

**SECTION XXXXXX**

**ELECTRIC SNOW MELTING SYSTEM**

1. GENERAL
	1. SECTION INCLUDES
		1. Snow melting cables.
		2. Control unit for snow melting cable.
		3. Components and accessories for a complete operating snow melting system.
		4. Snow Melting Installations: Nominal watts/square foot: Pedestrian Area 55 W/Sq Ft., Vehicle Area 45 W/SqFt.
	2. REFERENCES

		1. Underwriter’s Laboratories (UL)
		2. Canadian Standards Association (CSA)
		3. National Electric Code (NEC): – Article 426 Fixed Outdoor Electric Deicing and Snow-Melting Equipment
	3. SUBMITTALS

		1. Submit under provisions of Section XXXXX
		2. Manufacturer’s product data sheets
		3. Manufacturer’s installation instructions
	4. PROJECT RECORD DOCUMENTS

		1. Record locations of heating cable, temperature and moisture sensors, thermostats and branch circuit connections.
	5. QUALITY ASSURANCE

		1. Manufacturer Qualifications:
			1. Minimum 50 years of experience in design, engineering, manufacture and support of specified system and components
		2. Product Requirements
			1. All snow melting equipment furnished under this section shall be supplied by a single manufacturer.
			2. UL Listed and CSA Certified MI snow melting cables.
			3. Automatic snow melting control with continuous monitoring of ambient temperature, slab temperature, and slab moisture.
			4. Self-Regulating cable is not acceptable for this application.
			5. Glycol based systems are not acceptable for this application.
			6. MI snow melting cable shall be factory assembled, immersed in water for a minimum of 12 hours, and then tested for insulation resistance, high potential breakdown, and continuity before leaving the factory.
	6. COORDINATION
		1. Coordinate installation of heating cable with Electrical Contractor, Concrete, Asphalt or Paving Contractor, and General Contractor.
		2. Coordinate installation of heating cable with installation of concrete framework and concrete placement.
2. PRODUCTS

	1. MANUFACTURERS

		1. System shall be manufactured by:

Delta-Therm Corporation, 6711 Sands Rd Suite A, Crystal Lake, IL 60014, Phone: 800-526-7887,

