SECTION 238216 - AIR COILS

PART 1 - GENERAL

1.1 SUMMARY
   A. This Section includes hot- and chilled-water, refrigerant, and electric air coils that are not part of air handling units.

1.2 SUBMITTALS
   A. Product Data: For each model indicated, provide rated capacities at design conditions, pressure drop, physical dimensions, required clearances, weights, components, and accessories.
   B. 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
   A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 HOT-WATER AND CHILLED-WATER COILS
   A. Description: [Continuous circuit coil] [Self-draining coil] [Cleanable coil] fabricated; to ARI 410.
      1. Manufacturers:
         a. Aerofin Corporation.
         b. Carrier Corporation.
         c. Dunham-Bush, Inc.
         d. Heatcraft Inc.; Heat Transfer Division.
         e. Trane Co. (The).
         f. USA Coil and Air.
2. Piping Connections: Same end or opposite end connections as indicated on Drawings.
3. Tubes: Copper, complying with ASTM B 75, [0.625 inch] [0.50 inch] outside diameter.
4. Fins: Aluminum, maximum 144 fins per inch.
5. Fin to Tube Joint: Mechanical bond.
6. Headers: Cast iron with drain and air vent tappings or seamless copper tube with brazed joints, prime coated.
7. Frames: Galvanized-steel channel frame, for slip-in or flanged mounting as indicated on Drawings, designed to support weight of water filled coil.
8. Ratings: Design tested and rated according to ASHRAE 33 and ARI 410 for working pressure of 200 psig at 200 degrees F.
9. Source Quality Control: Test to 300 psig, and to 200 psig underwater.

2.3 REFRIGERANT COILS

A. Description: Coil designed for use with R-22 refrigerant, fabricated to ARI 410, connected with brazed fittings.
   1. Manufacturers:
      a. Aerofin Corporation.
      b. Carrier Corporation.
      c. Dunham-Bush, Inc.
      d. Heatcraft Inc.; Heat Transfer Division.
      e. Trane Co. (The).
      f. USA Coil and Air.
      g. York International.
   2. Capacity Reduction: Circuit for [face control] [row control] [interleaved control].
   3. Tubes: Copper, complying with ASTM B 75, [0.625 inch] [0.50 inch] outside diameter.
   4. Fins: Aluminum, maximum 144 fins per inch.
   5. Fin to Tube Joint: Mechanical bond.
   7. Frames: Galvanized-steel channel frame, for slip-in or flanged mounting as indicated on Drawings, designed to support weight of water filled coil.
   8. Ratings: Design tested and rated according to ASHRAE 33 and ARI 410 for working pressure of 300 psig.
   9. Source Quality Control: Test to 450 psig, and to 300 psig underwater.

2.4 ELECTRICAL HEATING COILS, CONTROLS, AND ACCESSORIES

A. Description: 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. Manufacturers:
      a. Besco, Inc.
      b. Brasch Manufacturing Co., Inc.
      c. Chromalox Wiegand Industrial Division; Emerson Electric Company.
      d. Dell Corp.
      e. INDEECO.
      f. Markel Products Co.
      g. PM Wright, Ltd.
      h. Tutco Applied Heating Technologies.
      i. Valley Industries.
3. Casing Assembly: Slip-in or flanged type as indicated on Drawings, with galvanized-steel frame.

4. Heating Elements:
   a. Open-Coil: Helix-wound resistance wire of 80 percent nickel and 20 percent chromium, supported and insulated by floating ceramic bushings recessed into casing openings, fastened to supporting brackets, and mounted in galvanized-steel frame. Watt density shall not exceed 35 watts per square inch of wire surface area.
   b. Finned Tubular: Coiled resistance wire of 80 percent nickel and 20 percent chromium; surrounded by compacted magnesium-oxide powder in tubular-steel sheath; with spiral-wound, copper-plated, steel fins continuously brazed to sheath.

5. Overtemperature Protection: Disk-type, automatically resetting, thermal-cutout, safety device; serviceable through terminal box without removing heater from duct or unit. Provide secondary protection consisting of load-carrying, manually resetting or manually replaceable, thermal cutouts; factory wired in series with each heater stage.

6. Control Panel: Unit mounted with disconnecting means and overcurrent protection. Include the following controls:
   a. Airflow proving switch.
   b. Magnetic contactor.
   c. SCR controller.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install coils level and plumb.

B. Install coils in metal ducts and casings constructed according to SMACNA’s "HVAC Duct Construction Standards, Metal and Flexible."

C.

D. Install stainless-steel drain pan under each [chilled-water] [DX] coil.
   1. Construct drain pans to comply with ASHRAE 62, to extend beyond coil length and width and to connect to condensate trap and drainage.
   2. Extend drain pan 5 inches upstream from coil face, 10 inches downstream from coil face, and extend under coil headers and exposed supply piping.
   3.

E. Straighten bent fins on air coils.

F. Clean coils using materials and methods recommended in writing by manufacturer, and clean inside of casing and enclosure to remove dust and debris.

3.2 CONNECTIONS

A.

B. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
C. Install piping adjacent to coils to allow service and maintenance.

D.

E. Unless otherwise indicated, connect piping with unions and shutoff valves to allow coils to be disconnected without draining piping. Refer to piping system Sections for specific valve and specialty arrangements.

F.

G. Ground equipment according to Division 16.

H. Connect wiring according to Division 16.

3.3 FIELD QUALITY CONTROL FOR ELECTRICAL HEATING COILS

A. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.

B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Shut unit down and reconnect automatic temperature-control operators.

END OF SECTION