

## **DIVISION 23 MECHANICAL**

### **1. GENERAL**

- A. The following design development narrative describes the mechanical system requirements for the EHRM Infrastructure Upgrades project at Cincinnati and Ft. Thomas VA campuses based on our understanding of the project scope and applicable codes, criteria, and regulatory standards.

### **2. DESIGN CONDITIONS AND APPLICABLE CODES**

- A. VA OIT - Infrastructure Standard for Telecommunications Spaces, Version 3.1
- B. VA HVAC Design Manual
- C. ASHRAE 62.1, 2016
- D. ASHRAE 90.1, 2013
- E. Outdoor Design Conditions:
  - 1. Summer: 90.3°F db / 74.2°F wb
  - 2. Winter: 2.9°F
- F. Indoor Design Conditions for non-Data Center Rooms: 72°F (41°F to 95°F). 8% RH to 80% RH
- G. Data Center Design Conditions: Average rack-face inlet temperature range needs to maintain 72°F to 80.6°F.
  - 1. The average rack-face inlet temperature will be determined as the average of a standard three-sensor temperature measurement at the bottom, mid and top height levels as measured 2 inches from the IT equipment inlets.
  - 2. 8% to 60% RH

### **3. DEMOLITION SCOPE**

- A. All existing ductwork, diffusers, grilles, piping, and controls currently serving the space that will become a new Telecommunications Room shall be demolished as shown on drawings.
- B. All existing ductwork and piping that is just passing above the new TR space is to remain and will not be re-routed.
- C. Room A035:
  - 1. Demolish existing Carrier Air Handling Units and associated ductwork in the space. Also, demolish associated condensing units on the roof.

### **4. NEW SCOPE**

- A. Install new split-system(s) for each new TR room. Locate condensing units on the roof of the building, unless noted otherwise on the drawings.
  - 1. Each split-system to be sized at 5kW (17,000 btu/hr) per IT rack in each TR room.

- B. Route refrigerant piping as shown on drawings. Install piping per specification 232300 and manufacturer's recommendations.
- C. Route condensate piping as shown on drawings to nearest existing TR condensate drain piping or nearby janitor's sink.
- D. All existing to remain piping shall have a catch pan below it to prevent water from dripping on the TR equipment. The catch pan shall have a drain connection that ties into the condensate drain. A water detector shall also be installed for each catch pan and tie into the BMS to notify the owner if a leak should occur.
- E. Split-system indoor unit to be provided with temperature and humidity control modules. Wall mounted thermostat shall be provided with adjustable temperature set point and a start-stop switch.
- F. Room A035:
  - 1. Install (2) new, larger air conditioning units in the space, similar to the existing units. This room's classification, per the OIT V3.1, requires that the HVAC systems have N+1 redundancy. Therefore, only one air conditioning unit shall be in operation at a time. The BAS shall alternate primary and redundant units monthly. (2) new condensing units will also be installed on the roof in the same location as the existing units.
- G. Cincinnati VA Hospital is switching to a new building controls manufacturer, Tridium. Utilized an updated controls specification provided via email from the VA representative.
- H. A437C Data Center room on the fourth floor is to be re-worked to be a hot aisle / cold aisle arrangement. (3) Existing 42kW downflow CRAC units are to remain - (1) of the existing CRAC units to be shifted to a new location. An additional 42kW downflow CRAC unit is to be installed in the space. (3) CRAC units will be in operation at all times with one on standby to meet the N+1 requirement of the OIT Standard.