

## **SECTION 271100 - COMMUNICATIONS EQUIPMENT ROOM FITTINGS**

Latest Update 5-7-2017 See underlined text for Edits..

(Engineer shall edit specifications and blue text in header to meet project requirements. This includes but is not limited to updating Equipment and/or Material Model Numbers indicated in the specifications and adding any additional specifications that may be required by the project. Also turn off all "Underlines.")

### **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 and all other sections of Division 27.

#### 1.2 SUMMARY

##### A. Section Includes:

1. Telecommunications mounting elements.
2. Backboards.
3. Telecommunications equipment racks and cabinets.
4. Telecommunications service entrance pathways.
5. Grounding.

#### 1.3 DEFINITIONS

- A. Basket Cable Tray: A fabricated structure consisting of wire mesh bottom and side rails.
- B. BICSI: Building Industry Consulting Service International.
- C. Channel Cable Tray: A fabricated structure consisting of a one-piece, ventilated-bottom or solid-bottom channel not exceeding 6 inches in width.
- D. Ladder Cable Tray: A fabricated structure consisting of two longitudinal side rails connected by individual transverse members (rungs).
- E. LAN: Local area network.
- F. RCDD: Registered Communications Distribution Designer.
- G. Solid-Bottom or Non-ventilated Cable Tray: A fabricated structure consisting of a bottom without ventilation openings within integral or separate longitudinal side rails.

- H. Trough or Ventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal rails and a bottom having openings sufficient for the passage of air and using 75 percent or less of the plan area of the surface to support cables.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product specified in this section. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for equipment racks and cabinets. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For communications equipment room fittings. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 2. Equipment Racks and Cabinets: Include workspace requirements and access for cable connections.
  - 3. Grounding: Indicate location of grounding bus bar and its mounting detail showing standoff insulators and wall mounting brackets.
- C. Qualification Data: For Installer, qualified layout technician, installation supervisor, and field inspector.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Cabling Installers must be Level 2 certified by BICSI.
  - 1. Layout Responsibility: Preparation of Shop Drawings shall be under the direct supervision of RCDD/NTS.
  - 2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.
  - 3. Field Inspector: Currently registered by BICSI as RCDD to perform the on-site inspection.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Telecommunications Pathways and Spaces: Comply with TIA/EIA- 568 C.
- D. Grounding: Comply with ANSI-J-STD- 568 C.

## 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install equipment frames and cable trays until spaces are enclosed and weather-tight, wet work in spaces is complete and dry, and work above ceilings is complete.

## 1.7 COORDINATION

- A. Coordinate layout and installation of communications equipment with owner's telecommunications and LAN equipment and service suppliers. Coordinate service entrance arrangement with local exchange carrier.
  - 1. Meet jointly with telecommunications and LAN equipment suppliers, local exchange carrier representatives, and owner to exchange information and agree on details of equipment arrangements and installation interfaces.
  - 2. Record agreements reached in meetings and distribute them to other participants.
  - 3. Adjust arrangements and locations of distribution frames, cross-connects, and patch panels in equipment rooms to accommodate and optimize arrangement and space requirements of telephone switch and LAN equipment.
  - 4. Adjust arrangements and locations of equipment with distribution frames, cross-connects, and patch panels of cabling systems of other communications, electronic safety and security, and related systems that share space in the equipment room.
- B. Coordinate location of power raceways and receptacles with locations of communications equipment requiring electrical power to operate.

## 1.8 WARRANTY/GUARANTEE

- A. See Division 26 Specification Section "Basic Electrical Requirements" for warranty and guarantee requirements.

## **PART 2 - PRODUCTS**

### 2.1 PATHWAYS

- A. General Requirements: Comply with TIA/EIA-568 C.
- B. Cable Support: NRTL labeled. Cable support brackets shall be designed to prevent degradation of cable performance and pinch points that could damage cable.
  - 1. Comply with NFPA 70 and UL 2043 for fire-resistant and low-smoke-producing characteristics.

2. B20 mushroom spools and white backboards as manufactured by AllenTel, catalog #187D1 (single) or 187B1 (double),
3. Five (5) inch wide x three and one quarter (3.25) inch high D-rings as manufactured by CPI, catalog #10943-000 or equivalent.
4. Blue backboards for mounting sixty six (66) blocks shall be manufactured by AllenTel, catalog #GB183B1 or equivalent.
5. Velcro straps for Cat 6 cable and other devices.

C. Cable Trays:

1. Cable Trays: Comply with NEMA VE 2 and TIA/EIA We can give the more global spec section 569 C.
2. Manufacturers: Subject to compliance with requirements, provide products by one (1) of the following:
  - a. Cable Management Solutions, Inc.
  - b. Cablofil Inc.
  - c. Cooper B-Line, Inc.
  - d. Cope - Tyco/Allied Tube & Conduit.
  - e. CPI
  - f. Wiremold Spec-Mate, Catalog #CA 04 09 18.
3. Cable Tray Materials: Aluminum.
  - a. Ladder Cable Trays: Nominally eighteen (18) inches wide, and a rung spacing of nine (9) inches.

D. Conduit and Boxes: Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems." Flexible metal conduit shall not be used.

