SECTION 23 05 33

HEAT TRACING FOR HVAC

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 **LESSONS LEARNED AND DESIGN CONSIDERATIONS**

A. Drawings should clearly show from point to point which pipe and the length of pipe to be heat traced.

B. Heat traced pipes under insulation will have a permanent stencil/label on the outside of the insulation/jacket to indicate pipe has heat trace minimum every 25 feet.

C. Heat tracing will not be installed over surfaces that have sharp protrusions or other conditions that could damage the heat tracing cable.

D. Refer to manufacturers recommendations when installing heat trace cable over expansion joints.

E. Make sure that heat tracing systems are included in the commissioning process and included on the equipment matrix.

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. SELF REGULATING, PARALLEL-RESISTANCE HEATING CABLES

1. Manufacturers:

a. Chromalox, Inc.

b. Easy Heat Inc.

c. Raychem; A division of Tyco Thermal Controls.

2. Heating Element: Pair of parallel no 16 AWG, nickel coated stranded copper bus wires embedded in crosslinked conductive polymer core, which varies heat output in responses to temperature along its length. Terminate with waterproof, factory-assembled nonheating leads with connectors at one end and seal the opposite end water tight. Cable shall be capable of crossing over itself once without overheating.

3. Electrical Insulation Jacket: Flame retardant polyolefin.

4. Cable Cover: Polyolefin outer jacket with UV inhibitor.

5. Maximum Operating Temperature (Power On): 150 degrees F.

6. Maximum Exposure Temperature (Power Off): 185 degrees F.

7. Provide cable output rating and wrap arrangement to effectively protect each application.

8. Controls:

   a. Remote bulb unit with adjustable temperature range from 30 to 50 degree F.

   b. Corrosion resistant, waterproof control exposure.

9. Warning Tape:

   a. Continuously printed “Electrical Tracing” vinyl, at least 3 mils thick, and with pressure sensitive, permanent, waterproof self adhesive back.

   b. Width of markers on pipes with OD, including insulation, less than 6 inches: ¾ inch minimum.

   c. Width of markers on pipes with OD, including insulation, 6inches or larger: 1-1/2 inch minimum.

PART 3 - EXECUTION

3.1 Install electric heating cables after piping has been tested before insulation is installed.

3.2 Install cables according to IEEE 515.1

3.3 Set field adjustable switches and circuit breaker trip ranges.

3.4 Protect installed heat cables and equipment from damage.

3.5 Testing:

A. Test cables for electrical continuity and insulation integrity before energizing.

B. Test cables to verify rating and power input. Energize and measure voltage and current simultaneously.

C. Repeat tests for continuity, insulation resistance and input power after applying insulation on pipe mounted cables.

D. Remove and replace malfunctioning units and retest.

END OF SECTION 23 05 33