

## **1 GENERAL**

### **1.1 RELATED WORK**

- .1 Plywood Backboards
- .2 Basic Electrical Materials and Methods Section 26 05 01
- .3 Cabinets, Splitters, Junction, and Pullboxes Section 26 05 31
- .4 Outlet Boxes and Fittings Section 26 05 32
- .5 Conduit Section 26 05 34
- .6 Communications Infrastructure Section 27 05 14

### **1.2 SYSTEM DESCRIPTION**

- .1 Complete telephone raceway system consists of outlet boxes, coverplates, cabletroughs, pullboxes, sleeves, fish wires, plywood backboards, and grounding conductors.

### **1.3 COORDINATION WITH UTILITY**

- .1 Coordinate complete installation with telephone utility.

## **2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Conduits: EMT, as per Section 26 05 34.
- .2 Junction boxes and T-cabinets: as per Section 26 05 31.
- .3 Outlet boxes and fittings: to Section 26 05 32.
- .4 Pull cord: polypropylene type.

### **2.2 DVO OUTLETS - GENERAL**

- .1 Flush wall mounted telephone outlet to consist of a 2-gang backbox with a single gang extension ring. Provide a 3/4" (19 mm) conduit from each outlet stubbed into the ceiling space.
- .2 Refer to Communications Infrastructure for cable and jack details.

## **3 EXECUTION**

### **3.1 INSTALLATION**

- .1 Install raceway system, fish wires, terminal cabinets, outlet boxes, floor boxes, pullboxes, coverplates, conduit, sleeves and caps, and miscellaneous material to constitute a

- complete system.
- .2 Conduit bends to be 10 times the interior diameter of conduit.
  - .3 Ground raceways in accordance with the requirements of the telephone utility.
  - .4 Install pullboxes such that no conduit run is longer than 50' (15 m) or contains more than two 90° bends along its length. Conduit fittings are not acceptable as pullboxes.
  - .5 Conform to all requirements of the telephone utility for the installation of the raceway system.
  - .6 Install pull cord in all conduits.
  - .7 Identify raceway system components as per Section 26 05 01.
  - .8 Provide a #6 insulation ground in conduit and a duplex receptacle at each backboard for MTS use.
  - .9 Provide 6 x 6 cable tray above security system backboard in Mechanical Room 110.

**END OF SECTION**

## **1 GENERAL REQUIREMENTS**

### **1.1 GENERAL**

- .1 Scope of this section is to provide a complete conduit pathway system which terminates at telecommunications closet and cabinet backboards, as shown on the drawings.
- .2 The pathway system is a combination of conduit and J hook supports consisting of terminal cabinets, conduits, pull strings, outlet boxes, floor boxes, pull boxes, coverplates, sleeves and caps, and miscellaneous material to complete system. Open wiring within suite walls will be acceptable with properly rated cable.
- .3 Pathways are to be provided for voice, data, nurse call, and CATV systems.
- .4 Provide sub-telephone panelboards as required.

### **1.2 STANDARDS**

- .1 Pathways are to meet the requirements of the following standards. The Contractor is to be familiar with these documents, and respond to varying site installation challenges as necessary.
  - .1 CAN/CSA-T527, Grounding and Bonding for Telecommunications in Commercial Buildings.
  - .2 CAN/CSA-T528, Design Guidelines for Administration Telecommunications Infrastructure in Commercial Buildings.
  - .3 CAN/CSA-T529, Design Guidelines for Telecommunications Wiring Systems in Commercial Buildings.
  - .4 CAN/CSA- T530, Building Facilities Design Guidelines for Telecommunications.

## **2 PRODUCTS**

### **2.1 GENERAL**

- .1 Electrical metallic tubing (EMT) and fittings to Section 26 05 34 and 26 05 32. Flexible metal conduit and PVC conduits are not acceptable products for telecommunications systems pathways. Minimum conduit size  $\frac{3}{4}$  " (19 mm).
- .2 Grounding to Section 26 05 28.
- .3 Telecommunications closets and cabinet backboards to be 19 mm plywood good one

side.

- .4 Pull strings: polypropylene type.

### 3 EXECUTION

#### 3.1 TELECOMMUNICATIONS CLOSETS AND EQUIPMENT

- .1 Ensure that telecommunications closets remain unobstructed by all architectural, mechanical, and structural equipment and products. Conform to other physical requirements of CAN/CSA- T530.
- .2 Provide IT Rack as follows: Middle Atlantic, model # DWR-12-22PD, c/w Power strip PD95R; Power strip hardware PBS-DWR; Fan kit DWR-FK22.

#### 3.2 BACKBOARDS

- .1 Install continuous floor to ceiling backboards throughout telecommunications closets. Backboards are to be fitted between structural members if necessary, so that all vertical surfaces up to the finished structural ceiling deck are covered with plywood.
- .2 Seal and sand edges and face to a smooth finish. Paint backboards a minimum of two coats of fire retardant white paint. Fill any errant screw holes on completion of cabling installation.

