods, techniques, sequences and procedures to be used.
 - 3. Record existing conditions by taking photos of important project elements.
- E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

1.05 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section for field testing.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Engineer seven (7) consecutive calendar days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Engineer, and those affected by decisions made.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
- C. Execute cutting, fittings, and patching to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of uninstalled Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- I. Identify hazardous substances or conditions exposed during the Work to Engineer to decision or remedy.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01330 - SUBMITTAL PROCEDURES

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 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.03 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Comply with requirements in or the relevant technical section(s) as applicable. Submit list of submittals and time requirements for scheduled performance of related construction activities.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 30 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.

- D. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- E. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - 1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review, received from sources other than Contractor.
 - 1. Transmittal Form: Use CSI Form 12.1A or equal approved by the State Project Manager
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Use only final submittals with mark indicating approval by Engineer.

1.04 CONTRACTOR'S USE OF ENGINEER'S CAD FILES

- A. General: At Contractor's written request, copies of the CAD files will be provided to the Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 1. CAD files shall only be used for this project.

PART 2 - PRODUCTS

2.01 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data is not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Compliance with specified referenced standards.
 - f. Testing by recognized testing agency.
 4. Number of Copies: Submit three copies of Product Data, unless otherwise indicated. Engineer will return two copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Shopwork manufacturing instructions.
 - f. Templates and patterns.
 - g. Schedules.
 - h. Notation of coordination requirements.
 - i. Notation of dimensions established by field measurement.
 - j. Relationship to adjoining construction clearly indicated.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit two opaque (bond) copies of each submittal. Engineer will return one copy.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
- E. Submittals Schedule: Comply with requirements specified in the relevant technical section(s) as applicable.
- F. Application for Payment: Comply with requirements specified in the relevant technical section(s) as applicable.
- G. Schedule of Values: Comply with requirements specified in the relevant technical section(s) as applicable.

2.02 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Engineer will not return copies.
 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 3. Test and Inspection Reports: Comply with requirements specified in the relevant technical section(s) as applicable.
- B. Contractor's Construction Schedule: Comply with requirements specified in relevant technical section(s).

- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names, and addresses of Engineers and owners, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- L. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- M. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in the relevant technical section(s) as applicable.

- O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturers.
- Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
- R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- S. Construction Photographs: Comply with requirements specified in the relevant technical section(s) as applicable.
- T. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Engineer.
 - 1. Engineer will not review submittals that include MSDSs and will return them for resubmittal.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.'
- C. Informational Submittals: Engineer will review each submittal and will not return it or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured or paid for separately but shall be considered incidental to and included in the price bid for various items of work in this project.

END OF SECTION

SECTION 01400 - CONTRACTOR QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 CONTRACTOR QUALITY CONTROL PROGRAM

A. GENERAL

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

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

1. Adequately provide for the production of acceptable quality materials.
2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.
3. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

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

B. DESCRIPTION OF PROGRAM

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

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

2. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document which shall be reviewed and approved by the Engineer and State Project Manager prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review no later than thirty (30) calendar days after execution of the Contract.
3. The Quality Control Program shall be organized to address, as a minimum, the following items:
 - a. Quality control organization;
 - b. Submittals schedule;
 - c. Inspection requirements;
 - d. Quality control testing plan;
 - e. Documentation of quality control activities; and
 - f. Requirements for corrective action when quality control and/or acceptance criteria are not met.
 - g. A listing of the definable features of work for the project.

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

C. QUALITY CONTROL ORGANIZATION

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

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

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

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

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

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

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

- a. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by Section 1.02E.
 - b. Performance of all quality control tests as required by the technical specifications and Section 1.02F.
3. Staffing. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

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

D. SUBMITTALS SCHEDULE

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

and shall include:

1. Specification item number;
2. Item description;
3. Description of submittal;
4. Specification paragraph requiring submittal; and
5. Scheduled date of submittal.

E. INSPECTION REQUIREMENTS

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

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

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

F. QUALITY CONTROL TESTING PLAN

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

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

1. Specification item number;
2. Item description (e.g., concrete cylinder test);
3. Test type (e.g., concrete compressive strength);
4. Test standard (e.g., ASTM or AASHTO test number, as applicable);

5. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated);
6. Responsibility (e.g., plant technician, independent lab); and
7. Control requirements (e.g., target, permissible deviations).

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

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

G. DOCUMENTATION

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

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

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

1. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and Subcontractor operations on a form acceptable to the Engineer and State Project Manager. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:
 - a. Technical specification item number and description and location of work performed;
 - b. A comprehensive breakdown of the work force including the number of workers and total hours for each trade.
 - c. Compliance with approved submittals;
 - d. Proper storage of materials and equipment;

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

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

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

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

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

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

H. CORRECTIVE ACTION REQUIREMENTS

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

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

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

I. SURVEILLANCE BY THE ENGINEER AND STATE PROJECT MANAGER

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

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

J. NONCOMPLIANCE

1. The Engineer or State Project Manager will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or State Project Manager or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.
2. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the Contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer or State Project Manager, the Engineer or State Project Manager may:
 - a. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors in accordance with Section 8.4 – “Character and Proficiency of Workers” of the General Provisions for Construction Projects (2016).
 - b. Order the Contractor to stop operations in accordance with Section 8.10 – “Suspension of Work” of the General Provisions for Construction Projects (2016).
 - c. Determine work performed by the Contractor during periods of noncompliance to be unacceptable and subject to inspection, removal or non-payment in accordance with Section 5.12 – “Removal of Non-Conforming and Unauthorized Work: Performance of Corrective or Remedial Work” of the General Provisions for Construction Projects (2016).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01533 - BARRICADES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 BARRICADES

- A. The Contractor shall take precaution to protect people and property from injury and damage. He shall erect barricades to delineate his work areas and provide the appropriate signing, hazard lights, and temporary paint striping per the safety plan as approved by the Engineer, to aid public and airport pedestrian and vehicular traffic around his work areas. Barricades shall be traffic cones, delineators, blinker barricades, caution tape, sawhorses, plywood barricades or other barriers as approved by the Engineer to effectively provide proper protection.
- B. The Contractor shall be responsible for his own security and protection of his property, including mobilization yard barricades.
- C. Barricades, in general, shall be neat and in good condition, as required for protection. In areas frequented by the general public, the barricades shall be visually presentable and plywood partitions shall be painted. Where dust is a problem, the Contractor shall erect floor to ceiling dust proof partitions.
- D. The Contractor shall coordinate and sequence this work with the Engineer to permit the continuing operation of the existing Airport facility. Barricades shall be removed upon the completion and acceptance of work and the premises left clean and operational.
- E. The Contractor shall be responsible for securing access into and out of the barricaded areas.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT 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 01560 – GENERAL ENVIRONMENTAL, HEALTH, & SAFETY CONTROLS

PART I – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

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

1.03 REFERENCES

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

- A. DOTA Construction Site Runoff Control Program
<http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program>
- 1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.
- B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) <https://health.hawaii.gov/heer/>
- C. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)
 - 1. Chapter 46, Community Noise Control.
 - 2. Chapter 59, Ambient Air Quality.
 - 3. Chapter 60.1, Air Pollution Control.
 - 4. Chapters 260.1, 261.1, 262.1, 263.1, 264.1, 265.1, 266.1, 268.1, 270.1, 271.1, 273.1, and 279.1, Hazardous Waste Management.
 - 5. Chapter 451, State Contingency Plan.

- 6. Chapter 501, Asbestos Requirements.
- D. CFR Title 40, Protection of the Environment, Chapter I, Environmental Protection Agency.
- E. CFR Title 42, Public Health, Chapter I, Public Health Service, Department of Health and Human Services.

1.04 SUBMITTALS

- A. The Contractor shall submit the following items as required:
 - 1. Individual Wastewater System (IWS) Final Report: For projects involving the construction of an individual wastewater system, an IWS Final Report is required to be submitted to the DOTA Engineering Branch, Environmental Section (AIR-EE) for approval, prior to submitting to DOH Wastewater Branch and prior to project closeout.
 - 2. Underground Injection Control (UIC) Well Final Report: For new drainage well construction and existing drainage well modification, a UIC Well Final Report is required to be submitted to AIR-EE for review and approval, prior to submitting to DOH Safe Drinking Water Branch (SDWB), and prior to project closeout. The Final Report shall also be submitted within the deadline specified on the UIC Approval to Construct. If a project involves abandoning an existing drainage well, written instructions shall be obtained from DOH SDWB and a copy provided to AIR-EE prior to backfilling the demolished well. All supporting documentation requested by DOH post demolition work shall be completed and provided to AIR-EE for review prior to submitting to DOH SDWB.
 - 3. AST (Flammable/Combustible Liquid) Tank Installation: Provide signed record of Final Inspection issued by County Fire Department.
 - 4. Waste Manifests: If a project will generate hazardous waste, the Contractor shall prepare waste manifests in accordance with HAR 11-262 and provide records to AIR-EE.
- B. The Contractor shall comply with all applicable regulations and maintain records of permits, licenses, certificates, and other environmental regulatory requirement correspondence. Submit copies of permits, licenses, certifications, inspection reports, releases, notices, receipts for fee payments, correspondence, records, and similar documents, established for compliance with environmental regulations bearing on performance of the work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 AIR POLLUTION CONTROL

- A. Emission: The Contractor shall not be allowed to operate equipment and vehicles that show excessive emissions of exhaust gases until corrective repairs or adjustments are made, as determined by the Engineer.
- B. Dust: The Contractor, for the duration of the contract, shall maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, graded areas, staging and storage areas, and all other work areas within or outside the project limits free from dust that would cause a hazard or nuisance to the work or operations of other Contractors, or to persons or property. Industry-accepted methods, that meet requirements of DOTA Construction BMP Field Manual as noted in Specification 01561 and that meet stabilization suitable for the area or materials involved.
- C. Burning on Airport property shall not be permitted.

3.02 SPILL CONTROL

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

3.03 DISPOSAL

- A. All unusable debris and waste material shall be hauled away to an appropriate local landfill. Contractor shall control dust during loading operations.
- B. Contractor shall consult with the landfill and conduct any required waste characterization to ensure that waste meets the landfill's requirements for size, type, etc.
- C. No burying of debris or waste materials, except for materials that are specifically indicated elsewhere in these specifications as suitable for backfill, shall be permitted on the project site.
- D. Contractor shall manage all construction materials, debris, and waste in a manner that prevents Foreign Object Debris (FOD) from reaching the airfield, where it could be an aircraft safety hazard.

3.04 HAZARDOUS MATERIALS CONTROL

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

3.05 OCCUPATIONAL HEALTH AND SAFETY

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

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01561 – CONSTRUCTION SITE POLLUTION CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

- A. This Section describes procedures for the proper application of management and engineering controls at State of Hawaii, Department of Transportation, Airports (DOTA) construction sites so that pollutants do not impact any storm drainage system, State water, soil, or groundwater.
- B. The Contractor shall supply all labor, materials, and equipment necessary for the management of stormwater during construction and to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.
- C. This Section also applies to construction support activities including concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas, material storage areas, excavated material disposal areas, borrow areas, waste management facilities, sanitary facilities, material storage areas, and temporary equipment fueling locations, regardless of their proximity to the Airport Property and State Right-of-Way. For areas serving multiple construction projects or operating beyond the completion of the construction project in which it supports, the Contractor shall be responsible for securing the necessary permits, clearances, and documents, and following the conditions of the permits and clearances, at no cost to the State.
- D. The Contractor shall be responsible for all subcontractors, suppliers, and vendors, and shall ensure that the means and methods of construction activities of subcontractors, suppliers, and vendors are in full compliance with this Section.
- E. The Contractor shall examine and be familiar with documents related to stormwater management at the airports and shall comply with related requirements for construction stormwater control. Should a requirement not be clearly described within the construction plans, specifications, permits and other applicable bid documents, notify the Engineer immediately for interpretation.

1.03 REFERENCES

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

- A. DOTA Construction Site Runoff Control Program
<http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program>
1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.
 2. DOTA Environmental Requirements for Construction Projects Standard Operating Procedures.
 3. DOTA Stormwater Management Plans (SWMPs) for the Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG), as applicable.
 4. DOTA Industrial SWPPPs for the HNL, OGG, and the Lihue Airport (LIH), as applicable.
- B. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)
<https://health.hawaii.gov/opppd/departement-of-health-administrative-rules-title-11/>
1. Chapter 54, Water Quality Standards
 2. Chapter 55, Water Pollution Control
 3. Chapter 451, State Contingency Plan
- C. United States (U.S.) Code of Federal Regulations (CFR), Title 40, Chapter I: Environmental Protection Agency.
- D. Hawaii Revised Statutes (HRS), Part I, Chapter 128D, "Environmental Response Law".

PART 2 – PRODUCTS

2.01 MATERIALS

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

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

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

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

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

PART 3 – EXECUTION

3.01 PRE-CONSTRUCTION REQUIREMENTS

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

- A. Water Pollution, Dust, Sediment, and Erosion Control Meeting: Schedule a water pollution, dust, sediment, and erosion control meeting with the Engineer after all documents required by AIR-EE are submitted to the Engineer and accepted in writing by AIR-EE. The meeting shall be scheduled a minimum of 14 calendar days prior to the Start Work Date. At a minimum, the meeting shall be attended by the Contractor, subcontractors whose work may provide an impact to stormwater or site environmental conditions, Engineer, AIR-EE, and any authorized representatives of the designated attendees. The meeting will discuss the sequence of work and plans and proposals for water pollution, dust, sediment, and erosion controls.
- B. Land Disturbance Calculations: The Contractor is responsible for calculating the total land disturbance for the life of the project and complying with all environmental requirements associated with the total land disturbance calculated. Disturbance of land is defined by Hawaii Department of Health as “the penetration, turning, or moving of soil or resurfacing of pavement with exposure of the base course or the exposure of bare soil or ground surface, including the land surface exposed by construction roads, baseyards, staging areas, demolition, headquarters, and parking areas. It does not include grass or weed cutting, bush or tree trimming or felling that leaves soil or ground intact. It includes ‘grubbing’ in its normal meaning of the use of equipment to knock down and push vegetation out of the way, typically uprooting vegetation and disturbing the ground surface.”

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

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

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

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

1. Conditions that develop during construction that were unforeseen during the design and pre-construction stages that could impact stormwater, soil, or groundwater.
2. Changes to the Contractor's Means and Methods of Construction that could impact stormwater, soil, or groundwater.
3. Omitted conditions that should have been allowed for in the accepted documents.
4. A SSBMP Plan measure that replaces an accepted SSBMP Plan measure that was not satisfactorily performing.
5. Revised dates of installation and/or removal of SSBMP Plan measures.

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

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

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

1. Do not begin land-disturbing activities until the CWB has issued an Individual NPDES Permit or NGPC. Conduct land-disturbing activities in accordance with the conditions of the NPDES Permit and/or NGPC.
 2. The Contractor shall submit a Notification of Start to CWB a minimum of seven calendar days before the start of construction and provide AIR-EE with a record of submittal.
 3. Before construction begins, the Contractor shall assign one of their personnel as the Duly Authorized Representative, in accordance with Section 15 of Appendix A, Chapter 1155. The Duly Authorized Representative is responsible for compliance with the NPDES Construction Permit (i.e., operations of the construction project) and shall certify, sign, and date various documents, including the SWPPP and SWPPP inspection documents.
- G. Solid Waste Disclosure: Submit the Solid Waste Disclosure Form for Construction Sites, if applicable, to the DOH Solid Waste Branch as specified on the form within 7 calendar days before the start of construction activities and provide a copy to the Engineer. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer. This shall also include documentation from any intermediary facility where solid waste is stored, handled or processed.
- H. NPDES Hydrotesting Permit: If hydrotesting activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Hydrotesting Waters Permit authorizing discharges associated with hydrotesting is required from the CWB. Do not begin hydrotesting activities until the CWB has issued an Individual NPDES Permit or NGPC for hydrotesting. Conduct Hydrotesting operations in accordance with the conditions of the NPDES Permit and/or NGPC.
- I. NPDES Dewatering Permit: If dewatering activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Dewatering Permit authorizing discharges associated with dewatering is required from the CWB. Do not begin dewatering activities until the CWB has issued an Individual NPDES Permit or NGPC for dewatering. Conduct dewatering operations in accordance with the conditions of the permit or NGPC.
- J. Construction BMP Training: All Contractor's and subcontractor's employees on the project shall complete the DOTA Construction BMP Training prior to entering the construction site and every calendar year thereafter. All Contractor and subcontractor personnel involved with construction project responsibilities shall also be trained on the site-specific BMPs that are utilized during construction and spill response. Records of completion and/or training roster sign-in sheet shall be up to date and included in the SWPPP or SSBMP Plan. Additional training required by AIR-EE shall be at no additional time or cost to the project. There are two training options:

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

[DOTA Construction BMP Training Survey:](#)

<https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-bmp-training-survey/>

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

3.02 CONSTRUCTION REQUIREMENTS

- A. Construction Start: Do not expose or disturb surface area of earth material or initiate any land-disturbing activities until submittals detailed in Subsection 01561.3.01 – Pre-construction Requirements are completed, submitted to the Engineer and accepted in writing by AIR-EE. Once installation of BMPs is allowed, a Pre-construction BMP Inspection is conducted, and all deficiencies that are noted during the inspection shall be corrected prior to any other ground disturbance.
- B. BMP Installation and Maintenance: Provide, install, maintain, monitor, repair and replace BMPs as needed to maintain efficacy. Address all inspection comments received from the Engineer, AIR-EE, and/or DOTA's designated authorized representative.
- C. Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff, and wind before the end of each work day. Coordinate and schedule the work to the maximum extent possible to minimize the amount of exposed or disturbed surface area of earth material.
- D. Install and maintain stabilized construction entrances/exits, including any wheel washes, to minimize tracking of dirt and mud onto roadways, sidewalks, and other paved areas. Restrict traffic to stabilized construction entrance areas only. Clean dirt, mud, or other material tracked onto the road, sidewalk, or other paved area by the end of the same day in which the track-out occurs. If tracking is excessive or sediment is being transported farther along the pavement or

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

- E. Maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, and all other work areas within the project limits free from dust that would cause a hazard to the work, airport operations, operations of other contractors, or to persons or property. If chemicals are used as soil stabilizers for erosion and dust control, submit the manufacturer's product data sheets of the chemicals to the Project Manager for acceptance by AIR-EE. Oil treating shall not be used. Dust screens and fabrics are not allowed to be mounted on, or to inhibit the view of, the TSA and AOA Security Fences.
- F. Cover exposed surfaces of materials completely with tarpaulin or a similar device when transporting aggregate, soil, excavated material, or other materials that may be a source of fugitive dust.
- G. Protect ditches, channels, and other drainageways leading away from cuts and fills at all times by:
 - 1. Hydromulching cuts and fills that may erode.
 - 2. Installing check dams or other silt control devices.
 - 3. Other methods acceptable to AIR-EE.
- H. Clean up and remove any pollutant that is attributed to the Contractor. Care shall be taken to ensure that no petroleum/chemical products, bituminous materials, or other deleterious substances, including debris, are allowed to fall, flow, leach, or otherwise enter the sewage systems or storm drains. Deposition of solid waste or the discharge of liquid waste, such as fuels, lubricants, bituminous waste, untreated sewage and other pollutants that may contaminate stormwater, surface waters, soil, or groundwater shall not be permitted.
- I. Disturbed Area Stabilization: Immediately initiate stabilization of exposed soil areas upon completion of land-disturbing activities for areas where disturbance has permanently or temporarily ceased on any portion of the site. Land-disturbing activities have permanently ceased when clearing and excavation within any area of the construction site that will not include permanent structures has been completed. Land-disturbing activities have temporarily ceased when clearing, grading, or excavation within any area of the site will not resume for a period of 14 or more calendar days, but such activities will resume in the future. The term "immediately" is used in this Section to define the deadline for initiating stabilization measures. "Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the land-disturbing activities have temporarily or permanently ceased.

1. After the initiation of stabilization, stabilization activities shall be completed according to the following timeline:
 - a. For projects with an NPDES Construction Permit:
 - For construction areas discharging into waters not impaired for nutrients or sediments, complete installation of stabilization measures within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.
 - For construction areas discharging into nutrient or sediment impaired waters, complete installation of stabilization measures within 7 calendar days after the temporary or permanent cessation of land-disturbing activities.
 - b. For projects without an NPDES Construction Permit, complete stabilization within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.
- J. Notice of Cessation: For projects with an NPDES Construction Permit, the Contractor shall submit a Notice of Cessation to CWB within seven calendar days after the end of the month that the project was completed and provide AIR-EE with a record of submittal.
- K. Changes to Land-disturbing Activities: The Contractor shall be responsible to prepare a new SWPPP or SSBMP Plans or amend existing SWPPP or SSBMP Plans if changes to the project or to the Contractor's activities result in land-disturbing activities additional to those previously approved:
 1. Land-disturbing activity outside of the approved limits is NOT allowed until approval and proper permits are received. Revised documents, including an updated SWPPP or SSBMP Plan, shall be submitted to and approved by AIR-EE prior to conducting additional land-disturbing activities.
 2. If coverage under an NPDES Construction Permit is needed, no activity in the additional area may occur until the additional permit coverage is granted:
 - a. If the project was already granted coverage under an NPDES Construction Permit, additional coverage shall be obtained from CWB for the additional area, either by adding the area to existing project documents, and applying for NPDES Construction Permit coverage for the entire project OR by creating new documents and obtaining separate NPDES Construction Permit coverage for the additional area.
 - b. If the new disturbed area will result in the total disturbed area

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

3.03 INSPECTIONS

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

- A. Corrective Actions: The Contractor shall be responsible for the correction of all deficiencies identified during any of the above inspections.
1. If the Contractor fails to satisfactorily address inspection deficiencies, the DOTA reserves the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor will be fully responsible for all related cost and time. The State will charge the Contractor such incurred costs plus any associated project engineering costs and will make appropriate deductions from the Contractor's progress payment. Additionally, DOTA can issue liquidated damages for deficiencies not resolved to DOTA's satisfaction and for illicit discharges or contaminant discharges to soil, groundwater, surface water, or State waters (see Appendix A).
 2. Failure to install or maintain site-specific BMP measures may result in the assessment of liquidated damages (Appendix B). Depending on the severity of the deficiencies, additional enforcement actions, such as suspension of work and/or termination of the contract (with the Contractor's Surety being fully responsible for all additional costs incurred by the State), can be conducted and assessed against the Contractor.
 3. For all citations or fines received by the DOTA for non-compliance, including non-compliance with NPDES Permit conditions, the Contractor shall reimburse the State within 30 calendar days for the full amount of outstanding cost that the State has incurred. The State may deduct incurred costs from the Contractor's progress payments; however, the Contractor shall be responsible for reimbursing the State if the costs exceed remaining payments owed to the Contractor.
 4. The Contractor shall be responsible for all citations, fines and penalties levied by DOH or EPA against the State due to the Contractor's failure to satisfactorily address site-specific BMP deficiencies and/or any Contractor's illicit discharges. The State may make the appropriate deductions from the Contractor's progress payment.; however, the Contractor shall be responsible for reimbursing the State if the costs of correction exceed remaining payments owed to the Contractor.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01561.1	Construction Site Pollution Controls	Lump Sum

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

- A. 20% of the line item price shall be paid upon the satisfactory completion of the Pre-construction BMP Inspection and associated corrective actions accepted by AIR-EE or their designated authorized representative, as described in Section 01561.3.03(A), above.
- B. 70% of the line item price shall be paid in equal monthly payments over the duration of the contract. Failure to satisfactorily apply, maintain, or modify BMP measures and devices, and/or submittals shall result in the withholding of monthly progress payments for this line item.

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

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

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

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

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

Appendix A. Liquidated Damages Schedule for Non-Compliances

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

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

Assessment of Liquidated Damages for Non-Compliance:

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

Liquidated Damages may be assessed for the following:

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

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

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

END OF SECTION

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

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

- A. This Section describes procedures for the management of known and/or unknown contaminated media (e.g., soil, sediment, groundwater, soil vapor, and building materials) and disposal and on-site reuse of either contaminated or uncontaminated soil/sediment (referred to herein as “soil”), that may be disturbed or generated during excavation or demolition activities, or other construction activities associated with this project.
- B. All soil shall be treated as potentially contaminated until it is determined otherwise.
- C. The Contractor shall supply all labor, materials, and equipment necessary for the removal, temporary storage, testing, handling, backfilling and management of soil and contaminated media to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.
- D. The Contractor shall follow the State of Hawaii, Department of Transportation, Airports (DOTA) Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (DOTA EHE-EHMP), a Construction-Environmental Hazard Management Plan (C-EHMP) Addendum, or a Site-Specific C-EHMP, whichever applies to the project.
- E. The Contractor and their Qualified Environmental Professional shall review any site-specific investigation reports (e.g., Phase II Environmental Site Assessment [ESA]) or construction management plans, etc.) to understand the conditions that may affect work performance.
- F. Qualified Environmental Professional: The Contractor shall employ a Qualified Environmental Professional (QEP) who possesses a minimum of five (5) years of experience providing environmental oversight for the management of contaminated media during construction activities, who shall assist in the preparation of the Contractor’s C-EHMP (Site-Specific or Addendum). The QEP shall be identified in the applicable EHMP document.
- G. Should the Contractor deviate from the DOTA EHE-EHMP, C-EHMP Addendum, or Site-Specific EHMP, the Contractor shall be responsible to prepare or modify any existing Hawaii Department of Health (DOH) required C-EHMP (Site-specific

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

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

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

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

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

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

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

1.03 REFERENCES

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

- A. DOTA Construction Site Runoff Control Program
<https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/>
 - 1. DOTA EHE-EHMP
 - 2. DOTA Construction Best Management Practices (BMP) Field Manual
- B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) <https://health.hawaii.gov/heer/>
 - 1. Technical Guidance Manual (TGM) for Implementation of the State Contingency Plan (including updates).
 - 2. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material.
 - 3. HEER Office Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater.
 - 4. HEER Office Construction EHMP and EHMP Addendum Template
- C. State of Hawaii Administrative Rules, Title 11, DOH
<https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/>
 - 1. Chapter 54 Water Quality Standards
 - 2. Chapter 58.1 Solid Waste Management Control
 - 3. Chapter 59 Ambient Air Quality Standards
 - 4. Chapter 11-260.1-279.1 Hazardous Waste Management: General Provisions
 - 5. Chapter 280.1 Underground Storage Tanks
 - 6. Chapter 451 State Contingency Plan
- D. The Hawaii Environmental Response Law (Hawaii Revised Statutes [HRS] Chapter 128D) and the State Contingency Plan (Hawaii Administrative Rules [HAR] Title 11, Chapters 451-1–451-24).
- E. American Petroleum Institute (API) RP 2219
<https://www.api.org/oil-and-natural-gas/health-and-safety/refinery-and-plant-safety/occupational-safety/rp-2219>
- F. United States Code of Federal Regulations (CFR), Title 29: Labor
<https://www.ecfr.gov/current/title-29>

- G. CFR, Title 40: Protection of the Environment <https://www.ecfr.gov/current/title-40>
1. Part 50, "National Primary and Secondary Ambient Air Quality Standards A".
 2. Part 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System".
 3. Part 261, "Identification and Listing of Hazardous Waste".
 4. Part 263, "Standards Applicable to Transporters of Hazardous Waste".
 5. Part 302, "Designation, Reportable Quantities, and Notification".
- H. CFR, Title 49: Transportation
<https://www.ecfr.gov/current/title-49>
1. Part 171, "General Information, Regulations, and Definitions".
 2. Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans".
- I. U.S. EPA Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), Section 107(1), exemption for cleanup of legally applied pesticide products.
<https://www.epa.gov/enforcement/superfund-enforcement-authorities>

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 GENERAL WORK PROCEDURES

- A. Prior to beginning work, the Contractor, the Contractor's Qualified Environmental Professional, and the Engineer or their representative shall review and discuss all available information pertaining to contamination or potential contamination at the work site.
- B. It should be noted that, in some cases, the contamination (e.g., soil contaminated with metals, PCBs, pesticides, PFAS, etc.) may not be identifiable through visual and/or olfactory observation, and contaminant-specific field screening techniques may need to be implemented.
- C. Potential or suspected contaminated media from separate locations or sources shall not be mixed or placed together without the approval of the Qualified Environmental Professional and AIR-EE.
- D. The removal, transfer, or handling of explosive or flammable media shall be

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

- E. Follow Decontamination regulations and procedures as necessary.
- F. Soil excavation, grading, and any disturbance of contaminated soil may cause a potential exposure to Contractor's employees and the public from the release of vapors or fugitive dust. The routes of exposure to dusts are by inhalation, ingestion, and dermal contact. The Contractor shall use engineering controls such as water spraying and wind barriers to control fugitive dust. The Contractor shall use engineering controls to mitigate the release and exposure to soil vapors.
- G. The Contractor shall test excavated soil for the presence of COPC and managed in accordance with this Section and relevant guidance and regulations.
- H. Report construction activities in areas with contaminated soil or groundwater by completing the appropriate forms in the DOTA EHE-EHMP, Appendix B.3 Construction Activities Release Response Plan. Submit the forms to the DOH Office of Hazard Evaluation and Emergency Response (HEER) Office and provide a copy of the forms to the Engineer and AIR-EE.
- I. All correspondence with DOH and other regulatory agencies must include the Engineer and AIR-EE.

3.02 PRECONSTRUCTION REQUIREMENTS

- A. Submit the following a minimum of 30 calendar days prior to beginning any ground disturbing activities, for approval by AIR-EE.
 - 1. The Contractor's revisions to the C-EHMP Addendum or Site-Specific C-EHMP completed in the design phase, or creation of a C-EHMP addendum if deviating from the DOTA EHE-EHMP, that includes, but is not limited to:
 - a. Procedures, engineering controls, and methods the Contractor will use during the excavation, soil stockpiling and segregation, temporary storage, testing, handling, treatment, backfilling, and disposal of contaminated media, work area isolation, construction barriers, dust control, decontamination, and emergency management.
 - b. Names of the Contractor's and their subcontractor's qualified personnel who will be supervising or managing contaminated

materials at the site. Include the personnel's phone number and qualifications.

- c. Name(s) of the Contractor's Qualified Environmental Professional, including their qualifications.
- d. Proposed schedule of work.
- e. Location map of temporary contaminated stockpiles and other contaminated media storage, including infrastructure such as pipes and appurtenances, if applicable.
- f. All documents required as part of the appendices to the DOTA EHE-EHMP (e.g., health and safety plan and completing the management plans in the appendices) or C-EHMP (Site-Specific or Addendum) applicable appendices (e.g., health and safety plan, construction material documents, etc.).

3.03 CONSTRUCTION REQUIREMENTS

A. Soil Excavation and Stockpiling:

1. Notify the HDOH HEER Office at least 90 calendar days prior to disturbing contaminated soil at "HEER Sites" as defined [HI DOH e-Permitting System - Notification of Construction Activities \(HEER Office\), Version 1.6 \(hawaii.gov\)](#) or most recent version available. Obtain AIR-EE's review and concurrence prior to submittal to DOH.
2. The disturbance of contaminated media shall be performed in accordance with the DOTA EHE-EHMP or the Contractor's approved C-EHMP (Site-Specific or Addendum), where applicable. The HEER Office and AIR-EE shall be immediately notified if contaminated media not previously known or anticipated is encountered. The HEER Office will determine whether additional sampling is required. The Contractor shall provide a location map with Global Positioning System (GPS) coordinates and approximate depth below ground surface at which contaminated media were encountered to the Engineer and AIR-EE.
3. Any soil stockpile shall not exceed 100 cubic yards unless approved in the applicable C-EHMP document. If deviating from the plan, approval from DOH is required. Soils placed in watertight containers shall be covered with plastic sheeting or positioned under a roof when not in active use. Soil stockpiles and containers shall be located at least 50 feet from drainage features, surface waters, and stormwater drainage paths.
4. Any liquid-phase oil or free product associated with the contaminated soil shall be drained prior to stockpiling. If feasible, the free product should be separated from the soil, properly stored, profiled, and disposed of at an approved recycling or disposal facility.

B. Soil Testing and Disposal:

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

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

1. Offsite Soil Disposal

- a. The Contractor shall confirm the disposal facility's sampling requirements, as well as their standards for disposal.
- b. Soil that is a regulated hazardous waste shall be disposed at an approved United States Environmental Protection Agency (EPA) regulated facility.
- c. Soil that is above the Hawaii Department of Health (DOH) Tier 1 Environmental Action Levels (EAL) for unrestricted use but not a regulated hazardous waste shall be disposed of at a DOH or EPA permitted disposal facility (i.e., landfill), unless on-site reuse is approved by the Engineer and AIR-EE as described below.
- d. For any contaminated media removed from Airport property to an approved facility, the Contractor shall be responsible for its legal disposal.

2. On-site Soil Reuse

- a. The Contractor shall test all soils designated for on-site reuse. Soil that does not exceed applicable DOH Tier 1 Environmental Action Levels (EAL) for unrestricted use may be reused on-site (within construction site boundaries) with AIR-EE approval.
- b. Soil with contaminants that exceed DOH Tier 1 EALs may be approved for on-site (within construction site boundaries) reuse with written approval from AIR-EE and when the following conditions are met:

- i. Contaminated soil is reused within other contaminated areas in the proximity of its original location.
- ii. Contaminated soil is reused no less than 150 meters from the nearest surface water or surface water inlet.
- iii. Contaminated soil is reused at an elevation above the tidally influenced high water table, and at least one foot below the finish surface grade, with the most contaminated soil placed at the bottom of the excavation and cleanest soil toward the ground surface. A minimum of one foot of clean soil shall comprise the final, top backfill layer and, unless waived by DOTA and DOH, an impervious layer shall cap this top layer.
- iv. Contaminated soil is not reused within or beneath the footprint of a permanent building structure.
- v. Contaminated soil to be reused cannot contain free oil, oil sheens, oil stains, or total petroleum hydrocarbons (TPH) concentrations exceeding 5,000 milligrams per kilogram (mg/kg).

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

1. If contaminated groundwater is discovered at a previously unknown source or site on the project, the Contractor shall immediately notify the Engineer, AIR-EE, and HEER Office. Provide a location map with GPS coordinates and approximate mean sea level depth of the groundwater at which the contamination was encountered.
2. The disturbance of contaminated groundwater shall be performed in accordance with the DOTA EHE-EHMP, or C-EHMP (Site-Specific or Addendum), where applicable. The HEER Office will determine whether additional sampling is required.
3. If free product is present in the extracted groundwater, it shall be separated from the groundwater, profiled, and disposed of at an DOH-approved recycling/disposal facility. Free product shall not be moved from one excavation to another. Engineering measures shall be taken to prevent the transfer of the free product during dewatering. Water contaminated with free product shall not be discharged from a dewatering pit.
4. Releases of contaminated groundwater to surface water bodies or areas beyond the work area is prohibited.

5. Groundwater shall only be re-infiltrated in the ground with the prior approval of AIR-EE and HEER Office. Under circumstances where contaminated groundwater cannot be re-infiltrated, proper disposal at a licensed facility shall be conducted. Notification to the appropriate agencies and other pertinent information related to the discharge shall be conducted by copying the Engineer and AIR-EE on all correspondence and copies of correspondence provided upon request.
6. The Contractor is responsible for the legal disposal or discharge of groundwater that is not re-infiltrated and shall provide AIR-EE with copies of waste manifests.
7. For groundwater containerized and removed from Airport property, the Contractor shall have representative samples taken and tested in accordance with DOH guidelines, standards, and regulations. A copy of the groundwater test results shall be submitted to AIR-EE. The groundwater shall not be disposed offsite without the approval of the Engineer and a written approval from the DOH-permitted facility receiving the groundwater indicating that they acknowledge the groundwater test results and providing their approval to dispose the groundwater at their facility. Transport off-site shall occur in DOT-approved containers or mobile tanks. Documentation for the removal of containerized groundwater is required in the Close-Out Report detailed in Section 3.04.
8. With approval from AIR-EE and oversight from the QEP, small volumes of groundwater may be disposed via evaporation from a constructed (lined) pond or basin, with solid residuals properly tested and disposed in accordance with this specification.
9. Release Reporting: Encountering previously unknown contaminated soil or groundwater during subsurface construction activities is considered a release and shall be reported to the HEER Office. Copies of the DOH Release Report, DOH-issued Release Number, and email correspondence (if applicable), shall be furnished to the Engineer and AIR-EE. The Contractor shall be responsible for release reporting and AIR-EE shall be included on all correspondence with the HEER office.
10. Contractor shall comply with DOTA and HEER Office requirements. A written report shall be provided to the HEER Office. The Hawaii Hazardous Substance Written Follow-up Notification Form is provided in the DOTA EHE-EHMP, Appendix B.1. Photos shall be included to document the incident. The Contractor shall keep a copy of the completed Form B.1 and provide copies of the written report to the Engineer and AIR-EE.
11. Report all leaks and spills immediately to AIR-EE, DOTA personnel, and regulatory agencies in accordance with the airport-specific DOTA Spill Reporting Fact Sheet available via the DOTA Construction Site Runoff

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

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

- D. Underground Storage Tanks (USTs) and Utility Pipes:
1. For any UST or pipeline, whether unexpectedly discovered or a planned removal, the nature of the UST or pipeline and whether they are inactive shall be determined prior to removal. Immediately notify the Engineer, AIR-EE and HEER Office of any unexpected encounter with a UST or buried piping.
 2. The Contractor shall record field observations of the UST and pipelines. These observations shall include, but are not limited to, the following:
 - a. Location relative to fixed landmarks, including GPS coordinates. Provide a location map that shows the UST and pipelines that were encountered. The map shall include a North arrow and a scale.
 - b. Depth, diameter, length, and type of piping. Describe the condition of the pipe.
 - c. Volume and type of fuel or product, including analytical laboratory reports for the product recovered.
 - d. Beginning and ending fluid levels, if applicable.
 - e. Flow rates, if applicable.
 - f. Direction of flow.
 - g. Detailed photographs.
 - h. Detailed description of actions taken following the discovery, such as cutting, product removal, and disposal.
 3. Provide records of the field observations to the Engineer, AIR-EE, and HEER Office.
 4. The removal of all USTs must comply with HAR § 11-280.1, and all correspondence related to identification, removal, and documentation must be provided to the Engineer and AIR-EE. Only personnel knowledgeable and trained in pipeline and UST removal shall cut, drain, and remove USTs and pipelines. Hazardous conditions, particularly those created by explosive vapors and releases of product to the

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

5. All removed pipelines and USTs shall be properly disposed or recycled.
6. The Contractor shall prepare and submit a UST Removal Report, including the results of all sampling activities required under HAR § 11-280.1, to the Engineer, AIR-EE, and the DOH SHWB (UST Program).

3.04 POST-CONSTRUCTION REQUIREMENTS

- A. Submit a Project Close-out Report within 30 calendar days after work is completed. The Close-out Report shall contain the following applicable contents:
 1. A signed letter certifying that the removal and disposal of all contaminated materials were completed in accordance with the DOTA EHE-EHMP or Contractor's approved C-EHMP (Site-Specific or Addendum), and all applicable Federal, State, and local rules and regulations.
 2. All approved DOTA EHE-EHMP deviation request forms. (Reference Appendix B of the DOTA EHE-EHMP.)
 3. Any Site-Specific EHMP(s) or Long-term EHMP(s). For locations at an airport for which DOTA has already established a Site-Specific EHMP from previous projects, the DOTA's Site-Specific EHMP shall remain applicable, with any approved amendments resulting from a change in site conditions due to construction.
 4. All testing and laboratory results, including chain of custody, for any soil/sediment, groundwater, soil vapor, or other media sampling and analysis.
 5. Any results from air monitoring.
 6. Record of Field Observations, including location map with GPS coordinates, limits, and depths of any contaminated media (soil, groundwater, etc.) that were encountered at previously unknown source or sites on the project. Include a copy of the completed Hawaii Hazardous Substance Written Follow-up Notification form that was submitted to DOH and all other associated documents.

7. If contaminated soil was disposed off-site (off Airport Property), include the following:
 - a. A copy of the signed agreement from the receiving facility acknowledging the sample test results and indicating acceptance of the soil.
 - b. Documentation of the quantity of soil received by the facility.
 - c. Copies of the test results of the soil sampling.
 - d. All certifications, disposal forms, waste manifests, and summary logs.

8. If any soil was approved for reuse on-site (within the construction site boundaries), at a minimum, include the following:
 - a. Copies of the test results of the soil sampling.
 - b. The quantity of soil that was re-used on-site.
 - c. Location map of the re-used soil. Include GPS coordinates of its emplaced limits.
 - d. A brief description of the purpose of the reused soil (e.g., general fill, utility trench backfill material, etc.). Include the depth and thickness of its placement.
 - e. Photos of the site after placement of the re-use soil has been completed.

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

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

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
01562.1	Management of Contaminated Media, Soil Disposal, and Soil Reuse	Lump Sum
01562.2	Additional Management of Contaminated Media, Soil Disposal, and Soil Reuse	Allowance

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

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

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

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

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

If the Contractor fails to satisfactorily address the non-compliance item, DOTA reserves

the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor shall be fully responsible for all cost and time. The State shall charge the Contractor such incurred costs plus any associated project engineering costs and shall make appropriate deductions from the Contractor's monthly progress payment.

END OF SECTION

SECTION 01565 - SECURITY MEASURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

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

1.03 SUBMITTALS

Submit a security plan that addresses the conditions set forth in this Contract. Said plan shall contain, at a minimum, a plan of the project scope with locations of construction barricades with secured entry/exits, identification of locations requiring guards, Contractor measures to ensure security of worksite and personnel and procedures to ensure the containment of the worksite from unauthorized personnel. This package shall be submitted within 14 calendar days after execution of 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 Airports Division Supplement to the Special Provisions (ADS), Paragraph 8.17 – "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 execution of 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 for Item 01210.2 Security Measures. 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 01715 – EXISTING CONDITIONS – ASBESTOS/LEAD/HAZARDOUS MATERIAL SURVEY

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 SUMMARY

- A. This section includes the results of the State's survey for Asbestos, Lead and / or other Hazardous materials and is provided for the Contractor's information.

1.03 ASBESTOS

- A. The structure or structures to be renovated or modified under this contract were surveyed for the presence of asbestos containing building materials (ACBM), using 11-501 requirements and/or 11-502 requirements (when applicable). A copy of the initial survey report, as well as any subsequent supplemental survey report(s) if performed, are included in this Section.
 - 1. The report(s) are included, even when no ACBM was found, for the Contractor's information. Review the attached report(s) for the basis on which the negative ACBM finding was made. Suspect ACM not previously tested or identified shall be treated as ACM unless proven otherwise. Should suspect ACM that has not been previously tested be encountered within the Contract limits, the Contractor shall notify the Engineer who shall coordinate additional testing if deemed necessary. Contractor shall not test any suspect ACM previously tested or any suspect ACM not previously tested unless authorized by the Engineer.
 - 2. If there is ACBM outside of the Contract limits in which work will be performed, this ACBM shall not be disturbed in any way.
- B. If applicable, notify employees, subcontractors and all other persons engaged on the project of the presence of asbestos in the existing buildings in accordance with the requirements of Chapter 110, Article 12 110 2 (f) (1) (B) of the Occupational Safety and Health Standards, State of Hawaii.
- C. In the event that work is required in any building or buildings on the site other than the one(s) designated within this project scope, request copies of the asbestos survey report(s) for such building(s) from the Engineer. Based on the information contained in the additional survey(s), notify affected personnel per paragraph 1.02.B.

