SECTION 17005
EQUIPMENT ROOMS, TELECOMMUNICATIONS ROOMS, AND SERVICE ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Facilities Management Design and Construction Guide, apply to this Section.

B. When included as a part of this specification, the following contain related requirements:
   1. Division 16 Section “General Electrical Requirements”.
   2. Division 16 Section “Basic Electrical Materials and Methods”.
   3. Division 17 Section “General Telecommunications Infrastructure Requirements”.

1.2 SUMMARY

A. This Section includes telecommunications infrastructure for equipment rooms, telecommunications rooms, and service entrance facilities including, but not limited to, cable, connecting devices, lightning protection, and installation for wiring systems to be used as signal pathways for voice and high-speed data transmission.

1.3 SUBMITTALS

A. Product Data: Include data on features, ratings, and performance for each component specified.

B. Cable Administration Drawings: As specified in Part 3.

C. Construction record drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Refer to Division 16 Section “General Telecommunications Infrastructure Requirements” for specific manufacturers.

2.2 SYSTEM REQUIREMENTS

A. General: Coordinate the features of materials and equipment so they form an integrated system. Match components and interconnections for optimum future performance.

B. Expansion Capability: Unless otherwise indicated, provide spare fibers and copper conductor pairs in cables, positions in cross-connect and patch panels, and terminal strips to accommodate 20 percent future increase in active workstations.
2.3 CABLE MANAGEMENT

A. Cable Trays: Comply with Division 16 Section “Cable Trays.”

B. Raceways and Boxes: Comply with Division 16 Section “Raceways and Boxes.”


D. Equipment Racks: Freestanding and wall-mounting, aluminum units designed for telecommunications terminal support and coordinated with dimensions of units to be supported.
   1. Finish: Black baked-polyester powder coat.
   2. Freestanding Racks.
      a. Configuration: Standard EIA 19"
      b. Height: 84 inches
      c. Manufacturer: Ortronics Mighty Mo 6, P/N OR-MM6710.

E. Vertical Cable Management:
   1. Include components that aid in routing, managing, and organizing cable to and from equipment, protect network equipment by controlling cable bend radius and providing cable strain relief, and a universal design mounted to EIA 19-inch racks.
   2. Manufacturer: Ortronics Might Mo 6 cable management cage with door, P/N OR-MM6VMD706.

F. Horizontal Cable Management:
   1. Include components that aid in routing, managing, and organizing cable to and from equipment, protect network equipment by controlling cable bend radius and providing cable strain relief, and a universal design mounted to EIA 19-inch racks.
   2. Install the horizontal cable management panel in between each patch panel.

G. Distribution Rings:
   1. Wall Mounted 6-Inch D-Rings:
      a. Metal: Senior Industries No. 4754 or equivalent
   2. Wall Mounted 4-Inch D-Rings:
      a. Metal: Senior Industries No. 4753 or equivalent

H. Cable Bundling Hardware:
   1. Reusable Velcro cable ties.
2.4 TWISTED-PAIR CABLES, CONNECTORS, AND TERMINAL EQUIPMENT

A. UTP Cable Connecting Hardware:
   1. Patch Panel: Modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.
      a. Provide number of patch panels as indicated on the detail drawings.
      b. Mounting: EIA/TIA 19-inch rack mounting.
      c. TIA/EIA Category 6
      d. Front Connections: Modular jacks
      e. Rear Connections: 110
      f. Wiring Scheme: T568B
      g. Ports: 24

B. Splice Closures:
   1. Designed for the number of cables, size of cables, quantity of conductors, and environment of the splice location.
   2. Able to be positioned either horizontally or vertically as indicated on the drawings.
   3. Closures effect a complete splice closure system and include the manufacturer’s recommended hardware and parts for the splice type and environment including, but not limited to, end caps or covers, splice wrappers, flange seals, bond connectors and clamps, ground braids, alignment bars, lubricants, cover clips, external bond braids or ribbons, and cleaning kits.

2.5 FIBER-OPTIC CONNECTORS AND TERMINATION EQUIPMENT

A. Cable Connectors: LC connectors with self-centering, axial alignment mechanisms. Insertion loss not more than 0.7 dB.

B. Patch Panel: Modular panels housing multiple-numbered cable connectors.
   1. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to satisfy specified expansion criteria.

C. Patch Cords: Dual fiber cables. Coordinate length and type with Owner.

D. Fiber Optic Splice Case:
   1. Type: Riser.
   2. Designed for the number of cables, size of cables, quantity of strands, and environment of the splice location.
   3. Able to be positioned either horizontally or vertically, other than aerial.
   4. Closures affect a complete splice closure system and include the manufacturer’s recommended hardware and parts for the splice type and environment including, but not limited to, end caps or covers, splice wrappers, flange seals, bond connectors and clamps, ground braids, alignment bars, lubricants, cover clips, external bond braids or ribbons, and cleaning kits.
E. Fiber Optic Splice:
   1. Type: Fusion.
   2. Provide physical protection for splices.

2.6 CABLE BUNDLING PRODUCTS
A. Reusable, adjustable, cable straps, capable of withstanding fastening to wall with screws or equipped with snap-and-button fasteners. Black in color. With or without cinch ring as applicable.

PART 3 - EXECUTION
3.1 PATCH PANELS
A. Provide patch panels wired 568B in each communications closet to terminate data and voice station cables. Mount in equipment racks. See detail drawings.

3.2 EQUIPMENT RACKS AND CABINETS
A. Provide equipment racks as indicated on drawings.
B. Bolt freestanding equipment racks to the floor. Securely fasten hinged wall brackets to the wall on which they are mounted.
C. Provide horizontal cable management as indicated on the detailed drawings.
D. Provide vertical cable management on each side of each equipment rack.

3.3 GROUNDING
A. Comply with Division 16 Section "Grounding and Bonding."

3.4 INSTALLATION IN EQUIPMENT ROOMS AND TELECOMMUNICATIONS ROOMS
A. Mount patch panels on equipment racks or cabinets. See detail drawings.
B. Group connecting hardware for cables into separate logical fields.
C. Use patch panels to terminate cables entering the space, unless otherwise indicated.

3.5 GENERAL OPTICAL FIBER TERMINATION
A. Directly terminate all fiber optic cable with LC composite/ceramic connectors.
B. Use manufacturer-furnished nylon cable wrap to bundle pigtails.
C. Terminate, install, protect cable and fiber according to the connector manufacturer’s recommended practices. Use the manufacturer’s kits, processes, cleaners, solvents, fasteners, and other mechanisms necessary for a complete termination unless otherwise indicated herein.
D. Unless otherwise indicated, route, manage, prepare, protect, install, and store cable according to the hardware manufacturer’s recommended practices. Use the manufacturer’s kits, processes, cable and fiber management hardware, fasteners, and other mechanisms necessary for a complete installation.

E. Use manufacturer-recommended breakout kit to prepare all outside plant cable for termination.

F. Incorporate industry standard color coding and positioning within the enclosures.

END OF SECTION 17005