

## University of Houston Master Specification

<Insert Project Name>

<Insert U of H Proj #>

<Insert Issue Name>

<Insert Issue Date>

### SECTION 23 8216 - HVAC COILS

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

Edit and finalize this Section, where prompted by Editor's notes, to suit Project specific requirements. Make selections for the Project at text identified in bold.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
  - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
  - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

##### 1.2 DESCRIPTION OF WORK:

- A. Work Included: Provide duct-mounted HVAC [**chilled and**] heating hot water coils as scheduled, specified, and required for the project.

##### 1.3 QUALITY ASSURANCE:

- A. Manufacturers: Provide products complying with these specifications and produced by one of the following:
  - 1. Aerofin Corporation.
  - 2. Carrier Machinery and Systems Division.
  - 3. McQuay (part of Daikin Industries).
  - 4. Trane Company.
  - 5. York Division, Borg-Warner Corporation.
- B. ARI Compliance: Comply with Air Conditioning and Refrigeration Institute (ARI) Standard ARI 410 "Standard for Forced-Circulation Air-Cooling and Air-Heating Coils".
- C. SMACNA Compliance: Comply with Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) standards.
- D. Industry Standards: Comply with American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommendations pertaining to HVAC coils, except as otherwise indicated.

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### 1.4 SUBMITTALS:

- A. Submittals: Shop drawing submittals shall include, but not be limited to, the following:
1. Cut sheets on hot water [**and chilled water**] coils, clearly marked to show coil sizes, construction, features, and other pertinent information.
  2. Coil selections clearly indicating coil sizes, capacities, flows and pressure drops.
  3. Manufacturer's recommended installation instructions.
  4. Additional information as required in Section 23 01 00.

### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver coils in factory-fabricated water-resistant wrapping.
- B. Handle coils carefully to avoid damage to tubes, fins, and casing.
- C. Store coils in a clean, dry space, and protect from weather.

## PART 2 - PRODUCTS

### 2.1 WATER COILS:

- A. General: Provide duct mounted hot water heating and chilled water cooling coils of the type, size and capacity scheduled and shown the Drawings.
- B. Tubes: Tubes shall be round seamless 5/8" OD (less than 60" tube length) or one-inch (1") OD (greater than 60-inch tube length) copper tubes expanded into full fin collars for permanent fin-tube bond and expanded into cast iron headers for permanent leak-tight joint. Tubes shall have minimum [**0.020"**] [**0.035"**] wall thickness. Tube supports shall be provided such that the maximum unsupported tube span does not exceed 40 inches.
- C. Fins: Shall be configured, plate-type aluminum with full fin collars for maximum fin-tube contact and accurate spacing, mechanically bonded to tubes for permanent fin-tube bond.
- D. Casings: Shall be minimum 16-gauge galvanized steel [, **stainless steel for cooling coils**] suitable for duct installation. Duct connection flanges shall be provided. [**Chilled water coil casings shall incorporate an insulated condensate drain pan with main and auxiliary drain connection.**]
- E. Headers: Shall be gray cast iron, fabricated steel, brass or copper and shall be located outside of the coil casing to allow uniform air flow across the entire coil surface.
- F. Selections: Coils shall be suitable for maximum working pressures of 225 psi and maximum working temperatures of 325°F. Coils shall have a maximum of 12 fins per inch and a maximum face velocity of [**500 fpm for chilled water coils and**] 700 fpm for hot water coils. Coil air and water pressure drops shall not exceed scheduled maximums. Coil sizes shall be coordinated with ductwork sheet metal sizes to reduce ductwork transitions at coils.
- G. Accessories: Coils shall be provided with drain [**valves with caps**] [**plugs**] and [**automatic**] [**manual**] air vents.
- H. Testing: Coils shall be factory tested at [**225 psi**] [**350 psi**] air pressure under water and suitable for use at working pressures up to [**150 psi**] [**250 psi**].

## PART 3 - EXECUTION

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### 3.1 INSTALLATION:

- A. General: Install coil products in accordance with the manufacturer's written instructions, the applicable portions of SMACNA and recognized industry practices, to ensure that products serve the intended functions.
- B. Transitions: Where coil size is different from duct size, duct shall be transitioned to the coil size and then transitioned back in accordance with SMACNA Standards.
- C. **[Drain Pans: Provide an auxiliary drain pan, as specified in Section 23 0300 "Basic Materials and Methods," under each chilled water coil.]**
- D. Damage: Comb out damaged fins when bent or crushed before enclosing coils in housings.
- E. Cleaning: Clean dust and debris from each HVAC coil as it is installed to ensure its cleanliness.

### 3.2 FIELD QUALITY CONTROL:

- A. Repair: Repair or replace coils as required, following purging and tightness testing of coils and piping, to eliminate leaks. Replace coils with heavily damaged fins. Retest as specified to demonstrate leakproof performance.

### 3.3 INSULATION:

- A. General: Non-factory insulated casing, headers, U-tubes shall be insulated as specified in Section 15200.

### 3.4 IDENTIFICATION:

- A. Refer to Section 23 0300 "Basic Materials and Methods" for applicable painting, nameplates, and labeling requirements.

**END OF SECTION 23 8216**

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