1.04 LEAD PAINT

- A. Inform employees, subcontractors and all other persons engaged in the project that lead paint is may be present in the existing building(s) and at the job site. Follow the requirements of 29 CFR 1926.62 and 29 CFR 1910.1025.

- B. Review the attached lead testing data which identify locations paint with lead was found and/or tested and the painted surface tested lead concentration was below the lead in paint analyzer level of detection. Lead testing was for design purposes only, and the results do not satisfy any of the requirements of 29 CFR 1926.62.
- C. All paint shall be considered to contain lead until proven otherwise.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SURVEY

- A. The reports listed below shall be used for informational purposes as it relates to the project limits as indicated in the Contract Plans and Specifications.
 - 1. Limited Asbestos Survey Report In Support of the DOTA Kalaeloa ARFF Station #3 Repair, 29 pages, dated April 2024, prepared by Kaimana Environmental Solutions.
 - 2. Kalaeloa 3 Year Asbestos Inspection, 19 pages, dated October 12, 2021, prepared by Environmental Science International.
- B. Contractor shall retain the services of qualified environmental professionals to review the report referenced above and verify if any additional testing beyond the ones included in the report are necessary prior to commencement of any demolition or repairs.
- C. Contractor shall identify areas for additional testing and obtain approval from the State Project Manager prior to testing of these additional areas.

Testing, management, and disposal of all materials shall be in accordance with all applicable Federal, State, and local regulations.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices under Item 01562.1.

Any additional work for areas not included in the above referenced project shall be paid under Allowance 01562.2.

END OF SECTION

**LIMITED ASBESTOS SURVEY REPORT IN SUPPORT OF THE DOTA
KALAELOA ARFF STATION #3 REPAIR
BUILDING 1755, KALAELOA AIRPORT**

Oahu, Hawaii

Prepared for:

**Oceanit Laboratories
828 Fort Street Mall, Suite 600
Honolulu, HI 96813**

Prepared by:



PO Box 11890
Honolulu, Hawaii 96828
(808) 341-3546
Info@kaimanaenv.com

April 2024

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List of Acronyms

DOH	State of Hawaii Department of Health
EPA	United States Environmental Protection Agency
KES	Kaimana Environmental Solutions LLC
US	United States

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Introduction/Background

Kaimana Environmental Solutions LLC (KES) was retained by Oceanit Laboratories to collect samples of suspect asbestos-containing materials (ACM) in areas planned for disturbance, that were not previously tested, as part of repairs at Building 1755, DOTA ARFF Station #3 at Kalaeloa Airport (Figure 1).

FIGURE 1: PROJECT LOCATION MAP



Suspect building components planned for disturbance were tested for the presence of asbestos fibers. The following sections outline the investigation methodology, results and recommendations based on the data collected.

Asbestos Survey

Regulatory Framework

The United States Environmental Protection Agency (EPA), under its National Emission Standard for Hazardous Pollutants (NESHAP) regulations (40 Code of Federal Regulations [CFR] 61 Subpart M), defines asbestos-containing materials (ACM) as those which contain greater than 1 percent (%) asbestos. NESHAP also categorizes ACM as either being a friable material, a Category I non-friable material, or a Category II non-friable material. Friable materials are defined as those that can be reduced to powder by hand pressure. Category I non-friable materials can include asphalt roofing materials, resilient floor covering excluding linoleum (e.g., floor tiles), packings, and gaskets. Category II nonfriable materials are cementitious materials, such as stucco and asbestos cement board.

NESHAP has also established requirements and recommendations for controlling emissions of asbestos fibers during the demolition of buildings containing asbestos. When a building containing asbestos is to be demolished, NESHAP requires that the friable ACM and some types of nonfriable ACM be removed before demolition of the structure. Non-friable ACM must be assessed on a case-by-case basis to determine whether the materials will become friable during the demolition activities. In addition, the State of Hawai'i Department of Health (DOH) institutes minimum requirements pertaining to the processing, handling, and disposal of ACM. These requirements also minimize the release of asbestos fibers from facilities being demolished or renovated (Hawaii Administrative Rules [HAR] 11-501).

Asbestos Sample Collection Methodology

KES provided a state certified asbestos Inspector (State of Hawaii Certification Number HIASB-3280) to conduct a survey of the suspect ACM building components at the project site planned for disturbance in accordance with DOH and EPA rules. The asbestos survey was conducted on March 28, 2024, and resulted in the collection of 24 suspect building component samples.

Sample collection followed the EPA publication, *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials* (EPA, 1985). The sampling locations were selected to characterize suspected ACM scheduled to be disturbed during planned repair activities at the Site. A representative building component section was carefully cut and placed in a labeled, resealable plastic bag for each sample. The condition of the suspect ACM was noted. The samples were logged and recorded following strict chain-of-custody procedures and submitted to Hawaii Analytical Laboratory (Hawaii Analytical) for analysis by polarized-light microscopy using the method outlined in 40 CFR 763, Attachment A to subpart F, Interim Method for the Determination of Asbestos in Bulk

Insulation Samples (EPA, 1982). Hawaii Analytical is accredited for bulk asbestos analysis through successful participation in the United States Department of Commerce, National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP).

Asbestos Survey Results

Eight of the 24 suspect ACM samples collected at the project site contained asbestos fibers above the regulatory level of 1% asbestos (gray caulk on the kitchen windows and sliding door). Therefore, special handling, air monitoring and disposal by a State licensed asbestos abatement contractor are required for disturbance of this one confirmed ACM.

Attachment 1 includes photos of the sampled building components. Attachment 2 includes a table that details the components sampled and the asbestos laboratory analytical results, and Attachment 3 includes the raw laboratory analytical results reports.

Note that asbestos has already been identified in building components at the Site (ESI, 2021). All abatement contractors should be provided with this report, as well as the ESI, 2021 report to assure all asbestos materials are identified and properly abated.

Conclusions and Recommendations

Based on the limited survey conducted, the identified ACM should be properly abated by a licensed asbestos abatement contractor prior to disturbance. No other ACM was detected on the tested building components. Therefore, no other special handling or disposal provisions are required for the tested building components planned for disturbance, unless components found to contain ACM identified in the ESI, 2021 report are planned for disturbance.

Significant Assumptions

There is a possibility that even with the proper application of proper methodologies that there may be conditions that exist at the project site that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. KES believes that the information obtained from the investigation concerning the project site is reliable. However, KES cannot and does not warrant or guarantee that the information provided by these sources is accurate or complete. The methodologies of this assessment are not intended to produce all-inclusive or comprehensive results, but rather to provide the Client with reliable information relating to project site conditions within the context of the scope of work included in this investigation.

References

Hawaii Revised Statutes, Chapter 342P: Asbestos and Lead

State of Hawaii Department of Health HEER Office Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan. July, 2021

Hawaii Administrative Rules 11-501: Asbestos Rules

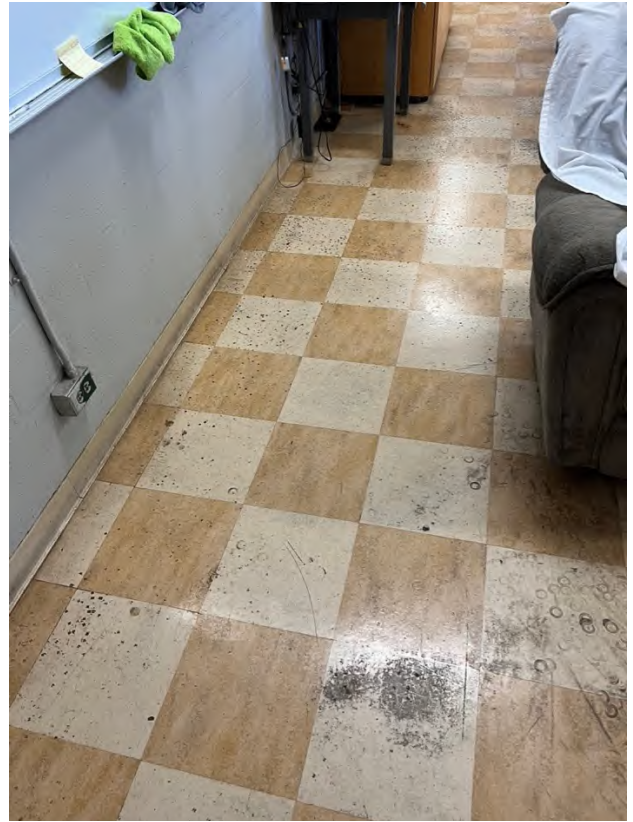
ESI, 2021. Three-Year Asbestos Inspection Report, Kalaeloa Airport, 300 Midway St, Kapolei, Hawaii, September 2021.

Attachment 1: Photo Log

Photo Log



Asbestos detected in gray caulking painted off white around kitchen windows and sliding door



Brown and off white VFT/mastic and off white cove base/mastic in kitchen; no asbestos detected



Brown speckled VFT/Mastic, and brown cove base/mastic; no asbestos detected



Bathroom window caulking tested; no asbestos detected

Attachment 2: Laboratory Analytical Results Summary Tables

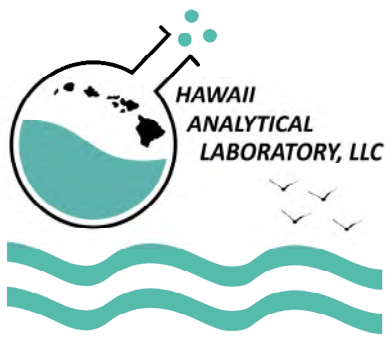
Asbestos Results Summary Table

Sample ID	Material	Color	Condition	Location	Asbestos Content
K-1	VFT	Brown/Yellow Speckled 18 X 18- inch	Good	Interior Hallways	ND
K-2	VFT	Brown/Yellow Speckled 18 X 18- inch	Good	Interior Hallways	ND
K-3	VFT	Brown/Yellow Speckled 18 X 18- inch	Good	Interior Hallways	ND
K-4	Cove Base	Brown	Good	Interior Hallways	ND
K-5	Cove Base	4-inch Brown	Good	Interior Hallways	ND
K-6	Cove Base	Brown	Good	Interior Hallways	ND
K-7	VFT	Tan & White 12 X 12-inch	Fair	Kitchen Floor	ND
K-8	VFT	Tan & White 12 X 12-inch	Fair	Kitchen Floor	ND
K-9	VFT	Tan & White 12 X 12-inch	Fair	Kitchen Floor	ND
K-10	Cove Base	4-inch Off White	Fair	Kitchen	ND
K-11	Cove Base	4-inch Off White	Fair	Kitchen	ND
K-12	Cove Base	4-inch Off White	Fair	Kitchen	ND

Sample ID	Material	Color	Condition	Location	Asbestos Content
K-13	Interior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-14	Interior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-15	Interior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-16	Exterior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-17	Exterior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-18	Exterior Caulk	Gray	Fair	Kitchen Sliding Door	2% Chrysotile
K-19	Exterior Caulk	Gray	Fair	Kitchen Windows	2% Chrysotile
K-20	Exterior Caulk	Gray	Fair	Kitchen Windows	ND
K-21	Exterior Caulk	Gray	Fair	Kitchen Windows	2% Chrysotile
K-22	Exterior Caulk	Gray	Good	Bathroom Windows	ND
K-23	Exterior Caulk	Gray	Good	Bathroom Windows	ND
K-24	Exterior Caulk	Gray	Good	Bathroom Windows	ND

Bold = Asbestos Detected
 ND = Asbestos not detected
 VFT = Vinyl Floor Tile

Attachment 3: Laboratory Analytical Data Report



Hawaii Analytical Laboratory

3615 Harding Avenue, Suite 308, Honolulu, Hawaii, 96816

Tel: (808) 735-0422 – Fax: (808) 735-0047

April 5, 2024

Max Solmssen
Kaimana Environmental Solutions LLC
PO Box 11890
Honolulu, HI 96828

Project Name: Kalaeloa ARFF Station #3 Repairs
Date collected: 3/28/2024
Date received: 3/28/2024
HAL #: 202403405

Dear Mr. Solmssen,

Enclosed are the analytical results for the samples received by our laboratory on March 28, 2024. The samples on the chain of custody were received in good condition unless otherwise noted.

The twenty-four (24) samples submitted for PLM analysis were subcontracted to Eurofins EMLab P&K in Pomona, CA (a NVLAP accredited Laboratory, NVLAP LAB CODE: 600282-0.). Its report is enclosed in its entirety.

Results in this report are based on the sampling data provided by the client and refer only to the samples as they were received at the laboratory. Unless otherwise requested, all samples will be discarded 14 days from the date of this report.

Quality assurance data is collected to accompany all analyses and to ensure that results generated meet Hawaii Analytical Laboratory's quality standards. This data is available upon request.

Please contact us at 808.735.0422 if you have questions.

Thank you for using Hawaii Analytical Laboratory and have a great day!

A handwritten signature in black ink that reads "Anne Antin" with a stylized flourish at the end.

Anne Antin
Quality Manager
Hawaii Analytical Laboratory
3615 Harding Ave. Ste. 308
Honolulu, HI 96816
Phone: (808) 735-0422
E-mail: aantin@analyzehawaii.com

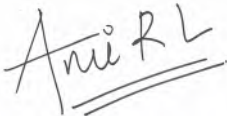
Report for:

Anne Antin
Hawaii Analytical Lab
3615 Harding Ave
Suite 308
Honolulu, HI 96816

Regarding: Eurofins EPK Built Environment Testing, LLC Project:
202403405; Kalaeloa ARFF Station #3 Repairs EML
ID: 3594330

Approved by:

Dates of Analysis:
Asbestos PLM: 04-05-2024



Approved Signatory
Dr. Ami Modha

Service SOPs: Asbestos PLM (EPA 40CFR App E to Sub E of Part 763 & EPA METHOD 600/R-93-116, SOP EM-AS-S-1267)
NVLAP Lab Code 600282-0

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

Eurofins EPK Built Environment Testing, LLC ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Total Samples Submitted:	24
Total Samples Analyzed:	24
Total Samples with Layer Asbestos Content > 1%:	8

Location: K-1, 18 x 18 VFT

Lab ID-Version‡: 17576444-1

Sample Layers	Asbestos Content
Yellow Floor Tile	ND
White Mastic (Trace) with Gray Leveling Compound	ND
Sample Composite Homogeneity: Moderate	

Comments: Some layers in the sample were inseparable without cross contamination.

Location: K-2, 18 x 18 VFT

Lab ID-Version‡: 17576445-1

Sample Layers	Asbestos Content
Yellow Floor Tile	ND
White Mastic (Trace) with Gray Leveling Compound	ND
Sample Composite Homogeneity: Moderate	

Comments: Some layers in the sample were inseparable without cross contamination.

Location: K-3, 18 x 18 VFT

Lab ID-Version‡: 17576446-1

Sample Layers	Asbestos Content
Yellow Floor Tile	ND
White Mastic (Trace) with Gray Leveling Compound	ND
Sample Composite Homogeneity: Moderate	

Comments: Some layers in the sample were inseparable without cross contamination.

Location: K-4, 4" Brown Cove Base

Lab ID-Version‡: 17576447-1

Sample Layers	Asbestos Content
Brown Cove Base	ND
Sample Composite Homogeneity: Good	

The test report shall not be reproduced except in full, without written approval of the laboratory. The 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. The Company reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Location: K-5, 4" Brown Cove Base

Lab ID-Version‡: 17576448-1

Sample Layers	Asbestos Content
Brown Cove Base	ND
Yellow Mastic	ND
Sample Composite Homogeneity: Moderate	

Location: K-6, 4" Brown Cove Base

Lab ID-Version‡: 17576449-1

Sample Layers	Asbestos Content
Brown Cove Base	ND
Sample Composite Homogeneity: Good	

Location: K-7, 12 x 12 VFT

Lab ID-Version‡: 17576450-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic (Trace) with Gray Leveling Compound	ND
Composite Non-Asbestos Content:	10% Cellulose 5% Synthetic Fibers
Sample Composite Homogeneity: Moderate	

Comments: Some layers in the sample were inseparable without cross contamination.

Location: K-8, 12 x 12 VFT

Lab ID-Version‡: 17576451-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic (Trace) with Gray Leveling Compound	ND
Composite Non-Asbestos Content:	10% Cellulose 5% Synthetic Fibers
Sample Composite Homogeneity: Moderate	

Comments: Some layers in the sample were inseparable without cross contamination.

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‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Location: K-9, 12 x 12 VFT

Lab ID-Version‡: 17576452-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic (Trace) with Gray Leveling Compound	ND
Composite Non-Asbestos Content:	10% Cellulose 5% Synthetic Fibers
Sample Composite Homogeneity:	Moderate

Comments: Some layers in the sample were inseparable without cross contamination.

Location: K-10, 4" Off-White Cove Base

Lab ID-Version‡: 17576453-1

Sample Layers	Asbestos Content
Off-White Cove Base	ND
Off-White Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: K-11, 4" Off-White Cove Base

Lab ID-Version‡: 17576454-1

Sample Layers	Asbestos Content
Off-White Cove Base	ND
Off-White Mastic	ND
Brown Mastic	ND
Sample Composite Homogeneity:	Poor

Location: K-12, 4" Off-White Cove Base

Lab ID-Version‡: 17576455-1

Sample Layers	Asbestos Content
Off-White Cove Base	ND
Off-White Mastic	ND
Brown Mastic	ND
Sample Composite Homogeneity:	Poor

The test report shall not be reproduced except in full, without written approval of the laboratory. The 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. The Company reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Location: K-13, Kitchen Sliding Door Caulk

Lab ID-Version‡: 17576456-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-14, Kitchen Sliding Door Caulk

Lab ID-Version‡: 17576457-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-15, Kitchen Sliding Door Caulk

Lab ID-Version‡: 17576458-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-16, Exterior Kitchen Door Caulk

Lab ID-Version‡: 17576459-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

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Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Location: K-17, Exterior Kitchen Door Caulk

Lab ID-Version‡: 17576460-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-18, Exterior Kitchen Door Caulk

Lab ID-Version‡: 17576461-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-19, Exterior Kitchen Window Caulk

Lab ID-Version‡: 17576462-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-20, Exterior Kitchen Window Caulk

Lab ID-Version‡: 17576463-1

Sample Layers	Asbestos Content
Beige Caulk with Paint	ND
Sample Composite Homogeneity: Good	

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‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Hawaii Analytical Lab
 C/O: Anne Antin
 Re: 202403405; Kalaeloa ARFF Station #3 Repairs

Date of Sampling: 03-28-2024
 Date of Receipt: 04-02-2024
 Date of Report: 04-05-2024

ASBESTOS PLM REPORT

Location: K-21, Exterior Kitchen Window Caulk

Lab ID-Version‡: 17576464-1

Sample Layers	Asbestos Content
Gray Caulk with Paint	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: K-22, Exterior Bath Window Caulk

Lab ID-Version‡: 17576465-1

Sample Layers	Asbestos Content
Light Gray Caulk	ND
Sample Composite Homogeneity: Good	

Location: K-23, Exterior Bath Window Caulk

Lab ID-Version‡: 17576466-1

Sample Layers	Asbestos Content
Light Gray Caulk	ND
Sample Composite Homogeneity: Good	

Location: K-24, Exterior Bath Window Caulk

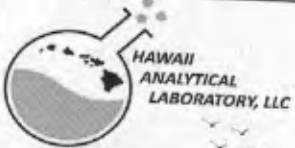
Lab ID-Version‡: 17576467-1

Sample Layers	Asbestos Content
Light Gray Caulk	ND
Sample Composite Homogeneity: Good	

The test report shall not be reproduced except in full, without written approval of the laboratory. The 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. The Company reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".



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

New Client?

Report To* : Max S.
 Company : Kaimana Environmental Sv.
 Address* : _____
 Phone / Cell No.* : _____
 Report results to : Max S.
 Email / Fax : Max@Kaimanaenv.com

Invoice To* : Jordan Moniuszko
 Company : Oceanit
 Address* : _____
 Phone / Cell No.* : _____
 Purchase Order No. : _____
 Email Invoice To : JMoniuszko@oceanit.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

Client Project No.:

Site/Project Name:

Kalaeloa ARFF station #3 Repairs

Sampled By & Certif. #:

Special Instructions:

*okay to sub per client (Max)
3/28/24 12:46

PLM POSITIVE STOP?

- + stop / SAMPLE
- + stop / LAYER

Verbal results?

Lab Report No.:

202403405

Lab Sample(s) No.:

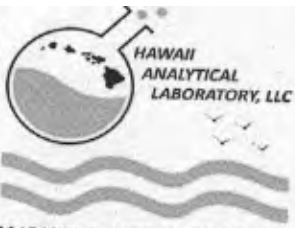
Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference
K-1	18X18 VFT	3/28/24	bulk	N/A	Asbestos	
K-2	↓					
K-3	↓					
K-4	4" brn Covebase					
K-5	↓					
K-6	↓					
K-7	12X12 VFT					
K-8	↓					
K-9	↓					
K-10	4" offwhite Covebase					
K-11	↓					
K-12	↓					
K-13	Kitch. sliding door Caulk Gnd					
K-14	↓					
K-15	↓					



003594330

Max K Solun 3/28/24 12:38pm

J APR 02 2024 0918



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

New Client?

Report To* : Max S
 Company : Kaimana ENV
 Address* : _____
 Phone / Cell No.* : _____
 Report results to : _____
 Email / Fax : _____

Invoice To* : Jordan M
 Company : Oceanit
 Address* : _____
 Phone / Cell No.* : _____
 Purchase Order No. : _____
 Email Invoice To : _____

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

Client Project No.: _____ Site/Project Name: Kalaedon ARFF St. #3 Repairs Sampled By & Certif. #: _____
 Special Instructions: _____ PLM POSITIVE STOP? + stop / SAMPLE Verbal results?
 + stop / LAYER

Lab Report No.:
202403405
 Lab Sample(s) No.:

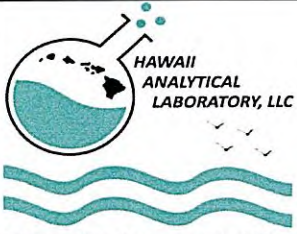
Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference
16 K-16	ext Kitch - door Caulk	3/28/24	bulk	N/A	Asbestos	
17 K-17						
18 K-18						
19 K-19	ext Kitch Window Caulk					
20 K-20						
21 K-21						
22 K-22	ext Aloha's bath Window Caulk					
23 K-23						
24 K-24						

Relinquished By (Print and Sign) <u>Max K Solmszen</u> <i>MS</i>	Date/Time <u>3/28/24 12:38pm</u>	Received By (Print and Sign) <u>Haley Leavitt</u>	Date/Time <u>03-28-24 P12:41 RCVD</u>
---	-------------------------------------	--	--

*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.

Lab Notes: via HAC via USPS via drop box via FedEx via pick up
 awb#: 173- 000 APR 02 2024 0918
 Page: 2 of 2





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

New Client?

Report To* : Max S.
 Company : Kaimana Environmental SVI
 Address* : _____
 Phone / Cell No.* : _____
 Report results to : Max S.
 Email / Fax : Max@kaimanaenv.com

Invoice To* : Jordan Moniuszko
 Company : Oceanit
 Address* : _____
 Phone / Cell No.* : _____
 Purchase Order No. : _____
 Email Invoice To : JMoniuszko@oceanit.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

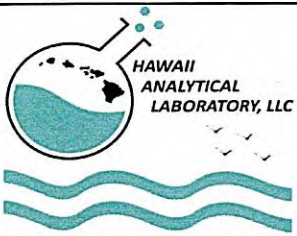
Client Project No.: _____ Site/Project Name: Kalaheon ARFF station #3 Repairs Sampled By & Certif. #: _____

Special Instructions: *okay to sub per client (Max) 3/28/24 e12:46 TR PLM POSITIVE STOP? + stop / SAMPLE Verbal results? + stop / LAYER

Lab Report No.: 202403405

Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab Sample(s) No.:
1 K-1	18X18 VFT	3/28/24	bulk	N/A	Asbestos		
2 K-2	↓						
3 K-3	↓						
4 K-4	4" brn Covebase						
5 K-5	↓						
6 K-6	↓						
7 K-7	12X12 VFT						
8 K-8	↓						
9 K-9	↓						
10 K-10	4" offwhite Covebase						
11 K-11	↓						
12 K-12	↓						
13 K-13	Kitch. sliding door Caulk Gnt						
14 K-14	↓						
15 K-15	↓						

Max K Solun 3/28/24 12:38pm



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

New Client?

Report To* : Max
 Company : Kaimana ENV
 Address* : _____
 Phone / Cell No.* : _____
 Report results to : _____
 Email / Fax : _____

Invoice To* : Jordan M
 Company : Oceanit
 Address* : _____
 Phone / Cell No.* : _____
 Purchase Order No. : _____
 Email Invoice To : _____

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

Client Project No.: _____ Site/Project Name: Kalaedea ARFE St. #3 Repairs Sampled By & Certif. # : _____

Special Instructions: _____ PLM POSITIVE STOP? Verbal results?
 + stop / SAMPLE
 + stop / LAYER
 Lab Report No.: 202403405

Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab Sample(s) No.:
16 K-16	ext Kitch - door Caulk	3/28/24	bulk	N/A	Asbestos		
17 K-17							
18 K-18							
19 K-19	ext Kitch Window Caulk						
20 K-20							
21 K-21							
22 K-22	ext Allen's bath Window Caulk						
23 K-23							
24 K-24							

Relinquished By (Print and Sign) <u>Max K Solmsen</u> Max Solmsen	Date/Time 3/28/24 12:38pm	Received By (Print and Sign) Haley Leavitt <u>Haley Leavitt</u>	Date/Time 03-28-24 P12:41 RCVD
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*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.

Lab Notes: via HAC via USPS via drop box via FedEx via pick up
 awb#: 173-
 Page: 2 of 2



Environmental Science International

**354 Uluniu Street, Suite 304, Kailua, Hawaii 96734
(808) 261-0740 phone / (808) 261-0749 fax**

120037:DO7

October 12, 2021

State of Hawaii Department of Transportation, Airports Division
Engineering Maintenance (AIR-EM)
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819

Attention: Mr. Benton Ho

Subject: Three-Year Asbestos Inspection Report, Kalaeloa Airport, 300
Midway St, Kapolei, Hawaii, September 2021.

References: HDOT-AIR, 2021a, Asbestos Management Plan, State of Hawaii
Department of Transportation Airports Division, April 26, 2021.

HDOT-AIR, 2021b, Operations and Maintenance Plan, State of
Hawaii Department of Transportation Airports Division, April 26, 2021.

Towill RM, 2006, Summary of Asbestos Inspection Results DOT-A
Facilities, Kalealoa Airport Oahu, DOT-A Project # AS1070-02,
Delivery Order 8.

This report documents the 3-Year Asbestos Inspection conducted by Environmental Science International, Inc. [ESI] between September 2020 – February 2021 at the Kalaeloa Airport [JRF]. The inspection was conducted on behalf of the State of Hawaii Department of Transportation– Airports Division [HDOT-AIR] in accordance with the HDOT-AIR Asbestos Operations and Maintenance Plan. The purpose of the 3-Year inspection is to monitor the condition of ACM, PACM, and suspect ACM at JRF. The 3-Year inspection and inspection report are not intended to satisfy NESHAP and HIOSH asbestos inspection requirements. A Hazardous Materials Request form shall be submitted to the Hazmat/Asbestos Manager prior to the commencement of any construction work or for maintenance activities that may disturb ACM, PACM, or suspect ACM.

BACKGROUND

HDOT-AIR operates under an Asbestos Management Program. The HDOT-AIR Asbestos Management Plan [AMP] (HDOT-AIR, 2021a) documents the structure and function of the HDOT-AIR Asbestos Management Program. Per the AMP, each HDOT-AIR district that contains asbestos-containing materials [ACM] is required to develop and implement an Asbestos Operations & Maintenance [O&M] Plan.

The O&M Plan for HDOT Airports (HDOT-AIR, 2021b) documents the activities to implement at the airport for the purpose of mitigating the exposure of airport occupants, HDOT-AIR employees, contractors, and the public to airborne asbestos fibers while at JRF. Per the O&M plan, periodic inspections are required to be performed every 3 years (i.e., 3-Year Asbestos Inspection) to help ensure that any ACM damage or deterioration are identified, and corrective actions are taken in a timely manner.

3-YEAR INSPECTION

The 3-Year Asbestos Inspection was performed by State of Hawaii Department of Health [HDOH] certified Asbestos Building Inspectors. ESI asbestos building inspector personnel and their respective HDOH Asbestos Certification Numbers are provided in Appendix B. The inspection consisted of reviewing historical asbestos survey data and maps and a physical onsite inspection of the known ACM and PACM. During the physical onsite inspection, if additional suspect materials were observed, the location and friability of the suspect ACM was noted.

Review of Historical Data

The presence or absence and condition of ACM and PACM identified during previous asbestos surveys were reviewed prior to performing the physical onsite inspection.

On-site Inspection

Between September 2020 and February 2021 HDOH Certified Asbestos Building Inspectors surveyed the condition and friability of known ACM and PACM for the buildings at JRF listed in Table 1.

Table 1: Buildings at Kalaeloa Airport Inspected for Asbestos

Building Number	Building Description
4	Control Tower and Administration
110	Hangar
115	Maintenance
116 (Formerly 1755)	Airport Fire Station

Buildings inspected are shown in Figure 1. The inspectors noted the existence, approximate location, conditions, and friability of known ACM and PACM. During the inspection, ACM locations were noted on field maps and the condition of the ACM was noted on field logs. In addition, the inspectors noted the location and friability of suspect ACM that was observed but had not been

identified in previous asbestos surveys. The following additional information was recorded for ACM, PACM and identified suspect ACM.

- Location (functional space) and color, size, and texture of each homogenous material.
- Current condition and friability of ACM, PACM and suspect ACM.
- Photographic documentation of ACM, PACM and suspect ACM.

Not all areas of JRF were accessible during the time the 3-Year Inspection was conducted. Multiple attempts to access all spaces were made, however Building 1910 was not accessible. The inspection data is provided in Appendix A. Photographs of ACM and PACM have been uploaded to the HDOT-AIR Asbestos Database.

HDOT-AIR DATABASE

The HDOT-AIR Asbestos Database is used to manage and track the ACM inventory at the airports. The database includes the location, condition, and friability of identified ACM, PACM and suspect ACM.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 3-Year Asbestos Inspection, friable and non-friable ACM is present at JRF. During the inspection, it was noted that additional signage identifying friable ACM is needed. In addition, a significant amount of suspect ACM was identified which had not been identified in previous asbestos surveys.

Based on the inspection results ESI recommends the following.

- Continue implementation of the HDOT-AIR Asbestos Management Program.
- Continue implementation of the HDOT-AIR O&M Plan and procedures.
- Sample any suspect ACM prior to being disturbed and update HDOT-AIR Database.
- Recommend installing proper signage for friable ACM, PACM and regulated areas.
- Perform the next 3-Year Asbestos Inspection in 2024.

ESI appreciates this opportunity to have assisted you with this project. Should you have any questions regarding this report or require further assistance, please contact us at (808) 261-0740.

Sincerely,



Isa Valdez
Asbestos Inspector
Environmental Science International, Inc.

Brandon A. Yoza

Brandon Yoza
Asbestos Program Manager
Environmental Science International, Inc.


Attachments: Figure 1 – Site Map
Appendix A – Summary of ACM and PACM
Appendix B – Asbestos Certifications
Appendix C – Acronyms List

Cc. Paul Nakasone

Figure 1

Site Map



LEGEND	
	KALAELOA AIRPORT BOUNDARY

NOTES
The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES
Street Map. 21°18'27.2"N 158°04'13.7"W, Google Earth. September 18, 2019.
http://planning.hawaii.gov/gis/ , 2019.

FIGURE 1
AREA MAP
 3-YEAR INSPECTION REPORT
 Kalaeloa Airport
 Kapolei, O'ahu, Hawai'i
 State of Hawaii Department of Transportation
 Airports Division

Appendix A

Summary of ACM, PACM, and Suspect ACM

**Appendix A: Summary of ACM, PACM, and Suspect AC
Three-Year Asbestos Inspection Report, October 2021
Kalaheo Airport**

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	B	Control Tower and Administration	Basement	Grey/tan carpet with white mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/12/2021	NF
4	B	Control Tower and Administration	Basement	4" Tan cove base with brown and off-white mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/12/2021	NF
4	B	Control Tower and Administration	Basement	White smooth plaster walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	B	Control Tower and Administration	Basement	White Paint over concrete walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/12/2021	NF
4	B	Control Tower and Administration	Basement	Concrete plaster on door and floor for basement crawl space	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	8/30/2005	NO INFO
4	B	Control Tower and Administration	Basement	12" x 12" Tiles in basement storage area: off-white with green and white spots	Suspect material was identified/sampled in previous RM Towill Report (2006). Not observed in 2021.	Positive 2% Chrysotile	8/30/2005	NF
4	B	Control Tower and Administration	Basement	White painted on drywall with joint compound on wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/12/2021	NF
4	1	Control Tower and Administration	Stairs connecting Level 1 and 2, and entrance to Conference Room	12" x 12" Navy blue non-skid vinyl floor tiles with white mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Stairs connecting Level 1 and 2	White painted concrete walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Women's restroom	2" x 2" Light brown ceramic floor tile and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Women's restroom	12" x 12" Light pink ceramic tile with grout on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Manager's Office	White painted drywall on ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Drywall not observed in 2021. Ceiling substrate was wood.		NF
4	1	Control Tower and Administration	Women's/Men's restroom	White toilet and countertop caulking	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Manager's Office and Break Room	Blue/tan carpet with yellow mastic on floor	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Manager's Office	4" Blue teal cove base with black and brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Break Room, Manager's Office	2' x 4' White acoustic fiberboard ceiling tiles with directional and non-directional fissures	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	F
4	1	Control Tower and Administration	Manager's Office	White Paint over Concrete Wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Break Room, Manager's Office	12" x 12" Grey speckled vinyl floor tile with black mastic	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2006).	Positive <1% - 4% Chrysotile	2/8/2021	NF
4	1	Control Tower and Administration	Break Room in Manager's Office Area	4" Brown cove base with brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Conference Room	Dark grey carpet with light brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Conference Room/ Lobby	4" Black Cove base w/ yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Conference Room/Lobby/Stairs connecting Level 1 and 2, BP Main Hallway	White Paint over concrete on walls and ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Men's Restroom	2" x 2" Light blue ceramic floor tile and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Men's Restroom	12" x 12" Light blue ceramic tile and grout on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Men's/Women's Restroom	White Paint Over Drywall on ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	1	Control Tower and Administration	Men's/Women's Restroom	White toilet and countertop caulking	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Lobby	4" Black cove base with yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Lobby/Restroom in old VIP Lounge	12" x 12" Tan/light brown vinyl floor tile and yellow mastic	(Abatement scheduled 2021) ACM was identified/sampled in previous RM Towill (2006)	Positive <1% Chrysotile (Mastic); 2% VFT	9/23/2020, 2/12/2021	NF
4	1	Control Tower and Administration	Lobby/Old VIP Lounge	2' x 4' White acoustic fiberboard ceiling tiles with directional and non-directional fissures	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	F
4	1	Control Tower and Administration	Lobby	White Paint over concrete walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Lobby	4" Black cove base with light brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Barber's Point Main Hallway	12" x 12" Black and white ceramic floor tiles and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Barber's Point Office 2	White paint over drywall on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	Barber's Point Main Hallway	12" x 12" White corrugated ceiling tiles	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Barber's Point Main Hallway and Main Office	Mastic beneath wood patterned vinyl floor tile	Suspect material was not identified/sampled in previous RM Towill Report (2006).	No mastic found beneath vinyl floor tile		NF
4	1	Control Tower and Administration	Barber's Point Main Hallway and Main Office	4" Black cove base with yellow & white clear mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Cubicles in Barber's Point Main Office, Pilot Shop	12" x 12" Light grey vinyl floor tile and yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Barber's Point Main Office and Office 3	2' x 4' Black acoustic fiberboard ceiling tiles	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Barber's Point Main Office	Brown carpet with yellow mastic	In 2006, R.M. Towill identified ACM mastic beneath non-ACM floor tile (HM No. JRF 4.9)	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Restroom in Barber's Point Main Office	1' x 2' White ceramic floor tile and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Restroom in Barber's Point Main Office	White toilet and sink caulking	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	Office 3 (Barber's Pt Aviations Svcs)	18" x 18" Beige ceramic floor tile and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Office 3 (Barber's Pt Aviations Svcs)	Dark brown paint over drywall on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	Janitor's Room	2" x 2" Brown ceramic floor tiles and grout	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	Janitor's Room	4"x 4" Brown ceramic tile and grout on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	Janitor's Room	Yellow insulation behind walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	F
4	1	Control Tower and Administration	Janitor's Room	White paint over concrete ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	2/8/2021	NF
4	1	Control Tower and Administration	Old VIP Lounge	4" Dark blue cove base with yellow/brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Old VIP Lounge	Dark Blue painted dry walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Restroom in Old VIP Lounge	4" Tan cove base with off-white mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Old VIP Lounge	2' x 4' White acoustic fiberboard ceiling tiles with directional and non-directional fissures	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	F
4	1	Control Tower and Administration	Conference Room	White Paint on CMU	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	1	Control Tower and Administration	Conference Room	White Paint over concrete ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Old VIP Lounge	light blue paint on plaster wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Old VIP Lounge	Light blue paint on drywall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Electrical Room in Old VIP Lounge	Teal paint on drywall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Electrical Room in Old VIP Lounge	Teal paint on concrete wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area, Pilot Shop	White vinyl floor tile under blue and gray vinyl with black mastic	(Abatement scheduled 2021) Suspect material was identified/sampled in previous RM Towill Report (2005).	Positive 3% - 4% Chrysotile	1/28/2021	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area, Pilot Shop	White painted plaster wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area, Pilot Shop	Tan painted drywall wall	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	1/26/2021	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area, Pilot Shop	Blue and gray vinyl floor tile with black mastic under dark brown laminate	(Abatement scheduled 2021) ACM (HM No. JRF 4.8 and 4.9) was identified/sampled in R.M. Towill (2006)	Not Detected	1/28/2021	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area	Teal vinyl floor tile with black mastic under white vinyl floor tile	(Abatement scheduled 2021) ACM (HM No. JRF 4.8 and 4.9) was identified/sampled in R.M. Towill (2006)	Positive 2% - 4% Chrysotile	1/28/2021	NF
4	1	Control Tower and Administration	Office 1 in BP Point	Off white vinyl floor tile under gray vinyl floor tile with black mastic	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2006).	Positive <1% - 3% Chrysotile	1/28/2021	NF
4	1	Control Tower and Administration	Office 1 in BP Point and Storage area in abandoned building	Green vinyl floor tile under off-white vinyl floor tile	(Abatement scheduled 2021) ACM (HM No. JRF 4.8 and 4.9) was identified/sampled in R.M. Towill (2006)	Positive 2% - 3% Chrysotile	1/28/2021	NF
4	1	Control Tower and Administration	Break Room in Manager's Office Area	Brown and red spotted vinyl floor tile with black mastic under carpet	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.2).	Positive 2% - 3% Chrysotile	2/8/2021	NF
4	1	Control Tower and Administration	Lobby	2' x 4' Off-white ceiling tiles with brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		F
4	1	Control Tower and Administration	Lobby, Pipe chase	White plaster ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Pipe chase	Yellow insulation on walls	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		F
4	1	Control Tower and Administration	Pipe chase	12" x 12" black speckled vinyl floor tile	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Throughout floor	Concrete ceiling / beams	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Material identified as suspect but not sampled		NF
4	1	Control Tower and Administration	Entrance to Conference Room	6" Navy blue cove base with yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Old VIP Lounge	Blue/green carpet with yellow/green mastic	Suspect material was not identified/sampled in previous RM Towill Report (2006).	Not Detected	9/23/2020	NF
4	1	Control Tower and Administration	Main Lobby	Olive and white 12"x 12" tiles in the checked pattern in lobby. Identified as ACM in Ogden's 1994 inspection report.	(Abatement scheduled 2021) ACM (HM No. JRF 4.7) was identified/sampled in R.M. Towill (2006)	Presumed positive 2% Chrysotile	1997	NF
4	1	Control Tower and Administration	BP Main office, Cubicles, Video Library, Locked area.	Floor tiles beneath carpet and/or other floor tiles. Previously identified as ACM. Various locations (See figure 4.2). Mastic also likely to contain asbestos	(Abatement scheduled 2021) ACM (HM No. JRF 4.8 and 4.9) was identified/sampled in R.M. Towill (2006)	Presumed positive 2% Chrysotile	1997	NF
4	1	Control Tower and Administration	Pilot Briefing room, Office 1, Office 2, Office 3, Office 201, Men's Restroom.	ACM mastic beneath non-ACM floor tiles. Various locations (See figure 4.2).	(Abatement scheduled 2021) ACM (HM No. JRF 4.8 and 4.9) was identified/sampled in R.M. Towill (2006)	Presumed positive 2% Chrysotile	1997	NF
4	2	Control Tower and Administration	NATCA, TERPA, Training Room, Main Hallway 1	12" 'x 12" White acoustic fiberboard ceiling tiles with brown mastic in the plenum	(Abatement scheduled 2021) Suspect material was identified/sampled in previous RM Towill Report (2005).	Positive 5% Chrysotile	2/12/2021	F

