PART 1 - GENERAL

1.1. SUMMARY

A. The work covered under this Section shall consist of a design, furnishing of all material, labor, and installation for completion of an operable end to end structured cabling system. Including equipment for the Telecom Rooms.

1.2. QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.3. RELATED DOCUMENTS

A. General and Supplementary Conditions

1.4. RELATED SECTIONS

A. Division 26 - Grounding and Bonding

B. Division 27 - Communications

PART 2 - PRODUCTS

2.1. MANUFACTURER(S) AND SOLUTIONS

A. Acceptable equipment rack, and cable management manufacturers:

1. Hoffman

B. Acceptable ladder rack manufacturers:

1. Chatsworth Products Inc.
2. Hoffman
3. Cooper/B-Line
4. Or equal subject to review.

2.2. EQUIPMENT CABINET

A. Designed for support of server equipment, server chassis and ancillary network devices.

B. Rack shall be minimum 84" and 45 rack units height and accommodate industry standard 19” wide mounting brackets.

C. Rack rails shall be threaded and tapped to accept industry standard #12-24 mounting screws.

D. Width and Depth of cabinet as indicated on drawings.

E. Aluminum construction with baked polyester powder coat black finish

F. Shall include vertical cable managers at front and back sides. Front side cable management can be achieved with metallic or plastic integral wire retaining fingers. Rear cable management can be achieved with metallic or plastic ringed cable troughs or a similar method.

G. Shall include horizontal cable management channels, top and bottom cable troughs, grounding lug.

H. Provide horizontal crossover cable management at the top of each cabinet with a minimum height of two rack units each.

I. Provide front to back adjustable cable management or cradle at the top of each cabinet with a minimum height of two rack units each.

J. Shall include grounding busbar.

K. Provide rack or Roof mounted 550 cfm (260-L/s) fan with filter.

L. Shall feature removable and lockable side panels.

M. Shall feature hinged and lockable front and rear doors.

N. Screened ventilation openings in the roof and front and rear door.

O. Cable access provisions in the roof and base.

P. Cabinet keyed to match the owner's standard keyset.

Q. Metal or plastic with integral wire retaining fingers.

2.3. EQUIPMENT RACK

A. Standard 2-post floor-mounted 19" Rack: Aluminum or steel construction, freestanding, modular, with top and bottom angles.

B. Rack shall be 84" high and accommodate industry standard 19" wide mounting brackets.

C. Rack shall incorporate a universal 5/8"-5/8"-1/2"alternating hole pattern.

D. Rack rails shall be threaded and tapped to accept industry standard #12-24 mounting screws.

E. Rack should be supplied with a ground bar and #6 AWG Ground lug.

F. Equipment Rack shall be equipped with cable management hardware to provide for orderly and secure routing of cabling. Provide cable management as described in the specifications and drawings.

2.4. EQUIPMENT CABINET – WALL MOUNT

A. The cabinets shall be constructed of painted steel or aluminum and offer a usable mounting height of 15 RUs and be a minimum of 21 inches deep. Access to the rear of the cabinet mounted equipment shall be by a hinged arrangement.

B. The cabinet shall be configured as to allow for adjustment of the channel uprights (front to rear) in 1-inch increments and be space to accommodate industry standard 19-inch mounting and tapped to accept 12-24 screws. The cabinet shall be vented to allow for airflow through the cabinet.

C. Cabinet(s) shall be equipped with vertical and horizontal cable management hardware as specified above. At a minimum, one such horizontal jumper management panel shall be provided with each cabinet.

2.5. HORIZONTAL CABLE MANAGEMENT

A. Horizontal cable manager shall be slotted duct with removable cover. Manager shall be a minimum of 2 rack units high and suitable for mounting in a standard 19" wide rack.

B. Provide strain relief and cable management at the rear of each manager unit for clean routing of all cables.

C. Management shall be Black in color.

2.6. VERTICAL CABLE MANAGEMENT

A. Vertical cable manager shall be slotted duct with removable cover. Wires should be held in place after cover is removed. Finger spacing for front side shall be on 1U centers. Manager shall have integral cable pass thru holes for ease of front to back cabling. Management shall be provided for front and back of rack.

B. Management shall be side mounted on both sides of each equipment rack as shown on the drawings.

C. The back side of management shall include adjustable rear cable rings with spin-open latches. Spacing between rings from top to bottom should not impede in bundling and passing of cable groups.

