

William J. Hughes Technical Center for Advanced Aerospace
Construction Qualified Vendor List (QVL) Competition

Statement of Work

QVL-26-0013

Building 300 AHU 9, 10, 11, 12 Replacement Project

Attachment J-1

C.1 SCOPE OF WORK

The work includes the provision of all labor, materials, equipment, and incidental related work to replace heating, ventilation, and air conditioning (HVAC), electrical, and architectural equipment in Building 300 including but not limited to; air-handling units (AHU), variable air volume (VAV) boxes, diffusers, controls, hydronic piping, ceilings, and lighting at the Federal Aviation Administration (FAA) William J. Hughes Technical Center for Advanced Aerospace (WJHTCAA), as per the contract drawings, specifications, and this Statement of Work (SOW).

The Scope of Work will cover general requirements of the work being performed, the Contract Documents include drawings and specifications for specific requirements of the work. **The scope of work includes additional work not captured in the project drawings.**

C.1.1 SCOPE OF WORK BY DISCIPLINE

C.1.1.1. Mechanical

- Scope of work in Mechanical Equipment Room 2 (MER-2) is the Air Handling Unit 10 (AHU-10) replacement including the following connected components: return/smoke-evacuation fan, hot water circulation pump, chilled water pump, ductwork, motorized dampers, controls, chilled hot water and condensate piping and valves. New vibration isolation must be provided between AHU-10 and the concrete pad.
- To facilitate the coil pull for AHU-10 coil maintenance/replacement, the outdoor air intake plenum must be provided with removable sections, and the exterior louver must be replaced to include a French door, per the project drawings.
- The AHU-10 system return/smoke-evacuation fan must be replaced and provided with a direct drive motor and a variable frequency drive (VFD). The fan must be UL listed for emergency smoke control application.
- The hot water pump replacement must be provided with an integrated VFD/ECM motor for initial system balancing and rated for a maximum operating pressure of 175 psi.
- The chilled water pump replacement must be provided with a direct drive motor and remote mounted VFD for control.
- All unit heaters and associated piping in MER-2 are to be replaced.

- All existing AHU-10 ductwork within the MER must be replaced. This includes the supply & return ductwork back to the duct shaft locations, the outdoor air intake plenum, the existing AHU mixed air plenum and the smoke evacuation exhaust ductwork back to the existing-to-remain roof vent. All connected ductwork, motorized dampers and controls must be replaced.
- EF-6 fan must be replaced and provided with a direct drive motor, a local disconnect switch and the manufacturer isolation mounting base. The building's Building Automation System (BAS) must provide start/stop & automatic control based on scheduling provided by FAA representative. Replacement of EF-6 must be phased with the replacement of AHU-10 per the project drawings.
- A temporary air-cooled DX with electric furnace rooftop unit (RTU) must be provided during construction. The RTU must be located on the third-floor roof, outside MER-2, and must be mounted to a temporary structural support platform. Temporary ducts must be extended from the RTU to the existing main supply and return ductwork riser locations during AHU-10 replacement. Shop drawings must be submitted for approval for all duct work and temporary support.
- The RTU temporary platform must be designed to protect the roof and maintain the existing roof warranty. The Contractor must contact and coordinate roof protection measures with an authorized applicator of Sarnafil Roofing Systems who qualifies for warranties provided by the Sika Corporation Roofing Division
- New VAV boxes in areas served by AHUs 9,10,11,12 must be replaced and provided with electric reheat coils. New low-pressure distribution ductwork must be replaced and connected to the VAV boxes per project drawing.
- Low pressure ductwork in the following zones must not be replaced and must remain existing:
 - AC-11 connected VAV low pressure ductwork distribution located above the telecom room (1N611) ceiling plenum to remain, ductwork to be cleaned only. The existing VAV located in the telecom room ceiling plenum must be replaced with new.
 - AC-10 connected VAV low pressure ductwork distribution located above the telecom room (1N601) ceiling plenum to remain, ductwork to be cleaned only. The existing VAV located in the telecom room ceiling plenum must be replaced with new and low-pressure ductwork must be routed outside the telecom room to be replaced with new.
- New ceiling air devices must be installed in new ceilings. Rectangular plaque style diffusers 2'-0" x 2'-0" and louvered return grilles 2'-0" x 2'-0" must be installed in the center of the existing 5'-0" x 5'-0" ceiling grid, 2'-0" x 2'-0" ceiling grid and in gyp ceilings. The existing linear diffusers serving the atrium must remain and must be cleaned. New linear diffuser plenums must be connected to the existing linear diffusers

serving the atrium. Perimeter linear diffusers located in perimeter zones must be left abandoned in place and cleaned.

- Smoke dampers associated with AHU-10 must be replaced, per the project drawings.
- All piping must be tested at 150% of working pressure though not less than 100 psig for four (4) hours. There must not be a drop in pressure for the system to be acceptable. Final report of the resulting data must be submitted for examination and approval by the Project TOR. All tests must be coordinated with the construction representative.
- The Mechanical Contractor must employ an independent test company to test and balance all airside and water-side mechanical systems. The Contractor must submit a pre-TAB report for review and approval prior to the start of work per the project specifications. The Testing, Adjusting, and Balancing (TAB) and the Mechanical Contractors must be held responsible for making all required adjustments of air and water-side system devices until all specified performances are met. All systems including AHUs 9,10,11, and 12 must be balanced.
- All fans, air supply outlets and dampers must be adjusted to a maximum deviation of 5% of the air quantities indicated on the drawings. The system must be properly balanced and adjusted for the required operating conditions. All measurement readings (cfm, temperature and air static pressure etc.) taken during the adjustment work must be recorded.
- Final air and water-side balancing report of the resulting data must be submitted for examination and approval by the Project TOR. Final air-side systems comfort balancing must be made to eliminate drafts and where otherwise directed by the Government or representative of the Government.
- After final tests and adjustments, Government's operating personnel must be fully instructed in all details of operation for equipment installed. Written descriptions must include all systems covering all manual operating procedures, automatic control descriptions and automatic control temperature and pressure settings to include, but not be limited to: start-up, shutdown, night setback and emergency procedures in case of equipment or power failure. Written descriptions must include lubrication schedules, parts list, performance services for equipment, filter size/quantity schedules, etc. When manufacturer's standard instructions are utilized, they must be clearly marked to indicate applicability. The Contractor must include a complete set of equipment catalogue cuts in each manual.
- The Contractor must post a laminated and framed list of all mechanical equipment in MER-2 with model and serial numbers at the completion of work. Coordinate location with the Project TOR.

