

DIVISION 23 8313 Radiant Electric Heating Cables

LOW- VOLTAGE FLOOR WARMING/SPACE HEATING SYSTEM - FLOORIZWARM

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Furnish and install low voltage electric cable-type heating element floor warming system as described in Contract Documents
- B. Related Sections:
 - 1. Section 035300 – Concrete Topping: Installation coordination with concrete floor material and details.
 - 2. Section 033000 – Cast-In-Place Concrete.
 - 3. Section 096000 – Flooring: Installation coordination with specific floor materials and details.
 - 4. Section 260600 – Schedules for Electrical: Materials and Installation of wiring and electrical power source.

1.2 SYSTEM DESCRIPTION

- A. The system shall consist of all equipment and materials for a complete floor warming/space heating system to be installed.
- B. The area covered and heat density (measured by Watts or BTU equivalent) per linear foot of heating element or square foot of area for each Heatizon System product are determined by the spacing between adjacent runs of heating element, the total length of heating element, and the size of the transformer. See manufacturer's installation instructions for more detailed information.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data and written installation instructions for low-voltage electric cable heating element systems.
- B. Shop Drawings: At Architect's request, submit drawings showing layout of system Control Box, activation device, grounding connections, and heating element required to provide complete operating system. Include the following:
 - 1. Locations for activation devices.
 - 2. Location of low-voltage heating cable step-down transformer.
 - 3. Cold-lead cable runs from transformer to heating element connection points.
 - 4. Heating element layout and spacing.
 - 5. Line-voltage wiring between transformer and activation device.
 - 6. Location of floor temperature sensors.
 - 7. Low-voltage wiring between sensor(s) and activation device(s).
 - 9. Differentiate between:
 - a. Control wiring.
 - b. Heating element.
 - c. Cold-lead.
 - d. Branch-circuit wiring.
 - 10. Differentiate between zones of heating element.
- C. Operation and Maintenance Data: Submit manufacturer's written maintenance and operation instructions for system.
- D. Warranty: Submit copy of system manufacturer's standard warranty for system.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Firm regularly engaged in manufacturing of electric cable heating elements, of type, sizes and ratings required, whose products have been in satisfactory use in similar service for not less than five years.
- B. Installer Qualifications:
 - 1. Licensed Contractor with a minimum of two years successful certified experience installing projects utilizing for low-voltage electric cable heating element systems equal to systems specified in this section.
- C. Regulatory Requirements:
 - 1. Comply with applicable local electrical code requirements of local authorities having jurisdiction.
 - 2. Provide products that are listed, recognized, and labeled by Nationally Recognized Testing Laboratory (NRTL) that include but are not limited to:
 - a. ETL subsidiary of Intertek Testing Laboratories,
 - b. Canadian Standards Association (CSA), and
 - c. Underwriters Laboratories (UL).
 - 3. Conform to requirements of "Electric Radiant Heating Panels and Heating Panel Sets" (UL – 1693, 2nd Edition, dated July 19, 2002).
 - 4. Conform with requirements of "Dry-Type General Purpose and Power Transformers" (UL – 1561).
 - 5. Conform to "Requirements for Electrical Resistance Heating Cables and Heating Device Sets" (CSA – 22.2, No 130-03, dated January, 2008)

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle in accordance with manufacturer's written instructions. Store the materials in dry indoor location off the ground.
- B. Remove damaged materials from job site and replace with new at no additional cost to Owner.

1.6 WARRANTY

- A. Provide Manufacturer's Standard Warranty with following requirements:
 - 1. Power Transformer - Five years
 - 2. Heating Element - 25 years

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Heatizon Systems, 9 Morris Lane, Clifton Park, NY 12065 (888) 448-0555 (518)373-5700 www.comfortradiant.com info@comfortradiant.com

2.2 COMPONENTS

- A. Heating Element:
 - 1. Copper stranded cable insulated with chemical- and gasoline-resistant thermoplastic vinyl and sheathed with nylon jacket for corrosion and mechanical protection.
 - 2. Rated for operating at variable output of 4 to 6 watts per linear foot.
 - 3. Maximum Operating Voltage: 0.026 volts per linear foot of heating element.
 - 4. Maximum Secondary Voltage: Not to exceed 65.5 volts.
 - 5. Heating Element Operating Temperature: Not to exceed 80 degrees C.
 - 6. Heatizon Systems Tuff Cable number E101-14.
 - 7. Heatizon Plastic Clip Kit with Nails.

- B. Low-voltage Electric Heating Element Transformer:
 - 1. Properly sized so heating element operation is less than 40 amps.
 - 2. Primary side to allow for operation of supply of 120v.
 - 3. Secondary side to allow proper operation when operating range of heating element lengths.
 - 4. Heatizon Systems Options:
 - a. FLZ1520 (6V)
 - b. FLZ2030 (9V)
 - c. FLZ2536 (9V)
 - d. FLZ3650 (16V)
 - e. FLZ5064 (16V)
 - f. FLZ6475 (28V)
 - g. FLZ75110 (28V)

- C. Activation Device:
 - 1. Provide unit with a 120v 12awg rated wire.
 - 2. Provide Thermostat: Model M337 (White).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine wood or concrete subfloor for proper installation, cleanliness, or condition that may hinder successful installation of low-voltage electric heating system.
 - 1. Notify Contractor in writing of items needing correction.
 - 2. Do not install floor warming system until faulty conditions are corrected.

3.2 INSTALLATION

- A. Interface with Other Work: Coordinate installation of heating system with appropriate sections of Division 26 Electrical.
- B. Install heating system, including Heating Element, Transformer, and Activation Device, in accordance with Manufacturer's written instructions and approved Shop Drawings.
- C. Attach manufacturer's supplied red octagonal warning sign (STOP! DANGER!) spaced equally on Floor Warming System on surface in which system is installed.
- D. Install floor covering as soon as possible after heating element installation.

3.3 FIELD QUALITY CONTROL

- A. Testing as directed by System Manufacturer:
 - 1. Prior to covering, visually inspect the heating element and cold leads for cuts, shorts, and other damage; repair as necessary.
 - 2. Check for continuity to any conductive material, including but not limited to metal; eliminate as necessary.
 - 3. Conduct After-Installation Element Tests per manufacturer's installation instructions. Test system in presence of Architect, Contractor, and Owner's Representative, to be certain system functions in accordance with design intent.
- B. Verify that all heating element is completely embedded.

3.4 DEMONSTRATION

- A. Provide adequate demonstration and training to Owner in operation and maintenance of system.

END OF SECTION