

1 GENERAL

1.1 RELATED WORK

- | | | |
|----|--|------------------|
| .1 | Basic Electrical Materials and Methods | Section 26 05 01 |
| .2 | Conduit | Section 26 05 34 |
| .3 | Communication System Raceways | Section 27 05 14 |

1.2 CODES & STANDARDS

- .1 EIA/TIA TSB 40 Additional Transmission specifications for Unshielded Twisted Pair Connecting Hardware.
- .2 EIA/TIA - 56B Commercial Building Telecommunications Wiring Standards.
- .3 CAN/CSA-T529 High Performance specifications for horizontal UTP.
- .4 CAN/CSA-T528 Wiring Systems Administration
- .5 CAN/CSA-T530 Telecommunications Pathways and Spaces.
- .6 IEEE Std. 1100 Powering and Grounding Sensitive Electronic Equipment.
- .7 EIA/TIA, IEEE, FCC standards Data System Performance Standards
- .8 Manitoba Building Codes.
- .9 CAN/CSA C22.1 Canadian Electrical Code 2009, Section 60

1.3 USE OF A CSV

- .1 Data Communications work as specified shall be the responsibility of Certified System Vendor (CSV). The CSV is required to:
 - .1 provide proof of Certification with Tender Submission;
 - .2 design a Category 6 wiring system based on contract documents;
 - .3 comply with Nordx IBDN design guide and installation principles;
 - .4 perform and supervise the cable pull;
 - .5 ONLY qualified technicians directly employed by the CSV shall terminate cables (at either ends), test and perform cross-connects;

- .6 After completion, provide standard and enhanced testing on all cable runs, and documentation of test results.
- .7 provide and install equipment as specified herein;
- .8 provide documentation of the Installation;
- .9 provide CSV Letter of Certification within two weeks of completion of Job which will include performance level, the Identification of the Installation by the location and installation date.

1.4 SCOPE OF WORK

- .1 Include all work, materials and labour for complete provision of all data and voice outlets, jacks and cabling as described in specifications. Include for certified CSV work. Supply of telephone and CATV cables by utility provider, installation by Electrical Contractor.
- .2 Include all work to include hubs, cabling, terminations, labour, wiring and testing for all communication/data runs indicated on the drawings. Provide all interface requirements for a complete system.
- .3 Refer to general comments.

1.5 GENERAL COMMENTS

- .1 Work to be done under this section to include finishing of labour, material and equipment required for CAT 6 data/voice wiring system installation.
- .2 The project is to cable outlets on all floors of the building and where shown on the floor plans with a level 6 FT4 or FT6 rated communication system (as required as per MB Building Code 2010). All outlet cablings shall be running back to electrical room's communication racks and main LAN room as indicated on floor plans.
- .3 The contractor shall install either fibre backbone and/or hard wire trunk to riser in conduit as required between main backboard and main LAN room.
- .4 If backbone fibre to be used as required by the Utility, it shall be minimum 6 strands, multimode and as specified in section 2.3.
- .5 Each Tenant suite shall be provided with one (or more) CAT 6 voice outlet c/w RJ 11 jack. Staff, public areas and store units to have RJ 45 CAT 6 data outlets and telephone outlets where shown.
- .6 The contractor is responsible for supplying all parts, labour, warranties, as well as testing documentation for the wiring system. All parts, components, connectors and physical connections must confirm to level 6 category wiring plan.

