

SECTION 15750

HUMIDITY CONTROL EQUIPMENT

**PART 1 –GENERAL**

1.1 SUMMARY

- A. Section includes evaporative humidifiers, evaporative pan humidifiers, and spray pumps.

1.2 REFERENCES

- A. ARI 410 (Air-Conditioning and Refrigeration Institute) - Forced-Circulation Air-Cooling and Air-Heating Coils.
- B. ARI 610 (Air-Conditioning and Refrigeration Institute) - Central System Humidifiers.
- C. ARI 630 (Air-Conditioning and Refrigeration Institute) - Selection, Installation and Servicing of Humidifiers.
- D. SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) - HVAC Duct Construction Standards, Metal and Flexible.
- E. UL 900 (Underwriters Laboratories, Inc.) - Test Performance of Air Filter Units.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit catalog sheets indicating general assembly, dimensions, weights, materials, and certified performance ratings duct and service connections, electric nameplate data and wiring diagrams.
- C. Manufacturer's Installation Instructions: Submit assembly and setting operations.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01770 - Execution Requirements: Closeout procedures.

- B. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, maintenance and repair data, including instructions for lubrication, filter replacement, cleaning and spare parts lists.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes and laws as well as the Stanford University Facilities Design Guidelines and all Stanford University Contract documents.

- B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.7 PRE-INSTALLATION MEETING

- A. Section 01330 - Administrative Requirements: Pre-installation meeting.

- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01660 - Product Requirements: Product storage and handling requirements.

- B. Accept units on site in factory packing. Inspect for damage.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 WARRANTY

- A. Section 01770 - Execution Requirements: Product warranties and product bonds.

- B. Provide a five year factory warranty.

1.11 MAINTENANCE SERVICE

- A. Section 01770 - Execution Requirements: Maintenance service.

**PART 2 –PRODUCTS**

**2.1 EVAPORATIVE HUMIDIFIERS**

- A. Manufacturers:
  - 1. OEM equipment compatible only
- B. Construction: Factory assembled accordance with ARI 610 consisting of casing, tank, filters, and spray pumps, water and drain connections

**2.2 CASING**

- A. Assembly: Stainless steel, minimum 0.0635 inch, reinforced and braced with galvanized steel angles, cadmium plated cap screws.
- B. Connection: 1-1/2 inch flanges on inlet and outlet with ¼ x 1 inch adhesive backed neoprene gasket.
- C. Doors: Quick opening access door on one side with ¼ inch thick Plexiglas inspection window.
- D. Finish: Two coats of zinc chromate, iron oxide, phenolic resin.
- E. Gasket and flange pipe penetrations, inspection panels, access doors, and other openings in casing.

**2.3 DRAIN TANK**

- A. Tank: Welded stainless.
- B. Connections: 3/4 inch adjustable float valve assembly with brass rod and brass float; 2 inch drain and overflow with removable copper suction screen.
- C. Fabrication: Lap and weld corners watertight. Weld fittings and piping supports to tank.

**2.4 FILTERS**

- A. Filters: Two rows of neoprene coated filter mats in removable frames.

**2.5 PUMPS**

- A. Spray Pump:
  - 1. Type: Horizontal shaft, Single stage, close coupled, radially split casing, for 125 psig maximum working pressure.

2. Case: Cast iron with gage ports, drain plug, flanged suction and discharge.
3. Impeller: Bronze, fully enclosed, keyed to motor shaft extension.
4. Shaft: Stainless steel.
5. Seal: Carbon rotating against a stationary ceramic seat.

## 2.6 EVAPORATIVE PAN HUMIDIFIERS

### A. Manufacturers:

1. OEM equipment compatible only

B. Units: ARI 610; evaporative pan with stand or cabinet enclosure, humidistat, heating coil, pre-wired except for humidistat, for use with heating hot water, steam or electronic heating elements.

## 2.7 COMPONENTS

A. Pan, Cover, Screws and Bolts: Stainless steel.

B. Overflow and Drainage Fittings: Copper or Brass.

C. Float Valve Mechanism: Stainless steel or brass with ¼-inch fill connection.

D. Coil Steam or Hot Water: 7/8 inch OD copper.

E. Coil Electric: Shielded electric immersion heating element with safety cutout switch set at 225 degrees F to disconnect electric heating element on low water level in pan.

F. Blower Fan: Forward curved fan, direct driven by fused, fractional hp motor.

G. Floor Stand: Extruded aluminum.

H. Cabinet Enclosure: Galvanized sheet metal with baked enamel finish.

I. Control: Humidistat cycles blower fan and opens inlet solenoid valve to steam or hot water for electric coils energizes electric heating element.

J. Flush Cycle: Timers allow one to four flushes per day of three to 120 minutes duration by shutting off power to heating element and opening drain valve.

**PART 3 –EXECUTION**

**3.1 INSTALLATION**

- A. Install in accordance with ARI 630.
- B. Connect evaporative pan humidifier to hot water supply. Provide gate or ball valve and solenoid valve on heating water supply line, and globe valve on heating water return line.
- C. Connect evaporative pan humidifier to steam supply. Provide gate valve and solenoid valve on steam line and thermostatic steam trap on condensate.
- D. Pipe all units, except for steam grid type, from overflow and manual drain with valve to floor drain.
- E. Install evaporative pan humidifier piping with unions or flanges for easy removal of pan for servicing.
- F. Connect evaporative pan humidifier to ducts. Keep duct runs minimum length and slope back to humidifier.
- G. Insulate exterior of evaporative humidifiers as specified for ductwork.
- H. Place evaporative humidifiers on 2-inch thick rigid insulation board same size as unit tank. Flash and counterflash with 0.0396 inch galvanized steel on entering and leaving sides.
- I. Connect evaporative, evaporative pan and sprayed coil humidifiers to domestic cold water supply. Provide gate or ball valve and pressure reducing valve (as needed) on water supply line. Provide  $\frac{3}{4}$  inch hose bibb accessible from interior.
- J. Bolt-evaporative humidifier pumps directly to tank fitting. Insulate external spray piping.
- K. Provide evaporative humidifiers with globe valve and solenoid valve in  $\frac{1}{2}$  inch bleed line from drain.
- L. Provide evaporative humidifiers with low water cut-off in drain pan to stop spray pump.

END OF SECTION