SECTION 27 13 13
COMMUNICATIONS COPPER BACKBONE CABLING

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. A complete copper twisted pair backbone cabling system to support voice circuit distribution as well as data communications with cables, termination hardware, splices, and necessary installation and supporting hardware.

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. UL 444
B. 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 cable routing details.
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.
D. Manufacturers Testing:
   1. Submit as testing results as required by Section 27 08 13.
2. Multi-pair copper riser cables: The Contractor shall submit two (2) sets of the manufacturer's test results for continuity, shorts and breaks.

1.05 IDENTIFICATION

A. Brass cable tags shall be placed on all copper backbone and riser cables.

B. Tags containing a unique cable ID designator as provided by a campus telecommunications representative shall be placed on both ends of all cables, 6 inches from the termination and/or terminal block, and in any pull boxes.

C. Subsequent to placing and terminating cables, the Contractor shall place the appropriate cable tag 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 new tag at the Contractor's expense.

E. All cable tags 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. Backbone Cable as defined in this section is intrabuilding riser cable for use between telecommunications facilities.

B. OSP Cable as defined in Section 27 13 14 is interbuilding cable for use between telecommunications facilities.

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.

2.01 COPPER CABLES – GENERAL

A. Cable jacket marking: Must be legible and shall contain the following information:
   1. Manufacturer’s name
   2. Copper Conductor Gauge
   3. Pair Count
   4. UL and CSA listing
   5. Manufacturer’s Trade Mark
   6. Category rating
   7. Sequential foot markings, in one foot increments

2.02 COPPER CABLE (BACKBONE)

A. Cable jacket shall be gray PVC with black lettering.
B. Cable must be ARMM riser rated.
C. Cable construction specifications:
   1. Solid Annealed Copper Conductor.
   2. Polyethylene Foam with PVC Skin Insulation
   3. Non-Hygrosopic Dielectric Tape
   4. Corrugated Aluminum Tape Shield
   5. Flame Retardant and Abrasion Resistant PVC Jacket.
D. The cables consist of 24 AWG copper formed into binder groups of 25 pairs using standard PIC color coding.
E. Manufacturer/Product: Superior Essex ARMM 02-XXX-03 (XXX = Pair count part number)
PART 3 – EXECUTION

3.01 GENERAL

A. Location and placement of backbone cables shall be shown on the Drawings.

B. Backbone copper cabling is not to share pathways with backbone fiber cabling or any horizontal cable.

C. Backbone copper cabling is to be installed point to point. Terminating a subgroup of conductors from a cable continuing to another location is not allowed.

D. Absolutely no splicing of backbone copper cabling is allowed.

E. Contractor is to verify sufficient end to end pathway fill ratios for cable runs prior to installation.

F. Do not install cross-connects until after the backbone cable 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. Cabling:

1. All backbone cables shall be routed through continuous conduit from point to point.

2. All backbone cable, once exposed, shall be provided with appropriate support.

3. At the same time cable is pulled into a conduit also install a pull rope to facilitate future cable pulls along those pathways. Pull rope to be nylon ¼” with 600 lb pulling tension.

4. Cables running on ladder racking within a telecommunications room shall be neatly placed and lashed to the horizontal and vertical ladder racking with wire ties at every rung.

B. Cable Terminations

1. All riser cables will be “punched down” on terminating blocks in the telecommunications rooms.

2. Cable pair twists shall be maintained up to within 1/2 in. of the point of termination for backbone cables. For other backbone cables, maintain twists as close as practicable to the point of termination. Under no circumstances shall cable pairs be untwisted or otherwise altered prior to termination.

3. All terminations will follow industry standard uniform color codes.
3.04 GROUNDING & BONDING

A. All termination locations for backbone copper cable shall bond the cable shield to the TGB/TMGB with a #6 AWG bonding conductor.

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

3.05 TESTING

A. For testing details see Section 27-08-13

3.06 ACCEPTANCE

A. Upon receipt of the Contractor’s documentation of testing, campus telecommunications representatives will review/observe the installation and may randomly request tests of the cables/wires 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 backbone cabling. Drawings should include identifying information from the cable identification tags.

END OF SECTION
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