

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

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies Information Technology (IT) equipment enclosures for use in VA telecommunications spaces.

1.2 SUMMARY

- A. Section Includes:
1. Server Cabinets.
 2. Network Channel Racks.
 3. Network Cabinets.
 4. Telecommunications Enclosures.
 5. Pathway Racks.

1.3 REFERENCES

- A. VA Infrastructure Standard for Telecommunications Spaces.

1.4 RELATED WORK:

- A. Cabling termination equipment, rack-mounted: Section 27 11 19, COMMUNICATIONS TERMINATION BLOCKS AND PATCH PANELS.
- B. Cable management equipment: Section 27 11 23, COMMUNICATIONS CABLE MANAGEMENT AND LADDER RACK.
- C. Power distribution equipment: Section 27 11 26, COMMUNICATIONS RACK MOUNTED POWER PROTECTION AND POWER STRIPS.
- D. Grounding and bonding equipment: Section 27 05 26, GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS.
- E. Labeling and identification requirements: Section 27 05 53, IDENTIFICATION FOR COMMUNICATIONS SYSTEMS.
- F. Seismic bracing: Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.

1.5 SUBMITTALS:

- A. Submit in accordance with Section 27 05 00, COMMON WORK RESULTS FOR COMMUNICATIONS SYSTEMS.

PART 2 - PRODUCTS

2.1 SERVER CABINETS.

- A. Height. Cabinets shall provide 45 standard rack units (RU) of space (45U) for mounting equipment.

- B. Dimensions. Nominal dimensions for server cabinets are 84" (2134mm) tall, 23.6" (600mm) wide, and 48" (1220mm) deep, including side panels and doors. Minimum depth is 46" (1168mm). Maximum width is 24 (610 mm).
- C. Doors and Panels.
1. Front Door. Provide a single locking, latched, hinged metal front door for the server cabinet with minimum 75% open perforated design for airflow.
 2. Rear Door. Provide a double locking, latched, hinged metal rear door for the server cabinet.
 - a. If a vertical exhaust duct (VED, "chimney") is specified for the server cabinet, the rear door shall be solid.
 - b. If no VED is specified, the rear door shall be perforated with a minimum of 75% open design for airflow.
 3. Side Panels. Provide removable, locking solid metal side panels. Side panels shall have cable pass-through cut-outs protected with brushed grommets on each side, aligned on each side to allow Rack PDU cables to pass between enclosures to Zone PDUs.
- D. Locks. All locks on a server cabinet shall be keyed the same. Provide two keys per cabinet.
- E. Color. The cabinet and all components shall be white in color.
- F. Equipment Mounting Rack. The cabinet shall provide an EIA-310-E compliant 19" racking system with front and rear rails using standard 3/8" x 3/8" square hole mounting.
1. Rear Rails. Position rear rails with a minimum of 6" of clearance between the rails and the rear doors to accommodate rear-mounted angled patch panels and up to four (4) vertical rack PDUs.
- G. Components. The cabinet shall be supplied with the following standard equipment:
- a. Air dams for left and right of the front rails.
 - b. Finger cable managers.
 - c. Bottom panel with brushed grommets.
 - d. Top panel with brushed grommets.
 - e. Toolless mounting brackets for vertical Rack PDUs.
 - f. 45U of 1RU blanking panels.
- H. Vertical Exhaust Duct. Provide a vertical exhaust duct (VED, or "chimney") matched to the height of the cabinet and facility horizontal return duct.

2.2 NETWORK CHANNEL RACKS.

- A. Height. Racks shall provide 45 standard rack units (RU) of space (45U) for mounting equipment.

- B. Dimensions. Nominal dimensions for network racks are 86" (2184mm) tall, 24" (610mm) wide, and 40" (1220mm) deep (30"/762mm between front and rear mounting rails).
- C. Side Panels. The rack shall have integral metal side panels (a "channel" rack) constructed with a cable management pattern of staggered shapes (circles, hexagons, etc.) to allow for connection points for cable management accessories.
- E. Color. The rack and all components shall be white in color.
- F. Equipment Mounting Rack. The rack shall provide an EIA-310-E compliant 19" racking system with front and rear rails using standard 3/8" x 3/8" square hole mounting.
- G. Components. The rack shall be supplied with the following standard equipment:
 - 1. Toolless mounting brackets for vertical Rack PDUs.
 - 2. 30U of 1RU blanking panels.
 - 3. Vertical cable managers with doors on both left and right of the rack (size commensurate with the requirement).
 - 4. Cable management accessories as necessary to maintain cable bend radii, uniformity, and neatness (e.g. d-rings, spools, bend radius limiters, finger cable managers, waterfalls, etc.).

