

SECTION 238323

RADIANT-HEATING ELECTRIC PANELS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each type of product indicated.
- B. Shop Drawings: For electric heating panels. Include plans, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and maintenance data.
- E. Warranty: Special warranty specified in this Section.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 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:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- C. Basis-of-Design Product: Subject to compliance with requirements, provide Berko model CP series or a comparable product by one of the following:
1. Markel Products; a division of TPI Corporation.
 2. QMark Electric Heating; a division of Marley Engineered Products.
 3. SSHC, Inc.; Solid State Heating Division.
- D. Description: Sheet-metal-enclosed panel with heating element suitable for lay-in installation flush with T-bar ceiling grid. Comply with UL 2021.
1. Panel: Minimum 0.0276-inch thick, galvanized-steel sheet back panel riveted to minimum 0.0396-inch thick, galvanized-steel sheet 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 custom paint color as selected by Architect.
 8. Surface-Mounting Trim: Sheet metal with baked-enamel finish in manufacturer's custom paint color as selected by Architect.
- E. Wall Thermostat: Bimetal, sensing elements calibrated from 55 to 90 deg F; with contacts suitable for low-voltage circuit, and manually operated on-off switch with contactors, relays, and control transformers.
- F. Capacities and Characteristics:
1. Nominal Panel Size: 24 by 24 inches.
 2. Heating Capacity: 375 Watts.
 3. Electrical Characteristics for Single-Point Connection:
 - a. Volts: 120
 - b. Phase: 1
 - c. Hertz: 60
 - d. Full-Load Amperes: 6.25
 - e. Maximum Overcurrent Protection: 20 Amp

PART 3 - EXECUTION

3.1 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 panel at a safety factor of 3.
- C. Verify locations of thermostats with Drawings and room details before installation. Install devices 48 inches above finished floor.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

- A. Testing: Perform the following field tests and inspections and prepare test reports:
1. Operate electric heating elements through each stage to verify proper operation and electrical connections.
 2. Test and adjust controls and safeties.
- B. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION