

SECTION 681

FIBER OPTIC SPLICE AND DISTRIBUTION EQUIPMENT

DESCRIPTION

681.01.01 GENERAL

- A. The equipment under this section shall consist of furnishing the fiber optic cable equipment or accessories including connectors, connector panels, splice trays, patch panels, jumper cables, cable troughs, underground splice closures, termination strips, branch cables, closet housings, pigtails, and Communications Distribution Cable Assembly (CDCA) for each splice location as determined by the drawings and specifications.
- B. All other equipment not used shall be delivered to the Freeway and Arterial System of Transportation (FAST) Traffic Management Center (TMC) prior to project acceptance.
 - 1. No partial shipments will be accepted for deliveries to the TMC, unless prior arrangements are made, and shall be labeled clearly with the project and location designation.
- C. All equipment shall be approved by the FAST Director or designee, prior to purchase.

MATERIALS/EQUIPMENT

681.02.01 UNDERGROUND SPLICE ENCLOSURES

- A. Underground splice enclosures shall be cylindrical, butt-end style, corrosion resistant, gel sealed, and meet the requirements of GR-771-CORE.
 - 1. Underground splice enclosures shall gel seal, bond, anchor, and provide efficient routing, storage, organization, and protection for fiber optic cable and splices.
 - 2. The splice enclosure shall provide an internal configuration and single end cap with a minimum of 6 ports for the appropriate backbone, trunk, and branch line cables. Provide a Commscope Fiber Optic Splice Closure Model No. 450-B6-6-24-6-B3V or equivalent as approved by the FAST Director or designee.
- B. All splice trays, cable baskets, and related equipment shall be supplied with the underground splice enclosure.
- C. The enclosure shall have 6 stackable single fusion trays for 24 splices each to accommodate a total 144 splices. Each fusion tray shall be designed specifically for housing 24 single-mode fusion splices protected by heat-shrink sleeves.
 - 1. The splice trays shall be easy to install and remove, and have provisions for a minimum entry of 4 buffer tubes.
 - 2. A storage basket for storing loose buffer tubes or single fiber shall be installed and delivered with the enclosure.
- D. Splice enclosures shall have a gel seal design with both the cable jackets and core tubes sealed, without the use of other water-blocking material. The splice enclosures shall be capable of being opened and completely resealed without loss of performance. All unused entry ports must be properly sealed with the provided water sealing port plug.

681.02.02 COMMUNICATIONS DISTRIBUTION CABLE ASSEMBLY (CDCA)

- A. The Contractor shall provide and install Single Mode CDCA Intelligent Transportation System (ITS) Drop Cable or equivalent which is factory terminated cable with epoxy filled patch panel with 12 fiber optic Lucent Connector (LC) connectors. Additionally, an approved Single-Panel Housing (SPH) pigtailed 12 strand LC duplex, single-mode (OS2), single fiber, 250 μ m can be approved for specific applications by the FAST Director or designee.
- B. The CDCA shall be used between the fiber optic trunk line and the traffic signal cabinet. Cable lengths shall have the minimum slack of 60 feet in each splice vault and a required length of 10 to 15 feet in each pull box, as shown on the plans.
- C. Drop cable shall be designed with an Optical Fiber Non-Conductive Riser (OFNR)-rated, all-dielectric cable that is ultraviolet-resistant and fully waterproof for outdoor applications. Cable shall have a single 3.0 mm buffer tube containing 12 color-coded fibers.

CONSTRUCTION**681.03.01 GENERAL**

- A. The Contractor shall provide all of the equipment for splices as noted on the drawings and in the quantities in the bid schedule.
- B. The CDCA shall be tested on the spool prior to installation.
- C. The CDCA shall be installed in the conduit from the traffic signal cabinet to the splice vault.
- D. Once the CDCA is installed and spliced, the Contractor shall perform a cable test verification according to the testing procedure in **Subsection 680.03.02, "Fiber Optic Cable."**

681.03.02 LABELING

- A. All labels shall include the necessary information to properly identify the cable. Splice tray labels shall identify applicable tubes, fiber strands, and cable with cable direction relative to that location.
- B. Labeling shall be done in a neat, professional manner using permanent methods and products approved by the FAST Director or designee (e.g. 144 F/O, Street Name, Direction).

681.03.03 TESTING

- A. Testing of the CDCA and related hardware in this section is included in the testing procedure in **Section [680](#), "Fiber Optic Cable."**

METHOD OF MEASUREMENT**681.04.01 MEASUREMENT**

- A. The quantity of Underground Splice Enclosures will be measured for payment per each supplied, complete and operational, and successfully tested.
- B. The quantity of CDCA will be measured for payment per each installed, in place, complete and operational, and successfully tested.

- C. Branch line cables, splice trays, warranty, documentation, training, and labeling are considered incidental to the item requiring the delivery of the needed equipment. The branch line cable shall adhere to the specifications described in **Section 680, "Fiber Optic Cable,"** and will be paid for as specified in this section.

BASIS OF PAYMENT

681.05.01 PAYMENT

- A. The accepted quantity of Underground Splice Enclosures delivered complete and associated cable/hardware measured as provided above, will be paid for at the Contract unit price bid per each, which shall be full compensation for the underground splice closures including gel, splice trays, cable baskets, single fusion trays, sleeves, and storage baskets.
- B. The accepted quantity of CDCA installed and tested positively will be paid for at the contract unit price bid per each, which shall be full compensation for the cable assemblies including hardware, 12 LC connectors per each assembly, labor and tools for the complete installation, testing, labeling, documentation, training, warranty, and splicing, all as accepted by the FAST Director or designee.
- C. Payment will be made under:

PAY ITEM

PAY UNIT

Underground Splice Enclosures	Each
Communication Distribution Cable Assembly (CDCA) and Permanent Fiber Splicing	Each