D. The front side of the management shall feature a minimum of 7.5 in. depth or 67.7 sq. in. of usable area. The rear side of the management shall feature a minimum of 6.8 in. depth or 66.6 sq. in. of usable area.

E. Height of management shall match overall height of rack and have a minimum 10 in. width.

F. Contractor shall review and confirm the vertical management capacity with the amount of cables being terminated prior to product submission.

G. Management shall be Black in color.

2.7. TELECOMMUNICATIONS PLYWOOD BACKBOARD

A. Backboards shall be 4'W x 8'H x ¾"D.

B. Finished grade of A-C or better. A-side shall face the interior of the room.

C. All sides of each backboard should be finished with (2) coats of white paint prior to installation. Plywood grade and fire rating stamps on plywood shall remain exposed and not painted over.

D. If the walls where plywood backboard will hang are fire rated or there's a requirement for fire rating per codes, the plywood backboard and finish paint must meet the same fire rated requirements.

E. A fire retardant paint additive may be used and the associated documentation should be applied to the painted backboard as proof of usage.

2.8. POWER DISTRIBUTION UNIT (PDU)

A. PDU inlet cord shall include the appropriate plug deemed necessary (e.g. 5-20P/5-30P/L6-30P) per the electrical drawings. Refer to the electrical drawings for more information on plug type for dedicated power receptacles above the equipment racks and cabinets or elsewhere in the room.

B. Horizontally mounted PDUs shall include a minimum of (8) NEMA 5-15R/5-20R power sockets on the back side for equipment connections. PDUs shall be horizontally mounted with no more than 1 rack unit in height.

C. Vertically mounted PDUs for equipment cabinets or 4-post racks should include a minimum of (21) C13 and (3) C19 power sockets for equipment connections. PDUs shall be mounted vertically at the back of the rack.

D. Inlet cord on PDU shall be a minimum 12 feet in length.

E. PDUs shall be switched and functionality to be metered by individual outlet.

F. Each outlet on PDU shall support power-on, power-off and reboot on a real-time programmable basis.

G. Unit shall allow reporting of voltage, frequency & load level, and current via Ethernet interface. Notifications of conditions are to be reported by email, secure web, SNMP, Telnet or SSH interface.

H. PDU shall provide Transient suppression to avoid overloads per the wattage rated by the PDU overall and by the individual power outlets.

I. UL-1449, UL 1283 and UL-497A compliant.

J. Power strip shall meet or exceed IEEE 587 Category A & B specifications.

K. Provide (1) horizontally mounted PDU shall be furnished and installed within each 2-post rack and equipment cabinet or 4-post rack.

L. Provide (1) vertically mounted PDU shall be furnished and installed within each equipment cabinet or 4-post rack.

PART 3 - EXECUTION

3.1. EQUIPMENT RACK

A. The Contractor shall bolt the rack to the floor as recommended by the manufacturer. Multiple racks shall be joined and the ground made common on each. Rack shall also be stabilized by extending a brace to the wall. Alternately, overhead cable tray over which the cabling accesses the equipment rack(s) shall provide this function.

B. Install rack with 4” side clearance from walls. Provide minimum clearances as shown on Drawings. Locations where these guidelines cannot be followed should be brought to the attention of the Consultant prior to installation.

C. Install with a minimum of 36 inches clear access behind and in front of rack unless otherwise directed by drawings.

D. Install racks straight and perpendicular to walls.

E. All hardware and equipment shall be mounted above 18" and below 79" A.F.F.

F. The rack shall be grounded to the telecommunications ground bar (TGB) using a minimum #6 AWG insulated stranded copper conductor. Conductor jacket shall be green.

3.2. WIRE MANAGEMENT

A. Rack shall be equipped with vertical and horizontal wire management hardware.

B. Provide horizontal cable management hardware below each patch panel.

C. Provide vertical cable management hardware on front and rear of each rack. Where multiple racks are installed, troughs shall be mounted between the uprights of adjacent racks per manufacturer recommendations.

3.3. BACKBOARDS:

A. Install backboards 6” above the finished floor to 8’6” AFF. Mounting shall be sufficient enough to support the equipment.

B. Shall be mounted with a minimum of 3/8” toggle bolts and 2” fender washer on each corner and 4’ on center as required.

END OF SECTION