

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 23 09 33 - Electric and Electronic Control Systems for HVAC.
- .2 Section 26 05 00 - Common Work Results for Electrical.

### **1.2 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### **1.3 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .3 Instructions: submit manufacturer's installation instructions.

### **1.4 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
  - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse in accordance with Section 01 74 00 - Cleaning.

## **2 Products**

### **2.1 PIPE/TANK TRACING HEATING CABLES**

- .1 Type A: parallel zone system, 2 conductor stranded copper bus wires covered with FEP Teflon or fluoropolymer inner insulation. Resistance heating cable connection to alternate bus wires covered with Teflon tape and overall FEP protective jacket. Heating capacity: as indicated; for use with 120 V power supply.
- .2 Type B: copper alloy conductor with X-link polyethylene insulation copper ground braid, pvc protective jacket, cold leads factory spliced and as indicated. Heating capacity: as indicated; for use with 120 V power supply.
- .3 Type C: mineral insulated copper alloy conductor with stainless steel sheath and HDPE jacket factory spliced and hermetically sealed cold leads and as indicated. Heating capacity: as indicated; for use with 120 V power supply.
- .4 Type D: self-limiting heating cable with copper ground wire, thermoplastic rubber primary and overall jackets. Heating capacity: as indicated; for use with 120 V power supply.

## **2.2 CONTROLS**

- .1 Thermostat: remote bulb type, to Section 23 09 33 - Electric and Electronic Control System for HVAC. Rating as indicated.

## **3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

### **3.2 INSTALLATION**

- .1 Install Type A heating cables in accordance with manufacturer's instructions. Co-ordinate installation with pipe insulation application.
- .2 Install Type B, C and D heating cables in accordance with manufacturer's instructions. Distribute and fasten cable evenly on pipe using pipe strap or tape at maximum spacing 0.5 m. Ensure that heating cables do not touch or cross each other. Run only cold leads in conduit and ensure sensing bulb does not touch cable. Ground shield to building ground. Coordinate cable installation with insulation application. Loop additional cable at fittings, valves, and flanges.
- .3 Make power and control connections.

### **3.3 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .2 Use 500 V megger to test cables for continuity and insulation value and record readings before, during and after installation.
- .3 Where resistance of 50 megohms or less is measured, stop work and advise Departmental Representative.

### **3.4 CLEANING**

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

### **3.5 COMMISSIONING**

- .1 Perform test in accordance with Section 26 05 00 - Common Work Results - Electrical and Section 01 91 13 - General Commissioning (Cx) Requirements.
- .2 Use 500V megger to test cables for continuity and insulation valves and record readings before, during and after installation.
- .3 Where resistance of 50 megohms or less is measured, stop work and advise the Departmental Representative.

**END OF SECTION**

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