

Part 1 General

1.1 REFERENCES

- .1 Building Industry Consulting Service International (BICSI):
 - .1 Telecommunications Distribution Methods Manual (TDMM), 13th Edition.
- .2 American National Standards Institute/Telecommunications Industry Association:
 - .1 ANSI/TIA-606-B, Administration Standard for Telecommunications Infrastructure.
 - .2 ANSI/TIA-607-B, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.

1.2 SYSTEM DESCRIPTION

- .1 System grounding and the grounding of the telecommunications network including, in particular: the bus bars, the main conductors, and other grounding conductors.
- .2 Provides a reference to the ground with very low impedance paths for networks and building telecommunications equipment.
- .3 Conduits and ducts for metal cables, shields, conductors, media, and various metal parts in telecommunications areas connected to the delivery system, to ground, and to the grounding of the telecommunications network.

Part 2 Product

2.1 TELECOMMUNICATIONS GROUNDING BUS BARS (TGB)

- .1 Tinned ULC copper bar, equipped with factory assembled insulators and mounting brackets.
- .2 Includes factory pre-drilled holes for use with standard dimensions lugs, depending on Standard ANSI/TIA-607-B:
 - .1 Twelve (12) holes of 6.35 mm diameter, spaced 16 mm.
 - .2 Three (3) holes of 9.53 mm diameter, spaced 25 mm.
- .3 Dimensions: 6.35 mm thick, 50.8 mm wide, 508 mm long, depending on Standard ANSI/TIA-607-B.
- .4 Panduit no. GB2B0312TPI-1 or approved equivalent.

2.2 PRIMARY TELECOMMUNICATIONS CONDUCTORS (TBB)

- .1 Conductor connecting one or more of TGB to TMGB.
- .2 Copper conductor, stranded, RW -90 type, with green insulation.
- .3 Templates from 6 AWG to 750 kcmil depending on the distance from the conductor, as per Standard ANSI/TIA-607-B.



2.3 GROUND EQUALIZERS

- .1 Conductor interconnecting multiple TBB passing through the same level.
- .2 Copper conductor, stranded, RW-90 type, with green insulation.
- .3 Similarly caliber, largest TBB, according to Standard ANSI/TIA-607-B.

2.4 TELECOMMUNICATIONS GROUND CONDUCTOR EQUIPMENT (TEBC)

- .1 Conductor connecting one or more supports and / or various metal parts of the telecommunications area such as one or more racks, cabinets, cable trays and / or conduits to the TMGB / TGB.
- .2 Copper conductor, stranded, RW -90 type, with green insulation.
- .3 Of the same caliber as the largest ground conductor among the telecommunications equipment in the telecommunications area, minimum 6 AWG according to Standard ANSI/TIA-607-B.

2.5 WARNING LABELS

- .1 Non-metallic warning label, in French and English, according to Standard ANSI/TIA-607-B.
- .2 Label to be marked as follows: "CALL BUILDING TELECOMMUNICATIONS MANAGER IF CONNECTORS ARE LOOSE OR IF THEY MUST BE REMOVED".

Part 3 Execution

3.1 TELECOMMUNICATIONS GROUNDING BUS BARS (TGB)

- .1 Install TGB equipment in each of the telecommunications areas.
- .2 Connect the TGB to each telecommunications area and to the equipment serving the TBB.

3.2 PRIMARY TELECOMMUNICATIONS CONDUCTORS (TBB)

- .1 Install the TBB between the TMGB and TGB, as indicated.
- .2 The main segment of each of TBB should be installed in one continuous segment so that the future removal of any of the TGB or pods associated with a given TBB does not cause failure (even temporary) to the primary segment of TBB.
- .3 Make the connections with irreversible crimp terminals.

3.3 GROUND EQUALIZERS (GE)

- .1 In the case of buildings with multiple floors, the top floor and all three (3) floors between the first and last floor, install an equalizer grounding conductors (GE) between the TBB.

3.4 CONNECTING TO TGB/TMGB

- .1 Connect paths of metallic cable, racks and cabinets located within the telecommunications area to TGB/TMGB by means of a TEBC.