#### 3.3 CONDUITS AND FITTINGS

- .1 Terminate conduits at each backboard in such a manner as to limit wasted space. Provide nylon bushings in fittings. See drawings for correct placement of conduits, and coordinate with The Contract Administrator on site prior to installation.
- .2 Run all work station conduits concealed in walls. Terminate conduits and conduit boxes or wireways as indicated. Provide nylon bushings in fittings.
- .3 Where stub-ups or stub-outs are indicated or required, ensure that power system sources, including branch circuit wiring, have the specified clearances from pathways resulting in exposed conductors.
- .4 Conduits poured horizontally into concrete slabs are not acceptable for telecommunications use.
- .5 No section of conduit shall be longer than 30 m or contain more than two 90° bends. If more than two 90° bends or reverse bends are required, install a pull box in an accessible location, satisfying the requirements of CAN/CSA- T530, Table 4.4-2.

- .6 Inside radius of bends shall be at least six times the internal diameter of the conduit. For conduits greater than 50 mm ID, inside radius shall be at least ten times the internal diameter of the conduit.
- .7 Any single conduit run extending from a telecommunications closet or cable tray shall not serve more than three telecommunications outlet boxes.
- .8 Outlet boxes shall be no smaller than 50 mm wide, 75 mm high, and 64 mm deep for connection to a maximum of two 19 mm conduits. For larger conduit sizes, increase outlet box size on direction from The Contract Administrator.
- .9 All conduits and conduit sleeves shall be clearly identified by labeling at both ends and intermediately, as required. Pull boxes shall be labeled on the exposed exterior on a minimum of two sides. Labeling standards are as dictated in Section 26 05 01.
- .10 For pathways run in dropped ceiling areas, maintain a minimum clearance above the ceiling product of 75 mm, unless directed otherwise.

### 3.4 PULL STRINGS

- .1 At least two pull strings shall be installed in all conduits. One pull string shall be used to pull in communications conductors during the initial installation of cables. A second string shall remain in the conduit for future cable pulls.
- .2 Tie-off remaining pull strings so accidental removal is not possible.

### 3.5 OUTLETS

- .1 Flush wall mounted telephone outlet to consist of a 100mm. x 100mm. backbox with a single gang extension ring. Provide a 1/2" (19 mm) conduit from each outlet connected to raceway systems terminating at the telephone backboard or as otherwise indicated.

### 3.6 BONDING

- .1 Provide grounding bushings on the ends of all conduits. Bond all conduits and cable trays with copper insulated green conductor, and terminate onto telecommunications room ground bus. Telecommunications room ground bus shall be bonded to the main electrical room ground bus with an insulated #2/0 copper conductor. For complete details, refer to drawings and CAN/CSA-T527.
- .2 Provide a #6 insulation ground in conduit and a fourplex receptacle at each backboard for each system.

## END OF SECTION

---

## 1 GENERAL

### 1.1 RELATED WORK

- |    |  |                  |
|----|--|------------------|
| .1 | Basic Electrical Materials and Methods       | Section 26 05 01 |
| .2 | Cabinets, Splitters, Junction, and Pullboxes | Section 26 05 31 |
| .3 | Outlet Boxes and Fittings                    | Section 26 05 32 |
| .4 | Conduit                                      | Section 26 05 34 |

### 1.2 SYSTEM DESCRIPTION

- .1 Complete raceway system and wiring for cable TV cabling consists of outlet boxes, coverplates, cable troughs, pullboxes, sleeves, pull cords, cabinet, and grounding conductors.

### 1.3 COORDINATION WITH UTILITY

- .1 Coordinate complete raceway installation with cable TV utility.

## 2 PRODUCTS

### 2.1 MATERIALS

- .1 Conduits: EMT type, as per Section 26 05 34.
- .2 Junction boxes and cabinets: as per Section 26 05 31.
- .3 Outlet boxes and fittings: to Section 26 05 32.
- .4 Pull cord: polypropylene type.

### 2.2 CABLE TV OUTLETS - GENERAL

- .1 Flush wall mounted cable TV outlet to consist of a 2-gang backbox with a single-gang extension ring and coverplate with single hole for cable TV jack.

## 3 EXECUTION

### 3.1 INSTALLATION

- .1 Install empty raceway system, pull cords, terminal cabinets, outlet boxes, floor boxes, pullboxes, coverplates, conduit, sleeves and caps, and miscellaneous material to constitute complete system.
- .2 Conduit bends to be 10 times the interior diameter of conduit.
- .3 Ground raceways in accordance with the requirements of the cable TV utility.

- .4 Install pullboxes such that no conduit run is longer than 50' (15 m) or contains more than two 90° bends along its length. Conduit fittings are not acceptable as pullboxes.
- .5 Conform to all requirements of the cable TV utility for the installation of the raceway system.
- .6 Install pull cord in all conduits.
- .7 Identify raceway system components as per Section 26 05 01.

