

Section 27 11 00

COMMUNICATION EQUIPMENT ROOM FITTINGS

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.

1.2 SCOPE OF WORK

- A. This section includes the minimum requirements for cabinets, racks, frames and enclosures in communications equipment rooms.
- B. Included in this section are the minimum composition requirements and installation methods for the following:
 - 1. Freestanding Cabinets.

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-942 – *Telecommunications Infrastructure Standard for Data Centers*
 - 2. ANSI/TIA/EIA – 568-B *Commercial Building Telecommunications Cabling Standard, 2000-2004*
 - 3. TIA – 569-B *Commercial Building Standard for Telecommunications Pathways and Spaces, 2004*
 - 4. ANSI/TIA/EIA – 606-A *Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, 2002*

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5. ANSI-J-STD – 607-A *Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications*, 2002
6. NFPA 70 – *National Electric Code*, 2005
7. BICSI – *Telecommunications Distribution Methods Manual, 10th Edition*, 2003

1.4 SUBMITTALS

- A. Provide product data for the following:
 1. Manufacturers data sheets/cut sheets, specifications and installation instructions for all products (submit with bid).

PART 2 – PRODUCTS

2.1 Cabinets

A. Free-standing Equipment Cabinets (Enhanced SteelFrame Cabinet)

1. Each cabinet will be a welded four-post frame with a vented top panel or top-mount fan kit and doors, as specified below and in the contract documents.
2. Cabinets will include two pairs of adjustable-depth equipment mounting rails to provide front and rear support for 19" wide rack-mount equipment.
3. The cabinet frame, top panel and doors will be manufactured from steel sheet. Anodized aluminum extrusion supports will be bolted inside the frame to hold the equipment mounting rails. Mounting rails will slide along the supports for infinite adjustment. The supports will include numbered scales that help evenly position mounting rails within the cabinet.
4. Equipment mounting rails will be L-shaped. The front flange of the mounting rails will be square-punched with attachment points for cage nuts. Attachment points will be spaced vertically according to the EIA-310-D Standard Universal hole pattern and will provide 45 RMU (rack-mount spaces) for equipment. Each RMU will be marked and numbered on the mounting rail.
5. The front pair of mounting rails will include an airflow baffle that blocks airflow between the mounting rails and the side of the cabinet. This integral air dam will be made with brush filaments that allow cables to pass front to rear along the side of the cabinet.
6. The cabinet will include equipment-mounting hardware. The manufacturer of the cabinet will also sell compatible equipment-mounting hardware with #12-24, #10-32 and M6 threads as a separate accessory

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7. The top panel will be vented and will have two 3" diameter edge-protected cable access ports with cable-protecting grommets. The top panel will include a removable jumper trough. The jumper trough will be located near the front of the cabinet and will provide a side-to-side pathway for cables. The top panel will be designed to accept a ventilation fan, airflow duct and 12" wide ladder rack in the parallel (side-to-side) orientation. The manufacturer of the cabinet will sell a compatible top-mounted ventilation fan, airflow duct and ladder rack as separate accessories.
8. The cabinets will include a front door and a rear door, as specified below and in the contract documents. The doors will have a solid or perforated (mesh) surface/panel. The doors shall be made from steel. The mesh panel on perforated doors will be 63% open for optimal airflow. The doors will have a swing-handle latch and keyed lock. The doors will be lockable and keyed alike. The doors will be removable and reversible so that each door can swing open to the left or right and/or be switched front-to-rear. The manufacturer of the cabinet will sell a compatible electronic lock system as a separate accessory.
9. The cabinet will be delivered assembled in the size specified below and in the contract documents.
10. The cabinet frame, doors and mounting rails will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents. Mounting rail supports within the frame are anodized aluminum.
11. Load bearing capacity shall be rated at 2,000 pounds per cabinet. Load bearing capacity will be stated in the manufacturer's product literature.
12. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet

Part Number **16141-101**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Gray, Fully Assembled.

Part Number **16141-201**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Computer White, Fully Assembled.

Part Number **16141-701**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Black, Fully Assembled.

Part Number **16141-102**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep

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Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Gray, Fully Assembled.

Part Number **16141-202**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Computer White, Fully Assembled.

Part Number **16141-702**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 39.4" Deep Exterior, 19" EIA x 45 RMU x 36" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Black, Fully Assembled.

Part Number **16142-101**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Gray, Fully Assembled.

Part Number **16142-201**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Computer White, Fully Assembled.

