

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 21 00 00/26 00 00 – Specific Conditions – Mechanical/Electrical.
- .2 Section 26 05 00 – Common Work Results – Electrical.

1.2 REFERENCES

- .1 Unless otherwise indicated, all the works must be done in accordance with the latest edition of the Quebec Construction Code (QCC).
- .2 Furthermore, works must be designed and carried out in accordance with any other code or standard having jurisdiction, as per the latest edition, including, but not limited to:
 - .1 Canadian Standards Association (CSA) / CSA International.
 - .1 CAN/CSA-C22.2 No. 18, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware, a National Standard of Canada.
 - .2 CSA C22.2 No. 45, Rigid Metal Conduit.
 - .3 CSA C22.2 n 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 Shop drawings:
 - .1 Submit shop drawings in accordance with Section 21 00 00/26 00 00 – Specific Conditions – Mechanical/Electrical.
- .2 Product data:
 - .1 Submit required product data and manufacturer's specifications and documents in accordance with Section 21 00 00/26 00 00 – Specific Conditions – Mechanical/Electrical.

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- .1 Submit cable manufacturing data.
- .3 Samples:
 - .1 N/A.

1.4 QUALITY ASSURANCE

- .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.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 21 00 00/26 00 00 – Specific Conditions – Mechanical/Electrical.
- .2 Remove all packaging material from the work site and send to the appropriate recycling facilities.
- .3 Remove and sort for recycling all packaging material and dispose of in bins located on site, as specified in Waste Management Plan.
- .4 Divert unused metal materials to metal recycling facility as approved by the Engineer and Client.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

1.6 GENERAL

- .1 Drawings do not show all conduits, tubes or their routes. Those depicted are in schematic form.
- .2 Conduits shall be a minimum of 21 mm in diameter.

PART 2 - PRODUCTS

2.1 CONDUITS

- .1 Rigid metal conduit: Galvanized steel threaded.

- .2 Electrical metallic tubing (EMT): equipped with fittings and a green ground wire.
- .3 Aluminum conduit.
- .4 Rigid PVC conduit.
- .5 Flexible metal conduit and flexible watertight metal conduit.
- .6 Conduits and tubes shall be a minimum of 21 mm in diameter, unless otherwise indicated.

2.2 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface conduits 53 mm and lower. Two hole steel straps to secure surface conduits 53 mm and higher.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 U-type galvanized steel channel support for two or more conduits.
- .4 Threaded galvanized steel rods, 6 mm diameter, to support suspended channels.
- .5 Metallic clamps. Plastic clamps are not acceptable.

2.3 CONDUIT FITTINGS

- .1 Fittings manufactured for use with conduit specified.
- .2 Factory "ells" where 90 degrees bends for conduits 27 mm and larger.
- .3 Connectors and couplings for EMT. Pressure-screw type, unless otherwise indicated.

2.4 EXPANSION FITTINGS FOR RIGID CONDUITS

- .1 Weatherproof expansion suitable for linear expansion with continuous path to ground.
- .2 Watertight expansion fittings suitable for linear expansion and 21 mm deflection in all directions, with continuous path to ground.

2.5 FISH CORD

- .1 Polypropylene, single length in each conduit with 3 m spare cord at each end.

PART 3 - EXECUTION

3.1 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 unfinished areas.
- .3 Install concealed conduits in exposed concrete.
- .4 Use rigid galvanized steel threaded conduit where it is encased in concrete, exposed to exterior elements, in an explosion-proof installation and/or there is risk of damage.
- .5 Use epoxy coated conduits in corrosive areas.
- .6 Use electrical metallic tubing (EMT) where there is no risk of physical damage, except where conduits are concrete-encased.
- .7 Metal-clad cable may be used instead of electrical metallic tubing between junction boxes in suspended ceilings and lighting fixtures; maximum length 1.5 m. Use EMT-type conduits in gypsum walls to connect wiring devices and/or all other outlets.
- .8 Do not use electrical metallic tubing (EMT) in hazardous and corrosive locations.
- .9 Metal-clad cable may be used instead of electrical metallic tubing between junction boxes in suspended ceilings and lighting fixtures or wiring devices in gypsum walls, when there are 2, 3 or 4 current carrying conductors, no. 12 AWG, a maximum of 3 m. in length.
- .10 Use rigid PVC conduits for underground installations, outside of building foundation.
- .11 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 in movable metal partitions.
- .12 Use flexible metal conduit for electrical connections with motors or equipment subject to vibration, situated in dry areas. Unless otherwise indicated, the maximum raceway length for this type of conduit is 1,000 mm.
- .13 Use explosion proof flexible connection for connection to explosion proof motors.
- .14 Use watertight connectors for rigid conduits installed in explosion proof areas. Fill with compound.
- .15 Bend conduits cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .16 Mechanically bend steel conduit over 21 mm diameter.

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- .17 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .18 Install fish cord in empty conduits.
- .19 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .20 Dry conduits out before installing wire.
- .21 Install metal supports on ceiling T-grids for installation of exit signs and fire detectors.
- .22 Install an expansion connector on all conduits crossing a building expansion joint.

3.2 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Install conduits 1.5 m clear of devices/appliances that are intense heat sources.
- .3 Group conduits wherever possible on suspended or surface mounted channels.
- .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.

3.3 CONCEALED CONDUITS

- .1 Do not install horizontal runs in masonry or gypsum panel walls.
- .2 Do not install conduits in terrazzo or concrete toppings.
- .3 Run parallel or perpendicular to building lines.
- .4 Firmly secure all concealed conduits and tubes, including those above suspended ceilings.

3.4 CONDUITS IN CAST-IN-PLACE CONCRETE

- .1 Install in centre one third of slab and locate to suit reinforcing steel.
- .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. Use cold mastic between sleeve and conduit.

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- .5 Encase conduits completely in concrete.

3.5 CONDUITS IN CAST-IN-PLACE SLABS ON GRADE

- .1 Run conduits 27 mm and larger below slab and encase in 75 mm concrete envelope.
Provide 50 mm of sand over concrete envelope below floor slab.

3.6 UNDERGROUND CONDUITS

- .1 Slope conduits to provide drainage.

END OF SECTION