

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 09 43 - Network Lighting Controls.
- .3 Section 27 51 23 - Intercommunications and Program Systems.
- .4 Section 28 13 00 - Access Control and Intrusion Alarm.
- .5 Section 28 23 00 - Video Surveillance.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CSA-C22.2 No. 214-02, Communications Cables (Bi-National standard with UL 444).
- .2 Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA).
 - .1 TIA/EIA-568-B.1-(2001), Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements.
 - .2 TIA/EIA-568-B.2-(2001), Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components.
 - .3 TIA/EIA-606-A-(2002), Administration Standard for the Commercial Telecommunications Infrastructure.

1.3 SYSTEM DESCRIPTION

- .1 Structured telecommunications wiring system consist of unshielded-twisted-pair cables, outlets, terminations, connectors, cross-connection hardware, and related equipment installed inside building.
- .2 Provide three independent IP networks for the following systems:
 - .1 Network 1: for Data outlets installed in central building;
 - .2 Network 2: for DALI lighting control system;
 - .3 Network 3: for security systems.
- .3 Installed in physical star configuration with separate horizontal and backbone sub-systems.
 - .1 Horizontal cables link outlets to patch panels, as indicated.
 - .2 Patch panels linked to main terminal/equipment by backbone cables.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

- .2 As-built Records and Drawings:
 - .1 Provide Microsoft Access database reflecting cable installation and cross-connections.
 - .2 Provide electronic drawings in AutoCAD format depicting all construction.
 - .3 Provide two bound complete hard-copy sets of as-built records to the Departmental Representative.
 - .1 Provide and place one hard copy of as-built records for each telecommunications room in plan holder in each telecommunications room.

1.5 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.

1.6 DELIVERY, STORAGE, AND HANDLING

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

1.7 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products.

Part 2 Products

2.1 FOUR-PAIR 100 Ω BALANCED TWISTED PAIR CABLE

- .1 Four-pair, 100 ohm balanced unshielded-twisted-pair (UTP) cable, flame test classification FT4 or MPG or CMG to: CSA-C22.2 No. 214, Enhanced Category 5 (Cat 5e) or Category 6 (Cat 6) as indicated, to: TIA/EIA-568-B.2.

2.2 WORK AREA UTP 4-PAIR MODULAR JACK

- .1 Eight-position modular jack ("RJ-45"), type T568A Category 6 to: TIA/EIA-568-B.2:
 - .1 In self-contained flush or surface-mount box, up to 8 jacks per box.
 - .2 Outlets of modular type (single) insulation displacement and fit to appropriate mounting plates.
 - .3 Mounting plates to receive a minimum of three (3) telecommunications outlets. The same mounting plates to be used for mounting on a power column or on a surface and recessed electrical box electrical box. In wall mounting, mounting plate to be covered with a cover plate adapted to the environment in which it is installed.

2.3 TERMINATION AND CROSS-CONNECTION HARDWARE FOR UTP

- .1 IDC Terminal strips, 25 pair, for terminating 4 pair 100 Ω balanced twisted pair cables and supporting cross-connections using jumper wires or compatible plug-ended patch cords: Category 6 to: TIA/EIA-568-B.2.
- .2 Mount or block for housing 10 IDC terminal strips, mounted in cabinet.
 - .1 Distribution rings or channels capable of externally mating with the above mount for managing cross-connection wires.

2.4 PATCH PANELS

- .1 Patch panel, 1 rack units high, 48 ports:
 - .1 Each port equipped with factory installed "RJ-45" jacks, type T568A Category 6 to: TIA/EIA-568-B.2.
 - .2 Horizontal cable-management unit for every 48 ports.
- .2 Provide a reserve capacity of 25% per panel.
- .3 Router:
 - .1 Router: 24 or 48 ports as needed, with Web interface for configuration and administration.
 - .2 Acceptable products:
 - .1 300 Series of Cisco.
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .4 Router for surveillance cameras:
 - .1 For fixed cameras: Power Over Ethernet Standard (IEEE 802.3af) Class 3; 12.8 W max.
 - .2 For mobile cameras: High Power Over Ethernet (High PoE), 60 W max.
 - .1 Acceptable products:
 - .1 AXIS T8124 High PoE 60 W Midspan 1-port: 100–240 V AC, 74 W max.
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .5 Wall mount 19 inches rack cabinet, capacity 10U, welded construction, sheet steel, pivoting panel, with hinged door and plexiglass window, handle, lock, and latch with two (2) keys.
 - .1 Acceptable products:
 - .1 Model DWR-1017PD of L-Com.
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.

2.5 UTP CROSS-CONNECT WIRE

- .1 Category 5e or Category 6, as indicated, 4 pairs to: TIA/EIA-568-B.2.

2.6 UTP WORK AREA CORDS

- .1 3 m long, each end equipped with "RJ-45" plug Category 6 to: TIA/EIA-568-B.2.

Part 3 Execution

3.1 INSTALLATION OF TERMINATION AND CROSS-CONNECT HARDWARE

- .1 Install termination and cross-connect hardware in cabinet as indicated and according to manufacturers' instructions. Identify and label as indicated to: TIA/EIA-606-A.

3.2 INSTALLATION OF HORIZONTAL DISTRIBUTION CABLES

- .1 Install horizontal cables as indicated in conduits, perimeter raceways, or "J" hooks. Identify and label as indicated to: TIA/EIA-606-A.
- .2 Support horizontal cables at intervals not exceeding 2 m.
 - .1 Where raceways are used to distribute cables to each zone, provide supplementary "J" hooks to support cables at intervals not exceeding 2 m.
- .3 Terminate horizontal cables in audiovisual or security room.
 - .1 Identify and label as indicated to: TIA/EIA-606-A.
- .4 Coil spare cables and store in ceiling space in zone.
- .5 Harness slack cable in cabinets, racks, and wall-mounted termination and cross-connection hardware.

3.3 INSTALLATION OF BACKBONE CABLES

- .1 Install backbone cables as indicated and according to manufacturers' instructions.
 - .1 Identify and label as indicated to: TIA/EIA-606-A.

3.4 FIELD QUALITY CONTROL

- .1 Test horizontal UTP cables as specified below and correct deficiencies provide record of results as hard copy and electronic record.
 - .1 Perform tests for Permanent Link on installed cables, including spares:
 - .1 Category 5e using certified level IIe tester to: TIA/EIA-568-B.1.
 - .2 Category 6 using certified level III tester to: TIA/EIA-568-B.2.
 - .2 Perform tests for Channel on 20% of cross-connected data horizontal cabling installed from each audiovisual room, including shortest and longest drops from each telecommunications room: should more than 5% of tested cables fail, test remaining cross-connected data cables.
 - .1 Category 5e using certified level IIe tester to: TIA/EIA-568-B.1.

- .2 Category 6 using certified level III tester to: TIA/EIA-568-B.2.

END OF SECTION