Part Number **16142-701**, Enhanced SteelFrame Low kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough, Locking Perforated (Mesh) Front Door, Locking Perforated (Mesh) Rear Door, Black, Fully Assembled.

Part Number **16142-102**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Gray, Fully Assembled.

Part Number **16142-202**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Trough and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Computer White, Fully Assembled.

Part Number **16142-702**, Enhanced SteelFrame High kW Cabinet, 24" Wide x 84" High x 42.4" Deep Exterior, 19" EIA x 45 RMU x 39" Deep Interior, Square-Punched Equipment Mounting Rails, Integral Air Dam, Vented Top Panel with Jumper Tray and Intelligent Fan Kit, Locking Perforated (Mesh) Front Door, Locking Solid Rear Door, Black, Fully Assembled.

- B. External Cable Manager for Enhanced SteelFrame Cabinet:
1. External cable managers will attach to the side of the cabinet with included hardware. The height and depth of the external cable manager will match the height and depth of the cabinet.
 2. External cable managers are welded four-post frames with a top and bottom panel and front and rear doors.
 3. External cable manager will be manufactured from steel sheet.
 4. Within the external cable manager, there will be separate front-facing and rear-facing vertical pathways for cables. The vertical pathways will be connected with four front-to-rear pathways for cables.
 5. Vertical pathways will be U-shaped troughs that are open at the front so that they can be easily accessed by opening the doors on the external cable manager. Each trough will have cable openings along both sides that align with rack-mount spaces (RMU) in the cabinet. Composite T-shaped cable guides with rounded edges will divide each opening so that cables can be neatly organized by-RMU.
 6. External cable managers will include four U-shaped front-to-rear troughs that connect the front and rear vertical cable pathways allowing cables to pass front-to-rear between vertical pathways. All cable pass-through holes in the vertical managers will be edge-protected.
 7. External cable manager will have a solid bottom and top. Edge protected openings will be located above and below the front-facing and rear-facing vertical cable managers. The bottom opening will include brush filaments to block airflow through the opening.
 8. The doors will be solid, locking, removable and reversible so that each door can open from the right or left and can be switched front-to-rear. The locks will be keyed alike and will match the locks on the cabinet doors and on side panels.
 9. The external cable manager will be delivered assembled in the size specified below and in the contract documents.
 10. External cable manager will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents. The composite cable guides will be black.
 11. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
External Cable Manager

Part Number **16144-150**, External Cable Manager, 6" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Gray.

Part Number **16144-250**, External Cable Manager, 6" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Computer White.

Part Number **16144-750**, External Cable Manager, 6" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Black.

Part Number **16145-150**, External Cable Manager, 12" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Gray.

Part Number **16145-250**, External Cable Manager, 12" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Computer White.

Part Number **16145-750**, External Cable Manager, 12" Wide x 84" High x 39.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Black.

Part Number **16144-140**, External Cable Manager, 6" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Gray.

Part Number **16144-240**, External Cable Manager, 6" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Computer White.

Part Number **16144-740**, External Cable Manager, 6" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Black.

Part Number **16145-140**, External Cable Manager, 12" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Gray.

Part Number **16145-240**, External Cable Manager, 12" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Computer White.

Part Number **16145-740**, External Cable Manager, 12" Wide x 84" High x 42.4" Deep Exterior, Locking Solid Front Door, Locking Solid Rear Door, Black.

C. Therma-Stop™ Brush Side Panel for Enhanced SteelFrame Cabinet:

1. Brush side panel attaches to and covers the side of the cabinet or external cable manager.
2. Brush side panel will have vertical edge-protected openings near the front and rear of the panel. The openings will include brush filaments to block airflow through the opening.
3. Brush side panel will be manufactured from steel sheet.
4. Brush side panel will include a lock. The lock will be keyed to match the doors on the cabinet and external cable manager.
5. Brush side panel will be sized as specified below and in the contract documents.
6. Brush side panel will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents. The brush filaments will be black.
7. Design Make:

Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Therma-Stop™ Brush Side Panel

Part Number **16143-150**, Therma-Stop Brush Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinets, Locking, Gray.

Part Number **16143-250**, Therma-Stop Brush Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinets, Locking, Computer White.

Part Number **16143-750**, Therma-Stop Brush Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinets, Locking, Black.

Part Number **16143-140**, Therma-Stop Brush Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinets, Locking, Gray.

Part Number **16143-240**, Therma-Stop Brush Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinets, Locking, Computer White.

Part Number **16143-740**, Therma-Stop Brush Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinets, Locking, Black.