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	2	Control Tower and Administration	ATC OPS Office, Signal Lab, TWR Static Lab, TSN, PUBS Room.	12" x 12" light brown ceiling tiles with brown mastic in the plenum	(Abatement scheduled 2021) Suspect material was identified/sampled in previous RM Towill Report (2005).	Positive 5% Chrysotile	2/12/2021	F
4	2	Control Tower and Administration	Stairs Connecting Level 2 and 3	18" x 18" Navy blue non-skid floor tiles with tan mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	Stairs Connecting Level 2 and 3	White paint over concrete wall and ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	Stairs Connecting Level 2 and 3	Brown paint over concrete on wall next to steps	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	Stairs Connecting Level 2 and 3	Off-white painted drywall and joint compound on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	Stairs Connecting Level 1 and 2	12" x 12" Beige corrugated ceiling tiles unknown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	F
4	2	Control Tower and Administration	Conference Room, Gym Room, Main Hallway, NATCA Office, Office 204 (TERPS), Server Room / TWR Static Lab, Training Room (205), TSN Office (206), (207) PUBS Office, Hallway to Training Room	2' x 4' White acoustic fiberboard ceiling tiles with directional and non-directional fissures	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	F
4	2	Control Tower and Administration	Recreational Room and Gym Room	Beige plaster on wall and ceiling above plenum	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 5% Chrysotile	9/22/2020	F
4	2	Control Tower and Administration	Conference Room and Break Room	Brown paint over concrete wall on floor and columns	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	2	Control Tower and Administration	Recreational Room, Gym Room, Conference Room (205), Hallway to Conference Room, Main Hallways 1 and 2	Yellow mastic beneath wood paneling on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
4	2	Control Tower and Administration	NATCA Room (203) and TERPS (204) underneath the red carpet, adjacent hallway, and Office 207 (PUBS Office), AT OPS Office (208), Restrooms, and TWR Static Lab (Server Room)	12" x 12" Off-white vinyl floor tile with tan stripes and black and brown mastic	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 3% - 8% Chrysotile	9/22/2020	NF
4	2	Control Tower and Administration	Main Hallway, Stairs, Offices 205, 206, and 207	Off-white painted concrete wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	TWR Static Lab's Entrance	12" x 12" Off-white vinyl floor tile with gray stripes and black mastic	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 3% - 4% Chrysotile	9/22/2020	NF
4	2	Control Tower and Administration	Server Room, Main Hallway 2, and Men's/Women's Restroom, Main Hallway 1	4" Brown cove base with black mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	2	Control Tower and Administration	TWR Static Lab (Server Room)	Multicolor-painted drywall and joint compound on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	2	Control Tower and Administration	Main Hallway 2	2' x 4' Off-white lay in ceiling tile	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	F
4	2	Control Tower and Administration	Men's/Women's Restroom	Black thermal sink insulation	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
4	2	Control Tower and Administration	Men's/Women's Restroom	6" x 12" White painted ceramic tiles on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	2	Control Tower and Administration	Men's/Women's Restroom	White painted concrete ceiling with a green paint layer underneath.	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/12/2021	NF
4	2	Control Tower and Administration	Stairs connecting Level 1 and 2	White painted plaster on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/8/2021	NF
4	2	Control Tower and Administration	Breakroom	White / white-off plaster on wall and ceiling	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive, 2% Chrysotile	12/7/2017	NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	2	Control Tower and Administration	Breakroom	Gray concrete on ceiling	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 2% Chrysotile	12/7/2017	NF
4	2	Control Tower and Administration	AT OPS Office	2' x 4' White acoustic fiberboard ceiling tiles with directional and non-directional fissures	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	F
4	2	Control Tower and Administration	Room 209, 211, 212,213	Light gray painted concrete wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/12/2021	NF
4	2	Control Tower and Administration	Room 209, 211, 212,213	Light gray painted drywall and joint compound on wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/12/2021	NF
4	2	Control Tower and Administration	NATCA Room (203) and TERPS Office (204)	Red carpet with yellow mastic and black pad underneath / 12" x 12" white VFT underneath?	(Abatement scheduled 2021) In 2006, R.M. Towill (Figure 4.2) determined the presence of covered ACM floor tile.	Positive, 3% - 4% Chrysotile	2/12/2021	NF
4	2	Control Tower and Administration	Room 209, 211, 212,213	Blue carpet with yellow mastic and an underneath layer of red floor tile with black mastic	(Abatement scheduled 2021) In 2006, R.M. Towill (JRF 4.1 & JRF 4.2/ Figure 4.2) determined the presence of suspect ACM vinyl sheet flooring.	Positive, 3% - 20% Chrysotile	2/12/2021	NF
4	2	Control Tower and Administration	Room 214	12" x 12" light blue VFT and red floor tile with black mastic	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.2/ Figure 4.2) determined the presence of suspect ACM vinyl sheet flooring.	Positive, 3% - 45% Chrysotile	2/12/2021	NF
4	2	Control Tower and Administration	Server Room's Entrance and Main Hallway 2	Red Vinyl Floor tile under off-white VFT with black mastic. (off-white VFT sampled previously 4.2 floor-2a, 2b, 2c)	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.2/ Figure 4.2) determined the presence of ACM mastic below non- ACM floor tile.	Positive <1% - 3% Chrysotile	12/23/2020	NF
4	2	Control Tower and Administration	Room 214	6" blue cove base with black mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/12/2021	NF
4	2	Control Tower and Administration	Room 214	12" x 12" wall tile with brown mastic	Suspect material possibly identified/sampled in previous RM Towill Report - negative (2005). (JRF 4.4)	Not Detected	2/12/2021	NF
4	2	Control Tower and Administration	204 Hallway	Yellow adhesive for AC duct	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
4	2	Control Tower and Administration	Recreational Room, Gym Room, Conference Room (205), and Main Hallways 1 and 2	Red and blue carpet on floor with Blue/green, black mastic, 12"x12" Brownish-green vinyl floor tile with black mastic underneath red and blue carpet	(Abatement scheduled 2021) Suspect material was identified positive/sampled in previous RM Towill Report (2005).	Positive (Brown vinyl floor tile), 4% Chrysotile	10/31/2017	F
4	2	Control Tower and Administration	ATC Training Room	Under carpet in area where historical reports show vinyl sheet flooring	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.1 / Figure 4.2) determined the presence of ACM vinyl sheet flooring.	Presumed positive, 30% Chrysotile	8/30/2005	F
4	2	Control Tower and Administration	Northeast room at the end of Main hallway 2	Brick red floor tiles w/ black mastic	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.2/ Figure 4.2) determined the presence of ACM floor tile.	Presumed positive, 2% Chrysotile	8/30/2005	NF
4	2	Control Tower and Administration	Locked area Break room, 204 Hallway, Office 204, Conference room 205	Floor tiles beneath carpet and/or other floor tiles. Previously identified as ACM. Various locations (See figure 4.2). Mastic also likely to contain asbestos	(Abatement scheduled 2021) In 2006, R.M. Towill (HM No. JRF 4.8/ Figure 4.2) determined the presence of ACM floor tile.	Presumed positive, 2% Chrysotile	1997	NF
4	2	Control Tower and Administration	ATC Training Room	Drywall in unoccupied area of 2nd floor	In 2006, R.M. Towill (HM No. JRF 4.3/ Figure 4.2) determined the presence of suspect ACM drywall.	Not Detected	8/30/2005	NF
4	2	Control Tower and Administration	Northeast room at the end of Main hallway 2	12" x 12" acoustic tiles on walls, small and pin holes.	In 2006, R.M. Towill (HM No. JRF 4.4/ Figure 4.2) determined the presence of ACM ceiling/wall tile.	Not Detected	8/30/2005	NF
4	3	Control Tower and Administration	Server Room	12" x 12" White vinyl floor tile with black stripes and black mastic	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 10% Chrysotile	9/22/2020	NF
4	3	Control Tower and Administration	Hallway	18" x 18" Navy blue non-skid floor sheeting with yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Hallway and Server Room	Bare concrete floor	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	2/9/2021	NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
4	3	Control Tower and Administration	Perimeter of Server Room	4" Off-white cove base with brown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	Blue painted concrete walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	Blue paint on plaster wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Hallway and Server Room	White window caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	F
4	3	Control Tower and Administration	AC Equipment Room	Green paint on concrete wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	F
4	3	Control Tower and Administration	Server Room	Black window Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	White painted concrete ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		
4	3	Control Tower and Administration	Hallway	2' x 4' White acoustic fiberboard ceiling tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	Light Grey paint on plaster wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	Brown/Black residual mastic on walls	(Abatement scheduled 2021) Suspect material was not identified/sampled in previous RM Towill Report (2005).	Positive 10% Chrysotile	9/22/2020	NF
4	3	Control Tower and Administration	Server Room and Hallway	4" Black cove base with beige/yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	3	Control Tower and Administration	Stairs connecting Level 2 and 3	Beige concrete ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
4	4	Control Tower and Administration	Control Tower	Red and blue carpet with yellow mastic on floor	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	4	Control Tower and Administration	Control Tower	4" Dark brown cove base with white mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	4	Control Tower and Administration	Control Tower	2' x 4' Black acoustic fiberboard ceiling tiles with directional fissures and unknown mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		F
4	4	Control Tower and Administration	Control Tower	Red carpet with yellow mastic and white leveling compound on columns	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	4	Control Tower and Administration	Control Tower	Black window caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	4	Control Tower and Administration	Control Tower	White thermal insulation on sink	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/22/2020	NF
4	4	Control Tower and Administration	Control Tower	12" x 12" Black acoustic fiberboard ceiling tiles with unknown mastic/adhesive	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		F
110	1	Hanger	Transformer Bldg.	Brown roof pad with black mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	1/8/2020	F
110	1	Hanger	Transformer Bldg.	Black roof felt	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	1/8/2020	F
110	1	Hanger	Transformer Bldg.	Gray concrete with off-white paint	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	1/8/2020	NF
110	1	Hanger	Transformer Bldg.	Off-white/gray concrete, & paint	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	1/8/2020	NF
110	1	Hangar	Transformer Bldg.	Drywall joint compound samples	In 2006, R.M. Towill (HM JRF 110.1 / Figure 110.1) determined the presence of non-ACM drywall joint compound.	Not Detected	9/28/2005	NF
110	1	Hangar	Transformer Bldg.	Insulation on two large boiler tanks	In 2006, R.M. Towill (HM JRF 110.2 / Figure 110.1) determined the presence of non-ACM boiler insulation.	Not Detected	9/28/2005	NF
110	1	Hangar	Transformer Bldg.	All Floor tile and mastic presumed positive based on results from Ogden's 1994 inspection report.	In 2006, R.M. Towill (HM JRF 110.3 / Figure 110.1) determined the presence of ACM floor tile and mastic.	Presumed positive 2%-10% Chrysotile	1994	NF
110	2	Hangar	Hangar	Tan mastic on walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
110	2	Hangar	Hangar	12" x 12" Corrugated wall tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
110	2	Hangar	Hangar	White window caulking	Suspect material was identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
110	2	Hangar	Hangar	4" black cove base with tan mastic.	Suspect material was identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
110	2	Hangar	Hangar	Yellow thermal insulation behind walls	Suspect material was identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		F
110	2	Hangar	Hangar	Drywall joint compound samples	In 2006, R.M. Towill (HM JRF 110.1 / Figure 110.1) determined the presence of non-ACM drywall joint compound.	Not Detected	9/28/2005	NF
110	2	Hangar	Hangar	All Floor tile and mastic presumed positive based on results from Ogden's 1994 inspection report.	In 2006, R.M. Towill (HM JRF 110.3 / Figure 110.1) determined the presence of ACM floor tile and mastic.	Presumed positive 2%-10% Chrysotile	1994	NF
115	1	Maintainence Bldg.	Maintainence Bldg.	Off-white plaster on gray concrete on ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	1/8/2020	F
115	1	Maintainence Bldg.	Staff Office	4" Brown Covebase with yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Under staircase	4" Brown Covebase w/ brown Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Main Area	Bare Concrete Floor	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/30/2020	NF
115	1	Maintainence Bldg.	Main Area	Tan Mastic on Floors	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
115	1	Maintainence Bldg.	Main Area	White Painted CMU Walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms & Storage room	2" x 2" Beige Ceramic Floor Tile	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	4"x4" Off-White Ceramic Wall Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	Black Window Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	White Sink Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	White Drywall on Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Storage	4" Black Covebase w/ White Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Main Area	White Paint over Concrete Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Herbicide Room	9' x 9' Black VFT and yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Herbicide Room	Off-White Painted Drywall Walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Herbicide Room	2' x 4' Fiberboard Acoustic Ceiling Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	White Drywall on Ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Staff office	Cream drywall with Joint Compound	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Staff Office and holding spaces	12" x 12" beige vinyl floor tiles with black mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Men & Woman Restrooms	White smooth paint on concrete wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Staff office	White Paint over Concrete Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	1	Maintainence Bldg.	Collapsed ceiling room	Off-white 12"x 12" floor tile with unknown mastic	In 2006, R.M. Towill (HM JRF 115.3/Figure 115.1) determined the presence of ACM floor tile.	Not Detected	7/26/2005	NF









Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
116	1	Airport Fire Station	Mens Restrooms, Ohana Restrooms	White Caulking on Sink & Urinals	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Hanger	White Painted CMU Walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Hanger	Bare Concrete Floor	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Hanger	White Paint over Concrete Ceiling & Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Main Hallway, Alarm Room	18" x 18" Tan Speckled Floor Sheeting	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Main Hallway	4" Dark Brown Covebase	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Main Hallway	CMU & Grout Painted White Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Main Hallway	White Door Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Kitchen	12" x 12" Tan & White VFT	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Kitchen	4" Off-White Covebase & Unknown Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Kitchen	White Window Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Main Hallway & Kitchen	White Painted Smooth Concrete Ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Area	Cove base in bunk area	In 2006, R.M. Towill (HM JRF 1755.1/ Fig. 1755.1) determined the presence of non-ACM cove base.	Not Detected	7/26/2005	NF
116	1	Airport Fire Station	Break Room	12" x 12" light brown in break room	In 2006, R.M. Towill (HM JRF 1755.2/ Fig. 1755.1) determined the presence of non-ACM floor tile.	Not Detected	7/26/2005, 8/30/2005	NF
116	1	Airport Fire Station	Entire roof of building	Tar paper	In 2006, R.M. Towill (HM JRF 1755.4/ Fig. 1755.1) determined the presence of non-ACM plaster.	Not Detected	7/26/2005	NF
116	1	Airport Fire Station	Near edge of floor under sink in breakroom	Plaster near edge of floor under sink in breakroom	In 2006, R.M. Towill (HM JRF 1755.6/ Fig. 1755.1) determined the presence of non-ACM plaster.	Not Detected	8/30/2005	NF
116	1	Airport Fire Station	NO INFO	9" x 9" dark brown floor tile in the hallway and kitchen/lounge area	In 2006, R.M. Towill (HM JRF 1755.3/ Fig. 1755.2) determined the presence of ACM floor tiles and mastic.	Presumed positive 3% Chrysotile	7/26/2005, 8/30/2005	NF
116	1	Airport Fire Station	Hallway outside breakroom	Floor tile sub-layer below floor tile (dark brown) 9" x 9" in hallway outside breakroom	In 2006, R.M. Towill (HM JRF 1755.4/ Fig. 1755.2) determined the presence of ACM floor tiles and mastic.	Presumed positive 3% Chrysotile	8/30/2005	NF
116	1	Airport Fire Station	Chiefs Quarters	Pale tan floor tile, below light brown tile (12"x 12") in chiefs quarters	In 2006, R.M. Towill (HM JRF 1755.7/ Fig. 1755.2) determined the presence of ACM floor tiles and mastic.	Presumed positive 2% - 7% Chrysotile	8/30/2005	NF
116	1	Airport Fire Station	Firemans Quarters	White floor tile, below light brown tile (12"x 12") with mastic in Firemans quarters	In 2006, R.M. Towill (HM JRF 1755.8/ Fig. 1755.2) determined the presence of ACM mastic.	Presumed positive 5% Chrysotile	8/30/2005	NF
116	1	Airport Fire Station	Alarm Room	Brown floor tiles in alarm room, different from tiles in hallway and kitchen/lounge area	In 2006, R.M. Towill (HM JRF 1755.9/ Fig. 1755.2) determined the presence of ACM floor tile.	Presumed positive 3% Chrysotile	9/28/2005	NF

Building Number	Level	Building	Functional Space	Material Description	Notes / Comparing to RM Towill	Sample Results	Date Sampled	Friability (F/NF)
115	1	Maintainence Bldg.	Spill Kit room	Green 9" x 9" floor tile on 1st floor. Same as tile upstairs, but with different type of mastic	In 2006, R.M. Towill (HM JRF 115.4 /Figure 115.2) determined the presence of ACM floor tile.	Presumed positive 3% Chrysotile	7/26/2005	NF
115	1	Maintainence Bldg.	Space between Spill kit room and Herbicide room	Red/Brown 9" x 9" floor tile with white streaks, unknown mastic under carpet.	In 2006, R.M. Towill (HM JRF 115.6/ Figure 115.2) determined the presence of ACM floor tile and mastic.	Presumed positive 5% Chrysotile	1997	NF
115	2	Maintainence Bldg.	Offices	2' x 4' Fiberboard Acoustic Ceiling Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	2	Maintainence Bldg.	Offices & Open Area	4" Brown Covebase w/ brown Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/30/2020	NF
115	2	Maintainence Bldg.	Offices	Off-White Paint Over Concrete Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	NF
115	2	Maintainence Bldg.	Offices & Open Area	Off-White Paint Over Concrete Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/30/2020	NF
115	2	Maintainence Bldg.	Offices	Gray Carpet w/ Yellow mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/30/2020	NF
115	2	Maintainence Bldg.	Offices & Open Area	Off-White Paint Over Drywall on Walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	9/30/2020	NF
115	2	Maintainence Bldg.	Offices	Yellow thermal insulation in ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Not Detected	10/1/2020	F
115	2	Maintainence Bldg.	Office	Insulation on AC duct, wrapped w/ canvas. Water damaged, appears to be fiberglass	In 2006, R.M. Towill (HM JRF 115.1/ Figure 115.1) determined the presence of suspect ACM exterior duct insulation.	Not Detected	7/26/2005	NO INFO
115	2	Maintainence Bldg.	Collapsed ceiling room	White 12"x 12" floor tile	In 2006, R.M. Towill (HM JRF 115.3/ Figure 115.1) determined the presence of suspect ACM floor tile.	Not Detected	7/26/2005	NO INFO
115	2	Maintainence Bldg.	Offices and staircase	12" x 12" Beige VFT and black mastic	Suspect material was identified/sampled in previous RM Towill Report (2005).	Presumed positive 6% Chrysotile	9/30/2020	NF
115	2	Maintainence Bldg.	Space between Office and Storage	Green 9" x 9" floor tile on 2nd floor. Same as tile upstairs, but with thick black mastic	In 2006, R.M. Towill (HM JRF 115.5/ Figure 115.2) determined the presence of ACM floor tile and mastic.	Presumed positive 3% Chrysotile	9/28/2008	NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters	2' x 2' Brown & Black Carpet W/ Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters	Black Covebase (4") w/ Unkown Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters, Restrooms	Off-White Paint Over Drywall on Walls	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters	2' x 4' Off-White Lay-In Ceiling Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		F
116	1	Airport Fire Station	Communications/ Alarm Room	2' x 4' Off-White Lay-In Ceiling Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		F
116	1	Airport Fire Station	Tavarez Kidani Office	2' x 2' Tan Carpet w/ Unknown Mastic	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters	Off-White Painted CMU Wall	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters, Mens Restrooms, Ohana Restrooms	Gray Window Caulking	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters Storage Room	White Painted Concrete Ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters Storage Room	12" x 12" Yellow & Red VFT	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Bunk Rooms/ Living Quarters Storage Room	Off-White Drywall Ceiling	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Mens Restrooms, Ohana Restrooms	1" x 1" Multicolored Ceramic Floor Tiles	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF
116	1	Airport Fire Station	Mens Restrooms, Ohana Restrooms	6" x 6" Beige Ceramic Wall Tile	Suspect material was not identified/sampled in previous RM Towill Report (2005).	Material identified as suspect but not sampled		NF


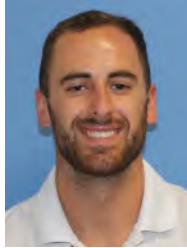



Appendix B

Asbestos Certifications

State DOH Certified Individuals

 <p>Chong Robert A. HIASB-4136 Environmental Science International Inc.</p> <p>W n/a PM n/a CS n/a MP 06/23/22 INS 06/23/22 PD n/a State Exp. Date: 07/16/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Griswold Natasha HIASB-4193 Environmental Science International, Inc.</p> <p>W n/a PM 08/10/21 CS 03/09/21 MP 03/10/21 INS 07/10/21 PD 08/12/21 State Exp. Date: 08/12/2021</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>
 <p>Nikaido Jonathan Y.M. HIASB-4657 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 01/14/22 PD n/a State Exp. Date: 01/11/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Sylva Traci Y. HIASB-4740 Environmental Science International</p> <p>W n/a PM n/a CS n/a MP 05/20/22 INS 05/20/22 PD n/a State Exp. Date: 06/17/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>
 <p>Martin Jake HIASB-4768 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 07/10/21 PD n/a State Exp. Date: 08/19/2021</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Valdez Isa C. HIASB-4824 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP 07/24/21 INS 12/08/21 PD n/a State Exp. Date: 11/29/2021</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>
 <p>Mitra Sharmila HIASB-4842 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 08/11/22 PD n/a State Exp. Date: 08/25/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Valdez Isa C. HIASB-4824 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP 07/24/21 INS 12/08/21 PD n/a State Exp. Date: 11/29/2021</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>

State DOH Certified Individuals

 <p>Lockwood Kaila M. HIASB-4947 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 07/14/22 PD n/a State Exp. Date: 08/04/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Brown David J. HIASB-4948 Environmental Science International, Inc.</p> <p>W n/a PM 10/30/21 CS n/a MP n/a INS 07/22/21 PD n/a State Exp. Date: 08/04/2021</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>
 <p>Teodoro Lean D. HIASB-4954 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 07/14/22 PD n/a State Exp. Date: 08/14/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	 <p>Yoza Brandon A. HIASB-4996 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 12/23/21 PD n/a State Exp. Date: 01/08/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>
 <p>Taniguchi Aimee K. HIASB-5087 Environmental Science International, Inc.</p> <p>W n/a PM n/a CS n/a MP n/a INS 06/30/22 PD n/a State Exp. Date: 07/08/2022</p> <p style="font-size: small;">W= Worker CS= Cont./Sup. INS= Inspector MP= Mgmt. Planner PM= Project Monitor PD= Project Designer</p>	

SECTION 01800 – SPECIAL REQUIREMENTS FOR CONTRACTORS ON THE AOA

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 OF WORK

- A. Provide all materials, labor, equipment, and tools necessary to complete the Special Requirements for Contractors on the Air Operations Area (AOA).
- B. The requirements of the Section are essential for ensuring public and worker safety on this project; hence, the Contractor shall comply with all requirements of this section when performing work on the AOA. Should the Contractor fail to comply with any requirement of this section; work may be delayed or temporarily suspended without contract time extensions. Liquidated damages or fines may result. All liquidated damages or fines resulting from violations due to improper activity, inattention, or failure to comply with required airport procedures; shall be borne by the Contractor.

1.03 PROJECT LIMITATIONS

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

1.04 AOA SECURITY REQUIREMENTS

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

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

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

- B. The Contractor shall comply with all existing and proposed airport security initiative requirements. Contractor may be subject to civil penalties up to \$35,000.00 for each security violation.
- C. The Contractor shall protect work areas from theft, vandalism and unauthorized entry. Ensure that proper methods are undertaken to secure tools, materials and equipment from the public.
- D. AOA Access Gates: Should the Contractor's assigned AOA access point be through an unguarded gate, the Contractor shall be responsible for the following:
 - 1. Obtain the AOA access gate key(s) from the Airport Security Office (a \$500.00 deposit is required per key).
 - 2. Provide all gate guards required. Each gate guard shall possess the following expertise:
 - a. Familiarity with all of the AOA security access clearance requirements.
 - b. Knowledge related to AOA access badge, AOA vehicle decal, and airport vehicle operator requirements.
 - c. A communication device and specific instructions to call for assistance whenever problems occur.
 - 3. Proper control of the AOA access gate in accordance with all required airport security procedures.
 - 4. Close the AOA access gate during prolonged periods of inactivity; and close and lock whenever the AOA access gate is not in use, or is unattended.

1.05 AOA OPERATIONAL SAFETY REQUIREMENTS

- A. It is the explicit intent of this contract that the safety of aircraft, and all of the personnel and equipment under the Contractor's jurisdiction, be the highest priority; hence, the Contractor shall carefully plan the operations of all personnel and equipment under their jurisdiction to provide for the free and unobstructed movement of all aircraft on the AOA, and to provide for the uninterrupted operation of visual and electronic signals used to guide aircraft while all personnel and equipment under their jurisdiction traverses the AOA.
- B. With the exception of actual construction methods, the Federal Aviation Administration (FAA), Airport Traffic Control Tower (ATCT) will have full authority to control the Contractor's movements within the existing movement area. If the FAA, ATCT notifies the Contractor to temporarily halt operations, the Contractor shall effectively notify all personnel and equipment under its jurisdiction, without using lighted flares, to cease all work and move all equipment and themselves away from hazardous areas.
- C. The Contractor is responsible for all of their movements on the AOA. Should the State deem that an escort, flagman, or driver fails to perform their duties, that escort, flagman, or driver may be terminated, or suspended and required to undergo additional training.

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

- A. A two-way radio capable of communicating on frequencies 118.90 (Tower) and 121.90 (Ground); with a spare charged battery and
- B. A cellular telephone, with a listing of all required emergency contact numbers.

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

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

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

- A. An AOA vehicle decal obtained from the Airport Security Office and displayed on the driver's side front bumper (use of an AOA temporary vehicle permit is not allowed).
- B. Insurance coverage as required by Article 7.1 of the General Provisions, and further amended by the Special Provisions.

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

- A. Operations occurring at night, or during periods of poor visibility, shall require a Flashing Amber Beacon mounted atop each vehicle /equipment's highest point.
- B. Daylight operations with clear visibility, shall require a Checkered Orange and White Flag attached to a staff that is mounted to each vehicle and/or equipment in lieu of a Flashing Amber Beacon. The flag shall be at least a three-foot square with a checker pattern of international orange and white squares that are at least one-foot on each side.
- C. Two placards shall be on both sides of each vehicle or equipment at all times to identify the vehicle or equipment owner. Placards shall contain the company name in letters at least four-inches (4") tall, or six-inch (6") minimum-sized company logo.
- D. All additional equipment marking, lighting and positioning that may be required by the FAA.

- 1.10 AOA DRIVERS: All people operating a vehicle or any driven piece of equipment on the AOA shall possess the following license, permit and expertise:
- A. Current and valid Hawaii State Driver's License.
 - B. Current and valid Airport Vehicle Operator's Permit.
 - C. Complete Airport Familiarization.
 - D. An understanding and ability to identify the following:
 - 1. All RSA's (Runway Safety Area), TWSA's (Taxiway Safety Area).
 - 2. All AOA Markings, Lighting, and Signing.
 - 3. The Need for Control of FOD (Foreign Object Debris).
 - 4. All AOA Equipment for Aircraft.
 - 5. All AOA Critical Areas.
 - 6. All AOA Travel Routes for the Various Work Places.
 - E. An understanding and ability to follow all ground vehicle operation and communication requirements while operating on the AOA.
 - F. Successful completion of all AOA driver training require by the Airport Operations Manager.
- 1.11 AIRPORT VEHICLE OPERATOR'S PERMIT: Airport vehicle operator's permit shall only be issued to people that apply through the Airport Security Office, and pass a written exam covering portions of the Airport Rules and Regulations related to vehicle operations on the AOA.
- 1.12 AOA ESCORTS: While operating on the AOA, the Contractor shall provide at least one escort for every five (5) vehicles and/or equipment under their jurisdiction. The Airport Operations Manager shall approve all escorts prior to any work commencing; hence, each escort shall possess:
- A. All AOA Driver Requirements.
 - B. Both AOA Communications Devices previously specified.
 - C. Knowledge about the assigned access points and travel routes for the project.
 - D. Successful completion of all AOA driver training required by the Airport Operations Manager. Each escort shall pass an exam given by the Airport Operations Manager, which demonstrates they possess an understanding and ability to follow all ground vehicle operation and communication requirements while operating on the AOA.

- 1.13 AOA TRAFFIC CONTROL: The Contractor shall furnish and provide the following traffic control devices to block off entrances of working area:
- A. Runway Lighted X's: Wherever working within an RSA.
 - B. Low-Profile Barricades: Low-profile barricades shall be any one of the following: however, if option a or b is selected, the Contractor shall be responsible for water filling and emptying these types of barricades as part of their contracted work.
 - 1. Neubert Aero Corporation's reusable Airport Low-Profile Barricade Model No. NAC-PC 2410 with at least one battery-powered red barricade light, or
 - 2. Multi-Barrier Safety Barricade Model No. AR-10x96 with at least one Multi-Barrier 360 degree solar-powered light, or
 - 3. Constructed barricades as indicated on plans.
 - 4. All Low-profile barricades shall be spaced fifteen (15) feet on center, and used as follows:
 - a. Restrict aircraft from taxiing into work areas: Barricades shall extend across the full TWY/RWY width, with one (1) barricade places on the TWY/RWY centerline.
 - b. Channel aircraft around work areas: Barricades shall be placed ten (10) feet away from active RSAs/TWSAs.
 - C. Reflective Cones: Reflective cones shall be used to demarcate AOA travel routes and locations where vehicles shall yield to aircraft.
- 1.14 AOA FOD CONTROL: The Contractor shall keep all work areas, AOA Travel Routes, and all adjacent areas clean at all times. Unless otherwise stated in this contract, or otherwise directed by the Airport Manager, the Contractor shall properly haul and dispose all removed pavement materials and collected debris to a site off the Airport. The State will require remedial cleaning from the Contractor whenever their FOD Control Operations are unsatisfactory. Upon receipt of notification, the Contractor shall be ready to start remedial cleaning at the jobsite within one-hour. Notification by telephone will be deemed as official.
- 1.15 AOA FLAG PERSONS: Should the plans require flag persons along the AOA Travel Route, each flag-person shall possess:
- A. AOA Driver as state in Sections 1.05.E.3, 1.05.E.4, and 1.05.E.6.
 - B. Both AOA Communication Devices previously specified in Section 105.A.
 - C. A traffic directing LED (Light-Emitting Diode)Light Baton.
 - D. A broom and dustpan to assist in AOA FOD Control.

- 1.16 AIRPORT STAGING AREAS: The Contractor shall only stage its vehicles and equipment at State approved areas. No vehicle or equipment shall park within four (4) feet of a security fence. Demarcation of the staging area shall be as follows:
- A. Weighted Lighted Barricades shall be placed around the staging area perimeter at a maximum of twenty feet (20') on center.
 - B. Yellow Barrier Tape with the words "CAUTION DO NOT ENTER" continuously printed on the tape shall be used with barricades to demarcate the staging area perimeter.
- 1.17 COORDINATION OF CONSTRUCTION ON THE AOA
- A. Work on the AOA requires RWY and TWY closures that demand proper notification to numerous agencies responsible for public safety; thus, the Engineer shall receive the following sufficiently accurate information from the Contractor.
 - B. Maximum height equipment: Equipment height shall be submitted to the State at least thirty-five (35) consecutive calendar days prior to construction. Construction shall not commence until the State receives confirmation from the FAA. All reported heights shall be the maximum heights among all vehicles or equipment used to complete the contracted work, and includes proper notification to the State whenever the reported maximum heights are to be exceeded.
 - C. Detailed work schedule: See SECTION 01300 – SUBMITTALS.
 - D. Cancellations: The Contractor shall only cancel work through the Engineer, Airport Operations Manager, or Airport Duty Manager. Whenever a cancellation is not made and the Contractor is not at the assigned AOA Access Point within thirty (30) minutes of the start time; all Contractor closures for the remaining workweek will be cancelled. The Contractor shall reimburse the State six hundred dollars (\$600.00) for every work cancellation the State deems unjustified. This reimbursement is to compensate the State for all unnecessary costs related to cancelling existing and coordinating new closures.
- 1.18 CONSTRUCTION LIGHTING REQUIREMENTS
- A. Should any part of the work area lack sufficient sunlight; the Contractor shall provide sufficient artificial lighting to permit the work and inspection to be carried out efficiently, thoroughly, safely, and satisfactorily. Work and inspections shall not be performed with only flashlight and/or vehicle/equipment headlights. All lights shall be positioned so they do not blind aircraft pilots, or FAA-ATCT controllers. All wiring for electrical lights and power shall be properly installed, maintained, securely fastened and kept as far as possible from telephone and signal wires. The Contractor shall submit a lighting plan to the Engineer for all work phases that shall be subject to approval.

1.19 ENVIRONMENTAL AND HEALTH REQUIREMENTS

- A. The Contractor shall perform the following in accordance with all applicable federal, state, local, and airport rules and regulations related to environmental pollution control, abatement, and fire code.
- B. Airport water: Airport water shall not be drawn from a tap lacking a reverse pressure principal backflow prevention device. Water valves shall be opened and closed so that water hammers are not produced.
- C. Waste Disposal: Waste disposal shall be performed properly. Materials shall not be burned, and construction wastes shall not be disposed into Airport storm water or sewer systems.
- D. Restoration: Completely restore, to an acceptable condition; staging area, work area, AOA travel routes, and areas adjacent to the aforementioned.
- E. When the Contractor damages an existing Airport perimeter fence, the Contractor shall perform immediate repairs on the fence to prevent inadvertent entry and maintain Airport Security.
- F. Vehicle/equipment leaks and material spills: Shall be handled by the following five-step process, and pertains to all fluids other than potable water:
 - 1. All leaked or spilled fluids shall immediately be kept from entering the Airport storm water and sewer systems.
 - 2. All fluid leaks or spills shall be respectively fixed or stopped, immediately after ensuring that the fluids are kept out of the Airport storm water and sewer systems.
 - 3. All areas containing the leaks or spills shall be properly cleaned and restored.
 - 4. Dispose all wastes per Section 1.08.B.
 - 5. Submit proper documentation to the State showing that all leaks or spills were properly cleaned and disposed.
- G. Erosion control: The Contractor shall provide any essential temporary drainage, dikes, and similar facilities to prevent erosion damage to the site. Run-off shall be controlled to prevent damage to the surrounding areas.
- H. Dust control: The Contractor shall take positive measures to ensure that dust is properly controlled without chemicals and/or oil treatments.
- I. Noise control: Noise control shall be within the levels that comply with all applicable regulations.

1.20 OTHER REQUIREMENTS

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

- B. Any new TSA (Transportation Security Administration) security requirements.
- C. Any additional operational safety requirement generated by the FAA.
- D. Provide additional lights along AOA travel routes should the Engineer deem additional safety enhancements are needed.
- E. Any new environmental and health requirements generated by the EPA (Environmental Protection Agency) or DOH (Department of Health).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

END OF SECTION

DIVISION 3 – CONCRETE

SECTION 03300 - CAST-IN-PLACE CONCRETE

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 SECTION INCLUDES

- A. Floors and slabs on grade.
- B. Concrete reinforcement.

1.03 RELATED REQUIREMENTS

1.04 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- B. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.
- C. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- D. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).
- E. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon- Steel Bars for Concrete Reinforcement; 2022.
- G. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2022.
- H. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.
- I. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.
- J. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- K. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

- L. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

1.05 SUBMITTALS

- A. See SECTION 01300 – SUBMITTALS or submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design.
- D. Test Reports: Submit report for each test or series of tests specified.
- E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.
- F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI PRC-305 when concreting during hot weather.

1.07 WARRANTY

- A. See SECTION 01300 - SUBMITTALS for additional warranty requirements.
- B. Termite-Resistant Vapor Barrier Sheet: Provide five year manufacturer's limited warranty.

PART 2 PRODUCTS

2.01 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Type: Deformed billet-steel bars.
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
- C. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.03 ACCESSORY MATERIALS

- A. Termite-Resistant Vapor Barrier Sheet: Plastic sheet complying with ASTM E1745, Class C; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs, and for exclusion of subterranean termites.
 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, prefabricated boots, etc., for sealing seams and penetrations.
 2. Products:
 - a. Stego Industries, LLC; Pango Wrap with Pango Tape: www.stegoindustries.com/#sle.
 - b. Approved equal.

PART 3 - EXECUTION

3.01 DESIGN OF CONCRETE MIXES

- A. Ingredients for concrete shall be Portland cement, fly ash, fine and coarse aggregates and water.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in cement as follows: Fly ash - 25 percent.
- C. Normal weight concrete shall meet the requirements outlined in Subsection D, E and F below.
- D. Concrete shall be designed so that the concrete materials will not segregate nor cause excessive bleeding. Slump shall be 4 inches. A tolerance of 1" above the indicated slump will be allowed for individual batches.

- E. For concrete used in ramps or other sloping construction, the slump tolerance shall be waived.
- F. For each class of concrete, the test results for 28-day compressive strength shall meet the following requirements:
- G. 28-Day-Compressive-Strength-Test-Results (psi)

<u>Nominal Strength</u>	<u>Min. Average for 3 Cylinders</u>	<u>Min. Average for 2 Cylinders</u>
5,000	5,000	4,750
4,500	4,500	4,250
4,000	4,000	3,750
3,000	3,000	2,750

- H. Slabs-on-grade shall have a maximum water-cement-ratio of 0.45 or as indicated.
- I. The Contractor shall submit for approval by the Engineer the mixes he intends to use at least 14 days before the actual concrete placing operations.
- J. The Contractor shall use only approved mixes.
- K. Concrete strength for various elements shall be as indicated.
- L. For slabs-on-grade, the contractor may use a mix design other than that indicated provided the vapor emission rate is equal or less than 5 lbs. per 1000 s.f. at the time of the finished flooring installation. If the vapor emission rate exceeds this limit, the Contractor shall be responsible to take the measures necessary to reduce the emission to an acceptable level without delaying the project.

3.02 JOINTS

- A. Construction joints shall be provided as detailed at locations indicated on the plans. Construction joints not shown on the plans shall be so made as to least impair the strength of the structure and shall be approved by the Engineer. In general, they shall be located near the middle of the spans of slabs, beams and girders unless a beam intersects a girder at this point, in which case the construction joints in the girders shall be offset a distance equal to twice the width of the beam. Joints in columns and walls shall be at the underside of floors, slabs, beams or girders and at the top of footings or floor slabs. Beams, girders, brackets, column capitals, haunches and drop panels shall be placed at the same time as slabs. Joints shall be perpendicular to the main reinforcement.
- B. All reinforcing steel shall be continuous across construction joints. Keys and/or inclined dowels shall be provided as required. Longitudinal keys at least 1-1/2" deep shall be provided in all joints in walls and between walls and slabs or footings. Unless otherwise indicated, joints shall be sealed with joint sealing compound.

- C. Expansion joints shall be provided as detailed at locations indicated on the plans. Reinforcement or other embedded metal items bonded to the concrete (except dowels in floors or walls bonded on only one side of joint) shall not be permitted to extend continuously through any expansion joint. Joints shall be sealed with expansion joint filler and sealing compound at least 3/8" deep.
- D. Contraction/control joints shall be provided where shown or called for on the plans and shall be 1/4 the depth of the slab or a minimum of 1" deep. Unless otherwise indicated on the plans, joints may either be tooled, formed-in-place or sawcut. When saw-cut joints are provided, cutting shall be timed properly with the set of the concrete so that it is firm enough not to be torn or damaged by the cutting blade and before random shrinkage cracking can form in the slab. In any case, cutting shall be completed not later than 12 hours after the concrete is placed and finished. Unless otherwise indicated on the plans, joints shall be sealed with joint sealing compound.

3.03 MIXING CONCRETE

- A. All concrete throughout shall be either job or plant mixture in an approved type of power operated mixer that will ensure uniformity and homogeneity of the concrete produced. The Contractor shall provide a sufficient number of mixers to continuously carry on the work.
- B. Mixing at jobsite shall be done in accordance with ACI 304 and as follows:
 - 1. Concrete shall be thoroughly mixed in a batch mixer of an approved type and size which will insure a uniform distribution of materials throughout the mass. The machine shall have a control device to prevent materials from being discharged until they have been mixed for the specified minimum time.
 - 2. The entire contents of the drum shall be discharged before materials of the succeeding batch are placed therein. No mixer shall be used which has a rated capacity of less than a 1-sack batch and no mixer shall be charged in excess of its rated capacity.
 - 3. The first batch of materials placed in the mixer after the machine has been cleaned shall contain a sufficient excess of cement, sand and water to coat the inside of the drum without reducing the required mortar content of the mix. Upon cessation of mixing, the mixer shall be thoroughly cleaned.
 - 4. Ready Mixed and Mixed-In-Transit Concrete shall be mixed to conform to the provisions of ASTM C94 and as follows:
 - 5. The plant shall have sufficient capacity and transportation equipment to deliver concrete at the rate desired. The interval between batches for a pour shall not exceed 30 minutes.
 - 6. The time elapsed between the introduction of the mixing water to the cement and aggregates or the cement to the aggregates, and the placing of concrete in its final position shall not exceed 90 minutes.

7. In hot weather (more than 90 degrees Fahrenheit ambient temperature) or under conditions contributing to quick stiffening of the concrete, the elapsed time in 2 shall not exceed 60 minutes, if no retarding admixture is used. If an ASTM C494 Type B or D admixture is added to the concrete, the elapsed time in 2 shall remain at 90 minutes.
8. Concrete shall be mixed only in such quantity as is required for immediate use. No retempering will be permitted and concrete that has started to harden shall be discarded and promptly removed from the job.
9. Admixtures conforming to Paragraph 2.01 may be used in the concrete as recommended by the supplier and approved by the Engineer.
10. Hand mixing of concrete will not be permitted except to make up shortages for fence post footings, sidewalks, thresholds, flag pole foundations, curbs and gutters, and thrust blocks.
 - A. No concrete shall be placed in the absence of the Special Inspector or his representative who shall be given one day advance notice of starting time of concrete pour.

3.04 PLACING CONCRETE

- A. No concrete shall be placed in the absence of the Special Inspector or his representative who shall be given one day advance notice of starting time of concrete pour.
- B. Place no concrete until foundation, forms, reinforcing steel, pipes, conduits, sleeves, hangers, anchors, inserts, waterproofing, termite treatment and other work required to be built into or placed ahead of concrete placing have been inspected and approved by the Special Inspector. Concrete placed without such notice and approval shall be rejected.
- C. Preparation
 1. All sawdust, chips and other construction debris and extraneous matter shall be removed from interior of forms. Struts, stays, bracing, or blocking serving temporarily to hold forms in correct shape or alignment shall be removed when the concrete placing has reached an elevation rendering their services unnecessary.
 2. Concrete shall be placed upon clean, damp surfaces with no free water, or upon properly compacted fills but never upon soft mud or dry, porous earth. Before pouring footings or foundations, bottoms of excavations shall be properly leveled off and tamped.

3. Before depositing new concrete on or against concrete which has set, all accumulations of mortar splashed upon reinforcing steel and the surfaces of forms shall be removed and the forms shall be retightened. The surfaces of previously set concrete shall be thoroughly roughened and cleaned of all foreign matter and laitance, saturated with water and slushed with a coat of cement grout. New concrete shall be placed before the grout has attained its initial set.

D. Conveying

1. Concrete shall be conveyed from mixer to forms as rapidly as practicable by methods that will prevent segregation.
2. Concrete shall be deposited as nearly as practicable in its final position. Extensive spading as a means of transportation shall be avoided and in no case shall vibrators be used to transport concrete inside the forms.
3. Open troughs and chutes shall have a slope not to exceed 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 ft. long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.
4. The concrete shall not be allowed to drop freely more than 6 feet except where specifically authorized by the Engineer. When placing operations would involve the dropping of concrete from a height of more than 6 feet, it shall be conveyed through pipes or flexible drop chutes.
5. If any appreciable segregation occurs through the conveying methods employed, their use shall be ordered discontinued by the Engineer and some other satisfactory method of placing concrete shall be used.
6. All chutes, troughs, pipes and other means of conveyances shall be kept clean and free from coatings of hardened cement or concrete by thoroughly cleaning with water and chipping after each pour. Water used for flushing shall be discharged away from the vicinity of the concrete or forms already in place.

