

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Works Results - Electrical.
- .2 Section 26 29 10 - Motor Starters to 600 V.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-C22.2 No.130-03(R2013), Requirements for Electrical Resistance Heating Cables and Heating Device Sets.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for radiant heating electrical cables and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for radiant heating electrical cables for incorporation into manual.
- .3 Record layout of cables in poured-in-place concrete indicating depth of cables.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect radiant heating electrical cables from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.6 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products.

Part 2 Products

2.1 FLOOR WARMING HEATING CABLES

- .1 Heating cables: to CAN/CSA-C22.2 No.130.
- .2 Copper alloy conductor with X-link polyethylene insulation, copper ground braid, PVC protective jacket, factory spliced and sealed cold leads.
 - .1 Power: 120 W/m².
 - .2 Voltage: single phase, 208 V.
- .3 Heating cables fixed on a wire mesh for ease of installation.

2.2 ACCESSORIES

- .1 Galvanized steel prepunched strapping to hold cables in place when embedded in concrete or asphalt.

2.3 CONTROLS

- .1 Thermostat: type electronic, Energy Star certified, remote bulb type, low voltage rating as indicated, to Section 23 09 33 - Electric and Electronic Control System for HVAC.
- .2 Contactors: to Section 26 29 10 - Motor Starters to 600 V.

2.4 ACCEPTABLE PRODUCTS

- .1 Model OWC-M of Ouellet.
- .2 Model SFM of Stelpro.
- .3 Replacement materials or products: approved by addendum according to Instructions to bidders.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for radiant heating electrical cables installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Install heating cable in accordance with manufacturer's instructions.
- .2 Secure cable straps to concrete with 25 mm nails. Strapping located 1m intervals.
- .3 Secure cable to anchoring devices and confine cable within 50 mm minimum from edge of slab.
- .4 Do not penetrate waterproofing membrane.
- .5 Protect heating cables with 13 mm plywood sheets and remove progressively when concrete topping is poured.
- .6 Place remote sensing bulb in conduit in between heating cables according to manufacturer's recommendations.
- .7 Do not cross expansion joints with cable.
- .8 Do not alter heating cable length.
- .9 Ensure cables do not bunch or cross.
- .10 Do not energize cable for 28 days after concrete topping.
- .11 Ground cable to building grounding system.
- .12 Fasten floor warming cable to underside of slab on 400 mm centres.
- .13 Make power and control connections.

3.3 FIELD QUALITY CONTROL

- .1 Tests:
 - .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .2 Use 500 V Megger to test cables for continuity and insulation value and record readings as follows:
 - .1 On cable reel.
 - .2 After installation.
 - .3 Before concrete casting.
 - .4 During concrete casting.
 - .5 24 hours after casting.
 - .3 Where resistance of 50 megohms or less is measured, stop work and advise Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION