

**SECTION 02741****TRAFFIC SIGNAL ELECTRICAL CONDUIT****02741.01 GENERAL****A. Description**

Traffic signal electrical conduit installation shall include, but not necessarily be limited to, furnishing and installing electrical conduit for traffic signals of the types and sizes specified at locations shown on the Plans and in accordance with the Contract Documents or as directed by the Engineer.

**B. Related Work Included Elsewhere**

1. Trench excavation, backfill, and compaction; Section 02250.
2. Patching paving; Section 02680.
3. General electrical work; Section 02730.
4. Electrical conduit and fittings; Section 02731.
5. Precast electrical handboxes; Section 02732.
6. Electrical pull and junction boxes; Section 02733.
7. Concrete foundations; Section 02734.

**C. Quality Assurance**

The Engineer will inspect all materials and work to ensure compliance with the Contract Documents.

**D. Submittals**

Certificates of compliance shall be submitted in accordance with the "General Provisions" for traffic signal electrical conduit stating that the conduit meets the requirements specified in Section 02741.02.

**02741.02 MATERIALS****A. Materials Furnished by the County**

The County will not furnish any materials for traffic signal electrical conduit.

**B. Contractor's Options**

Not applicable.

**C. Detailed Material Requirements**

1. Galvanized steel conduit shall meet the requirements of Federal Specification WW-C-581.
2. Polyvinyl chloride (PVC) conduit shall be schedule 40, schedule 80, or high-density polyethylene (HDPE) as determined on the plan set or as directed by the Engineer. All couplings, elbows, bushings, and other conduit fittings shall be of the same quality, strength, and grade of workmanship as the conduit and shall be manufactured expressly for use with the conduit.

**02741.03 EXECUTION****A. General**

Unless otherwise shown, conduits shall be placed a minimum depth of 18 inches below grade and shall slope at a minimum rate of 6 inches per 100 feet of length.

**B. Fittings**

Change in direction of conduit shall be accomplished by use of standard bends, elbows, or by bending the rigid steel conduit. Steel conduit, if bent, shall have a uniform radius which will fit the location with a minimum radius of six times the internal diameter of the pipe. Sharp kinks in the conduit or the substitution of nonmetallic materials for rigid steel conduit will not be accepted.

Nipples shall be used to eliminate cutting and threading where short lengths of conduit are required. When it is necessary to cut and thread steel conduit, no exposed threads will be permitted. All conduit fittings shall be free from burrs and rough places, and all conduit runs shall be cleaned and swabbed before cables are installed.

Standard manufactured elbows, nipples, tees, reducers, bends, couplings, unions, etc. of the same materials and treatment as the straight conduit pipe shall be used throughout the conduit line. All fittings shall be tightly connected to the conduit. All conduit runs ending in a pull box, junction box, or handbox shall be provided with a bushing to protect the cable from abrasion. Open ends of conduit being placed for future use shall be capped.

**C. Installation**

Trenches for traffic signal conduit shall be excavated to the depth and at locations shown on the Plans. Trenching and backfill shall be in accordance with Sections 02250.03 and 02734.03.

All conduits to be placed under existing pavement shall be pushed. Pushed conduits shall be placed by jacking, boring, or other means approved by the Engineer without cutting or removing pavement.

When existing field conditions will not permit conduit to be pushed under existing pavement, an item for slotting the pavement and paved shoulders will be provided. The slot shall be constructed to the dimensions shown on the Plans. The slot shall be constructed to neat lines, and the bottom shall be smooth. After the excavation has been approved by the Engineer, the conduit shall be placed and the trench backfilled with materials matching those existing in place, or as shown on the Plans, and then finished to a smooth surface matching existing grade in accordance with Section 02250.03.

All underground conduit runs shall have a tracer wire (14 AWG stranded thermoplastic high-heat-resistant nylon-coated [THHN]) installed from junction box to junction box. Multiple conduit runs in the same trench shall have tracer wire in at least one conduit.

The Contractor, at the Contractor's sole expense, may use larger conduit if desired—except where entering a cabinet foundation. Where larger conduit is used, it shall be for the entire length of the run. Reducing the number of couplings underground will not be permitted.

All conduits shall terminate in junction boxes such that when cable is pulled and coiled within the junction box there is a minimum clearance of 3 inches between the junction box lid and the conduit and cable. Cable and conduit shall not be crushed or damaged.

#### **02741.04 METHOD OF MEASUREMENT**

Measurement for traffic signal electrical conduit will be made along the centerline of the conduit of the length of each size and type satisfactorily installed where shown on the Plans. No distinction will be made for the method of installation. No separate measurement will be made for concrete encasement, conduit elbows, fittings, or other accessories.

#### **02741.05 BASIS OF PAYMENT**

##### **A. General**

Payment will be made for contingent items when ordered by the Engineer. Payment will be as specified in Section 02951, 02952, 02953, 02954, 02955, 02956, and 02957.

##### **B. Traffic Signal Electrical Conduit**

Payment for traffic signal electrical conduit will be made at the price bid per linear foot for each size and type installed, complete in place. The price bid shall include furnishing and installing conduit fittings, and accessories including trenching, slotting, jacking, boring, and backfilling; connecting conduit to other fittings or structures; concrete encasements; and furnishing all labor, tools, equipment, and materials necessary to complete the work as shown and specified, in strict accordance with the Contract Documents.

END OF SECTION