ITEM 022180

Item 0221801 - ALUMINUM STREET LIGHT POLE (6' SINGLE ARM)
Item 0221802 - ALUMINUM STREET LIGHT POLE (12' SINGLE ARM)
Item 0221803 - ALUMINUM STREET LIGHT POLE (6' DOUBLE ARM)

DESCRIPTION

This item shall consist of furnishing and installing Aluminum Street Light Pole. Aluminum Street Light Poles shall consist of a tapered shaft with a shoe base, a single arm, a pole cap, a hand hole, a grounding attachment, four bolt cover caps, four shims and four anchor bolts. The poles shall be capable of supporting a 75 pound luminaire with a projected area of 3.2 square feet at the nominal mounting height specified from either one or two bracket arms, in addition to the projected area of the pole, in a 90 miles per hour wind with a gust factor of 1.3.

REFERENCED ITEMS

None

REQUIRED SUBMITTALS

Material Certificate of Compliance:

Submit 5 copies of material certificate of compliance for light pole assembly in accordance with the contract general requirements.

Certified Test Report:

Submit 5 copies of certified test reports for light pole assembly in accordance with the contract general requirements.

Shop Drawings:

Submit 5 copies of shop drawings for light pole assembly in accordance with the contract general requirements and with the design details approved and signed by a professional engineer licensed to practice in Connecticut State.

MATERIALS

Shaft: FPI catalog #FPSLS84520C-DC (with 6' aluminum bracket) or Approved Equal

The shaft shall be fabricated from a one-piece, seamless, round tapered aluminum tube of alloy 6063-T4 measuring 8" O.D. at its base, 4.5" at its top and shall be 28' -0" long. The nominal wall thickness of the tube shall be 0.188. The material used shall be aluminum alloy 6063. The shaft shall be full-length heat treated after welding on both the base flange and handhole frame to produce the required T6 temper. The pole shaft shall include a 4" x 6" flush mounted reinforced handhole centered 16" above the bottom of the shaft and located 90 degrees measured clockwise from the plane of the bracket arm as viewed from the top. A flush mounted cover with 2-10-24 x 3/4" long flathead Phillips stainless steel machine screws grade 18-8 attachment screws shall be provided for the handhole cover. The handhole reinforcing frame shall be cast from aluminum alloy 356 and shall include a 5/16-18 NC tapped lug for grounding purposes integrally cast into the frame. The top of the shaft shall be drilled to accept four 1/2" diameter bracket attachment bolts.

A 1-1/2" diameter hole shall be furnished 6 1/2" from the top of each shaft to provide a cable entrance from the shaft into the bracket arm. The opening shall have a rubber or neoprene grommet placed in it in order to provide a smooth cable guide for pulling the electrical cable through.

Shaft material parameters shall be as follows:

	30' W/Shoebase	30' W/Tbase
MINIMUM WALL THICKNESS	.188	.188
MINIMUM DIAMETER BOTTOM	8	8
MINIMUM DIAMETER TOP	4 1/2	4 1/2
SHAFT LENGTH	28'	28'
BOLT CIRCLE DIAMETER	11 1/2"	15"

Handhole cover shall be attached with 12" long stainless steel keeper chain fastened to inside of handhole and to cover.

Provide a cast aluminum box and in-use cover at 15 feet high and opposite side of the arm for "GFI" duplex receptacle 20 amp, 120 volt.

For each shaft a removable ornamental pole cap of cast aluminum alloy 43 shall be provided along with 3 – ¼-20 x 1/2" long stainless steel set screws in order to attach the cap in place.

Base Flange

The base flange for the attachment of the shaft to the foundation or to a transformer base (T base) shall be a one-piece permanent mold casting of aluminum alloy 356.

The flange shall be joined to the shaft by means of complete circumferential welds, externally at the top of the flange and internally at the bottom of the shaft tube. The welds shall be 3.50" part. The anchor boltholes shall be arranged to mate with 1" diameter bolts located on a 11" to 12" diameter bolt circle. The minimum base hole slots shall be 1.25" by 1.75. Four bolt covers of aluminum alloy 43 and 4-1/4"-20 NC round head Phillips stainless steel machine screws for their attachment shall be provided. The base flange shall be 11.50" square.

