SECTION 238323 - RADIANT-HEATING ELECTRIC PANELS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes prefabricated radiant-heating electric panels.

B. Related Requirements:

1. Section 238213 "Valance Heating and Cooling Units" for factory-fabricated electric heating panels for ceiling and wall applications.
2. Section 238313 "Radiant-Heating Electric Cables."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, and furnished specialties and accessories.

B. Shop Drawings: For electric heating panels.

1. Include plans, sections, details, and attachments to other work.
2. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension assembly members.
2. Method of attaching hangers to building structure.
3. Structural members to which heating panels and suspension systems will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Items installed in finished ceiling, including the following:
    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Access panels.
    f. Perimeter moldings.

B. Field quality-control reports.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For electric heating panels to include in operation and maintenance manuals.

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS FOR RADIANT-HEATING ELECTRIC PANELS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 PREFABRICATED RADIANT-HEATING ELECTRIC PANELS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Detroit Radiant
2. Airtherm; a Mestek Company.
3. Engineered Air Ltd.
4. McQuay International.
5. Rosemex Products.
6. Ruffneck Heaters; a division of Lexa Corporation.
7. Trane.

B. Description: Sheet-metal-enclosed panel with heating element suitable for **surface mounting**. Comply with UL 2021.

1. Panel: Minimum 0.0276-inch- thick, galvanized sheet steel back panel riveted to minimum 0.0396-inch- thick, galvanized sheet steel front panel with fused-on crystalline surface.
2. Heating Element: Powdered graphite sandwiched between sheets of electric insulation.
3. Heating Element: Insulated resistive wires.
4. Electrical Connections: Nonheating, high-temperature, insulated-copper leads, factory connected to heating element.
5. Exposed-Side Panel Finish: Apply silk-screened finish to match appearance of Architect-selected acoustical ceiling tiles.
6. Exposed-Side Panel Finish: Factory prime coated, ready for field painting.
7. Exposed-Side Panel Finish: Baked-enamel finish in manufacturer's [**standard**] [**custom**] paint color as selected by Architect.
8. Surface-Mounted Trim: Sheet metal with baked-enamel finish in manufacturer's [**standard**] [**custom**] paint color as selected by Architect.

C. Wall Thermostat: Bimetal, sensing elements calibrated from 55 to 90 deg F; with contacts suitable for [**low**] [**line**]-voltage circuit, and manually operated on-off switch with contactors, relays, and control transformers.

D. Capacities and Characteristics:

1. Nominal Panel Size: 62”X18”
2. Heating Capacity: 3200 W.
3. Electrical Characteristics for Single-Point Connection:
   a. Volts: 480
   b. Phase: 3
   c. Minimum Circuit Ampacity: 25
   d. Maximum Overcurrent Protection: 30

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine surfaces and substrates to receive electric heating panels for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Ensure surfaces in contact with electric heating panels are free of burrs and sharp protrusions.
2. Ensure surfaces and substrates are level and plumb.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install radiant-heating panels level and plumb.

B. Support for Radiant-Heating Panels in or on Grid-Type Suspended Ceilings: Use grid as a support element.

1. Install a minimum of four ceiling-support-system rods or wires for each panel. Locate not more than 6 inches from panel corners.
2. Support Clips: Fasten to panel and to ceiling grid members at or near each panel corner with clips designed for the application.
3. Panels of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support panels independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
4. Install at least one independent support rod or wire from structure to a tab on panel. Wire or rod shall have breaking strength of the weight of the panel at a safety factor of 3.

C. Verify locations of timers with DFW. Install devices 48 inches above finished floor.

3.3 CONNECTIONS

A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections[with the assistance of a factory-authorized service representative]:

1. Operate electric-heating elements through each stage to verify proper operation and electrical connections.
2. Test and adjust controls and safeties.

D. Radiant-heating electric panels will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 PROTECTION

A. Protect installed radiant-heating electric panels from damage during construction.

B. Remove and replace damaged radiant-heating electric panels.

END OF SECTION