E. Depositing

1. Unless adequate protection is provided, concrete shall not be placed during rain. Rainwater shall not be allowed to increase the mixing water nor to damage the surface finish. Fresh concrete that has been deposited but has not attained its initial set shall be protected in the event of rain.
2. Concrete shall be placed so as to avoid segregation of the materials and the displacement of the reinforcing. As nearly as practicable, the concrete shall be dropped vertically without hitting reinforcement, sleeves or forms into its final position in order to avoid separation of coarse aggregates from concrete. After the initial set of concrete, the forms shall not be jarred and no strain shall be placed on the projecting reinforcing.

3. Formed concrete shall be deposited in horizontal layers not deeper than 2 feet avoiding inclined layers and inclined construction joints. The depth of layers shall be shallow enough so that the succeeding layer will be placed before the previous layer has attained its initial set.
 4. Concrete shall not be allowed nor shall it be caused to flow horizontally or on slopes in the form. Concrete placing on a slope shall begin at the lower end of the slope and progress upward.
- F. Construction joints shall be made only where located on the plans unless approved otherwise by the Engineer. Pours shall be planned to provide for the continuous placing of concrete from one construction joint to another. The face edges of all joints that are exposed to view shall be carefully finished true to line and elevation.
- G. In slab construction, placing of the concrete shall be started at the far end of the work so that each batch will be dumped against previously placed concrete, not away from it. The concrete shall not be dumped in separate piles and the piles then leveled and worked together. For floor slabs on earth, additional requirements in Paragraph 3.03 shall apply.
- H. Beams and girders shall not be placed at the same time as the supporting columns or walls. At least 2 hours must elapse after columns or walls are placed before placing beams and girders supported thereon.
- I. Columns shall be placed in approximately 4-foot sections, with each section being vibrated and compacted as placed.
- J. In placing a deck of slabs and beams, the beams shall be placed first up to the height of the bottom of the floor slab. This placement shall extend in bay modules and end at the midspan, midpoint between columns. The length of this placement shall be determined by the time it takes to return to the slab and the top layer of the beams before the top of the first pour has started to harden and form a cold joint.
- K. If depositing of concrete must be stopped short of a full placement, it shall be leveled to a horizontal plane or stopped against a vertical bulkhead. Such bulkhead or horizontal plane shall be located only as approved by the Engineer.
- L. Compaction
1. All concrete shall be consolidated by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. All compaction shall be done by use of high frequency internal vibrators. Where the vibrator cannot be inserted into the concrete, compaction shall be done by spading, rodding or forking.

2. Frequency of vibrator shall be not less than 7,000 impulses per minute. The Contractor shall provide a sufficient number of vibrators to properly consolidate all concrete immediately after placing. At least one standby vibrator shall be on hand at all times during placement of the concrete.
3. Vibration shall not be applied through contact with reinforcement of forms. Vibration shall penetrate previously deposited concrete sufficiently to prevent pockets or voids or construction joints from occurring between pours, but must not be applied to concrete which has set up sufficiently to cease to be plastic under vibration.

3.05 FLOOR SLABS ON EARTH

- A. Concrete floor slabs on grade, with the exception of sidewalks, shall be placed directly over a vapor barrier, and a minimum of 4 inches of gravel cushion fill (ASTM C33, No. 67). The edges of the vapor barrier shall be lapped and sealed as required by vapor barrier manufacturer to assure barrier performance. For slabs which will receive vehicular traffic, the slab shall be placed over a 6-inch layer of gravel cushion fill. The gravel cushion fill shall consist of crushed basaltic aggregate compacted to a minimum of 95% relative compaction.

Repair holes in the vapor barrier created by screeds, formwork or other temporary construction prior to coverage with concrete.

- B. All earth-supported slabs, with the exception of sidewalks, shall be reinforced with a minimum of Grade 60 #3 steel reinforcing bars at 15" o.c. each way unless otherwise shown or called for on the plans. Plain bar dowels shall be provided as detailed for construction and expansion joints. Such dowels shall be wrapped or greased on one side of the joints to prevent bonding.
- C. Care shall be taken in handling and placing the reinforcement. Reinforcement shall be positively set to the level required within the slab(s) as indicated on the plans.
- D. Floor slabs shall be placed in alternate panels, long strip pattern, following construction or expansion joints. Narrow contraction/control joints shall be provided transverse to the length of the cast strips. There shall be an interval of at least 2 days between the placing of the initial panels and that of the adjacent ones. "Keyed Cold Joint" may be used in lieu of placement in alternate panels in areas where floor covering is specified provided all shrinkage cracks are sealed prior to installation of floor covering. As an option, slabs may be placed in alternate panel checkerboard pattern. Where slabs are placed in a checkerboard pattern, no panel shall be placed in excess of 500 square feet in area nor exceed 32 feet in its longest dimension.
- E. A bond-break filler shall be provided where edge of slab abuts any vertical surface and where indicated on plans. Width of filler strips shall equal depth of floor slab.

- F. Prior to concrete placement, small mounds of concrete shall be placed at random rebar intersections during the pour to provide support in addition to the chairs or blocks. Reinforcing bars shall be lifted as necessary to ensure proper placement within the slab.

3.06 CONCRETE SIDEWALKS ON GROUND

- A. Concrete walks shall be of one lift construction, 4 inches in thickness with thickened edge, and reinforced with synthetic fiber reinforcement. Keys and /or plain bar dowels shall be provided as detailed for construction and expansion joints. Such dowels shall be wrapped or greased on one side of the joint to prevent bonding.
- B. Expansion joints shall be provided as detailed, not more than 32 feet apart; at junctions with curbs; where walks abut buildings, platforms and other fixed structures; and elsewhere as shown in the plans. Reinforcement or other embedded metal items bonded to the concrete (except dowels in floors or walls bonded on only one side of joint) shall not be permitted to extend continuously through any expansion joint. Joints shall be sealed with expansion joint filler and sealing compound at least 3/8" deep.
- C. Contraction/control joints shall be provided where shown on the plans and shall be 1/4 the depth of the slab or a minimum of 1" deep. Unless otherwise indicated on the plans, joints may either be tooled, formed-in-place or sawcut. When saw-cut joints are provided, cutting shall be timed properly with the set of the concrete so that it is firm enough not to be torn or damaged by the cutting blade and before random shrinkage cracking can form in the slab. In any case, cutting shall be completed not later than 12 hours after the concrete is placed and finished. Unless otherwise indicated on the plans, joints shall be sealed with joint sealing compound.
- D. Concrete shall be tamped and screeded true to grade and section, sufficient mortar brought to the surface for finishing, and the required finish given as specified hereinafter before the concrete sets. Steps in connection with walks shall have same finish as walks. All edges except for those at saw-cut control joints shall be rounded to 1/8" radius. Cross slope for sloped or crowned walks shall be 5/32" per foot. No pedestrian traffic shall be permitted on concrete walks for a period of 3 days after placing.
- E. Walks shall be finished as indicated hereinafter and scored where shown or called for on the plans.

3.07 FINISHING OF SLABS

- A. Finish A - Scratched Finish. After the concrete has been placed, struck off, consolidated and leveled, the surfaces shall be roughened with stiff brushes or rakes (cross-scratched) before final set.

- B. Finish B - Light Trowelled Finish. After the concrete has been placed, struck off, consolidated and leveled, the concrete shall not be worked further until ready for floating. Floating shall begin when the water sheen has disappeared and/or when the mix has stiffened sufficiently to permit the proper operation of a power-driven float. The surface shall then be consolidated with power-drive floats of the impact type except in thin sections. Hand floating with wood or cork-faced floats shall be used in locations inaccessible to the power-driven machine. The slab shall then be steel trowelled to a uniform, smooth texture.
- C. Finish C - Trowelled Finish. The surface shall be finished first with impact power floats, as specified above for Finish B, then with power trowels and finally with steel hand trowels. The first trowelling after power floating shall be done by a power trowel and shall produce a smooth surface which is relatively free of defects but which may still contain some trowel marks.
- D. Additional trowelling shall be done by hand after the surface has hardened sufficiently. The final trowelling shall be done to a point when a ringing sound is produced as the trowel is moved over the surface. The finished surface shall be free of any trowel marks and shall be uniform in texture and appearance. On surfaces intended to support floor coverings, any defects of sufficient magnitude to show through the floor covering shall be removed by grinding.
- E. Finish D - Broom Finish. The concrete slab shall be given a coarse transverse scored texture by drawing a broom across the surface. The operation shall follow immediately after steel-trowelling performed under Finish B above.
- F. Finish F - Non-Slip Finish. The surface shall be given a dust-on application of non-slip grit abrasive aggregates. Finish with steel trowel but avoid over-trowelling. The rate of application of abrasive aggregates shall be not less than 25 pounds per 100 square feet or application shall be in strict accordance with the manufacturer's recommendations.
- G. Finish G - Swirled Finish. After the concrete surface has been struck off, darbied, power floated and steel troweled, the surface shall be given a swirl float finish. The float should be worked flat on the surface in semi-circular or fan-like motion.

3.08 FINISHING TOLERANCES FOR SLABS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

- A. Finish shall be true planes within plus or minus 0.5 inch in 10 feet, as determined by a 10-ft. straightedge placed anywhere on the slab in any direction.
- B. Unless otherwise shown on the plans, all slabs shall meet this tolerance. The tolerances will be checked prior to removing of forms or shores.

3.09 SELECTION OF FLOOR FINISHES

- A. Unless otherwise indicated on the plans, the following floor finishes shall be used:
1. Finish A - Scratched Finish. For surfaces intended to receive bonded applied cementitious applications (such as setting beds for ceramic tile or quarry tile on the first floor, where no membrane is called for).
 2. Finish B - Light Trowelled Finish. For surfaces intended to receive roofing, waterproofing and membrane (such as setting beds on membranes, second floor and above).
 3. Finish C - Trowelled Finish. For interior floors (including refrigerator floor) and floors intended to receive floor coverings.
 4. Finish D - Broom Finish. For walks.
 5. Finish F - Non-Slip Finish. For platforms, interior and exterior steps, landings and ramps.
 6. Finish G - Swirled Finish. Not used.

3.10 REPAIR OF DEFECTS

- A. After forms have been removed, any concrete which is not constructed as shown on the plans or is out of alignment or level beyond required tolerances or which shows a defective surface which in the opinion of the Engineer cannot be properly repaired or patched shall be removed.
1. Where cast-in-place concrete which is exposed to view or designated as sandblasted requires repairing or patching, the texture of the surface of such repair or patch shall closely match that of the surrounding surface. If the concrete is to remain unpainted, the surface color shall also be closely matched to that of the surrounding surface.
 2. All tie holes and all repairable defective areas shall be patched immediately after form removal as follows:
 3. All honeycombed concrete shall be chipped out to sound concrete but in no case to a depth of less than 1 inch. If possible, edges of the chipped-out areas shall be undercut.
 4. Rock pockets, form tie holes, deep holes not too large in area, other holes with relatively high ratio of depth to area, and similarly confined areas shall be dry packed.

5. After the area to be patched has been thoroughly cleaned and dampened, mortar, which shall consist of 1 part cement, 2-1/2 parts sand passing a #16 screen, and only enough water to produce a mortar that will stick together upon being molded into a ball by slight pressure of the hands, shall be placed in the holes in layers having a compacted thickness of about 3/8". Each such layer shall be solidly rammed over its entire surface using a hardwood stick and a hammer.
6. Shallow depressions where lateral restraint cannot be obtained, voids behind reinforcement, and holes extending through concrete sections shall be patched using a commercially prepared bonding agent, a stiff mortar mix of 1 part cement and not more than 2-1/2 parts sand.
7. For filling holes in exterior surfaces, an epoxy-bonding agent shall be used. Application of the bonding agent shall be in strict conformance with the manufacturer's instructions.
8. An epoxy-and-sand mixture may be used in lieu of the mortar-and-bonding agent mixture for any of the patching above. The preparation of the surface to receive the patch, as well as the mixture proportions of the epoxy-and-sand, shall be in strict conformance with the manufacturer's instructions.
9. Except for concrete required to be removed under Paragraph 3.10, any concrete which is not constructed as shown on the plans or is out of alignment and/or level beyond allowable tolerances may be patched using an epoxy-and-sand mixture.
10. The proportions of the mix and the preparation of the surface to receive the patch shall be in strict conformance with the manufacturer's instructions except as or unless otherwise specified herein. The minimum thickness of the patch shall be 1/4". No "feathering" to a lesser thickness will be permitted.
11. Misalignment which requires correction more than 1 inch thickness shall be repaired in the following manner:
 12. The surface of the affected area shall be chipped, etched, or otherwise cleaned and roughened to provide a sound surface for bonding;
 13. Concrete nails or other fasteners which can provide positive mechanical bonding of the patch shall be set into the surface at about 18 inches o.c. in all directions with a minimum of 2 rows;
 14. Wire mesh reinforcement as approved by the Engineer shall be installed in those portions of the patch which exceed 2-inch thickness;

15. A bonding agent suitable for use in the repair location (epoxy required for exterior use) shall be applied over the entire surface to be patched;
16. Formwork to the true lines called for shall be installed over the area requiring the patch; and
17. Concrete or grout with aggregate sized appropriately for the cavity and which will provide strength equivalent to that of the base surface shall be placed in the form, properly compacted and suitably cured.

3.11 SURFACE FINISHES

- A. Rough Concrete Finish. Rough concrete finish surfaces shall be reasonably true to line and plane with no specific requirements for selected facing materials. Tie holes, honeycombing and defects shall be patched in accordance with Paragraph 3.10A herein except that the patches for concealed surfaces need not be matched in color and texture with adjacent surfaces. Fins exceeding 1/4" in height shall be removed. Otherwise, surfaces shall be left with the texture imparted by the forms
- B. Sandblasted Finish.
 1. All sandblasting shall be done at a consistent point in cure age for sake of uniformity. Upon completion of sandblasting and prior to application of finish treatment, thoroughly remove all residue sand from blasted surfaces by water.
 2. Form ties shall be broken back from the surface and washers removed prior to blasting the surface.
 3. During sandblasting operation, protect surfaces not to be sandblasted by masking with wood, metal, rubber, or tape. Concrete shall receive a medium sandblast (by wet method). Provide samples for approval and selection, using beach sand, crush basalt, silica sand, or a combination of them for the samples.
 4. Prepare one 4 ft. x 4 ft. sample with the specified mix for final approval. Approved sample shall remain on jobsite during period of sandblasting and shall be labeled with the following information.
 - a. Age of concrete when sandblasted.
 - b. Type of nozzle used.
 - c. Type of sand used.
- C. Plywood Finish. Finish of all exposed surfaces cast against forms constructed of plywood or lined with "Plyform" shall be true to line and plane.

- D. Joint marks and fins shall be removed and surfaces left smooth, dense and free from prominent grain markings.
- E. The surface shall be scrubbed to remove any laitance or loose particles and to expose any defects.
- F. Tie holes, honeycombing and defects shall be repaired in accordance with Paragraph 3.10 herein.
- G. The surface shall be thoroughly wetted. Then, as the concrete approaches surface dryness, a mortar consisting of 1 part Portland cement, 2 parts well-graded sand passing a No. 30 sieve, and enough water to provide the consistency of thick paint shall be vigorously and thoroughly rubbed over the area with clean burlap pads so as to fill all voids.
- H. While the mortar is still plastic but partially set so that it cannot be easily pulled from the voids, the surface shall be rubbed again with a dry (no water) mortar mix of the same proportions as above. Burlap pads, stretched tightly around a board to prevent dishing the mortar in the voids, shall be used for this operation. There shall be no discernible thickness of mortar on the surface, except in the voids, when this operation is concluded.
- I. Immediately following the rubbing treatment, the surface shall be continuously moist-cured for 72 hours.

3.12 LOCATION OF SURFACE FINISHES

- A. Unless otherwise indicated on the plans, the location of formed surface finishes shall be as follows:
- B. Rough Concrete Finish - All concealed concrete surfaces such as behind ceramic tile, furring, acoustical tile, etc.
- C. Plywood Finish with Cement Wash - All exposed concrete surfaces.
- D. Sandblasted Finish – All columns on grid lines A, 1 and 7, including braced frame columns at grid lines A/1 and A/7.

3.13 CURING AND PROTECTION

- A. All concrete shall be cured for a period of not less than 7 days. During this curing period, the concrete shall be maintained with minimal moisture loss at a relatively constant temperature. Fresh concrete shall be protected from heavy rains, flowing water, mechanical injury, and injurious action of the sun. Acceptable curing methods:
 - 1. Slabs-on-grade: Water cure or pervious sheeting or curing compound membrane.
 - 2. Other slabs: Cure by one of the methods listed below. Curing method selected must be compatible with the finish to be applied to the concrete.

- B. Curing shall immediately follow the finishing operation.
- C. To promote drying of slabs on grade to receive floor finish and avoid moisture related flooring problems, once drying of the slab has started, if not sheltered by roofs or other floors it shall be protected by slab protection sheets from getting wet for a minimum of 90 days immediately prior to the placement of the floor finish. If the slab cannot be adequately protected, mechanical drying or other means shall be employed to reduce the vapor emission level to 3 lbs. per 1000 s.f. or less as tested in accordance with Section 01450 prior to placement of the floor finish.
- D. Water Curing - If cured with water, concrete shall be kept wet by mechanical sprinklers, by ponding, or by any other method which will keep the surfaces continuously wet.
- E. Pervious Sheeting - Overlap sheeting edges approximately 6 inches and keep sheets continuously wet throughout the curing period.
- F. Curing Compounds - Curing compounds used on concrete surfaces that are to receive floor covering, paint or colored finish shall be as recommended by the manufacturer to be compatible with the applied finish.
- G. The Contractor shall submit to the Engineer a letter certifying that the curing compound is compatible with the applied finish. Application shall be in accordance with the manufacturer's recommendations. If curing, sealing or other compounds are used which are incompatible with applied finish, such compound shall be thoroughly removed by grinding with a terrazzo grinder or other means approved by the Engineer

3.14 CONCRETE FOR ELECTRICAL WORK

- A. Unless otherwise noted on plans, concrete for handholes and manholes shall be 3,000 psi strength at 28 days. Concrete for encased ducts shall be 2,500 psi strength at 28 days. Maximum size of aggregates for concrete encased duct shall be 3/4".
- B. All ducts shall have a minimum cover of 3 inches of concrete. Spacers shall be used for placing ducts and for rigidly holding the ducts during the concrete pour. Provide minimum earth cover of 18 inches over top of concrete encasement unless otherwise shown on plans.
- C. The encased section of ducts to which a future connection is to be made shall end with a coupling. An unencased 1-foot section of duct and end cap shall constitute the terminus of such ducts.

3.15 CONCRETE FOR DRAINAGE, SEWER AND PLUMBING SYSTEMS

- A. Unless otherwise noted on plans, all concrete required for construction of manholes, catch basins, valve boxes, etc., which are required for plumbing and drainage installations shall be 3,000 psi strength at 28 days.

- B. Normal weight concrete containing calcareous coarse aggregates shall not be used in sewerage structures and/or components
- C. Sewer manholes shall be constructed in accordance with Civil drawings and specifications.

3.16 CLEAN UP

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

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

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

END OF SECTION

DIVISION 6 – WOOD AND PLASTICS

SECTION 06610 - CAST POLYMER FABRICATIONS

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 RELATED REQUIREMENTS

- A. SECTION 07920 – JOINT SEALANTS.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- B. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS, for submittal procedures.
- B. Product Data: Manufacturer's data for fabricated units.
- C. Samples: For each type, two samples, 12 inches by 12 inches in size, indicating specified color.
- D. Test Reports: Indicate compliance with reference standard performance requirements.
- E. Operation and Maintenance Data: Maintenance instructions, including recommended cleaning procedures and materials.
- F. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products to prevent damage to edges, ends, or surfaces, and in accordance with manufacturer's written instructions.

1.07 WARRANTY

- A. See SECTION 01300 – SUBMITTALS for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for countertops. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Requirements:

1. Interior Use: Flame spread index of 75 or less and smoke-development index of 450 or less; Class B interior finish classification when tested in accordance with ASTM E84.

2.02 SOLID SURFACING FABRICATIONS

A. Solid Surfacing: Densified, homogeneous, nonporous castings fabricated into sheets; composed of acrylic resins, fillers, color chips, and pigment and performance-enhancing additives.

1. Standard Type: Comply with minimum performance and engineering properties of ISFA 2-01.

B. Applications: countertops.

1. Style: As indicated on drawings.
2. Finish on Exposed Surfaces: Matte.
3. Color: As selected from manufacturer's standard range of colors.

2.03 FABRICATION

- A. Provide consistent finish over exposed surfaces matching approved samples.
- B. Fill seams and mold lines; grind smooth and finish to match adjacent cast polymer surfaces.
- C. Built-Up Edges: Laminate components where design requirements indicate built-up edges; follow manufacturer's recommended procedures for laminating.

2.04 ACCESSORIES

- A. Adhesives: Type recommended by cast polymer manufacturer for application; not containing formaldehyde or volatile organic compounds.
- B. Joint Sealants: Type recommended by cast polymer manufacturer for application.
- C. Joint Sealants: See SECTION 07920. – JOINT SEALANTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify substrates are prepared to receive cast polymer fabrications.
- B. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Prepare substrates in accordance with manufacturer's written instructions.

3.03 INSTALLATION

- A. Install cast polymer units in accordance with manufacturer's written instructions.
- B. Install cast polymer units in accordance with manufacturer's written instructions.
- C. Align work plumb and level.

3.04 PROTECTION

- A. Protect installed cast polymer units from subsequent construction operations.

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

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07920 - JOINT SEALANTS

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 RELATED REQUIREMENTS

- A. SECTION 09211 – GYPSUM BOARD ASSEMBLIES: Sealing acoustical and sound-rated walls and ceilings.
- B. SECTION 09300 - TILING: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- B. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- C. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.
- D. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

- A. See SECTION 01300 SUBMITTALS for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
- C. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 WARRANTY

- A. **Manufacturer Warranty:** Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

- A. **Scope:**
 - 1. **Exterior Joints:**
 - a. Seal the following joints:
 - 1) Joints between doors, windows, and other frames or adjacent construction.
 - 2) Joints between different exposed materials.
 - 2. **Interior Joints:**
 - a. Seal open joints except specific open joints indicated on drawings as not sealed.
- B. **Exterior Joints:** Use nonsag nonstaining silicone sealant, unless otherwise indicated.
- C. **Interior Joints:** Use nonsag polyurethane sealant, unless otherwise indicated.
- D. **Interior Wet Areas:** kitchens and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

2.02 JOINT SEALANTS – GENERAL

- A. **Sealants and Primers:** Provide products used at interior spaces having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.03 NONSAG JOINT SEALANTS

- A. **Nonstaining Silicone Sealant:** ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. **Movement Capability:** Plus and minus 50 percent, minimum.
 - 2. **Nonstaining to Porous Stone:** Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. **Dirt Pick-Up:** Reduced dirt pick-up compared to other silicone sealants.
 - 4. **Color:** Match adjacent finished surfaces.
- B. **Polyurethane Sealant:** ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 - 1. **Movement Capability:** Plus and minus 50 percent, minimum.
 - 2. **Color:** Match adjacent finished surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.

3.02 INSTALLATION

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Install bond breaker backing tape where backer rod cannot be used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.03 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width, i.e., at low temperature in thermal cycle. Report failures immediately and repair them.

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

DIVISION 8 – DOORS AND WINDOWS

SECTION 08310 – ACCESS DOORS AND PANELS

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 RELATED REQUIREMENTS

- A. SECTION 09912 – INTERIOR PAINTING: Field paint finish.

1.03 REFERENCE STANDARDS

- A. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Manufacturer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

- A. Ceiling-Mounted Units:
 - 1. Location: As indicated on drawings.
 - 2. Panel Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
 - 3. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
 - 4. Size - Other Ceilings: 24" by 24" inches.

5. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

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 08320 SLIDING GLASS DOORS

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 RELATED REQUIREMENTS

- A. SECTION 07920 – JOINT SEALANTS: Sealing joints between door frames and adjacent construction.
- B. SECTION 08800 - GLAZING: Product and execution requirements for glass type and installation.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- E. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- F. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- G. ASTM E1423 - Standard Practice for Determining Steady State Thermal Transmittance of Fenestration Systems; 2021.
- H. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- I. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.

- B. Product Data: Provide component dimensions.
- C. Shop Drawings: Indicate opening dimensions, elevations of different types, and framed opening tolerances.
- D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
 - 1. Evidence of AAMA Certification; label or other documentation.
 - 2. Evidence of WDMA Certification.
 - 3. Evidence of CSA Certification.
 - 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- E. Certificate: Certify that sliding glass doors meet or exceed specified requirements.
- F. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.
- G. Manufacturer's qualification statement.
- H. Specimen warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project site and store in manufacturer's protective cartons until openings are ready for door installation.

1.07 WARRANTY

- A. See SECTION 01300 SUBMITTALS for additional warranty requirements.
- B. Correct defective work within a 2-year period after Date of Substantial Completion.
- C. Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum Sliding Doors:
 - 1. Arcadia, Inc; www.arcadiainc.com/#sle.
 - 2. Or approved equal.

2.02 SLIDING GLASS DOORS

- A. Aluminum Sliding Doors: Extruded aluminum unit frame and operable panel frame, factory fabricated, factory glazed; complete with integral sloped sill/threshold, flashings, and anchorage devices.
 - 1. Configuration: One fixed panel and one horizontal sliding panel.
 - 2. Finish: Clear Anodized.
 - 3. Color: Clear ano.
 - 4. Frame Depth: 6 inches, minimum.
 - 5. Aluminum Members: Factory finished; screw lock corner construction; thermally broken.
 - 6. Drainage: Provide drainage to exterior for moisture entering joints and glazing spaces and for condensation occurring within frame construction.
 - 7. Glass Stops: Same material and color as frame, sloped for wash.
 - 8. Operable Panels: Stainless steel bottom rollers; adjustable.
 - 9. Hardware: Manufacturer's standard frame lock and secondary foot-operated lock and keeper.
- B. Construction: Factory assemble door frame as one unit, including head jambs, and sill; factory assemble operating and fixed panels.
 - 1. Sizes: Allow for tolerances of rough framed openings, clearances, and shims around perimeter of assemblies.
 - 2. Joints and Connections: Flush, hairline width, and waterproof; accurately and rigidly joined corners.
 - 3. Sills: One piece, sloped to drain, with integral roller track.

2.03 COMPONENTS

- A. Glass and Glazing Materials: See SECTION 08800 - GLAZING.
- B. Insect Screens: Extruded aluminum frame with mitered and reinforced corners; screen mesh taut and secure to frame; adjustable spring-loaded top and bottom rollers; screen removable without use of tools; high-transparency vinyl-coated fiberglass screen mesh.
 - 1. Screen Frame Color: Match door exterior color.
 - 2. Operating Handle: Polycarbonate material with interior and exterior handles and lock lever; as selected by Architect from manufacturer's standard line.
 - 3. Screen handle color to match door frame exterior color, unless noted otherwise.

2.04 PERFORMANCE REQUIREMENTS

- A. Sliding Glass Doors: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for door type SD:
 - 1. Performance Class (PC): AW.
 - 2. Performance Grade (PG): Equivalent to design wind load.
- B. Design Pressure (DP): In accordance with ASCE 7.
- C. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection, tested by independent agency in accordance with ASTM E1996 for Wind Zone 4 - Additional Protection for Large and Small Missile impact and pressure cycling at design wind pressure.
- D. Water Penetration Resistance: No uncontrolled leakage on interior face when tested in accordance with ASTM E331 at differential pressure of 12.11 psf.
- E. Air Leakage: 0.10 cfm/sq ft maximum leakage at 6.27 psf pressure difference, when tested in accordance with ASTM E283/E283M.
- F. Door Frame Condensation Resistance Factor (CRF): CRF of 50, minimum, measured in accordance with AAMA 1503.
- G. Thermal Transmittance: U-factor of 0.35, maximum, that includes window glazing, door and frame system based on average window size required for project and determined in accordance with AAMA 1503, ASTM E1423, or NFRC 100.

2.05 ASSEMBLY

- A. Factory assemble door frame as one unit, including head, jambs, and sill; factory assemble operating and fixed panels.
- B. Sizes: Allow for tolerances of rough framed openings, clearances, and shims around perimeter of assemblies.
- C. Joints and Connections: Flush, hairline width, and waterproof; accurately and rigidly joined corners.
- D. Sills: One piece, sloped to drain, with integral roller track.
- E. Provide insect screen for each operable panel; finish frame same as door unless otherwise indicated.

2.06 ALUMINUM FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41, clear anodic coating not less than 0.7 mil thick.

2.07 ACCESSORIES

- A. Pull Handles: Manufacturer's standard type.
- B. Sliding Panel Bottom Rollers: Stainless steel, adjustable from interior.
- C. Limit Stops: Resilient rubber.
- D. Anchors: Hot-dipped galvanized or stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings are ready to receive work and opening dimensions and clearances are as indicated on shop drawings.

3.02 PREPARATION

- A. Prepare opening to permit correct installation of door unit in conjunction with air and vapor seal.

3.03 INSTALLATION

- A. Install sliding glass door units in accordance with manufacturer's instructions.
- B. Attach frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

- C. Use anchorage devices to securely fasten sliding door assembly to wall construction without distortion or imposed stresses.
- D. Place threshold in bed of sealant.
- E. Install operating hardware.

3.04 ADJUSTING

- A. Adjust hardware for smooth operation.

3.05 CLEANING

- A. Remove protective material from factory finished surfaces.
- B. Remove labels and visible markings.
- C. Wash surfaces by method recommended and acceptable to sealant and sliding glass door manufacturer; rinse and wipe surfaces clean.
- D. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.06 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

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 08330 – COILING DOORS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes: electric operated overhead insulated rolling doors.
- B. Related Sections:
 - 1. SECTION 09911 – EXTERIOR PAINTING.
 - 2. SECTION 09912 – INTERIOR PAINTING.
 - 3. DIVISION 16 - ELECTRICAL. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Air Infiltration to Comply With:
 - a. ASHRAE® (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) Standard 90.1-2007, 2010 & 2013 requirements of less than .3 CFM/FT2
 - b. IECC® (International Energy Conservation Code) 2012 requirements of less than 1.0 CFM/FT2
 - 2. Wind Loading:
 - a. Performance: Withstand positive and negative wind loads noted in the table below without damage or permanent set, when tested in accordance with ASTM

Wind Pressure Summary for C&C Zones based Upon Areas Ch 30 Pt 1											
All wind pressures include a Load Factor (LF) of 1.0											
a = 3.8 ft											
Zone	Figure	Pos A ≤ 10 ft ² psf	Neg A ≤ 10 ft ² psf	Pos A = 20 ft ² psf	Neg A = 20 ft ² psf	Pos A = 50 ft ² psf	Neg A = 50 ft ² psf	Pos A = 100 ft ² psf	Neg A = 100 ft ² psf	Pos A = 200 ft ² psf	Neg A = 200 ft ² psf
4	30.3-1	59.27	-64.21	56.64	-61.58	53.17	-58.11	50.55	-55.49	47.92	-52.86
5	30.3-1	59.27	-79.03	56.64	-73.77	53.17	-66.83	50.55	-61.58	47.92	-56.33

E330/E330M, using 10 second duration of maximum load.

3. Cycle Life:
 - a. Design doors of standard construction for normal use of up to 20 cycles per day maximum, and an overall maximum of 50,000 operating cycles for the life of the door
4. Seismic Performance:
 - a. Provide manufacturer's seismic calculations confirming ASCE7-10
5. Insulated Door Slat Material Requirements:
 - a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84
 - b. Sound Transmission Class (STC) rating up to 30 for the entire assembly. If an STC of 32 is desired, additional options are required. All configurations are evaluated per ASTM E90 and based on testing a complete, operable assembly
 - c. Minimum R-value of 8.0 (U-value of 0.125) as calculated using the ASHRAE Handbook of Fundamentals
 - d. Insulation to be CFC Free with an Ozone Depletion Potential (ODP) rating of zero
6. Safety:
 - a. Chain operated doors shall be designed so that the door immediately stops upward or downward travel and is maintained in a stationary position when the hand chain is released by user.

1.04 SUBMITTALS

- A. Reference SECTION 01330 SUBMITTAL PROCEDURES; submit the following items:
 1. Product Data
 2. Shop Drawings: Include special conditions not detailed in Product Data. Show interface with adjacent work.

1.05 QUALITY ASSURANCE/CONTROL SUBMITTALS:

- A.
 1. Provide manufacturer and installer qualifications - see below
 2. Provide manufacturer's installation instruction
- B. Closeout Submittals:
 1. Operation and Maintenance Manual
 2. Certificate stating that installed materials comply with this specification

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: ISO 9001:2015 registered and a minimum of five years experience in producing doors of the type specified
2. Installer Qualifications: Manufacturer's approval

1.07 DELIVERY STORAGE AND HANDLING

- ### A. Follow manufacturer's instructions

1.08 WARRANTY

- ### A. Standard Warranty: Two years from date of shipment against defects in material and workmanship

PART 2 PRODUCT

2.01 MANUFACTURER

A. Manufacturer:

1. Cookson: 24 Elmwood Avenue, Mountain Top, PA 18707.
 - a. Telephone: (800) 233-8366
2. Cornell
3. Clopay Building Products
4. Other approved equal

2.02 PRODUCT INFORMATION

- #### A. Model: ESD30 or approved equal

2.03 MATERIALS

- #### A. Curtain: Air infiltration rate of less than .3 CFM/FT², as tested per ASTM E283 validated by an independent testing agency. Test report required.
1. Fabrication:
 2. Slat Material: No. 6F, (Listed Exterior/Interior):
 - 1) Aluminum/Aluminum: 0.040 inch (1.016 mm) aluminum
 - a. Insulation: 7/8 inch (22 mm) foamed-in-place, closed cell urethane

- b. Total Slat Thickness: 15/16 inch (24 mm)
 - c. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84
 - d. R-value: 8.0
 - e. STC Rating: Sound Transmission Class (STC) rating up to 30 for the entire assembly. If an STC of 32 is desired, additional options are required. All configurations are evaluated per ASTM E90 and based on testing a complete, operable assembly
3. Exterior Slat Finish:
- a. SpectraShield® Coating System (Color Selected by Architect):
 - 1) SpectraShield color as selected by Architect from manufacturer's color range, more than 180 colors
 - 2) SpectraShield Ultra – Ultra Powder Coat to be applied as a protective top coat over SpectraShield finish. Top coat is a polyester based structured wear resistant clear powder coat of 2.5-3.5 mils cured film thickness. ASTM D-3363 pencil hardness: 2H or better. Tested per ASTM B117. Base coating of SpectraShield color as selected by Architect from manufacturer's color range, more than 180 colors.
4. Interior Slat Finish:
- a. SpectraShield® Coating System (Color Selected by Architect):
 - 1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat
 - 2) Zirconium treatment followed by baked-on polyester powder coat, with [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better
- B. Endlocks: Fabricate interlocking sections with high strength [nylon] [galvanized cast iron] endlocks on alternate slats each secured with two ¼" (6.35 mm) rivets. Provide windlocks as required to meet specified wind load.
- 1. Nylon: Required up to 21'-5" width (DBG - Distance Between Guides)
- C. Bottom Bar
- 1. Configuration:
 - a. Insulated Bottom Bar: Reinforced extruded aluminum interior face with full depth insulation and exterior skin slat to match curtain material and gauge.

Minimum 4" tall x 1-1/16" thickness.

2. Finish:

- a. Exterior: Match slats
- b. Interior: Powder coat to match slats.
- c. Air Infiltration Certification Label: Must be affixed to bottom bar

D. Guides:

1. Fabrication:

- a. Thermal break required. Minimum 3/16 inch (4.76 mm) stainless steel angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.

2. Finish:

- a. Stainless Steel: [#4 type 304 finish] [Mill finish]

E. Counterbalance Shaft Assembly:

- a. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width
- b. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque.

F. Brackets:

1. Fabricate from minimum 3/16 inch (5 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures
2. Finish: Powder Coat: Zirconium treatment followed by a baked- on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

G. Hood:

1. Minimum 24 gauge stainless steel with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.
2. Finish:

- a. Stainless steel: type 304 #4 finish

H. Weatherstripping:

- 1. Bottom Bar:
 - a. Motor Operated Doors: Sensing/weather edge with neoprene astragal extending full width of door bottom bar
- 2. Guides: Replaceable vinyl strip on guides sealing against [fascia side] [both sides] of curtain
- 3. Lintel Seal: Double brush seal with EPDM sandwiched between the two brush seals at door header to impede air flow.

2.04 OPERATION

- A. Manual ControlGard Chain Hoist: Provide chain hoist operator with endless steel chain, chain pocket wheel and guard, geared reduction unit, and chain keeper secured to guide. Chain hoist to include integral brake mechanism that will immediately stop upward or downward travel and maintain the door in a stationary position when the hand chain is released by the user
- B. Motor – Standard Use – Model MG (Industrial Duty Gear Head) Operator: The operator must not extend above or below the door coil when mounted front-of-coil. Rated for a maximum of 20 cycles per hour (not to be used for consecutive hours) cULus listed (to comply with UL requirements in The United States and Canada), Totally Enclosed Non Ventilated gear head operator(s) rated 1.5 hp as recommended by door manufacture for size and type of door, 208 Volts, 3 Phase. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, [emergency manual chain hoist] [provisions for auxiliary push-up operation] and control station(s). Motor shall be high starting torque, industrial type, protected against overload with an auto-reset thermal sensing device. Primary speed reduction shall be heavy-duty, lubricated gears with mechanical braking to hold the door in any position. Operator shall be equipped with [an emergency manual chain hoist assembly that safely cuts operator power when engaged. A disconnect chain shall not be required to engage or release the manual chain hoist.] [a disconnect cable for auxiliary push-up operation.] Operator drive and door driven sprockets shall be provided with #50 roller chain. [Provide an integral Motor Mounted Interlock system to prevent damage to door and operator when mechanical door locking devices are provided.] Operator shall be capable of driving the door at a speed of up to 9" per second or as recommended for door size. Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The electrical contractor shall mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.
- C. Control Station:
 - 1. Surface mounted: "Open/Close/Stop" push buttons; NEMA 1
- D. Control Operation:

1. Momentary Contact to Close: Fail-safe, UL325-2010 Compliant Entrapment Protection for Motor Operation
 - a. SafetyGard UL325 Light Curtain with Dynamic Sequential Blanking: Provide monitored, non-contact light curtain consisting of a transmitter and a receiver to be mounted to the guide assembly of the door in the provided mounting channel, projecting a thru beam across the width of the door for the height of the light curtain (3ft or 6ft depending on opening size of the door). Interruption of beam before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position
 - b. 2-wire, E.L.R. electric sensing/weather edge seal extending full width of door bottom bar. Provide a [retracting safety cord and reel] [self-coiling cable] connection to control circuit.
 - c. NEMA 4X photo eye sensors consisting of a transmitter and receiver that are to be mounted within 6" (152.4 mm) of the floor, projecting an IR beam across the entire width of the door. Electrical contractor to provide low voltage wiring from the transmitter and receiver to the door operator.
 - d. NEMA 1 photo eye sensors consisting of a transmitter and receiver that are to be mounted within 6" (152.4 mm) of the floor, projecting an IR beam across the entire width of the door. Electrical contractor to provide low voltage wiring from the transmitter and receiver to the door operator.
2. Sensing/Weather Edge: Automatic reversing control by an automatic sensing switch within neoprene or rubber astragal extending full width of door bottom bar
 - a. Electric sensing edge device. Provide a wireless sensing edge connection to motor operator eliminating the need for a physical traveling electric cord connection between bottom bar sensing edge device and motor operator.

2.05 ACCESSORIES

- A. Locking:
 1. None
- B. Trim Package: Minimum 16 gauge #4 type 304 finish stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates
- C. Commencement of work by installer is acceptance of substrate

3.02 INSTALLATION

3.03 GENERAL: INSTALL DOOR AND OPERATING EQUIPMENT WITH NECESSARY HARDWARE, ANCHORS, INSERTS, HANGERS AND SUPPORTS

- A. Follow manufacturer's installation instructions

3.04 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion

3.05 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer.
- B. Remove surplus materials and debris from the site

3.06 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative
- B. Instruct Owner's Representative in maintenance procedures

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 08511 - ALUMINUM WINDOWS

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 RELATED REQUIREMENTS

- A. SECTION 07920 – JOINT SEALANTS: Sealing joints between window frames and adjacent construction.
- B. SECTION 08800 - GLAZING.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- F. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- G. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).
- H. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- I. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2023.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.

- B. Product Data: Include component dimensions, information on glass and glazing, internal drainage details, and descriptions of hardware and accessories.
- C. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, anchorage locations, and installation requirements.
- D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
 - 1. Evidence of AAMA Certification.
 - 2. Evidence of WDMA Certification.
 - 3. Evidence of CSA Certification.
 - 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- E. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.
- F. Manufacturer's qualification statement.
- G. Specimen warranty.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of AAMA CW-10.
- B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.07 WARRANTY

- A. See SECTION 01300 SUBMITTALS for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN - AW PERFORMANCE CLASS WINDOWS

- A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 having Performance Class of AW, and Performance Grade at least as high as specified design pressure.
- B. Fixed, Thermally-Broken:
 - 1. Basis of Design: Boyd Aluminum; Series 3250XTF Fixed, 3-1/4-inch deep frame, thermally broken: www.boydaluminum.com/#sle or approved equal.
- C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
 - 1. Arcadia, Inc; www.arcadiainc.com/#sle.
 - 2. Or approved equal.
- D. Substitutions: See SECTION 01300 SUBMITTALS.
 - 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.02 ALUMINUM WINDOWS

- A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
 - 1. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
 - 2. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
 - 3. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
 - 4. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
- B. Fixed, Non-Operable Type:
 - 1. Construction: Thermally broken.

2. Glazing: Double; clear; low-e; laminated inner pane.
3. Exterior Finish: Class II natural anodized.
4. Interior Finish: Class II natural anodized.

2.03 COMPONENTS

- A. Frames: to match existing section; thermally broken with interior portion of frame insulated from exterior portion; flush glass stops of snap-on type.
- B. Glazing: See SECTION 08800 - GLAZING.
 1. For Exterior Windows: Type IG-1 at windows and G-6 at doors.
- C. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

2.05 FINISHES

- A. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31, clear anodic coating not less than 0.4 mil thick.

PART 3 EXECUTION

3.01 PRIME WINDOW INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sill and sill end angles.
- E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- F. Install glass and infill panels in accordance with requirements; see SECTION 08800 - GLAZING.

