Section 27 11 16 - Communications Cabinets, Racks, Frames and Enclosures

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, and equipment for the complete installation of work called for in the Contract Documents.
B. Scope of Work includes free-standing racks as noted in the project drawings and specifications
C. Server Racks noted in plans are out of scope and will be provided by the Owner.

1.2 SCOPE OF WORK

A. This section includes the minimum requirements for the equipment and cable installations in telecommunications equipment rooms.

B. Included in this section are the minimum composition requirements and installation methods for the following

   a. Freestanding Network Racks.

C. Related Sections from Division 27: Communications

   a. 27 00 00 Communications
   b. 27 05 26 Grounding and Bonding for Communications Systems
   c. 27 05 28 Pathways for Communications Systems
   d. 27 05 36 Cable Trays for Communications Systems
   e. 27 05 53 Identification for Communications Systems
   f. 27 11 00 Telecommunications Equipment Rooms
   g. 27 13 23 Communications Optical Fiber Backbone Cabling
   h. 27 15 13 Communications Copper Horizontal Cabling
   i. 27 15 33 Communications Coaxial Horizontal Cabling.

1.3 QUALITY ASSURANCE

A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

B. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.

C. Material and work specified herein shall comply with the applicable requirements of:

1. TIA – 569-B Commercial Building Standard for Telecommunications Pathways and Spaces, 2004

2. ANSI/TIA – 568-C Commercial Building Telecommunications Cabling Standard, 2009

3. ANSI/NECA/BICSI 568-2006 – Standard for Installing Commercial Building Telecommunications Cabling

4. TIA – 606-A Administration Standard for Commercial Telecommunications Infrastructure, 2007

5. ANSI-J-STD – 607-A Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2002

6. ANSI/TIA-942 Telecommunications Infrastructure Standard for Data Centers, 2005

7. NFPA 70 – National Electric Code, 2008

1.4 SUBMITTALS

A. Provide product data for the following:

1. Manufacturers cut sheets, specifications and installation instructions for all products (submit with bid).

PART 2 – PRODUCTS

2.1 EQUIPMENT RACKS

A. Free Standing Relay Racks (Standard Rack)

1. Racks shall be manufactured from aluminum extrusion.

2. Each rack shall have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The rack shall assemble with nut and bolt hardware. The base angles shall be pre-punched for attachment to the floor.

3. Equipment mounting channels shall be 3" (76 mm) deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern, 1-3/4" (44.45 mm) rack-mount spaces (U), to provide 45U, 52U or 58U for equipment. Each mounting space (U) shall be marked and numbered on the mounting channel.

4. When assembled with top and bottom angles, equipment-mounting channels shall be spaced to allow attachment of 19" EIA rack-mount equipment. Equipment attachment points shall be threaded with 12-24 roll-formed threads. The rack shall include assembly and equipment-mounting hardware. Racks shall include 50 each combination pan head, pilot point mounting screws.

5. The assembled rack shall measure 7' (2.1 m)/84" (2133 mm) high, 8' (2.4 m)/96" (2438 mm) high or 9' (2.7 m)/108" (2743 mm) high; 20.3" (515.9 mm) wide and 15" (381.0 mm) deep. The sides (webs) of the equipment-mounting channels shall be punched to allow attachment of vertical cable managers along the sides of the rack or for rack-to-rack baying.

6. Assembly hardware shall electrically bond the top angles, side channels and base angles together when assembled, and there shall be a masked ground attachment point with 1/4-20 threaded studs spaced 5/8" apart on the inside of the side channel to attach a ground lug allowing easy attachment to the Telecommunications Ground.

7. The rack shall be rated for 1,000 lb (453.6 kg) of equipment.

8. The rack shall be UL and cUL Listed as a Communications Circuit Accessory, DUXR and DUXR7 category, file number 140851.

9. Finish shall be either clear grained aluminum or epoxy-polyester hybrid powder coat in the color as specified below.

10. Design Make shall be:
Chatsworth Products, Inc. (CPI),
Standard Rack

Part Number 55053-703, Standard Rack, 7'H (2.1 m) x 20.3"W (515.9 mm) x 15"D (381.0 mm), 45U x 19"ElA, Black, UL Listed.

Part Number 40605-005, Equipment Mounting Screws, #12-24, 50 pack, Black.
Part Number 40604-003, Rack Installation Kit, Concrete Slab, Zinc.
Part Number 40607-001, Rack Installation kit, Wood Floor, Zinc
Part Number 12831-703, Global Vertical Cabling Section, Single Sided
Part Number 40159-008, Rack Ground Jumper Kit

PART 3 – EXECUTION

3.1 INSTALLATION

A. Relay Racks

1. Assemble relay racks according to manufacturer's instructions. Verify that equipment mounting rails are sized properly for rack-mount equipment before attaching the rack to the floor.
2. All racks must be attached to the floor in four places using appropriate floor mounting anchors. When placed over a raised floor, threaded rods should pass through the raised floor tile and be secured in the structural floor below. (Use CPI Part Number 40604-003 for concrete slab floors or 40607-001 wood floors. Raised floor support kits are also available.)

3. Racks shall be grounded to the TGB using appropriate hardware provided by the contractor. The ground will meet local code requirements and will be approved by the Authority Having Jurisdiction (AHJ).
4. In seismic areas, the rack should have additional bracing as required by building codes and the recommendations of a licensed structural engineer.
5. Ladder rack may be attached to the top of the rack to deliver cables to the rack. The rack shall not be drilled to attach ladder rack. Use appropriate hardware from the ladder rack manufacturer.
6. The equipment load will be evenly distributed and uniform on the rack. Place large and heavy equipment towards the bottom of the rack. Secure all equipment to the rack with equipment mounting screws. In seismic areas, secure equipment to shelves with additional bracing.

END OF SECTION