

SECTION 15813 - "HUMIDIFIERS"

- 1.0 Humidifiers shall be of the jacketed dry steam or self contained steam types. Pan, wetted drum, and power wetted element humidifiers are prohibited. Infrared pan type humidifiers are allowed in self-contained Computer Room units only, refer to Section 15785.
- 2.0 All humidifiers shall use a steam dispersion manifold. The preferred locations for humidifiers are in the air handling unit up-stream of the cooling coil. Review applications with the University Representative. All controls, valves, and traps, etc. must be located outside of the air stream.
- 3.0 The Campus central steam system may be used as a humidification source and can be directly dispersed into the air stream. (Preferred Method).
- 4.0 All steam humidifiers shall operate with low pressure steam (less than 12 PSI). All control valves shall be rated for 150% of the operating pressure, otherwise, pressure reducing valves shall be provided.
- 5.0 All free standing space humidifiers shall be of the self contained type.
- 6.0 Jacketed dry steam shall contain the following components:
  - A. Incoming steam service automatic isolation valve.
  - B. Steam jacketed dispersion tube(s).
  - C. Steam separator.
  - D. Separating baffles.
  - E. Steam trap(s).
  - F. Control valve (60:1 rangeability for 100% outdoor systems).
  - G. Drying chamber.
- 7.0 Self-contained humidifiers shall be of the electrode steam generator type and contain the following:
  - A. Disposable cylinders.

- B. Microprocessor controls.
  - C. Automatic cylinder fill and drain controls to maintain water conductivity and minimize energy waste. Built-in timers for repetitive drain cycles are prohibited.
  - D. Cylinder monitor to discern end of cylinder life.
  - E. 16 gauge steel cabinet with hinged and lockable access door.
  - F. Fill cup to prevent back siphonage.
- 8.0 Designer shall review the control of all humidifiers to ascertain that system response can meet or exceed expected load variations and maintain desired humidity levels. The suggested control options are as follows:
- A. For HVAC systems with central humidification, setpoint conditions shall be maintained from a signal from a relative humidity transmitter located in the discharge air duct controlling the humidifier steam control valve. Supply air relative humidity control shall be reset by one (or more) space sensors located in the space(s) served. The steam control valve shall close when the high limit is reached in the duct.
  - B. For individual space humidification applications, a normally closed steam control valve shall be used to control the humidifier output via a space humidity sensor wired in series with a high limit controller.
  - C. Return air humidity sensors shall not be used to control space humidity levels.
- 9.0 Minimum winter season humidity levels must be maintained at a minimum 25% relative humidity. Special spaces such as vivariums and data centers may require higher humidity levels. Confirm humidification requirements and humidity levels with the project program requirements. In no case shall the level be in excess of that which the existing structure can maintain without resulting in the formation of condensation. **In new buildings, the Engineer must work with the Architect to design building walls and glazing components which will permit winter period humidity levels that meet present indoor air quality requirements.** The Engineer shall submit calculations showing the anticipated wall and window temperature gradients based upon a 0°F and 93°F ambient temperatures. Special consideration shall be given to structural steel exposed to space conditions.
- 10.0 The locations of humidifiers shall generally be restricted to Mechanical Rooms. Where individual humidifiers are duct mounted, the duct construction must be watertight stainless

steel for 150 percent of the humidifier's absorption distance. The duct section shall have a drain connection piped to the nearest floor drain.

END OF SECTION