SECTION 27 15 23  
FIBER OPTIC STATION CABLES

PART 1 – GENERAL

1.01 DESCRIPTION

A. The work covered by this section of the Specifications includes all labor necessary to perform and complete such construction, all materials and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary or used to perform and complete such construction. The work of this section shall include, but is not limited to, the following:

1. Optical fiber station cabling

1.02 QUALITY ASSURANCE

A. Refer to Section 27 00 00 for general details.

B. As noted in Section 27 00 00, all contractors and installers working on structured cabling system elements must hold a current manufacturer’s certification for each individual component they install.

1.03 CODES, STANDARDS AND GUIDELINES

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations in Section 27 00 00.

1.04 SUBMITTALS

A. Refer to Section 27 00 00 for general details.

B. Shop Drawings:

1. Shop drawings shall show the locations where cables are to be routed and where terminating hardware is to be installed.

C. Submit Manufacturer’s Cut Sheets for the following:

1. Any products not specifically listed in the PRODUCTS section shall require a submittal of the manufacturer’s cut sheets.

1.05 IDENTIFICATION

A. ½” white permanent polyester with black labeling

B. Labels containing a unique cable ID designator shall be placed on both ends of all cables, 6 inches from the termination and/or terminal block.

C. Subsequent to placing and terminating cables, the Contractor shall place the appropriate cable label as noted above.
D. If at any time during the job the cable tag becomes illegible or removed for whatever reason, the Contractor shall immediately replace it with a duplicate pre-printed cable label at the Contractor's expense.

E. All cable labels shall be easily accessible, both physically and visually, upon completion of the job.

F. Refer to Section 27 05 53 for additional details.

1.06 DEFINITIONS

A. CMP: Communications Plenum Cable
B. CMR: Communications Riser Cable
C. MPP: Multipurpose Plenum Cable
D. OFNP: Optical Fiber Nonconductive Plenum Cable
E. OFCP: Optical Fiber Conductive Plenum Cable
F. LSZR: Low Smoke Zero Halogen Rated Cable
G. OM1: Defined by ISO 11801 & TIA-492-AAAA, 62.5/125 µm multimode fiber.
I. OM3: Defined by ISO 11801 & TIA-492-AAAC, laser-optimized 50/125 µm multi-mode fiber
J. OM4: Defined by TIA-492-AAAD, laser-optimized 50/125 µm multi-mode fiber

1.07 WARRANTY

A. Refer to Section 27 00 00 for general details.
PART 2 – PRODUCTS

2.01 PRODUCT CONSISTENCY

A. Product Consistency: Any given item of equipment or material shall be the product of one manufacturer throughout the facility. Multiple manufacturers of any one item will not be permitted, unless specifically noted otherwise.

2.02 FIBER OPTIC CABLES – GENERAL

A. Cable jacket marking: Must be legible and shall contain the following information:
   1. Manufacturer's name and/or trade mark
   2. Strand count
   3. Cable Type
   4. Pair Count
   5. UL listing
   6. Sequential distance markings, in one foot increments

B. All multimode shall be OM4, 50 μm multimode fiber.

C. All singlemode shall be zero water peak singlemode fiber

2.03 FIBER OPTIC STATION CABLE (2 STRAND MULTIMODE)

A. Cable should be plenum rated, tight buffered, 1.6mm zipcord with strippable jacket and high tensile strength yarn layer.

B. Jacket color should be aqua.

C. Manufacturer/Product: Commscope Part #: P-002-ZC-5K-F16AQ

2.04 FIBER OPTIC STATION CABLE (2 STRAND SINGLEMODE)

A. Cable should be plenum rated, tight buffered, 1.6mm zipcord with strippable jacket and high tensile strength yarn layer.

B. Jacket color should be yellow.

C. Manufacturer/Product: Commscope Part #: P-002-ZC-8W-F16YL

2.05 FIBER OPTIC STATION CABLE – FLOOR OUTLET (2 STRAND MULTIMODE)

A. Non-Armored Jacket shall be plenum and OSP rated.

B. Cable shall have aramid yarn and zipcord immediately underneath jacket.
C. Internal structure shall include water barrier layer and a central dielectric strength member.

