

**SECTION 27 11 19****COMMUNICATIONS TERMINATION BLOCKS AND PATCH PANELS****PART 1 - GENERAL****1.1 SUMMARY**

- A. This section specifies the products and installation of communications termination blocks and patch panels for copper twisted-pair and optical fiber cables.
- B. The product performance (e.g., category 5e, category 6A, OM4, OS2) shall be as specified on drawings.

**1.2 RELATED DOCUMENTS**

- A. The latest editions of the following codes, standards, and guidelines shall be followed. Bring to ITS' immediate attention where construction documents or conditions differ from the requirements in codes, standards, guidelines or specifications.
- B. The following codes, as required by law
  - 1. ANSI/NFPA-70, National Electrical Code® (NEC®)
- C. The following standards
  - 1. ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises
  - 2. ANSI/TIA-568-C.2, Balanced Twisted-Pair Telecommunications Cabling and Components Standards
  - 3. ANSI/TIA-568-C.3, Optical Fiber Cabling Components Standard
  - 4. ANSI/TIA-569-C, Telecommunications Pathways and Spaces
  - 5. ANSI/TIA-606-B, Administration Standard for the Telecommunications Infrastructure
  - 6. ANSI/TIA-607-B, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
- D. The following guidelines
  - 1. BICSI, Telecommunications Distribution Methods Manual (TDMM)
  - 2. BICSI, Information Transport Systems Installation Methods Manual (ITSIMM)
- E. The following project specifications
  - 1. 27 05 26 Grounding and Bonding for Communications
  - 2. 27 05 53 Identification for Communications Systems
  - 3. 27 11 13 Communications Optical Fiber Backbone Cabling
  - 4. 27 15 13 Communications Copper Horizontal Cable
  - 5. 27 15 43 Communications Faceplates and Modular Jacks

**1.3 QUALITY ASSURANCE**

- A. Termination blocks and patch panels shall be covered by the Advanced System Warranty (Refer to Section 27 00 00).

## 1.4 SUBMITTALS

- A. All submittals that are incomplete shall be returned without review.
- B. The following submittals shall be provided at the Pre-Construction Phase, in accordance with submittal requirements in Section 27 00 00, Communications. UT ITS shall have final approval of products for the installation.
  - 1. Product Information
    - a) Provide manufacturer's product information cutsheet or specifications sheet with the specific product number identified or filled out.
    - b) Provide manufacturer's product information showing system performance is maintained when using a variety of modular jacks (e.g., wall, patch panel), cable and patch cords (be manufacturer and product specific).
    - c) All product information shall be provided at one time, in one submittal package.
  - 2. Shop Drawings
    - a) Provide scaled drawings (not less than 1/8" = 1'-0") indicating location and type/part number of product to be installed. Additionally, provide (1/4" = 1'-0" scale or greater) drawing elevations for equipment cabinets, racks, frames, enclosures and wall terminations indicating locations of termination blocks and patch panels.
- C. The following submittals shall be provided three (3) weeks prior to Substantial Completion, in accordance with the submittal requirements in Section 27 00 00, Communications.
  - 1. Record Drawings
    - a) Provide scaled drawings (not less than 1/8" = 1'-0") indicating location and type/part number of product to be installed. Additionally, provide (1/4" = 1'-0" scale or greater) drawing elevations for equipment cabinets, racks, frames, enclosures and wall terminations indicating installed locations of wall termination blocks and patch panels.
    - b) All record drawings shall be provided at one time, in one submittal package.
  - 2. Manufacturer and Maintenance Manuals for installed equipment.

## PART 2 – PRODUCTS

### 2.1 GENERAL

- A. All connectivity components either for copper or fiber (e.g., patch panels, modular jacks, optical fiber enclosures) shall be by the same manufacturer and covered under the same manufacturer Advanced System Warranty.

### 2.2 COPPER BALANCED TWISTED-PAIR

- A. Wall-mounted 110-termination blocks and connectors (e.g., copper backbone termination, wall-to-rack termination)
  - 1. Performance shall meet the performance requirements of ANSI/TIA 568-C.2.

