

SECTION 15770 / 16855 / 238313.16

ELECTRIC EMBEDDED SLAB HEATING CABLE / MATS – by WarmlyYours Radiant Heating

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electric radiant slab heating mats or cables embedded in indoor concrete slabs.
- B. Controls, sensors, and relay panels.
- C. Electric radiant slab heating system components, accessories, and associated installation materials.

1.2 RELATED SECTIONS

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| A. 013300 – Submittal Procedures | G. 033900 – Concrete Curing |
| B. 014100 – Regulatory Requirements | H. 038000 – Concrete Cutting and Boring |
| C. 014300 – Quality Assurance | I. 260620.16 – Electrical Panel boards |
| D. 017000 – Execution and Closeout | J. 260620.23 – Electrical Circuit Schedule |
| E. 033000 – Cast-in-Place Concrete | |
| F. 032000 – Concrete Reinforcing | |

1.3 REFERENCES

- A. National Electrical Code (NEC)
- B. Canadian Standards Association (CSA)
- C. Underwriter’s Laboratory (UL)
- D. Radiant Panel Association (RPA)
- E. American Society of Concrete Contractors (ASCC)
- F. WarmlyYours Slab Heating / Snow Melting Installation Manual

1.4 PERFORMANCE REQUIREMENTS

- A. Electric slab heating mats/cables must generate 20 watts per square foot at a minimum. Mat/cable heaters that generate less than 20 w/sq ft, will not be acceptable.
- B. Mat substrate material must be open cell type polypropylene, allowing mortar/concrete through the open mesh to make a direct bond to the base (when mats are used).
- C. Heating wire must be at least ¼” diameter, 2-conductor style. Heating wires with smaller diameters will not be acceptable for this application.
- D. All heating mats must be standard sizes, and readily available. Custom mat sizes will not be acceptable for this application. All mats/cables shall include 20 ft cold leads. Cold leads shall be factory spliced to the hot section, and must be a different color from the hot section, and tagged with a CSA Label (showing ohms, voltage, amps, length).

1.5 SUBMITTALS

- A. Submit under provisions of Section 013300
- B. Provide General Contractor, Architect, MEP Engineer, and Owner with all the Manufacturer’s product data sheets, warranty, and installation instructions.
- C. Provide General Contractor, Architect, MEP Engineer, and Owner with all relevant Shop Drawings, Samples, Mock-Ups, and Electrical Schematics.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications & Services:
 - 1. 5 years of experience (minimum) with electric radiant slab heating systems.
 - 2. Slab heating mats/cables, controls, sensors, relays, and related items shall be provided by one manufacturer.
 - 3. Must provide 24/7 technical installation support, and free design assistance.
- B. Installer Qualifications:
 - 1. Must have verifiable experience successfully completing projects of similar size, and /or has been trained or certified by a manufacturer's representative.
 - 2. A licensed electrician shall complete all electrical rough-in, and electrical connections required to complete the system installation.
- C. Pre-Installation Meetings:
 - 1. Coordinate work with other trade representatives (general, electrical, paving, and other trade contractors) to verify areas of responsibility (scope of work).
 - 2. Review project timeline and construction deadlines to ensure project will comply with all manufacturer's installation instructions and warranty requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store materials protected from exposure to harmful site conditions, and in an area protected from vandalism and theft.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. WarmlyYours PH: 800-875-5285 FX: 800-408-1100
2 Corporate Drive, Suite 100
Long Grove, IL 60047
Web: www.warmlyyours.com Email: gjazwinski@warmlyyours.com
- B. Substitution requests must be approved 15 days prior to bid due date.
Alternative equipment manufacturer must provide all relevant product data sheets, warranty, installation instructions, shop drawings, samples, and electrical schematics.
Alternative equipment must meet specified material standards.

2.2 ELECTRIC RADIANT SLAB HEATING MAT/CABLE

- A. The WarmlyYours Heating Cable consists of a two-conductor stranded copper alloy resistance wire covered by primary fluoropolymer insulation. A braided metal sheath surrounds the primary insulation, and serves as a ground, before a second (final) layer of PVC, EPR, or Zero Halogen Polyolefin jacketing, which serves as the outer shell. The heating cable is taped in a serpentine pattern to a flexible polypropylene mesh at 3" on center spacing (for mats only). The 20 Ft cold lead return wire is factory installed (spliced) at one end of the mat/cable. All hot section must be blue in color. All cold lead section must be black in color, and include a CSA label for identification.
- B. The WarmlyYours Slab Heating Mat/Cable shall be 120 VAC or 240 VAC, producing 20 watts per square foot (min) and be CSA Certified. Multiple mat systems must be wired in parallel by the installer. Each mat/cable heater must have a minimum 10 yr manufacturers warranty.

2.3 CONTROLS, SENSORS & ACCESSORIES

- A. Smartstat 7-day programmable thermostat shall be 120/240 VAC and CSA Certified. Smartstat shall have a digital display and provide integral GFCI protection(only for systems under 15 amps). Display shall include a back-light for easy viewing. Thermostat will make use of a thermistor sensor probe that will directly control the concrete slab temperature. The Smartstat must be able to control electrically held relay panels for additional load switching to accommodate for larger systems (systems over 15 amps).
- B. Thermistor sensor shall be inserted into ¾" rigid metal conduit (capped off), and positioned between two of the slab heating cables/mats. Sensor must be replaceable.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's product data, including product technical bulletins, installation instructions and design drawings.

3.2 EXAMINATION & PREPARATION

- A. Installer shall verify field measurements are as shown on Shop Drawings(s).
- B. Any revisions needed to Shop Drawings, or product provided, must be corrected prior to proceeding with the installation.
- C. Prepare your base, as per the standard guidelines set forth by the American Society of Concrete Contractors. Remove any rip-rap, glass, or other sharp objects, that may damage the heating mat.
- D. Installer shall verify that the required power, is available, in proper location, and ready for use.

3.3 INSTALLATION

- A. Complete installation must conform to appropriate manufacturer's installation instructions, National Electrical Code, and appropriate local codes.

3.4 FIELD QUALITY CONTROL

- A. Test each mat/cable heater for ohms, with a digital ohms meter and Meg-ohm meter before and after the installation of the concrete. Record these values on the warranty form provided at the end of the WarmlyYours Installation Manual.
- B. Start-up (first-time activation) must wait for the concrete slab to be fully cured. Cable/Mat heaters must never be activated in open air.
- C. During "Start-Up", voltage and amps should be tested by a licensed electrician.
- D. All testing records should be copied, and provided to the Owner.

END OF SECTION