3.02 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

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 08800 – GLAZING

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 RELATED REQUIREMENTS

- A. SECTION 07920 – JOINT SEALANTS: Sealants for other than glazing purposes.
- B. SECTION 08320 – SLIDING GLASS DOORS: Glazing provided by door manufacturer.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- E. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- F. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- H. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.
- I. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- J. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

- L. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.
- M. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.
- N. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.
- B. Product Data on Insulating Glass Unit and Laminated Glass Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Manufacturer's qualification statement.
- E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 WARRANTY

- A. See SECTION 01300 SUBMITTALS for additional warranty requirements.
- B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.
- C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 - 1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 - 2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 - 3. Glass thicknesses listed are minimum.
- B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
 - 1. In conjunction with weather barrier related materials described in other sections, as follows:
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
 - 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.02 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
 - 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 - 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch thick, minimum.

2.03 INSULATING GLASS UNITS

A. Manufacturers:

1. Glass: Any of the manufacturers specified for float glass.
2. Cardinal Glass Industries; www.cardinalcorp.com/#sle.
3. Guardian Glass, LLC; www.guardianglass.com/#sle.
4. Vitro Architectural Glass (formerly PPG Glass); www.vitroglazings.com/#sle.
5. Or approved equal.

B. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Spacer Color: Black.
4. Edge Seal:
 - a. Color: Black.
5. Purge interpane space with dry air, hermetically sealed.

C. Type IG-1 - Insulating Glass Units: Vision glass, double glazed.

1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
4. Inboard Lite: Laminated float glass, 1/2" inch thick, minimum.
 - a. Tint: Clear.

5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Summer - Center of Glass: 1.6 W/m²K, nominal
7. Solar Heat Gain Coefficient (SHGC): 25, nominal.
8. Glazing Method: Dry glazing method, gasket glazing.

2.04 GLAZING UNITS

- A. Type G-6 - Hurricane Impact Resistance Glazing: Laminated glass, 3-Ply.
 1. Applications: Locations as indicated on drawings.
 2. Tint: Clear.
 3. Thickness: 1/2 inch.
 4. Outside Lite: Annealed glass.
 5. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 6. Middle Lite: Annealed glass.
 7. Interlayer, Inboard Side: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 8. Inside Lite: Annealed glass.
 9. Performance Criteria:
 - a. Hurricane Impact Resistance: Comply with ASTM E1996 windborne debris requirements for "Enhanced Protection" within Wind Zone 1.

2.05 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 INSTALLATION, GENERAL

3.03 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

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

DIVISION 9 - FINISHES

SECTION 09211 - GYPSUM BOARD ASSEMBLIES

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 RELATED REQUIREMENTS

- A. SECTION 06100 – ROUGH CARPENTRY: Wood blocking product and execution requirements.
- B. SECTION 07920 – JOINT SEALANTS: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- C. SECTION 09300 - TILING: Tile backing board.

1.03 REFERENCE STANDARDS

- A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- C. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- D. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2019.
- E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.
- G. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- H. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- I. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

- J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
- K. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- L. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).
- M. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- N. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- O. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.
- P. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.
- B. Product Data

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.
- B. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
- B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing

indicated, with maximum deflection of wall framing of L/120 at 5 psf.

1. Studs: C-shaped with knurled or embossed faces.
2. Runners: U shaped, sized to match studs.

2.03 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
- B. Backing Board For Wet Areas: One of the following products:
 1. Application: Surfaces behind tile in wet areas including tub and shower surrounds, and shower ceilings.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 1/2 inch.
- C. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Ceilings, unless otherwise indicated.
 2. Thickness: 1/2 inch.
 3. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

- A. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
 1. Corner Beads: Low profile, for 90 degree outside corners.
- B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

- C. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C1007/AISI S220 and manufacturer's instructions.
- B. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
- C. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- D. Blocking: Install wood blocking for support of:
 - 1. Wall-mounted cabinets.
 - 2. Plumbing fixtures.
 - 3. Wall-mounted equipment

3.03 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.06 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.07 PROTECTION

- A. Protect installed gypsum board assemblies from subsequent construction operations.

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 09300 - TILING

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 RELATED REQUIREMENTS

- A. SECTION 07920 – JOINT SEALANTS: Sealing joints between tile work and adjacent construction and fixtures.
- B. SECTION 09211 – GYPSUM BOARD ASSEMBLIES: Tile backer board.

1.03 REFERENCE STANDARDS

- A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017 (Reaffirmed 2022).
- B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 2017.
- C. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2021).
- D. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
- E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2019.
- F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2021.
- G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 1999 (Reaffirmed 2019).
- H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2019).

- I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2019).
- J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).
- K. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2019).
- L. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
- M. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.
- N. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.
- O. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
- P. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2019.
- Q. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
- R. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018 (Reapproved 2023).
- S. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2024.
- T. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.

- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- D. Installer's Qualification Statement:
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- B. Installer Qualifications:
 - 1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 TILE

- A. Glazed Wall Tile, Type CWT-1: ANSI A137.1 standard grade.
 - 1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 - 2. Size: 3" by 12" inch, nominal.
 - 3. Surface Finish: High gloss.
 - 4. Color(s): As indicated on drawings.
 - 5. Pattern: As indicated on drawings.
 - 6. Trim Units: Matching bullnose shapes in sizes coordinated with field tile.
 - 7. Products:

- a. Crossville Inc.; Handwritten: <http://www.crossvileinc.com/>.
 - b. Or approved equal.
- B. Porcelain Tile, Type PFT-1, TB-1: ANSI A137.1 standard grade.
- 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
 - 2. Size: 6 by 6 inch, nominal.
 - 3. Edges: Interlocking shape.
 - 4. Surface Finish: Unglazed.
 - 5. Color(s): To be selected by Architect from manufacturer's standard range.
 - 6. Trim Units: Matching cove base shapes in sizes coordinated with field tile.
 - 7. Products:
 - a. Crossville Inc.; Bluestone: <https://www.crossvilleinc.com/>.
 - b. Or approved equal.

2.02 SETTING MATERIALS

- A. Provide setting and grout materials from same manufacturer.
- B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
- 1. Products:
 - a. ARDEX Engineered Cements; ARDEX X 5: www.ardexamericas.com/#sle.
 - b. LATICRETE International, Inc; TRI-LITE: www.laticrete.com/#sle.
 - c. Mapei Corporation; Adesilex P10 Mosaic & Glass Tile: www.mapei.com/#sle.
 - d. Sika Corp; SikaTile 300 Set: www.sika.com/#sle.
 - e. Or approved equal.

2.03 GROUTS

- A. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.]
- 1. Applications: Where indicated.
 - 2. Products:

- a. ARDEX Engineered Cements; ARDEX WA: www.ardexamericas.com/#sle.
- b. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com/#sle.
- c. Mapei Corporation; Kerapoxy CQ: www.mapei.com/#sle.
- d. Sika Corp; SikaTile 825 Epoxy: www.sika.com/#sle.
- e. Or approved equal.

2.04 MAINTENANCE MATERIALS

- A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
 - 1. Composition: Water-based colorless silicone.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION – GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.

- F. Sound tile after setting. Replace hollow sounding units.
- G. Keep control and expansion joints free of mortar, grout, and adhesive.
- H. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- I. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- J. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.
 - 1. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F114, with cleavage membrane.
- B. Cleavage Membrane: Lap edges and ends.
- C. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.05 INSTALLATION - WALL TILE

- A. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.06 CLEANING

- A. Clean tile and grout surfaces.

3.07 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after 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 09650 - RESILIENT FLOORING

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 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2023.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- F. ASTM F3261 - Standard Specification for Resilient Flooring in Modular Format with Rigid Polymeric Core; 2020.
- G. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.03 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Verification Samples: Submit two samples, 6" by 6" inch in size illustrating color and pattern for each resilient flooring product specified.
- D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

- A. Resilient Tile with Rigid Polymeric Core - Type LVT-1 and LVT-2: Printed film type, with transparent or translucent wear layer; polymeric rigid core with or without backing.
 - 1. Manufacturers:
 - a. Mannington Comercial; Access Collection: www.manningtoncommercial.com or approved equal.
 - 2. Minimum Requirements: Comply with ASTM F3261, Class I; Type A - Smooth; Grade 1 - Commercial.
 - 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648.
 - 4. Tile or Plank Size: As indicated on drawings.
 - 5. Wear Layer Thickness: 0.020 inch.
 - 6. Total Thickness: 0.18 inch minimum.
 - 7. Color: As indicated on drawings.

2.02 RESILIENT BASE

- A. Resilient Base - Type RB-1: ASTM F1861, Type TS, rubber, vulcanized thermoset; style as scheduled.
 - 1. Manufacturers:
 - a. Flexco Corporation; Base Sculptures: www.flexcofloors.com/#sle.
 - b. Johnsonite, a Tarkett Company; www.johnsonite.com/#sle.
 - c. Mannington Commercial; www.manningtoncommercial.com/#sle.

- d. Roppe Corporation; Contours Profiled Wall Base System:
www.roppe.com/#sle.
- e. Or approved equal.
2. Height: 6 inches.
3. Thickness: 0.125 inch.
4. Finish: Satin.
5. Length: Roll.
6. Color: To be selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 1. Test as Follows:
 - a. Alkalinity (pH): ASTM F710.
 - b. Internal Relative Humidity: ASTM F2170.
 - c. Moisture Vapor Emission: ASTM F1869.
 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

- A. Remove existing resilient flooring and flooring adhesives; follow the recommendations of RFCI (RWP).
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

- D. Prohibit traffic until filler is fully cured.
- E. Clean substrate.

3.03 INSTALLATION – GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
 - 1. Fit joints and butt seams tightly.
 - 2. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 - 1. Resilient Strips: Attach to substrate using adhesive.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION - TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.05 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after 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 09911 - EXTERIOR PAINTING

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 RELATED REQUIREMENTS

A. SECTION 09912 – INTERIOR PAINTING.

1.03 REFERENCE STANDARDS

A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

B. SSPC-SP 13 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See SECTION 01300 - SUBMITTALS, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.

2. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

2.02 PAINTS AND FINISHES – GENERAL

- A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.
- B. Colors: To be selected from manufacturer's full range of available colors.
1. Provide field and trim colors to match existing building colors as approved by Architect.

2.03 PAINT SYSTEMS – EXTERIOR

- A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
1. Two top coats and one coat primer.
 2. Top Coat(s): Exterior Light Industrial Coating, Water Based; MPI #161, 163, or 164.
 3. Primer: As recommended by top coat manufacturer for specific substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete:

1. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

G. Masonry:

1. Prepare surface as recommended by top coat manufacturer.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- F. Use of spray method is expressly prohibited on airport property.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

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 09912 - INTERIOR PAINTING

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 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- D. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.03 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
 - 2. MPI product number (e.g., MPI #47).
 - 3. Cross-reference to specified paint system products to be used in project; include description of each system.
- C. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, 6"x6" inch in size minimum.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
2. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

2.02 PAINTS AND FINISHES – GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:

1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Colors: To be selected from manufacturer's full range of available colors.

1. Selection to be made by Architect after award of contract.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS – INTERIOR

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, aluminum, and acoustical ceilings.

1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex; MPI #143, 144, 145, 146, 147, or 148.

3. Primer: As recommended by top coat manufacturer for specific substrate.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
 1. Medium duty applications include doors and door frames.
 2. Two top coats and one coat primer.
 3. Top Coat(s): Interior Light Industrial Coating, Water Based; MPI #151, 153, or 154.
 4. Primer: As recommended by top coat manufacturer for specific substrate.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Concrete:
- F. Masonry:
- G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high-alkali surfaces.
- I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC- SP 1.
- J. Galvanized Surfaces:
- K. Ferrous Metal:
 1. Solvent clean according to SSPC-SP 1.

2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 Commercial Blast Cleaning. Protect from corrosion until coated.
- L. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- M. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

3.02 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood and metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

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

DIVISION 11 - EQUIPMENT

SECTION 11301 - RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 SUBMITTALS

- A. See SECTION 01300 - SUBMITTALS for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.02 WARRANTY

- A. See Section 01300 - Submittals, for additional warranty requirements.
- B. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Dishwasher: Undercounter.
 - 1. Controls: Solid state electronic.
 - 2. Wash Levels: Three (3).
 - 3. Cycles: Six (6), including normal, rinse and hold, short, china/crystal, pot and pan, and energy saver.
 - 4. Features: Include rinse aid dispenser, optional water temperature boost, and adjustable upper rack.
 - 5. Finish: Stainless steel , color as indicated.
 - 6. Manufacturers (or approved equal):
 - a. GE Appliances: www.geappliances.com/#sle.
 - b. Whirlpool Corp: www.whirlpool.com/#sle.
 - c. Bosch; www.bosch.us.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Anchor built-in equipment in place.

3.03 ADJUSTING

- A. Adjust equipment to provide efficient operation.

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

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13280 - REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL

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 DESCRIPTION OF WORK

- A. In performing this asbestos abatement project, all possible safeguards, precautions, and protective measures should be utilized to prevent exposure of any individual to asbestos fibers.

1.03 WORK SPECIFIED IN THIS SECTION

- A. Contractor is responsible for coordinating all work within this Section with contract drawings, contract specifications, and contract documents.
- B. All asbestos-containing material (ACM) as identified in SECTION 01715 - EXISTING CONDITIONS - ASBESTOS/ LEAD / HAZARDOUS MATERIAL SURVEY, and/or any asbestos survey report included as part of the contract documents, and which will be impacted/disturbed by planned renovation activity described in the Contract Documents are included as part of the asbestos related work under this Section even if not identified in this Section.
- C. Furnish all labor, materials, and equipment necessary to carry out the safe removal of asbestos- containing material in compliance with all applicable laws and regulations, from all surfaces/areas, including all incidental and pertinent operations to safely complete this project.
- D. Contractor shall treat all materials within the project area that are similar in appearance and texture to ACM identified in the provided asbestos survey reports, as positive for ACM, unless proven otherwise, and is included as work under this Section as required to safely complete this project.
- E. Homogeneous area(s) that is/are known to be ACM, shall be treated as ACM throughout the project limits and is/are included as work under this Section as required to safely complete this project.
- F. The asbestos work shall generally include the removal and disposal, as asbestos-containing material, the following:
 - 1. Entire ceiling system, including but not limited to, all suspended plaster-on-lath ceiling system, all acoustical ceiling finish, plaster-on-lath material, support wires, wire mesh, metal supports, ceiling grids, T-bars, plaster walls within

ceiling system, all overspray and overspray on, but not limited to, mechanical equipment, light fixtures, steel beams, walls, throughout the project limits, as required to safely complete this project. Work shall also include the removal and disposal of all sprayed-on/troweled-on insulation/material and overspray on structural steel beams and structural deck located above ceilings throughout the concourse project limits, as required to safely complete this project.

- G. Changes to SECTION 13280 - REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS of the specifications are not permitted except by the Certified Asbestos Project Designer who designed the project.
 - H. Suspect ACM not previously tested or identified shall be treated as ACM unless proven otherwise. Should suspect ACM that has not been previously tested be encountered, the Contractor shall notify the Engineer who shall coordinate additional testing if deemed necessary. Contractor shall not test any suspect ACM previously tested or any suspect ACM not previously tested.
 - I. Post-removal encapsulation work shall include the coating of all surfaces in the asbestos regulated area as well as on other surfaces designated on the plans and specifications.
 - J. Cleaning shall include all work within the complex affected by the removal project.
 - K. In general, the principal items of work shall be as follows:
 - 1. Protection of all on-site personnel and visitors.
 - 2. Preparation of work area.
 - 3. Removal and disposal of asbestos-containing material as specified.
 - 4. Encapsulation of surfaces noted.
 - 5. Cleaning.
 - 6. Removal of temporary plastic coverings.
 - L. All work specified in this Section shall be performed by individual(s) who are State of Hawaii - Department of Health certified and registered asbestos workers and/or supervisors. All training and registration must be current and each individual must possess current and valid asbestos ID at all times at the project site. Individuals without a current asbestos ID card onsite shall not be permitted to perform any work relating to this Section.
- 1.04 COORDINATION WITH OTHER SECTIONS
- A. Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to the Engineer.

- B. It will be the Contractor's responsibility to repair and/or replace to the State's satisfaction all items identified as damaged and/or missing that cannot be proven to have been in this condition prior to the commencement of this project.

1.05 SUBMITTALS

- A. Submit in accordance with SECTION 01300 - SUBMITTALS.
- B. Submittals shall be submitted in the order listed herein. Failure to do so will result in automatic rejection of submittals.
- C. Furnish Contractor certification that the Contractor is experienced with the EPA and OSHA regulations related to asbestos, application, removal, disposal and treatment.
- D. Fall Protection Plan: Submit to the Engineer a copy of the Contractor's site specific fall protection plan prepared in accordance with all applicable laws.
- E. Detailed Asbestos Work Schedule: Actual start and completion dates for each phase of the asbestos removal work and other work specified. The schedule shall be formulated on a day/week basis and include working hours. The schedule shall be updated weekly and submitted to the Engineer.
- F. Notices (Notification): Prior to commencement of work but no later than 20 working day before commencement of any on-site project activity, send a written "10-working day notification" of the proposed asbestos abatement work with copies to the Engineer and to the following agency:

State of Hawaii
Department of Health
Indoor and Radiological Health Branch - Asbestos
Section 99-945 Halawa Valley Street, Aiea,
Hawaii 96701.

- G. Permits: Submit 6 copies of all permits and arrangements for transportation and disposal of asbestos-containing or contaminated materials.
- H. Manufacturer's Data: Submit 6 copies of manufacturer's specifications, safety data sheets (SDS), installation instructions and field test procedures for each material, and all equipment related to asbestos handling and abatement, including other data as may be required to show compliance with these specifications and proposed uses. Indicate the application rate for encapsulant as specified herein. Indicate by transmittal form that a copy of each installation instruction has been distributed to the installer.
- I. Samples: Submit samples of the following items for approval prior to ordering materials:
 - 1. Asbestos Encapsulant(s): Copies of manufacturer's literature including all laboratory data, SDS, and application instructions.

2. Plastic Sheeting: 8-1/2- by 11-inch pieces of each thickness and type with labels indicating actual mil. thickness.
 3. Surfactant: Copies of manufacturer's literature including all laboratory data, SDS, mixing and application instructions.
 4. Tapes and Adhesives: Copies of manufacturer's literature including all laboratory data.
 5. Warning Labels and Signs: Copies of examples of all required signage.
 6. Protective Clothing: Copies of manufacturer's literature on all protective clothing and one sample of each item (which will be returned to the Contractor).
 7. Respirator Equipment: Copies of manufacturer's literature on all respirator equipment and one sample of each item which will be returned to the Contractor.
- J. Project Specific Descriptions and Drawings: Submit to the Engineer copies of shop drawings with the following items as a minimum:
1. Name and resume of Contractor's onsite Competent Person responsible for compliance with all Federal, State and Local regulations and plans and specifications. No work shall be performed unless the designated Competent Person is onsite.
 2. Descriptions of any equipment to be employed not discussed in this Section.
 3. Project specific work procedures (detailed plan of work procedures and methods) to be employed for this project.
 4. Location of regulated (control) work area boundaries and location of air purifying units.
 5. Location and construction of decontamination unit adjacent to the regulated work area.
 6. Location of air monitoring stations (including occupied tenant spaces).
- K. Documentation For Instruction: Furnish employee certification that employees have had instructions on the dangers of asbestos exposure, on respirator use, and decontamination, from an EPA approved training facility, as required by AHERA Regulation 40 CFR 763, Appendix C to Subpart E, April 30, 1987 and Asbestos Model Accreditation Plan (MAP), and Hawaii Administrative Rules, Chapter 11-501 and 11-504.
1. Submit to the Engineer documentation that each and every individual, including foremen, supervisors, other company personnel or agents, and any

other individual who may be exposed to airborne asbestos fibers, who may be responsible for any aspects of abatement activities, or who is allowed or permitted to enter areas where such exposure may occur, has had instruction on the hazards and health effects of asbestos exposure. Also submit to the Engineer documentation that personnel stated above have had instructions on the nature of the activities and operations which create a risk of asbestos exposure and the necessary protective steps, on use and fitting of respirators (in accordance with qualitative procedures as detailed in OSHA 1926.1101), Qualitative and Quantitative Fit Testing.

2. Procedures, on protective dress, on use of showers, on entry and exit from the work areas under normal and emergency conditions, on all aspects of work procedures and protective measures, and on all provisions of OSHA 1926.1101, and that each and every employee understands this instruction. This documentation shall be an outlined format of the instruction and shall be signed by all employees to be engaged on this project and by all individuals before being allowed within the project site and must include an acknowledgment and an assumption of the potential risk of exposure by that individual and a release of liability of the State, Consultant, and Engineer for any such exposure. The Contractor shall be responsible for keeping the documentation up to date and subsequent submittals to the Engineer before any additional employee or individual, not currently on this list, is allowed within the project site.
- L. Documentation From Physician: Submit to the Engineer documentation from a physician that all employees or agents who may be exposed to airborne asbestos have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, documentation that all individuals permitted within the project site have received medical monitoring or had such monitoring made available to them as required in OSHA 1926.1101. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the work place environment (e.g. high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities. The Contractor shall keep and make available to all affected individuals a record and the results of such examinations.
- M. Medical Surveillance Program: Submit to the Engineer a copy of the Contractor's medical surveillance program prepared in accordance with all applicable laws, and all medical examination documentation for all employees to be used on this project.
- N. Respiratory Protection Program: Submit to the Engineer a copy of the Contractor's respiratory protection program prepared in accordance with all applicable laws. The Contractor shall also submit fit test data on all employees to be used on this project.
- O. Hazard Communication Program: Submit to the Engineer a copy of the Contractor's hazard communication program prepared in accordance with all applicable laws.

- P. Site Emergency Action Plan: Submit to the Engineer a copy of the Contractor's site emergency action plan prepared in accordance with all applicable laws.
- Q. HEPA Vacuums: Submit manufacturer's certification that vacuums conform to ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems as applicable to this project.
- R. Respirators: Submit documentation that respirators meet all requirements of NIOSH and EPA. Document NIOSH approval of all respiratory protective devices utilized on site. Include manufacturer's certification of HEPA filtration capabilities for all cartridges and filters.
- S. Rental Equipment: When rental equipment is to be used in abatement areas or to transport asbestos-contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the Engineer.
- T. Entry Log: Maintain a log of all personnel other than the Contractor's employees and agents who enter the work area while asbestos abatement operations are in progress until after final clearance is received that the work area is asbestos free. The log shall contain the following information as a minimum and certified copies shall be submitted to the Engineer weekly:
1. Date of visit.
 2. Visitor's name, employer, business address, and telephone number.
 3. Time of entry and exit from work area.
 4. Purpose of visit.
 5. Type of protective clothing and respirator worn.
 6. Certificate of release signed and filed with the contractor.
- U. Daily Log: Maintain a daily log documenting the dates and times of, but not limited to, the following items:
1. Meetings; purpose, attendees, brief discussion.
 2. Visitations; authorized and unauthorized at the job site.
 3. Special or unusual events, i.e., equipment failures, accidents.
 4. Air monitoring tests and test results.
 5. Documentation of Contractor's completion of the following:
 - a. Inspection of work area preparation prior to start of removal and daily

thereafter.

- b. Progress of the work.
 - c. Contractor's inspections prior to encapsulation of the substrate from which such materials have been removed.
 - d. Removal of waste materials from work area.
 - e. Decontamination of equipment (list items).
 - f. Contractor's daily inspection for visual dust and debris.
6. Daily certification by the Contractor's onsite competent person that all work has been performed in accordance with all applicable laws, specifications and approved work plan.
- V. Waste Disposal Manifest Forms: Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos-containing waste materials removed from the work area during the abatement process.
- W. Asbestos Contractor OSHA Worker Exposure Determination Analytical Laboratory: Submit name, address and telephone number of analytical laboratory selected for OSHA worker exposure determination sample analyses and reporting of airborne fiber concentrations along with evidence that the air monitoring testing laboratory is a successful participant in the Proficiency Analytical Testing (PAT) program. The asbestos contractor may collect his/her own air samples for OSHA employee exposure determination purposes.
- X. Pressure Differential Measurements: Submit to the Engineer documentation that minimum pressure differential of -0.04 column inches of water pressure differential was maintained as evidenced by manometric measurements.

1.06 PRODUCT HANDLING

- A. Delivery and Storage of Materials: Deliver materials to the site in original packages, containers or bags fully identified with manufacturer's name, brand and lot number. Store materials in a dry well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation as approved by the Engineer. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations. Replacement materials shall be stored outside the contaminated work area until abatement is completed.

1.07 PROTECTION

- A. Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employee's of Subcontractors, the State and his representatives, State and local inspectors, responding emergency personnel and any other designated individuals. A list of authorized personnel shall be established prior to job start.

1. Entry to the work area by unauthorized individuals shall not be permitted without the express approval of the Contractor's on-site Competent Person and any such entry shall be reported immediately to the Engineer by the Contractor.
 2. A Visitor's Log shall be maintained.
 3. The Contractor shall have control, subject to approval of the State, of security in the work area and in proximity of Contractor's equipment and materials.
- B. Site Protection and Safety: As a minimum, follow the requirements of EPA and OSHA. Take all necessary precaution to ensure there is no asbestos contamination to those areas not included in the work schedule.
- C. Protective Covering: The Contractor shall provide and install additional protective covering to protect the project on an "as required" or "upon request" by the Engineer basis. Protective covering shall be clean plastic sheets.
- D. Safeguarding of Property: The Contractor shall take whatever steps necessary to safeguard his work and also the property of the State and other individuals in the vicinity of his work area during the execution of this Contract. He shall be responsible for and make good on any and all damages by his employees' negligence. Do not load structure with weight that will endanger the structure.
- E. Completed Work: The Contractor shall provide all necessary protection for surfaces encapsulated under this section.

1.08 ABBREVIATIONS

- A. ANSI: American National Standards Institute, Inc.
- B. CFR: Code of Federal Regulations.
- C. HIOSH: Hawaii Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii.
- D. EPA: U.S. Environmental Protection Agency.
- E. NESHAPS: National Emission Standards for Hazardous Air Pollutants.
- F. MAP: Asbestos Model Accreditation Plan.
- G. NIOSH: National Institute for Occupational Safety and Health.
- H. OSHA: Occupational Safety and Health Administration.

1.09 GENERAL REQUIREMENTS

- A. Furnish Contractor certification, within ten consecutive calendar days from

contract execution, that the Contractor is experienced with the EPA and OSHA regulations related to asbestos, application, removal, disposal, and treatment.

- B. Furnish employee certification, within 10 consecutive calendar days from contract execution, that employees have had instructions on the dangers of asbestos exposure, on respirator use and decontamination, from an EPA approved training facility, as required by AHERA Regulation 40 CFR 763, Appendix C to Subpart E, April 30, 1987 and asbestos Model Accreditation Plan (MAP), and Hawaii Administrative Rules, Chapter 11-501, 11-503 and 11-504.
- C. Contractor shall examine and have at all times in his possession at his office (one copy) and in view and readily available at each jobsite (one copy) a current issue of the following publications:
 - 1. Title 29, Code of Federal Regulations, Part 1926.1101 Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.
 - 2. State of Hawaii: Occupational Safety and Health Standards, Title 12, Subtitle 8, Part 1.
 - 3. State of Hawaii: Occupational Safety and Health Standards, Title 12, Chapter 203 - Hazard Communication.
 - 4. Title 40, Code of Federal Regulations, Part 61, Subparts A and M, National Emission Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA).
 - 5. Guidance for Controlling Asbestos-Containing Materials in Buildings (purple book), U.S. Environmental Protection Agency (EPA).
 - 6. Title 34, Code of Federal Regulations, Part 231, Appendix C, Procedures for Containing and Removing Building Materials Containing Asbestos, U.S. Environmental Protection Agency (EPA).
 - 7. ANSI Z88.2-80 Practice for Respiratory Protection.
 - 8. EPA, Final Response to the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR, Part 763, Subpart E.
 - 9. EPA, Model Accreditation Plan, 40 CFR Part 763 Subpart E, Appendix C.
 - 10. State of Hawaii, Asbestos Requirements, Title 11, Chapter 501 through 504.
 - 11. Project plans and specifications and approved Work Plan.
- D. The Contractor shall comply with the above requirements and any applicable State and City and County regulations. Where conflict or any inconsistency among requirements, this specification exists, and approved work plan exists the more stringent requirements shall apply. Ignorance of the above requirements and any

applicable State and City and County regulations resulting in additional cost to the Contractor shall not be paid by State.

- E. All regulations shall govern over these specifications, except that any more stringent specification (including approved work plan) or specification providing greater protection against asbestos exposure, injury, loss or liability shall control to the extent permitted by regulation. Any question regarding conflict or inconsistency between specifications and/or regulations should be directed to the Engineer.
- F. The Contractor shall give, at a minimum, 7 working days notification to the State's Designated Person (Air Monitoring Consultant) prior to the start of any asbestos related work.
- G. The Contractor shall not begin with any or conduct any work without the State's Inspector / Air Monitoring Consultant present onsite.
- H. WHENEVER APPROVAL OF THE ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH OTHER WORK, THE FOLLOWING SHALL BE COMPLIED WITH:
 - 1. The Contractor shall allow the Engineer 24 hours from notification to respond to the request for inspection.
 - 2. The Contractor shall designate one person (either a foreman or superintendent) who will be authorized to request inspections. The name of the designated person shall be submitted in writing to the State prior to commencing with the work. Requests from any other person will not be considered an official request.
 - 3. The designated person, when requesting inspection, shall provide the following information:
 - a. Name of caller.
 - b. Building and rooms to be inspected.
 - c. Work phase of inspection, as specified.

1.10 DEFINITIONS

- A. Abatement: Procedure to control fiber release from asbestos containing building materials.
 - 1. Removal: All herein specified procedures necessary to remove asbestos-containing materials from an area and disposal of the material at an approved site in an acceptable manner.
 - 2. Post-Removal Surface Encapsulation: Procedures necessary to coat surfaces from which asbestos-containing materials have been removed and where designated on the drawings to control any residual fiber release.

- B. Air Monitoring: The process of measuring the fiber content of a specific, known volume of air in a period of time.
- C. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.
- D. Authorized Visitor: The State, his representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.
- E. Holding Area: A secure area used for the storage of double bagged asbestos-containing material before removal from the project site to an approved disposal site.
- F. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.
- G. Friable Asbestos: Asbestos-containing material which can be crumbled to dust, when dry, under hand pressure.
- H. HEPA Filter: A High Efficiency Particulate Air filter capable of trapping and retaining 99.97 percent of monodispersed particles 0.3 micrometers or greater in diameter.
- I. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Air (HEPA) filter.
- J. Post-Removal Encapsulation: A liquid material which can be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface.
- K. Surfactant: A chemical-wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Plastic Sheeting: Minimum thickness of 6-mil polyethylene film.
- B. Plastic Bags: Minimum thickness 6-mil polyethylene film labeled as specified hereinafter.
- C. Tapes: Tape shall be capable of sealing joints of adjacent sheets of polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide, and double-faced foam tapes, by Nashua, 3-M, Arno, or approved equal shall be

used on polyethylene sheeting, red or NATO orange tape, minimum 2 inches wide for exit arrows.

- D. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water 3- M #76, #77, or approved equal.
- E. Surfactant (Wetting Agent): 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether, or equivalent, and shall be mixed with water to provide a concentration of 1 ounce, or more as needed, of surfactant to 5 gallons of water. (An equivalent surfactant shall be understood to mean material with a surface tension of 29 dynes/cm as tested in its properly- mixed concentration, using ASTM Method D 1331-56 (R 1980), "Surface and Interfacial Tension of Solutions of Surface-Active Agents.").
- F. Asbestos Encapsulant: Encapsulant shall be non-flammable with a Class A fire classification. Encapsulant shall be odorless when dry, and compatible with materials applied by others (separate contract). All references to application at strengths below full strength shall be as approved by the product manufacturer for the intended use.
- G. Warning Labels and Signs: As required by OSHA regulation 29CFR29 CFR 1926.1101. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter. Signage shall be as approved by the Engineer.
- H. Protective Clothing: As specified hereinafter. The Contractor is cautioned that during the summer and fall, there is usually a tremendous shortage of coveralls due to the consumption of these items by mainland contractors for summer
- I. Other Materials: Provide all other materials, which may be required to properly prepare and complete this project.

2.02 TOOLS AND EQUIPMENT

- A. General: Provide and fabricate suitable tools for the asbestos abatement procedures.
- B. Water Sprayer: Airless or a pressure sprayer for amended water application as applicable.
- C. HEPA Vacuum: High Efficiency Particulate Air (HEPA) vacuum.
- D. Air Purifying Unit: Air filtration system equipped with HEPA filter.
- E. Paint/Encapsulant Sprayer: Airless type.
- F. Scaffolding and Shoring: As required to accomplish the work and meet all applicable safety regulations.

- G. No power driven tools or equipment shall be permitted for removal of asbestos-containing materials.
- H. Other tools and equipment as necessary.

2.03 PERSONNEL PROTECTION REQUIREMENTS

- A. The Contractor acknowledges he alone is responsible for instruction and enforcement of personnel protection requirements and that these specifications provide only a minimum acceptable standard.
- B. The Contractor acknowledges that all person(s) within the regulated work area shall not remove respiratory protection. Any person(s) observed removing respiratory protection within the regulated area on more than one occasion will not be permitted to continue any work on the project.
- C. Provide workers with personally-issued and marked respiratory equipment approved by NIOSH and accepted by OSHA.
- D. Initial cleaning and work area preparation related work shall be performed in half mask dual cartridge negative pressure respirators approved for asbestos by NIOSH.
- E. All removal work related to the removal and bagging of asbestos-containing material shall be performed in air purifying respirators equipped with cartridges approved for asbestos by NIOSH.
- F. Loading and Unloading of Double-Bags or Drums at the Project Site and Landfill: Half-face dual- cartridge respirators equipped with cartridges NIOSH approved for asbestos.
- G. Other: Should any condition, for any reason, be encountered where the exposure level exceeds the action levels provided by the Engineer, the Contractor shall stop work and determine the causes of the excessive levels. Should the action level continue to be exceeded, the contractor shall stop work. Work will not be resumed until approval is received from the Engineer.
- H. Beards: Bearded persons will not be permitted in the regulated work area.
- I. Provide workers with sufficient sets of disposable protective full-body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full-body coveralls, footwear, gloves, and headgear. Provide hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as asbestos- contaminated waste.
 - 1. Protective clothing shall be worn by all personnel within the work area from the start of the removal through post-removal encapsulation work, until the Contractor has received acceptance of the asbestos-containing material removal and post-removal encapsulation work.

2. All persons conducting any work within the regulated work area shall remain fully suited (dressed) with protective clothing at all times. Any persons(s) observed partially suited while conducting work within the regulated area on more than one occasion will be required to be removed from performing any work on the project.
- J. No visitors shall be allowed in work areas, except as authorized by the Contractor's on-site competent person and specified herein. Provide authorized visitors with suitable respirators with fresh cartridges. Provide authorized visitors with suitable disposable protective full-body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full-body coverall, footwear, gloves and headgear, including hard hat when required and insulated rubber boots or equal.
- K. All electrical systems used for asbestos abatement operations shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes. All GFCI inside the regulated work area must be of waterproof type.
- L. Additional safety equipment (e.g., hard hats meeting the requirements of ANSI Z89.1-1981, eye protection meeting the requirements of ANSI Z87.1-1979, safety shoes meeting the requirements of ANSI Z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

PART 3 - EXECUTION

3.01 WORK AREA PREPARATION

- A. Work by the Asbestos Abatement Contractor: Step 1
 1. Posting of Caution Signs: Post caution signs in and around the work area to comply with 29 CFR 1926.1101, and all other Federal, State and local requirements. Signs shall be posted at a distance sufficiently far enough away from the work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.
 2. Critical Seals (barriers): Seal all windows, doors, and openings to the regulated work area with plastic sheeting. Plastic sheeting is to remain in place for the duration of the asbestos abatement or until specified by the Engineer or project designer.
 3. Install another barrier or isolation method which prevents the migration of airborne asbestos and debris from the regulated work area.
 4. Inspect the Building Openings: At the beginning of each work day, the Contractor shall inspect and ensure that all doors, windows and other openings of affected building(s) and all surrounding buildings are closed or

sealed.

B. Work by the Asbestos Abatement Contractor: Step 2

1. Temporary utility services are also generally specified under the General Specifications. Requirements specified herein amplify the General Specifications as they apply to the asbestos abatement operations.
2. Temporary Electricity and Lighting:
 - a. Existing electrical service to the building may be used for temporary electrical power during abatement and replacement work; however, the electrical power to the work areas will be shut down during abatement work.
 - b. The Contractor shall verify the location(s) of available electrical service outside the work areas and shall tie into the existing system at a location approved by the Engineer.
 - c. Install circuit and branch wiring, with area distribution boxes located so that power is available throughout the project by use of construction-type power cords.
3. Temporary Water:
 - a. Existing domestic water service to the building may be used for temporary water during construction. Location of tie-in shall be approved by the Engineer.
 - b. Install branch piping with taps as necessary throughout the construction area.
4. Temporary Sanitation Facilities:
 - a. Existing toilet facilities may be used by the Contractor's personnel during asbestos abatement work. Personnel must be in a decontaminated state before using temporary toilet facility.
 - b. Maintain toilet facility in a clean and sanitary condition in compliance with applicable codes and ordinances.
5. Temporary Fire Protection:
 - a. Provide and maintain temporary fire protection equipment during the asbestos abatement operations.
 - b. Equipment shall be of the appropriate type to fight fires associated with the existing building materials and those material used during the construction operations.

- C. Work by the Asbestos Abatement Contractor: Step 3
 - 1. Cover All Ceiling and Wall Penetrations: Cover all ceiling and wall vents, air-conditioning equipment, exhaust hoods, windows, louvered and screened openings, and doors with a single layer of 10-mil polyethylene sheeting or two layers of 6-mil polyethylene sheeting.

- D. Work by the Asbestos Abatement Contractor: Step 4

AFTER STEP 3 IS COMPLETED, APPROVAL BY STATE'S Air Monitoring CONSULTANT IS REQUIRED PRIOR TO PROCEEDING WITH REMOVAL WORK AS SPECIFIED HEREINAFTER. Commencement of work shall not start until:

- 1. Pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Engineer.
- 2. All equipment for abatement, clean-up and disposal are on hand.
- 3. All worker training (and certification) is completed.
- 4. Contractor receives written permission from the General Contractor's 3rd party daily air monitoring industrial hygiene testing entity to commence abatement.

3.02 ASBESTOS FIBER CONCENTRATIONS IN THE WORK AREA

- A. The maximum permissible exposure to airborne concentrations of asbestos fibers within the work area shall be 0.05 f/cc. The work shall stop whenever these limits are exceeded and the Contractor shall remedy the condition prior to commencing the work. The expenses resulting from the delays shall be the Contractor's responsibility and shall not be paid by the State. Air monitoring results shall be reviewed by the Contractor's on-site Competent Person on a daily basis and reports shall be submitted to the Engineer within 48 hours of collection.

3.03 PRIOR TO ASBESTOS REMOVAL

- A. Provide safe access to various tenant spaces at all times. Contractor shall construct plywood tunnel (which shall be outside of the regulated work area or containment) to allow safe access to and from the various tenant spaces to remain open during construction.
- B. Initial Cleaning – HEPA vacuum and wet-clean all floor and horizontal surfaces. HEPA vacuum, wet wipe, and remove all movable objects from within the regulated work area(s). Objects that cannot be moved will be thoroughly vacuumed, wet wiped, and covered with 2 layers of 6-mil polyethylene sheeting.
- C. Install critical barriers within work area up to existing finish ceiling.
- D. Isolate removal work area with plastic barriers or other isolation methods which prevent the migration of any debris from the work area.

- E. Install air purifying unit(s).
- F. Install Decontamination Unit adjacent to work area.
- G. Ensure, prior to the start of work, a minimum of -0.04 column inches of water pressure differential, relative to the outside pressure can be obtained and maintained.
- H. At this time, when applicable, Contractor shall remove minimal amounts of existing ceiling material in order to access the plenum space above the finish ceiling and install critical seals from below the existing finish ceiling to the underside of the structural ceiling deck.
- I. Install additional air purifying unit(s) to ensure the appropriate pressure differential can be obtained and maintained with the added volume of space to the work area.

3.04 REMOVAL ASBESTOS-CONTAINING MATERIAL

- A. All material shall be saturated with water or amended water containing a wetting agent (surfactant) before demolition/removal. Wet methods shall be used at all times during the demolition, removal and disposal of materials. No dry or mechanical method of removal is permitted. All material shall be carefully removed, whole and intact to the extent possible, and carefully carried for bagging and disposal. Drilling, breaking, pulverizing, or crushing of material shall be avoided as it may increase the possibility of fiber release. Application of a lock down on remaining surfaces within the work area is required.
- B. The asbestos material shall be removed in phases. First the debris shall be packed into leak tight double 6-mil plastic bags and sealed air tight. The bagged debris shall be handled and carried so that the polyethylene wrapping is not torn or punctured. The maximum number of material shall be bagged and shall be limited to what can easily be lifted by one person.
- C. Ensure, during all phases of work, a minimum of -0.04 column inches of water pressure differential, relative to the outside pressure is maintained within the regulated work area as evidenced by manometric measurements.
- D. Air Purify Unit(s) (neg. air, hog etc.) is/are to be operating while removal activities are ongoing to remove small particles to minimize airborne filters. The Contractor shall be required to maintain 6 air changes per hour. The number of units needed will be determined by the following:
 - 1. Total $\text{ft.}^3/10 \text{ min.}/\text{Capacity of unit (ft.}^3/\text{min.)}$
 - 2. The Air Purifying Unit(s) shall remain in operation until a final visual inspection is conducted and passed, air clearance monitoring is completed, and the regulated work area asbestos airborne fiber concentrations of each of the 5, inside work area samples, is less than or equal to 0.01 fibers per cubic

centimeter, in accordance with H.A.R. 11-502, analyzed by PCM.

- E. The Contractor shall keep at the project site standby purifying unit(s) equipped with HEPA filters. The number of standby unit(s) shall be at least equal in capacity of the operating air purifying units.
- F. It shall be the responsibility of the Contractor, prior to the submission of his bid, to verify the quantity of the material and satisfy himself as to the complexity of the total work and/or effort to remove said material and complete work as specified. No additional payment will be considered by the State to the bidder because of lack of such examination or knowledge.
- G. All existing surfaces to remain shall be protected from amended water. Surfactants will cause oxidation and blistering.
- H. Entry to Work Area: Require that any time a worker enters the Work Area the following procedure is followed:
 - 1. Access to the work area shall be through the decontamination unit located as approved by the Engineer. All other means of access (doors, stairways, hallways, etc.) shall be blocked or locked so as to prevent non-emergency entry to or exit from the work area. The only exception is the waste load-out airlock which shall remain sealed except during loading out of containerized asbestos containing waste from the work area, and emergency exits in case of fire or accident. Emergency exits shall not be locked from the inside, however, they shall be sealed with polyethylene sheeting and taped until needed, locked so as to prevent entry from the outside if possible and shall be clearly marked on the non-work area side to warn of the asbestos abatement proceeding within.