1. Outlet boxes shall be no smaller than two (2) inches wide, three (3) inches high, and two and one half (2-1/2) inches deep.

2.2 BACKBOARDS

- A. Backboards: Plywood, fire-retardant treated, three quarter (3/4) inches by forty eight (48) inches by ninety six (96) inches. Comply with requirements for plywood backing panels specified in Division 06 Section "Rough Carpentry."

2.3 EQUIPMENT FRAMES

- A. Manufacturers: Subject to compliance with requirements, provide products by one (1) of the following:

1. Chatsworth Products Incorporated, CPI, Catalog #55053-703.
2. Ortronics, Inc.
3. Siemon Co. (The).

B. General Frame Requirements:

1. Distribution Frames: Nineteen (19) inches wide freestanding, unit designed for telecommunications terminal support.
2. Module Dimension: Width compatible with EIA 310 standard, nineteen (9) inch panel mounting.
3. Finish: Black, baked-polyester powder coat.

C. Floor-Mounted Racks: Modular-type, aluminum construction.

1. Vertical and horizontal cable management channels, top cable troughs, grounding lug [, and a power strip]. <Engineer to Edit for Project Requirements>

D. Finish: Black, Modular Freestanding Cabinets:

1. Removable and lockable side panels.
2. Hinged and lockable front and rear doors.
3. Adjustable feet for leveling.
4. Screened ventilation openings in the roof and rear door.
5. Cable access provisions in the roof and base.
6. Grounding bus bar.
7. [Rack] [Roof]-mounted, 550-cfm fan with filter. <Engineer to Edit for Project Requirements>
8. Power strip.
9. Finish: Black, All cabinets keyed alike.

E. Cable Management for Equipment Frames:

1. Metal, with integral wire retaining fingers.
2. Finish: Black.
3. Double-side vertical trough with lockable cable latches, protective edge guards and pass-through ports; as manufactured by CPI, Catalog #11729-703 or UMB CITS approved equivalent.
4. Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of one rack unit each. As manufactured by Ortronics, Catalog # OR-808004759 or UMB CITS approved equivalent.

## 2.4 POWER STRIPS

A. Power Strips: Comply with UL 1363.

1. Rack mounting (or field installed).

2. Six 20-A, 120-V ac, NEMA WD 6, Configuration 5-20R receptacles.
3. LED indicator lights for power and protection status.
4. Circuit Breaker and Thermal Fusing: Unit continues to supply power if protection is lost.
5. [Close-coupled, direct plug-in] [Cord connected with fifteen (15) foot] line cord.  
<Engineer to Edit for Project Requirements>
6. Rocker-type on-off switch, illuminated when in on position.

## 2.5 GROUNDING

- A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems." for grounding conductors and connectors.
- B. Telecommunications Main Bus Bar:
  1. Connectors: Mechanical type, cast silicon bronze, solderless compression type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
  2. Ground Bus Bar: Copper, minimum one quarter (1/4) inch thick by four (4) inches wide with nine thirty second (9/32) inch holes spaced one and one eighth (1-1/8) inches apart.
  3. Stand-Off Insulators: Comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5,000 V.
- C. Comply with ANSI-J-STD- 568 C

## 2.6 LABELING

- A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

## PART 3 - EXECUTION

### 3.1 ENTRANCE FACILITIES

- A. Contact telecommunications service provider and arrange for installation of demarcation point, protected entrance terminals, and housing when so directed by service provider.
- B. Install [underground] [buried] [aerial] <Insert pathway> pathways complying with recommendations in TIA/EIA- 569C "Entrance Facilities" Article.

3.2 Install [underground] [buried] <Insert pathway> entrance pathway complying with Division 26 Section "Raceway and Boxes for Electrical Systems.

- A. Comply with NECA 1.
- B. Comply with BICSI TDMM for layout and installation of communications equipment rooms.
- C. Cable Trays: Comply with NEMA VE 2 and TIA/EIA 569 C.
- D. Bundle, lace, and train conductors and cables to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

### 3.3 FIRESTOPPING

- A. Comply with requirements in Division 07 Section "Penetration Firestopping." Comply with TIA/EIA-569-A; Annex A, "Firestopping."
- B. Comply with BICSI TDMM, "Firestopping Systems" Article.

### 3.4 GROUNDING

- A. Install grounding according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.
- B. Comply with ANSI-J-STD- 568 C.
- C. Locate grounding bus bar to minimize the length of bonding conductors. Fasten to wall allowing at least 2-inch clearance behind the grounding bus bar. Connect grounding bus bar with a minimum No. 4 AWG grounding electrode conductor from grounding bus bar to suitable electrical building ground.
- D. Bond metallic equipment to the grounding bus bar, using not smaller than No. 6 AWG equipment grounding conductor.
  - 1. Bond the shield of shielded cable to the grounding bus bar in communications rooms and spaces.

### 3.5 IDENTIFICATION

- A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements in Division 26 Section "Identification for Electrical Systems." Comply with requirements in Division 09 Section "Interior Painting" for painting backboards. For fire-resistant plywood, do not paint over manufacturer's label.

- B. See Division 27 Section "Communications Horizontal Cabling" for additional identification requirements.
- C. Labels shall be preprinted or computer-printed type.

END OF SECTION 271100