U.S. AIR FORCE

Eglin Air Force Base, Florida

DESIGN BUILD
STATEMENT OF WORK

FA2823-19-D-A005

Project No. FTFA23JG41
Replace Chiller, AHU/Paint fuel tank Bldg. 8777

Eglin Air Force Base, Florida

December 11, 2023

96 CEG/CEN

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1. Purpose:

This statement of work (SOW) outlines the basic requirements of FTFA23JG41 Replace Chiller, AHU/paint Fuel Tank. The Contractor shall be required to furnish all materials, equipment, plant, labor, and personnel necessary to design, replace, manage, test and accomplish this task order in accordance with the contract requirements.

2. Background:

The HVAC system has exceeded its expected life span and is no longer capable of meeting the customer's needs. It requires replacement to ensure reliable and efficient operation.

3. Description of Work:

The project is located on Eglin AFB, Building 8777. The Contractor shall be required to furnish all materials, equipment, plant, labor, and personnel necessary to design, manage, and accomplish this task order in accordance with the contract requirements. Work involves three areas: East side of building with existing multizone air handler and boiler, West side of building with existing air handler with two zones and boiler, and outside with existing 25-ton chiller and external pump. Install new electrical main distribution panel and two electrical sub panels for mechanical equipment. For the East side, work involves demolition of existing multizone air handler and associated components. Demolition of diesel boiler, hot water pump and all associated components and piping. Installation of new Variable Air Volume (VAV) air handler and electric heat elements according to design specifications. Configure and install BACnet over IP control system to accommodate the VAV air handler's variable airflow and electric heating functions. Install variable frequency drive and associated electrical to VAV air handler. Install electric preheat coil for freeze protection on new variable air volume air handler. Demolition of existing ductwork for VAV air handler. Install new ductwork properly sized for three variable air volume boxes with electric heat to meet heat load and air flow requirements. Configure and install BACnet over IP controls for each variable air volume box. For the West side, demolition of existing air handler with two supply duct zones and associated components. Demolition of diesel boiler, hot water pump and all associated components and piping. Installation of new zone air handler with two electric duct heaters for each duct branch to meet heat load specifications. Installation of electric preheat for freeze protection on zone air handler. Install and program new BACnet over IP controls to new air handler with electric heat. Install new building level supervisory controller (Jace) with the most current version of Niagara 4 software.

For outside, demolition of existing 25-ton chilled water system and chilled water pump. Install new 25-ton chilled water system with internal chilled water pump.

The objective is to replace the existing air conditioning units with new, efficient air conditioning system. Air handlers are original to the building and over 50 years old, the boiler uses diesel fuel from a diesel tank and the chilled water system has passed life expectancy.

Codes and references (use the latest revision): The International Mechanical Code, the International Building Code (IBC), ASHRAE Handbooks, NFPA, UFC 3-410-01, UFC-3-600-01, ASHRI, Eglin AFB criteria, etc.

3.1 EQUIPMENT DEMOLITION:

- Demo existing 12.5-ton multi-zone air handler (East side).
- Demo existing 12.5 air handler (West side).
- Demo existing ductwork for muti-zone air handler (East side).
- Demo 25-ton chilled water unit and chilled water pump (outside).
- Demo diesel boilers, hot water piping, fuel lines and two hot water pumps for two hot water systems (East and West side).
- Properly dispose of the existing air handling units, Chilled water system, hot and chilled water pumps and two diesel boilers and associated materials.
- Demo electrical disconnects, wire and conduit from disconnect to the HVAC units, for two air handlers, two diesel boilers, two hot pumps, chilled water system and one chilled water pump.
- Demo supply registers associated with multi-zone air handler.
- Demo Chilled water valves and actuators on both air handlers.
- Demo existing DDC controls.
- Demo wire from main distribution electrical panel to the electrical transformer located behind the building.
- Demo electrical main distribution panel.

