

SECTION 23 83 23
RADIANT-HEATING ELECTRIC PANELS

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between // // if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
3. The spec writer shall review the Physical Security Design Manual for VA Facilities to determine and include any Life Safety requirements called out.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies prefabricated radiant-heating electric panels.
- B. A complete listing of common acronyms and abbreviations are included in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

1.2 RELATED WORK

SPEC WRITER NOTE: Retain one of two paragraphs below.

- A. //Section 01 00 01, GENERAL REQUIREMENTS (Major NCA Projects).//
- B. //Section 01 00 02, GENERAL REQUIREMENTS (Minor NCA Projects).//
- C. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- D. Section 01 42 19, REFERENCE STANDARDS.
- E. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS.
- F. //Section 01 91 00, GENERAL COMMISSIONING REQUIREMENTS.//

SPEC WRITER NOTE: If Section 13 05 41 is included in this project the section shall be obtained from VA Masters.

- G. //Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.//
- H. Section 23 05 11, COMMON WORK RESULTS FOR HVAC: General mechanical requirements and items which are common to more than one section of Division 23.
- I. //Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//
- J. Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW).
- K. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

1.3 APPLICABLE PUBLICATIONS

SPEC WRITER NOTE: Make material requirements agree with requirements specified in the referenced Applicable Publications. Verify and update the publication list to that which applies to the project, unless the reference applies to all mechanical systems. Publications that apply to all mechanical systems may not be specifically referenced in the body of the specification, but, shall form a part of this specification.

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. National Fire Protection Association (NFPA):
70-2014.....National Electrical Code (NEC)
- C. Underwriters Laboratories (UL):
2021-2015.....Standard for Fixed and Location-Dedicated
Electric Room Heaters

1.4 SUBMITTALS

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 23 83 23, RADIANT-HEATING ELECTRIC PANELS", with applicable paragraph identification.
- C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
- D. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each type of product indicated.
- E. Shop Drawings: For electric heating panels. Include plans, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- F. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on 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.
- G. Items installed in finished ceiling, including the following:
1. Lighting fixtures.
 2. Air outlets and inlets.
 3. Speakers.
 4. Sprinklers.
 5. Access panels.
- H. Samples for Initial Selection: For units with factory-applied color finishes.
- I. Complete operating and maintenance manuals including wiring diagrams, technical data sheets, information for ordering replacement parts, and troubleshooting guide:
1. Include complete list indicating all components of the systems.
 2. Include complete diagrams of the internal wiring for each item of equipment.
 3. Diagrams shall have their terminals identified to facilitate installation, operation and maintenance.
- J. //Completed System Readiness Checklist provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//
- K. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

1.5 QUALITY ASSURANCE

- A. Refer to paragraph QUALITY ASSURANCE, in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

1.6 AS-BUILT DOCUMENTATION

SPEC WRITER NOTE: Coordinate O&M Manual requirements with Section 01 00 01, GENERAL REQUIREMENTS (Major NCA Projects) or Section 01 00 02, GENERAL REQUIREMENTS (Minor NCA Projects). O&M manuals shall be submitted for content review as part of the close-out documents.

- A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.

- B. Submit operation and maintenance data updated to include submittal review comments, substitutions and construction revisions shall be //in electronic version on CD or DVD// inserted into a three ring binder. All aspects of system operation and maintenance procedures, including applicable piping isometrics, wiring diagrams of all circuits, a written description of system design, control logic, and sequence of operation shall be included in the operation and maintenance manual. The operations and maintenance manual shall include troubleshooting techniques and procedures for emergency situations. Notes on all special systems or devices shall be included. A List of recommended spare parts (manufacturer, model number, and quantity) shall be furnished. Information explaining any special knowledge or tools the owner will be required to employ shall be inserted into the As-Built documentation.
- C. The installing contractor shall maintain as-built drawings of each completed phase for verification; and, shall provide the complete set at the time of final systems certification testing. As-built drawings are to be provided, and a copy of them in Auto-CAD version //____// provided on CD or DVD. Should the installing contractor engage the testing company to provide as-built or any portion thereof, it shall not be deemed a conflict of interest or breach of the 'third party testing company' requirement.
- D. Certification documentation shall be provided to COR 10 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and certification that all results of tests were within limits specified.

PART 2 - PRODUCTS

2.1 PREFABRICATED RADIANT-HEATING ELECTRIC PANELS

- A. Description: Sheet metal enclosed panel with heating element suitable for //lay-in installation flush with T-bar ceiling grid// //surface mounting// //recessed mounting//. Comply with UL 2021.
1. Panel: Minimum 0.7 mm (0.027 inch) thick, galvanized steel sheet back panel riveted to minimum 1.0 mm (0.040 inch) thick, galvanized steel sheet front panel with fused-on crystalline surface.
 2. Heating Element: //Powdered graphite sandwiched between sheets of electric insulation.// //Insulated resistive wires.//

3. Electrical Connections: Nonheating, high-temperature, insulated-copper leads, factory connected to heating element.

SPEC WRITER NOTE: If more than one type of finish is required, indicate each type in schedule on drawings.

4. Exposed-Side Panel Finish: //Apply silk-screened finish to match appearance of Architect selected acoustical ceiling tiles.//
//Factory prime coated, ready for field painting.// //Baked-enamel finish in color as selected by Architect.//

5. //Surface-Mounting Trim: Sheet metal with baked-enamel finish in color as selected by Architect.//

- B. Wall Thermostat: Bimetal, sensing elements; with contacts suitable for //low// //line//-voltage circuit, and manually operated on-off switch with contactors, relays, and control transformers.

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

3.2 INSTALLATION

- A. If an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no additional cost or time to the Government.
- B. Install radiant-heating panels level and plumb.
- C. Support for Radiant-Heating Panels in or on Grid-Type Suspended:
1. Ceilings: Use grid as a support element.
 2. Install a minimum of four ceiling support system rods or wires for each panel. Locate not more than 150 mm (6 inches) from panel corners.
 3. Support Clips: Fasten to panel and to ceiling grid members at or near each panel corner with clips designed for the application.
 4. 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 20 mm (3/4 inch) metal channels spanning and secured to ceiling tees.
5. 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.
- D. Verify locations of thermostats with Drawings and room details before installation.

3.3 CONNECTIONS

- A. Ground electric convection heating units according to Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
- B. Connect wiring according to Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW).

3.4 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.

3.5 //SEISMIC BRACING

- A. Where applicable provide Seismic bracing as required under specification Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.//

3.6 STARTUP AND TESTING

- A. Make tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.
- B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.
- C. //The Commissioning Agent will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR and Commissioning Agent. Provide a minimum notice of 10 working days prior to startup and testing.//

3.7 //COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.

- B. Components provided under this section of the specification will be tested as part of a larger system.//

3.8 DEMONSTRATION AND TRAINING

- A. Provide services of manufacturer's technical representative for //four// // // hour//s// to instruct each VA personnel responsible in the operation and maintenance of units.
- B. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

- - - END - - -