

SECTION 20 70 13

COMMON MATERIALS AND METHODS FOR ELECTRONIC SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Optical connectors
- B. Interconnect panels
- C. Outlets, hardware, and connections
- D. Fiber optics jumpers
- E. Pigtail cables
- F. Innerducts

1.02 MEASUREMENT AND PAYMENT

- A. General: Common materials and methods for electronic services, as specified herein, will not be measured separately for payment but will be paid for as part of the Contract lump-sum price for the related items of work in the Bid Schedule of the Bid Form.

1.03 REFERENCES

- A. American National Standard Institute (ANSI)
 - 1. ANSI C2 National Electric Safety Code (NESC).
- B. California Electrical Code
- C. Electronics Industries Association (EIA)
 - 1. EIA 310-D Cabinets, Racks, Panels, and Associated Equipment
 - 2. EIA 455-11-177A Standards for Test Measurements and Inspection of Fiber Cables, Connectors and/or Other Fiber Optic Devices
 - 3. EIA/TIA-568 Commercial Building Telecommunication Wiring Standard.
 - 4. EIA 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- D. National Fire Protection Association (NFPA)
 - 1. NFPA 262-94 Standard Method Of Test For Fire And Smoke Characteristics of Wires and Cables

1.04 SUBMITTALS:

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Product Data and Catalog Cuts: Data and catalog cut for each specified product shall be submitted.
- C. Samples: Samples of materials specified herein shall be submitted, upon request by the District.
- D. Certificates: Manufacturer's certificate indicating compliance with specified requirements. Where equipment or materials are specified to conform to the standards or publications and requirements of CFR, ANSI, NFPA, EIA, or UL, certificates attesting compliance to said standards or publications shall be submitted.

PART 2 - PRODUCTS**2.01 GENERAL**

- A. Furnish materials and equipment of design, sizes, and ratings as indicated.
- B. Furnish materials and equipment bearing label or classification listing of a national recognized testing laboratory where UL standards exist and such product labeling or listing is available.
- C. Provide products that are free from defects that may impair performance, durability, or appearance.

2.02 OPTICAL CONNECTORS

- A. Type of fiber optic connectors shall match and be compatible with equipment or patch panel terminations. Connectors shall match the fiber core and cladding diameters. The connector coupler shall be stainless steel and the alignment ferrule shall be ceramic. Connector insertion loss shall be nominally 0.3 db and less than 0.7 db.

2.03 INTERCONNECT PANELS

- A. Patch panels shall be a complete system of components fabricated by a single manufacturer, and shall provide termination, splice storage, routing, radius limiting, cable fastening, storage, and cross-connection of fiber optic cables. Patch panels shall be 19 inch rack mounted panels. Patch panels shall provide strain relief for cables. Panels shall be labeled with alphanumeric x-y coordinates and shall be provided with labeling space. Patch panels shall be fully populated with connector modules in the quantities indicated.

2.04 OUTLETS, HARDWARE, AND CONNECTIONS:

- A. Station Agent's Booth. Telecommunication outlet for Station Agent's Booth fiber cable termination shall be a flush-mounted wall box with faceplates equipped with six fiber optic ST to ST compatible sleeve connectors. Faceplates shall be stainless steel double gang.

- B. Destination Sign Units. Connector modules for DSU outlets shall be Designated Matching Products, Seimon part nos. SMC-SA-02-C. Sign hangers shall be constructed of ASTM A500 Grade B structural steel tubing.
- C. Automatic Fare Collection (AFC) Equipment: Telecommunication outlet for AFC equipment fiber cable connection shall be a Designated Matching Product Seimon Model SM6-BL-02. Three dual ST to ST connector sleeve insert modules, Designated Matching Products, Seimon Part No. SMC-SA-02-C shall be furnished for each AFC equipment outlet.

2.05 FIBER OPTIC JUMPERS

- A. Patch cords shall be cable assemblies consisting of flexible optical fiber cable equipped with compatible connectors. Patch cords shall be complete assemblies from manufacturer's standard product lines. Length shall be as required. Fiber optic jumper cables shall meet the following requirements:
 - 1. Fiber optic jumper cables shall be two-fiber zip cord type.
 - 2. Cable construction shall allow a small bend radius for installation in space constrained areas. The cable shall contain a dielectric strength member and a protective outer jacket. The cable jacket color shall be orange. The fiber core size shall be identified on the outer jacket
 - 3. Fibers shall be terminated at each end with connectors as specified herein.
 - 4. Cables shall meet the requirements specified in Section 20 70 23 - Electronic Circuits, Wires, and Cables.

2.06 PIGTAIL CABLES

- A. Cables used for connections to equipment shall be flexible fiber pigtail cables having the same physical and operational characteristics as the parent cable. The cable jacket shall be flame retardant PVC or FCP, that complies with NFPA 70 for OFPN applications. Maximum db loss for pigtail cables shall be 3.5 db/km at 850 nm, and 1.0 db/km at 1300 nm.

2.07 INNERDUCTS

- A. Inner ducts shall be corrugated semi-ridged construction, low smoke, zero halogen material, and shall have an inner diameter of no less than 1.25" and no more than 2.0". Couplers, if used, shall not reduce the inside diameter of the inner duct.

PART 3 - EXECUTION

3.01 GENERAL

- A. System components and appurtenances shall be installed in accordance with NFPA 70, manufacturer's instructions and as indicated. Necessary interconnections, services, and adjustments required for a complete and operable signal distribution system shall be provided. Components shall be labeled in accordance with EIA 606. Penetrations in fire-rated construction shall be sealed with fireproof material.

- B. Cabling shall be installed in accordance with EIA 568 and as specified herein. Cabling, distribution panels, terminal blocks, and outlets shall be marked in accordance with EIA 606. Cables not installed in conduit or wire ways shall be properly secured and neat in appearance and, if installed in plenums or other spaces used for environmental air, shall comply with NFPA 70 requirements for this type of installation.

3.02 TESTING

- A. Refer to Section 01 45 24 - Testing Program Requirements, for requirements governing test plans, procedures, and results.
 - 1. Factory Tests: Tests shall be performed on each deliverable assembly at the Contractor's and each sub-supplier's facility prior to shipment.

END OF SECTION 20 70 13