D. Solid Side Panel for Enhanced SteelFrame Cabinet:

1. Solid side panel attaches to and covers the side of cabinet or external cable manager.
2. Solid side panel will be manufactured from steel sheet.
3. Solid side panel will include a lock. The lock will be keyed to match the doors on the cabinet and external cable manager.
4. Solid side panel will be sized as specified below and in the contract documents.
5. Solid side panel will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents.
6. Design Make:

Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Solid Side Panel

Part Number **12612-150**, Solid Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinet, Locking, Gray.

Part Number **12612-250**, Solid Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinet, Locking, Computer White.

Part Number **12612-750**, Solid Side Panel, For 84" High x 39.4" Deep Enhanced SteelFrame Cabinet, Locking, Black.

Part Number **12612-140**, Solid Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinet, Locking, Gray.

Part Number **12612-240**, Solid Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinet, Locking, Computer White.

Part Number **12612-740**, Solid Side Panel, For 84" High x 42.4" Deep Enhanced SteelFrame Cabinet, Locking, Black.

E. Airflow Duct for Enhanced SteelFrame Cabinet:

1. Add airflow duct to the top of cabinets to duct hot air between the cabinet and a drop ceiling plenum.
2. Airflow duct attaches to the top of Enhanced SteelFrame Cabinet.
3. Airflow duct will be manufactured from steel sheet.
4. Airflow duct will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents.
5. Design Make:

Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Airflow Duct

Part Number **16148-100**, Airflow Duct, Gray.

Part Number **16148-200**, Airflow Duct, Computer White.

Part Number **16148-700**, Airflow Duct, Black.

F. Intelligent Fan Kit for Enhanced SteelFrame Cabinet:

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1. Intelligent fan kit attaches to the top panel of the cabinet to remove heated air from within the cabinet.
2. Intelligent fan kit includes four temperature-controlled fans.
3. Maximum airflow is 1,000 CFM.
4. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Intelligent Fan Kit

Part Number **16146-101**, Intelligent Fan Kit, 115Volt, 1000 CFM, Gray.
Part Number **16146-201**, Intelligent Fan Kit, 115Volt, 1000 CFM,
Computer White.
Part Number **16146-701**, Intelligent Fan Kit, 115Volt, 1000 CFM, Black.

G. Filler Panels for Enhanced SteelFrame Cabinets:

1. Use filler panels to close all open rack-mount spaces in the cabinet.
2. Filler Panels are flat rack-mount panels that attach to racks and cabinets to cover/close open rack-mount spaces in between rack-mount equipment.
3. Filler Panels will be made from aluminum sheet.
4. Filler Panels will be sized to attach to 19" EIA racks and cabinets and to match rack-mount spaces (RMU).
5. Filler Panels will be painted with epoxy-polyester hybrid powder coat paint in the color as specified below and in the contract documents.
6. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Filler Panels

Part Number **30026-101**, Filler Panel, 19" EIA by 1 RMU, Gray.
Part Number **30026-201**, Filler Panel, 19" EIA by 1 RMU, Computer
White.
Part Number **30026-701**, Filler Panel, 19" EIA by 1 RMU, Black.

Part Number **30026-102**, Filler Panel, 19" EIA by 2 RMU, Gray.
Part Number **30026-202**, Filler Panel, 19" EIA by 2 RMU, Computer
White.
Part Number **30026-702**, Filler Panel, 19" EIA by 2 RMU, Black.

Part Number **30026-103**, Filler Panel, 19" EIA by 3 RMU, Gray.
Part Number **30026-203**, Filler Panel, 19" EIA by 3 RMU, Computer
White.
Part Number **30026-703**, Filler Panel, 19" EIA by 3 RMU, Black.

Part Number **30026-104**, Filler Panel, 19" EIA by 4 RMU, Gray.
Part Number **30026-204**, Filler Panel, 19" EIA by 4 RMU, Computer
White.
Part Number **30026-704**, Filler Panel, 19" EIA by 4RMU, Black.

Part Number **30026-105**, Filler Panel, 19" EIA by 5 RMU, Gray.
Part Number **30026-205**, Filler Panel, 19" EIA by 5RMU, Computer
White.
Part Number **30026-705**, Filler Panel, 19" EIA by 5RMU, Black.

Part Number **30026-106**, Filler Panel, 19" EIA by 6 RMU, Gray.
Part Number **30026-206**, Filler Panel, 19" EIA by 6 RMU, Computer White.
Part Number **30026-706**, Filler Panel, 19" EIA by 6 RMU, Black.

