

**SPECIFICATION  
FOR  
SECTION 15778  
ELECTRIC SNOW/ICE MELTING SYSTEM  
(UTILIZING MINERAL INSULATED HEATING CABLE)**

**Organized in conformance with 1995 MasterFormat of  
Construction Specification Institute**

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The Section / Division assignment of these specifications  
may differ from traditional convention and/or installation  
trade/discipline. Specifiers shall coordinate in such man-  
ner as may best serve the interest of all parties.  
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SECTION 15778  
ELECTRIC SNOW/ICE MELTING SYSTEM

PART 1 GENERAL

- 1.1 Furnish and install automatic snow/ice melting system as shown on the Drawings.
- 1.2 System includes:
  - A. Electric heating cables.
  - B. Snow/ice sensor and control panel.
  - C. Accessories, such as contactors, junction boxes, splicing materials, etc.
- 1.3 Codes and standards.
  - A. Underwriters Laboratories, Inc.  
[ Canadian Standards Association. ]
  - B. 1996 National Electrical Code (NFPA-70) – Article 426.  
[ Canadian Electrical Code, Part I (C22.1-940). ]
  - C. *ASHRAE Handbook 1995 Applications* -- Chapter 46.

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*Do not request submittals if Drawings sufficiently describe the products of this Section or if submittals are enumerated in another Section of the Specifications.*  
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- 1.4 Submittals
  - A. Shop Drawings: Indicate general arrangement of snow/ice melting cable.
  - B. Product Data: Provide data on heating cable, sensor, control panel and accessory equipment and materials.
  - C. Instructions: Submit maintenance and operating instructions.

1.5 Project Conditions

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*Coordinate these requirements with Division 1 and with the responsibility for determining project conditions defined in the Conditions of the Contract.*  
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- A. Make field measurements of the snow/ice melting target area.
- B. Determine all pavement finished surface elevations, gradients and crowns to assure proper drainage of melt-off.
- C. Determine the location and extent of all planned pavement expansion and control joints.
- D. Determine the depth below finished surface of all required reinforcing rod or mesh.

## PART 2 PRODUCTS

### 2.1 HEATING CABLE

- A. Description: Heating cable shall be copper or resistance alloy series conductor in [ single ] [ two ] conductor configuration with magnesium oxide insulation, all contained in a seamless copper-alloy sheath. Heating cables shall be joined to a cold lead section by a factory-made watertight joint. Copper conductors shall be corrected for temperature coefficient of resistance at the expected operating temperature.
- B. Heating cables shall be designed for operation at [120] [208] [240] [277] volt.
- C. Each heating cable shall be factory fabricated to the required length.
- D. All heating cables shall be constructed and tested to requirements.
- E. Each item shall be shipped in an individual package with the heating cable number clearly marked on the outside.
- F. Manufacturers:
  - 1. [ BICC Phillips, Inc. (Pyrotenax) ]
  - 2. [ LETCO Products, Inc. ]
  - 3. [ O-Z / Gedney Company, Inc. (Nelson) ]
  - 4. [ Thermon Manufacturing Company ]

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install heating cable in accordance with manufacturer's instructions.
  - 1. Test each heater conductor continuity and insulation resistance to ground before removal from shipping package using a 500 V. dc insulation ground tester; minimum ground resistance shall be 10 megohms.
  - 2. Uncoil heating cables along floor or smooth, level surface; avoid kinking or twisting and do not exert stress at the cold lead joint.
  - 3. Install heating cable after concrete reinforcing and forming are complete.
  - 4. Do not route heating cable across pavement expansion or control joints.
  - 5. Do not cross heating cable over itself.
  - 6. Maintain uniform spacing between adjacent runs of heating cable.
  - 7. Maintain uniform minimum depth of heating cable within pavement.
  - 8. Minimum inside radius of field bends shall not be less than five times the outside diameter of the heating cable.
  - 9. When the location of all runs and bends is correct, secure heating cable with [ plastic straps or ties to concrete reinforcing ] [one-hole tubing or conduit clamps fastened to asphalt base course ].
  - 10. Prior to pavement placement, repeat heater conductor continuity and insulation ground resistance tests.
  - 11. Monitor heating cable continuity throughout pavement placement.
  - 12. Heating cable shall not be energized until pavement has been fully cured.

