

## **SECTION 23 82 10 – TERMINAL HEATING UNITS**

### **PART 1 - GENERAL**

#### **1.1 WORK INCLUDED**

- A. The Work of this Section shall consist of the labor, materials and equipment required for installation of terminal heating units.

#### **1.2 SUBMITTALS**

- A. Submit for approval in accordance with specified submittal procedures:
  - 1. Duct Coils
  - 2. Horizontal Unit Heaters

### **PART 2 - PRODUCTS**

#### **2.1 DUCT COIL, ELECTRIC**

- A. Acceptable Manufacturer: Brasch Manufacturing Company Inc., or Indeeco, Redd-I Inc.
- B. Heating Elements
  - 1. Material: 80 percent nickel, 20 percent chromium resistance coils.
  - 2. Terminals: Stainless steel, insulated by ceramic bushings.
  - 3. Miscellaneous: Step control to be arranged to prevent stratification when operating at partial capacity.
  - 4. Frame: Slip in construction of heavy gage galvanized or aluminized steel having vertical steel supports with stiffening ribs and gussets spaced no more than 4 inches apart, spot welded to frame.
  - 5. Terminal Box: Recessed, to assure elements and safety controls are in airstream. Solid box cover, to minimize dust infiltration. Insulated, to minimize condensation.
  - 6. Element Safety Devices: Primary over temperature protection shall be disc type automatic reset thermal cutout. Secondary protection shall incorporate a sufficient number of heat limiters in the power lines to deenergize elements if primary cutout fails. Built-in pressure type air flow switch to interlock fan and heating element.
- C. Remote Control Panel
  - 1. Regulations: UL listed, shall meet NEMA 1 and applicable NEC requirements.
  - 2. Ventilation: Panel to be provided with convection cooling without allowing molten material to escape in case of fault.
  - 3. Controls, factory wired complete with:
    - a. Main interlocking disconnect switch.
    - b. Transformer with secondary fuses per NEC.
    - c. SCR with operating contactors and branch circuit fuses for each step.
    - d. Safety contactors.

- D. Miscellaneous: Submit detailed wiring diagrams showing internal connections of panel and heater, power supply connections and connections between panel and heater. Typical printed product data wiring diagrams will not be an acceptable submittal.
- E. Controls: Refer to Section 23 09 10 - Building Automation System.

## 2.2 HORIZONTAL UNIT HEATER, ELECTRIC

- A. Acceptable Manufacturer: Trane, or QMark, Berko.
- B. Casing: Heavy gage steel with baked enamel finish. Top plate shall be provided with threaded or drilled hanger connections.
- C. Heating Element: Individually replaceable steel sheathed type with built-in automatic reset high limit switch.
- D. Motors: Continuous duty, direct connected to fan. Provide built in automatic reset thermal overload protection.
- E. Fan: Aluminum or steel blades, statically and dynamically balanced.
- F. Outlet: Adjustable discharge louvrr.
- G. Controls: Low voltage thermostat with heat-off fan settings. Thermostat shall cycle fan. Thermostat shall be remote mounted. Integral safety disconnect switch.
- H. Fan Guard: Removable heavy duty wire cage.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install terminal heating units in accordance with unit manufacturer's recommendations. Submit manufacturer's printed installation instructions with operating and maintenance data at completion of Work.
- B. Filters installed in cabinet unit heaters during the construction period will be considered temporary. Provide new throwaway type unit filters at time of Owner acceptance of Work.

END OF SECTION