

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for communications equipment and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Construction/Demolition Waste Management and Disposal in accordance with Section 10 74 21

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect communications equipment from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section
Packaging Waste Management: remove for reuse and return by manufacturer of.
packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 TELEPHONE CABLES

- .1 Existing 12 pair under ground cable from museum to Fur Loft, Big House and Men's house will be re-used and re-terminated to new protector block.
- .2 Electrical contractor to provide protector block and BIX block.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for communications equipment installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Install grounding conductor between new Main Electrical Grounding bus bar and new telecommunications grounding bus bar located in the new Mechanical/Electrical room.
- .2 Install wall mounted rack in the new Mech/Electrical room as indicated in the plan.
- .3 Install swing-out equipment rack in the new Mechanical/Electrical room

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

2.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by communications equipment installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute
 - .1 ANSI J-STD-607-B-2011, Joint Standard - Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
- .2 Telecommunications Industries Association (TIA)/Electronic Industries Alliance (EIA)
 - .1 TIA/EIA-606-B-2012, Administration Standard for the Commercial Telecommunications Infrastructure.
- .3 U.S. Department of Labor/Occupational Safety and Health Administration (OSHA)
 - .1 Nationally Recognized Testing Laboratory (NRTL).
- .4 Canadian Standards Association (CSA International)
 - .1 CSA C22.1-15, Canadian Electrical Code 23rd Ed.
- .5 Building Industry Consulting Services International (BICSI)
 - .1 BICSI Telecommunications Distribution Methods Manual 13th Edition

1.2 SYSTEM DESCRIPTION

- .1 Telecommunications grounding and bonding system consist of grounding busbars, bonding backbones, and other bonding conductors.
- .2 Provides ground reference for telecommunications systems within building and bonding to it of telecommunications rooms.
- .3 Metallic pathways, cable shields, conductors, and hardware within telecommunications spaces are bonded to telecommunications grounding and bonding system.

1.3 QUALITY ASSURANCE

- .1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal:
- .2 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 GROUNDING BUSBAR

- .1 Intrusion Alarm Panel and Telephone Protector block grounding connection to be connected to electrical grounding bus bar.

2.2 EQUIPMENT BONDING CONDUCTOR (EC)

- .1 6 AWG stranded copper conductor, green insulated marked to: ANSI J-STD-607-B.

2.3 RACEWAY BONDING CONDUCTOR (RBC)

- .1 6 AWG stranded copper conductor, green insulated marked to: ANSI J-STD-607-B.

2.4 BONDING CONDUCTOR TERMINATION

- .1 Two-Hole compression lugs, long barrel type, sized as per AWG of cable.
- .2 High conductivity wrought copper.
- .3 Electro tin plated

2.5 INSULATED CONDUIT GROUND BUSHINGS

- .1 Each Metal Conduit originating in the Telecom Entrance Facility, Telecom Room or Equipment Room shall be directly connected to the TMGB or TGB via a compression lug.
- .2 Ground bushing shall be insulated.

2.6 BONDING AND GROUNDING CLAMPS

- .1 All ground wires originating at the TMGB or TGB shall be clamped to the plywood backboard "B" ground wire clamps.
- .2 Shall be mechanically galvanized ASTM B695
- .3 5.6mm hole diameter

2.7 WARNING LABELS

- .1 Non-metallic warning labels in English and French to: ANSI J-STD-607-B.
- .2 Identify labels with wording "If this connector is loose or must be removed, please call the building telecommunications manager".

Part 3 Execution

3.1 GENERAL INSTALLATION REQUIREMENTS

- .1 Install all Bonding Conductors as per CEC. And manufacturers recommended installation procedures.

3.2 BONDING CONDUCTORS GENERAL

- .1 When placed in ferrous metallic conduit or EMT longer than 1 m, bond to each end of conduit or EMT using grounding bushing and #6 AWG copper conductor.

3.3 BONDING CONDUCTOR FOR TELECOMMUNICATIONS

- .1 Install bonding conductor for telecommunications from electrical grounding bus bar to service equipment (power) ground.
- .2 Use approved 2-hole compression lugs for connection to electrical grounding bus bar

3.4 LABELLING

- .1 Apply warning labels to telecommunications bonding and grounding conductors.
- .2 Apply additional administrative labels to: TIA/EIA-606-B.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/Telecommunications Industry Association (TIA)
 - .1 ANSI/TIA-569-C-2012, Telecommunications Pathways and Spaces
- .2 Building Industry Consulting Services International (BICSI)
 - .1 BICSI Telecommunications Distribution Methods Manual 13th Edition
- .3 Canadian Standards Association (CSA International)
 - .1 CSA C22.1-15, Canadian Electrical Code