2.3 NETWORK CABINETS.

- A. Height. Cabinets shall provide 45 standard rack units (RU) of space (45U) for mounting equipment.
- B. Dimensions. Nominal dimensions for server cabinets are 84" (2134mm) tall, 40" (1016mm) wide, and 48" (1220mm) deep, including side panels and doors. Minimum depth is 46" (1168mm). Maximum width is 24" (610mm).
- C. Doors and Panels.
 - 1. Front Door. Provide a single locking, latched, hinged metal front door for the server cabinet with minimum 75% open perforated design for airflow.
 - 2. Rear Door. Provide a double locking, latched, hinged metal rear door for the server cabinet.
 - a. If a vertical exhaust duct (VED, "chimney") is specified for the server cabinet, the rear door shall be solid.
 - b. If no VED is specified, the rear door shall be perforated with a minimum of 75% open design for airflow.
 - 3. Side Panels. Provide removable, locking solid metal side panels. Side panels shall have cable pass-through cut-outs protected with brushed grommets on each side, aligned on each side to allow Rack

- PDU and communications cables to pass between enclosures to Zone PDUs.
- D. Locks. All locks on a server cabinet shall be keyed the same. Provide two keys per cabinet.
 - E. Color. The cabinet and all components shall be white in color.
 - F. Equipment Mounting Rack. The cabinet shall provide an EIA-310-E compliant 19" racking system with front and rear rails using standard 3/8" x 3/8" square hole mounting.
 - G. Components. The cabinet shall be supplied with the following standard equipment:
 - 1. Air dams for left and right of the front rails.
 - 2. Bottom panel with brushed grommets.
 - 3. Top panel with brushed grommets.
 - 4. Toolless mounting brackets for vertical Rack PDUs.
 - 5. 45U of 1RU blanking panels.
 - 6. Cable management accessories as necessary to maintain cable bend radii, uniformity, and neatness (e.g. d-rings, spools, bend radius limiters, finger cable managers, waterfalls, etc.).
 - H. Vertical Exhaust Duct. Provide a vertical exhaust duct (VED, or "chimney") matched to the height of the cabinet and facility horizontal return duct.

2.4 TELECOMMUNICATIONS ENCLOSURES (TE).

- A. Telecommunications Enclosures (TEs) are swing-out wall-mounted enclosures.
 - 1. Height. TEs shall provide 26 standard rack units (RU) of space for mounting equipment.
 - 2. Dimensions. Nominal dimensions for server cabinets are 48" (1220mm) tall, 24" (610mm) wide, and 30" (760mm) deep.
 - 3. Doors and Panels.
 - a. Front Door. TEs shall have a single locking, latched, hinged metal front door with a tempered glass front.
 - b. Rear Panel. TEs shall have a latched, hinged metal rear door that mounts to the wall, allowing the body of the TE to be swung open for rear equipment access. If latched exterior to the body of the TE, the latch shall be locking.
 - 1) Cabling Cutouts. The top and bottom surfaces of the rear panel shall have cabling cutouts to accommodate telecommunications cabling entering the TE. Edge-protection grommets for the cabling cutouts shall be provided.

- 2) Power Cutout. The rear panel shall have a cutout on the rear mounting surface allowing power to be installed internal to the TE.
- c. Locks. All locks on a TE shall be keyed the same. Provide two keys per TE.
4. Load Rating. The TE shall support 300lb (136kg) of total weight.
5. Color. The cabinet and all components shall be white in color.
6. Equipment Mounting Rack. The cabinet shall provide an EIA-310-E compliant 19" racking system with front and rear rails using standard threaded #12-24 hole mounting.
7. Components. The cabinet shall be supplied with the following standard equipment:
 - a. 1U shelf (two per TE).
 - b. Vertical cable management kits (one per each full 12U of TE height).
 - c. Fan kit to evacuate heat generated by active equipment (two per TE).
 - d. Filter kit for fans (two per TE).

2.5 PATHWAY RACKS.

- A. Height. Pathway racks shall provide a minimum of 5 standard rack units (RU) of space (5U) for mounting Equipment Distributor equipment.
- B. Dimensions. Nominal dimensions for pathway racks are 12.6" tall, 23.6" wide, and 9" deep.
- C. Mounting. Pathway racks shall mount to standard basket-style cable tray.
- E. Color. Pathway racks shall be white in color.
- F. Equipment Mounting Rack. The cabinet shall provide an EIA-310-E compliant 19" racking system with rails using standard 3/8" x 3/8" square hole mounting.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Where to be installed in structures assigned to Seismic Design Category C, D, E, or F, seismic bracing equivalent to that for other storage racks per VA Master Specification 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS section 3.7 ("Install... to withstand earthquake forces and anchored to the floor or laterally braced from the top to the structural elements") is required.

Sioux Falls VAHCS, Sioux Falls, SD
EHRM Infrastructure Upgrades
2501 West 22nd St.
Sioux Falls, SD 57105

VA Project 438-20-910
04-04-2022
Bid Documents

B. Casters on floor-mounted enclosures shall be retracted and the enclosures leveled and stabilized.

- - - E N D - - -