

CONDUIT SYSTEM AND CONCRETE BASES**PART 1 - GENERAL****1.01 SECTION INCLUDES**

Section includes conduit system, handholes, and structural concrete bases as designated for removal, modification, installation, and construction in the project plans or by the Jurisdiction Engineer.

PART 2 - PRODUCTS**2.01 HANDHOLES**

- A. Furnish precast concrete handhole, or poured in place concrete handhole, each with cast iron ring and cover. The body of a handhole shall meet the requirements for Class 1500D concrete pipe as applicable.
- B. Cast iron ring and cover may be rated light duty for non-traffic areas (145 pounds minimum); but shall be rated heavy duty for traffic areas (320 pounds minimum) where shown on the plans. Deviations in weights shall not exceed plus or minus five percent. The cover shall have the words TRAFFIC SIGNAL cast on the top of the cover.
- C. Cable hooks shall be galvanized steel with a minimum diameter of 3/8 inch and a minimum length of 5 inches.

2.02 CONDUIT SYSTEM

- A. Rigid steel conduit shall be galvanized steel and meet the requirements of ANSI Standard Specification C80.1, latest revision. Fittings used with rigid steel conduit shall be galvanized steel only.
- B. Polyvinyl chloride conduit (PVC) shall meet the requirements of NEMA TC-2, Type 2, and applicable UL Standards.
- C. Sealing compound shall be readily workable soft plastic at temperatures as low as 30° F, and shall not melt or run at temperatures as high as 300° F.

2.03 CONCRETE BASES

- A. Footings shall be Class C structural concrete.
- B. Reinforcing Steel:
 - 1. Deformed bars; ASTM A 615, Grade 40
 - 2. Fabricate and bend cold, per approved submittals or plans

PART 3 - EXECUTION**3.01 HANDHOLES**

- A. Additional handholes may be installed at the Contractor's expense, to facilitate the work.
- B. Provide four cable hooks in all handholes. Anchor in the wall of the handhole utilizing appropriate anchoring devices.
- C. Handholes shall be installed in a neat and workmanlike manner. When the use of forms is required they shall be set level and of sufficient thickness to prevent warping or other deflections from the specified pattern. A means shall be provided for holding conduit runs rigidly in place while the concrete is placed. All conduits shall enter the handhole at a depth of 12 inches from the top of the handhole. The ends of all conduit leading into the handhole shall fit approximately 2 inches beyond the inside wall. Cast iron rings and covers for handholes shall be set flush with the sidewalk or pavement, or 1" above the surface of the ground.

3.02 CONDUIT SYSTEM

- A. When it is necessary to cut and thread steel conduit, no exposed threads will be permitted. Tighten all coupling until the ends of conduits are brought together. Conduit and fittings shall be free from burrs and rough places and conduit runs shall be cleaned, swabbed and reamed before cables are installed. Use nipples to eliminate cutting and threading of short lengths of conduit. Paint damaged galvanized finish on conduit with zinc rich paint. Approved conduit bushings shall be installed on the exposed ends of rigid steel conduit.
- B. Bell end fittings shall be installed on the exposed ends of PVC conduit.
- C. Change in direction of conduit shall be accomplished by bending such that the conduit will not be injured or its internal diameter changed. Bends shall be of uniform curvature and the inside radius of curvature of any bend shall not be less than six times the internal diameter of the conduit. Extend conduit 2 to 4 inches above finished surface in all bases.
- D. Place conduit buried in open trenches a minimum of 18 inches deep. Open trench methods of placing conduit will be permitted except where the conduit is to be placed under existing pavement. Place conduit in pavement areas a minimum depth of 24 inches below the finished pavement surface.
- E. Deposit backfill material in layers not to exceed 6 inches in depth and compact thoroughly before the next layer is placed. Backfill material shall be free of cinders, broken concrete, or other hard or abrasive materials. Remove surplus material from the public right-of-way.
- F. Place pushed conduit by jacking, pushing, boring or any other means necessary to place the conduit without cutting, removing, or disturbing existing pavement. The size of a bored hole shall not exceed the outside diameter of the conduit which is to be placed. Tunneling under the pavement or water jetting will not be permitted. Pits for boring shall not be closer than 2 feet to the back of curb unless otherwise directed by the Engineer.
- G. Seal conduit openings in the controller cabinet, handholes, and bases with sealing compound.

3.03 CONCRETE BASES

- A. Concrete bases for poles and controllers shall be poured to form a monolithic foundation. Excavations for these bases shall be made in a neat and workmanlike manner. The bottom of all foundations shall rest securely on firm undisturbed ground. The forms shall be set level or sloped slightly to blend with the adjacent ground level and means shall be provided for holding them rigidly in place while the concrete is being deposited. Anchor bolts for the signal poles or the controller cabinet shall be set in place by means of a template constructed to space the anchor bolts in accordance with the manufacturer's requirements. The center of the template and the center of the concrete base shall coincide unless the Engineer shall direct otherwise. Concrete shall be consolidated by vibration during placement.
- B. Finish the top of the base level and round top edges with a 1/2 inch radius edge. In sidewalk areas, adjacent to sidewalks, or in other paved areas, the top 10 inches of the base shall be formed square and flush with the surrounding paved area. Provide preformed expansion material between the base and the other paved area. When installed in an earth shoulder away from the pavement edge, the top of the concrete base shall be approximately 2 inches above the surface of the ground. The exposed surface of the base shall have a rubbed surface finish.
- C. After the foundation or base has been poured, absolutely no modification of any sort may be made. If the anchor bolts, conduit, or any part of the foundation or base is installed in an incorrect manner as determined by the Engineer, the entire foundation or base shall be removed and a new foundation or base installed at the Contractor's expense.
- D. Cover the anchor bolts in such a manner as to protect them against damage and to protect the public from possible injury prior to setting poles.

END OF SECTION