

SECTION 235523

GAS-FIRED RADIANT HEATERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes gas-fired, tubular infrared radiant heaters.

1.2 SUBMITTALS

- A. Product Data: For each type of gas-fired radiant heater indicated. Include rated capacities, operating characteristics, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

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.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gas-fired radiant heater that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TUBULAR INFRARED HEATERS

- 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 the product indicated on Drawings or a comparable product by one of the following, but not limited to:
 - 1. Calcana Industries Ltd.
 - 2. Combustion Research Corporation.
 - 3. Gas-Fired Products Inc.; Space-Ray Div.
 - 4. Reznor/Thomas & Betts Corporation.
 - 5. Roberts-Gordon, Inc.
 - 6. Schwank Inc.
 - 7. Solaronics, Inc.
 - 8. Sterling HVAC Products; Div. of Mestek Technology Inc.
- D. Description: Factory assembled, piped, and wired, and complying with ANSI Z83.20/CSA 2.34.
- E. Fuel Type: Design burner for natural gas having characteristics same as those of gas available at Project site.
- F. Combustion Tubing: 4-inch-diameter steel with high-emissivity, high-temperature, corrosion-resistant external finish.
- G. Tubing Connections: Stainless-steel couplings or flared joints with stainless-steel draw bolts.
- H. Reflector: Polished aluminum, 97 percent minimum reflectivity, with end caps. Shape to control radiation from tubing for uniform intensity at floor level with 100 percent cutoff above centerline of tubing. Provide for rotating reflector or heater around a horizontal axis for minimum 30-degree tilt from vertical.
 - 1. Reflector Extension Shields: Same material as reflectors, arranged for fixed connection to lower reflector lip and rigid support to provide 100 percent cutoff of direct radiation from tubing at angles greater than 30 degrees from vertical.
 - 2. Include hanger kit.
- I. Burner Safety Controls:

1. Gas Control Valve: Single-stage, regulated redundant 24-V ac gas valve containing pilot solenoid valve, electric gas valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.
2. Blocked Vent Safety: Differential pressure switch in burner safety circuit to stop burner operation with high discharge or suction pressure.
3. Control Panel Interlock: Stops burner if panel is open.
4. Indicator Lights: Burner-on indicator light.

J. Burner and Emitter Type: Gravity-vented power burner, with the following features:

1. Emitter Tube: 4-inch-diameter, aluminized or hot-rolled-steel tubing with sight glass for burner and pilot flame observation.
2. Venting: Concentric vent for combustion air and flue gas with rain cap for both.
 - a. Vent Terminal: Vertical.
3. Burner/Ignition: Power gas burner with electronic spark and electronic flame safety.
4. Burner/Ignition: Stainless-steel burner cup and head with balanced-rotor draft fan and spark ignition with electronic flame supervision.
5. Combustion-Air Connection: Duct connection for combustion air to be drawn directly from outdoors by burner fan.

K. Capacities and Characteristics:

1. Gas Input: 125,000 Btu/h.
2. Gas Output: 100,000 Btu/h.
3. Electrical Connection:
 - a. Volts: 120 V.
 - b. Phase: Single.
 - c. Hertz: 60.

2.2 CONTROLS

- A. Thermostat: Devices and wiring recommended by manufacturer.
- B. Thermostat: Single-stage, wall-mounting type with 50 to 90 deg F operating range and fan on switch.
- C. Thermostat: 2-stage, wall-mounting type with 50 to 90 deg F operating range and fan on switch.
 1. Control Transformer: Integrally mounted.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install and connect gas-fired radiant heaters and associated fuel and vent features and systems according to NFPA 54, applicable local codes and regulations, and manufacturer's written installation instructions.
- B. Suspended Units: Suspend from substrate using chain hanger kits and building attachments.
- C. Maintain manufacturers' recommended clearances to combustibles.
- D. Install piping adjacent to gas-fired radiant heaters to allow service and maintenance.
- E. Gas Piping: Comply with Division 22 Section "Natural Gas Piping." Connect gas piping to gas train inlet; provide union with enough clearance for burner removal and service.
- F. Vent Connections: Comply with Division 23 Section "Breechings, Chimneys, and Stacks."
- G. Electrical Connections: Comply with applicable requirements in Division 26 Sections.
 - 1. Install electrical devices furnished with heaters but not specified to be factory mounted.
- H. Adjust initial temperature set points.
- I. Adjust burner and other unit components for optimum heating performance and efficiency.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections: Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

END OF SECTION 235523