SECTION 23 83 13
ROOF & GUTTER DEICING SYSTEM

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Self-regulating heating cable for Roof & Gutter Deicing
B. Deicing Controller
C. Snow & Ice Melt Sensors
D. Heating Cable Installation Accessories

1.2 RELATED SECTIONS

A. Section 07 31 00 – Shingles & Shake: Installation coordination with roofing material and details.
B. Section 07 32 00 – Roof Tiles: Installation coordination with roofing material and details.
C. Section 07 41 00 – Roof Panels: Installation coordination with roofing materials and details.
D. Section 07 50 00 – Membrane Roofing: Installation coordination with roofing materials and details.
E. Section 07 60 00 – Flashing & Sheet Metal: Installation coordination with roofing materials and details.
F. Section 07 70 00 – Roof & Wall Specialties: Installation coordination with roof specialties and details.
G. Section 26 06 00 – Schedules for Electrical: Materials and installation of wiring & electrical power sources.

1.3 REFERENCES

A. Canadian Standards Association (CSA): Directory of CSA Listed Products

B CSA C22.2 NO. 130-03-2008 Requirements for Electrical Resistance Heating Cables and Heating Device Sets.

B. National Electric Code (NEC): Article 426 Fixed Outdoor Electric Deicing & Snow Melting Equipment
C. Underwriters Laboratory (UL): Directory of UL Listed Products
D. IEEE 515.1-2012: Standard for testing, design, installation and maintenance of electrical resistance trace heating for commercial applications.

1.4 ACTION SUBMITTALS

A. Product Data: For Roof & Gutter Deicing System Components including the following:
    1. Manufacturer's Data Sheet
    2. Installation Instructions
    3. Electrical Requirements
    4. Shop Drawings indicating the location of the heating cable on roof, sensors & controls.
    5. Wiring Diagrams for controller & sensors

1.5 INFORMATIONAL SUBMITTALS

A. Sample of Extended 10 Year Warranty and Requirements

1.6 CLOSEOUT SUBMITTALS

A. Operation & Maintenance Manuals for Roof & Gutter Deicing System

1.7 QUALITY ASSURANCE

A. Manufacturers Qualifications

1. Minimum of 20 years of experience in design, engineering, manufacturer and support of roof & gutter system and components.
2. Manufacturer shall be ISO-9001:2008 Registered

B. Installer Qualifications
1. System installer shall have a complete understanding of product from manufacturer prior to installation of roof & gutter deicing system.
2. Electrical Connections shall be performed by a licensed electrician.

1.8 DELIVERY, STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging and dry location with a temperature range of 0°F (-18°C) to 100°F (38°C) until ready for installation.
B. Protect Heating Cable from exposure to moisture, water & mechanical damage until ready for installation.

1.9 WARRANTY

A. Provide manufacturer's standard warranty form which manufacturer agrees to repair or replace products that fail in material or workmanship within the following periods following the date of substantial completion:
1. Heating Cable & Components: One Year
2. Controls & Sensors: One Year

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Manufacturer: Subject to compliance with requirements, provide a self-regulating, roof & gutter deicing system by Chromalox, Pittsburgh,, PA, 800-443-2640, www.chromalox.com .
1. Submit comparable products of one of the following for approval by Engineer:
a. [Specifier: insert name of manufacturer of comparable product.]
b. Submit requests for substitution in accordance with Instructions to Bidders and

B. MATERIALS
1. Chromalox CPR8-2CT Self-Regulating, Heating Cable
a. Operating Voltage 240 VAC
b. The self-regulating, heating cable shall consist of two (2) 16 AWG nickel-copper bus wires embedded in a radiation cross-linked, continuous, self-regulating polymer core.
c. The self-regulating, heating cable shall have a modified polyolefin dielectric jacket cover.
d. The self-regulating, heating cable shall have a tinned-copper braid.
e. The self-regulating, heating cable shall have a fluoropolymer over jacket.
f. The self-regulating, heating cable shall be suited for use on wood, plastic, sheet metal, tile and asphalt building materials.
g. The self-regulating, heating cable have a power output of 12 watts per foot @ 32°F in snow and ice.
h. The heating cable shall be part of a UL Listed and CSA Certified System.
2. Chromalox Connection Kits
a. Manufacturer to provide connection kits for power, splice, tee and end seal shall be:
Chromalox SnapFit Series style connection system
b. Power Connection Kits shall be rated NEMA 4X to prevent water ingress and corrosion.
c. Connection Kits shall be UV stabilized
d. Connections kits shall be UL Listed and CSA Certified.

3. Chromalox Heating Cable Installation Accessories
   a. Roof clips RCK-1 shall be capable of being installed with mechanical fastening or adhesive.
   b. Downspout Hangers RDK-1 to support heating cable in the gutter downspout.
4. [Chromalox Roof & Gutter System Control – One or Two Circuits with Individual Control - 120-277V]
   a. Chromalox Model Chroma-RG2
   b. Supply Voltage: 208-240 VAC
   c. Two Form A Contacts
   c. Rated for 30 Amp Resistive Load
   d. Weather Resistant NEMA 4X enclosure
   e. Adjustable Hold-On Timer: 0 – 8 hours
   f. Automatic & Manual Override Operator Control
   h. Integrated 30mA Ground Fault Equipment Protection
   i. LED Status indicator lights –
      1. Supply, Heat, Snow, Ground Fault, System Test
   j. Provide aerial sensor for control of the roof & gutter deicing system:
      1. Chromalox CS-AS – aerial snow located on roof or building installed on roof or on building away from overhead obstructions.
      1. Coordinate the installation of the sensors with manufacturer

PART 3 – EXECUTION

3.1 EXAMINATION

A. Installer to field verify all dimensions as shown on Roof & Gutter Deicing System shop drawings

B. Installer to verify that power is available, in proper location and ready for use.

C. Installer to verify that all roofing & gutter surfaces have been properly prepared for heating cable installation. Notify architect of unsatisfactory conditions exist prior to installing Roof & Gutter Deicing System.

3.2 INSTALLATION

A. The roof & gutter installation shall conform to all local building codes.

B. The installer shall comply with the Roof & Gutter Deicing installation, operation & maintenance instructions – Chromalox document – PJ485-2.

C. The installer shall layout heating cable per approved shop drawings.

D. Grounding of the roof & Gutter Deicing System shall be in accordance with section 26 05 26 “Grounding & Bonding for Electrical Systems”

E. Connections of all electrical wiring shall be in accordance with section 26 05 19 “Low-Voltage Electrical Systems”

3.3 FIELD QUALITY CONTROL

A. Start-Up and testing of the Roof & Gutter Deicing System shall be performed by factory technician or factory representative per the owner’s requirements.

B. Field Testing & Inspections
   1. Field Testing and Inspections
   1. The system shall be commissioned in accordance to the Chromalox Installation, Operation & Maintenance manual for Roof & Gutter Deicing Systems – PJ-485.

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 roof or gutter

c. After installing connection kits

d. Prior to initial start-up (commissioning)

f. As part of the regular system maintenance

3. The technician shall verify that the controller parameters are set properly for the roof & gutter deicing application requirements.

4. The technician shall verify that the temperature & moisture sensors are corrected connected to the controller.

5. The installer shall submit test results to owner after commissioning.

3.4. ADJUSTING AND CLEANING

A. Keep temperature & moisture sensors clean of dirt and debris

3.5 MAINTENANCE

A. Comply with Manufacturers recommendations IOM Manual PJ-485 for service of roof & gutter deicing system

END OF SECTION