U.S. Department
Of
Veterans Affairs

100% Issued for Construction - Narrative
Replace Garland Elevators / Garland, Texas

North Texas VA Health Care System

VA Project Number: 549C40418
EA Project Number: EA07.001

Issue Date: December 13, 2024

ENAPAY LLC

REGISTERED ARCHITECT
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STATE OF TEXAS
12-13-2024

TABLE OF CONTENTS

Table of Contents……Page 2 of 10

Project Statement of Work……Pages 3 thru 10

Architectural

This project will modernize / replace ten (10) electric elevators and four (4) hydraulic elevators and correct functional deficiencies to bring them up to current elevator codes, ADA standards, and VA design guidelines. Areas that will be addressed area: elevator pits, machine rooms, control systems, hoist ways, machine drives, landing doors, phones, safety systems, car operation panels, door operators, signaling devices, and upgrade elevator cab interiors. The General Contractor will provide a one (1) year repair clause to match a one (1) year maintenance and a one (1) year warranty.

Mechanical penthouses – decommission elevator equipment that will not be used and remove.

The VA will be using Siemens Desigo BMS for all elevator control and monitoring. It is expected that the Siemens System would integrate with the elevator manufacturer's system – like the BMS Link. The siemens system installation will be outside the elevator scope, but the BMS Link from the elevator controller company should be included in the elevators company's scope of work.

Mechanical

DIVISION 23 – MECHANICAL HVAC SYSTEMS

PART 1 - DESIGN CRITERIA

1.1 CODES AND STANDARDS:

A. Systems are to be designed in accordance with the latest edition of the following codes and standards:
   1. 2021 International Building Code
   2. 2021 International Mechanical Code
   3. 2021 International Plumbing Code
   4. 2021 International Fire Code
   5. 2021 International Fuel Gas Code
   6. 2021 International Energy Conservation Code
   7. 2020 National Electrical Code (with local amendments)

B. Systems are to be designed to the following conditions:
   1. Summer Outside: 105°F DB / 74°F WB
   2. Summer Inside: 70°F ±2°F
   3. Humidity Inside: 50% RH ±2%
   4. Winter Outside: 17°F
   5. Winter Inside: 68°F, ±2°F

PART 2 – MECHANICAL SYSTEM

2.1 HVAC SYSTEMS

A. The mechanical systems are designed to provide an environment for the elevator equipment requirements. Systems will be designed and installed to provide flexibility for operation, reconfiguration, and function with reduced energy consumption.

B. Existing air handling units serving the existing mechanical rooms will be replaced with new units. Air handling units will be chilled water and direct expansion as required to meet existing installed system.

C. Existing terminal units serving the existing mechanical rooms will be replaced with new units. The terminal units will be cooling only with controls.

D. Air Handling units and Terminal units will be provided with controls capable of tying into the existing building automation system. The existing system will be modified to update the control system for the new terminal units, thermostat locations, and floor plan.

E. All mechanical units will meet the requirements of ASHRAE audible vibration/noise limitations.

2.2 AIR DISTRIBUTION SYSTEMS

A. All ductwork will be formed from galvanized steel and will conform to the requirements of SMACNA's Duct Construction Standards, NFPA Standard 90A.

B. All concealed supply and return ductwork will be low pressure and will be externally wrapped with 2-inch fiberglass insulation with FSK vapor barrier.

C. Exhaust ductwork will be constructed per low pressure supply ductwork standards, except that they will not be insulated except as required by the International Energy Code.

D. Fire dampers and combination fire/smoke dampers will be installed at all ductwork penetrations of rated fire and smoke walls/partitions as shown on the architectural floor plans.

E. Seal all ductwork (supply, return and exhaust) in accordance with the International Energy Code. Snap lock construction not acceptable in project.

F. All exposed ductwork will be round spiral ductwork with paint ready finish or natural metal finish, to be determined. All supply duct will be internally insulated.

G. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

H. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Hangers and Supports."

I. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

J. Leakage Tests:
    1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Leakage for low pressure duct systems including supply, return, and exhaust will not exceed 2% of the design flows as evidenced by the final test and balance report.
    2. Test the following systems:
    3. Supply, return, and exhaust air.
    4. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
    5. Test for leaks before insulation application.

6. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure. Give seven days' advance notice for testing.

2.3 CONTROL SYSTEMS

A. Modify existing building management system to monitor and control all systems existing and new within the renovation area. Provide all the required hardware and software required.

B. Provide Thermostats for variable volume terminal unit operation. Provide all wiring and conduit for controls functions. This includes 120/1/60 power wiring to control devices and motorized dampers.

C. The elevator monitoring system shall be connected to the existing BMS system. All elevators need to be compatible with the new siemens DESIGO BMS.

2.4 TEST AND BALANCE

A. The complete air system installed as part of the project will be tested, adjusted and balanced by an independent certified testing and balancing firm as required to ensure system performance in accordance with design criteria.

2.5 COMMISSIONING

A. The building systems installed will be commissioned to equal to IECC 2021 requirements. Contractor will provide all required labor and material to support commissioning process. Contractor will provide labor to complete testing of systems under the direction of the commissioning authority.

END OF DIVISION 23

Electrical

DIVISION 26 – ELECTRICAL

PART 1 - DESIGN CRITERIA

1.1 CODES:

Systems will be designed in accordance with the following codes with local amendments:

1. 2021 International Building Code (IBC)
2. 2021 International Mechanical Code (IMC)
3. 2021 International Plumbing Code (IPC)
4. 2021 International Fire Code (IFC)
5. 2021 International Fuel and Gas Code (IFGC)
6. 2021 International Energy Conservation Code (IECC)
7. 2020 National Electrical Code (NEC)

1.2 STANDARDS:

A. Systems will be specified in accordance with the following reference standards:

1. ADA Americans with Disabilities Act Standards for Accessible Design
2. Texas Accessibility Standards (TAS)
3. ANSI American National Standards Institute (Applicable Standards)
4. IES Lighting Handbook
5. NECA 1Standard for Good Workmanship in Electrical Construction
6. NEMA National Electrical Manufacturers' Association (Applicable Standards)
7. NESC National Electrical Safety Code
8. NFPA 70E Standard for Electrical Safety in the Workplace
9. NFPA 72 National Fire Alarm and Signal Code
10. NFPA 101 Life Safety Code
11. NFPA 110 Emergency and Standby Power Systems
12. TIA Telecommunications Industries Association (Applicable Standards)
13. UL Underwriters' Laboratories, Inc. (Applicable Standards)

PART 2 - ELECTRICAL SYSTEMS

2.1 EXISTING ELECTRICAL SERVICE AND DISTRIBUTION

A. The existing electrical service to the facility will be reused to serve the new equipment.

2.2 NORMAL POWER SERVICE AND DISTRIBUTION:

A. Existing circuits will be reused to serve normal power, outlets, and lighting.

B. A new equipment panel, 400 amps will be provided to serve new HVAC equipment. The new panel will be rated for 400 amps at 208/120V 3-pole 4-wire at 22,000 AIC rating. The new panel will be served from the existing main distribution board.

2.3 EMERGENCY POWER SERVICE AND DISTRIBTION:

A. Existing circuits will be reused to serve elevator power, required outlets, and required lighting.

2.4 ELECTRICAL IDENTIFICATION:

A. Conduit system markers will be adhesive color-coded system marking materials.

B. Electrical utilization equipment will be provided with permanently attached engraved plastic laminate nameplates.

C. Identify all raceways provided or utilized as part of this project.

D. Cable and conductor identification will be per NFPA 70.

E. All junction box covers will include identification of circuit numbers.

F. Electrical panelboards will have typewritten directory and arc-flash labels.

2.5 CONDUIT:

A. All conduits will be concealed except in mechanical and electrical rooms. Galvanized rigid steel conduit will be used in concrete slabs and below grade. PVC Schedule 40 direct buried will be used for electrical and telecommunication main service conduits run underground. PVC Schedule 40 will be used for site lighting. The minimum size conduit will be 3/4-inch trade size for both power and telecommunication systems. Minimum 1 inch conduit for power systems used below slab or where concealed in concrete. EMT conduit will be used in lay-in ceilings and non-masonry walls.

B. Flexible steel conduit will be used to connect unit heaters, fan motors, lay-in light fixtures, and transformers. Liquid-tight flexible steel conduit will be used in damp and wet locations.

