

ITEM 0300101

ORNAMENTAL LIGHT POLE FOUNDATION

DESCRIPTION

Work under this item shall consist of furnishing and installing a steel reinforced cast-in-place concrete foundation for 14' and 30' ornamental street light poles at the location and to the dimensions and details shown on the plans or as directed by the Engineer. The work shall include excavation, forming, steel reinforcing bars, conduit, ground rod, grounding conductor, anchor bolts and anchor bolt installation, concrete placement, concrete finishing, form removal, backfilling and compaction.

REFERENCED ITEMS

0221001

REQUIRED SUBMITTALS

Shop Drawings:

Submit 5 copies of shop drawings for foundations in accordance with the contract general requirements.

MATERIALS

Portland Cement Concrete: Concrete shall conform to Class "A" and shall meet the requirements of Article M.03.01 of The State of Connecticut, Department of Transportation, Standard Specification for Roads, Bridges, and Incidental Construction, Form 816, 2004.

Reinforcing: Reinforcing bars to be furnished and placed under this item shall be "Deformed Bars", ASTM A-615-04 Grade 60, of the sizes and lengths indicated on the plans in the Reinforcing Schedule. Steel reinforcement bars shall be placed in the exact positions shown on the plans or as directed by the Engineer.

Anchor Bolts: The dimensions shall be shown on the plans or as recommended by the manufacturer and the bolts shall be made of steel conforming to ASTM F-1554-99, Grade 55. Anchor bolts, hex nuts, flat washers and split lock washers shall be hot-dip galvanized in accordance with the requirements of ASTM A-153-03, Class C.

Field welding and field bending of anchor bolts is prohibited. If installed anchor bolts do not fit the base plate, the Contractor shall remove and replace the foundation.

The contractor shall ensure anchor bolts are plumb in the foundation. A minimum anchor bolt embedment of at least 3 feet is required.

Rock Anchors: Shall conform to the Article M.15.03 of Form 816.

Electrical Conduit: Rigid galvanized steel conduit conforming to the requirements of Article M.15.09 of Form 816.

Ground Rod: 3/4" X 10' solid copper rod.

Ground Conductor: No. 6 AWG solid copper.

Ground Conductor to Ground Rod Connection: Exothermic weld connection equal to Cadweld as manufactured by Erico Products Company or approved equal.

CONSTRUCTION METHODS

- a. The foundations shall be completed the day the foundation is excavated. Foundations shall be installed in conjunction with the installation of hand holes or pull boxes provided for under other items.
- b. Forms shall be built true to lines and grades designated, shall be strong, stable, firm, mortar-tight and adequately braced or tied, or both. They shall be designed and constructed to withstand all loads and pressures including those imposed by concrete placement, taking full account of the stresses due to the rate of placement, effect of vibration and conditions brought about by construction methods. Provide a 3/4" chamfer at all exposed edges, if required by the drawings. Form material in contact with concrete shall be of a quality to provide the required concrete surface smoothness and shall be treated with a commercially available form release compound, which will not damage, discolor or adhere to the concrete. Concrete may be placed against the sides of the excavation; however, the exposed portion of the foundations shall be formed to the size indicated on the plans. When in the judgment of the Engineer, unusual soil conditions prevent excavation to neat lines as shown on the plans, the complete foundation shall be formed.
- c. The finished elevation of the top of the foundation shall be as shown on the plans.

- d. Steel reinforcing and anchor bolts shall be set in the form prior to concrete placement. The anchor bolts shall be mounted in a template to maintain the proper spacing of the bolts. The bolts shall be secured to the reinforcing steel cage using short pieces of steel reinforcing bars and tie wire.
- e. Conduits for power supply and pole grounding shall be placed in the forms at the locations indicated. The conduits shall extend 2" above the top of the concrete foundation and shall be centered in the top of the foundation. The conduits shall be held in place with the anchor bolt template. All conduits shall be installed and capped, with standard pipe caps, prior to concrete placement. Caps shall remain in-place until the cable is installed.
- f. Concrete shall be central plant mixed and shall be placed in the forms within 90 minutes after the time that water is first added to the mix. The Engineer reserves the right to alter this time by as much as one-half when necessary to achieve the requirements related to set and plasticity. After placement, the concrete shall be mechanically compacted by vibrator.
- g. After initial set of the concrete, the forms shall not be jarred. Forms shall not be removed until after the concrete has hardened properly and not less than 24 hours after the concrete has been placed. Concrete surfaces exposed to conditions causing premature drying shall be protected by covering within two (2) hours of placing. The external surface of the hardened concrete shall be finished immediately after the removal of the forms. All voids on the surface shall be filled and finished to conform to the surrounding concrete surface. The entire exposed surface shall be thoroughly wet with a brush and rubbed with a No. 16 carborundum stone or an abrasive of equal quality, bringing the surface to a paste. The rubbing shall be continued sufficiently to remove all form marks and projections, producing a smooth, dense surface without pits or irregularities.
- h. Backfill to be furnished and placed under this item shall be bank or crushed aggregate conforming to Article M.02 of Form 816, with a maximum size of $\frac{3}{4}$ ". Aggregate shall conform to the Gradation requirements of M.02.06, Grade C of Form 816, except 100 percent shall pass a 19mm square mesh sieve. All costs of furnishing and placing backfill are to be included in the unit price bid for Light Pole Foundations. Backfill shall be thoroughly compacted to 95% optimum dry density.
- i. The Contractor shall allow sufficient time for foundations to cure before placing any strain on the foundations. Poles and bracket arms or mast arms shall not be installed for a minimum of fourteen calendar days after the concrete has been placed.

- j. When a pole foundation is to be installed in close proximity of an identified utility the Contractor shall locate the utility by hand excavation. After the utility is located, the Contractor shall coordinate the remainder of the excavation under the supervision of the utility company's representative and the Project Engineer.
- k. When the foundation is to be installed over an existing CL&P service feed, the Contractor shall locate the conduit with service cable and shall contact the utility company representative to de-energize the feed. Once the service feed is de-energized and disconnected at the CL&P handhole or manhole, the Contractor shall cut the conduit beyond the foundation limits and the cable shall be pulled from the handhole or manhole. After the foundation excavation, a connecting rigid metal conduit shall be installed through the foundation form to restore the continuity of the feed. This connecting rigid metal conduit will be paid under Item 0221001.
- l. If rock is encountered during the course of excavation, the Engineer shall determine whether the rock to be excavated to full depth or usage of rock anchors at partial depth.

METHOD OF MEASUREMENT

Ornamental Light Pole Foundation shall be measured for payment by the number of units installed and accepted. This measurement shall include the electrical conduit sweeps, which shall extend 2 feet outside of the foundation.

BASIS OF PAYMENT

The work will be paid for at the contract unit price each for "ORNAMENTAL LIGHT POLE FOUNDATION" installed, which price shall include all materials, labor, equipment, tools, forms, excavation, rock anchors, hand excavation of test pit to locate utilities in the proximity of foundation, disposal of surplus material, concrete, electrical conduit sweeps, conduit caps, ground rod, sleeves, ground bushings, bonding wire, anchor bolts, backfill, restoration of existing service feed(s) disturbed by foundation excavation and incidental expenses thereto.

When rock is encountered within the limits of the excavation, this removal will be paid for at the contract unit price per vertical feet for "Rock in Foundation Excavation".

PAY ITEM

DESCRIPTION

PAY UNIT

0300101

Ornamental Light Pole Foundation

EA