

**SECTION XXXXXX**

**ELECTRIC SNOW MELTING SYSTEM**

1. GENERAL
	1. SECTION INCLUDES
		1. Heating cables for slab snow melting.
		2. Control unit for a snow melting system.
		3. Components and accessories for a complete operating snow melting system.
		4. Snow melting design requirements: Nominal watts/square foot: Pedestrian Area 50 to 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 20 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/or CSA Certified snow melting cables.
			3. Automatic snow melting control with continuous monitoring of 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. Snow melting cable shall be factory assembled and functionally tested 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 Mineral Insulated (MI), seamless sheathed, series resistance heating cable.
			2. MI heating cable construction shall consist of MI jacketed 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 with a Low Smoke Zero Halogen jacketing (LSZH) to provide corrosion and mechanical protection.
			4. Connection lead lengths are standard 20 feet with optional longer lengths available. Connection leads shall be of stranded wire and factory terminated.
			5. Cable voltage rating shall be:
				1. 120 VAC
				2. 208 VAC
				3. 240 VAC
				4. 277 VAC
				5. 480 VAC

* + 1. TXLP1 Series Resistance Heating Cable:
			1. UL Listed stranded resistance heating wire.
			2. Heating cable construction shall consist of XLPE insulation, tinned copper grounding conductor, aluminum sheath, and PVC outer jacket.
			3. Connection lead lengths are standard 15 feet with optional longer lengths available. Connection leads shall be of stranded wire and factory terminated.
			4. Cable voltage rating shall be:
				1. 120 VAC
				2. 208 VAC
				3. 240 VAC
				4. 277 VAC
				5. 480 VAC
		2. DWS-T Series Resistance Heating Cable on Mat:
			1. CSA us Certified two conductor resistance heating wire.
			2. Heating cable construction shall consist of fluoropolymer/XLPE insulation, copper shielding ground, and polyolefin (EPR) outer jacket.
			3. Heating cable attached to mat material at 3 inch spacing at factory.
			4. Connection lead lengths are standard 50 feet with optional 100 feet. Connection leads shall be of stranded wire and factory terminated.
			5. Mats will be 24 inch wide or 36 inch wide. Lengths vary from 3 feet to 60 feet.
			6. Mat voltage rating:
				1. 208 VAC
				2. 240 VAC
	1. CONTROLS
		1. Snow Melting System Control Unit:
			1. Controller shall have:
				1. Manual setpoint temperature.
				2. Settable time duration after sensor has dried.
				3. Fully automated operation.
				4. Direct connection capability for activating a heating cable power switching panel.
			2. System shall have a minimum of:
				1. One Sensor to sense moisture/ slab temperature sensor.
			3. System Activation:
				1. When slab/ambient temperature is less than the setpoint temperature and snow or moisture is present on the 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. GFEP Power Control Panel:
			1. Controller shall have:
				1. NEMA 4X painted steel enclosure with one Ground Fault Module protecting all circuits.
				2. CSA us Certified to UL Standard 508A
				3. One yellow “System On” LED, one white “Control Power ” LED, and one red “Trip Indicator” LED on panel door.
				4. Interior ground fault test button and ground fault dry alarm contacts.
			2. Power Control panel model shall be:
				1. GFEP-2-N
				2. GFEP-4-N
				3. GFEP-6-N
				4. GFEP-8-N
				5. GFEP-12-N
	2. ACCESSORIES

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

		1. Install in accordance with manufacturer’s instructions and shop drawings.
		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. Heating cable and mats shall not leave heated area or cross expansion or control joints.
		5. Tie cable to rebar or reinforcing mesh.
		6. Position cables 2” to 3” inches below finished surface but not less than 1.5”. Install cable in accordance with detailed layout drawings.
		7. Cable Spacing in Concrete: 5” to 8” inches on center per project design.
		8. Do not pinch or make sharp bends in cable.
		9. Slab sensor(s) shall be placed between heating cables or mats.
	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 of each cable or mat after concrete has set-up.
		5. Enter the total resistance and insulation resistance readings on the warranty card.
		6. Annually check system for damaged cable and components.
	4. ADJUSTING AND CLEANING

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

		1. Protect installed products until completion of project.

END OF SECTION