3.05 DECONTAMINATION PROCEDURES

- A. A three (3) stage decontamination unit adjacent to work area must be of sufficient size to accommodate cleaning of equipment and removal of personal protective equipment (PPE), showering and dressing without spreading contamination beyond this area.
- B. Require all Workers to adhere to the following personal decontamination procedures whenever they leave the work area and at the end of work shift:
 - 1. Before leaving the work area, require the worker to remove all gross contamination and debris from overalls and feet.
 - 2. The worker then proceeds to the equipment room and removes all clothing except respiratory protection equipment. Disposable coveralls are placed in a bag for disposal with other contaminated material.
 - 3. The worker then proceeds to the shower. After showering, the worker moves to the change room and dresses in either new coveralls for re-entry of the work area or street clothes if leaving.

3.06 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL AND ASBESTOS-CONTAMINATED WASTE (SOLID AND/OR LIQUID)

- A. As the work progresses and waste is generated, the Contractor shall transport all waste generated each day to the authorized disposal site, unless specifically approved by the State to delay the disposal operation. Transport all waste to the pre-designated disposal site in accordance with EPA regulations.
- B. Asbestos-containing material, asbestos contaminated material and PPE shall be double-bagged in leak tight bags with OSHA label prescribed by the OSHA regulations referenced in these specifications. Label shall state:

**DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST**

- C. Asbestos-containing material waste material to be transported off the facility site, shall be labeled with the name of the wastes generator and the location at which the waste was generated, as prescribed by EPA regulation 40CFR61.150 (NESHAPS). Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101.
- D. Vehicles used for transporting waste to the disposal sites shall have a completely enclosed, lockable storage compartment. Storage compartments shall be plasticized and sealed with a minimum of one layer of 6-mil polyethylene sheeting on the sides and top, and two layers of 6- mil polyethylene on the floor (bed). If allowed by OSHA, waste materials, except those with sharp edges (metal lath, screws, nails, metal suspension system, etc.), properly double-bagged or wrapped may be transported to the disposal site without being placed in drums if the transporting vehicle is prepared as specified above in addition to any more stringent requirements by OSHA. The compartments shall be thoroughly wet-cleaned and/or HEPA vacuumed following the disposal of each load at the disposal sites at an approved location with electrical power as required. At the conclusion of the asbestos abatement, or before transport vehicles are used for other purposes, the polyethylene sheeting shall be properly removed and disposed of as contaminated waste. After this has been accomplished, compartments shall once again be wet cleaned and HEPA vacuumed in order to eliminate all debris.
- E. The Contractor shall mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that signs are visible, and displayed in such a manner and location that a person can easily read the legend.

- 1. The legend shall state:

**DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
Authorized Personnel Only**

2. Additionally, the legend shall conform to the NESHAP requirement specified in 40 CFR Part 61.149(d)(1)(iii).

- F. Workers unloading bags at the disposal sites shall be dressed in full-body protective clothing and dual-cartridge respirators.
- G. Waste disposal manifest forms shall be properly completed to assure custody and disposal of all asbestos-containing material and asbestos-contaminated waste at approved disposal sites. Forms shall be kept on file as directed by the State with copies submitted to the Engineer the next working day after each trip.

NOTE: IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ANY LANDFILL USED FOR DISPOSAL OF ASBESTOS-CONTAINING OR ASBESTOS-CONTAMINATED WASTE IS APPROVED FOR THAT PURPOSE.

- H. Bags must be placed in the hole for burial. Dumping of bags from the containers will not be allowed. However, if a bag is torn and if acceptable by the landfill, the entire container may be buried.
- I. Liquid waste shall not be disposed into the sanitary sewer system, filtered or unfiltered, without appropriate County permit(s).
- J. The Contractor shall pay the waste disposal charge for use of the landfills. All expenses for landfills shall be the complete responsibility of the Contractor. The Contractor shall provide the required advance notice of all deliveries to the landfill(s). Delivery time shall be as directed by the landfill operator.

3.07 CLEANING OF THE WORK AREA

- A. Should the contractor fail to commence work to clean-up and make the work area asbestos free within one working day after the clean-up has been requested by the Engineer, the State may without further notice and without termination of contract, do the clean-up and deduct the cost thereof from the contract price.
- B. Surfaces to be encapsulated shall be wet-wiped and/or HEPA vacuumed just prior to the application of encapsulant.
- C. Post-removal encapsulation of affected areas shall begin as specified hereinafter when approved by the Engineer.

3.08 POST-REMOVAL ENCAPSULATION OF AFFECTED AREAS

- A. An approved encapsulant diluted to a maximum of 1/3 strength of the manufacturer's normal application rate for the intended substrate shall be applied using airless spray equipment to all areas of the project where asbestos-containing materials have been removed.

3.09 FINAL CLEAN-UP

- A. Final clean-up may not proceed until final air clearance monitoring, is performed by the State's Inspector / Air Monitoring Consultant.
- B. Sample analyses shall be performed by Phase Contrast Microscopy (PCM) and the airborne fiber concentrations of each of the 5, inside work area samples, is less than or equal to 0.01 fibers per cubic centimeter.
- C. Remove signage required by the asbestos removal and encapsulation work. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.
- D. Completely remove all temporary (except for critical seals from below finish ceiling to underside of structural ceiling deck) materials. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore existing facilities to their original condition as approved by the Engineer.
- E. Critical seals above the finish ceiling to the underside of the structural ceiling deck may temporarily left in place if only if the temporary critical seal may be reused for the adjacent regulated work area.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Work under this Section shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

**Employee Release Form
(Sample)**

Employee Name:

Employee Address:

Employee Telephone No.:

Name of Training Center, Certificate Number and Expiration Date:

Classification of Worker:

Have you had in the past or present, any respiratory problems?

Yes _____ No _____

Have you worked in the past with asbestos or fiberglass type materials?

Yes _____ No _____

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed at the commencement of the job on the required use of safety equipment, clothing, working conditions, and procedures. These must be rigidly adhered to. Smoking is not permitted in the work areas. Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to me by the company at my work commencement and I am thoroughly conversant with them and I have answered the above questions truthfully.

Signed (Employee)

Date

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME: _____ DATE: _____

PROJECT ADDRESS: _____

CONTRACTORS NAME: _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. you must be given a copy of the written respiratory protection manual issued but your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

- Physical characteristics of asbestos
- Health hazards associated with asbestos
- Respiratory protection
- Use of protective equipment
- Pressure Differential Systems
- Work practices including hand on or on-job training
- Personal decontamination procedures
- Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

By signing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer, the Contractor.

Signature _____ Social Security Number _____

Printed Name _____ Witness _____

END OF SECTION

SECTION 13288 - TESTING / AIR MONITORING

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 OF WORK

- A. Testing and air monitoring (non-OSHA) shall be supplied by the State for the purpose of:
1. Verifying compliance with the specifications listed in SECTION 13280 -REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL;
 2. Insuring that the owner's legally required documentation is collected;
 3. Providing engineering control during the project.

1.03 COORDINATION WITH OTHER SECTIONS

- A. The testing/air monitoring requirements included in the scope of work for any testing/air monitoring consultants or inspectors, and all applicable Federal, State, and local regulations shall be coordinated with this section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 ABATEMENT CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall be responsible for providing the personal monitoring and maintaining necessary records for all of the Contractor's employees as required by OSHA and all other applicable law.
- B. The Contractor shall obtain the legally required reports for air monitoring as part of the contract.
- C. Monitoring information developed by the Inspector's activities while under the contract with the State shall be for the use of the State. The information will be available and offered to the Contractor when developed, but not thereafter, and shall not waive the Contractor's obligations stated elsewhere in this section.
- D. Air monitoring and testing which becomes necessary in order to follow up on work by the Contractor which is rejected as not conforming to the requirements shall be the responsibility of the State. However, the full cost of such additional monitoring and testing shall be borne by the Contractor, and shall be deducted from the final contract payment.
- E. Personal air monitoring that is part of the Inspector's scope of work shall be accommodated by the Contractor and shall not be assumed to be the monitoring required of the Contractor by law or regulation.

3.02 TESTING/AIR MONITORING INSPECTOR

- A. The Inspector (State's Air Monitoring Consultant) will insure that the applicable specifications are being followed using the methods and requirements of the applicable scope of work.
- B. The Inspector (State's Air Monitoring Consultant) shall have the authority to exercise engineering control during the project.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Work under this Section shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 13971 - WET CHEMICAL FIRE EXTINGUISHING SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:

1. Installation of wet chemical fire extinguishing system in the existing exhaust hood.
2. Obtain and pay for all fees, permits, licenses, assessments and inspections required for this work. Schedule and coordinate required tests and inspections to accomplish the work in conformance with these specifications and drawings.

1.03 APPLICABLE PUBLICATIONS

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

A. Factory Mutual (FM) Publication

1. Approval Guide, latest edition

B. National Fire Protection Association (NFPA) Publications:

1. NFPA 17A-2002 Wet Chemical Extinguishing Systems
2. NFPA 70-2002 National Electrical Code
3. NFPA 96-2001 Ventilation Control and Fire Protection of Commercial Cooking Operations

C. Underwriters' Laboratories, Inc. (UL) Publications:

1. Fire Protection Equipment Directory, latest edition

1.04 PERFORMANCE REQUIREMENTS

A. SCOPE

1. The work includes the designing and providing a new wet chemical fire extinguishing system for protection of existing cooking equipment including

exhaust hoods, ducts, and related work. Equipment, materials, installation, workmanship, inspection, and testing shall be in strict accordance with the required and advisory provisions of NFPA 17A and NFPA 96, except as modified herein. Each system shall include all materials, accessories and equipment necessary to provide each system complete and ready for use. Design and install each system to give full consideration to blind spaces, piping, electrical equipment, ductwork and all other construction and equipment and to be free from operating and maintenance difficulties in accordance with detailed working drawings to be submitted to the Officer in Charge for approval. Devices and equipment for fire protection service shall be of a make and type listed by the Underwriter's Laboratories, Inc., or approved by the Factory Mutual System approved for use with wet chemical fire extinguishing systems. In the publications referred to herein, the advisory provisions shall be considered to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears; reference to the "authority having jurisdiction" shall be interpreted to mean the Building and Fire Departments.

B. QUALIFICATION OF INSTALLER

1. Prior to installation, submit data showing that the Contractor has successfully installed automatic fire extinguishing systems of the same type and design as specified herein, or that he has a firm contractual agreement with a subcontractor having such required licensed experience. The data shall include the names and locations of at least two installations where the Contractor or the subcontractor referred to above, has installed such systems. The Contractor shall indicate the type and design of each system and certify that each system has performed satisfactorily in the manner intended for a period of not less than 18 months.

1.05 SUBMITTALS

- A. Submittals shall be in accordance with Section 01330. Partial submittals will not be acceptable. Submit for approval six (6) complete sets of submittals as described below. Annotate descriptive data to show the specific model, type, and size of each item the Contractor proposes to furnish. Prepare working drawings on sheets not smaller than 24 by 36 inches, and include data essential to the proper installation of each system. Do not commence work until the design of each system and the various components have been approved. The Contracting Officer and the Building and Fire Departments will review and approve all submittals. Before work is commenced, submit for approval complete sets of working drawings and calculations for each wet chemical extinguishing system. Working drawings and calculations must be stamped by a licensed professional engineer.

B. Manufacturer's Data:

1. Storage cylinders
2. Fusible links
3. Release mechanisms

4. Valve
 5. Discharge nozzle
 6. Pipe and fittings
 7. Piping and accessories
 8. Remote manual actuation station
 9. Pressure operated switches
 10. Gas and electric disconnects
 11. Signage
- C. Shop (Working) Drawings:
1. Fire extinguishing system
- D. Calculations:
1. Submit calculations verifying storage requirements, pipe sizes, and nozzle orifice sizes, in accordance with the manufacturer's design data.
- E. Certificates of Compliance:
1. When preliminary field tests have been completed and all necessary corrections made, submit to the Contracting Officer a signed and dated letter attesting to the satisfactory completion of testing and stating that the system is in operating condition. The letter shall include a written request for a formal inspection and test.
- F. Operation and Maintenance Manuals:
1. Submit operation and maintenance data.
- G. Test Plan: A minimum of fifteen (15) days prior to the Preliminary Testing, the contractor shall submit a "Test Plan" which shall describe how the system will be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be employed. Tests shall not be conducted until the test plan is approved by the Officer in Charge.
- H. As-Built Drawings: Submit in accordance with SECTION 01300 - SUBMITTALS.

1.06 QUALITY ASSURANCE

- A. Manufacturer's Representative: Provide the services of a manufacturer's authorized representative or technician, experienced in the installation and operation of the type

of system being provided, to supervise the installation and testing, including final testing, adjustment of the system and to provide instruction to maintenance personnel.

PART 2 - PRODUCTS

2.01 SYSTEM DESIGN

- A. Systems shall comply with NFPA 17A and NFPA 96, except as modified herein. Piping and accessories within the hood shall be stainless steel or chrome plated. All other piping shall be black steel. Wet chemical agent shall be listed for the particular system and recommended by the manufacturer of the system. Provide systems for protection of existing cooking equipment, including exhaust hoods and ducts for cooking equipment required protection by NFPA 96.
- B. System Controls: Each system shall be mechanically actuated by fusible links and by remote manual actuation stations connected to the extinguishing system release mechanisms by stainless steel cables. Arrange each system to automatically shut off the flow of fuel and electrical power to cooking appliances and to automatically actuate the building fire alarm system. Electrical power to hood exhaust fans shall not be shut off unless specifically required by the UL Listing or FM approvals. Provide operating instructions at all system remote manual actuation stations.
- C. Identification Signs: Provide red rigid plastic signs with engraved 0.25 inch high white lettering at each remote manual actuation station. Sign legends shall be "Fire Extinguishing System" followed by a brief description of the equipment protected.
- D. Pressure switch for existing system: Provide Ansul R-102 system to add a pressure switch for the automatic actuation of the building fire alarm system. Take precautions not to activate the existing system. Contractor shall replace the agent in the event of a discharge.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with the manufacturer's installation and maintenance manuals and NFPA 17A, except as modified herein.

3.02 FIELD QUALITY CONTROL

- A. Perform tests to determine compliance with the specified requirements in the presence of the Contracting Officer. Test, inspect, and approve piping before covering or concealing.

3.03 PAINTING

- A. Painting: Clean, pretreat, prime, and paint new extinguishing systems including valves, piping, conduit, hangers, miscellaneous metalwork, and accessories. Apply

coatings to clean dry surfaces using clean brushes. Clean the surfaces to remove dust, dirt, rust and loose mill scale. Immediately after cleaning, provide the metal surfaces with one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, and one coat of primer applied to a minimum dry film thickness of one mil. Exercise care to avoid painting operating devices. Remove materials which are used to protect devices, while painting is in process, upon the completion of painting. Remove devices which are painted and provide new clean devices of the proper type. Provide primed surfaces with the following:

- B. Systems in Unfinished Areas: Unfinished areas are defined as attic spaces, spaces above suspended ceilings, crawl spaces, pipe chases, and spaces where walls or ceiling are not painted or not constructed of prefinished material. Provide primed surfaces with one coat of red enamel applied to a minimum dry film thickness of one mil.
- C. Systems in All Other Areas: Provide primed surfaces with two coats of paint to match adjacent surfaces.

3.04 FIELD TESTING

A. Preliminary Tests:

1. Upon completion and before final acceptance of the work, test each pipe and fittings system by discharging a minimum of one storage cylinder of the same size as the system cylinder of compressed air or nitrogen (do not use wet chemical) to demonstrate the reliability and proper functioning of all pressure-operated switches, electrical and gas shutoff features, and the discharge of gas from each system discharge nozzle. Individually test remote control stations and other components and accessories to demonstrate proper functioning. Testing shall also include automatic and manual actuation, fuel and electrical power shutoff and automatic actuation of the building fire alarm system. When tests have been completed and corrections made, submit a signed and dated certificate, with a request for formal inspection and testing.

- B. Formal Inspection and Tests: The State's Representative will witness formal tests and approve all systems before they are accepted. The system shall be considered ready for such testing only after all necessary preliminary tests have been made and all deficiencies found have been corrected to the satisfaction of the equipment manufacturer's technical representative and the Officer in Charge. Submit the request for formal inspection at least 15 days prior to the date the inspection is to take place. Experienced technicians regularly employed by the contractor in the installation of both the mechanical and electrical portions of such systems shall be present during the inspection and shall conduct the testing. All wet chemical agent, instruments, personnel, appliances and equipment for testing shall be furnished by the contractor. All necessary tests encompassing all aspects of system operation shall be made including the following, and any deficiency found shall be corrected and the system retested at no cost to the State.

1. At the final test repeat any or all of the preliminary tests as directed. Provide plastic containers, hose fittings, and hose at each nozzle to capture the wet chemical and discharge each system to demonstrate uniform distribution of the wet chemical among the nozzles. Contractor shall retest the system at no additional cost if the system fails the discharge test. Refill and reset systems after tests have been completed.
- C. Upon acceptance by the State, the complete system shall be placed in operation within 24 hours. The contractor shall provide written certification that all containers are filled and the system is in service.

3.05 INSTRUCTING OPERATING PERSONNEL

- A. Prior to final acceptance, the Contractor shall provide operation and maintenance training to the facilities and operating personnel. Each training session shall include equipment emergency procedures, and unique maintenance and safety requirements. Training areas will be provided by the State in the same building as the protected areas. The training conducted shall use operation and maintenance manuals called for in paragraph entitled "Operation and Maintenance Instructions, Parts and Testing." Dates and times of the training period shall be coordinated through the State not less than two weeks prior to the session. The State shall be provided with a simplified training manual providing a description of operation and controls, possible hazards to personnel, and restart procedures for all equipment.

3.06 INSPECTION, MAINTENANCE, AND TESTING SERVICE AGREEMENT

- A. The contractor shall include one year inspection, maintenance, and testing service agreement in the bid. The one year period shall begin at the date of acceptance. The agreement shall cover all labor, parts, insurance taxes, fees, and other incidental costs to inspect and test the system in accordance with NFPA 17A and the Maui Fire Code. Inspection and testing of the system shall be conducted on a semiannual basis for a total of two (2) visits during the one year period.

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

DIVISION 15 - MECHANICAL

SECTION 15011 - GENERAL MECHANICAL PROVISIONS

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 OF WORK

- A. This section applies to all sections of DIVISION 15 - MECHANICAL.
- B. Scope of work shall be as described in the technical sections of DIVISION 15 - MECHANICAL.

1.03 SUBMITTALS

Submittals required in this and other sections of DIVISION 15 - MECHANICAL, shall conform to the General Provision and Special Provisions and the 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 Department of Transportation, Airports Division standard 22" x 34" mylar sheets. These drawings shall include all revisions to the shop drawings. The contractor shall submit the original mylar 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 Architect and Engineer in writing prior to procurement and installation.

All but not limited to, the following items shall be installed in accordance with the manufacturer's instructions and these bid documents.

Air Conditioning Equipment	Air Outlets
Fans	Pre-Insulated Piping
Flexible Duct	Vibration Isolators
Volume Dampers	Underground Fuel Piping

4. **Certificates of 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.
5. **Reference Standards Compliance:** Where equipment for materials are 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), American Gas Association

(AGA), American Refrigeration Institute (ARI), 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.

6. 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 Officer-in-Charge.
7. 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.

8. Operating Instructions: Submit text of posted operating instructions for each system and principal item of equipment as specified in the technical sections.
9. 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.
10. Welders Qualifications: All welders shall be certified, by an independent testing laboratory and certificates shall be submitted to the Engineer for approval. Testing of welders shall be in accordance with the welding section of ANSI B-31.09 "Building Services Piping".

1.04 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 State Building Officials.

1.05 SUBSTITUTION OF EQUIPMENT

- A. Substitution shall be in accordance with SECTION 01300 – SUBMITTALS.
- B. The Contractor shall assume full responsibility for proper fit, performance and additional work relating to other sections of the specifications.

1.06 VERIFICATION OF DIMENSIONS

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 Officer-in-Charge of any discrepancy before performing any work.

1.07 DELIVERY, STORAGE, AND HANDLING

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.

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 replace to the satisfaction of the architect by and at the expense of the Contractor.

1.08 INSTRUCTION TO PERSONNEL

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.

1.09 POSTED OPERATING INSTRUCTIONS

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.

1.10 SAFETY REQUIREMENTS

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.

1.11 ELECTRICAL REQUIREMENTS

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.

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.

1.12 SEISMIC RESTRAINTS

Provide seismic restraints for mechanical systems in accordance with the Building Code.

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.

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.
- B. Materials and equipment shall conform to the requirements of applicable technical sections, publications specified therein and shall be as shown. Materials and equipment shall be new and shall be the products of manufacturers regularly engaged in the manufacture of such products. All items shall essentially duplicate materials and

equipment that have been in satisfactory use at least two (2) years prior to bid opening and shall be supported by a service organization that is, in the opinion of the Officer-in-Charge, reasonably convenient to the site of installation.

2.02 SIMILAR PRODUCTS

Shall be of the same manufacturer.

2.03 AMERICAN PRODUCTS PREFERENCE

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

PART 3 - EXECUTION

3.01 QUALITY CONTROL

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

The Contractor shall give the Officer-in-Charge 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 Officer-in-Charge shall be repaired or replaced by the Contractor at no additional cost to the State.

3.03 PROTECTION OF WORK IN PROGRESS

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 by, and at the expense of the Contractor. Ductwork openings shall be covered and protected from dust and moisture daily. No equipment, ductwork, piping, or insulation should be installed if contaminated by dust or moisture. Objects should be cleaned or dried before installation.

3.04 PROGRESS OF WORK AND COORDINATION

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.

3.05 INSTALLATION OF EQUIPMENT

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.

3.06 TRENCHING AND BACKFILL

- A. Trench excavation shall be dug to depths shown on the drawings. If depths are not indicated, the trench shall be cut down to proper levels that will provide the minimum coverage of one foot as required by the Code.
- B. Trenching work shall be open cut excavation with banks as nearly vertical as practical, with sufficient width to provide proper working space and bottom of trench accurately graded to provide uniform slope and support.
- C. Backfill shall be either sandy or granular material such as black sand, clean beach sand, crushed fine aggregates, finely graded coral passing through 1-inch sieve or native material which does not contain lumps greater than 1 inch in diameter, organic debris, or adobe shall be used. Backfilling shall be in 6 inch layers and compacted to 95% compaction of ASTM D-1557-78. Slightly mound the backfill above the finished grade to allow for settlement.
- D. When manufacturers installation instruction differ from the above requirement, the more stringent requirement shall be followed.

3.07 PERMITS, LICENSES AND INSPECTIONS

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 FIELD TESTS

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.

3.09 PAINTING

Painting shall be done under SECTION 09911 – EXTERIOR PAINTING and SECTION 09912 – INTERIOR PAINTING of these specifications. Factory finishes damaged during shipment or construction shall be touched up to provide a finish to match surrounding surfaces by the installing contractor.

3.10 CODES AND STANDARDS

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

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 15400 - PLUMBING

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 OF WORK

This section covers the furnishing, fabrication, delivery and installation of the plumbing system complete as shown, including but not limited to the following:

1. Removal and relocation of existing equipment and piping as indicated on drawings.
2. Soil, waste and vent piping system.
3. Cold water systems consisting of piping and all accessories.
4. All connections to utility such as water, sewer, gas, etc.
5. All plumbing fixtures and equipment, trim and accessories.
6. Soil, waste, vent, water and gas final connections to all plumbing fixtures and equipment.
7. Temporary piping and valves to supply water during construction for all Contractors, at all locations required by the Engineer.
8. Disinfection of water supply lines.
9. Labeling and tagging all valves.
10. Operating and maintenance instructions and manuals.
11. Shop drawings and record drawings.
12. Inspection, testing and guarantee.

1.03 ELECTRICAL WORK

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.

1.04 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. Permits: 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.

1.05 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.

1.06 SHOP DRAWINGS

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

1.07 MATERIAL AND EQUIPMENT SUBMITTALS

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:

Cleanouts, Access Covers	Pipe Supports and Hangers
Dielectric Connectors	Equipment Supports
Equipment Insulation	Pipe and Fittings
Flexible Pipe Connectors	Pipe Insulation
Solder Flux and Solder	Thermometers

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.

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.

1.08 AS-BUILT DRAWINGS

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

1.09 WORKMANSHIP

All materials and equipment shall be installed in accordance with the Building and Fire Codes of the City & County of Honolulu 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 City and County of Honolulu. The Officer in Charge may reject any proposed installer who cannot show evidence of such qualifications. Officer's in Charge approval will not relieve the Contractor from his responsibilities to perform all work in accordance with specifications to contract terms.

1.10 INSTURCTIONS TO OWNER

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

1.11 CONFORMANCE TO AGENCY REQUIREMENTS

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.

1.12 NAMEPLATES

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. 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.

1.13 VERIFICATION OF DIMENSIONS

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 Officer in Charge of any discrepancy before performing any work.

1.14 OMISSIONS

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 Officer in Charge 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.

1.15 SUBSTITUTIONS OF EQUIPMENT

- A. Substitution requests shall be in accordance with SECTION 01300 SUBMITTALS.
- B. The Contractor shall assume full responsibility for proper fit, performance and additional work relating to other sections of the specifications.

1.16 WELDERS QUALIFICATIONS

Welders shall be qualified in accordance with SECTION 15011 - GENERAL MECHANICAL PROVISIONS.

1.17 PRODUCT DELIVERY AND STORAGE

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.

1.18 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. Plumbing equipment and fixtures shall be cleaned with an approved cleansing compound.

1.19 GUARANTEE

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 MATERIALS

- 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.
- B. Foreign Products: Shall not be allowed on this project unless specifically approved by the Design Engineer and is clearly shown to be superior to the American product.
- C. All products that convey water for human consumption shall comply with lead free regulations NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water. – whether explicitly designated or not.

2.02 SOIL, WASTE AND VENT PIPE

- A. Soil, waste and vent service weight cast iron, hub and spigot soil pipe and fittings, double asphalt coated, ASTM A 74 and CISPI HSN with ASTM C 564 rubber compression gasket.
- B. Above grade cast iron soil, waste and vent piping in enclosed pipe shafts, concealed ceiling spaces or enclosed under floor spaces may be No-Hub systems, Tyler No-Hub pipe and fittings or equal, conform to Cast Iron Soil Pipe Institute Standard 301-90 with Cast Iron Soil Pipe Institute Standard 310 coupling joint.
- C. Below grade piping in sizes 6" and smaller may be hubless cast iron sanitary system with MG mechanical cast iron couplings or approved equal, conforming to Cast Iron Soil Pipe Institute's Standard 301-72. Stainless steel couplings are unacceptable. Each assembled coupling shall bear the following clearly identifiable markings: The manufacturer, the size, and the letters UPC, indicating conformance with the Uniform Plumbing Code. Install couplings per manufacturer's written instructions, and tighten

nuts or bolts heads alternately and gradually to manufacturer's specifications using an accurate torque wrench.]

2.03 DOMESTIC WATER PIPE

- A. Underground pipes shall be Type "K" seamless rigid copper tubing conforming to ASTM B88 with wrought copper solder type fittings conforming to ANSI B16.22 or ANSI B16.18. Joints shall be brazed with a silver alloy filler metal.
- B. Above ground piping shall be Type "L" seamless rigid copper tubing conforming to ASTM B88 with wrought copper or cast copper alloy solder type fittings conforming to ANSI B16.22 or ANSI B16.18. Solder shall be 95-5 tin-antimony or approved equal.
- C. Solder and brazing flux shall meet ASTM B813 Standard, "Specifications for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy Tube."
- D. T-Drill joints are prohibited.

2.04 CLEANOUTS AND ACCESS COVERS

Provide cleanouts where indicated and even if not indicated in the following locations. At junction of building drain with building sewer, at points of change in direction in horizontal drain exceeding 45 degree change of direction, at intervals of 50 feet in horizontal runs. Cleanouts shall be in the location accessible for easy removal and which will provide clearance for routing. Size shall be same as pipe served but need not be larger than 4" in any case.

Cleanouts and access covers as hereinafter specified are based on Josam Manufacture, similar product manufactured by Zurn, Wade, Smith, or equal in accordance with Plumbing Blue Book Comparison Chart, is acceptable.

- 1. Floor cleanouts shall be Smith 4048-U, Josam 56020-22-15, Zurn ZN-1400-T-IC, or approved equal. Duco cast iron body, tapered thread bronze plug, square adjustable scoriated vandalproof nickel bronze top and with carpet cleanout marker when located in carpeted floor areas.
- 2. Cleanout to grade shall be Smith 4288, Josam 58470, Zurn Z-1402, or approved equal. Duco cast iron body, countersunk taper thread bronze plug and inside caulked outlet. Cleanout shall be set in 12" x 12" x 12" concrete pad flush to pavement, or 1" above finished grade with beveled edges down to finished grade.

2.05 DIELECTRIC UNIONS AND FLANGES

Provide at connections between copper and ferrous metal piping materials.

- 1. Dielectric Unions or flanges shall be suitable for the required operating temperature and pressure. The metal parts of dielectric unions or flanges shall be separated to prevent current flow between the dissimilar metals.
- 2. ASTM F 441, Schedule 80, CPVC threaded pipe nipples, 4-inch minimum length,

may be provided for dielectric connections in pipe sizes 2 inches and smaller.

2.06 VALVES

All valves shall be suitable for 125 lb steam working pressure minimum, and in accordance with the latest edition of ASTM and ANSI specifications as indicated:

ITEM	SIZE	DESCRIPTION
Gate Valves	2" and smaller	125-lb, SWP, bronze, rising stem, double wedge disc, union bonnet, screwed ends.
		Grinnell 3090
		Crane 430 UB
		Lunkenheimer 3125
		Nibco T-135
		Or approved equal

ITEM	SIZE	DESCRIPTION
Globe and Angle Valves	2" and smaller	125-lb, SWP, bronze, rising stem, inside screw, composition disc, screwed ends.
		Globe Angle
		Crane 7 17
		Lunkenheimer 2140 2141
		Stockham B-22 B-222
		Nibco T-211-B T-311-Y
		Grinnell 3200 3220
		Or approved equal

2.07 PIPING INSULATION

- A. All insulation material applied to the exterior surface of metal pipes shall have flame spread of not more than 25 and a smoke development rating of not more than 50 when tested as a composite installation, including insulation, facing material, tapes and adhesives as normally applied.
- B. All hot water supply and return lines except small fixture branches shall be insulated with Owens/Corning Fiberglass 25ASJ/SSL insulation with an embossed vapor barrier laminate sealed with pressure adhesive tape. Insulation shall be 1" thick for pipe size 2" and smaller. Fitting and valve shall be insulated with segments of insulation coated with fitting mastic, then applied over fiberglass reinforcing cloth and coated with another coating of fitting mastic.
- C. All insulation exposed to weather or exposed within 7'-0" of floor shall be provided with 0.016" thick aluminum jacket. Installation of snap and metal band shall be as recommended by manufacturer.

2.08 PLUMBING FIXTURE

- A. As specified in SECTION 15410 – PLUMBING FIXTURES.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

- A. Underground piping shall be installed promptly after excavating for same, keeping all excavations open as short a time as possible. However, piping shall not be permanently closed up, furred in or covered over before it has been tested and inspected, and approved by the Plumbing Inspector and Architect.
- B. Horizontal soil and waste piping shall be installed straight as possible to a uniform grade of not less than 1/4 inch per foot unless otherwise shown or directed. Vent piping graded to provide proper venting of the plumbing and to free itself of condensation.
- C. Openings in pipes, drains, fittings, apparatus and equipment shall be sealed or securely plugged during erection, to prevent accumulating obstructions in same.
- D. Underground piping outside of building shall have a minimum 12" cover except as otherwise shown. Piping in fill shall be properly supported to prevent settling and breaking. Sewer and water pipes shall not run or be laid in the same trench. A distance of minimum 2 feet shall be kept at all times. Except when crossing, the bottom of water piping at all points shall be at least twelve inches above the top of the sewer pipe.
- E. All pipe appurtenances subject to unbalanced thrust shall be properly braced with concrete reaction blocks and/or tie rods.
- F. Piping except where specifically shown otherwise, shall be concealed in walls, utility chases, partitions, ceiling spaces and roof spaces. Piping shall be installed to maintain headroom and keep passageways and access openings clear. Where necessary, piping shall offset to maintain the required clearances to coincide with structural features of building.
- G. Springing, bending or forcing of pipe into place is not allowed; fittings shall be used for all offsets or changes in alignment of piping.
- H. Rough outlets for all fixtures shall be set exactly to the measurements furnished by the manufacturer; fixtures in batteries with their rough outlets set in a straight line at equal spacing.
- I. Each water branch connection to fixtures, including hose bibbs, shall be controlled by independent loose key stops. All exposed piping at fixtures shall be brass or copper with chrome plated finish.
- J. Exposed pipes penetrating walls, ceilings, and floors shall be provided with chrome plated brass escutcheons. Pipes located in cabinets shall be considered exposed.

- K. Copper pipe shall be isolated from direct contact with ferrous piping connections by approved isolating (dielectric) unions or couplings, and from contact with dissimilar metals outside of system by taping pipe at point of contact with plastic electricians tape.
- M. Damaged or otherwise defective piping, or piping showing excessive wrench marks, shall be replaced with new materials as directed by the Architect.
- N. Verify fixture rough-in height and location with architectural drawings.

3.02 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. Supports for copper pipe shall be additionally coated with plastic.
- C. Drilled in Threaded Inserts: Where supports in walls, beams and joists are required after concrete has been poured, Phillips "Redhead" Drilled-In Threaded Inserts shall be provided, installed in accordance with manufacturer's recommendations and with the approval of the project Structural Engineer.
- D. Support horizontal overhead pipes with clevis hangers, rods inserts, clamps, on suspension suitable for type of building construction.
- E. Support horizontal pipes which are close to floor with pipe rest and floor flange or pipe roll stand on piers.
- F. Support horizontal pipes from walls with "J" hooks, or hangers suspended from wall brackets.
- G. Support vertical pipes at base of the pipe on every floor and at 10' intervals maximum with galvanized steel pipe clamps, special cast iron pipe rests, base fittings, or by other approved methods suitable for type of building construction.
- H. Horizontal Pipe Support Schedule:
 - 1. Support all piping at intervals in accordance with the Plumbing Code or requirements of this section, whichever is more stringent.
 - 2. Support horizontal lines of copper tubing with hangers spaced not more than 6 feet, center to center for all pipe sizes. All pipes shall be supported at elbows, branches and risers.
 - 3. Support horizontal cast iron soil pipe with hanger, or pier, two for each 5 feet pipe length; locate support close to joints, except, pipe exceeding 5 feet in length shall be supported at no more than 5 feet intervals. Supports shall be located on both sides of all joints and within 6" of the joint.

4. Gas piping horizontal support spacing shall not exceed 6 feet for all pipe sizes.
5. Horizontal pipe support spacing and hanger rod size shall conform to the following table:

Pipe Material	Max. Hanger Spacing (feet)	Hanger Rod Diameter (inches)
Copper Tube: 2 inches and smaller	6	3/8
Copper Tube: 2 to 5 inches and larger	6	1/2
Steel: 2 inches and smaller	6	3/8
Steel: 2.5 inches and 3 inches	6	1/2
Steel: 4 inches and 5 inches	6	5/8
Steel: 6 inches	6	3/4
Steel: 8 to 12 inches	6	7/8
PVC and ABS DWV	4	3/8 (minimum)

- I. 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. Pipes 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. In addition to the above specified locations, pipes shall be hung from spring isolator where indicated on the drawings.

3.03 PIPE INSULATION

- A. Insulate all hot water supply pipe up to individual fixture branches.

- B. All individual fixture branches more than 10 feet long shall be insulated to within 2 feet of the fixture.

3.04 VIBRATION ISOLATORS

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

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. Spaces between pipe and floor sleeves shall be sealed with U.L. listed fire stopping material for the full depth of the floor.
4. No cutting or drilling of any structural members will not be permitted without the approval from the Architect.

3.06 DIELECTRIC UNIONS AND FLANGES

- A. Dielectric unions or flanges shall be installed when connecting dissimilar metal water piping, accessories or equipment.
- B. Copper water piping shall be isolated from ferrous material such as metal studs, hanger or clamps by wrapping the pipe with plastic electrician's tape.

3.07 FIXTURE INSTALLATION

- A. Each fixture shall be installed at the exact height and location shown on architectural drawings, or as directed.
- B. Fixture supplies, trap and trap arm shall be set square with wall, in line with fixture outlets without any offsets, angles, or bends.
- C. Each fixture shall be set level and in continuous contact with floor or wall; fixture in batteries shall be set on one line, at equal spacing.

- D. Joints between fixtures and walls or floor shall be adequately sealed, forming a smooth, even watertight joint. China caps shall be securely sealed into place over floor flange bolts, entirely covering washer and bolt hole.
- E. Wall Supports: Proper provisions for supporting all wall hung plumbing fixtures are totally within the scope of this section of the specifications. All metal supports shall receive one coat of red lead and oiled before erection.
- F. Chrome plated brass wall escutcheons shall be provided for all piping. Exposed piping shall be chrome plated. Pipe within cabinets shall be considered exposed and shall therefore be chrome plated.

3.08 TESTING AND ADJUSTING

- A. All work completely installed and tested as required by this section and the applicable plumbing ordinances, and proven leak tight before inspection is required. Providing of all required equipment and labor to make the test and repeating of the tests to the satisfaction of those making the inspection is within the scope of this section of the specifications.

Any work concealed without the required test and approval shall be uncovered and tested at the Contractor's expense.

B. Procedure:

1. Soil, waste and vent piping: Filled with water to the highest point in each system, and left filled for eight hours with no noticeable change in water level; after approval, remove the test plugs and flush the line.
2. Water Piping: At 150 psi and left for an eight hour period without loss of pressure; and left under line pressure for the balance of the construction period.
3. Gas Piping: 60 psi air pressure test for a period of 24 hours. After test, all gas piping shall be purged of all gas.
4. Plumbing Fixtures: Filled with water and checked for leaks and/or retarded flow.
5. All Valves: Adjusted and balanced to provide for the proper operation of the various systems. After disinfecting, strainer screens shall be removed, cleaned and reinstalled.

3.09 DISINFECTING

All domestic cold and hot water lines shall be thoroughly flushed and drained after installation. Sterilization shall be accomplished by opening taps at the end of all branches, and slowly filling the system adding liquid chlorine, or hypochlorite solution, to the water until water flowing from all branches indicates not less than 50 P.P.M. residual chlorine; the system allowed to stand for not less than twenty-four (24) hours, [200 PPM for 3 hours] with all valves opened and closed several times during this period; then

drained and thoroughly flushed until all traces of chlorine are eliminated (less than 0.2 P.P.M.) Certificate shall be submitted to the Architect. The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and environment in accordance with applicable Department of Health requirements.

3.10 PAINING

Painting shall be as specified in SECTION 09911 – EXTERIOR PAINTING and SECTION 09912 – INTERIOR PAINTING.

3.11 SPARE-PARTS DATA

After approval of materials and equipment and 2 months prior to the date of beneficial occupancy, the Contractor shall furnish a complete list of parts and supplies, with current source of supply.

3.12 PIPE PENETRATION

Where pipes penetrate fire rated walls and floors the space between the pipe and pipe sleeve shall be sealed with fireproof sealant.

Installation shall be in accordance with manufacturers' instructions.

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 15410 - PLUMBING FIXTURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Provide plumbing fixtures and trim as scheduled.

1.03 SUBMITTALS

- A. Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES.
- B. Manufacturer's Data: Submit manufacturer's technical data for all materials.
- C. Operation and Maintenance Data: Submit operation and maintenance data including maintenance schedules, spare parts requirements, and procedures.

1.04 QUALITY ASSURANCE

- A. Single Source: Provide similar plumbing fixtures and trim from a single manufacturer.
- B. All work shall conform to the current edition of the Uniform Plumbing Code.

1.05 RELATED WORK

- A. SECTION 15400 - PLUMBING

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Acceptable Manufactures:
 - 1. Fixtures: Kohler, American Standard, Crane, Eljer, or approved equal.
 - 2. Faucets: Kohler, American Standard, Eljer, Moen, Sloan, Chicago, or approved equal.
- B. Where applicable, refer to the Index Creations cross reference "Blue Books". Fixtures, fittings, equipment or appliances listed as similar in the "Blue Books" shall be acceptable under this paragraph. Prequalification is not required.
- C. All fixtures shall include accessories to comply with the energy conservation and water conservation requirements of the Building Code and Plumbing Code.

- D. All products that convey water for human consumption shall comply with lead free regulations NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water. – whether explicitly designated or not.
- F. Faucet hole covers shall be provided for extra faucet holes. Faucet hole covers shall be polished stainless steel.
- G. All plumbing fixtures shall include stops, P-traps, trap arms and escutcheons of the following type unless otherwise specified.
 - 1. Stops shall be chrome plated brass with compression fittings, chrome plated copper tubing risers and chrome plated brass escutcheons.
 - 2. P-traps and Trap Arm shall be 17 gauge chrome plated brass with slip joint. Slip joints which are not accessible, such as tub waste fittings, shall be soldered.
- I. The following general description are given for quality only. Substitutes are acceptable if approved in writing by the Architect.

FIXTURE SCHEDULE

- 1. STAINLESS STEEL SINK: All stainless steel sinks shall be seamless drawn of 18 gauge, type 302 (18-8) nickel bearing stainless steel, 14" deep, self rim, undercoated underside, 3-hole punch, waste fitting with stopper, chrome plated P-trap and chrome plated brass 1/2" 1/4-turn ball supply stops. Provide faucet with 2.5 gpm flow restrictor.
 - a. Three Compartment Sink shall be AERO NSF or approved equal. See Architectural drawings for sink dimensions. Provide with AERO faucet, 8" O.C., 14" spout with wrist blades.
 - b. Hand Sink shall be Elkay drop-in type, stainless steel single bowl, brushed satin finish, dimensions 15"x15"x6-1/8" or approved equal. See Architectural drawings for sink mounting height. Provide with Symmons two handle faucet 0.5 gpm flow restrictor, gooseneck faucet satin nickel finish that meets ADA. Fixture substitutions shall show that they meet the accessible clearance requirements of the Building Code and ADAAG. Drain piping and water piping insulation shall be molded closed cell vinyl with anti-microbial additive. Installation shall be in compliance with the Americans with Disabilities Act. Insulation shall be self extinguishing and as manufactured by Truebro, McGuire Products, Brocar Products or approved equal.
- 2. GARBAGE DISPOSER: Split phase motor shall be 3/4 H.P., 115 volts, 60 cycles, single phase A.C. with corrosion protection shield. Stainless steel grinding elements, continuous feed. Unit finish shall be stainless steel, with enamel finish. Disposer shall be IN-SINK-ERATOR Model Badger 5XP, or approved equal with local disconnect switch.

