

## SECTION 23 8326

### EARTH STORAGE HEATING SYSTEMS

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by one of the following methods:

Microsoft Word 2007: Click the OFFICE button, select WORD OPTIONS, select DISPLAY, then select or deselect the HIDDEN TEXT option.

Microsoft Word (earlier versions): From the pull-down menus select TOOLS, then OPTIONS. Under the tab labeled VIEW, select or deselect the HIDDEN TEXT option.

Corel WordPerfect: From the pull-down menus select VIEW, then select or deselect the HIDDEN TEXT option.

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Earth storage system.
  - 2. Thermostat controls.
  - 3. Connection to power supply.
  
- B. Related Sections:
  - 1. Division 01: Administrative, procedural, and temporary work requirements.
  - 2. Section [03 3000 - Cast-In-Place Concrete:] [\_\_ \_\_\_\_ - \_\_\_\_:] Concrete subfloor.
  - 3. Section [06 1100 - Framing and Sheathing:] [\_\_ \_\_\_\_ - \_\_\_\_:] Wood floor framing and decking.
  - 4. Section [09 3000 - Tiling:] [\_\_ \_\_\_\_ - \_\_\_\_:] Tile setting bed and floor finish.
  - 5. Section [09 6340 - Stone Flooring:] [\_\_ \_\_\_\_ - \_\_\_\_:] Stone setting bed and floor finish.
  - 6. Section [31 2300 - Excavation and Fill:] [\_\_ \_\_\_\_ - \_\_\_\_:] Subgrade preparation and fill placement.

##### 1.2 REFERENCES

- A. Canadian Standards Association (CSA) - Canadian Electrical Code
- B. National Fire Protection Association (NFPA) 70 - National Electrical Code.
- C. Underwriters Laboratories, Inc. (UL) - Product Directories.

##### 1.3 SUBMITTALS

- A. Submittals for Review:
  - 1. Shop Drawings: Include plans with heating [panel] [cable] layout, [panel sizes,] and power supply locations.
  - 2. Product Data: Manufacturer's descriptive data for [panels] [cables] and accessories, including electrical characteristics.

##### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum [2] [\_\_] years [documented] experience in work of this Section.
- B. Electrical Products: Tested by Underwriters Laboratories, Inc.
  - 1. Bear UL Listing Mark.
  - 2. Listed in UL Product Directory.

\*\*\*\* OR \*\*\*\*

- C. Electrical Products: Certified by CSA.

\*\*\*\* OR \*\*\*\*

- D. Electrical Products: Certified by an independent laboratory approved by authorities having jurisdiction.

## 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle products in manner to prevent damage.

## 1.6 WARRANTIES

- A. Furnish manufacturer's [5] [10] [20] year warranty providing coverage against defects in materials and workmanship.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Contract Documents are based on products by Therma-Ray ([www.thermaray.com](http://www.thermaray.com)).
- B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

### 2.2 COMPONENTS

- A. Earth Storage Panels:
  - 1. Product: SmartRooms Earth Storage System.
  - 2. Factory fabricated electrical heating cables.
  - 3. Utilize alloy resistance wire element, electrically insulated, rated to 250 degrees C.
  - 4. Watt density range of 40 to 50 watts per square foot when energized on design voltage.
  - 5. Model: No. [\_\_\_\_], [208] [240] [277] [347] VAC, [\_\_] watts, [\_\_] feet long x [\_\_] inches wide.
  - 6. Connectors: No. 3M567.
  - 7. Gelcaps: No. PC-3.
  - 8. Sensor: No. SR.
  - 9. Relay panel: No. SRDP SmartRooms Relay Panel.
  - 10. Controls: [No. SR-LV SmartRooms Comfort Controller, low voltage, with sensors and SRDP distribution panel.] [No. SR-240/120 SmartRooms Comfort Controller, 240/120 volts, with sensors.]

### 2.3 ACCESSORIES

- A. Setting Bed: Specified in Section [09 3000.] [09 6340.] [\_\_ \_\_\_\_.]

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Do not begin installation until below-grade plumbing and electrical work is roughed in and subgrade has been placed and compacted.
- B. Install panels and accessories in accordance with manufacturer's instructions, approved Shop Drawings, and [NFPA 70.] [Canadian Electrical Code.]
- C. Position panels to layout indicated. Do not place panels partly on structural components and partly on subsoil.
- D. Run branch circuits in concrete in nonmetallic conduit.

- E. Do not place conduits across expansion or construction joints.
- F. Protect conductors entering or leaving slab with conduit.
- G. Install branch circuits with amp rating equal to 125 percent of connected panel load.
- H.** Run branch circuits to pick up connections at each panel.
- I. Connect panels parallel to branch circuit using 3M No. 567 self-tapping connectors. When using USE wire, use No. 12 AWG. When using RWU wire, use 10 AWG or 12 AWG.
- J. Insert connected cables into endcap gel; draw gelcap tight using strap, then affix strap using screw.
- K. Conduct final test of panels and connections and record test readings.
- L. Conduct additional tests after backfilling and compacting, after slab is poured, and before connecting branch circuit to distribution panel; record readings and compare to first set of values.
- M. Read resistance between two branch circuit conductors using ohmmeter. If circuit is connected to distribution panel, turn circuit breaker off.
- N. Install conduits for in-slab temperature sensor.
- O. Install conduits for cut-outs.
- P. Do not energize panels until slab is fully cured.

END OF SECTION

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