C.1.1.2. Controls

- The HVAC control system existing throughout the building is pneumatic with selected equipment monitoring and control connected to the site Andover DDC Building Automation System (BAS). All existing pneumatic controls must be removed and replaced with Andover DDC controls, per the project drawings and specifications. New and modified work must work seamlessly with the existing BAS system, locally and remotely.
- New mechanical systems' DDC controls must be provided by the building controls vendor. New mechanical equipment installed must connect to the existing Andover Infinet II BAS with Andover controls. The building's control vendor must provide all required equipment, components, wiring and programming for the required controls integration. All points must be programmed into the SkySpark monitoring program.
- Existing fin-tube perimeter heating system & associated pneumatic controls are to remain. Do not remove pneumatic thermostats.
- The temporary unit (RTU-10) must be provided with controls and be compatible with the BMS to provide a complete operating system, per the project drawings and specifications. The temporary unit must be added to EcoStruxure for the duration of its use.

Additional SkySpark Points:

- The VAV controllers replaced under this contract were pneumatic and are being upgraded to direct digital control (DDC). This will require the addition of programming approximately **1,000** existing points to the SkySpark software package. The Contractor must verify the number of points required to ensure complete coverage of all systems installed in this project. The Contractor must utilize existing unprogrammed points available.
- Configure Andover BAS system to mirror and log all target BAS data points to be included in the analysis.
- Automatically analyze the data from the included buildings to detect faults over all periods of time.
- Check and change any programming sequences that may be different from when the system was originally installed.
- Change to optimize any sequence which is not in compliance with currently used methods of conservation.
- All electronic data produced by Tri-M of the building systems to include sequences, wiring diagrams and equipment data sheets must be accessible.
- Building data must be stored so that it may be viewed and analyzed at any time.
- Make programming changes to optimize equipment operation based on results of the analyses and adhering to standards of comfort and conservation as agreed upon.

- The Contractor must provide training for the FAA for the SkySpark system and all new points added under this contract. The Contractor must give the FAA a minimum of two (2) weeks' notice prior to scheduling training,
- VAVs must each have the following data points in SkySpark at a minimum (NEW):
 - ST
 - ST.TRG
 - DAT
 - DAT.TRG
 - DMP.POS
 - FLW
 - FLW.TRG
 - REHEAT %
 - HTG.TRG
 - CLG.TR
- AHUs must each have the following data points in SkySpark at a minimum:
 - DAT
 - DAT.TRG
 - ECON
 - HCCV
 - MAT
 - MAT.TRG
 - MCLG
 - OAD
 - OCC
 - RFAN.POR
 - SFAN
 - SFAN.POR
 - SFAN.VSD
 - ZnRmRhAvg (NEW)
 - ZnRmTmpAvg (NEW)
 - ZnAirFlTot (NEW)
- EF must have the following data points in SkySpark at a minimum (NEW):
 - EFAN#
 - EFAN#_POR
 - EFAN#_CUR
 - EFAN#_ST
- Chilled Water Pumps must have the following data points in SkySpark at a minimum (NEW):
 - CHWP#
 - CHWP#_POR
 - CHWP#_DPR
 - CHWP#_VSD
- Hot Water Pumps must have the following data points in SkySpark at a minimum (NEW):
 - HWP#
 - HWP#_POR
 - HWP#_DPR
 - HWP#_VSD
- Unit Heaters must have the following data points in SkySpark at a minimum (NEW):
 - UH#_FAN
 - UH#_FAN_POR
 - UH#_HCV
 - UH#_ST

C.1.1.3. Architectural

- The existing ceiling tiles in areas served by AHU-9, AHU-10, AHU-11, and AHU-12 are to be replaced with new 2' x 2' acoustic ceiling tiles within the existing 5' x 5' grid, per the project drawings and specifications.
- 4th Floor Auditorium Ceiling (23-30/H-K) Replacement
 - Remove existing and provide new ceiling and ceiling grid for the 4th floor Auditorium Ceiling (23-30/H-K), per project drawings and specifications.
 - Install new 2' x 2' ceiling within 5' x 5' grid per the project drawings and specifications.
 - The Contractor must protect the atrium floor from damage for the duration of the work. The Contractor is responsible for remediating areas damaged during construction.
 - All work must be cleaned up and removed from the atrium at the end of each shift.
 - The ceiling must be completed in sections and may not be left open at the end of each shift.
 - The Contractor must provide a work plan and schedule for approval a minimum of three (3) weeks in advance prior to the start of work.
 - If there is evidence of water damage or leaks above the ceiling, the Contractor must stop and notify the Government prior to the continuation of work for further investigation and direction.
 - This work must be completed outside of normal working hours, Monday through Friday 5:30pm – 2:00am or on weekends.

C.1.1.4. Fire Protection

- This work will require adjustment to the fire sprinkler system to relocate and add new sprinkler heads as needed, including work in the mechanical equipment room and on floors one (1) through four (4) of Building 300, per the project drawings and specifications.
- The Contractor must provide new escutcheons as required to ensure a complete, functional, and code complaint system to match previously renovated spaces.
- There must be no reuse of existing sprinklers and pipes that are removed during construction. All sprinklers and pipes that are removed must be replaced with new ones at the same exact location or relocated as per the design document to ensure code compliance coverage. All sprinklers must be replaced like with like or as specified in the drawings. The Sprinkler Contractor must arrange for a walkthrough and coordinate with the HVAC and General Contractors and the Project TOR before commencing any work

to field verify the final number of sprinklers and linear footage of associated branch piping to be removed during construction and replaced with new.

C.1.1.5. Electrical

- Coordinate all work per the project drawings and specifications.
- Areas served by AHUs - 9, 10, 11 & 12 and MER-2 must be provided with new Light Emitting Diode (LED) lighting and Lutron lighting controls.
- All Lutron controls must be complete and functional in one (1) phase of work prior to moving on to the next area.
- The Contractor must provide Lutron Lighting controls training to FAA personnel. Coordination must take place a minimum of two (2) weeks in advance.
- Mechanical equipment must be replaced or upgraded, requiring disconnection, reconnection, or installation of new power circuits per the project drawings and specifications.
- Where ceiling areas are being replaced or temporarily removed to accommodate new ductwork, existing low voltage and fire alarm devices must be temporarily supported and remounted as required. The Contractor must coordinate existing ceiling mounted fire alarm horn/strobes with the new reflected ceiling plan. The Contractor must relocate horns/strobes as required into adjacent ceiling tiles to coordinate with new supply & return air diffuser locations.
- The Contractor must provide new cabling and conduit from existing breakers to temporary AHU via new disconnect.
- Two (2) new dedicated panels must be provided to serve new VAVs with electric reheat. These must be fed from two (2) new 277/480V panelboards P2-2A and P2-4A, located in electric rooms ER2-2 and ER2-4 respectively. The location currently designated for these panels is taken up by an existing lighting digitizer. These must be relocated behind the door in both electrical rooms. The Contractor must reconfigure wiring and conduit as required and coordinate exact location with the Project TOR prior to the start of work. Panel P2-2A must be fed from a new 200A breaker in Substation 1, located in MER-1. Panel P2-4A must be fed from a new 200A breaker in Substation 3, located in MER-2A.
- The Contractor must coordinate all electrical shutdowns with the Government at least two (2) weeks in advance. All shutdowns must take place outside of normal working hours.

C.1.1.6. Fire Alarm (MER-4)

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- Provide all labor, materials, equipment, and supervision necessary to properly integrate the stairway pressurization fans in MER-4 into the building fire alarm system in accordance with applicable codes, project requirements, and project specifications.

- The Fire Alarm Contractor must provide design, materials, programming, and commissioning required to integrate the new stairway pressurization fans serving Stairwells #1 and #3 in Building 300 with the existing fire alarm system. The Contractor must prepare and submit a fire alarm integration design package, including updated sequence of operations and interface requirements, for review and approval prior to implementation. Existing Fire Alarm As-builts are attached for reference only.
- The existing supervising station fire alarm system is a HONEYWELL focal point system. There are three (3) fire alarm consoles, one (1) located at the Central Security Station in Building 301, one (1) in the Alternate Security Station in Building 320, and one (1) located at Fire House Building 510. All new fire alarm work must function seamlessly with the existing system, both locally and remotely. The existing focal point system and the existing fire alarms must be reprogrammed and modified to accommodate the new alarm systems. If a New S3 System is being installed, building floor plans along with detector locations must be programmed into the focal point system. This work, along with associated testing and commissioning, and updating of the center wide fire alarm inventory, must be accomplished by a HONEYWELL/GAMEWELL/FCI engineered system distributor. Two (2) digital copies of the S3 program must be left in the new fire alarm panel. All costs must be the Contractor's responsibility and must be included as part of the Contractor's bid.

The scope must include, but is not limited to, the following:

- The Fire Alarm Contractor must submit a fire alarm system integration design package and updated fire alarm system sequence of operation for FAA approval, as well as all required technical submittals demonstrating compliance with applicable codes. The Fire Alarm Contractor must be an authorized HONEYWELL/GAMEWELL/FCI engineered system distributor (credentials must be reviewed and approved by the Government prior to work starting).
- The Contractor must install a new smoke detector in the intake duct located in the mechanical room for each supply fan. Fans must automatically shut off when the fire alarm is activated to prevent smoke from entering the building.
- Pressurization fans serving Stairwells #1 and #3 must activate from any Building 300 fire alarm trigger per NFPA.
- Reprogram the fire alarm control panel to:
 - Activate the respective stair pressurization fans as required by the approved sequence of operations as required by code.
 - Monitor fan status as required by code.
- Coordinate with the Mechanical and Controls Contractor to ensure proper interlock and operation of the fans.

- Provide all relays, modules, conduit, wiring, terminations, labeling, testing, etc. required for a complete and operational system.
- Perform testing and commissioning in the presence of the FAA Project TOR and Fire Inspector. Fire Alarm Contractor must provide NFPA record of system operational acceptance testing.
- Provide updated as-built drawings, test data, and reports generated during the commissioning and acceptance testing.
- Any lapse in operating capabilities of any system loop during normal business hours will require the Contractor to provide 24/7 fire watch capabilities and coordination with FAA Project TOR until the fire alarm system is operational again.
- Provide two (2) weeks' notice for all work to be completed on site.
- Coordinate with the FAA Project TOR to receive CAD As-Builts of existing Fire Alarm Drawings.
- Coordinate with the FAA Project TOR to receive program and voice files for Fire Alarm System.

C.1.1.7 Civil/Structural

- Provide concrete infill to properly support the new installation of AHU-10 per the project drawings and specifications.
- Remove all loose concrete debris in areas of patching. Surface preparation must be in accordance with SSPC SP-13, "Surface preparation of concrete".
- Clean and prepare surface in complete accordance with the written recommendations of manufacturer of concrete patching materials, primer, and finish coating.
- Finished surfaces of concrete patching must be flush with surrounding concrete. Cut edges of patching areas as required prior to proceeding with patching, to ensure flush finishes after repair.
- All aspects and procedures of surface preparation, priming, finish coating, material preparation and handling, and curing must be in complete accordance with the manufacturer's recommendations and instructions.
- Existing concrete slab on grade to remain.
- The Contractor must remediate areas of damaged fireproofing in MER-2 as shown on the project drawings.

