

## SECTION 271200 – ETHERNET CABLE SYSTEM

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. This Section specifies the ethernet Category 5E data cabling system for buildings and structures.
  - 2. Provide all labor, materials, and equipment as necessary to complete all work as indicated on the drawings, and as specified herein.
  - 3. The Contractor shall furnish and install a complete ethernet cabling system with all necessary components for a complete system as described in the specification and shown on the drawings.
- B. Related Sections include the following:
  - 1. Applicable sections of Division 26 - Electrical

#### 1.3 SYSTEM DESCRIPTION

- A. Installation of new Category 5E data communication cable including all terminations and outlets for a complete system from the patch panel rack to the outlets.

#### 1.4 SUBMITTALS

- A. Shop Drawings:
  - 1. Ethernet cables
  - 2. Equipment racks, enclosures, patch panels, and all related components
  - 3. Outlets

## 1.5 QUALITY ASSURANCE

- A. In general, all new data communications cable and equipment shall comply with the standards of IEEE 802.3 10Base-T (10 Mbps Ethernet) and 100Base-TX (100 Mbps Ethernet); and TIA/EIA 568, 569, and 606.
- B. Installation of cabling systems shall be performed by fully qualified personnel having had a minimum of five years experience on installing these types of systems.
- C. Any workmen terminating cables shall be certified by Panduit Corporation for the type of terminating specified in this project if Panduit products are used or certified by Hubbell Premises Wiring, Inc. for the type of terminating specified in this project if Hubbell products are used.

Use the following paragraph when new cable is installed adjacent to existing broadband cable and/or installed in existing broadband outlet boxes.

- D. In some cases the new cable will be installed in the vicinity of the existing broadband cable. The broadband cable system is fully functional with no abnormalities. At the conclusion of the project, the Owner will test the broadband system and if any problems are identified the Owner will repair the system at the Contractors expense.

## PART 2 - PRODUCTS

### 2.1 TWISTED PAIRED CABLES

- A. All communication cables not installed in conduit shall have as a minimum the rating required by the NEC for the space in which they are to be installed.
- B. Twisted pair communication cable shall meet EIA/TIA 568 Category 5E requirements and shall be CMP rated. Cables shall be four pair with a blue overall jacket, Systimax Catalog number 2061004BBL, Belden catalog number SQ1701A or General Cable catalog number 6131278.

### 2.2 EQUIPMENT

- A. All hardware installed in plenums shall be approved by the Underwriters' Laboratory (UL) for safe use in environmental air spaces without conduit.

Use the following for equipment racks located in a dedicated communication room..

- B. Communication Room Equipment (dedicated communication room)

1. The Contractor shall provide the following equipment in each of the communication rooms. Quantities of equipment shall be determined from sketches bound in these specifications or shown on the drawing:
  - a. MOD-TAP open bay rack, nominal 19" wide by 84" high, with Mod Strut adjustable wall bracket with all necessary hardware, Hubbell rack Catalog number CR1976 (includes 2 floor angles, 2 vertical uprights, 2 top angles, 4 Z channels, 32 gates, 4 covers, and 1 kit assembly hardware.), or approved equal by Panduit.
  - b. Two Panduit catalog number WMP1 wire management panels per rack or Hubbell Catalog number HC219ME3S.
  - c. Panduit catalog number DP48588110B 48 port patch panel or Hubbell Catalog number P5E48B19E.
  - d. Panduit catalog number DP24588110B 24 port patch panels or Hubbell Catalog number P5E24B19E.
  - e. One Panduit catalog number DPLT and one Panduit catalog number DPLF labelling kits per 24 port patch panel.
  - f. One Panduit catalog number DPLT and two Panduit catalog number DPLF labelling kits per 48 port patch panel.
2. Exact arrangement of the communication rooms and equipment in the racks will be determined in the field with the Project Representative and a representative from Physical Telecommunications Systems.

Use the following for equipment racks located in an open room arrangement.

C. Communication Room Equipment (open room)

1. The Contractor shall provide the following equipment in each of the communication rooms (quantities of equipment shall be determined from sketches bound in these specifications or shown on the drawing):
2. Rittal enclosures for patch panels and hubs as follows and as shown on sketches:
  - a. Cabinet DK702451, 19" rack for mounting equipment with space on both sides for vertical wire management, nominal 84" high.
  - b. Cabinets shall have solid lockable front and rear doors, side panels, solid tops, and 4" base.
  - c. Cabinets shall be paired with one cabinet for patch panels and one cabinet for hubs bolted together with no side panel in between the two units to allow for cable passage. The two units shall be bolted so that they are rigid as if they were one unit.

