

SECTION 23 82 60 – ELECTRIC HEATERS

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 various types of electric heaters. Refer to the contract drawings for required accessories and other components.

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each product indicated.
- B. Source Limitations: Obtain all electric heating units through one source from a single manufacturer, regularly engaged in production of the components and who issues complete catalog data on the product offering.
- C. Shop Drawings: Detail equipment assemblies and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection. Include the following:
 - 1. Plans, elevations, sections, and details.
 - 2. Location and size of each field connection.
 - 3. Equipment schedules to include rated capacities, operating characteristics, furnished specialties, and accessories.
 - 4. Location and arrangement of integral controls.
 - 5. Wiring Diagrams: Power, signal, and control wiring.

1.4 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.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

PART 2 - PRODUCTS

2.1 WALL HEATERS (2 kw and less)

- A. Manufacturers: Subject to compliance with requirements, provide products manufactured by Q-Mark. Heaters manufactured by others may be considered if equal as judged by the Engineer.
- B. Heaters to be UL listed.
- C. Refer to the drawings for unit voltage and heating capacity.
- D. The heater shall be designed for surface or recessed mounting in walls.
- E. Back-box: Provide back-box designed as a recessed rough-in box in either masonry or frame installations and is also used with the surface mounting frame in surface mounted installations. The back-box shall be 20-gauge galvanized steel and shall contain knockouts through which power leads are installed.
- F. Inner Frame Assembly: Provide an inner frame assembly consisting of a 20-gauge steel chassis to mount the heating element, fan motor and blade, fan control and thermal cutout. The inner frame assembly shall be completely pre-wired.
- G. Heating Element: The heating element shall be of the non-glowing design consisting of an 80/20 nickel-chromium resistance wire enclosed in a steel sheath to which plate fins are copper brazed. The element shall cover the entire air discharge area to ensure uniform heating of all discharge air.
- H. Power Switch: Provide a double-pole single throw on/off switch shall be mounted on the back box for positive disconnect of power supply. The switch will be completely concealed behind the front cover.
- I. Motor and Controls: The fan motor shall be impedance protected, permanently lubricated and with totally enclosed rotor. Fan control shall be of the bi-metallic, snap-action type and shall activate fan after heating element reaches operating temperature, and continue to operate the fan after the thermostat is satisfied and until all heated air has been discharged. The thermostat shall be single pole type on all models. Manual-reset thermal cutout shall be bi-metallic, snap-action type designed to shut off heat in the event of overheating. The fan shall be four-bladed aluminum
- J. Disconnect Switch: Provide a factory installed double pole single throw disconnect switch shall be provided for positive disconnect of power supply. The disconnect switch will be completely concealed behind the front cover.
- K. Surface Mounting Frame: Provide surface mounting frame fabricated from heavy gauge steel designed to mount around the back box for a finished surface installation. Slot knock outs shall be provided for power supply conduit.
- L. Front Cover: The louvered front cover shall be of heavy gauge steel with a polyester powder coat finish. A plug button will be provided to replace the thermostat knob and render the unit tamper-resistant.
- M. All sheet metal parts, except the front cover and galvanized back box shall be phosphatized, then completely painted by a baked enamel painting process.
- N. Where indicated provide wall mounted thermostat with back box and all required control wiring.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance. Examine roughing-in for electrical connections to verify actual locations before unit heater installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Provide units with integral thermostats and/or wall mounted thermostats as indicated on the drawings. Provide all required wiring.
- B. Install units complete with built in mounting features and controls, and provide branch circuits and controls. Install all heaters per the manufacture's installation instructions.
- C. Where required install wall boxes in finished wall assembly; seal and weatherproof.
- D. Install propeller unit heaters level and plumb.

3.3 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
- B. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Operate electric heating elements through each stage to verify proper operation and electrical connections. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

END OF SECTION 23 82 60