C.1.2 KEY PERSONNEL REQUIREMENTS

This project requires badged Key Personnel for the following labor categories:

Field Superintendent/Site Safety and Health Officer (SSHO)

The Position of Field Superintendent and SSHO can be filled by the same candidate. The Contractor must designate an alternate candidate for each labor category. Requirements for each labor category (including alternates) include:

- Six (6) years of recent work experience in a supervisory position acting as the onsite superintendent or project manager on at least two (2) projects of similar size and scope to this project, involving multiple disciplines/trades.
Experience must include coordination and directing day-to-day field operations for large-scale, multi-phase projects with limited oversight and supervision.
- Must have completed and provide valid certificate for candidate's 30- hour OSHA sponsored/approved course in Occupational Safety and Health Standards for Construction.
- The Field Superintendent/SSHO must be on-site at all times where work is being performed.
- Resumes and associated certificates must be submitted as a part of the Contractor's submittals and approved prior to Notice to Proceed (NTP). *Final approval of candidates is at the discretion of the FAA Project TOR.*

The work is related to the following QVL categories:

- ☒ **Category 1 - General Construction**
- ☒ **Category 2 - Mechanical/HVAC-R**
- ☐ **Category 3 - Plumbing**
- ☐ **Category 4 - Fire Protection and Suppression**
- ☐ **Category 5 - Electrical**
- ☐ **Category 6 - Telecommunications**
- ☐ **Category 7 - Roofing**

C.2 SITE CONDITIONS –

BOA Clause 3.2.2.3-46 Supervising the Contract Work (July 2004)

At all times while the Contractor (you) performs this contract, and until you complete the work and FAA accepts it, you must directly supervise the work or assign and have on the worksite a competent supervisor who the Contracting Officer (CO) is satisfied with and who has authority to act on your behalf.

C.2.1 OCCUPIED AREAS

- The Contractor must use power shears to cut existing ductwork to reduce noise in occupied areas of Building 300, including all office and hallway spaces on Floors 1, 2, and 3.
- Existing ductwork must be removed in sections. The Contractor must seal each end such that any dust is contained prior to taking down and removing from work area for disposal.

- All desks, cabinets, furniture, and cubical walls will remain in place during construction. The Contractor must cover, and keep covered, all items in work areas.
- The Contractor must create a floor to ceiling (slab) barrier around each work area while construction is going on. This will limit dust in areas that are still occupied. Walls must consist of metal studs and flame-retardant corrugated plastic sheets (48" x 96").
- The Contractor must not remove demolished ductwork and debris through occupied spaces.
- The Contractor must protect the floor and carpet in all areas of work.
- The Contractor is responsible for cleaning the work area of all dust and debris created by construction activities.
- The Contractor must use a HEPA filter system in each area where work is being conducted. HEPA filters must be run continually until area is complete.
- The Contractor must perform air monitoring inside the work area and adjacent to the work area. The Contractor must be able to provide air monitor readings as requested to the FAA Project TOR for the duration of the contract.
- Upon completion of an area the Contractor must maintain temporary walls and HEPA filtration until notified by the Project TOR that they can be removed to allow for inspections and approval processes.

C.2.2 PHASING OF WORK:

- Technical Center badging requirements must be adhered to.
- Construction in the mechanical room can be done independently of work in the occupied areas.
- All work must be completed in each phase before the next phase can start per the phasing plan provided. Work must be done on one (1) floor at a time.
- The Contractor must phase work so that the changeover to and from temporary units for the AHU-10 replacement is to take place during Fall/Winter months between October and May.
- The Contractor must provide a minimum of three (3) weeks' notice prior to the start of construction in a bathroom area.
- The Contractor must provide a minimum of three (3) weeks' notice prior to the start of construction in a hallway area.
- The Contractor must allow 45 days between each phase as shown in the attachment.
- The Contractor must give the FAA 45 days' notice prior to mobilization in the first phase of work.

C.3 SCHEDULE OF WORK

The Contractor must perform all work between 7:00 A.M. and 4:30 P.M. Monday through Friday (excluding Federal Holidays) apart from what is listed in section C.3.1.

The WJHTCAA is a secure facility, the Contractor must allow adequate time to clear personnel and equipment through the FAA Security Operations Center (SOC).

C.3.1 SPECIAL SCHEDULING REQUIREMENTS:

- The Contractor must allow at least 45 days down time between the completion of one (1) phase and the start of work on the next phase or floor. This time is needed to allow the Government to relocate personnel.
- HVAC Temporary Units: Change over to and from temporary units must be conducted on weekends.
- Crane Lifts: The use of a crane must be conducted on weekends. Crane use requires daily permission from the Atlantic City International Airport (ACY) air traffic control tower and is weather and/or operational condition dependent. The FAA will not be liable for any claims due to restrictions that are dictated by the ACY tower.
- Work requiring the shutdown of systems (including but not limited to electrical, HVAC, plumbing, etc.) that will disrupt occupied space for any duration of time must be conducted on weekends.
- Work requiring a pipe freeze must be conducted on weekends.
- Work requiring the use of an interior lift in the Building 300 atrium must take place during second shift (5:30pm – 2:00am) or on the weekend.
- All work in the cafeteria or impacting the cafeteria must take place outside of normal working hours.
- On weekends (Saturday and Sunday), work can be done within eight (8) to ten (10) hour shifts between 6:00 am and 4:00 pm.
- The Contractor must provide a minimum of two (2) weeks' notice prior to weekend work, second shift work, shutdowns, or startups.

C.4 PERIOD OF PERFORMANCE

The period of performance will be 700 calendar days from the Notice to Proceed (NTP).

C.5 CONTRACT SPECIFICATIONS

The Government will supply a soft copy of the contract specifications for this project. The Government will not supply hard copies of the contract specifications during the mandatory site visit. Contractors wishing to make notes on the specifications during the site visit must print and bring the hard copy with them to the mandatory site visit. Regardless of how the specifications

are distributed, the Contractor is responsible for confirming that all specifications listed below have been received.

SPECIFICATION SECTIONS –

TC-RD-6950-0120 General Specifications for Electrical Installations

DIVISION 01 - GENERAL REQUIREMENTS

01 33 00	Submittal Procedures
01 57 19	Temporary Environmental Controls
01 78 23	Operation And Maintenance Data

DIVISION 03 - CONCRETE

03 01 00	Rehabilitation Of Concrete
03 30 53	Miscellaneous Cast-in-Place Concrete

DIVISION 05 - METALS

05 12 00	Structural Steel
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DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 84 00	Firestopping
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DIVISION 08 - OPENINGS

08 91 00	Metal Wall Louvers
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DIVISION 09 - FINISHES

09 29 00	Gypsum Board
09 51 00	Acoustical Ceilings
09 90 00	Paints and Coatings

DIVISION 21 - FIRE SUPPRESSION

21 13 00.00 40	Fire-Suppression Sprinkler Systems
21 13 13	Wet Pipe Sprinkler Systems, Fire Protection

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

23 03 00.00 20	Basic Mechanical Materials and Methods
23 05 15	Common Piping For HVAC
23 05 48.00 40	Vibration Controls for HVAC Piping and Equipment
23 05 93	Testing, Adjusting, and Balancing for HVAC
23 07 00	Thermal Insulation for Mechanical Systems

23 08 00.00 20	Commissioning of Mechanical System
23 09 54	Direct Digital Control Systems
23 21 13.00 20	Low Temperature Water (LTW) Heating
23 21 23	Hydronic Pumps
23 30 00	HVAC Air Distribution
23 31 13.00 40	Metal Ducts
23 34 23.00 40	HVAC Power Ventilators
23 37 13.00 40	Diffusers, Registers, and Grilles
23 64 26	Chilled, Chilled-Hot, and Condenser Water Piping Systems
23 73 13.00 40	Modular Indoor Central-Station Air-Handling Units
23 82 00.00 20	Terminal Heating Units

DIVISION 26 – ELECTRICAL

26 05 00.00 40	Common Work Results for Electrical
26 05 26.00 40	Grounding and Bonding for Electrical Systems
26 29 23	Adjustable Speed Drive (ASD) Systems Under 600 Volts
26 51 00	Interior Lighting

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 31 70	Interior Fire Alarm System, Addressable
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DIVISION 40 - PROCESS INTERCONNECTIONS

40 17 30.00 40	Welding General Piping
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C.6 CONTRACT DRAWINGS

The Government will supply a soft copy of the contract drawings for this project. The Government will not supply hard copies of the contract drawings during the mandatory site visit. Contractors wishing to make notes on the drawings during the site visit must print and bring the hard copy with them to the mandatory site visit. Regardless of how the contract drawings are distributed, the Contractor is responsible for confirming that all drawings listed below have been received. The contract drawings are considered the property of the Government and must not be used for any purpose other than that contemplated by the specifications. The contract drawings indicate general arrangements, approximate sizes and relative locations of principal materials to be provided or tasks to be completed. Contract drawings are diagrammatic and are a graphic representation of contract requirements to best available standards at the scale utilized. The Contractor must provide offsets to clear interferences and supports which are not specifically shown, but which are obviously needed to make the system complete, operable, and safe. The

Contractor must verify all elevations, dimensions and clearances at the site. The following contract drawings accompany the specifications and are a part thereof:

DRAWING LIST

<u>Drawing Number</u>	<u>Drawing Title</u>
Cover Sheet	Building No. 300 – HVAC Units 9, 10, 11, & 12 Replacement
F2024113-G0.00	List of Drawings
F2024113-AD2.01	Partial First Floor Demolition Reflected Ceiling Plan Area "D"
F2024113-AD2.02	Partial Second Floor Demolition Reflected Ceiling Plan - Area "B"
F2024113-AD2.03	Partial Second Floor Demolition Reflected Ceiling Plan - Area "C"
F2024113-AD2.04	Partial Second Floor Demolition Reflected Ceiling Plan - Area "D"
F2024113-AD2.05	Partial Second Floor Demolition Reflected Ceiling Plan - Area "G"
F2024113-AD2.06	Partial Third Floor Demolition Reflected Ceiling Plan - Area "C"
F2024113-AD2.07	Partial Third Floor Demolition Reflected Ceiling Plan - Area "D"
F2024113-AD2.08	Partial Third Floor Demolition Reflected Ceiling Plan - Area "G"
F2024113-A2.01	Partial First Floor Reflected Ceiling Plan - Area "D"
F2024113-A2.02	Partial Second Floor Reflected Ceiling Plan - Area "B"
F2024113-A2.03	Partial Second Floor Reflected Ceiling Plan - Area "C"
F2024113-A2.04	Partial Second Floor Reflected Ceiling Plan - Area "D"
F2024113-A2.05	Partial Second Floor Reflected Ceiling Plan - Area "G"
F2024113-A2.06	Partial Third Floor Reflected Ceiling Plan - Area "C"
F2024113-A2.07	Partial Third Floor Reflected Ceiling Plan - Area "D"
F2024113-A2.08	Partial Third Floor Reflected Ceiling Plan - Area "G"
F2024113-A3.00	Ceiling Details
F2024113-M0.01	Mechanical General Notes and Sheet Index
F2024113-M0.02	Mechanical Symbols and Abbreviations
F2024113-MD1.01	Mechanical First Floor Demolition Plan - Area "D"
F2024113-MD1.02	Mechanical Second Floor Demolition Plan - Area "B"
F2024113-MD1.03	Mechanical Second Floor Demolition Plan - Area "C"
F2024113-MD1.04	Mechanical Second Floor Demolition Plan - Area "D"
F2024113-MD1.05	Mechanical Second Floor Demolition Plan - Area "G"
F2024113-MD1.06	Mechanical Third Floor Demolition Plan - Area "B"
F2024113-MD1.07	Mechanical Third Floor Demolition Plan - Area "C"
F2024113-MD1.08	Mechanical Third Floor Demolition Plan - Area "D"
F2024113-MD1.09	Mechanical Third Floor Demolition Plan - Area "G"
F2024113-MD1.10	Mechanical Fourth Floor Demolition Plan - Area "D"
F2024113-MD2.01	Mechanical Demolition Part Plan - MER-2
F2024113-M1.01	Mechanical First Floor Plan - Area "D"
F2024113-M1.02	Mechanical Second Floor Plan - Area "B"

F2024113-M1.03	Mechanical Second Floor Plan - Area "C"
F2024113-M1.04	Mechanical Second Floor Plan - Area "D"
F2024113-M1.05	Mechanical Second Floor Plan - Area "G"
F2024113-M1.06	Mechanical Third Floor Plan - Area "B"
F2024113-M1.07	Mechanical Third Floor Plan - Area "C"
F2024113-M1.08	Mechanical Third Floor Plan - Area "D"
F2024113-M1.09	Mechanical Third Floor Plan - Area "G"
F2024113-M1.10	Mechanical Fourth Floor Plan - Area "D"
F2024113-M2.01	Mechanical Part Plan - MER-2
F2024113-M2.02	Mechanical Sections - MER-2
F2024113-M3.01	Mechanical Part Plan - Temporary RTU-10
F2024113-M4.01	Mechanical Schedules - 1
F2024113-M4.02	Mechanical Schedules - 2
F2024113-M5.01	Mechanical Details - 1
F2024113-M5.02	Mechanical Details - 2
F2024113-M5.03	Mechanical Details - 3
F2024113-M5.04	Mechanical Details - 4
F2024113-M8.01	Mechanical Controls Diagram - 1
F2024113-M8.02	Mechanical Controls Diagram - 2
F2024113-E0.00	Electrical: General Notes, Symbols and Abbreviations
F2024113-ED2.01	Electrical: Partial First Floor Lighting Demolition Plan - Area "D"
F2024113-ED2.02	Electrical: Partial Second Floor Lighting Demolition Plan - Area "B"
F2024113-ED2.03	Electrical: Partial Second Floor Lighting Demolition Plan - Area "C"
F2024113-ED2.04	Electrical: Partial Second Floor Lighting Demolition Plan - Area "D"
F2024113-ED2.05	Electrical: Partial Second Floor Lighting Demolition Plan - Area "G"
F2024113-ED2.06	Electrical: Partial Third Floor Lighting Demolition Plan - Area "C"
F2024113-ED2.07	Electrical: Partial Third Floor Lighting Demolition Plan - Area "D"
F2024113-ED2.08	Electrical: Partial Third Floor Lighting Demolition Plan - Area "G"
F2024113-ED3.01	Electrical: Demolition Power Part Plan - MER-2
F2024113-ED4.01	Electrical: Demolition Lighting Part Plan - MER-2
F2024113-E1.01	Electrical: Partial First Floor Power Plan - Area "D"
F2024113-E1.02	Electrical: Partial Second Floor Power Plan - Area "B"
F2024113-E1.03	Electrical: Partial Second Floor Power Plan - Area "C"
F2024113-E1.04	Electrical: Partial Second Floor Power Plan - Area "D"
F2024113-E1.05	Electrical: Partial Second Floor Power Plan - Area "G"
F2024113-E1.06	Electrical: Partial Third Floor Power Plan - Area "C"
F2024113-E1.07	Electrical: Partial Third Floor Power Plan - Area "D"
F2024113-E1.08	Electrical: Partial Third Floor Power Plan - Area "G"
F2024113-E2.01	Electrical: Partial First Floor Lighting Plan - Area "D"
F2024113-E2.02	Electrical: Partial Second Floor Lighting Plan - Area "B"

F2024113-E2.03	Electrical: Partial Second Floor Lighting Plan - Area "C"
F2024113-E2.04	Electrical: Partial Second Floor Lighting Plan - Area "D"
F2024113-E2.05	Electrical: Partial Second Floor Lighting Plan - Area "G"
F2024113-E2.06	Electrical: Partial Third Floor Lighting Plan - Area "C"
F2024113-E2.07	Electrical: Partial Third Floor Lighting Plan - Area "D"
F2024113-E2.08	Electrical: Partial Third Floor Lighting Plan - Area "G"
F2024113-E3.01	Electrical: Temporary Power Part Plan - MER-2
F2024113-E4.01	Electrical: Power Part Plan - MER-2
F2024113-E4.02	Electrical: Power Part Plan – MER-1 + MER-2A
F2024113-E5.01	Electrical: Lighting Part Plan - MER-2
F2024113-E6.01	Electrical: Panel Schedules
F2024113-E6.02	Electrical: Panel Schedules
F2024113-E6.03	Electrical: Panel Schedules
F2024113-E7.01	Electrical: Details - 1
F2024113-E7.02	Electrical: Details - 2
F2024113-E8.01	Electrical: Partial Single Line Diagram Substation 1
F2024113-E8.02	Electrical: Partial Single Line Diagram Substation 3
F2024113-E8.03	Electrical: Partial Single Line Diagram Substation 5
F2024113-E8.04	Electrical: Partial Single Line Diagram Emergency Power Building 300
F2024113-FA0.00	Fire Alarm: General Notes, Symbols and Abbreviations
F2024113-FA0.01	Fire Alarm: General Notes
F2024113-FAD1.01	Fire Alarm: Demolition Part Plan - MER-2
F2024113-FA1.01	Fire Alarm: Part Plan - MER-2
F2024113-FP0.01	Fire Protection General Notes Symbols and Abbreviations
F2024113-FP1.01	Fire Protection First Floor Plan – Area "D"
F2024113-FP2.01	Fire Protection Part Plan - MER-2
F2024113-FP2.03	Fire Protection Second Floor Plan - Area "B"
F2024113-FP2.04	Fire Protection Second Floor Plan - Area "C"
F2024113-FP2.05	Fire Protection Second Floor Plan - Area "D"
F2024113-FP2.06	Fire Protection Second Floor Plan - Area "G"
F2024113-FP3.08	Fire Protection Third Floor Plan - Area "C"
F2024113-FP3.09	Fire Protection Third Floor Plan - Area "D"
F2024113-FP3.10	Fire Protection Third Floor Plan - Area "G"
F2024113-FPD4.01	Fire Protection Part Demolition Plan - MER-2
F2024113-FP5.01	Fire Protection Details - 1
F2024113-S1.00	Structural – AHU Temporary Support
F2024113-S1.01	Concrete Curb and Pad Details
2023-000109-C	Replacement and Mold Removal Reflected Ceiling Plan Fourth Floor

REFERENCE-ONLY DRAWING LIST

- Fire Alarm for Building 300 As-Builts
- Building 300 MER 4 Exhaust Fan Layout

C.7 SECURITY

The William J. Hughes FAA Technical Center for Advanced Aerospace is under security at all times. All critical areas (e.g. air traffic control towers) are controlled by means of a personal identification system. All personnel entering the facility will require a badge or visitor badge, which must be visible and worn at all times while on the premises. All visitors must have a REAL ID or other approved identification. The Government will provide further instructions regarding security requirements at the time the badges are issued.

