### SECTION 681 – FIBER OPTIC SPLICE AND DISTRIBUTION EQUIPMENT

**DESCRIPTION**

**681.01.01 GENERAL**

***DELETE PARAGRAPH “B” and “C” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:***

B. All other Arterial Management System (AMS) and Freeway Management System (FMS) equipment not used shall be delivered to the Freeway and Arterial System of Transportation (FAST) Traffic Management Center (TMC) prior to project acceptance. All other City of Las Vegas (CLV) equipment not used shall be delivered to the CLV West Service Center (WSC)

1. No partial shipments will be accepted for deliveries to the TMC and WSC, unless prior arrangements are made, and shall be labeled clearly with the project and location designation.

C. All AMS and FMS equipment shall be approved by the FAST Director or designee, prior to purchase. All CLV Fiber Optic (CFO) equipment shall be approved by the CLV Transportation Engineering Division (TED) or designee, prior to purchase.

**MATERIALS/EQUIPMENT**

**681.02.01 UNDERGROUND SPLICE ENCLOSURES**

***DELETE PARAGRAPH “A.2.” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:***

1. 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. For splice locations requiring 144 single fusion splices or less provide a Commscope Fiber Optic Splice Closure Model No. 450-B6-6-24-6-B3V or equivalent as approved by the FAST Director for AMS and FMS cable splices, TED for CFO splices, or designee. For splice locations requiring more than 144 single fusion splices provide a Commscope Fiber Optic Splice Closure Model No. 450-D6-6-72-8-C3V or equivalent as approved by the FAST Director for AMS and FMS cable splices, TED for CFO splices, or designee.

***DELETE PARAGRAPH “C” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:***

C. For splice locations requiring 144 single fusion splices or less the enclosure shall have 6 stackable single fusion trays for 24 splices each to accommodate a total 144 splices, with each fusion tray designed specifically for housing 24 single fusion splices protected by heat-shrink sleeves. For splice locations requiring more than 144 single fusion splices, the enclosure shall have 8 stackable single fusion trays for 72 splices each to accommodate a total 576 splices, with each fusion tray designed specifically for housing 72 single 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.

***ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:***

E. Each splice shall be packaged in a protective heat-shrink sleeve and secured in the splice tray.

1. The heat-shrink sleeve shall be approved for use by the fiber optic cable manufacturer and installed in such a manner as to protect the fiber from scoring, dirt accumulation, moisture intrusion, and micro bending.
2. All termination plans and splicing plans shall be as directed on the Plans.
3. Following the installation, termination, and splicing of the CDCA and the Fiber Optic Splice and Distribution Equipment, The Contractor shall perform all tests on the splices that were completed, as required on the Plans.
4. Documentation shall be submitted as required in section 680.03.02 TESTING.
5. Protective covers shall be used on all optical connectors and terminations at all times until terminated.

**681.02.02 COMMUNICATIONS DISTRIBUTION CABLE ASSEMBLY (CDCA)**

***DELETE PARAGRAPH “A” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:***

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 μm can be approved for specific applications by the FAST Director for AMS and FMS CDCA, TED for CFO CDCA, or associated designee.

**CONSTRUCTION**

**681.03.01 GENERAL**

***DELETE PARAGRAPH “C” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:***

C. The AMS CDCA shall be installed in the conduit from the traffic signal cabinet to the AMS T200 splice vault. The CFO CDCA shall be installed in the conduit from the TELECOM cabinet to the CFO T200 splice vault.

**METHOD OF MEASUREMENT**

* + 1. **measurement**

***ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:***

The quantity of UNDERGROUND SPLICE ENCLOSURES and fiber optic splices will be measured per each, in place and operational, as shown on the contract drawings and as directed by the engineer.

The quantity of COMMUNICATION DISTRIBUTION CABLE ASSEMBLY will be measured per each, in place and operational, as shown on the contract drawings and as directed by the engineer.

The CLV ETHERNET SWITCH will be provided by the owner after construction has started. The contractor will be required to pick up and install the switch in each TELECOM cabinet as shown on the contract drawings and as directed by the engineer.

The quantity of [FILL IN ITEM DESCRIPTION] will be measured per [UNIT].

No direct measurement shall be made for [FILL IN ITEM DESCRIPTION].

**BASIS OF PAYMENT**

**681.05.01 PAYMENT**

***ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:***

The accepted quantity of UNDERGROUND SPLICE ENCLOSURES and fiber optic splices installed complete and associated cable/hardware measured as provided above, will be paid for at the Contract unit price bid per each, which price shall be full compensation for the splicing and the underground splice closures including gel, splice trays, cable baskets, single fusion trays, sleeves and storage baskets and all work as shown on the Plans, as specified herein and as directed by the Engineer.

The accepted quantity of COMMUNICATION DISTRIBUTION CABLE ASSEMBLY installed and tested positively will be paid for at the Contract unit price bid per each, which price shall be full compensation for the cable assemblies including hardware, twelve (12) LC connectors per each assembly, labor and tools for complete installation, testing, labeling, documentation, training, warranty, splicing, and all work as shown on the Plans, as specified herein and as directed by the Engineer.

The accepted quantity of CLV ETHERNET SWITCH will be paid for at the Contract unit price bid per each, which price shall be full compensation for all materials, equipment, and labor required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, mounting, mounting hardware, power supply unit, conductors, cabling, connections, and network management software delivered as a single shipment to City, with the Project’s name noted on the packaging.

The accepted quantity of [FILL IN ITEM DESCRIPTION] will be paid for at the contract unit price of [UNIT] and shall include all materials, equipment and labor required including, but not limited to, [FILL IN] and all other items necessary to complete the work as shown on the Plans, as specified herein and as directed by the Engineer.

Unless otherwise provided in the Special Provisions, no payment will be made for [FILL IN ITEM DESCRIPTION] as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which [FILL IN ITEM DESCRIPTION] is required.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **ITEM NO.** | **ITEM DESCRIPTION** | **UOM** |
| 681.0005 | UNDERGROUND SPLICE ENCLOSURE | EA |
| 681.0020 | COMMUNICATION DISTRIBUTION CABLE ASSEMBLY | EA |
| 681.0030 | CITY OF LAS VEGAS ETHERNET SWITCH | EA |

**END OF SECTION 681**