PART 4 CONTROLS

4.1 All installed heating cable branch circuits shall have automatic control.

4.2 SENSORS

A. Snow/ice sensors shall incorporate a microprocessor that, in conjunction with integral ambient air temperature and moisture detectors, will verify the presence of moisture at 38° F. (3.3° C.) and below.

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*The following requirement is applicable to the Model SIT-5E Pavement-Mounted Sensor.*  
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- 1. Sensors controlling pavement snow/ice melting shall function to incrementally ramp pavement temperature to minimize thermal stresses that may contribute to concrete cracking and shall maintain a maximum slab temperature of 44° F. (6.7° C.).
- B. Sensor design and operation shall effectively eliminate snow/ice bridging phenomenon.
- C. Snow/ice sensors shall operate at low voltage.
- D. Snow/ice sensor enclosures shall be non-ferrous metal and shall be constructed to adequately withstand the rigors associated with the intended location.
  - 1. All electronic components shall be waterproofed with U-L 94V-O flame retardant epoxy.
- E. Manufacturer: Environmental Technology, Inc.
- F. Snow/ice sensor(s) shall be Model [ CIT™-1 for installation in exposed, elevated locations. ] [ SIT™-5E for flush installation in pavement and ramps. ]

4.3 CONTROL PANEL

- A. Control panel shall be microprocessor based to provide effective, economical automatic control.
  - 1. Control panel shall accommodate up to six snow/ice sensors on a single 3-conductor low voltage detection loop having a maximum installed length of 2000' (609.6 m) to the most distant sensor.
  - 2. Control panel shall have an adjustable hold-on timer to provide up to 10 hours of system operation after snowfall ceases for complete melting.
  - 3. Control panel shall have a manual cycle switch permitting the following operation:
    - a. Manual system operation for the hold-on time period to clear tracked slush and drifted snow.
    - b. Manual termination of the hold-on period during timedown.

- c. Manual system test operation independent of weather conditions for a fixed one minute period with a mandatory two minute cooldown time.
- 4. Control panel shall have individual LEDs to provide indication of power supply, sensor status and heater operation.
- 5. Control panel shall be capable of providing remote monitor/control via 2-conductor NEC Class 2 wiring having a maximum installed length of 2000' (609.6 m).
- 6. Control panel enclosure shall be suitable for NEMA 1,2,3R,12 and 13 applications and shall incorporate safety barriers to isolate line and low voltage compartments.

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*The following requirements are applicable to the Model APS-3B Control Panel operating at either 120 V. or 208-240 V. ac supply.*

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- 7. Control panel shall operate satisfactorily over an ambient temperature range of -40 to 136° F. (-40 to 58° C.).
- 8. Control panel shall have a DPDT output relay capable of switching heater loads up to 24 ampere or directly operating both mechanically and electrically-held remote contactors.

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*The following requirements are applicable to the Model APS-4 Control Panel operating at either 208-240 V. or 277 V. ac supply.*

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- 7. Control panel shall operate satisfactorily over an ambient temperature range of -40 to 160° F. (-40 to 60° C.).
- 8. Control panel shall include a 2-pole definite purpose contactor capable of switching heater loads up to 40 ampere.
- 9. Control panel shall include 30 ma ground-fault equipment protection with companion test switch and LED indicator.
- 10. Control panel shall be capable of providing networked control of up to ten satellite contactor modules via 2-conductor NEC Class 2 wiring having a maximum installed length of 2000' (609.6 m) to the most distant unit.

- B. Manufacturer: Environmental Technology, Inc.
- C. Control panel shall be Model [ APS™-3B ] [ APS™-4 ]; supply voltage shall be [ 120 ] [ 208-240 ] [ 277 ] volt.
- D. Satellite contactor(s) shall be Model SC™-40; supply voltage shall be [ 208-240 ] [ 277 ] volt.

END OF SECTION