**END OF SECTION**

**PART 1 GENERAL**

**1.1 Related Work**

- |    |  |                  |
|----|--|------------------|
| .1 | Basic Electrical Materials and Methods | Section 26 05 01 |
| .2 | Conduit                                | Section 26 05 34 |
| .3 | Wire and Cable                         | Section 26 05 21 |
| .4 | Outlet Boxes and Fittings              | Section 26 05 32 |
| .5 | Communications Raceways                | Section 27 05 14 |

**1.2 Submittals**

- .1 Submit shop drawings in accordance with Section 26 05 01 including:
- .1 Layout of equipment.
  - .2 Complete wiring diagram, including connections to devices.

**1.3 Operation and Maintenance Data**

- .1 Provide data for incorporation into Maintenance Manual specified in Section 01 61 00.
- .2 Operation and Maintenance Manual to include:
- .1 Operation and maintenance instructions for complete sound.
  - .2 Technical data - illustrated parts lists with parts catalogue numbers.
  - .3 Copy of reviewed shop drawings and As-Builts.

**1.4 Maintenance**

- .1 Provide one year's free maintenance with an 11<sup>th</sup> month inspection during the first year of service. Replace or repair any defective equipment.

**1.5 Service**

- .1 The supplier of the system must employ factory-trained technicians and maintain a service organization within Winnipeg.

**1.6 Warranty**

- .1 The system shall carry a one-year warranty parts and labour from date of acceptance by The City. Main amplifiers and control equipment to carry a five years hardware warranty.

**1.7 On-Site Training**

- .1 The system supplier shall provide a 2 hour on-site, hands on orientation and instruction

seminar showing the operational techniques and procedures.

## 1.8 System Description

- .1 The Electrical Contractor shall furnish and install a complete and operating sound system as specified and as shown on the drawings.
- .2 The new system shall be capable of the following functions:
  - .1 Multi-Purpose Room 1, Multi-Purpose Room 2, and Servery Room 103 are to be capable of independent or combination distribution to loudspeakers.
  - .2 Transmission of music to all loudspeakers from an Ipod, CD or am/fm tuner as shown on the drawings. Note: Rack mounted Ipod dock is required. iPod by The City.
  - .3 Provide wall mounting and floor mounting microphone outlets as shown on the drawings.
  - .4 Provide two microphones.
  - .5 Location of the amplifier to be determined by The City. Relocate amplifier if necessary at no additional cost.

## PART 2 PRODUCTS

### 2.1 The system will consist of the following:

- .1 **Janitor Room 104:**
  - .1 Wall Mounted swing out rack (install in Media room)
  - .2 TOA 120 watt amplifier
  - .3 TOA processor module
  - .4 TOA wall-mount bracket (for amplifier)
  - .5 2 x TOA handheld microphones
  - .6 2 x Atlas microphone stand
  - .7 2 x Digiflex microphone cord (25')
- .2 **Multi-Purpose Room 1:**
  - .1 3 x TOA ceiling-mount speakers c/w back box
  - .2 1 x Provo microphone wall plate (double XLR)
  - .3 1 x Provo music input wall plate (RCA/3.5)
- .3 **Multi-Purpose Room 2:**
  - .1 1 x TOA ceiling-mount speakers c/w back box
  - .2 1 x TOA Volume control
- .4 **Servery Room 103:**
  - .1 1 x TOA ceiling-mount speakers c/w back box
  - .2 1 x TOA Volume control

### 1.2 Volume Controls

- .1 Where applicable volume controls shall consist of a stainless steel wall plate. The wall plate shall have a dial scale to indicate attenuator position and shall mount to a standard electrical backbox.

**1.3 Products**

- .1 All products to be supplied by Chubb Edwards or approved equal.
- .2 Please contact Jason Avison at Chubb Edwards:  
Jason Avison  
Integrated Security Communications  
Direct: (204)-631-4978  
jason.avison@chubbedwards.com  
www.chubbedwards.com

**PART 3 EXECUTION**

**3.1 General**

- .2 Locate, install, wire and connect all components and devices in accordance with the requirements of the manufacturer.

**3.2 Installation of Devices**

- .1 Mount devices at heights as described in Section 26 05 01.
- .2 Mount equipment square with building lines. Install devices flush and square with walls.

**3.3 Wire connection of all Devices**

- .1 Terminate conductors directly to the terminals of each device.

**3.4 Wiring and Conduit**

- .1 Install wiring in an independent conduit system.
- .2 Install speaker backboxes to form part of the conduit system. Conduit to be sized to accommodate the wiring being installed.
- .3 Use 2/c 18 awg speaker wire and 3/c 22 awg microphone/music input wire

**3.5 Testing**

- .1 The complete system shall be tested in the presence of the Contract Administrator and The City's representative on completion of the work. Tests shall demonstrate that the P.A. system will function in an acceptable manner. This includes all paging functions, and all music input functions.
- .2 Conduct intelligibility test. Adjust tap settings on individual speakers to suit volume requirements. Have The City's representative or Contract Administrator sign-off that the sound quality is acceptable.

**END OF SECTION**