SECTION 27 11 16
COMMUNICATIONS CABINETS, RACKS, FRAMES AND ENCLOSURES

PART 1 – GENERAL

1.01 DESCRIPTION
A. The work covered by this section of the Specifications includes all labor necessary to perform and complete such construction, all materials and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary or used to perform and complete such construction. The work of this section shall include, but is not limited to, the following:
1. Fixed 2 Post 19” equipment racks complete with all necessary installation hardware.
2. Fixed 19” equipment cabinets complete with all necessary installation hardware.

1.02 QUALITY ASSURANCE
A. Refer to Section 27 00 00 for general details.

1.03 CODES AND STANDARDS
A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations in Section 27 00 00.
B. ANSI/EIA-310-D (Racks, Panels, and Associated Equipment).
C. NEBS-Telcordia GR-63-CORE Zone 4
1. Tested with 500 lbs. of equipment installed and 100 lbs. of simulated cable weight on the top.

1.04 SUBMITTALS
A. Refer to Section 27 00 00 for general details.
B. Shop Drawings:
1. Shop drawings shall show the position of the equipment racks in the telecommunications room. Racks shall be dimensioned and the position of the rack or cabinet shall be dimensioned from (2) walls in each telecommunication room.
2. Shop drawings for equipment racks shall also show the method of attachment to the floor and to any overhead ladder rack. All cable management raceways for equipment racks shall be shown on the shop drawings.
C. Submit Manufacturer's Cut Sheets for the following:
1. Any products not specifically listed in the PRODUCTS section shall require a submittal of the manufacturer’s cut sheets.

1.05 IDENTIFICATION

A. Each rack shall require a ½” white permanent polyester label with black labeling noting rack designation as provided by a campus telecommunications representative.

B. Refer to Section 27 05 53 for additional details.

1.06 DEFINITIONS

A. N/A

1.07 WARRANTY

A. Refer to Section 27 00 00 for general details.
PART 2 – PRODUCTS

2.01 PRODUCT CONSISTENCY

A. Product Consistency: Any given item of equipment or material shall be the product of one manufacturer throughout the facility. Multiple manufacturers of any one item will not be permitted.

2.02 EQUIPMENT RACKS

A. Racks shall be manufactured from aluminum extrusions.

B. Each rack will have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The rack will assemble with bolt hardware. Equipment-mounting channels will be threaded for easy assembly. The base angles shall be 3.5" x 6.0" x .375" thick, and will be pre-punched for attachment to the floor.

C. Equipment mounting channels shall be 3" deep x 1.265" wide x .25" thick and punched on the front and rear flange with the EIA-310-D Universal hole pattern. Each mounting space will be marked and numbered on the mounting channel.

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

E. Top angle shall be 1.5" x 1.5" x .25" thick. Top bar shall be 1.5" x .25" thick.

F. The assembled rack will measure 7' (84") high, 20.3" wide, and 15" deep. The sides of the equipment-mounting channels will have threaded mounting points to allow attachment of vertical cable managers along the sides of the rack.

G. The rack will be rated for 1,500 lb. of equipment.

H. The rack will be UL Listed.

I. Finish shall be clear grained aluminum.

J. Manufacturer/Product: Chatsworth Universal Rack Part# 46353-503 or Approved Equal

2.03 VERTICAL RACK MOUNT WIRE MANAGEMENT

A. Vertical Wire Manager

1. Closed, double-sided vertical cable manager

2. T-shaped cable fingers with rounded edges

3. Cable openings shall align with each rack-mount unit on the specified rack and pass 48 patch cords.

4. Shall include a removable hinged door with a two-point latch and single door knob
5. Color is to be black.
6. Manufacturer/Product: CPI Part #: 35523-703 (10"
7. Manufacturer/Product: CPI Part #: 35521-703 (6"

2.04 HORIZONTAL RACK MOUNT WIRE MANAGEMENT

A. Copper Cable Wire Manager
   1. Single-sided, 2RU, 19” EIA rackmount horizontal cable managers.
   2. Provides a side-to-side pathway that lines up with specified vertical managers.
   3. Include radiused fingers, and removable double hinged snapon cover.
   4. Color is to be black.
   5. Manufacturer/Product: CPI Part #: 30130-719

B. Fiber Radiused Jumper Tray
   1. Single-sided, 2RU, 19” EIA rackmount horizontal jumper tray for fiber optic patch cables.
   2. Radiused drop offs on each end of the tray.
   3. Color is to be black.
   4. Manufacturer/Product: CPI Part #: 12183-719

