

## **1 General**

### **1.1 REFERENCES**

- .1 Canadian Standards Association (CSA)
  - .1 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .2 CSA C22.2 No. 83-M1985 (R2003), Electrical Metallic Tubing.
  - .3 CSA C22.2 No. 211.2 (R2011), Rigid PVC (Unplasticized) Conduit.
  - .4 CSA C22.2 No. 227.3, Nonmetallic Mechanical Protection Tubing (NMPT), a National Standard of Canada.
  - .5 CSA C22.2 No. 18.3-12, Conduit, Tubing, and Cable Fittings (Tri-National Standard with ANCE NMX-J-017 & UL 514B).
  - .6 CSA 22.1-18, Canadian Electrical Code, Part 1, 24th Edition.

### **1.2 SUBMITTALS**

- .1 Provide shop drawings and product data in accordance with Division 01 - General Requirements.

### **1.3 LOCATION OF CONDUITS**

- .1 Drawings do not show all conduits. Those shown are in diagrammatic form only.

## **2 Products**

### **2.1 CONDUITS**

- .1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with steel set-screw couplings and connectors.
- .2 Rigid PVC conduit: to CSA C22.2 No. 211.2.
- .3 Flexible metal conduit: to CSA C22.2 No. 56, aluminum flexible metal.
- .4 Flexible PVC conduit: to CAN/CSA-C22.2 No. 227.3.

### **2.2 CONDUIT FASTENINGS**

- .1 One hole steel straps to secure surface conduits 50 mm and smaller. Two hole steel straps for conduits larger than 50 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits spaced every 1.5 m on center.
- .4 Threaded rods, 6 mm dia., to support suspended channels.

### **2.3 CONDUIT FITTINGS**

- .1 Fittings: To CAN/CSA C22.2 No. 18.3, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Factory "ells" where 90° bends are required for 25 mm and larger conduits, unless indicated otherwise.
- .3 Ensure conduit bends other than factory "ells" are made with an approved bender. Making offsets and other bends by cutting and rejoining 90 degree bends is not permitted.
- .4 Connectors and couplings for EMT. Steel set-screw type, size as required.

### **2.4 EXPANSION FITTINGS FOR RIGID CONDUIT**

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.
  - .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion to suit installation and 19 mm deflection in all directions.
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- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

## **2.5 FISH CORD**

- .1 Polypropylene.

## **2.6 SEALANT**

- .1 Low VOC mastic compound.

## **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 datasheets.

### **3.2 INSTALLATION**

- .1 Install all conduit, conduit fittings and accessories in accordance with the latest edition of the Canadian Electrical Code in a manner that does not alter, change or violate any part of the installed system components or the certification of the components.
- .2 Surface mount conduits except in finished areas or as indicated.
- .3 Use electrical metallic tubing (EMT) except in cast concrete and above 2.4 m not subject to mechanical injury, as well as concealed work in masonry construction.
- .4 Use rigid PVC conduit underground and buried in or under concrete slab on grade.
- .5 Use flexible metal conduit for connection to motors in dry areas, connection to recessed incandescent fixtures without a prewired outlet box, and for connection to surface or recessed luminaires work in movable metal partitions.
- .6 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.
- .7 Use AC-90 for vertical power supply drops to luminaires.
- .8 Minimum conduit size for lighting and power circuits: 21 mm. 16 mm conduit is acceptable for switch leg drops and control circuits only.
- .9 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .10 Mechanically bend steel conduit over 21 mm dia.
- .11 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .12 Install fish cord in empty conduits.
- .13 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .14 Dry conduits out before installing wire.

### **3.3 SURFACE CONDUITS**

- .1 Run parallel or perpendicular to building lines.
- .2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.
- .3 Run conduits in flanged portion of structural steel.
- .4 Group conduits wherever possible on suspended channels.
- .5 Do not pass conduits through structural members except as indicated.
- .6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

### **3.4 CONCEALED CONDUITS**

- .1 Run parallel or perpendicular to building lines.
  - .2 Do not install conduits in terrazzo or concrete toppings.
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**3.5 CONDUITS UNDERGROUND**

- .1 Slope conduits to provide drainage.
- .2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

**3.6 CLEANING**

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials rubbish, tools and equipment.

**END OF SECTION**

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