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for communication raceway systems and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
 - .2 Submit Construction/Demolition Waste Management and Disposal in accordance with Section 01 74 21.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect communication raceway systems from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .5 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 CONDUIT, PULL BOXES AND OUTLET BOXES FOR COMMUNICATIONS AND SECURITY SYSTEMS

- .1 Metallic Conduit
 - .1 EMT, reamed and bushed at both ends.
 - .2 Minimum Size for communications is 27mm inside diameter.
 - .3 Installed above ceilings, under access floors and in walls only; not acceptable for in floor use.
 - .4 Conduits, conduit fittings, hanger and supports: in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings, Section 26 05 29 Hangers and Support for Electrical Systems, Section 26 05 33 Raceway and Boxes for Electrical System
 - .5 Fish wire: polypropylene type.
- .2 Pull Boxes
 - .1 Shall be made of code gauge steel and shall have a rust resistant finish.
 - .2 Shall be constructed in accordance with Canadian Standards Association.
 - .3 Shall be sized in accordance with ANSI/TIA/EIA-569B, Table 12.
 - .4 Pull Boxes for Security systems shall not have pre-punched knockouts.
 - .5 Junction boxes, cabinets type: in accordance with Section 26 05 31 - Splitters, Junction, Pull Boxes and Cabinets.
- .3 Outlet Boxes for communications systems
 - .1 Shall be a minimum size of 100mm x 100mm x 65mm deep.
 - .2 Shall have a raised Plaster adapter ring sized for a single gang opening for communications Outlets.
 - .3 Shall have raised plaster adapter ring sized for Access Control devices.
 - .4 Shall have raised plaster adapter ring sized for Digital Wall clock.
 - .5 Shall have raised plaster adapter ring sized for Intrusion Alarm devices.
 - .6 Outlet boxes 2-gang type with single gang plaster ring, conduit, and fittings: in accordance with Section 26 05 31 - Splitters, Junction, Pull Boxes and Cabinets.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for communication raceway systems installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Note that Lower Fort Garry is a historic site. All cutting patching shall be done in accordance with architectural specifications and in strict accordance with Parks Canada Requirements.
 - .1 Any cutting and removal of material shall be done only with approval from Parks Canada. Where this is required, the work shall be done in a manner such that it can be reversed.
 - .1 Photograph and document existing conditions prior to work commencing.
 - .2 Deconstruction assembly, and document all components. Hand over all components to Parks Canada.
 - .3 Patching must be performed in strict accordance with Parks Canada's instructions.
 - .1 Work will involve matching materials and construction methods with original.
 - .2 Splice new work with old work.
 - .3 Material shall be of equal grade or better. Wood species shall match.
- .2 The contractor shall allow for specialized labour, with experience in historic restoration work.
- .3 Install all systems as per the CEC and manufacturers recommended installation procedures.
- .4 Ground and bond all conduits, telephone protector block and alarm panel in accordance with section 27 05 26 and CEC.
- .5 Electrical Metallic Tubing (EMT) conduits for Intrusion Alarm systems minimum size to be 19mm unless specified otherwise.
- .6 Provide the following separation from Electrical Power systems installed in conduits:
 - .1 300mm from circuits of 300Volt and less.
 - .2 600mm from circuits 300Volt and higher.
 - .3 2 Metres from Circuits between 600V and 15KV.
 - .4 3 Metres for circuits above 15KV.
 - .5 Electrical or Mechanical systems cannot share the same cable tray or be racked on the same support structure.
- .7 Heights of Communications system Outlet Boxes:
 - .1 Intrusion alarm keypads, 1400mm AFF
 - .2 Door Contacts, on leading edge of door frame at top of frame.

3.3 INSTALLATION OF HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS.

- .1 Conduits and equipment shall be independently supported, free from any other mechanical system.
- .2 PULL BOX INSTALLATION REQUIREMENTS

- .1 In all instances pull boxes shall be placed in straight sections of a conduit run and shall NOT be used in lieu of a bend. Corresponding ends of the conduit are to be aligned with each other. Conduit fittings shall not be used in place of pull boxes. Conduits shall always protrude in the direction of pull. Conduits shall not exit the sides bottom or back of the pull box.
- .2 Pull boxes shall be not be installed in exposed location. Pull boxes shall not be placed in a fixed false ceiling space.
- .3 All Boxes shall be adequately secured. They shall not be supported by the conduits entering the box.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse, recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by pathways for communications systems installation.

END OF SECTION