SPECIFICATION STANDARD COMMUNICATIONS CABINETS, RACKS, FRAMES, and ENCLOSURES 27 11 16

PART 1: GENERAL

1.01: SCOPE OF WORK

A. The contractor, designated agent or employee is held responsible to be familiar with the provisions contained herein and with other Sections of this Specification as applicable to the completion of the installation.

B. Work covered by this Section shall consist of furnishing labor, equipment, supplies, materials, and testing unless otherwise specified, and in performing the following operations recognized as necessary for the installation of the Information Technology Cabinets, Racks, Frames and Enclosures described on the Drawings and/or required by these specifications.

C. The extent of the Information Technology Cabinets, Racks, Frames and Enclosures Installation (The Project) will be as shown in the project drawings or as specified.

D. The project's architects, engineers, contractor, manufacturer, and/or University employee is assumed to possess the knowledge, manpower, and materials applicable to the completion of the installation within the University's Information Technology Department's design guidelines and standards.

1.02 RELATED SECTIONS

A. The project's architects, engineers, contractor, manufacturer, and/or University employee are responsible to be knowledgeable with the provisions contained within the following and other related sections of these standards of the UNM IT department as they apply to the completion of the project's installation and design.

1. Division 27, Section 27 00 00 Communications
2. Division 27, Section 27 05 26 Grounding and Bonding for Communications Systems
3.
4. Division 27, Section 27 05 53 Identification for Communication Systems.
5. Division 27, Section 27 05 28 Pathways for Communications Systems.
6. Division 27, Section 27 11 19 Communications Termination Blocks and Patch Panels.
7. Division 27, Section 27 11 23 Communications Cable Management and Ladder Rack.

B. Design, manufacture, test, and install the project's data cabling systems in accordance to the UNM IT design guidelines and standards, industry standards, manufacturer's requirements and in accordance with NFPA 70 (National Electric Code), state codes,

local codes, requirements of authorities having jurisdiction, and particularly the most recent editions of the following standards and specifications.

1. UNM IT Design Guidelines and Standards
2. National Fire Protection Association
3. National Electrical Code
4. National Electrical Safety Code
5. This Technical Specification and Associated Drawings
6. ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises, and its published addenda.
7. ANSI/TIA-568-C.1, Commercial Building Telecommunications Cabling Standard, and its published addenda.
8. ANSI/TIA-568-C.2, Copper Cabling Components Standard, and its published addenda.
9. ANSI/TIA-568-C.3, Optical Fiber Cabling Components Standard, and its published addenda.
10. ANSI/TIA/EIA-569-B, Commercial Building Standard for Telecommunications Pathways and Spaces, and its published addenda
11. ANSI/TIA/EIA-606-A, Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, and its published addenda
12. ANSI/J-STD-607-A, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, and its published addenda.
13. Building Industries Consulting Services International (BICSI) Telecommunications Distribution Methods Manual (TDMM)
14. ANSI/TIA-942, Telecommunications Infrastructure Standard for Data Centers, and its published addenda
15. Product manufacturer's published specifications and instructions.
16. BICSI TDMM and associated standards.

PART 2: PRODUCTS

2.01: PRODUCTS EQUIPMENT FRAMES

A. Approved equipment racks (frames) are:

1. Chatsworth Adjustable Quadra Rack™, 4-Post Frame for data equipment black unless otherwise specified.

   a. Frames shall be manufactured from aluminum and/or steel extrusion and sheet.

   b. Each frame will have two L-shaped top angles, two L-shaped base angles, a top and bottom pan, and four C-shaped equipment-mounting channels (a front and rear pair). The rack will assemble with nut and bolt hardware. The base angles and bottom pan will be pre-punched for attachment to the floor. The top pan will be pre-punched for attaching ladder rack with J-bolts.

    c. Equipment mounting channels will be 3" deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern to provide 45 rack-mount spaces for equipment. Each mounting space will be marked and numbered on the mounting channel.

    d. When assembled with top and bottom pans and 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 frame will include assembly and equipment-mounting hardware. Frames will include 100 each combination pan head, pilot point, mounting screws.

    e. The assembled frame will measure 7' (84") high, 20.3" wide and 41" deep. There will be 29" between the front and rear mounting surfaces of the two pairs of mounting channels. The sides (webs) of the equipment-mounting channels will be punched to allow attachment of vertical cable managers along the sides of the frame or for frame-to-frame or frame-to-rack baying (frames must be able to bay with a 2-post relay rack).

    f. The frame will be rated for 2,000 lb. of equipment.

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

2. Chatsworth Universal Rack™, free standing, 2 post rack, 19 inch x 7 feet high black when specified by UNM IT.

    a. Install 2post free standing racks when specified and approved by UNM IT.

    b. Racks shall be manufactured from aluminum and/or steel extrusions.

    c. 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 will be pre-punched for attachment to the floor.

    d. Equipment mounting channels will be 3" deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern to provide 45 rack-mount spaces for equipment. Each mounting space will be marked and numbered on the mounting channel.

    e. When assembled with top and bottom angles, equipment-mounting channels will be spaced to allow attachment of 19" EIA (or 23" only when specified and approved by UNM IT) 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.

    f. The assembled rack will measure 7' (84") high, 20.3" wide and 15" deep. The sides (webs) of the equipment-mounting channels will be punched to allow

IT ⓦ UNM

attachment of vertical cable managers along the sides of the rack or for rack-to-rack baying.

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

h. The rack will be UL Listed.

i. Finish shall be either clear grained aluminum or epoxy-polyester hybrid powder coat in the color of black.