- .7 The contractor is responsible for all cross connects at distribution panel as well as equipment/patch cable (2m) at IT equipment rooms/closets.
- .8 Coordinate with Voice Data Communication Utility and provide consolidation point cabinets if required by the Utility allow grouping conduit “risers” and termination therein on BIX punch down - to RJ 45 cross connects.
- .9 Each consolidation point will contain a switch with suitable number of ports (plus 10% spare) for cross connect of each outlet to local network system. Between consolidation points and “head end” system in telephone room, run fibre optic cable. Provide hardware for termination and network connection hardware at both ends of each fibre.
- .10 Work to be done under this section to include finishing of labour materials, and equipment required for a Category 6 Data wiring system Installation.
- .11 The Contractor will be responsible for coordination with the Utility, supplying all parts, labour warranties, as well as testing documentation for the wiring system. All parts, components, connectors and physical connections must confirm to a level 6 category wiring plan. Certification of 350 MHz speeds end to end is required.
- .12 Contractor is responsible for all cross connects at distribution panel as well as equipment/patch cable (2m) at floor site and equipment rooms.
- .13 All bidders must demonstrate that they can meet the installation standards required and submit detailed proposals with specification documents of material components with their bid.
- .14 An autocad drawing (on disk) of the cabling structure for each floor is to be supplied indicating runs and identification numbers on project completion by the contractor.
- .15 The contractor is responsible for all facets of the project, including but not limited to, access between floors for the cables, backboards in the LAN room, system cabinets, wiring and wall outlets.
- .16 Fibre Optic cable, if used, should have enough slack to provide 2 metres out using ST or SC connectors on both ends in the LAN and/or hub room.

2 PRODUCTS

2.1 VOICE DATA OUTLETS

- .1 For each outlet provide:
 - .1 1 Category 6, Data Outlet, complete with icon type numbered labels: DXX-YYYYA, where XX=floor level (08, 09, 10) of Work Station, YYY is work station number (001, to 100 etc.) and A is wire to outlet. Outlets as manufactured by Thomas & Betts or approved equal.

- .2 Termination of cables on Bix Block at applicable cabinet.
- .3 Cable and termination of same on Bix Block to back of cross connect outlet on rack
- .4 One cross connect jumper.
- .2 Provide Nordx Category 6 BIX RJ45 jacks for all cabinet/racks.

2.2 VOICE DATA OUTLETS IN RESIDENTIAL SUITES

- .1 Main coax cable riser and main Telephone cable riser to be installed in a common area within the suite. Ex: laundry room, utility room, storage room.
- .2 Coax cable & telephone cable riser to be located within the same stud space either side by side or on top of each other in the common area. Minimum spacing around main riser plate: width – 3.5 inches, height - 5 inches from centre of riser plate.
- .3 All additional suite outlets to be wired to this central location. (No daisy chain).
- .4 A CAT 6 cable to be run between the main cable riser & main telephone cable riser.
- .5 Each suite to have a dedicated riser from the main backboard or sub panel to the common area in the suite.
- .6 When installing the suite risers install cables on one side of stud cavity and bring the feed for that suite over to opposite side of stud cavity. Leave a slack loop of cable approx 12". Use loose staples to attach the cables to the stud.

2.3 UTP CABLE

- .1 Horizontal cable shall be Category 6 cable 23 AWG unshielded twisted pair. All cables shall be installed as per CSA C22.1. Part 1, Section 50 and Section 60. The industry standard IEEE 802.3 1000 Base T will apply.
- .2 In the Wiring/Equipment (LAN) room, provide cables to each equipment cabinet/rack.
- .3 All cables in the Wiring/Equipment room are to be placed in a neat and professional manner and routed as per specifications and drawings provided. All cables must be combed and/or routed in such a manner to ensure all bundled cabling is neat and parallel to all other cables in the bundles. All exposed cable bundles are to be tie-wrapped at a maximum of 200 mm apart.
- .4 Each 4-pair cable shall be terminated in an eight position modular (RJ45) jack. Data pin/pair assignment must meet ISDN standard. Standard 4-pair colour codes, Tip (T) and Ring (R) and Pin assignments are illustrated below:

Standard	4-Pair	Wiring Colour Codes	RJ45
Pair 1	T R	White/Blue Blue/White	Pin 5 Pin 4
Pair 2	T R	White/Orange Orange/White	Pin 3 Pin 6
Pair 3	T R	White/Green Green/ White	Pin 1 Pin 2
Pair 4	T R	White/Brown Brown/White	Pin 7 Pin 8

- .5 Data communications cables shall be routed in conduit and terminated in a connection location as specified.
- .6 Cable runs shall be completed without splices.
- .7 Category 6 cable performance is intended for high-speed LAN applications (≥ 1 Gbps). Category 6 Commercial Building Standard Specification for horizontal UTP cables. This specification places limits on the horizontal distances to assure minimum boundaries of performance. The cable run from the communication closet to the work area outlet is limited to 90 meters. An additional 3 meters is allowed from the outlet to the terminal and up to 7 meters allowance for patching on the cabinet patch panel to switching equipment.
- .8 Testing shall be to CAT6 standards and will be according to LINK test specifications only. LINK is defined as the installed CAT6 cable between the V/D Room Patch Panel and the office Communication Outlet (max length = 90 meters) and includes the test equipment patch cords (maximum of 4 meters total) at each end.
- .9 For reference only, note that testing will NOT be according to CHANNEL test specifications. CHANNEL is defined as the installed CAT6 cable between the VDR Patch Panel and the suite Communication Outlet (max length = 90 meters) and includes the test equipment patch cords and the user equipment cords (maximum of 10 meters total).

2.4 DISTRIBUTION/EQUIPMENT TERMINATION

- .1 Supply and Install mounts, distribution connectors, designation strips and labels, distribution rings according to horizontal runs and in compliance with approved IBDN IDC (Installation Displacement Connection) design.
- .2 All cables to be installed to the equipment; cables are to be dressed neatly into the equipment using cable tie-wraps.

2.5 Acceptable Manufacturers:

- .1 Amp.
- .2 Leviton.
- .3 Systemax.

3 EXECUTION

3.1 INSTALLATION

- .1 Install empty raceway system, fish wires, terminal cabinets, outlet boxes, floor junction boxes, pull boxes, coverplates, conduits, sleeves and caps, and miscellaneous material to constitute a complete system. All wiring to be concealed.
- .2 All voice and data cabling in public areas and from main building demarcation point to each suite termination panel shall be installed in conduits. All voice and data cabling within suites to be soft wired.
- .3 Conduit bends to be 10 times the interior diameter of conduit.
- .4 Provide ground continuity and integrity throughout voice and data systems.
- .5 Install pullboxes such that no conduit run is longer than 50' (50m) or contains more than two 90 degree bend along its length. Conduit fittings are not acceptable as pullboxes.
- .6 Install pull cord in all conduits.
- .7 Grounding as per section 26 05 28 and as required.
- .8 All penetrations through fire separations to meet the fire separation. All conduits penetrated through fire separations shall be non-combustible rated.
- .9 Identification of raceway system and components to be as per section 26 05 01.
- .10 Install drops into wall mounted outlets with appropriate connectors as required.
- .11 Path must be straight through, as per specifications on pin outs, pairs and wire colours attached.
- .12 The installation is to be a certified level 6 installation.
- .13 Cables to be identified at both ends of cable with 5 cm from termination. Port on cross connected to be identified as well.
- .14 All cables shall be terminated on the cross connect panel and DVO with no more than 1.27 cm of untwisted cable before termination.
- .15 Provision of cross connect cables in various lengths; stranded level 6 cable meeting main cable specifications which are to be determined and identified as price per piece (include 100 1.5m cables in base bid).

END OF SECTION

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 13

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.

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, public address, wander alert, CCTV 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 ¾" (19 mm).
- .2 Wireways to Section 26 05 37.

- .3 Grounding to Section 26 05 28.
- .4 Telecommunications closets and cabinet backboards to be 19 mm plywood good one side.
- .5 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.

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 Consultant 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 Consultant.
- .9 All conduits and conduit sleeves shall be clearly identified by labelling at both ends and intermediately, as required. Pull boxes shall be labelled on the exposed exterior on a minimum of two sides. Labelling 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 CABLE TRAYS (where indicated)

- .1 Install cable trays such that Code clearances are not marginalized. Provide a minimum of 300 mm clearance above cable trays. Provide a consistent minimum of 600 mm clearance to anyone side of cable trays.
- .2 Coordinate with mechanical, structural, and architectural trades to ensure clearances are maintained. Marginalization of clearances will be deemed as unacceptable, and will be corrected by the Contractor.
- .3 For pathways run in dropped ceiling areas, maintain a minimum clearance above the ceiling product of 75 mm, unless directed otherwise.
- .4 Minimum clearances between un shielded wires and cables in cable trays and power sources shall be as follows. Ensure these separation distances are maintained.