Bracket Arm: FPI cat#FPEANY352375-6-30-4.5 or Approved Equal

The bracket arm member shall be tapered from a 3.5" O.D. seamless tube of aluminum alloy 6063-T4. The nominal wall thickness of the tube shall be 0.125". At the pole end the tube shall be ovalized 2.50" by 4.25" with the long dimension in a vertical plane. The pole end of the bracket arm tube shall be welded to an extruded pole plate designed to fit the curvature of the pole and provide a flat surface to accept the arm tube. The plate shall be designed to be bolted to the shaft with four 1/2" diameter bolts. The extruded plate shall be alloy 6063-T6. The wiring hole in the plate provides clearance for the grommeted wiring hole in the pole (1 1/2" diameter, min.). The bracket arm shall incorporate a 2" pipe size slipfitter tenon (2 3/8" O.D.) and be at least 8" long. The completed arm assembly shall be heat-treated to the T6 temper after all fabrication and welding has been performed. When mounted on the pole shaft the arm shall have between a 2 degree and 3-degree uptilt.

The bracket arm and pole shaft shall be designed in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Wind pressure for design purposes shall be determined in accordance with the above AASHTO Standard Specification utilizing a 90 mph wind speed.

Anchorage

A set of four steel anchor bolts per ASTM A-576 threaded 1"-8 NC for 6" and hot dipped galvanized per ASTM A-153 at the threaded end for at least 10" shall be supplied with each 4" right angle (90 degrees) hook to the unthreaded end. A nut, lockwasher and flatwasher shall be supplied with each anchor bolt and also be hot dipped galvanized. All other nuts, bolts and washers used in the fabrication of the pole shall be Grade 18-8 stainless steel.

Welding

Welding shall be done by the inert gas shielded metal arc method with consumable electrode. Aluminum alloy 4043 electrode shall be used.

Surface-Finish & Protection

The pole shaft shall be provided with a 60 grit satin finish accomplished by mechanical rotary grinding. The bracket arm shall be provided with a satin etched finish. All materials shall be cleaned and free from dents and unsightly scratches. No surface preparation shall be required at the time of installation.

After finishing, each pole shaft shall be spirally machine wrapped with protective Kraft paper and secured in place with tape. All small parts shall be boxed.

Wind Loading

The complete pole assembly shall be capable of supporting a luminaire weighing 70# maximum with an effective projected area of 1.6 sq. ft. maximum (equivalent to 3.2 sq. ft. of projected area with a coefficient of drag of 0.5 of less) 117 mph maximum wind gust velocities.

All aluminum welding on light standards shall be performed in the shop, using the inert metal-arc welding process. Filler metal shall conform to the AWS Specification A5.10.

Color & Finish: As determined by Engineer

BASIS OF ACCEPTANCE

Acceptance of the Shaft and Bracket Arms covered by this specification will be based on:

1. Manufacturer's certification of compliance with these specification requirements.

2. Submission, to the City, of design and fabrications details for each shaft and arm. The design and fabrication details being submitted shall have been approved and signed by a professional engineer licensed to practice in Connecticut State.

Information Required

The bidder shall submit a complete description of the poles, bracket arms, pole base and all other information necessary to analyze the performance of the pole.

CONSTRUCTION METHODS

Construction methods for this work shall be in accordance with the manufacturer's recommendations. The contractor shall be responsible for coordinating all necessary prerequisite work with Northeast Utilities. This shall include, but not be limited to de-energizing existing light poles, energizing new light poles, coordinating and verifying new conduit installations. Northeast Utilities shall be responsible for pulling new wiring from energy source to first pole location and energizing new lighting system. The contractor shall be responsible for installing all underground conduits in accordance with CL&P requirements.

METHOD OF MEASUREMENT

This work will be measured for payment by the number of Aluminum Street light Poles of type specified, complete and accepted.

BASIS OF PAYMENT

The aluminum lighting standards will be paid for at the contract unit price per each "(TYPE) SINGLE ARM" or each "(TYPE) DOUBLE ARM" with the size bracket indicated, pole cap, handhole, grounding attachment, bolt cover caps, and shims, complete with price shall include all materials, equipment, tools and labor incidental thereto, including field checking of existing bolt circle diameter.

PAY ITEM	DESCRIPTION	PAY UNIT
0221801	6' Single Arm	EA
0221802	12' Single Arm	EA
0221803	6' Double Arm	EA