SECTION 405 -- CONDUIT

405.01 -- Description

1. The Contractor shall furnish and install the size and type of conduit shown in the plans. This applies to underground conduit and conduit in or on bridges, median barriers, retaining walls, tunnels, and similar structures. This work includes the conduit, fittings, excavating, backfilling, compacting, and all labor, equipment, tools, materials, and incidentals required to complete the work.

2. Special devices or fittings such as hangers, expansion fittings, deflection fittings, junction boxes, drains, grounding devices, and all other fittings required for a complete conduit system installation shall be considered subsidiary to the conduit pay item.

405.02 -- Material Requirements

Conduit and fittings shall conform to the requirements of Section 1073. The Contractor may use Cable in Duct (CID) in place of cable and conduit on lighting and sign lighting systems only, and the CID shall conform to the requirements of Section 1073.

405.03 -- Construction Methods

1. The Contractor shall assemble and install conduit systems in accordance with the *NEC*, except that in those instances where the *Standard Specifications* are more stringent than the minimum requirements of the *NEC*, the *Standard Specifications* shall prevail.

2. The Contractor may substitute a larger size conduit than specified at no additional cost to the Department if approved by the Engineer.

3. Fittings must be standard conduit fittings and designed for the specific type of conduit used. Galvanized malleable iron or steel fittings shall be used with galvanized rigid steel, intermediate metallic, or electrical metallic tubing conduit. Aluminum or zinc alloy fittings will not be allowed.

4. Field bends must be properly formed with appropriate tools and shall not reduce the conduit cross section area.

5. Exposed field cut threads on metallic conduit and any area where galvanizing has been removed shall be painted with 1 coat of an approved zinc rich paint.

6. All conduit terminations shall have bells or bushings.

7. Spare conduits shall be capped or plugged with standard fittings.

8. Unless otherwise provided or directed by the Engineer, underground conduit shall be placed 30 inches below finished grade.

9. The locations of conduit runs indicated in the plans may be altered at the direction of the Engineer to accommodate field conditions. Conduit shall be routed to minimize damage to existing trees and shrubs.

10. Trenches shall be excavated to true line and grade. Trench width shall be the minimum practical dimension needed to place the conduit. Backfill material shall be free of unsuitable materials. Backfill shall be placed with care and shall be compacted and/or mounded so that, after natural settlement, the trench surface is level with the surrounding surface.

11. Conduit placed under surfaces which are not to be disturbed may be jacked or augured into the proposed location. Jacking pits shall be at least 2 feet beyond the edge of the pavement. Excessive use of water is not allowed.

12. Conduit installed in or on bridges, retaining walls, median barriers, tunnels, and similar structures shall be capped or plugged in an approved manner to prevent the entrance of water, concrete, or other foreign materials.

13. Conduit under sidewalk shall include replacement of the sidewalk from joint to joint unless the conduit is jacked under the sidewalk. Sidewalk that is damaged shall be removed and replaced as complete panels.

14. "Conduit Under Roadway" is conduit that is trenched in place before the roadway is paved. This conduit may be either metallic or nonmetallic. The Contractor may elect to trench through existing bituminous pavement to install conduit under the roadway before a new pavement is constructed.

15. Conduit under surfaced medians may be placed by jacking or augering. The Contractor may also elect to remove and replace the median surfacing and bury the conduit at no additional cost to the Department. Median surfacing shall be removed and replaced in complete panels from joint line to joint line.

16. Metallic junction boxes installed in bridges or median barriers shall be drilled and tapped to receive a grounding lug.

405.04 -- Method of Measurement

Conduit shall be measured in linear feet for each type and size shown in the plans. The length shall be measured horizontally from center to center of poles, pull boxes, junction boxes, and control cabinets and shall not include allowances for vertical rises or bends. Cable in Duct (CID) will be measured as 2 separate items, conduit and cable.

405.05 -- Basis of Payment

1. Pay Item — Pay Unit

Pay Item	Pay Unit
_____ Conduit in Trench	Linear Foot (LF)
_____ Conduit in Bridge	Linear Foot (LF)
_____ Conduit in Median Barrier	Linear Foot (LF)
_____ Conduit Under Median Surfacing	Linear Foot (LF)
_____ Conduit on Structure	Linear Foot (LF)
_____ Conduit Under Roadway	Linear Foot (LF)
_____ Conduit Under Sidewalk	Linear Foot (LF)
_____ Conduit, Jacked	Linear Foot (LF)

2. Payment is full compensation for all work prescribed in this Section.