

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Institute of Boiler and Radiator Manufacturers (IBR)
- .2 US Department of Commerce
 - .1 CS 140-47, Commercial Standard.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for finned tube radiation heaters and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Manitoba, Canada.
 - .2 Indicate on drawings:
 - .1 Equipment, capacity, piping, and connections.
 - .2 Dimensions, internal and external construction details, recommended method of installation with proposed structural steel support, sizes and location of mounting bolt holes.
 - .3 Special enclosures.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00- Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for finned tube radiation heaters for incorporation into manual.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions 01 61 00- Common Product Requirements .
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, in dry location, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect finned tube radiation heaters from nicks, scratches, and blemishes.

- .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 DAMPERS

- .1 Factory built, internal damper, at enclosure air outlet grille for each convection type heating unit not thermostatically controlled. Refer to schedules on drawings.

2.2 CAPACITY

- .1 As indicated, based on 52 degrees C average water temperature, 11 degrees C temperature drop.

2.3 BASEBOARD RADIATION

- .1 Heating elements: NPS copper tubing sized as specified, mechanically expanded into flanged collars of evenly spaced aluminum fins, one tube end belled.
- .2 Enclosure: minimum 1.0 mm thick steel surface mounted prefinished with 1.0 mm thick back and top of one piece construction. Front panel removable. Run wall to wall unless otherwise indicated. Provide panel corners joiner pieces end caps as required. Assemble with stainless steel oval head sheet metal screws. Finish factory applied baked on enamel.
- .3 Element brackets: 1.2 mm thick galvanized steel to support front panel and element cradle. Space brackets 900 mm centres maximum.
- .4 Provide for noiseless expansion of components.
- .5 Acceptable Manufacturers are: Sigma, Vulcan, Rittling, Engineered Air, Slant Fin

2.4 FINNED TUBE RADIATION

- .1 Heating elements: NPS seamless copper tubing sized as specified, mechanically expanded into flanged collars of evenly spaced aluminum fins
- .2 Element hangers: cradle type providing unrestricted longitudinal movement on enclosure brackets. Space brackets 900 mm centres maximum.
- .3 Standard enclosures: 1.2 mm thick steel complete with components for wall-to-wall or complete with die formed end caps having no knock-outs, with inside corners, outside corners, as indicated. Provide full length channel and sealer strip at top of wall edge. Height as indicated. Joints and filler pieces flush with cabinet. Support rigidly top and bottom, on wall mounted brackets. Joints and filler pieces clear of grilles located to provide easy access to valves and vents. Provide access doors for valves, traps, and vents. Finish cabinet with factory applied baked primer coat.
- .4 Special enclosures: as indicated.
- .5 Dimensions for enclosures: measure site conditions. Do not scale from drawing.
- .6 Provide for noiseless expansion of components.
- .7 Acceptable Manufacturers are: Sigma, Vulcan, Rittling, Engineered Air, Slant Fin

2.5 CABINET CONVECTORS

- .1 Heating element: seamless copper tubing mechanically expanded into flanged collars of evenly spaced aluminum fins and cast iron headers, steel side plates and supports.
- .2 Cabinet: type as indicated, 1.6 mm thick steel back and ends, exposed corners rounded, secured removable front panel, braced and reinforced for stiffness. Provide access doors for traps, vents and valves.
- .3 Acceptable Manufacturers are: Daikin, Sigma, Trane, Rittling, Engineered Air, Slant Fin, Vulcan, Carrier

2.6 HYDRONIC HEATING COILS

- .1 Heating element: Seamless copper tubing mechanically expanded into flanged collars of evenly spaced aluminum fins and cast iron headers, steel side plates and supports.
- .2 Connection: Copper wrot male NPT. Same side supply and return.
- .3 Case: Slip & drive or flanged.
- .4 Acceptable Manufacturers: Daikin, Trane, Madok, Cancoil, Carrier, Engineered Air, Johnson Controls.

2.7 RADIANT PANELS

- .1 Pipework: 16mm O.D. copper tubing.
- .2 Panels: Extruded aluminum planks.
- .3 Suspension, Joint, and Pipework Clips: Cadmium or zinc-plated steel springs.
- .4 Finish: White Polyester Powder Coating.
- .5 Suspension system: T-bar or drywall installation as specified.
- .6 Insulate above panel as indicated on drawings.
- .7 Acceptable Manufacturers: TWA, Sigma, Price

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for finned tube radiation convector heater installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of City of Winnipeg.
 - .2 Inform the City of Winnipeg of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from the City of Winnipeg.

3.2 INSTALLATION

- .1 Install in accordance with manufacturer's instructions.

- .2 Install in accordance with piping layout and approved shop drawings.
- .3 Provide for pipe movement during normal operation.
- .4 Maintain sufficient clearance to permit performance of service maintenance.
- .5 Check final location with the City of Winnipeg, if different from that indicated prior to installation. Should deviations beyond allowable clearances arise, request and follow the City of Winnipeg's directive.
- .6 Valves:
 - .1 Install valves with stems upright or horizontal unless approved otherwise.
 - .2 Install isolating gate valves on inlet and lockshield globe balancing valves on outlet of each unit.
- .7 Venting:
 - .1 Install screwdriver vent on cabinet convector, terminating flush with surface of cabinet.
 - .2 Install standard air vent with cock on continuous finned tube radiation.
- .8 Clean finned tubes and comb straight.
- .9 Install flexible expansion compensators as indicated.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00- Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19- Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION