

GUIDE SPECIFICATIONS

DIVISION 23 8300 Roof Ice Melt System

ROOF ICE AND SNOW MELTING SYSTEM GUIDELINES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section includes but is not limited to furnishing and installing a complete roof de-icing system of engineered extruded base panels, cover panels, UL Listed heater cables, connection kits and electronic controllers.

1.02. RELATED REQUIREMENTS

- A. Section 02 58 00 - Snow Control
- B. Section 07 20 00 - Thermal Protection
- C. Section 07 30 00 - Steep Slope Roofing
- D. Section 07 40 00 - Roofing and Siding Panels
- E. Section 07 50 00 - Membrane Roofing
- F. Section 07 60 00 - Flashing and Sheet Metal
- G. Section 07 71 23 - Manufactured Gutters and Downspouts
- H. Section 25 12 16 - Direct-Protocol Integration Network Gateways
- I. Section 25 51 00 - Integrated Automation Control of Facility Equipment
- J. Section 26 00 00 - Electrical

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Meeting: Conduct a preinstallation meeting <<one week; at least one week; _____ ; or None - N/A>> prior to the start of the work in this section; require attendance by all affected installers.
- B. Sequencing: Ensure that the electrical testing and connections be coordinated with the roof installation in an orderly and expeditious manner.

1.2 SYSTEM DESCRIPTION

- A. The system shall consist of all equipment and materials for a complete roof de-icing system installation specifically designed for keeping water paths clear and to avoid ice dams on roof eaves, gutters, and downspouts, with ambient temperature sensing controllers, integrated ground-fault circuit protection, and Building Management System (BMS) communication capabilities.
- B. See Manufacturer's current Installation and Operations Guide and System Layout for detailed information.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures
- B. Product Data: Submit Manufacturer's Data Sheets for all eave, valley, gutter, and controller components
- C. Shop Drawings: Submit drawings and System Layout showing the following:

1. Determine the zones for system.
 2. Locations of controllers.
 3. Eave panel layout.
 4. Valley panel layout.
 5. System Layout with sensor, junction box, and controller probe locations.
 6. Distribution panel location and drawings.
- D. Installation Guide: Submit Manufacturer's written Installation and Operation Guide for system.
- E. Field Quality Control Submittals: Complete testing and record readings in Installation Log.
- F. Project Field Documents: Record actual installations of junction boxes, branch circuits with cable meter (footage) readings (start and end counts)
- G. Operation and Maintenance Data: Include Manufacturer's descriptive literature, operating instructions of system and controls, installation instructions, maintenance and repair data, and parts listings.\
- H. Warranty: Submit Installation Log demonstrating satisfactory testing results to Manufacturer, Project Architect, General Contractor, and Owner. Submit copy of Manufacturer's standard warranty for system.
- I. Maintenance Data:
1. Include repair methods and parts list of components
 2. See Section 01 6000 - Product Requirements for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Company specializing in roof ice melt systems specified in this section, with not less than Five (5) years of experience in high-efficiency systems.
- B. Installer qualifications: System installer shall have a complete understanding of product and product literature from manufacturer prior to installation. Electrical connections and testing shall be conducted by a licensed electrician.
- C. Regulatory Requirements and Approvals: Systems heating cable and connection kits to be Listed and Classified by UL (Underwriter's Laboratories) for roof and gutter deicing.
- D. Copies of Documents at Project Site: Maintain at the Project Site a copy of each referenced document that prescribes execution requirements, including Installation Log with recorded readings to date.

1.06 STORAGE AND HANDLING

- A. Deliver, store, and handle to prevent deterioration due to moisture, temperature changes, or other causes.
- B. Delivery and Acceptance Requirements: Deliver products to site in original, unopened containers or packages with legible and intact manufacturer's labels identifying the following:
1. Product and Manufacturer
 2. Length/Quantity
 3. Lot Number
 4. Installation and Operation Guide
- C. Storage and Handling Requirements
1. Store the materials in clean, dry indoor location off the ground with a temperature range of 0 F. and 100 F.
 2. Protect the heating cable from mechanical damage.

3. Do not allow components with strippable film to be exposed to sunlight or excessive heat before installation.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide warranty as follows:
 1. 50-year warranty on Panel Covers
 2. 50-year warranty on aluminum Base Panels
 3. 40-year warranty on Kynar-500 finished Panel Covers
 4. <<2 year; 10 year; 15 year; or ____>>manufacture's warranty for heating cable system>>.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Manufacturer:
 1. Manufacturer shall have no less than five years experience with manufacturing of roof ice melt systems.
 2. Manufacturer must manufacture component to ISO 9000 requirements, and all sheet metal products must be manufactured in-house to 0.25 angle and 0.004" dimensional tolerances.
 3. Summit Ice Melt Systems, Inc. www.summiticemelt.com
 4. Substitutions: Not Permitted

2.2 PRODUCTS, GENERAL

- A. Single Source Responsibility: Furnish complete heat tracing system for roof and gutter de-icing from manufacturer.
- B. The complete system (heating cable, metal panels, connection kits, and controllers) shall be for roof and gutter de-icing. No parts of the system may be substituted or exchanged.

2.3. PRODUCT SELECTION

- A. Determine the roof edge ice melt system Product Line with Snow Classification Map at <http://summiticemelt.com/learn/ice-dam-potential-snowfall-zones/> from the following:
 1. Radiant Edge PRO [Class 1 (Heavy) and 2 (Moderate) snow areas]
 2. Radiant Edge LT [Class 2 (Moderate) and 3 (Light) snow areas]
 3. HotSlot [for Class 2 (Moderate) and 3 (Light) snow areas]
 4. Valley [All areas]
 5. Lowslope [All areas: for low pitch and metal roofs]
 6. Heated Standing Seam [All areas]
- B. S1 (120Vac) and S2 (208-277Vac) Self-regulating heater cable for roof systems and gutters and downspouts.
 1. UL and CSA approved self-regulating heater cable 12 watt per foot nominal output heater cable
 2. Two Bus Wires: 16 AWG, Nickel Plated Maximum
 3. Heating Core: Radiation Cross-linked Polyolefin.
 4. Primary Dielectric Insulation: Radiation Cross-linked Polyolefin

5. Metallic Braid: 16 AWG (equivalent size) tinned copper
 6. Outer Jacket: Polyolefin
 7. Minimum Bend Radius: 1.125"
 8. The outer jacket of heating cable shall have the following markings:
 - a. Heating cable Model Number
 - b. Agency Listings
 - c. Meter Mark
 - d. Lot/Batch ID
 9. Supply Voltage: <<120Vac; 208Vac; 240Vac; 277Vac>>
- C. Listings
1. Manufacturer shall provide UL and CSA certificates for roof and gutter deicing applications.
- D. Assembly
1. Factory designed for outdoor applications
 2. Provide Manufacture's S1 (120Vac) or S2 (208-277Vac) self-regulating heater cable with 12 watt per foot nominal output.
 3. Provide all manufacturer's accessories as required: power connection kits, splice kits, protective gutter and downspout straps.
- E. Controls
1. Provide 4CDC fully automatic microprocessor based control system (or larger is system requires)
 2. Sensing to be based upon Ambient Temperature Sensing Probe Input
 3. Field adjustable set point for system trigger and low-temperature shutoff
 4. Controls to be
 - a. Local Zone Controller
 - i. Supply Model 4CDC ambient temperature sensing controller.
 - ii. Digital controller interface displaying status, ambient temperature, and mode
 - iii. 4 circuits full 30A 110Vac or 220Vac rating
 - iv. Enclosure <<NEMA 1 enclosure for interior installations; NEMA 4 enclosure for exterior installations>>.
 - v. Provide a larger controller as needed
 - b. Central Distribution and Control Panel
 - i. Digital controller interface displaying status, ambient temperature, and mode
 - ii. Ambient temperature sensing controller
 - iii. Enclosure <<NEMA 1 enclosure for interior installations; NEMA 4 enclosure for exterior installations>>.
 - iv. Multiple branch circuits as needed
 - v. Field adjustable set point for system trigger and low-temperature shutoff
 - vi. Connect to a Building Management System (BMS) as needed.
- F. Accessories
1. Provide manufacturer's stainless steel protective downspout straps
- G. Electrical Characteristics
1. Radiant Edge PRO (24 watts/foot) Note: 36 watt per foot systems are not acceptable.

