

University of Houston Master Specification

<Insert Project Name>

<Insert U of H Proj #>

<Insert Issue Name>

<Insert Issue Date>

SECTION 23 8233 - ELECTRIC HEATING COILS

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

Edit and finalize this Section, where prompted by Editor's notes, to suit Project specific requirements. Make selections for the Project at text identified in bold.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

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.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
 - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

1.2 DESCRIPTION OF WORK:

- A. Work Included: Provide duct-mounted electric heating coils as scheduled, specified, and required for the project.

1.3 QUALITY ASSURANCE:

- A. Manufacturers: Provide products complying with these specifications and produced by one of the following:
 - 1. Brausch.
 - 2. Indeeco.
 - 3. Magna-Flow.
 - 4. Redd-i-Heat.
 - 5. Warren.
- B. UL Listing: Coils shall be UL-listed and labeled for zero clearance installation and shall meet all applicable NEC requirements.
- C. SMACNA Compliance: Comply with Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) standards.
- D. Industry Standards: Comply with American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommendations pertaining to HVAC coils, except as otherwise indicated.

1.4 SUBMITTALS:

<Insert A/E Name>

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- A. Submittals: Shop drawing submittals shall include, but not be limited to, the following:
1. Cut sheets on electric heating coils, clearly marked to show coil sizes, construction, features, and other pertinent information.
 2. Coil selections clearly indicating coil sizes, capacities, ratings and pressure drops.
 3. Manufacturer's recommended installation instructions.
 4. Additional information as required in Section 23 0100 "Mechanical General Provisions."

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver duct heaters in factory-fabricated water-resistant wrapping.
- B. Handle duct heaters carefully to avoid damage to tubes, fins, and casing.
- C. Store duct heaters in a clean, dry space, and protect from weather.

PART 2 - PRODUCTS

2.1 ELECTRIC DUCT HEATERS:

- A. General: Provide electric duct heaters with air flow, heating capacities and electrical characteristics as scheduled or shown on the drawings. Heater shall be of a slip-in design and shall be suitable for side or bottom installation in externally insulated or sheet metal ductwork. The element frame and control panel shall be fabricated of galvanized or aluminized steel.
- B. Heating Elements: Shall be high grade 80/20 nickel chromium with ceramic insulators. Element wires shall not glow when operating at rated capacity. Heaters over 47 inches in any dimension shall have protective screens on the inlet side. Multi-stage heaters shall have their elements split by rows.
- C. Thermal Protection: Heater shall have disc type automatic reset thermal cutouts for primary protection and fusible links for secondary protection.
- D. Control Panel: All unit control and electrical connections shall be installed in an internally insulated factory wired control panel with a hinged and gasketed cover. Control shall include, but not be limited to, fusing for all stages, magnetic contactors, primary and secondary fused control panel transformer, **[PE switches,]** time delay between steps and differential air pressure switch. All components shall be factory wired and only field connections for electric power and **[pneumatic]** controls will be required. **[Settings for PE switches shall be coordinated with the Temperature Controls Subcontractor.]** Control panels for use with lined duct shall be recessed so that the entire surface of the heating elements is in the air stream. An accurate wiring diagram shall be permanently attached to the inside of the control panel door.
- E. Disconnect Switches: Shall be furnished and installed under Division 26.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. General: Install electric duct heaters in accordance with the manufacturer's written instructions, the applicable portions of SMACNA and recognized industry practices, to ensure that products serve the intended functions.
- B. Duct Installation: Where heaters are installed in ductwork, a sheet metal channel shall be inserted in the duct on all three sides of the heater to support the heater. Where the heater cross-sectional area

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is less than the duct cross-sectional area an equalizing grid shall be installed on three sides of the heater per SMACNA guidelines. Transitions shall not be used. The grid shall be either galvanized wire mesh or a perforated galvanized sheet metal plate and shall have approximately the same pressure drop as the heater. The grid shall be securely fastened to the duct and heater frame. Where heater cross-sectional is larger than the duct cross-sectional area, the duct shall be transitional to the larger size and then transitioned back, in accordance with SMACNA guidelines.

C. Cleaning: Clean dust and debris from each coil as it is installed to ensure its cleanliness.

3.2 FIELD QUALITY CONTROL:

A. Repair: Repair or replace damaged coils as required.

3.3 INSULATION:

A. General: Non-factory insulated casing shall be insulated as specified in Section 23 07 00.

3.4 IDENTIFICATION:

A. Refer to Division 23 Section 23 0300 "Basic Materials and Methods" for applicable painting, nameplates, and labeling requirements.

END OF SECTION 23 8233

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