

## PART 1 – GENERAL

### 1.1 SUMMARY

- A. Furnish and install a UL listed system of electric self-regulating heating cable and components for maintaining the water temperature in the pipes as indicated on the drawings.

### 1.2 CODES AND STANDARDS

- A. Codes and Standards shall be the current version adopted by the Authority Having Jurisdiction.

### 1.3 SUBMITTALS

- A. Copy of UL file indicating the heating cable is specifically listed to provide freeze-protection.
- B. Manufacturer's catalog cuts showing materials and performance data.
- C. Project list of at least 20 projects, installed for at least 5 years, with at least 2000 ft (600m) of heating cable in each project.

## PART 2 – PRODUCTS

### 2.1 CONSTRUCTION

- A. The self-regulating heating cable shall consist of two (2) 16-AWG nickel-coated copper bus wires embedded in a radiation-crosslinked conductive polymer core. It shall be covered by a radiation-crosslinked, polyolefin, dielectric jacket and enclosed in a tinned copper braid of 14 AWG equivalent wire size. The braid shall be covered with a (nominal) 40-mil polyolefin outer jacket, color coded for easy identification. The cable shall be specifically designed, manufactured, and UL listed for freeze-protection.

### 2.2 MECHANICAL

- A. The cable shall have a minimum cut-through resistance of 600 lb per CSA 22.2 0.3. Cutting test 4.14. The cable shall have a minimum impact resistance of 25 ft lb per UL 1588.11. The cable shall withstand a glancing impact of 22 ft lb per UL 1581.590. The cable shall have a minimum abrasion resistance of 7000 cycles per UL 719.19. The cable shall withstand a crush resistance of 4500 N per IEEE 515 Deformation Test 5.1.5.

### 2.3 EXPERIENCE

- A. The manufacturer shall have more than ten years experience with self-regulating heating cables for temperature maintenance of domestic hot water.
- B. The manufacturer's Quality Assurance Program shall be certified to ISO 9001 standard.

### 2.4 ACCEPTABLE MANUFACTURER

- A. Raychem Corporation.
- B. Thermon.

- C. Nelson Heat Tracing Systems.
- D. Or Approved Equal.

## PART 3 – EXECUTION

### 3.1 OPERATING TEMPERATURES

- A. The freeze protection system shall not exceed a nominal temperature of 40°F.

### 3.2 MAINTENANCE TEMPERATURE

- A. Each freeze protection system shall be maintained using only one product. Temperatures shall be maintained with straight runs of heating cable on the pipe. The use of a 40°F fixed thermostat shall ensure heating cable is off when pipe temperature is over 40°F.

### 3.3 INSTALLATION

- A. The system shall be installed by factory trained certified installers.
- B. The system shall be installed according to the drawings and the manufacturer's instruction. The installer shall be responsible for providing a functional system, installed in accordance with applicable national and local code requirements. Each circuit shall be protected with a 30-mA ground-fault protection device.
- C. Electrical Connections: The following requirements apply:
  - 1. Electrical power wiring is specified in Division 26.
  - 2. Freeze-protection for the fire line shall be monitored by fire alarm control panel.
- D. Insulate heat traced piping in accordance with the manufacturer's installation instructions and with Division 23.

### 3.4 TESTING

- A. Procedure: Measure the heater circuit continuity and the insulation resistance between the braid and bus wires with a 2500-Vdc megohmmeter (megger).
- B. Acceptable Results: The heater circuit shall be continuous and megger readings shall be at least 20 megohms regardless of heater length. Circuits yielding unacceptable readings must be repaired or replaced.
- C. Submittal of Results: Submit records of the test data to the Construction Manager.

**END OF SECTION**