2. Manufacturer shall be
  - a) Panduit
  - b) Ortronics
  - c) or equivalent
- B. Angled patch panels
  1. Size as identified on the drawings. Typical size is 48-port, 2RU.
  2. Shall accept modular jacks that meet the required performance of the specified category system.
  3. Manufacturer shall be
    - 1) Panduit – Mini-Com opening(s)
    - 2) Ortronics – TracJack opening(s)
    - 3) or equivalent
- C. (Straight; flat) patch panels
  1. Specifications are the same as angled patch panels
  2. To be used where appropriate, such as for wall racks and enclosed cabinets.
    - a) Manufacturer shall be
      - 1) Panduit – Mini-Com opening(s)
      - 2) Ortronics – TracJack opening(s)
      - 3) or equivalent

## 2.3 FIBER

- A. Rack-mounted Fiber Enclosures
  1. Shall be 4RU in height and fit into a standard 19" wide rack.
    - a) Refer to drawings for location.
  2. Shall have a front cover that swings down. Labeling shall be integrated either on the fiber enclosure cover or on the fiber adapter panels.
  3. Shall have a minimum capacity of 144-strands.
  4. Shall include fixtures to maintain the cable and optical fiber manufacturer's minimum bend radius.
  5. Shall include a splice tray option.
  6. Manufacturer shall be
    - a) Corning, Pretium Connector Housings (PCH)
      - 1) Include Splice Tray Bracket, Strain Relief Bracket, (12) Splice Trays Type 2S
    - b) Systimax, 360 Modular Fiber Shelf
      - 1) Include (2) Fusion Splice Wallet (Tray) Kits
    - c) Panduit, FCE4U
      - 1) Include FOSMM Fusion Splice Trays

- d) or equivalent
- B. Fiber Adapter Panel
  - 1. Shall fit into specified fiber enclosures.
  - 2. Shall be in multiples of 12 strands.
  - 3. Singlemode fiber adapters shall be LC/APC (green in color)
  - 4. Multimode fiber cassettes shall be LC/UPC to MTP. The LC/UPC adapters shall be aqua in color.
  - 5. Multimode fiber adapter panels shall have the adapters be aqua in color.
  - 6. See Section 27 11 13 Communications Optical Fiber Backbone Cabling for optical fiber performance specifications.
  - 7. Manufacturer shall be
    - a) Corning
    - b) Systemax
    - c) Panduit
    - d) or equivalent

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Termination block and patch panel installation (copper and optical fiber) shall be in conformance to ANSI/TIA-568 standards, BICSI methods, industry standards and manufacturer's instructions and guidelines.
- B. Termination blocks and patch panels terminated in areas prior to final cleaning (e.g., painting, carpet installation, where dust may be created) shall be protected to ensure dust, debris, moisture and other foreign materials do not settle onto contacts or optical fiber end-faces.
- C. Cables shall be terminated in consistent consecutive order.
- D. Coordinate with all other trades prior to pre-construction submittals and installation.
- E. Quantity on drawings is illustrative. Provide the quantity of wall-termination blocks and connectors, patch panels, enclosures and inserts to support the necessary quantity of cable pairs and strands plus 10%.

#### **3.2 COPPER BALANCED TWISTED-PAIR**

- A. Follow 27 15 43 Communications Faceplates and Modular Jacks for terminations.
- B. Cables shall be supported and loosely tied off by means of a strain relief bar on the back of patch panels.
- C. Contractor shall terminate copper backbone (riser) cables onto wall-mounted 110 termination blocks using C-5 connectors.
- D. Wall-to-rack cables shall be terminated between the backbone 110 termination field and patch panel(s). The wall-to-rack cables shall be 100 pair category 3. The 110 termination block shall be terminated with five (5) C4 connectors and one (1) C5 connector per 25-pair row. Four pair per port shall be terminated on the patch panels.

- E. Provide a separate patch panel(s) in each Communications Room for Wireless Access Points.
- F. Provide a separate patch panel(s) in each Communications Room for Building Automation Controls, Security and Elevators, and wall-to-rack copper backbone.

3.3 FIBER

- A. Follow 27 13 23 Communications Optical Fiber Backbone Cabling for terminations.
- B. The contractor shall furnish and install separate fiber enclosures for single-mode and multimode optical fiber in-building cables.
- C. The contractor shall furnish and install LC/APC adapter panels (12-fibers per adapter panel) in each single-mode fiber enclosure.
- D. The contractor shall furnish and install LC/UPC to MTP cassettes (12-fibers per cassette) for the installed multimode cable and LC/UPC adapter panels (12-fibers per adapter panel) for non-cassette spaces in each multimode fiber enclosure.

**END OF SECTION**