2.6 WIRES AND CABLES:

A. All conductors will be copper with THWN insulation for wet or underground and THHN for dry locations. Type XHHW will be used for sizes larger than #1/0. Conductor sizes to be No. 12 AWG minimum for power and No. 14 AWG for controls or signal.

B. Secondary, distribution, and branch circuit conductors will be copper with XHHW, THHN / THWN insulation. Solid for #8 AWG and smaller, stranded for #6 AWG and larger.

C. Color coding will comply with the National Electric Code. Neutrals will be white. Equipment grounding conductors will be green. Isolated grounding conductors will be green with yellow striping.

2.7 WIRING DEVICES:

A. Outlet Boxes: Outlet boxes will be one piece or projection welded, galvanized stamped steel for gang sizes required. Sectional boxes are not acceptable. Boxes will be 4" square and 1-1/2" deep generally. Larger boxes will be used as required by the code.

B. Receptacles: Receptacle associated with equipment will have a NEMA match the NEMA type of the plug of the served equipment. Receptacles in exterior and wet areas will be GFCI.

C. Disconnect switches will be heavy duty and shall use a quick-make, quick-break mechanism with an enclosure of a NEMA type conforming to the area in which it is installed. Disconnects for motors shall be horsepower rated.

2.8 DISTRIBUTION PANELBOARDS:

A. Main Distribution Panelboard will be full size, using bolt-on quick-make, quick-break circuit breakers of the adjustable electronic trip and adjustable thermal-magnetic type; ground-fault protection as required. Mains shall be copper, lugs only or main circuit breakers as required. Main circuit breakers shall be individually mounted, insulated case type. Panelboard shall be surface mounted within electrical room.

B. Panelboards will be full size, using bolt-on quick-make, quick-break circuit breakers of the thermal-magnetic type. Mains shall be copper, lugs only or main circuit breakers as required. Panel shall be surface mounted within electrical rooms.

2.9 SURGE PROTECTION DEVICES:

A. Type I for main service entrance switchboard; Type II for downstream panelboards - IEEE C62.41-compliant, integral to panelboard, solid-state, parallel connected, modular (with field-replaceable modules) type, with sine-wave tracking suppression and filtering modules, UL 1449 second edition, short-circuit rating matching or exceeding the switchboard short-circuit rating.

2.10 GROUNDING:

A. All feeders and branch circuits will have an equipment grounding conductor, sized per NEC. The main switchboard will have a neutral – ground bond with a connection to a ground electrode system, as defined by the NEC and as required by the local AHJ. A separate grounding system will be provided for the electrical system and telecommunications system, each consisting of a common grounding electrode conductor tied back to the main switchboard neutral busbar.

B. All raceways and cable trays will contain separate grounding conductors to insure an effective grounding system throughout the facility.

C. An insulated equipment grounding conductor will be required with all feeders and branch circuits, each end terminated on a suitable lug, bus or bushing; the equipment grounding conductors will be sized to comply with NEC, unless otherwise indicated, but not smaller than #12 AWG.

D. Distribution Panels and panelboards will have separate equipment ground bars.

2.11 TEST AND PERFORMANCE VERIFICATION:

A. A selective overcurrent protective device coordination study, including arc-flash analysis, shall be performed by the electrical gear manufacturer in coordination with the installation by the electrical contractor and submitted to the Architect / Engineer for review.

2.12 MECHANICAL MOTORS AND EQUIPMENT:

A. Mechanical equipment will be served by local distribution panels.

2.13 LIGHTING SYSTEMS:

System Description

1. Lighting will consist of energy-efficient LED sources in the renovated areas. Fixtures will use optical systems and sources that are in compliance with local lighting ordinances.
2. In general, indoor lighting controls will consist of a combination of low voltage, relay-based lighting control panels, local occupancy sensors and dimming switches.

Equipment and Materials

Lighting Fixtures – In general, indoor shall consist of:

Surfaced mounted LED elevator rated lights.

LEDs and Drivers

In general, all interior LED's will have a color temperature of 4,000 degrees Kelvin and a color rendering index (CRI) of 90 or greater.
dimming drivers will be 0-10 V, to 1% dimming.

Lighting Controls

a. All lighting will be automatically controlled to meet the requirements of 2021 IECC.
b. Lighting will be controlled via low voltage, lighting control panel manufactured by Blue Ridge.
c. Building lighting controls and lighting power densities will be in accordance with 2021 IECC requirements.
d. Occupancy sensors will be provided in all offices, break rooms, restrooms, and storage rooms. Occupancy sensors will be dual technology type. Manual override of occupancy sensors will be provided in workout rooms, private offices, kitchens, conference rooms, corridors and storage rooms.
e. Prepare 2021 IECC calculations and documents for compliance.

END OF DIVISION 26

Plumbing

DIVISION 22 – PLUMBING SYSTEM

PART 1 - DESIGN CRITERIA

1.1 CODES AND STANDARDS:

A. Systems are to be designed in accordance with the latest edition of the following codes and standards:

1. 2021 International Building Code
2. 2021 International Mechanical Code
3. 2021 International Plumbing Code
4. 2021 International Fire Code
5. 2021 International Fuel Gas Code

6. 2021 International Energy Conservation Code
7. 2020 National Electrical Code (with local amendments)

PART 2 – PLUMBING SYSTEMS

2.1 DOMESTIC WATER SYSTEMS

A. Existing domestic water piping interfering with new locations of elevator equipment rooms or within existing elevator equipment rooms will be relocated outside the foot print of the room.

B. The new interior domestic hot and cold-water lines will be cooper piping.

C. All the domestic hot and cold-water lines will be insulated with a 1" think fiberglass with vapor barrier wrap.

2.2 SANITARY WASTE AND VENT SYSTEMS

A. The Existing sanitary piping interfering with new locations of elevator equipment rooms or within existing elevator equipment rooms will be relocated outside the footprint of the room. Where sanitary lines are not able to be relocated, a drain pan will be installed below the piping for protection of the equipment in the room.

B. Sanitary sewer piping will be extended to existing sanitary mains under each floor as required.

C. Sanitary waste and vent piping located below the floor slab will be schedule 80 DWV PVC with schedule 80 DWV fittings.

D. Sanitary waste and vent piping located above the ceiling will be CISPI 301-85, ASTM A888 no-hub cast iron piping using 4-bolt couplings for joints.

END OF DIVISION 22

Fire Protection & Alarm

DIVISION 21 – FIRE PROTECTION

PART 1 - DESIGN CRITERIA

1.1 CODES AND STANDARDS:

<u>Systems will be designed in accordance with the following codes:</u>

1. 2021 International Building Code
2. 2021 International Fire Code
3. 2020 National Electrical Code (with local amendments)
4. NFPA 13 (2019) Standard for the Installation of Sprinkler Systems
5. UL Underwriters' Laboratories, Inc. (Applicable Standards)

PART 2 – FIRE PROTECTION SYSTEMS

2.1 EXISTING FIRE PROTECTION SERVICE

The existing fire protection service will remain in place. Existing occupancy classifications will remain, except that the occupancy classification in the new ICU-2 Elevator Machine Room will be changed to Ordinary Group 1. Fire protection retrofit for adjusted spaces will be delegated design.

2.2 DISTRIBUTION

A. Piping is routed within enclosed spaces and above ceilings. All protected areas and where piping will be routed must be heated.

B. Fire sprinkler design criteria will comply with NFPA 13 according to the occupancy classification and nature of the hazard in each area.

C. Pipe materials and pipe joining methods shall be in accordance with NFPA 13.

D. Fire sprinkler piping will be schedule 40 and schedule 10 steel pipe.

E. New and relocated heads will be ceiling mounted semi recessed heads or upright heads in areas with exposed structure. Electrical rooms, fire riser room, and occupied rooms with exposed structure will have head guards on the heads.

F. Required submittals will include calculations, product data, shop drawings, and approval from the local Authority Having Jurisdiction (AHJ).

END OF DIVISION 21

Information Technology

DIVISION 27 – INFORMATION TECHNOLOGY

The scope of work for this project includes providing new communications cabling infrastructure and pathway support from the elevator controllers to the nearest existing communications room for monitoring and control via the facility BMS. The project shall utilize Category 6A unshielded twisted pair (UTP) cabling for data communications.