3. FLOOR DRAIN: Smith 3020-19-C-HP-U, Josam 49500-NB-10, Zurn Z-1970-KC-11 or approved equal. Cast iron body and flashing flange receptor with acid resisting porcelain enameled interior, nickel bronze rim, hinged heel proof and vandal proof grate, and aluminum dome bottom strainer. When indicated on drawing, floor drain body shall be provided with a trap primer connection. Outlet size shall be as indicated on drawings.
4. Trap primer shall be Precision Plumbing Products Model PR-500 with distribution unit or approved equal. Pressure drop active type, corrosion resistant brass material.
5. DISH WASHER: See Architectural drawings for unit model and dimensions.
6. GAS OUTLETS: Flexible stainless steel gas line designed for connecting a gas line stub-out. Size gas line based on the stove BTU capacity and be provided with the correct size connectors.

PART 3 - EXECUTION

3.01 FIXTURE INSTALLATION

- A. Set all plumbing fixtures in an approved workmanlike manner. Point up edges against wall with approved sealant.
- B. Flanges at wall penetrations shall be flush against wall and shall not spin when rotated by hand.
- C. Adjust equipment and plumbing fixtures and trim to operate properly and clean all fixtures just prior to final inspection.
- D. Rough outlets for all fixtures shall be set exactly to the measurements furnished by the manufacturer; fixtures in batteries with their rough outlets set in a straight line at equal spacing.
- E. Verify fixture rough-in height and location with architectural drawings.
- F. Each fixture shall be installed at the exact height and location shown on architectural drawings, or as directed.
- G. Fixture supplies, trap and trap arm shall be set square with wall, in line with fixture outlets without any offsets, angles, or bends.
- H. Each fixture shall be set level and in continuous contact with floor or wall; fixture in batteries shall be set on one line, at equal spacing.
- I. Joints between fixtures and walls or floor shall be adequately sealed, forming a smooth, even watertight joint. China caps shall be securely sealed into place over floor flange bolts, entirely covering washer and bolt hole.
- J. Wall Supports: Proper provisions for supporting all wall hung plumbing fixtures are

totally within the scope of this section of the specifications. All metal supports shall receive one coat of red lead and oiled before erection.

- K. Chrome plated brass wall escutcheons shall be provided for all piping. Exposed piping shall be chrome plated. Pipe within cabinets shall be considered exposed and shall therefore be chrome plated.

3.02 TESTING AND ADJUSTING

- A. All work completely installed and tested as required by this section and the applicable plumbing ordinances, and proven leak tight before inspection is required. Providing of all required equipment and labor to make the test and repeating of the tests to the satisfaction of those making the inspection is within the scope of this section of the specifications.
- B. Procedure:
 - 1. Plumbing Fixtures: Filled with water and checked for leaks and/or retarded flow.
 - 2. All Valves: Adjusted and balanced to provide for the proper operation of the various fixtures. After disinfecting, strainer and aerator screens shall be removed, cleaned and reinstalled.

3.03 SPARE-PARTS DATA

After approval of materials and equipment and 2 months prior to the date of beneficial occupancy, the Contractor shall furnish a complete list of parts and supplies, with current source of supply.

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 15600 - AIR CONDITIONING AND VENTILATION

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 OF WORK

This section covers the furnishing, fabrication, delivery and installation of the air conditioning and ventilation systems complete, including but not limited to the following:

1. Ventilation system.
2. Air conditioning units and wiring.
3. Air diffusers, registers, and grilles.
4. Air filters.
5. Sheet metal duct.
10. Vibration Isolation.
11. Operation and maintenance instructions.
12. Manufacturer's literature, shop drawings, and record drawings.
13. Inspection, test, and guarantee.
14. One year maintenance service.

1.03 ELECTRICAL WORK

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.

1.04 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 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. Permits: 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.

1.05 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 constitute 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.
- C. Capacities of all equipment and materials shall be not less than those indicated.

1.06 SHOP DRAWINGS

Shop drawings shall be provided in accordance with SECTION 15011 – GENERAL MECHANICAL PROVISIONS.

1.07 MATERIAL AND EQUIPMENT

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:

Air Filter	Equipment Supports
Dampers	Flexible Duct Connectors
Diffusers, Registers, Grilles	Gauges and Thermometers
Duct Access Doors	Hi-Efficiency Motors
Duct Sealer	Drain
Duct Work	Flexible Pipe Connectors
Fan Coil	Vibration Isolators

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.

Submittal shall be in accordance with SECTION 15011 – GENERAL MECHANICAL PROVISIONS.

1.08 AS-BUILT DRAWINGS

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.

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.

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 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.

1.09 CONFORMANCE TO AGENCY REQUIREMENTS

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.

1.10 NAMEPLATES

Each major component of equipment shall be provided with a nameplate engraved with the manufacturer's name, address, and catalog number, serial number and electrical data on a metal plate mechanically attached to the item of equipment.

1.11 VERIFICATION OF DIMENSIONS

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 Officer-in-Charge of any discrepancy before performing any work. Fabrication of ductwork and piping shall be in accordance with field measurements.

1.12 OMISSIONS

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 Officer-in-Charge to such omissions in fifteen (15) days advance of the date of bid openings so that the necessary corrections can be made.

1.13 SUBSTITUTIONS OF EQUIPMENT

- A. Substitution requests shall be in accordance with SECTION 01300 SUBMITTALS.
- B. The Contractor shall assume full responsibility for proper fit, performance and additional work relating to other sections of the specifications.
- C. Redesign made necessary by the use of approved substitutions shall be the responsibility and at the expense of the Contractor.

1.14 WELDERS QUALIFICATIONS

All welders shall be certified, by an independent testing laboratory and certificates shall be submitted to the Architect for approval. Testing of welders shall be in accordance with the welding section of ANSI B-31.09 "Building Services Piping".

1.15 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.

1.16 GUARANTEE

The entire mechanical installation described herein shall be guaranteed in writing as a complete working unit for a period of one year starting only after 30 days of trouble free operation after the date of system acceptance. Other requirements shall be in accordance with SECTION 15011 – GENERAL MECHANICAL PROVISIONS.

PART 2 – PRODUCTS

2.01 MATERIALS

- 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 PACKAGED DUCTLESS AIR CONDITIONING UNIT

A. Package Unit

1. Unit suitable for wall hung installation. Unit consists of commutated indoor fan motor combined with highly efficient scroll compressor. Unit shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air cooling system.
2. Units shall be used in a refrigeration circuit matched to a duct-free cooling fan coil unit. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a baked on neutral beige finish.
3. Coil shall be constructed of aluminum fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.
4. Two position motorized fresh air damper with pressure relief ventilation.
5. Equipment shall meet or exceed minimum Energy Code Efficiency Requirements.
6. Unit shall be complete with cooling coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit shall be furnished with integral wall-mounting bracket and mounting hardware.
7. Fan shall be tangential direct-drive blower type.
8. Controls shall control space temperature, determine optimum fan speed, and run self diagnostics. The temperature control range shall be from 64°F to 84°F. The unit shall have the following functions as a minimum:
 - a. An automatic restart after power failure at the same operating conditions as at failure.
 - b. A timer function to provide a minimum 24-hour timer cycle for system with automatic Start/Stop.
 - c. Temperature-sensing controls shall sense return-air temperature.
 - h. Dehumidification mode shall provide increased latent removal capability by modulating fan speed and set point temperature.

- i. Fan only operation shall provide room air circulation when no cooling is required.
 - k. Fan speed control shall be user-selectable; high, medium, low or microprocessor automatic operation during all operating modes.
9. Unit shall have factory supplied replaceable filters and with hot gas reheat.
10. Air conditioning shall be Marvair Model MAA1036A, or approved equal.

2.03 CORROSION PROTECTION

Special protection for cabinets is not required for equipment that has a zinc coating conforming to ASTM A 386 or a duplex coating of zinc and paint. Equipment items shall be protected by the manufacturer with a corrosion-inhibiting coating or paint system that have been proven capable of satisfactorily withstanding the following tests: Test method shall be ASTM B117. Period of test shall be 125 hours for equipment intended for installation indoors; test period shall be 500 hours for equipment intended for installation outdoors or which will be otherwise subjected to marine atmosphere. Each specimen shall have a standard scratch as defined in ASTM D 1654.

- A. Finned Tube Coils: Finned tube coils shall be protected with "Blygold Polual", or "Thermoguard Fin Guard Silver" a polyurethane based metal impregnated coating or approved equal.
 - 1. Coating thickness and application shall be applied in strict accordance with the coating manufacturer's recommendation.
 - 2. The coating shall be performed by a qualified and experienced factory certified applicator such as International A/C Coatings, Honolulu, Hawaii, Thermoguard Pacific, Inc., or an approved applicator.
- B. Cabinet and Exterior Surfaces: Unit cabinet shall be coated with Ameron PSX 700 Engineered Siloxane or "Thermoguard Casing Guard". Metal preparation shall provide a surface profile that shall include degreasing and etching.
 - 1. The coating shall be applied to all interior and exterior surfaces. Coating thickness and application shall be applied in strict accordance with coating manufacturer's recommendations.
 - 2. After the coating has totally cured, the equipment shall be assembled using care not to damage the coating during assembly. Fasteners shall be stainless steel with bonderized rubber washer attached. Any touch up required shall be performed in accordance with the manufacturer's recommendations.
- C. The coating shall be performed by a qualified and experienced factory certified applicator such as International A/C Coatings, Honolulu, Hawaii, Thermoguard Pacific, Inc. or an approved applicator.

2.04 FANS

Fans shall be sound and air tested and rated in accordance with the standards of the Air Movement and Control Association, Inc. Fans shall be directly connected to the motor shaft or indirectly connected to the motor by means of a V-belt drive as noted on equipment schedule. Where V-belt drives are used, motor sheaves shall be adjustable to provide not less than 20 percent speed variation. Sheaves shall be selected to drive the fan at such speed as to produce the specified capacity at field static pressure when set at the approximate midpoint of the sheave adjustment. Motors for V-belt drives shall be provided with adjustable rails or bases. Fans shall be provided with personnel screens or guards on both suction and supply ends except where ducts or dampers are connected to the fan. Provide aluminum bird screen at discharge of aluminum fans and stainless steel bird screens for steel fans. Fans and motors shall be provided with vibration isolation supports or mountings. Each fan shall be selected to produce the capacity required at the fan total pressure indicated. Standard AMCA arrangement, rotation and discharge shall be as indicated on the drawing. Motor efficiency shall be as specified in paragraph "MOTORS". Fans shall be manufactured by Penn, Greenheck, ACME, Cook, Carnes or approved equal. When sound criteria is indicated on drawings, equipment shall be AMCA certified for Air and Sound. Otherwise equipment shall be AMCA certified for Air only.

1. Makeup Air Fan shall be direct drive centrifugal inline fan. Fan housing shall be galvanized steel, mixed flow aluminum wheel, and filter fan section with 2" pleated replaceable Merv 8 filters.
2. Inline Fans: Exhaust fans shall be direct driven centrifugal inline type. The square shaped fan housing shall be of heavy gauge formed steel. One of the sides shall be hinged and shall support the entire drive assembly and wheel allowing the assembly to swing out for cleaning, inspection, or service without dismantling the unit in any way. The motor shall be mounted on the hinged side exterior isolated from the airstream.
3. Power Roof Ventilator - Centrifugal Type: Belt drive upblast roof exhaust fans shall be of the type, wheel size and capacity as shown. V-belt drives shall be designed for 50% overload and shall have adjustable pitch motor sheaves. Motors shall be NEMA Standard open drip-proof and mounted on heavy gauge plates with adjustable sliding steel rods for positive belt tensioning. Wheels shall be backwardly inclined with non-overloading characteristics.
 - a. Housing shall be aluminum with backward inclined aluminum wheel. Curb cap with prepunched mounting holes, entire unit shall be vibration isolated on shock mount.
 - b. Fan drives shall have pre-lubricated flange type ball bearings.
 - c. Fan housing shall be easily removable for access to all parts of the unit. Fans shall bear UL/cUL 705 Power Ventilators.
 - d. Provide pre-wired motor disconnect switch in the fan housing.

- e. Fan exterior finish shall be baked enamel with custom color to match roof.
4. HVLS Fans:
- a. Fan shall be Powerfoild D 12 ft diameter.
 - b. Fan shall be Haiku 52 inch diameter, aluminum airfoil material with white hardware finish.

2.05 MOTORS

- A. All motors 1 horsepower and larger shall be energy efficient type. Efficiency rating shall be in accordance with NEMA Premium.
- B. Motors shall have a 1.15 service factor.
- C. Motors to be used with variable speed drives shall be provided with phase isolation, Class F insulation and a winding thermostat that will detect any motor overheat conditions.
- D. Motor shall be designed to operate at full capacity with a voltage variation of plus or minus 10 percent of the motor voltage rating. Motor size shall be sufficient for the duty to be performed and shall not exceed its full load nameplate current rating when driven equipment is operated at specified capacity under the most severe conditions likely to be encountered. When motor size provided differs from the size indicated or specified, the Contractor shall make the necessary adjustments to the wiring, disconnect devices, and branch circuit protection to accommodate the equipment actually provided, at no cost to the Owner.
- E. Provide a motor starter for each motor.

2.06 DISPOSABLE FILTER:

Air filters shall be as scheduled, medium efficiency, pleated, disposable type. Each filter shall consist of a non-woven cotton fabric media, media support grid and enclosing frame. The filter shall be listed by Underwriters' Laboratories as Class II.

- 1. Filter Media: Filter media shall be of the non-woven cotton fabric type. The filter media shall have an average efficiency of 25-30% on ASHRAE Test Standard 52.76. It shall have an average arrestance of 90-92% in accordance with that test standard.

2.07 VIBRATION ISOLATORS

All isolators shall be hot dipped galvanized with galvanized or stainless steel fasteners. Isolators shall be as manufactured by Mason, Vibrex, Vibro-Acoustics, Korfund, California Dynamics Corporation, M.W. Sausse & Co., or approved equal.

- 1. Neoprene Isolators: Double deflection neoprene mountings shall have a minimum static deflection of 0.35". All metal surfaces shall be neoprene covered to avoid

corrosion and have friction pads both top and bottom so they need not be bolted to the floor. Bolt holes shall be provided for these areas where bolting is required. On equipment such as small vent sets and close coupled pumps, steel rails shall be used above the mountings to compensate for the overhang. Mountings shall be type ND or rails type DNR as manufactured by Mason Industries, Inc. or approved equal.

2.08 DIFFUSERS, REGISTERS, AND GRILLES

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. Supply Registers: Supply registers shall be double deflection type with 1" nominal flange, 1/4" horizontal face bar spacing, and removable core.
2. Return and Exhaust Registers: Registers shall match supply registers except without double deflection.

2.08 VOLUME DAMPERS

- A. Low Velocity/Low Leak For Outside Air Duct (1,500 FPM or Less): Furnish and install Ruskin Model (specifier select one) CD35 or CD36 standard dampers suitable for use in temperatures from -25°F to 180°F. Frames shall be 5" x 1" x 16 gage galvanized steel hat channel. Blades shall be roll formed, triple V-groove 16 gage galvanized steel, maximum of 6" wide. Axles shall be 1/2" plated steel hex. Bearing shall be molded synthetic and linkage concealed in frame. Maximum single section size shall be 48" wide and 72" high. When applications require more than one damper section to fill opening, sections shall be interconnected by appropriate jack shafting. (Specify following for CD36 only). Blade edge shall be extruded dual durometer vinyl. Jamb seals shall be flexible metal, compression type.
- B. High Velocity/Low Leak (Greater than 1,500 FPM): Furnish and install Ruskin Model CD80AF3 suitable for use in pressure differentials up to 13" w.g. and temperatures up to 200°F. Damper frame and airfoil blades shall be steel with all damper materials equivalent to Ruskin standard construction. Axles shall be 3/4" diameter plated steel supported by stainless steel bearings bolted to frame. Finish shall be mill galvanized. Blade edges seals shall be extruded vinyl. Jam seals shall be flexible metal, compression type.
- C. Pre-approved equal manufacturers are Titus, Carnes, Pottorff, Airstream, Metalaire and Anemostat or approved equal.

2.09 DUCT ACCESS DOORS

Hinged access doors shall be provided at all automatic dampers, fire dampers, heaters, thermostats, sensors and all other apparatus requiring service and inspection in the duct system. Access doors shall be 15 by 18 inches unless indicated otherwise. Where size of duct will not accommodate this size, access doors shall be made as large as practical.

Doors shall be provided with galvanized continuous hinge with steel pin and galvanized steel cam latch at 12" O.C. maximum spacing. All doors 48 inches by 48 inches or larger shall be provided with fasteners that can be operated from both sides. Access doors in insulated ducts shall be of the insulated type with 1" foam or mineral fiber insulation. Doors in field fabricated air handlers shall be installed so that fan pressure or suction holds the door closed, unless otherwise indicated. Door and frame shall be galvanized sheetmetal.

2.10 DUCT TEST HOLES

Holes with patches in ducts and plenums shall be provided where directed or necessary for using pitot tubes for taking air measurements to balance the air systems. At each of these locations where ducts or plenums are insulated, extension shall be provided with plug fittings.

2.11 DUCTWORK

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 absolutely airtight.

1. Duct pressure class shall be equal to or greater than 1.5 times the fan total static pressure.
2. Seal all transverse joints on ducts with Deign Polymerics DP 1010, Foster 32-19 Fire Resistive Duct Sealer, Minnesota Mining and Mfg. Co. Duct Sealer 800 Premium Grade, Polymer Adhesives Sealant Systems, Inc. Airseal # 22 or approved equal.
3. Moisture laden ducts from shower rooms shall be ASTM A167, 304 stainless steel.
4. Kitchen Cooking Equipment Hood Ducts:
 - a. Ducts shall be constructed of and supported by stainless steel not less than .043 inch (No. 18 MSG) thick. Except that concealed ducts and supports may be carbon steel not less than .054 inch (No. 16 MSG) thick.
 - b. All seams and joints shall be liquid tight with continuous external weld. Exposed stainless steel welds shall be ground to a finish matching connecting ducts.

- c. Cleanout openings shall be provided at each change in direction and at ten feet intervals. Unless otherwise noted on drawings, ducts which are located in inaccessible ceilings or walls shall be provided with access panels. This Contractor shall provide an access panel with an appropriate U.L. Rating and Label for rated walls and ceilings.
 - d. Complete installation shall be in compliance with NFPA No. 96 VAPOR REMOVAL FROM COOKING EQUIPMENT.
5. Flexible Duct: Flexible air duct shall be listed by Underwriters' Laboratories under UL 181 standards as Class 1 flexible Air Duct Material and complying with NFPA Standards 90A and 90B. Flexible duct shall be a factory fabricated assembly composed of a polymeric liner duct bonded permanently to a coated spring steel wire helix and supporting a fiber glass insulating blanket. Low permeability outer vapor barrier of fiber glass reinforced film laminate shall complete the assembly. Duct shall be rated for 6" w.g. positive pressure, 1" w.g. negative pressure, and operating temperature up to 250°F.

PART 3 - EXECUTION

3.01 PROTECTION OF WORK IN PROGRESS

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 Architect by, and at the expense of the Contractor. Ductwork openings shall be covered and protected from dust and moisture daily. No equipment, ductwork, piping, or insulation shall be installed if contaminated by dust or moisture. Objects shall be cleaned or dried before installation.

3.02 PIPING

- A. Pipes shall be cut accurately to measurements established at the jobsite and worked into place without springing or forcing, properly clearing all windows, doors, and other opening. Cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Pipes shall be cut square, shall have burrs removed by reaming, and shall be so installed as to permit free expansion and contraction without damage to joints or hangers. Fittings, dust, or dirt shall be wiped from interior of the pipe before connections are made. Changes in direction shall be made with fittings, except that bending of pipe will be permitted, provided a hydraulic or mechanical pipe bender is used and wide sweep bends are formed. Bent pipe showing any kinks, wrinkles, or other malformations will not be accepted. All piping shall be installed with sufficient pitch to ensure adequate drainage.
- B. Provide accessible pet cock air vent at all high points in piping system where air pockets may develop.

- C. Opening in pipes, fittings, and equipment shall be plugged or capped to prevent construction debris from entering.
- D. Valves and accessories shall be line size.

3.03 DIELECTRIC UNIONS AND FLANGES

- A. Dielectric unions or flanges shall be installed when connecting dissimilar metal water piping accessories or equipment.
- B. Copper water piping shall be isolated from ferrous material such as metal studs hanger or clamps by wrapping the pipe with plastic electricians tape.

3.04 JOINTS

- A. Copper tubing shall be cut square, ends reamed, and all shavings and dust wiped from the interior of the pipe. Joints in refrigeration piping shall be brazed with silver solder. Excess solder shall be wiped from the joint before the solder hardens.
- B. Screw joints shall be made with tapered threads properly cut conforming to requirements of NBS Handbook H 28. Joints shall be made perfectly tight with a stiff mixture of litharge and glycerin or other approved threaded joint compound applied with a brush to the male threads only. Not more than three threads shall show after the joint is made up.
- C. Unions: Unions shall be installed at all equipment and valves connections which are threaded. Dielectric unions or flanges shall be installed at all connections of dissimilar metals.
- D. Solder and solder flux shall not contain lead. Solder flux shall meet the requirements of ASTM B 813, "Standard Specifications for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy Tube". The Contractor shall submit five (5) copies of certificates stating that the solder and fluxes used are lead free.

3.05 SLEEVES

- A. Pipes passing through wall waterproofing membrane or concrete floors shall be provided with pipe sleeves fitted into place at time of construction. Sleeves shall not be installed in structural members unless noted. Each sleeve shall extend through its respective wall or floor and shall be cut flush with each surface. Unless otherwise indicated, sleeves shall be of such size as to provide a minimum of 1/4" clearance between pipe or jacket over insulation and sleeves. Sleeves in bearing walls, waterproofing membrane floors, and wet areas shall be schedule 40 steel pipe or cast iron pipe.
- B. When penetrating waterproofing membrane for floors, the metal jacket shall extend from a point below the backup material to a minimum of 2 inches above the flashing sleeve. For other areas, the metal jacket shall extend from a point below the backup material to a point 12 inches above the floor, or when passing through walls shall extend a minimum of 4 inches on either side of the wall.

- C. Where pipes or ducts penetrate fire rated walls and floors the space between the pipes or ducts and sleeves shall be sealed with fireproof sealant. Installation shall be in accordance with manufacturers instructions.

3.06 FLOOR, WALL, AND CEILING ESCUTCHEONS

Escutcheons shall be provided at all finished surfaces where exposed piping, bare or insulated, passes through floors, walls or ceilings except in utility, or equipment rooms.

Escutcheons shall be fastened securely to pipe or pipe covering and shall be chromium plated brass, either one piece or split pattern, held in place by internal spring tension or setscrew.

3.07 DUCTS

A. Supports:

1. Refer to structural drawings for type of construction from which ducts are to be suspended. Support from steel decking is prohibited unless specifically approved by the Engineer.
2. Drilled in Threaded Inserts: Where supports in beams and joists are required after concrete has been poured, Phillips "Redhead" Drilled In Threaded Inserts shall be provided, installed in accordance with manufacturer's recommendations.
3. Ducts and accessories shall be supported in accordance with SMACNA HVAC Duct Construction Standards Metal and Flexible Ducts (1995). Additional hangers shall be provided within 6" of each cross sectional joint on each duct section. This will result in all duct sections having two hanger locations, one at each end.

B. Duct Seams and Joints:

1. Longitudinal seams shall be Pittsburgh seams, standing seams, grooved, or snap lock. Snap lock seams shall be formed with rollers and designed and set up specifically for the metal gage being worked. Seams shall be caulked.
2. Transverse joints in low velocity round ducts shall be slip type secured with sheet metal screws equally spaced on 6" centers maximum with a minimum of 3 screws per joint. Exposed inside edge of duct at joint shall point in direction of air flow. Joints shall be sealed with an approved tape or mastic.
3. All seams and joints in rectangular ductwork shall be constructed in accordance with ASHRAE Handbooks, except as otherwise noted.

- C. Duct Accessories: Turning vanes or extractors shall be installed in all changes in direction of air flow, whichever is applicable.

3.08 PIPE PENETRATION

Where pipe penetrate fire rated walls and floors the space between the pipe and pipe sleeve shall be sealed with fireproof sealant. Installation shall be in accordance with manufacturer's instructions.

3.09 EQUIPMENT INSTALLATION

Necessary supports shall be provided for equipment, appurtenances and pipe, as required. These include frames or supports for air conditioners, and other similar type items requiring supports.

3.10 VIBRATION ISOLATORS

No rigid connections between equipment and building structure shall be made that degrades the noise and vibration isolation system herein specified. Electrical conduit connections to isolated equipment shall be looped to allow free motion of isolated equipment. Provide vibration isolators to vibrating and/or dynamic equipment, and install per equipment manufacturer's instructions.

3.11 CLEANING AND ADJUSTING

Pipes shall be cleaned free of scale and thoroughly flushed of all foreign matter. Strainers and valves shall be thoroughly cleaned. Equipment shall be wiped clean, with all traces of oil, dust, dirt, or paint spots removed. Temporary filters shall be provided for all fans that are operated during construction, and after all construction dirt has been removed from the building, new filters shall be installed.

Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper tension. All control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions. Clean all strainer screens 10 days after acceptance of this project.

3.12 TESTING, ADJUSTING AND BALANCING SYSTEMS

- A. The Contractor shall obtain the services of an independent test and balance agency that specializes in and whose business is limited to the testing and balancing of air conditioning systems.
- B. Testing, adjusting and balancing shall be performed in complete accordance with ASHRAE Testing, Adjusting and Balancing.

Recommendations by ASHRAE shall be considered mandatory. Adjustment of equipment and air outlet quantities to suit actual field conditions shall be within the scope of Testing, Adjusting and Balancing.

- C. Instruments used for testing and balancing of air and hydronic systems must have been calibrated within a period of six months and checked for accuracy prior to start of work.

- D. Six copies of the complete test report shall be submitted to the Architect prior to final acceptance of the project. Reports shall be submitted on standard SMACNA Forms.
- E. All air filters shall be replaced with new filters after 8 hours of operation and prior to balancing.
- G. Balancing:
 - 1. Duct systems shall be balanced as follows:
 - a. System (or air moving device) to not less than design CFM. Adjusting shall include changing of sheaves to suit field static pressures.
 - b. Control zones or major duct branches to plus or minus 5%.
 - c. Registers and grilles, initially, to plus or minus 5%, thereafter, adjust to field conditions.
 - 2. Test Data: The Contractor shall provide the Architect with typewritten schedules of readings taken during the balancing and testing operations indicating the required or specified reading, the first reading taken, and final balanced reading for the following items:
 - a. Fans: Size, Type, speed in rpm, outlet velocity in fpm, static pressure in inches of water, air quantity in cfm, and motor load in amperes. Fan pulleys shall be changed or adjusted to meet system field static pressure requirement.
 - b. AC package Units: Size, type, fan speed in rpm, outlet velocity in fpm, external static pressure in inches of water, total static pressure in inches of water, air quantity cfm, and motor load in amperes.
 - c. Air outlets and inlets: Size, velocity in fpm, and air quantity in cfm.
 - d. Coils: Size; face velocity in fpm; air temperature entering coil and air temperature leaving coil, wet-bulb and dry-bulb degrees F.; water temperature entering coil and water temperature leaving coil, degrees F; and water quantity in gpm.
 - e. Ducts: Size, velocity in fpm, and air quantity in cfm.
 - f. Fill out attached Operational Performance Test form.

3.13 PAINTING

Painting shall be as specified in Sections 09911 Exterior Painting and 09912 Interior Painting.

3.14 SPARE-PARTS DATA

After approval of materials and equipment and 2 months prior to the date of beneficial occupancy, the Contractor shall furnish a complete list of parts and supplies, with current source of supply.

3.15 OPERATING AND MAINTENANCE MANUAL

Provide operating and maintenance manual on all equipment and the system in accordance with SECTION 15011- GENERAL MECHANICAL PROVISIONS.

3.16 FIELD INSTRUCTIONS

Upon completion of the work and at a time designated, the services of one or more qualified personnel shall be provided by the Contractor for a period of not less than 2 days to instruct the Officer-in-Charge in the operation and maintenance of the air conditioning system and ventilation system. These field instructions shall cover all the items contained in the bound instructions.

3.17 ONE YEAR GUARANTEE AND MAINTENANCE SERVICE CONTRACT

- A. In addition to the Guarantee on material and workmanship, the installer shall submit seven (7) copies of the Maintenance Service Contract, countersigned by the General Contractor, that will validate said Guarantee.
- B. The Guarantee and maintenance service shall extend for a period of one year commencing after 30 consecutive days of trouble-free operation after the Project Acceptance Date or the air conditioning equipment acceptance date, if earlier than the Project Acceptance Date, and shall include all labor, materials, equipment and parts necessary to service the complete system, in accordance with the attached Schedule of Maintenance Service, so as to assure proper operation and function of the system. All costs for the periodic maintenance, including emergency calls, shall be borne by the Contractor. This maintenance period and the guarantee period shall run concurrently (same start and end dates).

Trouble-free operation is defined as a non-disabling condition or a non-recurring failure or disruption and the following:

- 1. The system shall be free of all discrepancies, contamination and debris which requires correction in excess to those described for the monthly service which is included in the Schedule of Maintenance Service.
 - 2. The system is maintaining operational conditions and other parameters as measured during acceptance test.
- C. The Contractor shall keep a separate log recording all regular and emergency maintenance calls to the project at his office. The log shall include at least the following information:
 - 1. Name of person making service call.

2. Date of call.
3. Time in and out from project.
4. Nature of call; if emergency, who contacted service company.
5. Temperature and pressure readings from all available pressure gauges and thermometers. Readings from all other gauges, thermometers, level indicators, status indicators, sensors, Ambient temperature and humidity at the site.
6. The type and cost (labor, materials, parts and equipment) of repair work performed on the unit, if any.
7. All items indicated to be recorded in the Schedule of Maintenance Service.
8. Other data required.

In addition, the Contractor shall submit written reports of maintenance service performed within 5 working days of performance of service to the Officer-in-Charge. The maintenance service report shall include pertinent pages of the maintenance log.

D. The Installer shall include a listing of the following items along with the Maintenance Service Contract:

1. Name of the Servicing Contractor.
2. Air Conditioning system acceptance date.
3. Service contract expiration date. Service contract expiration date shall be amended after the completion of the 30 consecutive days of trouble free operation specified in paragraph B. above.
4. Monthly inspection schedule for the maintenance period.
5. Itemized listing of the equipment covered under the service contract, including a description of the equipment identified, its model and serial number(s) and manufacturer's name(s).

E. The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual 30 days before the Project Acceptance Date.

F. Certification of Maintenance Work: All work done under this maintenance contract shall be certified by a responsible employee of the Contractor who is in charge of or who performs the maintenance work. Service reports shall be made out for all service periods, i.e., monthly, quarterly, semi-annual, annual, emergency, etc. Certification of work by the Contractor shall be construed to mean that work has been performed in accordance with recommended and accepted maintenance procedures in conformance with the full intent of the service contract. Service reports shall include findings by the service personnel and description of work performed to maintain the systems in proper

operating condition.

G. Work Schedule/Advance Notification:

1. All maintenance work shall be performed between the hours of 7:30 a.m. to 4:00 p.m., on normal working days, Monday through Friday, excluding State Holidays.
2. Contractor shall notify Officer-in-Charge prior to any maintenance work that will cause mechanical equipment outages or in any way affect the facility's user in the performance of their duties. Contractor shall inform the Officer-in-Charge a minimum of five 5 working days in advance of any work.

H. Trouble Calls: Emergency service and repairs required between regular service calls shall be rendered within 24 hours after the Contractor is notified, non-work days included.

The Contractor shall call Officer-in-Charge the next working day after being notified of the problem and report the status of repairs.

I. Maintenance Report/Checklist: The Contractor shall prepare and maintain a maintenance service report/checklist which shall include the following:

1. Date maintenance service was performed.
2. The name of the mechanic who performed said maintenance.
3. The type and cost (labor, materials, parts and equipment) of repair work performed on the unit, if any.
4. Documents and other data pertaining to the maintenance performed.
It will be the responsibility of the Contractor to maintain the report/checklist by recording the above noted data after each scheduled maintenance and emergency repairs, and have the checklist available for inspection at the building site. The report shall be sufficiently detailed to properly reflect the past maintenance history of the equipment.
Reports shall be certified by a representative of the facility being served and shall be submitted to the State at the completion of the Service Contract.

J. Cleanup and Work Practices: The Contractor shall keep the job site free of debris, litter, discarded parts, etc. and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts, and equipment from the service areas upon completion of the work.

The Contractor shall exercise caution during the progress of his maintenance and repair work to prevent damage to the ceilings, roofing and other building structure. The Contractor shall restore all damages, caused by his negligence, to its original condition, at his own expense.

K. All periodic maintenance services performed by the Contractor shall include applicable

items listed but shall not be limited to the following maintenance tasks:

SCHEDULE OF MAINTENANCE SERVICE

1. VENTILATING FANS (Exhaust and Supply)

Quarterly Service

- a. Check motor-controlled and back-draft dampers for proper operation; lubricate linkage for free movement. Correct, record and report all discrepancies and actions taken.
- b. Lubricate fan motors and bearings. Correct, record and report all discrepancies and actions taken.
- c. Check belt wear and tension and record findings; adjust or replace as needed. Correct, record and report all discrepancies and actions taken.
- d. Check sheaves for wear and record findings. Replace as needed. Correct, record and report all discrepancies and actions taken.
- e. Check fan collar, bearings, and shaft for wear. Correct, record and report all discrepancies and actions taken.
- f. Replace air filters where installed; clean grilles, registers and diffusers. Correct, record and report all discrepancies and actions taken.
- g. Read and record motor power supply voltage and amperes. Correct, record and report all discrepancies and actions taken.
- h. Check two-speed motor for proper operation; check refrigerant sensor control of motor speed for proper operation. Correct, record and report all discrepancies and actions taken.
- i. Certify performance of quarterly scheduled maintenance service and that all discrepancies have been reported and corrected.

Semi-Annual Service

- a. Check and clean fan wheels and housings of dust, dirt, and grease. Correct, record and report all discrepancies and actions taken.
- b. Remove and wash all intake grilles and dampers and repair or replace deteriorated bird screens. Correct, record and report all discrepancies and actions taken.
- c. Certify performance of semi-annual scheduled maintenance service and that all discrepancies have been reported and corrected.

2. PACKAGE AIR CONDITIONER

Monthly Service

- a. Clean and clear all drain pan and flush all related condensate drain line with or compressed air. Install drain pan tablets to control algae growth. (Note: Contractor will be liable for water damage due to clogged drains under this contract.) Repair, record and report all discrepancies and actions taken.
- b. Change all disposable air filters at least once a month. Use filters of equal capacity and performance characteristics as original design. Repair, record and report all discrepancies and actions taken.
- f. Lubricate and oil all fan and motor bearings, connections of dampers and vanes, linkages, automatic motors, valves, and actuators. Correct, record and report all discrepancies and actions taken.
- g. Check all drives for wear; adjust belt tension if necessary. Change belts as required. Correct, record and report all discrepancies and actions taken.
- h. Check pressure and temperature differential across cooling coils and record readings. Correct, record and report all discrepancies and actions taken.
- i. Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean-up all equipment. Provide operational simulation of controls at various conditions. Correct, record and report all discrepancies and actions taken.
- j. Check time clock for proper operation and time settings. Correct, record and report all discrepancies and actions taken.
- k. Read and record motor power supply voltage and amperes. Correct, record and report all discrepancies and actions taken.
- l. Check Compressor oil level and refrigerant sight glass. Add oil as needed and change filter/drier if moisture is indicated. Correct, record and report all discrepancies and actions taken.
- m. Check refrigerant system for leaks, unusual noise and vibration. Record suction, discharge and oil pressures. Correct, record and report all discrepancies and actions taken.
- n. Certify performance of monthly scheduled maintenance service and that all discrepancies have been reported and corrected.

Annual Service

- a. Adjust alignment of bearings and sheaves; lubricate fan and motor bearings.

- Replace worn or noisy bearings. Repair, record and report all discrepancies and actions taken.
- b. Check and record condition of fan blades. Replace fan wheel as required. Repair, record and report all discrepancies and actions taken.
 - c. Clean cooling coils of dirt accumulation using nitrogen, high pressure air/water, steam, or chemical coil cleaner solution. Repair, record and report all discrepancies and actions taken.
 - d. Clean supply and return air grilles, registers, and diffusers, and outside air intake grilles, screens and dampers. Repair or replace deteriorated bird screens. Correct, record and report all discrepancies and actions taken.
 - e. Clean and adjust valves, and clean all fan wheels and interior and exterior of equipment housings. Repair, record and report all discrepancies and actions taken.
 - f. Secure all loose housing, seal leaks and touch up paint after cleaning rust. Repair, record and report all discrepancies and actions taken.
 - g. Check and calibrate control valve. Repack valve system as necessary. Repair, record and report all discrepancies and actions taken.
 - h. Service thermostats, clean, and calibrate. Repair, record and report all discrepancies and actions taken.
 - i. Check and record motor power supply voltage and amperes. Correct, record and report all discrepancies and actions taken.
 - j. Check and clean the inside and outside of all unit housing. Seal leaks and remove rust from exterior components and touch-up paint. Correct, record and report all discrepancies and actions taken.
 - k. Certify performance of annual scheduled maintenance service and that all discrepancies have been reported and corrected.

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

SERVICE MAINTENANCE REPORT

DATE: _____ SHEET NO. _____

- 1. Name of Facility and Location: _____
- 2. Submitted By: _____

- 3. Date of Service Call: _____
- 4. Name of Person(s) Making Call: _____
- 5. Time In; Time Out at Site: _____
- 6. Person(s) Contacted: _____

7. Nature of Service Call: (Routine Maintenance, or Emergency Explain).

8. Equipment Readings and Maintenance Performed: (List all items serviced; identify - 8a, 8b, 8c...etc.)

DIVISION 16 – ELECTRICAL

SECTION 16050 – ELECTRICAL WORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. The work covered by this section of the Specifications shall include furnishing all labor, materials, equipment and services to construct and install the complete electrical system shown on the accompanying Drawings and specified herein. This work shall include but is not necessarily limited to:

1. Power and light systems, including branch circuits, outlets, panelboards, light fixtures, wiring devices, equipment, and wiring.
2. Complete branch circuit wiring system for motors.
3. Power wiring for air conditioning and ventilation equipment including mounting of starters furnished by mechanical contractor.
4. Wiring, up to and including safety switches, for items described under other sections of these Specifications.
5. Wiring and connecting of all electrical equipment supplied for installation and use in this contract and not specifically listed as work by others, including the furnishing of disconnects for all motors.
6. Test the completed installation.

1.03 GENERAL REQUIREMENTS

A. It is the intent of the plans and specifications to provide a complete installation. Should there be omissions or discrepancies in the plans and specifications, the Contractor shall call the attention of the Contracting Officer to such omissions and discrepancies in advance of the date of bid opening 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. Before bidding on this work, carefully examine each of the drawings and the site. By submitting a proposal of the work included in this contract, the Contractor shall be deemed to have made such examination and to be familiar with and accept all conditions of the job site.
2. Standards:
 - a. The entire installation shall be made in strict accordance with the latest rules and regulations of the National Electrical Code, the National Board of Fire

Underwriters, NFPA, ANSI, NEMA, and IPCEA, and the local ordinances, rules and regulations of the State.

- b. The Electrical Contractor shall obtain and pay for the electrical permit as required by local laws and rules. All work shall be inspected by the proper local authorities as it progresses. The Electrical Contractor shall pay all inspection fees and shall deliver certificates of completion and inspection to the Contracting Officer before final payment will be made. Cost of permit and inspection fees shall be included in the Electrical Contractor's quoted price for the installation.

3. Drawings:

- a. Contract Drawings: These specifications are accompanied by floor plans of the building, and diagrammatic electrical layouts showing the approximate location of the outlets, switches, devices and other equipment.
- b. The wiring layouts and schedules show the approximate locations of all outlets, switch controls, service runs and other electrical apparatus. These locations are approximate and before installing, the Contractor shall study adjacent architectural details and make installation in most logical manner. Any device may be relocated within 10'-0" before installation at the direction of the Contracting Officer, whose decision shall be final.

4. Symbols: The standard electrical symbols together with special symbols, notes, and instructions shown on the drawings indicate the work and equipment required and are all to be included as a part of these specifications.

1.04 SUBMITTALS

- A. Shop drawings, or catalog cuts, of the following equipment shall be submitted. Shop drawings and catalog cut submittals processed by the Contracting Officer are not Change Orders. The purpose of the submittals by the Contractor is to demonstrate to the Contracting Officer that he understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.

1. Panelboard(s), circuit breakers, safety switches, manual motor starter(s).
2. Wiring Devices (light switches, receptacles).
3. Special wiring devices.
4. Conduit and wiring.
5. Light fixtures, including data on lamps and drivers.

- B. As-Built Drawings: The Contractor shall keep at the job site a complete, neat and accurate record of all approved deviations from the contract drawings, shop drawings and specifications, indicating the work as actually installed. These changes shall be recorded on prints of the drawings affected and the shop drawings. Above reference to deviation shall not be construed to allow deviations without prior approval. As-builts shall be submitted prior to final acceptance to Contracting Officer.

- C. Warranty.

1.05 QUALITY ASSURANCE

- A. For actual fabrication, installation and testing of the work of this section, use only thoroughly trained and experienced workmen completely familiar with items required and with manufacturers' recommended methods of installation. In acceptance or rejection of installed work, no allowance will be made for lack of skill on part of workmen.
- B. Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work and materials of all other trades.

1.06 WARRANTY

- A. All work and materials executed under this Section shall be under warranty to be free from defects of materials and workmanship for one (1) year from date of final acceptance of project as a whole, except lamps, which shall be warranted for 50% of the rated life as published by the manufacturer. All repair and replacement work required, including other work damaged by this work's defects shall be performed without cost to the State.
- B. The Surety shall not be held liable beyond two (2) years of Project Acceptance.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials shall be new and of the best quality available in their respective kinds, free from all defects, comply with applicable provisions of ASTM Standards, NEC Articles 90.7 and 110.3 and those items listed by the Underwriters' Laboratories shall bear "UL" label of approval and shall be tested by a nationally recognized electrical testing laboratory and shall be of the make and types specified for approval.
- B. Brand names and catalog numbers indicate standards of design and quality required. In case of obsolescence, supersedure, or error in catalog number, the associated description and intent implied by the application shall govern. Substitute materials may be used if qualified by written permission from Contracting Officer. List of substitute materials together with qualifying data shall be submitted for approval.

Example:

Item	Manufacturer & Catalog No. Specified	Substitute Manufacturer & Catalog No.
Cable	Joe Doe - No. 3200	King - No. 3200

- C. Qualifying data shall include cuts, shop drawings, and specifications to show equality with material specified herein and in drawings. The decision of the Contracting Officer shall govern as to what materials or equipment may be substituted for that specified. The burden of proof as to the equality of any proposed substitution shall be upon the Contractor.
- D. Electrical equipment and luminaires to be supplied through the manufacturer's designated representative by a local distributor.

- E. Furnish proof of compliance when shop drawings are submitted.
- F. All electrical apparatus of the same manufacturer unless otherwise noted.
- G. Where electrical apparatus is to be installed outdoors, NEMA 4X 316 SS housings shall be provided.

