SECTION 23 82 19 - FAN COIL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The Conditions of the Contract and applicable requirements of Division 1, "General Requirements", and Section 23 01 00, "Mechanical General Provisions", govern this Section.

1.2 DESCRIPTION OF WORK:

A. Work Included: Provide fan coil units of the type shown and scheduled on the drawings with accessories as shown, noted or scheduled on the drawings as specified herein.

1.3 QUALITY ASSURANCE:

A. Manufacturer: Provide products complying with these specifications and produced by one of the following:

1. Carrier Corporation.
2. MagicAire.
3. McQuay.
4. RECO.
5. Trane Company.
6. Enviro-Tec
7. USA Coil
8. York.

B. Certification: Provide manufacturer's certification of fan coil unit capacity and compliance with ARI Standard 441.

1.4 SUBMITTALS:

A. Shop Drawing submittals shall include, but not be limited to, the following:

1. Cut sheets on all fan coil units, clearly marked to show sizes, configuration, construction, features, accessories and other pertinent information.
2. Fan curves or tables with selection point clearly indicated.
3. Motor data as required in Section 23 04 00.
4. Additional information as required in Section 23 01 00.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Deliver fan coil units in factory-fabricated water-resistant wrapping.

B. Handle fan coil units carefully to avoid damage to material component, enclosure and finish.

C. Store fan coil units in a clean, dry space and protect from the weather.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. General: Except as otherwise indicated, provide fan coil unit manufacturer's standard materials and components as indicated by his published product information, designed, constructed, and assembled

by the manufacturer. Units shall be certified in accordance with ARI 440-84. Unit capacities shall be certified in accordance with ARI Standard 441-66. Unit sound data shall be rated in accordance with ARI Standard 443-70.

B. Capacity: Heating and cooling capacities and fan characteristics shall be as scheduled or shown on the Drawings and shall be ARI-certified.

C. Cabinets: Cabinets shall be fabricated of 18 gauge, cold rolled steel or galvanized steel factory-painted, designed to provide a rigid structure for lasting durability and peak performance. Cabinets shall be reinforced for maximum rigidity. Removable panels shall be provided on each side of cabinet for ease of installation and maintenance. The entire interior of the cabinet shall be insulated both thermally and acoustically with 1/2" thickness of fiberglass neoprene insulation with black flame resistant coating. Insulation shall meet NFPA 90A and ASTM E84-70 with flame spread of less than 25 and smoke developed of less than 50 requirements and be UL-listed and labeled.

D. Water Coils: The coils shall consist of minimum 5/8" OD, 0.020" wall thickness copper tubes, mechanically expanded into aluminum fins. Coils shall have a maximum of 12 fins per inch and coil water and air pressure drops shall not exceed the scheduled maximums. All copper tubes and headers shall be constructed of seamless copper. All water coils shall be furnished with a [manual] [automatic] air vent and drain **[valve] [plug].** Coils shall be tested at 350 psig air pressure and are suitable for 250 psig working pressure. Hot water coils shall be mounted in preheat position, unless otherwise noted. [Chilled water and heating hot water coils shall have factory installed and pipe with two-way electric solenoid valves and inlet and outlet shutoff valves. Valves shall be wired to an electrical control junction box.]

E. Electric Heating Coils: Factory-installed and wired heating coils shall be provided in each unit. Elements shall be 80/20 nickel-chromium wire and shall not glow when in operation. Each element shall be protected by a fusible link and high temperature limit control. Coils shall be complete with magnetic staging contactors and all other required controls factory installed. Coils up to 3 kW shall be single-stage. Coils 3.5 kW and larger shall be two-stage.

F. Drain Pans: All drain pans shall be fabricated of rugged galvanized construction, and insulated with a closed cell polyurethane or polyisocyanurate that is sprayed on and into every crevice of the drain pans. Drain pan shall have an integral auxiliary drain pan connection located above primary drain connection to provide an auxiliary drain. Insulation shall be Underwriters' Laboratories, Inc. listed and labeled. Drain pans shall be pitched for positive drainage with the fan coil unit installed level. All drain connections shall be piped to drain.

G. Fan Wheels: Fan wheels shall be mounted on a solid steel shaft with ball bearings, all fan wheels shall be heavy duty, galvanized steel, double inlet, forward-curved blade, centrifugal direct-drive or belt-drive type, as scheduled. The wheels shall be dynamically and statically balanced for smooth, quiet operation and shall be direct driven.

H. Motors: Motors shall be three speed, high efficiency, single phase, permanent split capacitor ball bearing type motors with thermal overload protection for direct drive fans and high efficiency, open-drip-proof motors for belt drive fans. The manufacturer shall furnish a four position three speed switch (Off, High, Medium and Low) with an auxiliary contact for single phase motors. Switch shall be rated for 5.0 amps (full load) at 277 volts ac and shall be installed on the unit at the factory in an easily accessible location.

I. Filters: Provide manufacturer's standard throwaway filters of glass fiber, **2" t**hick as specified within 23 40 00 unless scheduled or shown otherwise on the Drawings.

J. Factory Finish: Finish shall be bonderized, phosphatized, baked-on primer, and baked-on enamel.

K. Accessories: Provide units with accessories as scheduled or shown on the Drawings and as required for a complete installation. Typical accessories shall include, but not be limited to: supply, return and outside air duct connections, supply and return air grilles, filter racks, ceiling access doors, valve packages and similar accessories.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General: Install fan coil units, including components and controls required for operation, in accordance with manufacturer's instructions.

B. Location: Locate each unit accurately in the position indicated in relation to other work. Position unit with sufficient clearance for normal service and maintenance, including clearance for cabinet removal.

C. Tolerance: Level fan coil units to the tolerance recommended by the manufacturer.

D. Damaged Fins: Comb out any damaged fins or replace coil if fins cannot be combed to a like-new condition.

E. Vibration Isolation: Provide unit vibration isolation as specified in Section 23 05 48.

F. Drain Pans: Install auxiliary drain pans as specified in Section 23 20 10 under all concealed fan coil units. on the drawings and as indicated in the Sequence of Operation..

G. Auxiliary Drains: Pipe auxiliary drains on fan coil units [to drain pans on concealed units to an approved location.

H. Filters: Three sets of filters shall be supplied for each fan coil unit. One set shall be installed at initial unit startup after all ductwork has been blowout and shall be used during balancing and testing, the second set shall be installed at the time of substantial completion and the third set shall be turned over to the Owner. Any additional filter sets required during the construction period shall be the responsibility of the Contractor.

3.2 IDENTIFICATION:

A. Refer to Section 23 03 00 for applicable painting, nameplates, and labeling requirements.

3.3 TESTING:

A. General: Test unit to verify proper operation and correct any defects found.

END OF SECTION 23 82 19