Fax: 847-526-4456, Email: info@Delta-Therm.com, Web: www.Delta-Therm.com

* + 1. Substitutions: No substitutions are permitted.
	1. HEATING CABLE

		1. Mineral Insulated (MI) Heating Cable:
			1. UL Listed and CSA Certified Mineral Insulated (MI), seamless sheathed, series resistance heating cable.
			2. MI heating cable construction shall consist of MI copper sheath or MI stainless steel sheath, terminated in factory splice to stranded wire connection leads.
			3. MI copper sheath heating cable construction shall consist of MI copper sheath and have a Low Smoke Zero Halogen jacketing (LSZH) to provide extra corrosion and mechanical protection.
			4. Connection leads shall be of enough length to reach junction boxes or power panel as shown on detailed drawings. Connection leads shall be of stranded wire. Only connection leads in conduit shall exit from heated zone.
			5. Insulator shall be Magnesium Oxide only; a Fiberglass insulator is not permitted.
			6. No combustible materials between heating conductor wire and ground sheath.
			7. Cross section of heated portion of cable not to exceed 0.4 of an inch.
			8. Tie cable to rebar or reinforcing mesh.
			9. Cable rating shall be:
				1. 120 VAC
				2. 208 VAC
				3. 240 VAC
				4. 277 VAC
	2. CONTROLS
		1. DTC-24S, Automatic Control System:
			1. Controller shall have:
				1. 3-button keypad with single level menu.
				2. LED Digital Display with manual temperature adjustment.
			2. System shall have a minimum of:
				1. One 5” Diameter MP Sensor to sense moisture and slab temperature.
				2. RID remote indicator and activation timer.
			3. System Activation:
				1. When slab/ambient temperature is less than the setpoint temperature and snow or moisture is present on the MP sensor.
			4. System Deactivation:
				1. System will remain active for the pre-set time duration after the sensor has dried or temperature rises about the setpoint.
				2. Control system deactivation timer shall be programable from 0 to 24 hours in one-hour increments with a manual timer deactivation.
		2. MPS, UL Listed Automatic Control System:
			1. Controller shall have:
				1. Fully automated system requiring no operator settings or adjustments.
				2. Input Power Requirement of: 120VAC, 208VAC or 240VAC.
			2. System shall have a minimum of:
				1. One 5” Diameter MP Sensor to sense moisture and slab temperature
				2. RID remote indicator and activation timer.
			3. System Activation:
				1. When slab/ambient temperature is less than the setpoint temperature of 40° F and snow or moisture is present on the MP sensor.
			4. System Deactivation:
				1. When slab/ambient temperature is greater than the setpoint temperature of 40° F or no snow or moisture is present on the MP sensor and 5 hours have elapsed.
		3. Power Control Panel with G.F.P.E:
			1. Controller shall have:
				1. NEMA rated panel enclosure with one Ground Fault protective device per circuit and one green “working” LED and one red “trip” LED per circuit.
				2. NEMA rating of NEMA 1, NEMA 4, NEMA 4X.
				3. One red “System On” LED, one green “Control Power On” LED, and one Amber “Trip Indicator” LED on panel door.
				4. Interior G.F. Test button and include Dry alarm contacts.
			2. Power Control panel model shall be:
				1. GFPE-2-N
				2. GFPE-4-N
				3. GFPE-6-N
				4. GFPE-8-N
				5. GFPE-12-N
	3. ACCESSORIES

A. Brass Embedded Heating System Marker: Fixed outdoor electric deicing marker (4” by 5” in size) shall be installed flush with surface.

1. NEC Article 426 Section 426-13, Identification, states that embedded snow-melting equipment must be evident by the posting of appropriate caution signs or markings.
2. EXECUTION

	1. EXAMINATION

		1. Installer to verify that concrete framework is ready to receive work.
		2. Installer to verify field measurements are as shown on Drawings.
		3. Installer to verify that required utilities are available, in proper location, and ready for use.
		4. Beginning installation means installer accepts conditions.
	2. SNOW MELTING CABLE INSTALLATION

		1. Install in accordance with manufacturer’s instructions.
		2. Complete installation shall conform to appropriate codes and shall also be in accordance with manufacturer’s specification.
		3. Do not energize the system until concrete has thoroughly cured.
		4. MI heating cable shall not leave heated area or cross expansion or control joints.
		5. Pull stranded connector leads through conduit from condulets to junction boxes.
		6. Embedded MI condulet bodies in concrete to be filled fill with water repellent powder.
		7. Tie cable to rebar or reinforcing mesh.
		8. Position cables 2” to 3” inches below finished surface but not less than 1.5”. Install cable in accordance with detailed layout drawings.
		9. Cable Spacing in Concrete: 5” to 8” inches on center per project design.
		10. Do not pinch or make sharp bends in cable.
		11. Slab sensor(s) shall be placed between heating elements.
	3. FIELD QUALITY CONTROL

		1. Test continuity of heating cable.
		2. Test total resistance (TR) using an ohmmeter. The ohmmeter reading should be within 10% of the calculated Total Resistance.
		3. Perform Insulation resistance (IR) or “Megger” test on each heating cable before, during and after installation. Insulation resistance should be greater than 10 megohms.
		4. Measure voltage and current at each unit after concrete has set-up.
		5. Enter the total resistance and insulation resistance readings on the warranty card.
		6. Annually check system for loose or damaged cable.
	4. ADJUSTING AND CLEANING

		1. Keep automatic control system’s slab sensor(s) clean of dirt and debris.
	5. PROTECTION

		1. Protect installed products until completion of project.

END OF SECTION