

SECTION 15764  
UNIT HEATERS

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary Conditions, and Division 1 General Requirements, apply to work specified in this Section.
- B. Requirements of Section 15050, "Basic Mechanical Materials and Methods" apply to work specified in this Section.

1.02 SUMMARY

- A. Work Included: Unit heaters. Extent of unit heater work is indicated by drawings and schedules, and by requirements of this section.
  - 1. Unit heaters are provided by owner in for installation in some locations. New units heaters are required in other locations as indicated.
  - 2. Provide the following electrical work as work of this section, complying with requirements of Division-16 sections:
    - a. Interlock wiring specified as factory-installed.
    - b. Control wiring between field-installed controls, indicating devices, and terminal unit control panels.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications for terminal units showing dimensions, capacities, ratings, performance characteristics, gages and finishes of materials, and installation instructions.
- B. Shop Drawings: Submit assembly-type shop drawings showing unit dimensions, construction details, and field connection details.
- C. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to terminal units. Submit manufacturer's ladder-type wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.
- D. Maintenance Data: Submit maintenance instructions, including lubrication instructions, motor and replacement, and spare parts lists for new unit heaters. Include this data, product data and shop drawings in maintenance manuals in accordance with requirements of Section 01770.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of terminal units, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Codes and Standards:
  - 1. Provide coil ratings in accordance with ARI Standard 410 "Forced-Circulation Air-Cooling and Air-Heating Coils".
  - 3. Test coils in accordance with ASHRAE Standard 33 "Methods of Testing Forced Circulation Air Cooling and Heating Coils".
  - 4. Provide electrical components for terminal units which have been listed and labeled by UL.
- C. Comply with USM IDAT requirements,

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Handle terminal units and components carefully to prevent damage, breaking, denting and scoring. Do not install damaged terminal units or components; replace with new.
- B. Store terminal units and components in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.
- C. Comply with Manufacturer's rigging and installation instructions for unloading terminal units, and moving them to final location.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Unit heaters: Subject to compliance with requirements, provide products of one of the following:
  - 1. Airtherm Mfg. Co.
  - 2. Modine Mfg. Co.
  - 3. Trane (The) Co.
  - 4. Vulcan Radiator Co
  - 5. Dunham Bush

#### 2.02 UNIT HEATERS

- A. General: Provide unit heaters in locations as indicated, and of capacities, style, and having accessories as scheduled.

- B. Horizontal Unit Heaters:
  - 1. Casings: Construct of steel, phosphatized inside and out, and finished with baked enamel. Provide motor-mounted panel, minimum of 18-ga steel. Fabricate casing to enclose coil, louvers, and fan blades. Provide louvers for 4-way air diffusion.
  - 2. Fans: Construct of aluminum, and factory-balance. Provide fan inlet orifice, smooth, and drawn into casing back panel.
- C. Coils: Construct of plate-type aluminum fins, mechanically bonded to copper tubes. Design coil for use in hot water applications.
- D. Motors: Provide totally enclosed motors, with built-in overload protection, having electrical characteristics as scheduled.
- E. Accessories – provide the following for each new unit heater and for each unit heater acquired from owner:
  - 1. Vibration isolation springs in support hangers.
  - 2. Unit mounted thermostat with auto/off/fan switch.
  - 3. Vertical deflector blades.
  - 4. Aquastat.
  - 5. Manual toggle switch/starter.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Examine areas and conditions under which unit heaters are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.
- B. Ascertain condition of unit heaters furnished by Owner. Do not proceed with the installation of equipment exhibiting visible damage.

#### 3.02 INSTALLATION OF UNIT HEATERS

- A. General: Install unit heaters as indicated, and in accordance with manufacturer's installation instructions.
- B. Uncrate new units and inspect for damage. Verify that nameplate data corresponds with unit designation.
- C. Acquire selected unit heaters from owners storage, moving to site in good working order.

- D. Hang units from building substrate, not from piping. Mount as high as possible to maintain greatest headroom possible unless otherwise indicated.
- E. Support units with rod-type hangers anchored to building substrate; incorporate constrained spring hangers.
- F. Install heating hot water supply and return piping. Provide shut-off valve and union on supply. Provide union, aqua-stat and combination balance/shut-off valve on return.
- G. Protect units with protective covers during balance of construction.

### 3.03 ELECTRICAL WIRING

- A. General: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electric Installer.
- B. Mount accessory line voltage thermostat securely to unit. Wire to start fan on fall in temperature. Wire aqua-stat to delay fan start until coil is warm to avoid cold air delivery. Wire toggle switch/starter.
- C. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-16 sections. Do not proceed with equipment start-up until wiring installation is acceptable to equipment installer.

### 3.04 ADJUSTING AND CLEANING

- A. General: After construction is completed, including painting, clean unit exposed surfaces, and vacuum clean coils and inside of cabinets.
- B. Retouch marred or scratched surfaces of new factory-finished cabinets, using finish materials furnished by manufacturer.
- C. Clean units acquired from owner including tubes, fins, casings, motors, protective guards, fans and fan blades.

### 3.05 3.09 START UP

- A. Before operating the system perform these steps:
  1. Open valves to full open position.
  2. Remove and clean strainers.
  3. Check air vents at high points of systems and determine if all are installed and operating freely (automatic type) or to bleed air completely (manual type).
- B. Review data in Operating and Maintenance Manuals. Refer to Division 1 Section 01770 "Closeout Procedure and Submittals."
- C. Comply with USM IDAT requirements.

1. Provide information for all equipment provided. In other words, if a unit heater, fire damper, etc. is provided and no O & M material is available from the manufacturer, at a minimum, include the installation instructions and model/capacity data. Provide O & M for all scheduled material.
2. Provide manufacturers recommended spare parts list.
3. Provide job specific as-built wiring diagrams and piping diagrams.
4. Provide complete data relative to make/model number, size, capacity data, manufacturer name and address, accessories included, etc. In other words, provide complete information that would allow ordering the exact piece of equipment supplied.

END OF SECTION 15764