

0.0 SPECIFIER: PLEASE SELECT ONE FOR THE TITLES BELOW

- A. SECTION 16855: Heating Cables
- B. SECTION 15773: Electric Heating Cables, Mats, Modules and Panels
- C. SECTION 15770: Floor Heating and Snow Melting Equipment

1.0 NEXANS INTEGRATED FLOOR HEATING SYSTEM

- A. Provide a complete, integrated system, comprised of heating cable(s), sensor(s) and control panel(s) as Integrated and provided by:

NEXANS
Distributed by Orbit Radiant Heating
1507 West Park Avenue
Perkasie, PA 18944
(800) 522-3986

1.1 WORK INCLUDED

- A. Furnish and install heating cables with factory-installed cold junctions as described in this section and shown on the Drawings.
- B. Furnish and install one Control System as described in this document, to operate from a _____ [insert 120, 208-240, 277, 460 or 480 Volt], _____ [insert 1 or 3 Phase]. If 208 or 277 Volt, insert _____ [3 or 4 Wire] System
- C. Furnish and install Line Voltage thermostat with temperature sensors as described in this document.

1.2 NEXANS HEATING CABLE

- A. Furnish heating cable with the following properties:
 - 1. Single conductor, series resistance type.
 - 2. Integral full-length foil shield and copper ground conductor.
 - 3. Insulated by type XLPE cross-linked polyethylene.
 - 4. Surrounded with an extruded PVC outer jacket.
 - 5. Precut to correct length with cold junction conductors integrally welded to the resistance wire at the factory. Field or factory manual crimping of lead wire to heating cable is not acceptable.
 - 6. Sized to produce a maximum of 6-7 Watts per linear/ft, (max.15 watts per square/ft.) when energized.
 - 7. Insulation to be tested and documented before shipment with a 500-megohm meter; insulation resistance less than 10 meg.ohm. shall be rejected.
 - 8. UL listed.
 - 9. Designed to meet current NEC regulations when properly installed.
 - 10. Warranty of 10 years minimum.
 - 11. Twin conductor and self-regulating cable is not acceptable.
 - 12. Cable shall be Nexans Series TXLP produced by Nexans Kabel Norway; Alternates are not acceptable.

- B. Provide factory-assembled cables with heating lengths and cold-lead lengths shown on the Drawings.

1.3 TEMPERATURE CONTROL (THERMOSTAT)

- A. O.J. Electronics UL Listed Line Voltage Thermostat For One Of The Following:

1. Model UCCG-9991 (Floor Sensing).
2. Model UCCG-9999 (Ambient Sensing)
3. Model UCDG-9999 (Dual Sensing)

- B. Features:

1. UL Listed
2. GFCI Class A 5 mA trip level (For projects 16 Amps and under @ 120/240 Volt) For projects 16.1 Amps and over use control panel options in section 1.4 and separate GFCI protection per NEC 424.44
3. GFCI disconnect L and N (L2) using two relays.
4. Grounded neutral detection, using 2 coils.
5. 4 event clock function.
6. Manual Mode option.

1.4 CONTROL SYSTEM (Installations Above 16 Amps Per Area Controlled)

- A. Standard UL Listed Orbit RFW Series Control Enclosures shall consist of a NEMA 1 panel, designed for indoor surface or recessed mounting, including:

1. Power Control by means of Magnetic Contactors, rated at 50 Amperes Resistive Load, Single Phase.
 - a. Optional 100 Amp (2 Contactor) or 200 Amp (4 Contactor) Panel
 - b. Contactors pre-mounted and pre-wired in the enclosure.
 - c. Pre-mounted and pre-wired Terminal Connections.

- B. Custom UL Listed Control Enclosure shall consist of a NEMA 12 panel, designed for indoor or outdoor, surface mounting, including:

1. Primary power disconnect switch (circuit breaker) in accordance with NEC recommendations.
2. Power Control by means of Magnetic Contactors, rated at 50 Amperes Resistive Load, 1 or 3 Phase as required.
 - a. Contactors pre-mounted and pre-wired in the enclosure, or
 - b. Contactors may be remotely mounted inside NEMA rated enclosures, when NEC required GFI protection is provided by Orbit Mfg. Company in lieu of the Electrical Contractor. (See part D, below.)
3. Control circuit transformer, where required
4. Pilots lights, indicating: Main Power On, Each Circuit On and Control System On.
5. 'Touch Safe', labeled termination points for control power, remote sensor connections and cable power connections.
6. The control enclosure shall bear a UL label.

- C. Control of the system will be achieved by the use of one or more thermostats with _____ [Insert Floor Mounted or Room Air] temperature sensors.
- D. Compliance with NEC
The 2005 NEC (National Electric Code) in 424.44 calls for GFCI personal protection type branch circuit breakers for heating cable located in normally wet areas (i.e bathrooms, shower rooms, kitchens). All other areas require branch circuit protection per NEC.

1.5 INSTALLATION

- A. Inspect the cable and controls upon receipt of shipment, noting any damage and ensuring that the materials received match the order and shipping documents. Compare the labels and the electrical resistance of the heating cables with the shipping documents.
- B. Ensure that electrical terminations in the control panel(s) have not been loosened by vibration during shipment.
- C. Place cables in the slab and position sensors as described in the manufacturer's instructions and drawings. Perform electrical resistance testing before, during and after the 'pour', per manufacturer's instructions.
- D. Perform electrical installations as shown on manufacturer's Drawings.
- E. An accurate record or picture of the cable layout for future reference.
- F. Refer to RPA (Radiant Panel Association) Guidelines 2004 addition for any additional details on installation methods (www.radiantpanelassociation.org)

1.6 COORDINATION

- A. Coordinate installation of heating cable with Electrical Contractor, Concrete Contractor and General Contractor.
- B. Coordinate installation of heating cable with installation of concrete framework and concrete placement.

1.7 TESTING

- A. Refer to manufacturer's literature for requirements for testing, recording, and documenting resistance and insulation-to-ground readings.
- B. Take test readings before, during, and after installation.
- C. If problems are found, consult the manufacturer.
- D. If problems cannot be corrected, notify Owner's Representative before proceeding with the pour.
- E. Keep testing records for inspection by the Engineer, and for subsequent submittal to the manufacturer to ensure validation of the warranty.

1.8 GUARANTEE

- A. The Electrical Contractor shall verify and record resistance and insulation-to-ground readings of the system upon receipt and before startup.
- B. If readings show electrical faults following receipt testing, then cable installation Contractor shall replace the cable at no cost to the Owner or the manufacturer.

1.9 DOCUMENTATION AND TRAINING

- A. Manufacturer shall present the Owner with equipment start-up and operational documentation to ensure proper operation and to meet specified design standards.

ELECTRIC FLOOR HEATING CABLE SCHEDULE (Sample)

AREA TAG	SQ FT.	CABLE MODEL	QTY	WATTS/EA.	VOLTAGE	CONTROL	PHASE	NOTES