C.8 ADDITIONAL REQUIREMENTS AND CONSIDERATIONS

- All Material needs to be onsite or stored at your facility prior to start of any work onsite. All Material must be protected from weather and stored at an outside laydown area on site or at your facility.
 - Work will only be allowed to begin on the Floor Areas once all material has been received to complete work on all floors. (i.e. Lights, VAV Boxes, Diffusers, Ceiling Tiles)
 - Work will only be allowed to begin in the mechanical room once all material has been received to complete work (i.e. AHUs, Unit heaters, etc.)
- Per DOT Order 4356B, construction and demolition (C&D) waste generated as part of this project shall be segregated from municipal solid waste (MSW) and diverted from landfills to the extent feasible. The quantity and disposal method (i.e. salvage, reuse, recycle, incinerate or landfill) of C&D waste must be tracked & reported to Project TOR.
- Fluorescent bulbs removed as part of this project must be handled as Universal waste and sent to an authorized Class D recycling facility in accordance with the Technical Center-Wide Recycling Program, FAA Order 1050.2C.
- For light ballast removed as part of this project, their polychlorinated biphenyl (PCB) content must be determined in accordance with FAA Order 1050.14B and then they must be properly disposed.
- The Government or the Government's Center Operations and Maintenance Contractor's (COM's) Hazardous Waste Manager must review and sign any waste requiring: manifest, disposal paperwork or bill of lading, from this facility. Waste includes fluorescent tubes from demolished lighting.

- The Contractor must provide a minimum of 14 days' written notice to the Project TOR prior to scheduling any kind of Asbestos or Lead abatement work.
- The Contractor must restore any staging/laydown area, both inside and outside, to its previous condition after use.
- The Contractor must submit a Site-Specific Safety Plan that applies to this SOW. This plan is to serve as a supplement to the Contractor's Corporate Safety Manual. The Site-Specific Safety Plan must address all definable features of work covered in the SOW and how safety will be addressed and enforced. (Note the Corporate Safety Manual was already submitted by the Contractor when they applied to be on the QVL.)
- The Contractor must maintain and submit a Daily Access Log of all Prime Contractor employees, Subcontractor employees, Vendors, and equipment, that are on site each day, how many hours they are onsite, and what task they are working on. The daily report must be sent to the FAA Construction Representative at the end of each day.
- The Contractor must submit a Solid Waste Disposal Report each month to the Government. The report must include date of disposal, waste description, total weight of waste material in tons, total weight of waste material diverted, method of waste material disposal or diversion, and, if applicable, reasons why waste was not diverted.
- The Contractor must keep all equipment (i.e. ladders, job boxes, etc.), that is to remain on site in designated laydown areas and ensure it is properly labeled with the Contractor's name.
- The Contractor must not transport trash and construction debris through occupied areas. Remove a window within each phase to utilize as a trash chute.
- The Contractor must have a Dedicated Full-Time Site Safety and Health Officer, and Field Superintendent.
- The Contractor must complete a "Record of Change Report" (RCR). The Government will supply the RCR form.
- The Contractor must clean all work/construction areas after the end of each workday.
- The Contractor must dispose of all construction material.
- The Contractor is responsible for equipment left on site
- The Contractor must place a 6-mil black or green plastic with grommet dust curtains around the construction area in hallways areas. The dust curtain must be installed floor to ceiling and secured at both ends so dust cannot get through. See section C.2.1 for additional requirements.
- The Contractor must place caution tape around the construction site.
- The Contractor must procure and supply temporary construction signage. All temporary signs must be aluminum or hard polyethylene plastic. All signs must be mounted at construction entrances and along temporary alternate egress routes. Signs must note the proper Personal Protective Equipment (PPE) required to enter the site and have contact information for the FAA Project Manager and Contractor Field Superintendent. The

Contractor must submit a signage plan prior to the start of work to be reviewed and approved by the FAA Safety Office.

- The Contractor must remove and dispose of all dust curtains and caution tape once construction is completed.
- The Contractor must have all construction materials on site before they start work.
- The Contractor must provide a trash dumpster(s). The Government will provide a location(s) for the dumpster(s).
- The Government will provide restrooms inside Building 300 for the Contractor to use.
- The Government will allow the Contractor to use the cafeteria inside Building 300 for purchasing and consuming items.
- TEMPORARY UTILITIES - Pursuant to Contract Clause 3.2.2.3-55, "Availability and Use of Utility Services (July 2004)", the Government will make available reasonable amounts of the following utilities to the Contractor without charge:
 - Domestic (Potable) Water
 - Electricity

C.9 PROPRIETARY WORK

The Contractor must perform the following work in accordance with WJHTCAA standards and tied into existing monitoring stations; contact information is provided since a subcontracting arrangement is expected:

Power Monitoring and Control System (PMCS):

Steve Graham

Delaware Valley Liebert (DVL)

Cell: 215-284-8501

Building Automation System (BAS):

Robert Koenig/Mike May

Tri-M Group

Cell: 610-496-4885/610-721-3540

C.9.1 PROPRIETARY EQUIPMENT:

VAV Boxes

VAV Boxes must be manufactured by either Metal Air (model TH-500) or DAKIN (model MQTH-500)

LED 2 x 2 Lighting:

LED 2 x 2 ceiling lighting must be Elite Lighting model: 22-FPL-BL-LED-ML-CCT
(discontinued model 22-FPL1-LED)

C.10 SUBMITTALS

Pursuant to Contract Clauses 3.2.2.3-45, “Material and Workmanship (July 2004)” and 3.2.2.3-60, “Specifications, Drawings and Material Offers (July 2004)”, the Contractor must prepare and submit for Government review and approval the construction submittals as specified in the contract specifications, herein this document, or as called for in the contract drawings. Definitions, processing, required formats and required quantities for construction submittals are specified in project specification Section 01 33 00, “Submittal Procedures”.

