

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 Canadian Standards Association (CSA International).
 - .1 CAN/CSA C22.2 No. 18.1-2013, Metallic, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No.18.2-06 (R2011) Non-Metallic Outlet Boxes.
 - .3 CSA C22.2 No. 56-2013, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83-M1985 (R2013), Electrical Metallic Tubing.
 - .5 CSA C22.2 No. 211.2-06 (R2011), Rigid PVC (Unplasticized) Conduit.

- 1.2 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.

- 1.3 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.
 - .2 Place materials defined as hazardous or toxic waste in designated containers.
 - .3 Seal and store emptied containers safely for disposal.
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PART 2 - PRODUCTS

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| <u>2.1 CONDUITS</u> | .1 | Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings. |
| | .2 | Rigid pvc conduit: to CSA C22.2 No. 211.2. |
| | .3 | Flexible metal conduit: to CSA C22.2 No. 56, aluminum, liquid-tight flexible metal. |
| <u>2.2 CONDUIT FASTENINGS</u> | .1 | One hole steel straps to secure surface conduits 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 code spacing. |
| | .4 | Threaded rods, 6 mm diameter, to support suspended channels. |
| <u>2.3 CONDUIT FITTINGS</u> | .1 | Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit. |
| | .2 | Provide factory "ells" for 90, 45, or 22.5 degree bends for 25 mm and larger conduits. |
| | .3 | Steel Connectors and couplings for EMT. |
| | .1 | Die-cast fittings are not acceptable. |
| | .2 | All connectors to be c/w insulated throats. |
| <u>2.4 FISH CORD</u> | .1 | Polypropylene. |
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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 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 of the CSA/UL certification of these components.
- .2 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .3 Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.
- .4 Wiring Method:
.1 Use EMT conduit except where specified otherwise.
.2 All control wiring for this project shall be installed in conduit.
- .5 Wiring for branch circuits powered from the emergency power system shall be run in separate conduit from the other systems.
- .6 Use flexible metal conduit for connection to transformers in dry areas.
- .7 Bend conduit cold: replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .8 Mechanically bend steel conduit over 21 mm diameter. Conduits 35mm or larger are to be bent using a hydraulic bender or use factory bends. Conduits found to be bent using methods other than above will be removed.
- .9 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .10 Install fish cord in empty conduits.
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- 3.2 INSTALLATION
(Cont'd)
- .11 Remove and replace blocked conduit sections.
 - .1 Do not use liquids to clean out conduits.
 - .12 Dry conduits out before installing wire.
 - .13 Seal conduits which penetrate through fire walls using approved fire stop material. Conduits which penetrate through non fire rated walls into other parts of the building are to be caulked.
 - .14 Conduits entering sprinkler proof enclosures shall use only compression style connectors and have all joints within 10 meters of the enclosure sealed with silicone sealant to prevent the intrusion of water in the event of sprinkler action.
 - .15 Coordinate all conduit routings with existing systems and structures. Do not run conduits or zone conduits at elevations which may interfere with ventilation or other systems.
- 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 horizontal runs in masonry walls.
 - .3 Do not install conduits in terrazzo or concrete toppings.
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- 3.5 CLEANING
- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
 - .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.