3.2 EQUPMENT INSTALLATION:

- Install one VAV air handling unit with chilled water coil able to meet heat load requirement (East side).
- Install new ductwork for VAV air handler.
- Install four new VAV boxes with electric heat able to meet heat load and air flow requirements.
- Install new supply and return diffusers for the VAV air handler.
- Install new zone air handler with supply duct heaters and chilled water coil able to meet heat load requirements (West side).
- Install electric pre-heat coil in the ductwork for both air handlers able to meet heat load requirements.
- Install new 25-ton chilled water system with internal chilled water pump (outside).
- Contractor shall provide drawings showing heat load requirement. New drawing shall include detailed refrigerant piping configuration.

- Provide and connect the necessary electrical circuits from new disconnects to the installed HVAC units.
- Use as much existing ductwork to connect to new zone air handler unit.
- Modification of ductwork can be made to fit the new zone air handler unit.
- Install thermostats and thermostat wire for all new air conditioning units and VAV boxes.
- Install new drain lines for all associated HVAC units.
- Install new chilled water valves for two air handlers.

3.3 MECHANICAL:

- Contractor shall provide a 100% mechanical design for the replacement of 2 air handlers, removal of hot water system and replace with electric duct heaters, install four vav boxes with electric heat and replace chilled water system at Bldg. 8777.
- Chilled water lines must meet manufacture requirement.
- Seal-off all wall penetration after installation of chilled water lines, condensate lines and electrical conduits.
- Insulate all chilled water lines and provide aluminum jacket covering.
- Plastic tubing use for condensate line will not be accepted.
- The Contractor shall verify the new HVAC equipment's will be able to adequately supply volume of air to meet the heat load requirement.

3.4 ELECTRICAL:

- Provide 100% electrical design.
- Install new wire from transformer to main electrical distribution panel.
- Install new main distribution panel in the mechanical room and two electrical sub-panels for new mechanical equipment. One sub-panel in each mechanical room.
- Install conduit and wire for new electrical sub-panels.
- Contractor shall perform all investigative and design services to determine where they will get power to feed the new HVAC unit, which include all material required and method of installation.
- Provide and install disconnects for two air handlers, four VAV boxes with electric heat, one chilled water system to isolate unit for emergency shut down and maintenance.
- Provide all wire, Category 6 ethernet cable and conduit to air handlers, VAV boxes and chiller.
- Final installation shall comply with the manufacture recommended instructions and standards.
- Install all necessary components to make this a complete and operational system and by all appropriate codes.
- Provide and install new wire and conduit for two air handlers, one variable frequency drive, three VAV boxes with electric heat and one chilled water system.

3.5 CONTROLS:

- Install and program new BACnet over IP field controllers comparable with Eglin DDC requirements for both air handlers, four VAV boxes and on chilled water system.
- Install new JACE with the most current version of Niagara 4 software.
- Install new thermostats, supply air sensors and air flow sensors for four VAV boxes.
- Install 2 new Temperature/humidity sensors for the zone air handler.
- Install outside air, return air and mixed air temp sensors for both air handlers.
- Install new chilled water valve actuators for two air handlers.
- VAV air handler will be programmed to maintain a 55-degree supply air for humidity control. VAV box temperature to maintain 73-degrees cooling and 70-degrees heating.
- Modifications to an existing Building's Control System (CS) **must** be compatible with the current CS in that facility if the new controls are connecting to existing JACE. (Whenever possible, the same brand controls should be used.) If a new JACE is to be installed, the requirements for (New Facilities) will apply.
- All graphics (including floor plans) must be updated in the existing ENS (Enterprise Network Server) located in building 696 which shall serve as the Web Server for the system, as well as in the JACE.
- The system shall allow CE technicians to connect to all controllers with all available software in all modes available from the manufacturer from building 696 via the local area network (LAN) to program, backup, download, configure and perform all functions necessary to maintain the system as if onsite and direct connected to the device.
- Provide all Controls software necessary for project (to be loaded onto an AF provided Laptop with current SDC). Provide latest software and USB adapters for each type of DDC field controllers, to include factory installed DDC controllers. (This laptop will be used/verified during the training).
- All hardware and software administrator level passwords shall be provided to the government to access all levels of all controllers including the new Niagara Framework controllers as well as copies of the system's topology, hardware/ software inventory, and configuration. The password shall allow complete access to everything the manufacture has access to.
- The BACnet communication buss shall be daisy chained with Category 6 ethernet cable from each BACnet over IP device to the JACE. No additional switches or routers shall be used. Ensure not to damage/cut existing Buss Line for the remainder of the Facility.