- Preconstruction Submittals: As per the definition provided in specification Section 01 33 00, “Submittal Procedures,” all preconstruction submittals are required within 10 days of contract award.
- The Government will schedule a mandatory Preconstruction Meeting once all preconstruction submittals have been received and approved. The Government expects to issue the Notice to Proceed (NTP) at this meeting, which starts the Period of Performance (POP). Note that issuance of the NTP may not take place until the Government has approved all preconstruction submittals.
- The Contractor must submit the preconstruction submittals for Certificate of Insurance, Performance Bond, and Payment Bond directly to the Contracting Officer. The Contractor must submit all other preconstruction submittals to the **Project TOR Laura DeWaters (laura.b.dewaters@faa.gov) and cc to the QVL CORs Coral Yip (coral.yip@faa.gov) and Kevin Scott (kevin.scott@faa.gov).**

C.10.1 PRECONSTRUCTION SUBMITTALS

THE CONTRACTOR MUST SUBMIT THE FOLLOWING PRECONSTRUCTION SUBMITTALS BEFORE THE GOVERNMENT ISSUES NOTICE TO PROCEED:

Submittal #	Submittal Description	Due Date	Reference
1	Performance Bond	10 calendar days after award	BOA Clause 3.4.1-4 & SOW C.10
2	Payment Bond	10 calendar days after award	BOA Clause 3.4.1-5 & SOW C.10

3	Certificate of Insurance	10 calendar days after award	BOA Clause 3.4.1-10 & SOW C.10
4	Schedule of Prices	10 calendar days after award	BOA Clause F.04 & SOW C.10.1.2
5	Contract Schedule	10 calendar days after award	SOW C.10.1.1
6	Site Specific Safety Plan	10 calendar days after award	BOA Clause H.14 & SOW C.8
7	Submittal Register	10 calendar days after award	Government Furnished
8	Field Superintendent	10 calendar days after award	SOW Section C.1.2
9	Site Safety and Health Officer	10 calendar days after award	SOW Section C.1.2

C.10.1.1. Construction Schedule

The Contract Schedule must indicate the Contractor's planned sequence of work to complete the contract within the specified Period of Performance. The Contract Schedule must include activities, sequencing, and scheduling for the following categories of work:

At a **minimum**, the Contractor must identify and provide durations for the following work activities **per floor and for each phase of work separately**:

- Administrative work (e.g., submittals, procurement badging and fabrication lead times)
 - Submittals
 - Badging
 - Equipment Lead Times
- Mobilization
- Mobilization by Subcontractors
- Temporary Wall Installation
- Trash Chute Window Removal
- Protection of Equipment & Cubicles
- Demolition
- Shop Drawings
- Installation
 - Ceiling
 - VAV
 - Ductwork
 - HVAC Electrical

- Lighting Electrical
 - HVAC Controls
 - Lighting Controls
 - SkySpark Controls
 - Insulation
 - Balancing
 - Fire Protection
 - Test & Inspection
 - Clean Up
- Temporary HVAC
- Mechanical Room MER-2
 - Demolition
 - Concrete Pad Repair & Infill
 - Ductwork
 - AHU Install
 - RAF Install
 - Louver Install
 - Pump Install
 - Unit Heaters
 - Mechanical Piping
 - Insulation
 - Electrical
 - Controls
 - Balancing
 - Test & Inspection
- Mechanical Room MER-4 Stairway Pressurization Fans
- 4th Floor Ceiling Replacement
- Equipment Startup & Testing
- Training
 - HVAC Equipment with Manufacturer
 - Tri-M Controls
 - Lutron Controls
- Punch List & Inspection
- Demobilization
- As-builts
- O&M

The Contract Schedule must specifically identify and differentiate between work activities planned for execution during regular work hours and work activities planned for execution

outside of regular work hours. See paragraph titled “Schedule of Work” for specific requirements.

The Contract Schedule must include the 45-day period between each phase as indicated in paragraphs C.2.2 and C.3.1.

C.10.1.2. Schedule of Prices

The Schedule of Prices must include breakdown of costs by trade, location, and phase, ensuring each line item represents a measurable deliverable rather than a lump sum. The complete Schedule of Prices must include task descriptions, costs per task, percentage complete, and match the total contract sum. Direct and indirect costs must be captured in separate line items. The Schedule of Prices must include a clear breakdown that aligns with the construction schedule.

Where the contract documents require work to be completed in multiple phases, occupied areas, or during restricted outage periods, the Contractor must include all costs associated with the required phasing in its proposal and Schedule of Prices. Clearly identify all values associated with each phase within the provided Schedule of Prices as separate line items rather than a lump sum.

C.10.2 CONSTRUCTION SUBMITTALS

THE CONTRACTOR MUST SUBMIT THE FOLLOWING CONSTRUCTION SUBMITTALS DURING CONSTRUCTION PERFORMANCE:

Submittal #	Submittal Description	Due Date	Reference
1	Daily Inspection Reports	Daily during construction	BOA Clause F.08
2	Contract Discrepancy Reports	Within 48 Hours of discovering a discrepancy	BOA Clause F.08
3	Progress Photographs All photos must be taken in the presence of the Project TOR and/or authorized Government Representative	At start of work, monthly with Contract Progress Report, and at completion of work	BOA Clause F.10
4	Electronic Email	Continuously	BOA Clause G.04

5	Emergency Contacts – to include Primary and 1 st tier subcontractors.	To be submitted at or before Preconstruction meeting and updated as needed.	BOA Clause H.02
6	Daily Access Log	Daily during Construction	SOW C.8
7	Solid Waste Disposal Report	Monthly after NTP is issued	SOW C.8
8	Recovered Materials	As Required	
9	Technical Submittals	As Required	Submittal Register / Specifications
10	Pre-balancing report	30 days prior to balancing	Specification 23 05 93

C.10.3 CLOSE OUT SUBMITTALS

THE CONTRACTOR MUST SUBMIT THE FOLLOWING SUBMITTALS UPON COMPLETION OF WORK:

Submittal #	Submittal Description	Due Date	Reference
1	Equipment/ Product Warranty List	At work completion	BOA Clause F.11
2	As-built drawings	At work completion	BOA Clause F.11
3	Asbestos Free Statement	At work completion	BOA Clause 3.6.3-12
4	Completed RCR Equipment List with complete Equipment Location, Model, and Serial #	At work completion	SOW C.8 & FAA Provided Form
5	Operations and Maintenance Manuals for all equipment (Must include table of contents. PDF must have bookmarks as required.)	At work completion	Project Drawings / Specifications