

**PART 1 - GENERAL****1.1 RELATED SECTIONS**

- .1 Section 26 05 00 - Common Work Results - Electrical.

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA C22.2, No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
  - .2 CSA C22.2, No. 45, Rigid Metal Conduit.
  - .3 CSA C22.2, No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .4 CSA C22.2, No. 83, Electrical Metallic Tubing.
  - .5 CSA C22.2, No. 211.2 M1984 (R2003), Rigid PVC (Unplasticized) Conduit.

**1.3 SUBMITTALS**

- .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit manufacturer's printed product literature, specifications and datasheets.
  - .1 Submit cable manufacturing data.

**1.4 GENERAL**

- .1 Conduits are not fully indicated on drawings. Indicated conduits are schematic.
- .2 All conduit must have 21 mm diameter or larger.
- .3 Paint completely the conduits for fire alarm system and communication/ phone systems as indicated in the section 26 05 00 - Common Work Results - Electrical.

**PART 2 - PRODUCTS****2.1 CABLES AND REEL**

- .1 The cables should be supplied on reels. Each cable or cable winding drum shall be marked or labeled to indicate the length of cable, voltage rating, conductor size, number and batch number of the reel.
- .2 Each reel or coil should be continued without a cable connection.
- .3 Identify cables used exclusively for DC applications.

**2.2 CONDUITS**

- .1 Rigid metal conduit: conform to CSA C22.2 No. 45, hot dipped galvanized steel threaded.
- .2 Electrical metallic tubing (EMT) according to CSA C22.2 No. 83, with couplings with expanded ends and a green wire to bonding.
- .3 Flexible metal conduit in accordance with CSA C22.2 No. 56, and steel liquid-tight flexible metal.
- .4 All conduit to have 21 mm diameter or larger.

**2.3 CONDUIT FASTENINGS**

- .1 One hole galvanized steel straps to secure surface conduits 53 mm and smaller. Brides two holes steel straps for conduits larger than 53 mm.
- .2 Beam clamps to secure conduits to exposed steel work. Stirrups "U" to support more conduits arranged to 1,500 mm wheelbase.
- .3 Channel type supports in galvanized steel for two or more conduits.
- .4 Threaded rods in galvanized steel, 6 mm diameter, to support suspended channels.
- .5 Fixation fasteners must be metallic. Plastic fasteners are not permitted.

**2.4 CONDUIT FITTINGS**

- .1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" where 90° bends for 27 mm and larger conduits.

.3 Steel watertight connectors and couplings for EMT.

.1 Set-screws are not acceptable.

## **2.5 EXPANSION FITTINGS FOR RIGID CONDUIT**

.1 Weatherproof expansion fittings for linear expansion of 100 mm.

.2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 21 mm deflection.

.3 Weatherproof expansion fittings for linear expansion at entry to panel.

## **2.6 FISH CORD**

.1 Polypropylene twisted of 6 mm from a tensile strength of 5 kN.

## **PART 3 - EXECUTION**

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

.1 Compliance: comply with the requirements, recommendations and manufacturer's written specifications, including all technical bulletin available, instructions for handling, storage and installation of products, and Data Sheets

### **3.2 INSTALLATION**

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.

.3 Use rigid hot dipped galvanized steel threaded conduit for exterior installations if subject to mechanical damage (ex.: electrical room, mechanical room, corridor, etc.).

.4 Use electrical metallic tubing (EMT) except in cast concrete, and when they are not subject to mechanical damage.

.5 Use flexible metal conduit in case of installation of removable metallic partition. Use flexible metal conduits for connections to motors and other equipment subject to vibrations in dry areas.

.6 Use flexible metal and watertight conduits for connections to motors and other equipment subject to vibrations in damp and wet areas.

- .7 Use conduits with a diameter that meets the requirements of the Electrical Code. These conduits must be 21 mm of diameter minimum.
- .8 Bend the conduit cold. Replace conduit if kinked or flattened more than 1/10<sup>th</sup> of its original diameter.
- .9 Mechanically bend steel conduit over 21 mm diameter.
- .10 Field threads on rigid conduit must be of sufficient length to allow tight joints to be made.
- .11 Install fish cord in empty conduits.
- .12 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .13 Dry conduits out before installing wire.
- .14 Install a metal support in the ceiling "T" for installation of exit signs and fire detectors.
- .15 Install an expansion fitting for all conduits which pass through a building expansion joint.

### **3.3 SURFACE CONDUITS**

- .1 Run parallel or perpendicular to building lines.
- .2 Group conduits wherever possible on suspended or surface channels.
- .3 Locate conduits behind heat sources with 1.5 m clearance.
- .4 Do not pass conduits through structural members except as indicated.
- .5 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.
- .6 Pass ducts along the beams of concrete to minimize the visual impact.

### **3.4 CONCEALED CONDUITS**

- .1 Run parallel or perpendicular to building lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 It is forbidden to drown in books ducts terrazzo or concrete copings.
- .4 Solidly anchor all the concealed conduit, including those installed above the suspended ceilings.

**END OF SECTION**