SECTION 27 13 23

COMMUNICATIONS OPTICAL FIBER BACKBONE CABLELING

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 backbone 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.

B. TIA-492-AAAD Multi Mode OM4 Fiber


1.04 SUBMITTALS

A. Also refer to Section 27 00 00.

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. All fiber optic backbone and riser cables must be labeled with 1½” stamped brass tags at each endpoint and at each slack loop.

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

C. Cable tags shall be attached to the cable with a tie wrap.

D. 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.


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.

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 OPTICAL FIBER PLENUM RISER CABLE

A. Composite cable consisting of 24 singlemode and 24 multimode fibers in one jacket.

B. Non-Armored, Gel Free Plenum Distribution Cable.

C. Jacket color shall be aqua or yellow.

D. Manufacturer/Product: Commscope Part#: P-048-DS-CM-FMU AQ/8W024/5K024

2.04 HARSH ENVIRONMENT ARMORED OPTICAL FIBER PLENUM RISER CABLE

A. Composite cable consisting of 12 singlemode and 12 multimode fibers in one jacket.

B. Aluminum interlocking Armor, Gel Free Plenum Distribution Cable.

C. Jacket color shall be aqua.

D. Manufacturer/Product: Commscope Part#: P-024-DZ-CM-FSUAQ/8W012/5K012
PART 3 – EXECUTION

3.01 GENERAL

A. Backbone (Non OSP) fiber optic cables are for use between telecommunications facilities within the same building.

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 each end of all backbone fiber optic cables.

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

E. Ensure all fiber optic cables as installed are not subject to strain, and that correct bend radiiuses are maintained at all times.

F. 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.

G. Each fiber optic riser cable shall be placed within one cell of innerduct per Section 27-05-33.

H. Fiber optic cables and copper cables shall not share conduit or innerduct.

I. Do not terminate fiber or place fiber termination hardware in telecommunication spaces until rooms are completely clean, dust free, and kept in that state until accepted by the building owners.

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

K. 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 Backbone 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 cables together as a single bundle, not to be combined with copper or coax cabling.
4. Pulling 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. Both ends of each fiber shall be fusion spliced to a factory made LC to Unconnectorized, Fiber Pigtail.

2. 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.

C. Slack Loop

1. A 20’ slack loop shall be left at each end of the cable.

2. Slack loop shall be mounted on the wall, above ladder rack height.

3. Slack loop shall be located within Telecommunication Rooms.

4. Slack loop location shall be designated by the campus telecommunications representative.

3.04 GROUNDING & BONDING

A. Any use of armored cable shall require the bonding of that shield to the TGB/TMGB with a #6 AWG copper bonding conductor.

B. Refer to Section 27 05 26 for additional details.

3.05 TESTING

A. Refer to Specification Section 27 08 23.

3.06 ACCEPTANCE

A. 100% of the fiber tested must successfully pass test 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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