

## PART 1 - GENERAL

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| <u>1.1 REFERENCES</u>                    | .1 Canadian Standards Association (CSA International)<br>.1 CAN/CSA C22.2 No. 18-98(R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.<br>.2 CSA C22.2 No. 45-M1981(R2003), Rigid Metal Conduit.<br>.3 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.<br>.4 CSA C22.2 No. 83-M1985(R2003), Electrical Metallic Tubing.<br>.5 CSA C22.2 No. 211.2-M1984(R2003), Rigid PVC (Unplasticized) Conduit. |
| <u>1.2 WASTE MANAGEMENT AND DISPOSAL</u> | .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.<br>.2 Place materials defined as hazardous or toxic waste in designated containers.<br>.3 Ensure emptied containers are sealed and stored safely for disposal away from children.   |

## PART 2 - PRODUCTS

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| <u>2.1 CONDUITS</u> | .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.<br>.2 Rigid metal conduits epoxy coated.<br>.3 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.<br>.4 Rigid pvc conduit: to CSA C22.2 No. 211.2.<br>.5 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal. |
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- 2.2 CONDUIT FASTENINGS
- .1 One hole steel straps to secure surface conduits 53 mm and smaller.
    - .1 Two hole steel straps for conduits larger than 53 mm.
  - .2 Beam clamps to secure conduits to exposed steel work.
  - .3 Channel type supports for two or more conduits at 1.5 m on centre.
  - .4 Threaded rods, 6 mm diameter, to support suspended channels.
- 2.3 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 27 mm and larger conduits.
  - .3 Set-screw steel connectors and couplings for EMT.
- 2.4 FISH CORD
- .1 Polypropylene.

PART 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.
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3.2 INSTALLATION  
(Cont'd)

- .2 Conceal conduits except in mechanical and electrical service rooms, areas with exposed ceilings, or otherwise as noted.
- .3 Use rigid galvanized steel threaded conduit and epoxy coated where exposed to mechanical injury and as noted.
- .4 Use electrical metallic tubing (EMT) except in cast concrete and not subject to mechanical injury.
- .5 Use rigid pvc conduit underground.
- .6 Use flexible metal conduit for connection to motors in dry areas.
- .7 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.
- .8 Minimum conduit size for lighting and power circuits: 21 mm.
- .9 Install EMT conduit from branch circuit panel to junction box in sub-floor immediately below operations room.
  - .1 Run flexible conduit from junction box to receptacle outlet boxes in sub-floor.
- .10 Bend conduit cold:
  - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .11 Mechanically bend steel conduit over 21 mm diameter.
- .12 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .13 Install fish cord in empty conduits.
- .14 Run 2 27 mm spare conduits up to ceiling space and from each flush panel.
  - .1 Terminate these conduits in 152 x 152 x 102 mm junction boxes in ceiling space.
- .15 Remove and replace blocked conduit sections.
  - .1 Do not use liquids to clean out conduits.

3.2 INSTALLATION .16 Dry conduits out before installing wire.  
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3.3 SURFACE  
CONDUITS

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.1 Run parallel or perpendicular to building lines.

.2 Run conduits in flanged portion of structural steel.

.3 Group conduits wherever possible on suspended or surface channels.

.4 Do not pass conduits through structural members except as indicated.

.5 Do not locate conduits less than 75 mm parallel to hot water lines with minimum of 25 mm at crossovers.

3.4 CONCEALED  
CONDUITS

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.1 Run parallel or perpendicular to building lines.

.2 Do not install conduits in terrazzo or concrete toppings.

3.5 CONDUITS IN  
CAST-IN-PLACE  
CONCRETE

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

.2 Protect conduits from damage where they stub out of concrete.

.3 Install sleeves where conduits pass through slab or wall.

.4 Provide oversized sleeve for conduits passing through waterproof membrane, before membrane is installed.  
.1 Use cold mastic between sleeve and conduit.

.5 Conduits in slabs: minimum slab thickness 4 times conduit diameter.

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| 3.5 CONDUITS IN<br>CAST-IN-PLACE<br>CONCRETE<br><u>(Cont'd)</u> | .6 | Encase conduits completely in concrete with<br>minimum 25 mm concrete cover.   |
|   | .7 | Organize conduits in slab to minimize<br>cross-overs.  |
| 3.6 CONDUITS IN<br>CAST-IN-PLACE SLABS<br>ON GRADE<br><u></u>   | .1 | Run conduits 27 mm and larger below slab and<br>encase in 75 mm concrete envelope.<br>.1 Provide 50 mm of sand over concrete<br>envelope below floor slab. |
| 3.7 CONDUITS<br>UNDERGROUND<br><u></u>                          | .1 | Slope conduits to provide drainage.  |
| 3.8 CLEANING<br><u></u>   | .1 | Proceed in accordance with Section 01 74 11 -<br>Cleaning.   |
|   | .2 | On completion and verification of performance<br>of installation, remove surplus materials,<br>excess materials, rubbish, tools and<br>equipment.          |