SECTION 23 80 00

DECENTRALIZED HVAC EQUIPMENT

PART 1: GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 This section includes:

A. Unit Heaters

B. Computer Room Air Conditioning Units

C. Split System Air Conditioners

D. Fan Coil Units

1.3 **LESSONS LEARNED AND DESIGN CONSIDERATIONS**

A. Refrigerant lines that are outside or receive sunlight at any portion of the day require 100% UV protection as well as protection from physical damage per 2015 International Mechanical Code. This will require a jacket, UV resistant coating or paint is not sufficient.

B. For systems with a remote condenser locate compressor inside the outdoor unit.

C. Hail guards required for all condensing units regardless of size.

D. Microchannel condensing coils need to have the utilities at their location to clean the coils.

E. Avoid using condensate return pumps if possible. Gravity drain is preferred.

F. If the expansion device is located in the outside unit the “liquid” and suction lines should be insulated.

G. Condensate lines should be insulated.

H. Filter access for units installed above ceiling must be coordinated with other trades such as fire protection, network cable trays, electrical, mechanical piping etc. prior to construction.

I. Prefer gravity drain for condensate over pumped condensate systems. Designer should make an effort to avoid designs with pumped condensate.

J. Mounting hardware for unit heaters/cabinet heaters will be provided by unit manufacturer or designed by PSP.

K. When using electric heating coils make sure the design minimum airflow is sufficient to not trip thermal overload protection set point. Use SCR control.

L. Fan Coil units location must be designed so that no special ceiling tiles need to be removed and provides easy access for filter replacement.

PART 2 - PRODUCTS

2.1 GENERAL

A. This product section is intended to inform the PSP on the minimum standard of quality that should be incorporated in new designs. The PSP should evaluate these standards and incorporate or make additional requirements per project specific requirements. Where the PSP considers any requirement listed not to be applicable or incompatible with the project design intent should be discussed with UTA Office of Facilities Management.

B. Unit Heaters

1. Manufacturers:

a. McQuay

b. Carrier

c. QMark

d. Reznor

e. Modine

2. Hot Water Coils: Copper tube, minimum .025 inch thickness with mechanically bonded aluminum or copper fins, maximum 10 fins per inch. Minimum working pressure of 200 psig.

3. Electric Coils: Metal sheathed elements consisting of 80/20 nickel-chromium wire encased in refractory material with copper clad steel sheath and aluminum fins. Provide automatically reset thermal overload perfection. Fans with electric heating coils greater than 25 kW will be multispeed controlled.

4. Cabinet: 18 gage minimum steel. All outer surfaces will be finished with polyester powder coating.

5. Fan: Propeller type with aluminum wheel directly coupled to motor shaft. Draw-through design.

C. Computer Room Air Handling Units.

1. Manufacturers:

a. Leibert

b. Data Aire

c. Johnson Controls

2. Cabinet/Frame:

a. Frame will be 10 gage welded steel capable of supporting compressors and other mechanical equipment and fittings. Assemble unit for up flow air delivery.

b. Access panels will be minimum 18 gage galvanized steel with full gasket. Hinges must allow removal of panel.

c. Insulation: Thermally and acoustically lined interior cabinet with fiber free insulation.

3. Fans: Double inlet forward/backward curved designed for air flow. Direct drive or V-belt.

4. Chilled Water Coil: **Seamless copper tubes with mechanically bonded aluminum or copper fins. Maximum 10 fins per inch.**

5. Condensate Drip Pan: Insulated stainless steel sloped for gravity drain. Chilled water drip pan will have a condensate sensor indicating on EMS system.

D. Split System Air Conditioning Units

1. Manufacturers:

a. Carrier

b. LG

c. Mitsubishi

2. Indoor Units

a. Enameled steel with removable panels on front and ends.

b. Refrigerant Coil: **Copper tubing with mechanically bonded aluminum or copper fins.**

c. Fan: Direct drive centrifugal fan.

3. Outdoor Units

a. Casing: Steel, finished with baked enamel with removable panels for access to controls and equipment. Provide external brass service ports on exterior of casing.

b. Compressor will be in outside unit. Hermetically sealed, scroll type and vibration isolated.

c. Refrigerant: R-410A.

d. Refrigerant Coil: Copper tubing with mechanically bonded aluminum or copper fins.

e. Fan: Aluminum propeller type directly mounted to motor.

f. Provide with low ambient kit for operation down to zero degrees Fahrenheit.

g. Provide hail guards.

E. Fan Coil Units

1. Manufacturers

a. First Company

b. Enviro-Tec

c. Titus

2. Cabinet will be steel with baked enamel finish.

3. Chassis will be galvanized steel where exposed to moisture/humidity with removable access panels.

4. **Insulation will be fiber free insulation minimum one inch thick**.

5. Surfaces in contact with airstream will comply with ASHRAE 62.1.

6. Chilled Water Coil: **Seamless copper tubes with mechanically bonded aluminum or copper fins. Maximum 10 fins per inch.** Include manual air vent and drain valve.

7. Hot Water Coils: Copper tube, minimum .025 inch thickness with mechanically bonded aluminum or copper fins, maximum 10 fins per inch. Minimum working pressure of 200 psig.

8. Electric Coils: Metal sheathed elements consisting of 80/20 nickel-chromium wire encased in refractory material with copper clad steel sheath and aluminum fins. Provide automatically reset

thermal overload perfection. Fans with electric heating coils greater than 25 kW will be multispeed controlled.

9. Single point electrical connection.

10. Condensate Drip Pan: Insulated stainless steel sloped for gravity drain. Chilled water drip pan will have a condensate sensor indicating on EMS system.

PART 3 - EXECUTION

A. Install new filters in units 1 week prior to substantial completion.

B. Verify location of externally mounted control devices on drawings prior to installation.

C. Connect piping to coils in a manner that does not restrict access panels or doors.

END OF SECTION 23 80 00