3. The equivalent B-Line or APC 2 or 4 post rack and associated vertical wire management system where specified will be accepted upon prior approval by UNM IT.

B. Racks are to be joined vertically using the Chatsworth Global Vertical cabling solution part number 12831-703 or prior approved equivalent. One unit shall be installed on both sides of the racks.

C. For racks mounted "slab on grade" use Chatsworth Rack Base Insulator Kit.

D. Junction plate at top of equipment frame shall be Homaco #JP0912.

E. Equipment Cabinets and Wall Mount Equipment Cabinets as specified and only when approved by UNM IT.

F. Wall Mount Equipment Racks and Cabinets are permitted only with the prior approval from UNM IT.

2.03: VERTICAL WIRE MANAGEMENT

A. Vertical Cable Management for Racks/Frames
(CCS Combination Cabling Section)

1. Every rack/frame will have a minimum of one vertical cable manager plus one additional per row. The vertical cable manager will create a space for storing and organizing cables and patch cords along the side of the rack/frame. The cable manager will maintain separation between patch/equipment/jumper cords and premise cables.

2. The cable manager will be 6" wide for UNM installations and 10" wide for UNMH installations.

3. A single vertical cable manager shall be used in between bayed racks/frames.

4. The vertical cable manager will match the height of the rack(s)/frame(s).

5. The vertical cable manager will bolt to the side of racks/frames with included hardware. The manufacturer of the vertical cable manager will sell compatible racks/frames..

6. The front cover will be removable.

7. The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each .25" OD patch cords.

8. The cable manager will be delivered individually boxed, and available in several widths as specified below and in the contract documents.

9. The vertical cable manager shall be manufactured from sheet aluminum and composite materials.

10. Finish shall be a black epoxy-polyester hybrid powder coat paint. Edge-protectors, T-shaped cable guides and latch hardware is black.

B. UNM Installations install - Chatsworth Products - CCS Combination Cabling Section, For 6" Deep Rack Channels, Double-Sided, 6" Wide x 84" High x 14.6" Deep, Black.

C. UNMH Installations install - Chatsworth Products - CCS Combination Cabling Section, For 6" Deep Rack Channels, Double-Sided, 10" Wide x 84" High x 14.6" Deep, Black.

2.04: EQUIPMENT RACK GROUNDING BUSBAR

A. Equipment Rack Busbar

1. Panduit #TRGK672 Telecommunications Rack Grounding Kit or UNM IT approved equivalent.

2.05 EXCEPTIONS

A. THERE ARE NO NOTABLE EXCEPTIONS TO THE AFORE MENTIONED PRODUCT STANDARDS WITHOUT A WRITTEN CHANGE REQUEST SUBMITTED AND APPROVED BY THE UNM IT OR UNMH IT.

PART 3.0 EXECUTION

IT ᯤ UNM

3.01: EQUIPMENT FRAME INSTALLATION

A. Installation of 4 and 2 post equipment racks (Frames)

1. Confirm equipment frame location with UNM IT prior to installation.

2. Confirm all location of equipment before installing in racks or on walls.

3. Provide equipment racks as needed to mount patch panels, equipment, etc. as specified herein. A standard ER/TR will have a minimum of (3) 4 post racks or as determined by UNM IT.

4. Install racks with 36 inches clearance at front and rear of each row and 36 inches at the end of each row.

5. Assemble frames according to manufacturer's instructions. Verify that equipment mounting rails are sized properly for rack-mount equipment before attaching the frame to the floor.

6. All frames must be attached to the floor in four places using appropriate floor mounting anchors. The completed equipment frame will be affixed to the floor using drop-in anchors and 5/8-inch zinc-plated hex bolts. The anchors will be sheathed with an isolation sleeve and isolation pads under each rack. The rack will be anchored with split and flat washers 5/8 inch nylon slip stop nuts.

7. 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.)

8. The frame should have additional bracing as required by building codes and the recommendations of a licensed structural engineer, i.e. for seismic requirements.

9. Ladder rack shall be attached to the top of the frame to deliver cables to the frame. Provide a junction plate at top of equipment rack and required cable runway to attach rack to cable runway around the perimeter of the TR. Install the junction plates above all equipment racks and attach to cable runway. The frame should not be drilled to attach ladder rack. Use appropriate hardware from the ladder rack manufacturer. Junction plate must be fastened to frame without using "J" hooks so that no equipment space is lost.

10. All equipment racks shall be grounded and isolated. Frames 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).

11. Grounding of equipment racks shall include scraping of paint off grounding points on rack, installer must use sheathed six gauge grounding wire with home runs from each rack grounding point to the bus bar located in the BDF or TR.

IT ᐅ UNM

12. The equipment load should be evenly distributed and uniform on the frame. Place large and heavy equipment towards the bottom of the frame. Secure all equipment to the frame with equipment mounting screws.

B. Installation of Vertical Cable Managers

1. Attach vertical cable managers to the side of the rack/frame using the manufacturer's installation instructions and included hardware.

2. When a single vertical cable manager is used in between two racks/frames, attach the vertical cable manager to both racks/frames.

3. When more than one cable manager is used on a rack/frame or group of racks/frames, use the same make, style and size of vertical cable manager on the rack/frame or in between racks/frames.

4. The color of the rack(s)/frame(s) and cable manager(s) must match.

5. Doors should be attached to the cable manager and in the closed position after cabling is complete.

C. Equipment Cabinets and Wall Mount Equipment Cabinets are to be installed according to manufacture instructions and as specified and approved by UNM IT.

D. Wall Mount Equipment Racks are to be installed according to manufacturer instructions and as specified and approved by UNM IT.

END OF SECTION