- .2 Connect the shield on the metallic elements or cables located within the telecommunications area to TGB/TMGB by means of a TEBC.

3.5 LABELING

- .1 Install warning labels on grounding conductors and telecommunications equipment.
- .2 Designate and mark labels in accordance with Standard ANSI/TIA-606-B.

END OF SECTION



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 - .2 American National Standards Institute/Telecommunications Industry Association:
 - .1 ANSI/TIA-569-C, Telecommunications Pathways and Spaces.

1.2 SYSTEM DESCRIPTION

- .1 Network conduits and empty boxes for wiring systems, Division 27.
- .2 The Contractor must pay particular attention to the requirements associated with the design of the equipment and installation characteristics required to complete the ductwork and empty boxes described in this specification and / or shown on the associated plans.
- .3 No supplement will be given to the requirements described in this quote and / or shown until associated plans are complete.

Part 2 Product

2.1 METAL CONDUITS

- .1 Use the size required by the Quebec Building Code, Chapter V - Electricity, unless otherwise indicated, minimum 21 mm in diameter.
- .2 Galvanized steel, rigid, thin-walled, unless otherwise indicated (TEM).
- .3 Connectors and conduit fittings, thin-walled steel, compression type. Zinc or zinc-steel fittings are prohibited.
- .4 Metal caps with grounding connection for cable protection against rubbing at the conduit output.

2.2 PULL BOXES

- .1 Steel, minimum 14 gauge, painted with two coats of gray enamel inside and outside.
- .2 Without factory-made knockouts.
- .3 Frame having a minimum width of 25 mm.
- .4 Boxes provided with angled steel frame to form a rigid assembly, which will be absent of any deformation during the pulling of communications cables.
- .5 Covers are easily removable in sections with captive screws and hinges. Hinges with removable pins are accepted.
- .6 Custom made boxes when necessary, to meet the requirements of this specification.



2.3 SLIDING SLEEVES

- .1 Sliding sleeve made of galvanized steel of the same thickness as the conduit, specially manufactured with three screws at each end, of sufficient length to cover both ends of a sleeve with spaced conduit/pipe overlap of 200 mm.
- .2 Provide the necessary anchors and supports allowing free movement of sliding sleeves.
- .3 Install a copper bonding jumper in a conduit for the continuity of the mass. The attachment points of these jumpers should not impede the free passage of the sleeves.

2.4 CONDUIT SUPPORTS

- .1 Branded steel supports by Canstrut or approved equivalent.

2.5 PULL ROPES

- .1 Pull rope of 9.525 mm with a minimum strength of 220 lb.

2.6 LIST OF MANUFACTURERS

- .1 Metal conduits EMT:
 - .1 Columbia International Ltd.
 - .2 Siezfried Kreser Industries Ltd.
- .2 Pull boxes:
 - .1 Bel Products
 - .2 Iberville
 - .3 Roger Girard
 - .4 Temco
- .3 Supports:
 - .1 Burndy
 - .2 Canstrut
 - .3 Hilti
 - .4 Pilgrim
 - .5 Unistrut

Part 3 Execution

3.1 INSTALLATION

- .1 Install empty conduits and all the materials below required to build a complete network: conduits, pull boxes, lids, sleeves, pull cords, fastening accessories and other accessories required to complete the work described and locate the material so as to form a complete system.
- .2 All ducts must be electrical metallic tubing (EMT), unless explicitly stated otherwise.
- .3 The minimum diameter for EMT conduits is 21 mm.