2.05 WALL CABINET (INDOOR USE, UP TO 6 RACK UNITS)

A. Wall-mount enclosure with reversible, lockable front door
B. Lock keyed to a CH751 key.
C. Rail system, with 12-24 threaded mounting holes, that can be rotated for use horizontally or vertically
D. Removable top panel and ventilated sides
E. Constructed from 16-gauge steel, with a 100 pound static load rating
F. Material: sheet steel
G. Construction: Welded and/or bolted
H. Epoxy-polyester hybrid powder coat paint, Black in color.
I. Manufacturer/Product: CPI Part #: 13050-723
J. Include Intelligent Fan Kit: CPI Part# 13051-001
2.06 WALL CABINET (INDOOR USE, 18 RACK UNITS)
A. Wall-mount enclosure with lockable front door and swing-out rear access to equipment.
B. Lock keyed to a CH751 key.
C. 19” L-shaped adjustable equipment mounting rails with 12-24 threaded mounting holes.
D. Rated for 200 pounds, open or closed.
E. Material: sheet steel
F. Construction: Welded and/or bolted
G. Epoxy-polyester hybrid powder coat paint, Black in color.
H. Manufacturer/Product: CPI Part #: 12419-736
I. Manufacturer/Product: CPI Part #: 12804-701 (Fan Kit)
J. Manufacturer/Product: CPI Part #: 12805-701 (Filter Kit)
K. Manufacturer/Product: CPI Part #: 12806-001 (Box of 6 Filters)

2.07 WALL RACK (INDOOR USE, 19 RACK UNITS)
A. Open wall-mount rack with swing-out rear access to equipment
B. 19” L-shaped equipment mounting rails with 12-24 threaded mounting holes.
C. Rated for 85 pounds open or closed
D. Material: sheet and tubular steel
E. Construction: Welded and bolted
F. Epoxy-polyester hybrid powder coat paint, Black in color.
G. Manufacturer/Product: CPI Part #: 13604-725

2.08 HORIZONTAL CABINET MOUNT WIRE MANAGEMENT PANEL (TO BE USED IN 18RU WALL CABINET & 19RU WALL RACK)
A. Copper Cable Wire Management Panel
   1. Single-sided, 1RU, 19” EIA rackmount horizontal cable managers.
   2. Provides a side-to-side pathway that lines up with specified vertical managers.
   3. Include radiused fingers, and removable double hinged snap-on cover.
   4. Color is to be black.
5. Manufacturer/Product: CPI Part #: 30139-719
PART 3 – EXECUTION

3.01 GENERAL

A. Location and placement equipment racks shall be as shown on the Drawings or defined in these specifications and schedules.

B. Usage

1. 2 Post racks are only to be used within a designated telecommunications room.

2. 19RU open frame racks are to be used in secured, dedicated, locked, and environmentally controlled areas. Open frame racks are to be used for a maximum of 96 cables.

3. 18RU wall cabinets are to be used in environmentally controlled but public areas. 6RU wall cabinets are to be used for a maximum of 24 cables. 18RU wall cabinets are to be used for a maximum of 96 cables.

C. Equipment racks and cabinets shall be assembled and installed as per the manufacturers' printed instruction.

D. Any excess length of bolts or threaded rods shall be trimmed to no more than $\frac{1}{2}$ past the nut.

E. Do not install patch panels, termination blocks, equipment or cabling to the equipment racks or cabinets until after their installation has been accepted by the campus telecommunications representative.

3.02 QUANTITIES

A. Quantities and sizes of rack equipment and components shown on the Drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of all materials necessary to accommodate the equipment and to terminate, cross connect and patch the volume of cable described in these specifications and schedules and shown on the Drawings.

B. Quantities of Wire Managers

1. Vertical Wire Managers

a. Rooms with 2 racks will have one 6" and two 10" vertical wire managers.

b. Rooms with 3 racks will have two 6" and two 10" vertical wire managers.

c. Rooms with 4 racks will have two 6" and three 10" vertical wire managers.

d. Rooms with 5 racks will have two 6" and four 10" vertical wire managers.

2. Horizontal Wire Managers

a. Each 2 post rack will be provided with two Horizontal wire managers and one Fiber Radiused Jumper Tray.

b. Each Telcom wall cabinet (excluding 6U cabinet) or wall rack will be provided with four 1U Horizontal wire management panels.
3.03 INSTALLATION

A. Follow manufacturer’s installation instructions for compliance with referenced seismic requirements.

B. If any part of the project requires equipment racks to be installed on a raised floor application or requires auxiliary supports for which no Manufacturers installation details are available allowing for compliance with the referenced seismic standards, the Contractor must provide an alternate installation approved by a structural engineer.

C. Equipment racks and wall cabinets must be mounted, and approved by the AHJ, as to accommodate anticipated equipment loads. Any proposed reinforcement to be the responsibility of the Contractor.

D. Wall cabinets and wall racks are to be mounted with the top of the enclosure at 60” AFF.

E. Wall cabinets and wall racks are to be mounted such that there are no obstructions or impediments to the full opening radius of the enclosure.

F. Wall cabinets and wall racks are to be mounted such that they do not obstruct access to any other junctions, pull boxes, control panels, cabinets, etc.

3.04 GROUNDING & BONDING

A. All racks and cabinets are to be individually grounded to the TGB/TMGB with a #6 AWG copper bonding conductor.

B. Refer to Section 27 05 26 for additional details.

3.05 TESTING

A. None required unless specified by AHJ or other contract requirements.

3.06 ACCEPTANCE

A. Once the installation has been completed and the campus telecommunications representative is satisfied that all work is in accordance with the Contract Documents, the representative will notify the Contractor and/or campus project manager in writing or via email.

3.07 RECORD (ASBUILT) DRAWINGS

A. The Project Record Drawings shall show the types and locations of installed equipment racks and wall cabinets.

END OF SECTION
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