Part Number **30026-107**, Filler Panel, 19" EIA by 7 RMU, Gray.
Part Number **30026-207**, Filler Panel, 19" EIA by 7 RMU, Computer White.
Part Number **30026-707**, Filler Panel, 19" EIA by 7 RMU, Black.

Part Number **30026-108**, Filler Panel, 19" EIA by 8 RMU, Gray.
Part Number **30026-208**, Filler Panel, 19" EIA by 8 RMU, Computer White.
Part Number **30026-708**, Filler Panel, 19" EIA by 8 RMU, Black.

Part Number **30026-109**, Filler Panel, 19" EIA by 9 RMU, Gray.
Part Number **30026-209**, Filler Panel, 19" EIA by 9 RMU, Computer White.
Part Number **30026-709**, Filler Panel, 19" EIA by 9 RMU, Black.

Part Number **30026-110**, Filler Panel, 19" EIA by 10 RMU, Gray.
Part Number **30026-210**, Filler Panel, 19" EIA by 10 RMU, Computer White.
Part Number **30026-710**, Filler Panel, 19" EIA by 10 RMU, Black.

Part Number **30026-111**, Filler Panel, 19" EIA by 11 RMU, Gray.
Part Number **30026-211**, Filler Panel, 19" EIA by 11 RMU, Computer White.
Part Number **30026-711**, Filler Panel, 19" EIA by 11 RMU, Black.

Part Number **30026-112**, Filler Panel, 19" EIA by 12 RMU, Gray.
Part Number **30026-212**, Filler Panel, 19" EIA by 12 RMU, Computer White.
Part Number **30026-712**, Filler Panel, 19" EIA by 12 RMU, Black.

H. Horizontal Cable Managers for Enhanced SteelFrame Cabinet:

1. Horizontal cable managers shall be manufactured from sheet aluminum and composite materials.
2. Horizontal cable managers will be sized to attach to a 19" rack and will be sized to fit a specific number of rack-mount spaces.
3. Horizontal cable managers will be flat panels with C-shaped composite rings attached at standard intervals.
4. The composite rings will be rounded so that there are smooth edges in contact with the cables.
5. Horizontal cable managers will be painted with an epoxy-polyester hybrid powder coat in the color as specified below and in the contract documents. Composite rings will be black.
6. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Rack Cabling Manager

Part Number **11752-119**, Rack Cabling Manager, 19" EIA, 1 RMU, 1.3" Deep, Gray.

Part Number **11752-219**, Rack Cabling Manager, 19" EIA, 1 RMU, 1.3" Deep, Computer White.

Part Number **11752-719**, Rack Cabling Manager, 19" EIA, 1 RMU, 1.3" Deep, Black.

Part Number **11753-119**, Rack Cabling Manager, 19" EIA, 2 RMU, 1.6" Deep, Gray.

Part Number **11753-219**, Rack Cabling Manager, 19" EIA, 2 RMU, 1.6" Deep, Computer White.

Part Number **11753-719**, Rack Cabling Manager, 19" EIA, 2 RMU, 1.6" Deep, Black.

I. Large Horizontal Cable Managers for Enhanced SteelFrame Cabinet:

1. Horizontal cable managers shall be manufactured from sheet and extruded aluminum.
2. Horizontal cable managers will be sized to attach to a 19" rack and will be sized to fit a specific number of rack-mount spaces.
3. Horizontal cable managers will be flat panels with C-shaped rings attached at standard intervals.
4. The rings will be formed from extruded aluminum bar with rounded edges so that there are smooth edges in contact with the cables.
5. Horizontal cable managers will be painted with an epoxy-polyester hybrid powder coat in the color as specified below and in the contract documents.
6. Design Make:

Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Large Horizontal Ring Panel

Part Number **11564-119**, Large Horizontal Ring Panel, 19" EIA, 2 RMU, 6" Deep, Gray.

Part Number **11564-219**, Large Horizontal Ring Panel, 19" EIA, 2 RMU, 6" Deep, Computer White.

Part Number **11564-719**, Large Horizontal Ring Panel, 19" EIA, 2 RMU, 6" Deep, Black.

