

SECTION 238127 - AIR HANDLING UNITS, SPLIT SYSTEM

PART 1 - GENERAL

1.1 SCOPE

- A. Furnish and install medium duty factory packaged air handling units with direct expansion refrigerant coils of the types, sizes, and capacities indicated.

1.2 SHOP DRAWINGS

- A. Refer to Section entitled "General Mechanical Provisions". Include complete performance data at the scheduled operating conditions, dimensions; weights; fan performance curves, airside pressure losses; waterside pressure losses; coil descriptions; and fan discharge and radiated sound power levels, by octave bands, at the stated conditions.

1.3 CERTIFICATION

- A. Equipment performance ratings shall be certified as follows:
 - 1. Fans: AMCA Bulletin 210 or ARI Standard 430.
 - 2. Coils: ARI Standard 210-79.

1.4 MANUFACTURER

- A. Basis of design: Similar to Trane Series TWE or Climate Changer Series, or as scheduled on the drawings.
- B. Acceptable: Carrier, Trane, York, Weatherking.

1.5 COMPATIBILITY

- A. Each unit must be compatible with the condensing units(s) to which it is matched. This includes unit arrangement/configuration, capacity, associated controls, piping and all other connected equipment to which the unit and its components are interfaced.

PART 2 - PRODUCTS

2.1 CASING

- A. Unit casings shall be fabricated of mill galvanized steel reinforced with formed "hat" channels or steel angle iron frames and bracing to provide a rigid assembly. Casing shall be provided with removable panels for access to and removal of coils, dampers and fans in external units. Provide hinged access door for access to and removal of fans and drives in internal drive units.

2.2 DRAIN PAN

- A. Unit drain pan shall be of the double wall internally insulated type with welded seams. Drain pan in draw-thru units shall extend under both the fan and coils sections and in blow-thru units under the entire coil and plenum section.

2.3 DIRECT EXPANSION REFRIGERANT COOLING COILS

- A. Provide direct expansion refrigerant cooling coil of copper tubes with aluminum fins mechanically bonded thereto, circuited to provide proper refrigerant velocities, properly matched with compressor-condenser assembly for proper operation, with expansion valves selected for optimum refrigerant flow from 20% to 100% full load.

2.4 ELECTRIC HEATING COILS

- A. Where electric heating coils are shown or scheduled to be integral with the air handling unit, each such coil shall be as follows:
 - 1. Factory assembled and prewired. Heater capacities, sizes and operating characteristics shall be as scheduled on drawings or as indicated in other sections.
 - 2. Meet all applicable requirements of the current NEC.
 - 3. UL listed including all built-in components.
 - 4. Coordinated with the specified requirements of the mechanical system control system.
 - 5. Provided in capacity control steps indicated or scheduled. If not otherwise indicated, heaters over 10 KW shall have heating elements sequenced on and off in 5 KW increments, and shall be wired for 2 stage operation. All heaters shall be equipped with both thermal and current overload devices, and the required heating and cooling system controls.

2.5 FANS

- A. Fans shall be individually selected to best suit the air quantities and pressures scheduled. Fans handling less than eighteen thousand (18,000) cubic feet per minute, at four and one-half (4-1/2) inches or less static pressure may be of the forward curved blade centrifugal type. Fans handling eighteen thousand (18,000) cubic feet per minute or more or operating at more than four and one-half (4-1/2) inches static pressure shall be of the backward inclined airfoil blade centrifugal type. All fans shall be double width, double inlet type. Fans and shafts shall be selected to operate not less than twenty-five percent (25%) below their first critical speed, statically and dynamically balanced, and keyed to the shafts. Shafts shall be of the hollow large diameter type with tapered and strengthened ends where they extend entirely through the casing and shall be solid steel for fans having drives within the casing. Shafts shall be turned and shall be ground and polished at bearing and fan mounting points.

2.6 BEARINGS

- A. Provide regreaseable ball types selected for an average life of 200,000 hours at design operating conditions. Bearings shall have grease line extended to the drive side of the fan casing of the drive side of the fan scroll for internal drive fans.

2.7 DRIVES AND MOTORS

- A. Provide guards for internal and external drive fans.

2.8 INSULATION

- A. The entire air handling unit casing (including accessory sections), including structural frame and channels shall be insulated from contact with the air stream. Insulate using one inch (1") thick, three (3) pound per cubic foot density fiberglass duct liner having a neoprene stabilized face toward the air stream. The insulation shall be secured using a full coverage insulation and adhesives shall comply with the requirements of NFPA 90A as to flame spread and smoke developed ratings.

2.9 FILTERS

- A. See section describing air filters.

2.10 OVERALL CONSTRUCTION

- A. Shall be as recommended by the manufacturer for operation at the indicated conditions.

2.11 OTHER REQUIREMENTS

- A. Be horizontal or vertical configuration (as applicable).
- B. Cooling coils shall not have face velocities in excess of 500 fpm unless otherwise indicated on drawings schedule (in such case, velocity obtained from drawings schedule shall be upper limit).
- C. Units shall be provided which will perform as indicated with proper consideration of any correction factors which are applicable to system unit casing configuration.
- D. Heating coils, if required, shall be located in reheat position unless otherwise indicated.

PART 3 - INSTALLATION

3.1 EQUIPMENT PLACEMENT

- A. Air handling equipment shall be located essentially as shown on drawings; however, actual placement of the unit shall be verified using field measurements and data relating to the units approved for actual installation on this project.

3.2 WIRING

- A. Where units utilize internal drives, conduit penetrations shall be provided by the manufacturer. The conduit openings shall be located on the drive side and positioned so as not to compromise access to any portion of the unit. The opening shall be provided with effective seals and the edges of the internal insulation shall be properly sealed.

3.3 SOUND AND VIBRATION CONTROL

- A. Refer to other sections for airside sound control and vibration control. Mount isolators using height saving brackets where required to reduce operating height of unit to suit space available.

3.4 DUCT CONNECTIONS

- A. Supply and return ducts and combination filter mixing boxes shall be connected to their respective air handler using flexible connectors. Connectors shall be properly installed so that they are not in tension and are aligned with their respective ducts.

3.5 HOUSEKEEPING PAD

- A. Provide 6 inch high reinforced concrete (with 10 x 10 WWP) housekeeping pad for each floor mounted unit. The housekeeping pad shall extend 6 inches beyond the unit base in all directions and shall be continuous beneath the base. Pads shall have chamfered edges and shall be poured and finished smooth and level.

3.6 OTHER REQUIREMENTS

- A. Properly connect all piping.
- B. Allow adequate space for all service and operational clearances necessary.

END OF SECTION 238127