2. Radiant Edge LT (12 watts/foot)
 3. HotSlot (12 watts/foot)
 4. Valley (24 watts/foot)
 5. Lowslope (24 watts/foot)
 6. Heated Standing Seam (to be determined)
 7. S1 (120Vac) and S2 (208-277Vac) 12 watt per foot nominal output heater cable
- H. Metals/Finishes
1. Aluminum Panel Covers: Select from Manufacturer's standard color selection with a Kynar-500 paint finish. Color to be
 2. Real Copper
 - I. Copper shall be 20 oz. per foot (nominal 0.027" thick)
 - ii. Copper shall have thermally transparent polyvinyl isolator film to protect copper covers from galvanic corrosion (electrolysis) from contact with dissimilar metals (aluminum Base Panels)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine roofing and/or roof deck for proper installation, cleanliness, or condition that may hinder proper installation of ice melt system.
 1. Notify Contractor in writing of items needing correction.
 2. Do not install ice melt system until faulty conditions are corrected.

3.2 INSTALLERS

- A. Licensed Contractor with a minimum of two years successful certified experience installing projects utilizing roof edge ice melt systems equal to systems specified in this section.

3.3 INSTALLATION

- A. Interface with Other Work: Coordinate installation of ice melt system with appropriate sections in Division 07 for roofing material and appropriate sections of Division 26 Electrical.
- B. Perform testing of heater cable and record megohmmeter testing results in Installation Log per section 3.3.
- C. Comply with the manufacturer's recommendations in the S1 and S2 heating cable, connection kits and Splice kits Installation and Operation Guide and manuals.
- D. Install ice melt system, including Eave and Valley Base Panels, and self-regulating heater cables per the drawings and Manufacturer's Installation and Operation Guide. Prior to installation of cover panels, perform and record megohmmeter testing results. Ensure that results meet requirements in Installation Guide before proceeding. Have Project Supervisor approve compare to System Layout and approve cable installation.
- E. On new construction, apply a strip of waterproof membrane along the top edge of the eave cover panels to ensure weather tight installation. Locate strip low enough to weatherproof adjacent roofing fasteners, and high enough to not be visible when roofing is installed.
- F. Ensure all circuits are protected with 30mA GFCI breakers as required by NEC.

3.3 FIELD QUALITY CONTROL

- A. Heater cable handling and testing as directed by System Manufacturer in Installation Guide:
 - 1. Heater cable testing and the recording of the results in Installation Log is required at three phases
 - a. At time of materials delivery
 - b. After cable is installed in system but prior to covering with Cover Panels
 - c. Before commissioning and powering up system.
 - d. Do not proceed with project if unsatisfactory test results are given. Follow the procedures in the Troubleshooting section of Installation and Operation Guide until requirements are met.
 - e. Provide the completed Installation Log to the Owner/Contractor and to Summit Ice Melt Systems within 30 days of completion.
 - 2. Heater Cable Testing Criteria
 - a. The heater cable must be tested at 500Vac and 100Vac megohmmeter.
 - b. Minimum acceptable insulation resistance readings shall be 20 megohms or greater.
 - 3. Heater cable handling
 - a. Do not pull cable over sharp edges.
 - b. Do not use excessive pulling force.
 - c. Do not kink or crush the heating cable.
 - d. Do not walk on heater cable.
 - e. Protect heater cable from sharp edges, such as sheet metal covers, with electrical tape.
- B. Install per Manufacturer's most recent edition of the Installation and operation Guide and follow System Layout for this project.
- C. Ensure that only Manufacturer's components are use on project.
- D. Ensure that all circuits are protected with 30mA ground-fault equipment protection device GFEPDs.
- E. Ensure all work is performed in accordance with the National Electrical Code (NEC), agency certifications, and national and local laws.

3.4 DEMONSTRATION

- A. Test system and operate in presence of Architect, Contractor, and Owner's Representative to be certain system functions in accordance with design intent.
- B. Provide adequate demonstration and training to Owner in operation and maintenance of system.

END OF SECTION