3.6 EQUIPMENT START-UP:

- The Contractor will be responsible to arrange for a factory authorized service representative to startup equipment.

3.7 SPECIAL INSTRUCTIONS

- The contractor shall perform all investigative and design services to determine proper power requirements to feed new equipment, which include all material needed and best method of installation.
- All EMT conduits shall be installed using steel compression couplings and steel compression box connectors.
- Any service or feeder circuit under 400 Amps shall not be in parallel conduit.
- All electrical disconnect switches shall be Heavy Duty unless stated differently in the statement of work.
- All new electrical panels installed shall be of the type with bolt-on circuit breakers unless stated differently in the statement of work.
- All duplex receptacles and GFCI receptacles shall be 20 Amps unless stated differently in the statement of work.
- All insulated type wire shall be THHN/THWN copper unless stated differently in the statement of work.
- Contractor must field verify the voltage, amperage, wire size, transformer size, measurements, etc.
- Ensure new electrical work is grounded and bonded per the National Electrical Code.
- All drywall on Eglin AFB shall be 5/8” and fire rated.
- Conduit, switch boxes, receptacle boxes, etc. shall be concealed, when possible, in walls and above drop ceiling.
- In the absence of required material submittals/drawings showing the description of item or items to be installed the description of the item or items installed shall be that of the negotiated proposal.
- Ensure design and installation meet all requirements of UFC 3-600-01 and all applicable NFPA standards.
- Wrap all metal conduits in contact with concrete with 20 MIL corrosion protection tape designed for this purpose. Extend tape 6” beyond top and bottom of concrete.
- All branch circuits shall have their own neutral conductor - no sharing of the neutral conductor.
- Items removed for new work to be completed shall be reinstalled by the contractor unless stated differently in the statement of work.
- All items removed to be reinstalled are considered in good condition (undamaged) and working properly unless otherwise noted in writing.
- The contractor shall repair any openings in electrical boxes, panels, cabinets, etc., when the opening is created by the contractor removing something or not using an opening they created.
- Any holes created by the contractor through the wall, floor, ceiling, etc. for installation or removal of conduit, pipe, duct, etc. shall be repaired. Any openings shall be sealed with the appropriate material to meet the 2023 National Electrical Code requirements.
- Series rated circuit breakers, panels, equipment shall not be used.

4. General Requirements:

The Contractor shall identify and comply with all applicable federal, state, and local statues; Air Force and Department of Defense instructions, manuals, handbooks, regulations, guidance and policy letters; Executive Orders (EOs); National Fire Protection Association (NFPA); Uniform Criteria (UFC); International Building Code (IBC); International Plumbing Code (IPC); Vault/Security Compartment Information Facility (SCIF) requirements; International Mechanical Code (IMC) Florida Department of Transportation (FDOT) including all changes and amendments in effect on the date of issuance of this contract.

The area where the work is to be performed will be available for inspection. A pre-proposal site visit will be conducted at a date and time specified by the Contracting Officer. All existing conditions shall be field verified by the Contractor during the site visit(s). The Government is not responsible for providing any surveys or measurements. This project shall be accomplished through submittal phases to include 35% preliminary design, 65% interim design, 95% pre-final design and 100% final design.

Construction on this project shall not begin until the 100% design has been accepted by the Government. A pre-construction conference will be held following the 100% design to provide clearance to begin construction.

Staging areas and haul routes shall be provided by the Contracting Officer. The construction site shall be kept neat and free of trash and debris at all times.

5. Meetings and Submittals:

The Contractor shall participate in and facilitate on-site meetings and all design review meetings. ***The Contractor shall prepare and submit meeting minutes to the Contracting Officer within two (2) calendar days after every meeting.***

The Contractor shall submit for approval a complete design schedule, with all submittal and review meeting dates, within seven (7) calendar days after the Notice to Proceed (NTP). The schedule shall be based on the following proposed design agenda.

- Design kick-off meeting shall be same date as NTP.