D. Jacket color shall be black.

E. Manufacturer/Product: Commscope Part #: P-002-OD-5K-FSUBK

2.06 FIBER OPTIC STATION CABLE – FLOOR OUTLET (2 STRAND SINGLEMODE)

A. Non-Armored Jacket shall be plenum and OSP rated.

B. Cable shall have aramid yarn and zipcord immediately underneath jacket.

C. Internal structure shall include water barrier layer and a central dielectric strength member.

D. Jacket color shall be black.

E. Manufacturer/Product: Commscope Part #: P-002-OD-8W-FSUBK

2.07 OPTICAL FIBER PLENUM BREAKOUT CABLE (FIRE ALARM)

A. Fluoropolymer unreinforced cable jacket shall be plenum rated.

B. Jacket color shall be red.

C. 550 Meter Rated, bend tolerant 50/125 multimode fiber.

D. Manufacturer/Product: Commscope Part #: P006-DS-5K-FSURD
PART 3 – EXECUTION

3.01 GENERAL

A. Fiber optic station cables are for use between telecommunications rooms and outlets serving user spaces or end user devices.

B. Location, fiber count and placement detail for all fiber optic cables shall be as shown on the Drawings.

C. Provide 20’ slack loops at the TR end of all fiber optic cables.

D. Provide 36” of stripped strands fiber wrapped neatly at each fiber cabinet.

E. Provide 18” of stripped strands fiber wrapped neatly at each fiber outlet.

F. Insure all fiber optic cables as installed are not subject to strain, and that correct bend radiuses are maintained at all times.

G. Do not combine terminations of fiber optic cables leading to different endpoints into a single cabinet. Each distribution, riser, OSP or Fire Alarm serving cable shall require their own, dedicated fiber termination cabinet. The only exception is for station fibers, termination of station fibers can be combined into a single cabinet.

H. Fiber optic station cables and copper cables may share conduit.

I. Do not terminate fiber until after the rack locations and elevations of fiber cabinets have been accepted by the campus telecommunications representative.

J. Do not install patch cables until after the fiber optic test reports have been accepted by the campus telecommunications representative.

3.02 QUANTITIES

A. Quantities of system elements shown on the drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of materials to construct a system that meets the intent of these Specifications and the relevant codes.

3.03 INSTALLATION

A. Optical Fiber Station Cables:

1. Provide support for vertical runs of fiber optic riser cables.

2. Route fiber optic cables over telecom ladder racking avoiding the area directly in front of the wallfield.

3. Route fiber optic station cables together as a single bundle, not to be combined with copper or coax cabling.

4. Installation of all fiber optic cables shall require the use of a breakaway swivel rated to the cable manufacturer’s written specifications for pull strength.

5. Follow all manufacturers’ specifications for installation.
B. Connector Installation
   1. Terminate both ends of each fiber with an appropriate anaerobic type connector. Fibers will be
terminated in strict compliance with the manufacturer’s printed instructions.
   2. Breakout kits will be required per manufacturer’s specifications.
   3. Maximum length differential between terminated strands per bundle shall be 6”. If the length does
not meet this requirement the entire bundle must be re-terminated.
   4. Connectors for cables utilizing aramid yarn as a strength member shall integrate the yarn into the
termination per manufacturer’s written specifications.

C. Slack Loop
   1. Slack loop at outlet shall utilize integrated slack loop hardware.
   2. Slack loop in TR shall be mounted on the wall, above ladder rack height.
   3. Slack loop location shall be designated by the campus telecommunications representative.

3.04 GROUNDING & BONDING
   A. None Required

3.05 TESTING
   A. Refer to Specification Section 27 08 23.

3.06 ACCEPTANCE
   A. 100% of the fiber tested must meet requirements for the whole of the fiber installation to be accepted.
   B. Upon receipt of the Contractor’s documentation of cable testing, the campus representative will
review/observe the installation and randomly request tests of the cables installed. Once the installation and
testing has been completed and the campus telecommunications representative is satisfied that all work is in
accordance with the Contract Documents, the representative will notify the Contractor and/or campus project
manager in writing or via email.

3.07 RECORD (ASBUILT) DRAWINGS
   A. The Project Record Drawings shall show the types and locations of all fiber optic cabling and fiber optic
termination points. Drawings should include identifying information from the cable identification tags.

END OF SECTION
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