PART 1 –GENERAL

1.01 SECTION INCLUDES

A. Interconnect panels
B. Outlets, hardware, and connections
C. Fiber optics jumpers
D. 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. The Institute of Electrical and Electronics Engineers, Inc. (IEEE):

1. IEEE National Electrical Safety Code (NESC)

B. California Code of Regulations, Title 24, Part 3

C. Electronic Components Industry Association (ECIA)/Telecommunications Industry Association (TIA):

1. ECIA EIA/ECA-310-E Cabinets, Racks, Panels, and Associated Equipment
2. TIA 455-11-D FOTP-11 Vibration Test Procedure for Fiber Optic Components and Cables
3. TIA-568.1-D Commercial Building Telecommunication Infrastructure Standard
4. TIA-606-B Administration Standard for Telecommunications Infrastructure

D. National Fire Protection Association (NFPA):

1. NFPA 262 Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air Handling Spaces
2. NFPA 70 National Electrical Code
E. Underwriters Laboratories, Inc (UL)

F. American Society for Testing and Materials (ASTM):

1. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

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, NFPA, ECIA/TIA, 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 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.
2.03 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 LC compatible sleeve connectors. Faceplates shall be stainless steel double gang.

   B. Destination Sign Units (DSU): Sign hangers shall be constructed of ASTM A500/500M 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. Three dual LC to LC connector sleeve insert modules, Designated Matching Products, shall be furnished for each AFC equipment outlet.

2.04 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 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.

2.05 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 one and a quarter inches and no more than two inches. 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
TIA-606-B. Penetrations in fire-rated construction shall be sealed with fireproof material.

B. Cabling shall be installed in accordance with TIA-568.1-D and as specified herein. Cabling, distribution panels, terminal blocks, and outlets shall be marked in accordance with TIA-606-B. 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