<u>Condition</u>	<u>Minimum Separation</u>		
	<u>2 kVA</u>	<u>2-5 kVA</u>	<u>5 kVA</u>
Unshielded power near open non-metal pathway	127 mm	305 mm	610 mm
Unshielded power near grounded metal conduit	64mm	152 mm	305 mm
Power lines in grounded shielding or grounded metallic conduit	0 mm	76mm	152 mm
Transformers or electric motors	305 mm	305 mm	305 mm
Fluorescent lighting	305 mm	305 mm	305 mm

3.5 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.

3.6 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.

3.7 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.

2.3 CABLE TV OUTLETS IN RESIDENTIAL SUITES

- .1 Extension cable TV outlets in residential suites to consist of a single gang backbox and coverplate with single hole for cable TV jack, as well as RG59 coaxial cable and coaxial connector.
- .2 Pre-wiring of the extension cable TV outlets (horizontally) from the main cable TV outlet (on riser) to be the responsibility of the Electrical Subcontractor. Include all costs for the cable TV company's involvement in the pre-wiring of extension cable TV outlets. Obtain

further cable and connector details from successful cable TV supplier.

- .3 Provision of complete owner supplied TV cabling installation for entire building. Obtain further cable and connector details from successful cable TV supplier.

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

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 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:
Shaw:
Darren Goodman| Senior Planner| Planning Department Shaw Cable Systems G.P.
22 Scurfield Blvd. | Winnipeg, MB R3Y 1S4
Phone: (204) 480-3478| Fax: (204) 480-3482 | Email: darren.goodman@sjrb.ca
- MTS:
General Line: 204-225-5687 (204-CALLMTS)

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 INTERNAL DEMARCATION (Main backboard)

- .1 1-4X4 backboard (3/4" plywood).
- .2 1-120V A/C outlet.
- .3 1-6 AWG ground.

2.3 ADDITIONAL DEMARCATIONS (Sub panel)

- .1 Determined when: RG6 riser cables exceed 45m in length, or RG11 riser cables exceed 75m in length, and with instruction of cable TV utility.
 - .1 1-4X4 backboard (3/4" plywood).
 - .2 1-120V A/C outlet.
 - .3 1-6 AWG ground.

2.4 CABLE RISERS

- .1 Coordinate with Cable TV Utility for cable type and cable installation instruction
- .2 40% cable fill rate is used for the riser conduits/sleeves.

2.5 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.

2.6 CABLE TV OUTLETS IN RESIDENTIAL SUITES

- .1 Main coax cable riser and main Telephone cable riser to be installed in a common area within the suite. Ex: laundry room, utility room, storage room.
- .2 Coax cable & telephone cable riser to be located within the same stud space either side by side or on top of each other in the common area. Minimum spacing around main riser plate: width – 3.5 inches, height - 5 inches from centre of riser plate.
- .3 All additional suite outlets to be wired to this central location. (No daisy chain).
- .4 A CAT 6 cable to be run between the main cable riser & main telephone cable riser.
- .5 Each suite to have a dedicated riser from the main backboard or sub panel to the common area in the suite.
- .6 When installing the suite risers install cables on one side of stud cavity and bring the feed for that suite over to opposite side of stud cavity. Leave a slack loop of cable approx 12". Use loose staples to attach the cables to the stud.
- .7 Extension cable TV outlets in residential suites to consist of a single gang backbox and coverplate with single hole for cable TV jack, as well as RG59 coaxial cable and coaxial connector.
- .8 Pre-wiring of the extension cable TV outlets (horizontally) from the main cable TV outlet (on riser) to be the responsibility of the Electrical Subcontractor. Include all costs for the

cable TV company's involvement in the pre-wiring of extension cable TV outlets. Obtain further cable and connector details from successful cable TV supplier.

3 EXECUTION

3.1 INSTALLATION

- .1 Coordinate with Cable TV Utility and Install 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 16010.

END OF SECTION