- .4 In wells, lay the conduits so as not to clutter the space to allow for future installations. Have approved by the Engineer, forecasted sites for future work before work begins.
- .5 Unless otherwise indicated, conceal all conduits in the walls, floors, ceilings.
- .6 No conduits should be installed in concrete slabs.
- .7 Install protruding conduits in parallel with structural lines and so as not to harm the equipment of other trades.
- .8 No drilling should be done through the beams and columns for the passage of conduits.
- .9 Maintaining the continuity of the conduits throughout the facility, taking care to make solid connections between the conduits. Connect them to the grounding approved by the building, according to the Quebec Building Code, Chapter V - Electricity. Check continuity of the conduits for all networks and installed and / or modified boxes, once the full installation is complete.
- .10 Attach sections of thin-walled conduits with fittings.
- .11 During construction, join unfinished conduit raceways together with caps to prevent the ingress of foreign bodies.
- .12 Attach the conduits as follows:
 - .1 Supply and install all the necessary supports for electrical work. These supports should be made of galvanized steel.
 - .2 Conduits:
 - .1 When the insulated conduits are in contact with a surface of concrete or masonry, affix using cast iron or steel straps.
 - .2 When a group of channels (two or more) flows in parallel, affix the steel supports anchored directly to the frame by means of threaded rods or other supports.
 - .3 The size of the rods, supports, and spacing of supports are based on weight bearing and required by the Quebec Building Code, Chapter V - Electricity. When pipes of various sizes are grouped, the spacing of the supports is determined by the smallest conduit of that group.
 - .3 Install cross bracing spaced up to 12 m center to center and longitudinal bracing on all horizontal runs of conduits at 300 mm suspended by the ceiling tile. This requirement may be omitted if the maximum diameter is less than 65 mm for an individual conduit or if the group of conduits has a total weight less than 15 lb/m.
- .13 The spacing of supports and fasteners must be in accordance with the latest edition of the Quebec Construction Code, Chapter V – Electricity.
- .14 Support vertical conduits at floor level and more intermediate supports required by the Quebec Building Code, Chapter V – Electricity.
- .15 In suspended ceilings, conduit supports are fastened to the frame and not the ceiling structure.
- .16 The conduits should not touch the insulation of ducts or mechanical equipment or be buried in the insulation or fireproofing materials.
- .17 No section of conduit should be more than 30.5 m (100') long or have more than two 90° bends or a total radii of greater than 180° between two sliding sleeves or two pull boxes.



- .18 Use pull boxes for conduit segments, when required according to this section.
- .19 When it is impossible to install a pull box, a sliding sleeve is allowed on conduit segments having an inner diameter 50 mm (2") or more. Dimensions conform to the references in this section due to existing facilities or architectural or structural constraints.
- .20 Always install pull boxes in straight conduit segments. A pull box should not replace an elbow. Pull boxes should not serve as a T. Align in the axis, the corresponding ends of sections of conduit situated on either side of the pull box. Align both ends in the same axis when a conduit is present on one side and two conduits are present on the other.
- .21 It is forbidden to use fitting types LB, LL, LR and access fittings, for any reason.
- .22 The internal curvature radius of the conduits must be equal to at least six times their inner diameter for conduits of 50 mm and less.
- .23 The internal curvature radius of the conduits must be equal to at least ten times their inner diameter for the conduit more than 50 mm.
- .24 Join end caps to the ends of all conduits in order to prevent damage to the cable during the pulling thereof.
- .25 Adjust the conduits and their supports well enough to adequately resist the tensions created by pulling the cable.
- .26 Install a pull rope in the installed conduits raceways.
- .27 All conduits must meet the requirements of the appropriate codes and guidelines.
- .28 Always use an appropriate fire system, including a sleeve, in addition to TEM installed through walls and floors.
- .29 Ensure vertical sleeves pass through the floor 100 mm above the surface of the finished floor.
- .30 Specify the location of pull boxes on drawings.

3.2 PULL BOXES

- .1 Install all pull boxes or junction boxes indicated in the plans or which are necessary to make the installation conform to this specification and related plans.

3.3 ACCESS DOOR

- .1 Refer to architectural documentation for the location of all ceiling sections which are or will become inaccessible following the work.
- .2 Supply and install special access doors with dimensions according to architectural specification documents to allow access to each of the pull boxes or sliding sleeves installed in ceiling sections which are or will become inaccessible following the work.
- .3 Access doors must be the same size as pull boxes and sliding sleeves by adding 200 mm upstream and 200 mm downstream. Moreover, the lids of underfloor pull boxes will be easily removed and the sliding of the sleeves will be readily accomplished once the access doors open.

END OF SECTION

