SPECIFICATION
FOR

SECTION 15778
ELECTRIC SNOW/ICE MELTING SYSTEM

(UTILIZING SELF-REGULATING 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 manner as may best serve the interest of all parties.

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Environmental Technology, Inc.
1850 N Sheridan Street, South Bend, IN 46628
Tel: (574) 233-1202 • (800) 234-4239
Fax: (574) 233-2152 • (888) 234-4238
Email: sales@networketi.com
Web: http://www.networketi.com

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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 consist of two parallel copper bus wires embedded in a self-regulating polymer core that varies its power output in response to temperature all along its length. Heating cable shall be covered with an irradiated cross-link dielectric, a tinned-copper braid and an overall jacket of polyolefin. Power supply, end seal and splices shall be accomplished with manufactured kits specifically intended for the purpose.
B. Heating cable shall be designed for operation at [120] [208] [240] [277] volt.
C. All heating cable shall be constructed and tested to requirements.
D. All heating cable shall be continuously marked with manufacturer's name, catalog number, supply voltage and nominal power output in watts per lineal foot and shall be furnished on spools clearly marked with the length contained thereon.
E. Manufacturers:
   1. [Briskheat Corporation]
   2. [Chromalox, E.L. Wiegand Div.]
   3. [Raychem Corporation]

PART 3 EXECUTION

3.1 INSTALLATION

A. Install heating cable in accordance with manufacturer's instructions.
   1. Install heating cable after concrete reinforcing and forming are complete.
   2. Do not route heating cable across pavement expansion or control joints.
   3. Maintain uniform spacing between adjacent runs of heating cable.
   4. Maintain uniform minimum depth of heating cable within pavement.
   5. Secure heating cable with [plastic straps or ties to concrete reinforcing] [insulated staples or one-hole tubing clamps to asphalt base course].
   6. Prior to pavement placement, test heating cable continuity and insulation resistance to ground in accordance with manufacturer's recommendations.
   7. Monitor heating cable continuity throughout pavement placement.
   8. 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 to160° 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