J. LCD Monitor Shelf for Enhanced SteelFrame Cabinet:

1. Provide a shelf with a slide-out flat panel monitor that uses no more than 2 RMU in the closed position.
2. Attach the shelf so that the display is located at a comfortable viewing height when extended.
3. Design Make:

Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
LCD Monitor+Shelf

Part Number **13380-719**, LCD Monitor Shelf, 19" EIA, 2 RMU, with 15" LCD Monitor, Black. *Monitor has 1024 x 768 resolution and supports 24-bit color. Monitor color may differ in color.*

- K. Keyboard + Tray for Enhanced SteelFrame Cabinet:
1. Provide a shelf with a slide-out keyboard & touchpad that uses only 1RMU in the closed position.
 2. Attach the shelf so that the keyboard & touchpad is located at a comfortable typing height when extended.
 3. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Keyboard+Tray

Part Number **13480-719**, Keyboard + Tray, 19" EIA, 1 RMU, with keyboard & touchpad, Black. *Keyboard & touchpad color may differ.*
- L. Equipment-Mounting Hardware for Enhanced SteelFrame Cabinet:
1. Provide additional equipment-mounting hardware if required to support equipment.
 2. Design Make:
Chatsworth Products, Inc. (CPI),
Enhanced SteelFrame Cabinet Accessory,
Equipment Mounting Hardware

Part Number **12637-001**, Hardware Kit for Square-Punched Rails, M6 Screws and Cage Nuts, Package of 25, Gold over Zinc.
Part Number **12638-001**, Hardware Kit for SUN and Square-Punched Rails, 10-32 Screws and Cage Nuts, Package of 25, Zinc.
Part Number **12639-001**, Hardware Kit for Square-Punched Rails, 12-24 Screws and Cage Nuts, Package of 25, Black.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Free-standing Equipment Cabinets (Enhanced SteelFrame Cabinet)

1. Provide all components of the cabinet system (cabinet, cable managers, side panels, and accessories) from a single manufacturer.
2. Provide a cabinet with a rectangular frame, vented top panel, locking perforated (mesh) front door, locking perforated (mesh) rear door, two pairs of equipment mounting rails and integral air dams when the per cabinet heat load (per cabinet power requirement) is less than 5 kW.
3. Provide a cabinet with a rectangular frame, vented top panel, top-mount 1000 CFM fan kit, locking perforated (mesh) front door, locking solid rear door, two pairs of equipment mounting rails and integral air dams when the per cabinet heat load (per cabinet power requirement) exceeds 5 kW.
4. Provide a minimum of one external cable manager for each cabinet. A single cable manager may be shared between two cabinets if it is doubled in width to provide sufficient space for cables. The external cable manager will be the same height and depth as the supporting cabinet.

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5. Provide side panels with each cabinet and cable manager. Place a brush side panel in between each cabinet and external cable manager. Place a solid side panel on the sides of an individual cabinet or on both ends of a multi-cabinet bay.
6. When used in a multi-cabinet bay, cabinets will be attached side-by-side using included baying kit hardware according to the manufacturer's instructions. An external cable manager and two brush side panels must be used in between bayed cabinets.
7. All cabinets will be sized to provide sufficient depth for equipment. Use the same depth cabinet in any continuous row.
8. Cabinets shall be secured to the structural floor using manufacturer's installation instructions and appropriate hardware as defined by local code or the authority having jurisdiction. Installers will provide installation hardware. When placed over a raised floor, secure the cabinet to the structural floor through the raised floor panels using 5/8-11 threaded rod. Leveling feet and casters will not be used.
9. Use rack-mount filler panels of various sizes to close any open rack-mount spaces in the cabinet.
10. Attach overhead cable runway or FastTrac Cable Tray to the ceiling, independent of the cabinet. Maintain a 3" minimum clearance between the top of the cabinet and the bottom of the cable runway/tray. Cable runway/tray should be positioned so that it does not interfere with hot air exhaust through the vents/fan at the top of the cabinet. Use radius drops where cable enters/exits the tray. Alternately, attach cable runway to the top of cabinets using the elevation kit so that cable runway is a minimum of 3" above the cabinet.

Note: Seismic installations require additional bracing of cabinets and overhead cable runways to building structure as advised by and certified by a licensed structural engineer.

11. Cabinets shall be securely bonded to the Telecommunications Grounding Busbar (TGB). Attach a bonding conductor sized as defined in J-STD-607-A and as defined by local code or the authority having jurisdiction between the Telecommunications Grounding Busbar or Signal Reference Grid and the cabinet. Attach the bonding conductor to the cabinet using a rack-mount busbar, ground terminal block or two-hole compression lug. The installer will provide the bonding conductor and other necessary hardware required to make the connections between the cabinet and the Telecommunications Grounding Busbar or Signal Reference Grid.