

SECTION 210533 - HEAT TRACING FOR FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes heat tracing for fire-suppression piping with the following electric heating cables:
 - 1. Self-regulating, parallel resistance.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For electric heating cable.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace electric heating cable that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SELF-REGULATING, PARALLEL-RESISTANCE HEATING CABLES

- A. Comply with IEEE 515.1.
- B. Heating Element: Pair of parallel No. 18 AWG, tinned, stranded copper bus wires embedded in crosslinked conductive polymer core, which varies heat output in response to temperature along its length. Terminate with waterproof, factory-assembled, nonheating leads with connectors at

one end, and seal the opposite end watertight. Cable shall be capable of crossing over itself once without overheating.

- C. Electrical Insulating Jacket: Flame-retardant polyolefin.
- D. Maximum Operating Temperature (Power On): 150 deg F (65 deg C).
- E. Maximum Exposure Temperature (Power Off): 185 deg F (85 deg C).
- F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- G. Capacities and Characteristics:
 - 1. Maximum Heat Output: 5 W/ft. (16.4 W/m).
 - 2. Piping Diameter: <See Drawings >.
 - 3. Number of Parallel Cables: <2 >.
 - 4. Spiral Wrap Pitch: <3 inches (mm)>.
 - 5. Electrical Characteristics for Single-Circuit Connection:
 - a. Volts: 120.
 - b. Phase: Single.
 - c. Hertz: 60 .
 - d. Full-Load Amperes: 12 .
 - e. Maximum Overcurrent Protection: 20 .

2.2 CONTROLS

- A. Remote bulb unit with adjustable temperature range from 30 to 50 deg F (minus 1 to plus 10 deg C).
- B. Snap action; open-on-rise, single-pole switch with minimum current rating adequate for connected cable.
- C. Remote bulb on capillary, resistance temperature device, or thermistor for directly sensing pipe-wall temperature.
- D. Corrosion-resistant, waterproof control enclosure.

2.3 ACCESSORIES

- A. Cable Installation Accessories: Fiberglass tape, heat-conductive putty, cable ties, silicone end seals and splice kits, and installation clips all furnished by manufacturer or as recommended in writing by manufacturer.
- B. Warning Tape: Continuously printed "Electrical Tracing"; vinyl, at least 3 mils (0.08 mm) thick, and with pressure-sensitive, permanent, waterproof, self-adhesive back.
 - 1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): 3/4 inch (19 mm) minimum.

2. Width for Markers on Pipes with OD, Including Insulation, **6 Inches (150 mm)** or Larger: **1-1/2 inches (38 mm)** minimum.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install electric heating cable where indicated and according to NFPA 70 and NFPA 13.
- B. Install electric heating cables after piping has been tested and before insulation is installed.
- C. Install electric heating cables according to IEEE 515.1.
- D. Install insulation over piping with electric cables according to Section 210700 "Fire-Suppression Systems Insulation."
- E. Install warning tape on piping insulation where piping is equipped with electric heating cables.
- F. Set field-adjustable switches and circuit-breaker trip ranges.
- G. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- H. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- I. Connect heat-tracing controls to fire-alarm system according to NFPA 13. Comply with requirements in Section 284621.11 "Addressable Fire-Alarm Systems."

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 1. Perform tests after cable installation but before application of coverings such as insulation, wall or ceiling construction, or concrete.
 2. Test cables for electrical continuity and insulation integrity before energizing.
 3. Test cables to verify rating and power input. Energize and measure voltage and current simultaneously.
- B. Repeat tests for continuity, insulation resistance, and input power after applying thermal insulation on pipe-mounted cables.
- C. Cables will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Remove and replace damaged heat-tracing cables.

END OF SECTION 210533