

## SECTION 22 30 00 - PLUMBING EQUIPMENT

### PART 1 - GENERAL

#### 1.1 DESCRIPTION

- A. The requirements of this section apply to the electric gutter and roof snow melt equipment.
- B. Related Work: The requirements of Section 22 05 00, Common Plumbing Materials and Methods, also apply to this section.

#### 1.2 QUALITY ASSURANCE

- A. Code: Comply with requirements of the Oregon State Plumbing Specialty Code.
- B. All equipment and component parts shall conform to governing codes.
- C. Labeling: All equipment shall have permanent labels affixed by the manufacturer listing model number, capacity, efficiency, approvals, and similar characteristics of the product.
- D. See 22 08 00 for Commissioning work associated with water heater systems.
- E. Coordinate with Division 26 for power connection. Coordinate with Owners control contractor for control interface/connector.

### PART 2 - PRODUCTS

#### 2.1 HEATING CABLE

- A. Self-regulating heating cable
  - 1. The heating cable shall consist of a continuous core of conductive polymer that is radiation cross-linked, extruded between two (2) 16 AWG nickel-plated copper bus wires that varies its power output in response to temperature changes.
  - 2. The heating cable shall have a modified polyolefin inner jacket and a tinned-copper braid to provide a ground path and enhance the cables ruggedness.
  - 3. The heating cable shall have a fluoropolymer (XT) outer jacket for enhanced mechanical and chemical protection.
  - 4. The heating cable shall have an inherently UV-resistant outer jacket (fluoropolymer).
  - 5. The heating cable shall have a self-regulating factor of at least 75 percent. The self-regulating factor is defined as the percent reduction of the heating cable power output going from a 0°F to 80°F roof temperature.
  - 6. The heating cable shall operate on line voltages of 208 volts.
  - 7. The heating cable power output shall be 12 W/ft at 32°F in ice or snow.
  - 8. The heating cable shall be part of a UL Listed, CSA Certified and FM Approved system.
- B. Heating Cable Connection Kits
  - 1. Manufacturer shall provide power connection, splice/tee and end seal kits compatible with selected heating cable.

2. Connection kits shall be rated NEMA 4X to prevent water ingress and corrosion. All components shall be UV stabilized.
  3. Connection kits shall be UL Listed, CSA Certified and FM Approved.
- C. Heating Cable Installation Accessories
1. Roof clips – Used to secure IceStop heating cables to roofs and gutters. The clips may be attached with mechanical fasteners (screws or nails) on shake roofs or using adhesive on metal, slate or composite roofing.
  2. Downspout Hangers - Used to provide mechanical protection and strain relief to the IceStop heating cable as it goes over sharp edges and to Raychem IceStop or equal Thermon, Chromolox or Nelson.

### PART 3 - EXECUTION

#### 3.1 EQUIPMENT INSTALLATION AND CONNECTION

- A. All equipment shall be installed as recommended by the manufacturer.
- C. Arrange equipment for adequate service access as recommended by the manufacturer and as required by code.
- D. Anchor equipment to resist displacement due to snow, ice and rain and as detailed on the drawings, recommended by the manufacturer, and as required by code and as specified in other sections of these specifications.

#### 3.2 TEST

- A. Field Testing and Inspections
  1. The system shall be commissioned in accordance to manufacture Installation and Operation manual.
  2. The heating cable circuit integrity shall be tested using a 2500 Vdc megohmmeter at the following intervals below. Minimum acceptable insulation resistance shall be 1000 megohms or greater.
    - a. Before installing the heating cable
    - b. After heating cable has been installed onto the pipe
    - c. After installing connection kits
    - d. After the thermal insulation is installed onto the pipe
    - e. Prior to initial start-up (commissioning)
    - f. As part of the regular system maintenance
  3. The technician shall verify that the snow/icing melting controller parameters are set to the application requirements.
  4. The technician shall verify that the snow/ice melting controller alarm contacts are corrected connected to the BMS.
  5. All commissioning results will be recorded and presented to the Owner.

END OF SECTION 22 30 00