2.02 MATERIALS

A. Raceways:

1. Rigid metal conduit- Rigid steel, hot-dipped galvanized inside and outside, round bore for use with threaded fittings, 3/4 inch minimum diameter, except as noted. Other sizes to conform to NEC requirements, based on THW wires. Manufacture and install according to NEC Article 344. Aluminum conduits not allowed.
2. Flexible metallic tubing - Flexible, galvanized steel used in conjunction with factory approved fittings. 1/2 inch minimum diameter, except as noted. Manufacture and install according to NEC Article 360.
3. Electrical Metallic Tubing (EMT) - Zinc coated or galvanized, round bore, thin walled metal tubing, 1/2 inch minimum diameter except as noted. Manufacture and install according to NEC Article 358.
4. Liquidtight flexible metal conduit - Flexible steel, zinc-coated, jacketed with high density polyethylene or polyvinyl-chloride jacket. Use with factory approved fittings. Manufacture and install according to NEC Article 350.

B. Wires:

1. Conductors shall be copper, 600 volts, No. 12 AWG minimum. Conductors No. 10 and smaller, solid and round, or 7 or 19 strands, concentric. Conductor No. 8 and larger, 7 or 19 strands, concentric. All conductors No. 6 and smaller shall be NEC Type THWN, XHHW and THW. All conductors No.4 and larger shall be NEC Type XHHW or THWN.
2. Fixture wiring shall be NEC Type RHH or THHN. Exterior conductors shall be Type RHW-USE or cross-linked polyethylene, Style USE. Fire alarm conductors shall be Type THWN/THHN.
3. Color Code: Black-Phase "A", Red-Phase "B", Blue-Phase "C", White- Neutral, Green-Ground. (208Y/120V System) Color coding shall be maintained throughout entire system. Use other colors when more wires than above listed are contained on one raceway. Contracting Officer shall determine whether deviation from color coding will be permitted.

- C. Disconnect Switch: Heavy duty non-fusible safety switch shall be horsepower rated when used as motor disconnect. Contacts shall be lever operated and spring loaded. When for use with fuses, conventional or of current limiting type, blades shall be rejection type. Enclosures to have provision for padlocking. Provide NEMA 1 enclosure for interior locations and NEMA 4X 316 stainless steel for exterior locations.

- D. Circuit Breakers: Individual breakers shall be molded plastic case, with toggle operated mechanism thermal-magnetic overload trips. Inter-changeable trip shall be provided when available. Toggle positions "ON", "TRIPPED" and "OFF", engraved on body of toggle. Enclosed in NEMA style steel box Boxes shall be NEMA 1 for interior locations and NEMA 4X 316 stainless steel for exterior locations. Circuit breaker AIC rating and type to match existing.
- E. Panelboards: Provide as shown on plans, unit circuit breaker panelboard as indicated. See plans for schedule.
1. Enclosures: Panelboard enclosures shall be corrosion resistant galvanized (zinc finished) sheet steel with removable end walls. Fronts shall be cold-rolled steel, coated with a phosphatized rust inhibitor and then finish coated with ANSI 61 light gray enamel.
 2. Fronts: A four-piece front shall be furnished to provide ease of wiring access. A door shall be a one-piece bolt on front with a lockable hinged door over the protective devices. All door hinges shall be continuous piano hinges which are welded to the door and bolt on front. Door locks shall be provided. Provide 2 keys. All screw fasteners are zinc coated to retard corrosion.
 3. Main and Branch Devices: Main and branch circuit breakers shall be quick-make, quick break, and trip indicating. All three-pole breakers with ampere ratings greater than 100 ampere shall have interchangeable trips when available. Interrupting rating of circuit breakers shall not be less than the maximum short circuit current available at the incoming line terminals as shown on plans.
 4. Interiors: Panelboard symmetrical interior shall be so designed and assembled that the circuit breakers are mounted onto the bus bar with positive gripping jaw assemblies and locked pressure connections. The circuit breaker shall be removed or replaced without disturbing adjacent protective devices and without removing the main bus or branch circuit connections. The interiors shall allow installation of molded-case circuit breakers in the panelboard. Insulation barriers shall be installed over the vertical bus behind the dead front shield to provide increased safety when field service is required.
 5. Bus bars: Bus bars shall be copper, current density rated and meet UL67 temperature rise limits through actual tests. All bus bars shall be silver plated. Bus bar current density rating shall be 1000 amperes per square inch for copper. Bus bars shall be sequenced-phased, and rigidly supported by high impact resistant, insulated bus supporting assemblies to prevent vibration or short circuits. All solderless terminations shall be suitable for either copper or aluminum UL Listed wire or cable and shall be tested and listed in conjunction with appropriate UL standards.

The neutral bar shall be fully rated and capable of being located in either corner of the enclosure at the line end to facilitate conductor termination.

Ground wire terminations shall be provided as an option in kit form suitable for installation by the panelboard installer without voiding UL label.

- 6. Other: A panel directory, neatly typed on factory-card giving branch circuit "USE" and general location of outlets shall be provided.
 - 7. Panelboard shall be listed and labeled by Underwriters Laboratories, Inc. in accordance with UL Standard 67, and shall conform to the latest requirements of the National Electric Code NEMA Standard PB.1. The panelboard shall meet service entrance requirements when required.
- F. Nameplates: Nameplates for identification or instruction on equipment enclosures shall be engraved laminated phenolic plastic, screw mounted. Plates shall be three layered, black-white-black. Plates shall be engraved to show 3/8" high engraved white letters on black background. Provide nameplates for all feeder breakers, switches, panels, cabinets and large junction boxes.

Breakers and Switches:	By panels or loads served
Panels:	By source panel & circuit, designation, voltage, phase & wires
Cabinets:	By use (such as telephone, TV, etc.)
Boxes:	By use and voltages

- G. Pullboxes: Pullboxes shall be provided where required by the NEC or Utility Company requirements. Boxes shall be code gauge steel with screw cover and raintight construction when installed in locations exposed to rain. For exterior locations provide in ground Handholes or Manholes as required.
- H. Enclosures and Cabinets: Enclosures and cabinets for panelboards, breakers, and switches shall be NEMA type, fabricated from galvanized steel, prime painted and enamel finished according to NEMA specifications.
- I. Outlet Boxes: Outlet boxes shall be of size and type best suited to particular use or location but in any case shall be of sufficient size to contain without crowding all conductor and connections which may be required in any outlet box. Manufacture and install according to NEC Article 314.
 - 1. Boxes in interior locations shall be code gauge galvanized steel, not less than 14 gauge, not less than minimum size required by Code. Pressed galvanized steel boxes: In ceilings and dry walls, 4-11/16" square by 2-1/8" deep minimum. For mounting of single device such as a switch or receptacle, 2" by 3" by 2-1/8" deep minimum.
 - 2. Exposed boxes and weather exposed boxes, recessed boxes, including lighting outlets on exterior shall be galvanized cast iron or alloyed aluminum with threaded hubs for conduit connections. Aluminum boxes shall be prime painted and enamel finished. Cast metal boxes: In exposed and wet locations, 4" square by 2-1/8" deep with threaded hubs, prime painted, gasketed covers.
- J. Devices: Approved equal products manufactured by Arrow-Hart, Bryant, Cooper, Hubbell, Leviton, Pass & Seymour.

1. Switches: Single or double pole, 3 or 4 way as required, non-mercury quiet, 20 amperes, 120-277 volts, UL labeled AC type, silvered contacts, color as noted plastic body, tumbler switch with endurance of 10,000 make breaks. Hubbell No. 1220 series, Arrow Hart No. 1990 series, Bryant No. 4000 series, Cooper 1220 series or approved equal.
2. Duplex Convenience Receptacles: Duplex, 20-amperes, 125 volts, back and side wired, 3 wire, self-grounding type, specification grade, color as noted plastic body, with parallel and ground U-shaped slots, NEMA 5-20R; Cooper #5362, Leviton #5362A or approved equal.
3. GFI Receptacles: Duplex, 20-amperes, 125 volts, back and side wired, 3 wire, specification grade, color as noted plastic body, with parallel and ground U-shaped slots, NEMA 5-20R; Cooper #XGF201, Hubbell #GF53621, or approved equal.
4. Manual Motor Starter: NEMA ICS 2, AC general-purpose Class A manually operated, full voltage controller with horsepower rated overload element, red pilot light and toggle operator.
5. Wall-mounted Occupancy Sensor: Local, dual technology with passive infrared and ultrasonic. White color body with vandal resistant lens and manual on operation. Set time delay at 15 minutes or at the direction of Contracting Officer. Wattstopper #DW-100-W or approved equal (for lighting load only) and Wattstopper #DW-100-24-W with power pack or approved equal (for lighting and exhaust fan load. Dedicated power pack shall be provided for controlling each exhaust fan).
6. Ceiling-mounted Occupancy Sensor: Local, dual technology with passive infrared and ultrasonic. White color body with 360 degrees of coverage. Compatible with low voltage momentary switch to provide on/off manual operation. Set time delay at 15 minutes or at the direction of Contracting Officer. Provide compatible power pack where required. Dedicated power pack shall be provided for controlling each exhaust fan. Wattstopper #DT-300 or approved equal.
7. Special Purpose Receptacles: Specification grade, size as indicated. Provide one matching plug per receptacle.
8. Device Plates:
 - a. Plates for interior flush construction shall be molded plastic of high dielectric strength and arc resistance, meeting or surpassing UL 514, color as noted color or matching surrounding area.
 - b. Plates for exposed and weather exposed boxes shall be cast metal with neoprene gasket for sealing against entry of water and moisture into box. Switch plates shall be provided with neoprene cover over handle or raintight lever mechanism.
 - c. Receptacle safety outlet enclosure shall consist of an outlet plate with a hinged safety cover that shall remain weatherproof while in use or idle. The enclosure shall have a latching mechanism to allow the enclosure to maintain weatherproof integrity. The enclosure shall have a cord port(s) capable of allowing an appropriate size electrical cord(s) to pass through when the safety cover is closed. The enclosure shall be UL Listed and conform to NEC Article

410.57. Body materials shall be of flame resistant, ultra violet inhibiting, impact resistant, polycarbonate resin. Gasket materials shall be of sufficient thickness to form a weatherproof seal. Attachment screw shall be stainless steel. TAYMAC Corporation or approved equal.

- K. Light Fixture: Complete with necessary stem, lamps, drivers, starters and accessories, according to "Lighting Fixture Schedule" - on plans.
- L. Hardware, Supports, Backing. Etc.: All hardware, supports, backing, and other accessories necessary to install electrical equipment shall be provided. Wood materials shall be "wolmanized" treated against termites; iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze. All wood screws shall be brass or galvanized steel. Bolts, nuts, washers, and screws used for exterior shall be high quality 316 stainless steel or brass.
- M. Other Materials: All other materials not specifically described but required for a complete and operable electrical installation, shall be new, first quality of their respective kinds, and as selected by Contractor subject to approval by Contracting Officer.

PART 3 – EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

- A. Perform all work in accordance with equipment manufacturer's requirements and applicable NFPA standards. Install equipment and materials in a workmanlike manner conforming to recognized commercial standards.
- B. Construction Methods
 - 1. Comply with local ordinances and regulations of the County of Honolulu. Workmanship subject to approval of Contracting Officer who shall be afforded every opportunity to determine skill and competency. Concealed work re-opened at random during formal inspection by Contracting Officer without additional charge to the State.
 - 2. Construction shall conform to construction practices as recommended by American Electricians Handbook by Croft (latest edition) Edison Electric Institute, National Electrical Code, National Electrical Safety Code and applicable instructions of manufacturers of equipment and materials supplied for project.

3.02 SURFACE CONDITIONS

- A. Inspection: Prior to work of this section, carefully inspect installed work of other trades and verify that all such work is complete to point where this installation may properly commence.
- B. Discrepancies: In event of discrepancy, immediately notify Contracting Officer. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.03 PREPARATION

- A. Coordination: Coordinate installation of electrical items with schedules for work of other trades to prevent unnecessary delays in total work. Where electrical items are shown in conflict with locations of structural members and mechanical or other equipment, furnish and install required supports and wiring to clear encroachments.
- B. Accuracy of Data: The data indicated on drawings and in specifications are as exact as could be secured but their absolute accuracy is not guaranteed. Exact locations, distances, levels and other conditions will be governed by job decisions of Contracting Officer.

3.04 INSTALLATION OF RACEWAYS AND FITTINGS

- A. All conduits within building line shall be rigid steel conduits or electrical metallic tubing. Electrical metallic tubing may be used above floor. EMT installation shall be installed exposed not less than 84" above floor.
- B. Conduits shall be of ample size to allow drawing in or removing of wires and cables without undue strain and suitable bushings shall be installed on each end of every run of conduit where wires are installed.
- C. Conduit system shall be continuous from outlet to outlet or fitting to fitting so that electrical continuity is obtained between all conduits of the system.
- D. Cut raceways square, and ream inner edges. Adjoining lengths shall butt together evenly in couplings to provide passage for installing conductors. Factory threads shall be cleaned with die before installation of conduit. Use of running threads not permitted. Where conduits cannot be joined by standard threaded couplings, approved watertight conduit unions shall be used.
- E. Bends, offsets, and crossing of conduits shall be avoided wherever possible. When necessary make bends and offsets with hickey or conduit bending machine. Do not use vise or pipe tee. Flattened or crushed conduit shall not be acceptable. Bends made so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend shall be not less than ten times internal diameter of raceway.
- F. Cap raceways during construction with plastic or metal-capped bushings to prevent entrance of dirt or moisture. Swab all raceways out and dry before wires or cables are pulled in.
- G. Mount raceway free from other pipes, valves, or mechanical equipment. Keep all conduits at least six inches away from the covering on hot water pipes, and 18" away from kitchen exhaust ducts.
- H. Fish wires, cords, strings, chains or the like shall not be placed or inserted in the conduit system during installation of the conduits.
- I. After conduit system has been installed, empty conduits shall be left with a nylon drag wire.

- J. Install insulating bushings and two locknuts on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required to grounding receptacles and connect conduits to service ground, per NEC Article 250.
- K. Run exposed raceways parallel with, or at right angles to structural or architectural elements.
- L. Securely fasten raceways with two-hole galvanized pipe straps, or with approved beam clamps, or approved single or gang pipe hangers spaced not more than 7 feet apart, as conditions require. Vertical runs shall be supported at intervals not exceeding 5 feet by approved clamp hangers. Conduit runs with three 90-degree bends or equivalent, 150 feet maximum length without pullbox shall be permitted. Support raceways from structure. Do not support raceways from or on mechanical pipes, ducts or ceiling suspension wires.

3.05 INSTALLATION OF CONDUCTORS

- A. Except for cables and wires otherwise called for, install all conductors in conduit, wireway or cable tray.
- B. Color Coding: Wires shall be color-coded in accordance with requirements of the NEC.
- C. Tag all feeders for identification.
- D. Splicing:
 - 1. Wires shall be formed neatly in enclosures and boxes. Conductors, #10 and smaller shall be twisted and made secure with wrenut suitable for the purpose. Splice conductors #8 through #4/0 with high pressure compression (indent) copper sleeve connectors.
 - 2. Insulate all splices with a minimum of two half-lapped layers of vinyl-plastic electrical tape where insulation is required.
 - 3. Splice insulation shall be 200% in thickness of original wire insulation and of same electrical and mechanical characteristics.
- E. Lubricants: Chemically neutral to insulation and sheath. Sherwin-Williams "flaxsoap". Apply liberally during pulling. Other means of lubricating allowed with written approval of Contracting Officer.
- F. Pulling Conductors: Mechanical means for pulling to be torque limiting type and not to be used for No. 2 AWG and smaller wires. Pulling tensions shall not exceed manufacturer's recommendations. Form neatly in enclosure for minimum of cross-overs.

3.06 INSTALLATION OF OUTLET BOXES

- A. Provide outlet boxes to suit conditions encountered. Provide outlet boxes in spaces with extension or raised rings of such depth that metal will be flush with surrounding surfaces of opening. When two or more switches are installed at single location, mount in gang box under single device plate. Close all unused knockouts and hubs.

3.07 INSTALLATION OF RECEPTACLES

- A. Receptacles installed vertically, shall be installed with the ground prong up. Receptacles installed horizontally, shall be installed with the neutral prong up.

3.08 INSTALLATION OF LIGHT FIXTURES

- A. Support fixtures securely and safely by means of fixture studs in the outlet boxes or other approved means. Ceiling fixtures arranged to hang vertically unless otherwise directed by Contracting Officer. Provide accessories, such as straps, mounting plates, nipples or brackets for proper installation. Provide additional stems and channels for mounting on suspended ceilings as recommended by fixture manufacturer. Pendant hung fixtures shall be supported directly from the structure above as noted without using the ceiling suspension system for direct support. Pendant mounted fixtures with stems exceeding 9 feet in length shall be braced for seismic level requirements.

3.09 GROUNDING

- A. All metallic enclosures, raceways, and electrical equipment shall be grounded according to requirements of National Electrical Code, Article 250.
 - 1. All grounding wire runs within buildings shall be in rigid nonmetallic conduits. Where practicable, all ground wires shall be run together with circuit conductors.
 - 2. A No. 6 bare copper wire shall be used to connect ground to intercommunication cabinet. A four-foot slack of grounding wire shall be left in cabinet.

3.10 EQUIPMENT CONNECTIONS

- A. Connect all equipment and appliances. Make power connections to motor on equipment with short section of flexible conduit. Provide disconnect switches for all motorized equipment if none is furnished by other trades. Furnish starters with overload protection on each leg for all motorized equipment if none is furnished by other trades.

3.11 MISCELLANEOUS DETAILS

- A. Cut, core and patch as required to install electrical system. Repair any surface damaged or marred by notching, coring or any other process necessary for installation of electrical work. Cutting, repairs and refinishing shall be subject to the approval of the Contracting Officer. Need for remedial work determined by the Contracting Officer as attributable to poor coordination and workmanship shall be cause for reconstruction to the satisfaction of the Contracting Officer at no cost to the State.

3.12 FINISHING

- A. Patch, repair and restore all structural and architectural elements cut or drilled for installation of electrical system. Drilling, cutting, patching, repairing and restoring shall be finished by suitable trades subject to approval of Contracting Officer.
- B. Attach electrical equipment to wood by wood screws, and attach to concrete by embedded or expansion inserts and bolts. Use power-driven charge with approval only. Close unused knock-outs on boxes or enclosures with metal cap. Powder actuated

fasteners shall not be used on precast concrete. Do not use powder activated fasteners to attach enclosures and boxes to the building.

- C. Wipe clean all exposed raceways and enclosures with rag and solvent. Prime painting and finishing of unfinished raceways and enclosures shall conform to SECTION 09901 - PAINTING. Factory finished enclosures shall not be painted. Panelboard, switches, circuit breakers, junction boxes, and equipment shall be identified by stenciling with engraved plastic nameplates on cover or door. Voltage and phase shall be indicated on nameplates for panelboards, switches and circuit breakers.
- D. Connect circuits to circuit assignments shown on drawings. Provide neatly typewritten circuit directory for all panelboards. Circuit directory shall indicate location of loads served by each circuit. For example: "LTS - PARKING, RECEP - OFFICE."

3.13 TESTING AND INSPECTIONS

- A. After the installation has been completed, and at such time as the Contracting Officer may direct, the Contractor shall conduct all tests required to secure approval of the installation from all agencies having jurisdiction. The equipment shall be demonstrated to operate in accordance with the requirements of this section of the specifications. The test shall be performed in the presence of the Contracting Officer. The Contractor shall furnish the necessary instruments and personnel required for the test, and the State will furnish the necessary electrical power.
 - 1. All wiring shall be tested to insure proper operation according to functions specified. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects. All systems shall show proper neutral connections.
 - 2. Interior installation, 600 volts and less shall be tested for insulation resistance after all wiring is completed and ready for connection to equipment. With a 500V megger, measure and record the insulation resistance from phase to phase, and phase to neutral. The above tests shall be witnessed by the Contracting Officer and resistances of feeder cables shall be recorded and four (4) copies submitted to the Contracting Officer.
 - 3. Proper operation of all electrical devices shall be demonstrated at request of Contracting Officer during final inspection.
 - 4. Balance loading on each feeder.
 - 5. Measure ground resistance at service equipment in the presence of the Contracting Officer. Submit four (4) copies of test results to Contracting Officer.
- B. The Contractor shall retape splices which have been bared for inspection. The Electrical Contractor shall test all portions of the electrical system furnished by him for proper operation and freedom from accidental grounds. All tests shall be subject to the approval of the Contracting Officer.
- C. Wherever test or inspection reveals faulty equipment or installation, the Contractor shall take corrective action, at his own expense repairing or replacing equipment or installation as directed.

D. If the Contracting Officer shall discover any of the following errors, the Contractor, at his own expense shall go over all similar portions of the entire job, taking the necessary or directed remedial action.

1. Loose connections.
2. Impaired clearance.
3. Improper finish.
4. Improper adjustment.

3.14 CLEAN UP

A. Upon completion of all installation, lamping and testing, thoroughly inspect all exposed portions of the electrical installation and completely remove all exposed labels, soil, markings and foreign material.

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 16510 – LIGHTING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Work includes providing luminaires and lamps. Materials not normally furnished by manufacturers of these devices are specified in SECTION 16050 - ELECTRICAL WORK.

1.03 APPLICABLE PUBLICATIONS

- A. The publications listed within this specification form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Unless otherwise indicated, most recent edition of the publication with current revisions and amendments will be enforced.

1.04 SUBMITTALS

- A. Data, shop drawings, and reports shall employ the terminology, classifications, and methods prescribed by the IES Lighting Handbook, as applicable, for the lighting system specified. Submit shop drawings and catalog cuts of the following equipment for approval. Prepare each submittal with a summary sheet attached to each copy individually identifying all items included in the submittal. Incomplete submittals and those without summary sheets will be returned without review.

- B. Manufacturer's Data

1. Luminaires.
2. Emergency lights.
3. LED drivers.

- C. Shop Drawings: Luminaire assemblies.

1.05 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, or in house manufacturer's laboratory, with the experience and capability to conduct the testing as recommended by IES testing standards. The agency shall be NRTL as defined by OSHA in 29 CRF 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products.

PART 2 – PRODUCTS

2.01 LED LIGHTING LUMINAIRES

- A. Luminaire Manufacturer shall have a minimum of five (5) year's experience in the manufacture and design of LED products and systems.
- B. Correlated Color Temperature (CCT) shall be provided as indicated on the luminaire schedule.
- C. Color Rendering Index (CRI) shall be a minimum of 70 for exterior and 80 for interior fixture types.
- D. Efficiency shall be measured based on IESNA LM-79 testing. Manufacturer shall provide published luminaire efficacy (Lumens / Watt) measured in a 25 degree Celsius environment. Efficacy shall include driver, thermal, optical and luminaire losses.
- E. Lumen maintenance shall be at least 50,000 hours to 70% lumen maintenance. Tested per IESNA LM-80 and projected per IESNA TM-21.
- F. The LED fixtures at specified operating voltage shall have a power factor not less than 0.90 and Total Harmonic Distortion (THD) shall be < 20%.
- G. All exterior LED light fixture shall be provided with integral surge protection.
- H. Shall be provided with warranty period that covers complete replacement of LED boards and drivers that fail within 5 years from substantial completion.
 - 1. Manufacturer will keep record of original bin for each LED module and have replacement modules from the same bin available for 3 years after date of installation.
 - 2. Manufacturer will keep an inventory of replacement parts (source assembly, power and control components).
 - 3. Manufacturer's LED system will not become obsolete for 10 years: Manufacturer will provide exact replacement parts or provide upgraded parts that are designed to fit into the original luminaire and provide equivalent distribution and lumen output to the original.
 - 4. All parts of the system shall be replaceable in field.
- I. Driver:
 - 1. 10-year operational life while operating with a case temperature range of 0 – 62 degrees C and 90% non-condensing relative humidity.
 - 2. Designed and tested to withstand electrostatic discharges up to 15,000V without impairment per IEC 801-2.
 - 3. Maximum inrush current of 2 amperes for 120V and 277V drivers.

4. Withstand up to a 4,000V surge without impairment of performance as defined by ANSI C62.41 Category A.
5. Inaudible in a 27 dBA ambient environment.
6. No visible change in light output with a variation of +/- 10% line voltage input.
7. THD less than 20% and meet ANSI C82.11 maximum allowable THD requirements.

2.02 RECESS- AND FLUSH-MOUNTED LUMINAIRES

- A. Trim for the exposed surface of flush-mounted fixtures finished as indicated.
- B. Thermal protected with auto reset.
- C. Rated for insulated ceilings where applicable.
- D. Provide earthquake clips for luminaires recessed in grid ceilings.

2.03 SUSPENDED LUMINAIRES

- A. Provide hangers capable of supporting twice the combined weight of the adjoining luminaires. Provide with swivel hangers to ensure a plumb installation with swivel-ball tapped for the conduit size indicated. Allow luminaires to swing within an angle of 45 degrees. Single-unit suspended linear luminaires shall have twin-stem hangers. Multiple-unit or continuous row luminaires shall have a tubing or stem for wiring at one point and a tubing or rod suspension provided for each unit length of chassis, including one at each end. Rods shall be a minimum 3/16-inch diameter.

2.04 EMERGENCY UNIT LIGHTING EQUIPMENT

- A. Emergency Lighting Systems shall be as indicated on drawings, complete with all equipment, including fixtures, lamps, batteries, conduit, boxes and wiring.
- B. This equipment is to provide instantaneous emergency lighting in the event of a power failure:
 1. Supply battery backup with lighting fixture according to the fixture schedule.
- C. Emergency battery pack shall consist of a field replaceable, high temperature, maintenance-free nickel cadmium battery, charger and electronic circuitry contained in a single metal case. A solid-state charging indicator light to monitor the charger and battery, a double-pole test switch, and installation hardware shall be supplied.
- D. A minimum of a 5-year full manufacturer warranty shall be provided.
- E. The emergency battery pack shall be capable of producing the rated output for a minimum of 90 minutes and shall be Listed to UL 924 standards.
- F. Emergency battery pack shall be installed inside the ballast compartment of the light fixtures. Where the size of the emergency battery pack prohibits installation inside the

ballast compartment, the emergency battery pack shall be installed remotely from the fixture in an accessible location (i.e. Above a lay-in ceiling when used with a recessed fixture). Provide flexible metallic conduit for interconnecting fixture to battery pack in remote situations.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine architectural and other pertinent details and confirm with general and ceiling and wall construction and finish being installed.
 - 1. It shall be the Contractor's responsibility to determine what suspension or mounting method is required and provide fixtures complete with all trim, flanges, brackets, levelers, etc. required for mounting at the location indicated.
- B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- C. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- B. Install fixtures in a workmanlike manner. Install fixtures to maintain the alignment, spacings, layout and general arrangement shown on the plans; obtain approval from contracting officer for any changes in layout required to avoid interferences with other trades.
- C. Surface mounted fixtures shall be securely mounted and shall not rotate on single box connections. Additional fastening shall be installed by the contractor, if necessary, to secure fixture.
- D. Deliver lamps to the project in the original cartons and install in the fixtures just prior to the completion of the project.
- E. When installed, any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks; lens doors shall close in a light tight manner.
- F. Coordination:
 - 1. Work incorporating with ceiling trades in location and framing recessed fixtures in acoustical tile pattern or grid system to conform to layout.

2. Inform affected trades of the location and framing details necessary for the installation of flush fixtures and delivery of all framing rings of these fixtures that become a part of the ceiling construction.
3. Before equipment is ordered, contractor to review luminaire and ceiling mechanical compatibility in each areas and verify luminaire ordering code numbers with the ceiling system shown on the drawings. Contractor shall be responsible for all fixture quantities, lengths, and clearances required.
4. Mechanical and electrical contractor are to review and coordinate lighting locations in relationship to mechanical systems to minimize conflicts prior to installation.

G. Mounting and Supports:

1. Unless otherwise noted pendant-mounted luminaires mounting heights shall be to the bottom of the luminaire. Wall mounted luminaire mounting heights shall be to the center of the luminaire.
2. Sized and rated for luminaire weight.
3. Able to maintain luminaire position after cleaning and relamping.
4. Provide support from the structural system above for luminaire without causing deflection of ceiling or wall.
5. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
6. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
7. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
8. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and wire support for suspension for each unit length of luminaire chassis, including one at each end.
9. Do not use ceiling grid as support for lay-in ceiling luminaires. Install ceiling support system rods or wires independent of the ceiling suspension devices, for each luminaire. Locate not more than 6" from luminaire corners. Fasten support clips to luminaire and to ceiling grid members at or near each corner with clips UL listed for the application.
10. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

3.03 GROUNDING

- A. Ground noncurrent-carrying parts of equipment as specified in SECTION 16050 - ELECTRICAL WORK. Where the copper grounding conductor is connected to a metal other than copper, provide specially treated or lined connectors suitable for this purpose.

3.04 FIELD TESTS

- A. Upon completion of the installation, conduct an operating test to show that the equipment operates in accordance with the requirements of this section and as indicated on the Drawings.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

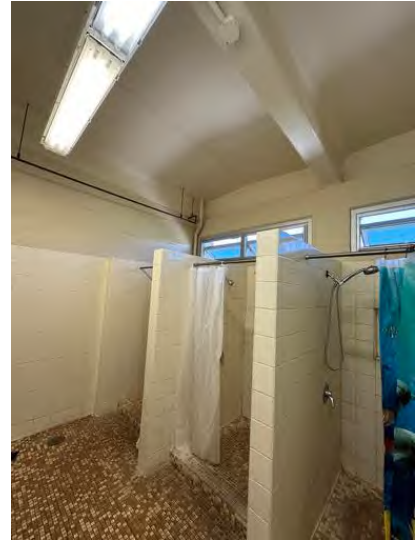
APPENDIX A: PROJECT SITE PHOTOS



Bathroom Photo 1



Bathroom Photo 2



Bathroom Photo 3



Apparatus Bay Photo 1



Apparatus Bay Photo 2



Apparatus Bay Photo 3



Apparatus Bay Photo 4



Apparatus Bay Photo 5



Flooring



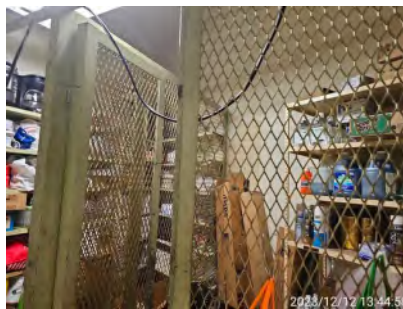
Sink area



Kitchen sink and storage



Fans, air conditioning, sliding door, exhaust



Pantry



Air conditioning in kitchen



Stove and oven - cooking area



Cooking area



Outside of kitchen - sliding doors

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(a), 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 inspection 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 and Trainees

- 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, 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) 322-4808
- Maui and Kauai(808) 243-5322

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

PROPOSAL

PROPOSAL TO THE
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

PROJECT: JRF ARFF Station Renovations
Kalaeloa Airport
Kapolei, Oahu, Hawaii

PROJECT NO.: CO4420-33

COMPLETION TIME: TWO HUNDRED SEVENTY (270) Calendar days from the date indicated in the Notice to Proceed from the Department.

LIQUIDATED DAMAGES: FIVE HUNDRED DOLLARS (\$500.00) for each and every calendar day which the Contractor has delayed the completion of this project.

PROJECT MANAGER: Mr. Benton Ho
Department of Transportation
Airports
Daniel K Inouye International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1880
Phone: (808) 838-8804
FAX: (808) 838-8017
Email: Benton.ho@hawaii.gov

ELECTRONIC SUBMITTAL: **Bidders shall submit and upload the complete proposal to HlePRO prior to the bid opening date and time. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HlePRO. Bidders shall refer to SPECIAL PROVISIONS 2.8 PREPARATION AND DELIVERY OF BID for complete details. FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HlePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

Director of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Sir:

The undersigned Bidder declares the following:

1. It has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal.
2. It has not been assisted or represented on this matter by any individual who has, in a State capacity, been involved in the subject matter of this contract within the past two years.
3. It has not and will not, either directly or indirectly offered or given a gratuity (i.e. an entertainment or gift) to any State or County employee to obtain a contract or favorable treatment under a contract.

The undersigned Bidder further agrees to the following:

1. If this proposal is accepted, it shall execute a contract with the Department to provide all necessary labor, machinery, tools, equipment, apparatus and any other means of construction, to do all the work and to furnish all the materials specified in the contract in the manner and within the time therein prescribed in the contract, and that it shall accept in full payment therefore the sum of the unit and/or lump sum prices as set forth in the attached proposal schedule for the actual quantities of work performed and materials furnished and furnish satisfactory security in accordance with Section 103D-324, Hawaii Revised Statutes, within 10 days after the award of the contract or within such time as the Director of Transportation may allow after the undersigned has received the contract documents for execution, and is fully aware that non-compliance with the aforementioned terms will result in the forfeiture of the full amount of the bid guarantee required under Section 103D-323, Hawaii Revised Statutes.
2. That the quantities given in the attached proposal schedule are approximate only and are intended principally to serve as a guide in determining and comparing the bids.
3. That the Department does not either expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Director of Transportation, and that all increased or decreased quantities of work shall be performed at the unit prices set forth in the attached proposal schedule except as provided for in the specifications.

4. In case of a discrepancy between unit prices and the totals in said Proposal Schedule, the unit prices shall prevail.
5. Agrees to begin work within 10 working days after the date of notification to commence with the work, which date is in the notice to proceed, and shall finish the entire project within the time prescribed.
6. The Director of Transportation reserves the right to reject any or all bids and to waive any defects when in the Director's opinion such rejections or waiver will be for the best interest of the public.

The Bidder acknowledges receipt of and certifies that it has completely examined the following listed items: the Hawaii Department of Transportation, Air and Water Transportation Facilities Division General Provisions for Construction Projects dated 2016, the Notice to Bidders, the Special Provisions, if any, the Technical Provisions, the Proposal, the Contract and Bond Forms, and the Project Plans.

In accordance with Section 103D-323, Hawaii Revised Statutes, this proposal is accompanied with a bid security in the amount of 5% of the total amount bid, in the form checked below. (Check applicable bid security submitted with bid.)

Surety Bid Bond (Use standard form),

Cash,

Cashier's Check,

Certified Check, or

(Fill in other acceptable security.)

The undersigned Bidder acknowledges receipt of any addendum issued by the Department by recording in the space below the date of receipt.

Addendum No. 1 _____

Addendum No. 3 _____

Addendum No. 2 _____

Addendum No. 4 _____

In accordance with Section 103D-302, Hawaii Revised Statutes, the undersigned as Bidder, has listed the name of each person or firm, who will be engaged by the Bidder on the project as a Subcontractor or Joint Contractor and the nature of work to be done by each. The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Subcontractor or Joint Contractor. For each listed firm, the Bidder declares the respective firm is a Subcontractor or Joint Contractor and is subject to evaluation as a Subcontractor or Joint Contractor. It is understood that failure to comply with the aforementioned requirements may be cause for rejection of the bid submitted.

<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.

JRF ARFF STATION RENOVATIONS
 Kalaeloa Airport
 Kapolei, Oahu, Hawaii
 Project No. CO4420-33

PROPOSAL SCHEDULE

Item No.	Description	Approx Qty	Unit	Unit Price	Total
DIVISION 1 - GENERAL REQUIREMENTS					
01010.1	JRF ARFF Station Renovations	LS	LS	LS	\$ _____
01210.1	Unforeseen Conditions	Allow.	Allow.	Allow.	\$ 100,000.00
01210.2	Security Measures	Allow.	Allow.	Allow.	\$ 10,000.00
01561.1	Construction Site Pollution Controls	LS	LS	LS	\$ _____
01562.1	Management of Contaminated Media, Soil Disposal, and Soil Reuse	LS	LS	LS	\$ _____
01562.2	Additional Management of Contaminated Media, Soil Disposal, and Soil Reuse	Allow.	Allow.	Allow.	\$ 10,000.00
TOTAL AMOUNT FOR COMPARISON OF BIDS					\$ _____

NOTES:

The bid prices herein shall include all labor, materials, equipment, and incidentals necessary to construct all items in place, including installation and testing of equipment, complete and ready for operation, all in accordance with the plans and specifications.

- Note 1: Bids shall include all Federal, State, County and other applicable taxes and fees.
- Note 2: The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.
- Note 3: Bidders shall complete all unit prices and amounts. Failure to do so shall be grounds for rejection of bid.
- Note 4: If a discrepancy occurs between unit bid price and the bid price, the unit bid price shall govern.
- Note 5: The State reserves the right to reject any or all Bids and to waive any defects in said Bids in the best interest of the State.
- Note 6: Submission of a Bid is a warranty that the bidder has made an examination of the project site and is fully aware of all conditions to be encountered in performing the work and the requirements of the plans and specifications.

- Note 7: The bidder's attention is directed to Section 2.11 - BID SECURITY of the General Provisions, as amended by the Special Provisions.
- Note 8: Bidder shall be paid for actual work performed as directed by the Engineer for allowance items. Bidder shall not be paid overhead and profit for unused allowance funds.
- Note 9: If the TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available for the project, then the State reserves the right to negotiate with the lowest, responsive, responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes (HRS), to further reduce the scope of work and award a contract thereafter.
- Note 10: **Bidders shall submit and upload the complete proposal to HlePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HlePRO. Bidders shall not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection. Original (wet ink, hard copy) proposal documents are not required to be submitted. Contract award shall be based on evaluation of proposals submitted and uploaded to HlePRO.**

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

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

SURETY BID BOND

Bond No. _____

KNOW TO ALL BY THESE PRESENTS:

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

as Offeror, hereinafter called the Principal, and

(name of bonding company)

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

(State/county entity)

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

(required amount of bid security)

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

WHEREAS:

The Principal has submitted an offer for

(project by number and brief description)

NOW, THEREFORE:

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

Signed this _____ day of _____, _____

Name of Principal (Offeror) (Seal)

Signature

Title

Name of Surety (Seal)

Signature

Title

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS

FORMS

Sample Contract
Performance Bond (Surety)
Performance Bond
Labor and Material Payment Bond (Surety)
Labor and Material Payment Bond
Chapter 104, HRS Compliance Certification
Certification of Compliance for State
Resident (ACT 192, SLH 2011)
Provisions to be Included in
Construction Procurement Solicitation

CONTRACT

THIS AGREEMENT, made this day of _____, by and between the STATE OF HAWAII, by its Director of Transportation, hereinafter referred to as "STATE", and «CONTRACTOR», «STATE_OF_INCORPORATION», whose business/post office address is «ADDRESS», hereinafter referred to as CONTRACTOR";

WITNESSETH: That for and in consideration of the payments hereinafter mentioned, the CONTRACTOR hereby covenants and agrees with the STATE to complete in place, furnish and pay for all labor and materials necessary for "«PROJECT_NAME_AND_NO»", or such a part thereof as shall be required by the STATE, the total amount of which labor, material and construction shall be computed at the unit and/or lump sum prices set forth in the attached proposal schedule and shall be the sum of «BASIC»----DOLLARS (\$«BASIC_NUMERIC») as follows:

TOTAL AMOUNT FOR COMPARISON OF BIDS.....\$«BASIC_NUMERIC»

which sum shall be provided from State funds, all in accordance with the specifications, the special provisions, if any, the notice to bidders, the instructions to bidders, the proposal and plans for «PROJECT_NO_ONLY», and any supplements thereto, on file in the office of the Director of Transportation. These documents, together with all alterations, amendments, and additions thereto and deductions therefrom, are attached hereto or incorporated herein by reference and made a part of this contract.

The CONTRACTOR hereby covenants and agrees to complete such construction within «WORKING_DAYS» from the date indicated in the Notice to Proceed from the State subject, however, to such extensions as may be provided for in writing under the specifications.

For and in consideration of the covenants, undertakings and agreements of the CONTRACTOR herein set forth and upon the full and faithful performance thereof by the CONTRACTOR, the STATE hereby agrees to pay the CONTRACTOR the sum of «BASIC»---DOLLARS (\$«BASIC_NUMERIC») in lawful money, but not more than such part of the same as is actually earned according to the STATE's determination of the actual quantities of work performed and materials furnished by the CONTRACTOR at the unit or lump sum prices set forth in the attached proposal schedule. Such payment, including any extras, shall be made, subject to such additions or deductions hereto or hereafter made in the manner and at the time prescribed in the specifications and this contract.

An additional sum of «EXTRAS»-----DOLLARS (\$«EXTRA_NUMERIC») is hereby provided for extra work.

All words used herein in the singular shall extend to and include the plural. All words used in the plural shall extend to and include the singular. The use of any gender shall extend to and include all genders.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed the day and year first above written.

STATE OF HAWAII

Director of Transportation

«CONTRACTOR»

(Seal)

Signature

Print name

Print Title

Date

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

KNOW TO ALL BY THESE PRESENTS:

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

as Contractor, hereinafter called Principal, and _____

(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a
surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____ DOLLARS (\$_____), to which payment Principal and Surety bind themselves,
their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by
these presents.

WHEREAS, the above-bound Principal has signed a Contract with Obligee on
_____, for the following project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part
hereof.

NOW THEREFORE, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in
strict accordance with the terms of the Contract as said Contract may be modified or amended
from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the 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 Obligees, 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 Obligees on _____ for the following project: _____

_____ hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this _____ day of _____, _____.

(Seal)

Name of Principal (Contractor)

*

Signature

Title

(Seal)

Name of Surety

*

Signature

Title

***ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC**

LABOR AND MATERIAL PAYMENT BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto _____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount
_____ DOLLARS (\$ _____)
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal Tender;
- Share Certificate unconditionally assigned to or made payable at sight to _____
Description: _____
- Certificate of Deposit, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Cashier's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Teller's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Treasurer's Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Official Check No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;
- Certified Check No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project: _____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

AND IT IS HEREBY STIPULATED AND AGREED that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payments of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond..

Signed this _____ day of _____, _____.

(Seal) _____

Name of Contractor

Signature*

Title

ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

CHAPTER 104, HRS COMPLIANCE CERTIFICATE

The undersigned bidder does hereby certify to the following:

1. Individuals engaged in the performance of the contract on the job site shall be paid:
 - A. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and
 - B. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day.
2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

DATED at Honolulu, Hawaii, this _____ day of _____, 20____.

«CONTRACTOR»
Name of Corporation, Partnership, or Individual

Signature and Title of Signer

Notary Seal
NOTARY ACKNOWLEDGEMENT

Subscribed and sworn before me this _____ day of _____
Notary signature _____
Notary public, State of _____
My Commission Expires: _____

Notary Seal
NOTARY CERTIFICATION

Doc. Date: _____ #Pages: _____
Notary Name: _____ Circuit _____
Doc. Description: _____

Notary signature _____
Date _____

**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 Hawaii 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 Hawaii 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

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 Hawaii at the time the person claims to have established the person's domicile in the State of Hawaii and shows the person's intent is to make Hawaii 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 Hawaii 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 Hawaii 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 Hawaii 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 Hawaii. 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.