- 35% preliminary design submittal shall be 30 calendar days from the design kick-off meeting. The Government review period will be 21 calendar days followed by a design review meeting.

- 65% interim design submittal shall be 30 calendar days from 35% Government review. The Government review shall be 21 calendar days followed by a design review meeting.

- 95% pre-final submittal shall be 30 calendar days from the 65% Government review. The Government review shall be 20 calendar days followed by a design review meeting.

- 100% final design shall be 14 calendar days from the 95% Government review. The Government review shall be 14 calendar days followed by a pre-construction conference.

All items required in each stage of design shall be submitted as one (1) complete package. No partial submittals will be accepted.
The Contractor shall provide the comments from the Government review at each design submittal. A response of ***"will comply" IS NOT*** acceptable The Contractor shall annotate the comments with the actions taken and incorporate the annotated comments with the next design submittal.

The 95% design submittals shall include seven (7) bound sets each of half size drawings (12 x 18), specifications and design analysis and one (1) electronic version of the complete submittal on a compact disc with the drawings in AutoCAD drawing format and in PDF format; specifications and design analysis in Adobe PDF format.

The 100% final design submittal shall include one (1) full size bound set of drawings (24 x 36), two (2) bound sets of half size (12x18) drawings, two bound sets of specifications, two bound sets of design analysis, an electronic version of the complete submittal on one compact disc with the drawings in AutoCAD format and t in Adobe PDF format, specifications and design analysis in Adobe PDF format.

The as-built drawings and specifications that reflect addendums, field changes and modifications shall be submitted at close out of the project. ***[See attachment titled "As-Built Drawings" for submission details]***

The Contractor shall identify and have on his staff a State Licensed Designer of Record to develop submittals during design and construction. The Contractor's Designer of Record shall produce a Submittal Register at each design submittal. The Contractor's Designer of Record shall be responsible for listing, reviewing and

approving each submittal necessary to ensure the project requirements are in compliance. The Submittal Register shall identify items such as shop drawings, manufacturer's literature, certificates of compliance, material samples, guarantees, test results, etc. that the Contractor shall submit for Government review and/or approval action. The Designer of Record shall review and approve all submittals they are responsible for prior to submittal to the Government. Upon approval by the Contractor, five (5) copies of that submittal shall be submitted to the Contracting Officer.

Progress Schedules shall be submitted using AF Form 3064 and Progress Reports shall be submitted using AF Form 3065.

All material submittal that are scheduled for government review and approval ***shall be reviewed by the designer of record (DOR)*** prior to submitting to the government.

6. Government Furnished Materials:

Project related drawings and data are available for review at 96 Civil Engineering Group, Building 634, Eglin AFB and are for informational purposes only.

Eglin AFB standard title sheet, drawing sheets and title block shall be provided to the Contractor in electronic format.

7. Period of Performance:

The Period of Performance is 270 calendar days; 120 days for design and 150 days for construction.

hours for work requiring access to existing facility shall be Mon-Friday 0700-1500.

Exterior work may be completed outside normal duty hours coordinated with PM in advance (2 weeks).

8. Summary of Activities:

REQUIED ACTION:	TIME FRAME:
Pre-proposal site visit	TBD
Notice to Proceed	Design kick-off meeting

Period of Performance	120 calendar days for design, 150calendar days for construction
35% preliminary design submittal	30 calendar days after design kick-off / NTP
Design review meeting	15 calendar days after submission
65% interim design submittal	30 calendar days after review meeting
Design review meeting	calendar days after submission
95% pre-final design submittal	30 calendar days after review meeting
Design review meeting	15 calendar days after submission
100% final design submittal	30 calendar days after review meeting
Pre-construction conference	15calendar days after 100% final submission
Design schedule	15 calendar days of award
AF Form 3064	10 calendar days of award
AF Form 3065	Weekly
AF Form 3000	As required
Pre-final inspection	10 calendar days before final inspection
Final inspection	270 calendar days after NTP
As-built drawings	260 calendar days after NTP

Eglin Specific Requirements:

Reference the Eglin Design Manual for all Eglin specific requirements.


Cool - CCW
Heat - CW


HOT WA