- d. The patch panel side shall have two sets of DK7095 collecting rails and three sets of DK7099 cable clamps spaced equally on both sides. The top of the patch panel side shall have grommets sized to accommodate the number of cables entering the enclosure.
  - e. The hub side shall have a SK3167100 fan with filter and sealing frame at the bottom and a filtered exhaust sized to match the fan at the top on the side panel. The fan shall be controlled by a SK3112 temperature control. Provide two 15 amp, 120 volt multioutlet power strips in the enclosure for hub and fan power.
  - f. One Panduit catalog number WMP1 or two Hubbell catalog number HC219ME3S wire management panels to span across the patch panel side and the hub side of the enclosures.
  - g. Panduit catalog number DP48588110B or Hubbell catalog number P5E48B19E 48 port patch panel.
  - h. One Panduit catalog number DPLT and two Panduit catalog number DPLF labeling kits or two Hubbell catalog number LHP174 labeling kits per 48 port patch panel.
- 3. Exact arrangement of the communication rooms and equipment in the racks shall be as shown on attached sketches to the specification and/or as determined in the field with the Project Representative and a representative from Physical Telecommunications Systems.
  - 4. A new cable tray shall be installed in each communication room to train the cables over to the communication racks. Ends of trays shall be supported from the wall. Trays longer than 10' shall also be supported at tray midspan from the deck above.

## 2.3 OUTLETS

- A. All new flush mounted data cable outlet boxes shall be one or two gang as indicated on the drawings, extra-deep galvanized steel boxes. When conduit is not connected to the box provide grommets in conduit KO's to protect cable as it enters the box.

Indicate on the drawing when conduit is used and how it is to be installed.
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- B. Surface mount outlet boxes shall be Wiremold boxes as indicated on the drawings.
- C. Data outlets shall be one of the following:
  - 1. Panduit MOD-COM "106" Frame catalog number MM106F4EI with one thru four (depending on number of outlets per location) PAN-JACK Category 5 Modular Jack catalog number MUJC588BGR. Blank outlet positions shall be filled with Panduit blank module catalog number MMB1EI-X.

2. Hubbell catalog number SSF12, SSF14, SSF16 (Stainless steel faceplate 2, 4, or 6 openings single gang) or SSF204, SSF206, SSF209 or SSF212 (Stainless steel faceplate 4, 6, 9, or 12 openings double gang). Use Hubbell Category 5E jacks Catalog number HXJ5EOR. Blank outlet positions shall be filled with blank fillers.
- D. Data cable shall be terminated on jacks per manufacturers recommendations. Manufacturers recommended preparation tool shall be used.
- E. Data cable shall be terminated on jacks using EIA T568B configuration.

### PART 3 - EXECUTION

#### 3.1 CABLE

- A. Where data cables are not run in conduit or other approved raceway, it shall be bundled and fastened approximately every 3 feet to structural members, slabs, or walls only, it shall not be laid on or fastened to channels of suspended ceilings.
- B. The maximum number of cables in a bundle shall the number of cables in a vertical riser. Cables shall be bundled with velcro type fasteners.
- C. Vertical cable risers shall be supported from the upper most floor the riser serves with split support grips as manufactured by Daniel Woodhead or equal. Intermediate supports shall be installed as recommended by the cable manufacturer for the number of cables and vertical distance of cable riser. Number of cables per support grip for the vertical height of the cable to be supported shall be determined using manufacturers recommendations.
- D. Contractor will follow Hubbell document control no. 77885401 detailing the patch panel termination methods, and observe the less than one-half inch untwisting of pairs and the termination and routing of station cables from the patch panel through the equipment rack. This document details the preferred method of cable termination, routing, and labeling, and is included in the package with the Hubbell patch panels.

#### 3.2 LABELLING

- A. Both ends of all data cables shall be labeled indicating the room number and outlet number of the room where the outlet is installed; eg. A220-1, indicates room A220 outlet number 1. eg: 220J-3 indicates room 220J outlet #3. The same designation shall be used on the patch panels indicating the room and outlet number served.
- B. Labels shall be typewritten or prepared using a labeling machine with laser jet printing. Labels shall be self adhesive, shall bond securely to cable after the cable has been handled. and when wrapped around the cable shall not cover up the designation.
- C. Label all jacks using Panduit PAN-JACK labels, part number PJI-PO-1 or equal by Hubbell.

END OF SECTION 271200