

---

**CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS**

---

**1. GENERAL**

**1.1 Related Sections**

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

**1.2 References**

- .1 Canadian Standards Association (CSA)
  - .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, Rigid PVC (Unplasticized) Conduit.
  - .6 CAN/CSA C22.2 No. 227.3, Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada.

**1.3 Submittals**

- .1 Provide submittals 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.
- .3 Quality assurance submittals:
  - .1 Test reports: submit certified test reports.
  - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .3 Instructions: submit manufacturer's installation instructions.

**2. PRODUCTS**

**2.1 Cables and Reels**

- .1 Provide cables on reels or coils.
  - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.

---

**CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS**

---

- .2 Each coil or reel of cable to contain only one continuous cable without splices.
- .3 Identify cables for exclusively dc applications.
- .4 Reel and mark shielded cables rated 2,001 volts and above.

**2.2 Conduits**

- .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2 Epoxy coated conduit: to CSA C22.2 No. 45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- .3 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .4 Rigid pvc conduit: to CSA C22.2 No. 211.2.
- .5 Flexible metal conduit: to CSA C22.2 No. 56, steel and aluminum.
- .6 Flexible pvc conduit: to CAN/CSA-C22.2 No. 227.3.

**2.3 Conduit Fastenings**

- .1 One hole malleable iron straps to secure surface conduits NPS 50 mm and smaller.
  - .1 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 at 3050 mm. on centre.
- .4 Threaded rods, 6 mm diameter, to support suspended channels.

**2.4 Conduit Fittings**

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" where 90 degrees bends for NPS 1 and larger conduits.
- .3 Watertight connectors and couplings for EMT.
  - .1 Set-screws are not acceptable.

**2.5 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 and 19 mm deflection.

---

**CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS**

---

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

**2.6 Fish Cord**

- .1 Polypropylene.

**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 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 in unfinished areas.
- .3 Surface mount conduits except used in the slab.
- .4 Use rigid galvanized steel and hot dipped galvanized steel threaded conduit except where specified otherwise.
- .5 Use epoxy coated conduit in corrosive areas.
- .6 Use electrical metallic tubing (EMT) except in cast concrete and above 2440 mm. not subject to mechanical injury.
- .7 Use rigid pvc conduit in corrosive areas.
- .8 Use flexible metal conduit for connection to motors in dry areas connection to recessed incandescent fixtures without prewired outlet box, connection to surface or recessed fluorescent fixtures and work in movable metal partitions.
- .9 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment.
- .10 Use explosion proof flexible connection for connection to explosion proof motors.
- .11 Install conduit sealing fittings in hazardous areas.
  - .1 Fill with compound.
- .12 Minimum conduit size for lighting and power circuits: 19 mm.
- .13 Install rigid metal conduit from computer room branch circuit panel to outlet boxes located in sub floor.
- .14 Install rigid metal conduit from computer room branch circuit panel to junction box in sub-floor immediately below panel.

---

**CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS**

---

- .1 Run flexible conduit from junction box to outlet boxes for each computer in sub-floor.
- .15 Bend conduit cold:
  - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .16 Mechanically bend steel conduit over 19 mm diameter.
- .17 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .18 Install fish cord in empty conduits.
- .19 Run 2 x 25 mm spare conduits up to ceiling space and 2 x 25 mm spare conduits down to ceiling space from each flush panel.
  - .1 Terminate these conduits in 152 x 152 x 100 mm junction boxes in ceiling space or in case of an exposed concrete slab, terminate each conduit in surface type box.
- .20 Remove and replace blocked conduit sections.
  - .1 Do not use liquids to clean out conduits.
- .21 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 1524 mm. 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 76 mm parallel to steam or hot water lines with minimum of 25 mm crossovers.

**3.4 Concealed Conduits**

- .1 Run parallel or perpendicular to building lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 Do not install conduits in terrazzo or concrete toppings.

**3.5 Conduits In Cast-In-Place Concrete**

- .1 Locate to suit reinforcing steel.
- .2 Install in centre one third of slab.

---

**CONDUITS, CONDUIT FASTENINGS AND CONDUIT FITTINGS**

---

- .3 Protect conduits from damage where they stub out of concrete.
- .4 Install sleeves where conduits pass through slab or wall.
- .5 Provide oversized sleeve for conduits passing through waterproof membrane, before membrane is installed.
  - .1 Use cold mastic between sleeve and conduit.
- .6 Conduits in slabs: minimum slab thickness 4 times conduit diameter.
- .7 Encase conduits completely in concrete with minimum 25 mm concrete cover.
- .8 Organize conduits in slab to minimize cross-overs.

**3.6 Conduits In Cast-In-Place Slabs On Grade**

- .1 Run conduits 25 mm and larger below slab and encase in 76 mm concrete envelope.
  - .1 Provide 51 mm of sand over concrete envelope below floor slab.

**3.7 Conduits Underground**

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

**END OF SECTION**