13. ORNAMENTAL STREETLIGHT

1. Streetlight Assembly

The streetlight manufacturer shall provide all required components to assemble a streetlight as shown in the attached drawing and as described in the following Special Provisions. The manufacturer shall guarantee that all components provided, when assembled, shall constitute a complete functioning streetlight.

The streetlight capital, globe holder, light engine base, fluted shaft, and base shall be delivered as a single unit, fully assembled and painted as describe in the following Special Provisions. The luminaire assembly, Light Emitting Diode (LED) light engine, and anchor bolts, if required, may be delivered in a separate shipment or container.

Optionally, streetlight assembly shall have weatherproof UL listed GFI electrical receptacles mounted at the top of the pole shaft.

2. Luminaire Assembly

The luminaire assembly shall include a 424 Lexalite Acrylic Prismatic Top, GE8–9 globe, Formed Plastic FP 199, or National Lighting NL199 globe or approved equal as shown on the drawing. The luminaire assembly shall be UL listed for wet/damp locations and shall be furnished prewired.

The Lexalite 424 globe shall have IES Distribution Type III or V as specified by the City Engineer. Assembly of top and bottom parts of the globe shall be by a stainless steel band. Globe top shall not include a factory installed Lexalite spike aluminum finial. The globe shall be provided with a neck ring so that the tightening of the screws will not damage the globe collar.

Unless otherwise specified, the lamp assembly shall be delivered with a light engine. The light engine shall be of LED manufactured by CREE model DPT A SB FR A 30K UL UF, VEGA D4A model D4A–30G–30K–TSM–NA–E39D–STD or approved equal.

3. Cast Iron Capital and Globe Holder

The capital and globe holder shall be of the design and dimensions as shown on the drawing and shall be of cast iron per ASTM A48 CL30 standards. The globe holder shall have four (4) 5/16" stainless steel set screws (90 degrees) for mounting of the globe. Set screws shall be square head. Allen or Phillips set screws are not acceptable. The capital shall be prewired with a light engine base. The light engine base shall be of porcelain mogul type. The capital shall be attached to a 3" tenon mounted on top of the steel fluted shaft with four (4) 5/16" stainless steel screws.

4. Steel Fluted Shaft

The fluted shaft shall be of the dimensions shown on the drawing and shall be tapered 0.14" per foot. The fluted shaft shall have the chemical and physical properties of A595 grade A. The fluted shaft shall be fabricated from a single length of a minimum 11–gauge steel sheet, rolled into a fluted shaft on a steel mandrill and finished with a single longitudinal weld. No transverse or intermediate welds or joints shall be permitted.

The fluted shaft shall have sixteen (16) equally spaced Doric flutes, sharp and clear–cut throughout the entire length of the shaft. The radius of the flute's crest shall not exceed the thickness of the shaft material. Individually rolled flutes or round poles with a separate fluted sheathing are not acceptable. Shaft shall be formed true to the pattern and complete in detail. The interior surface shall be smooth with no protrusions or sharp edges. There shall be a minimum of 2" internal clearance extending the fluted shaft's length to permit internal wiring from an underground source.

At the top of the fluted shaft, a steel tenon shall be welded and sized to accept the capital and globe holder. The maximum gap between the inside–diameter of the capital and outside–diameter of the tenon shall be ½".

A ½" steel adapter plate, of 36,000 psi minimum yield strength, shall be welded to the bottom of the fluted shaft. The adapter plate shall include three (3) tapped holes on a 4" bolt–circle to accept ½" –13 stainless steel bolts for attachment to the streetlight pole base. The stainless steel bolts shall be per ASTM F593. The bolts shall be with a minimum yield strength of 92,000 psi. The maximum diameter offset between the bottom of the fluted shaft and the adapter plate shall be as shown in the drawing.

All welds shall meet AWS D1.1.

The complete fluted shaft shall be hot–dipped galvanized per ASTM A123 prior to painting.

13. ORNAMENTAL STREETLIGHT (continued)

5. Cast Iron Base

The streetlight base shall be of the design and dimensions as shown on the drawing and shall be of cast iron per ASTM A48 CL30 standardswith a minimum thickness of ½".

The base shall have an opening for the hand hole of the dimensions shown on the drawing with the cover cast of the same material, and attached with a 1/4" stainless steel, button head hex socket cap screw. The base shall have three (3) holes integrally cast into its top to be attached to the shaft. A minimum of 2" wiring access hole shall also be provided.

The base shall be furnished with a 12"–13 UNC grounding bolt.

6. Anchor Bolts

Unless otherwise specified, each streetlight assembly shall include four (4) galvanized steel anchor bolts of the dimensions as shown on the drawing. Anchor bolts shall meet ASTM – A36 with 55,000 psi minimum yield strength. The threaded portion shall be galvanized. Each anchor bolt shall include two (2) galvanized hex nuts and two (2) flat washers. All galvanized parts shall meet ASTM A153.

7. Surface Coating

The exterior and interior surfaces of the streetlight base, fluted shaft, and capital shall have surface preparation, primer coating, and two coats of paint. The surfaces of the base, fluted shaft, and capital shall have a smooth finish that shall be uniform along the entire length of the streetlight pole assembly. All surface preparation, primer coating, and painting application shall be performed inside a shop or plant before shipment to jobsite.

The manufacturer shall provide Manufacturer Certification that all primer coating and paint application was performed per coating manufacturer specifications for the selected coating, prior to delivery of streetlight pole. Minor field coating touch–up may be permitted at the City's discretion.

All work shall be performed in strict accordance with these specifications and the manufacturer's directions for the materials to be used on this project.

A. Surface Preparation

The exterior and interior surfaces of the pole shall be prepared as follows:

a) All sharp edges shall be removed or rounded.
b) Contaminants such as oil, grease, dirt, etc., shall be removed by solvent cleaning per SSPC–SP1 (solvent cleaning).
c) All non–galvanized surfaces shall be blasted per SSPC–SP10 (Near White Metal Blast) to remove all rust, mill scales, slags, and foreign matters.
d) Streetlight base, fluted shaft, and capital shall be primed on the same day the surface preparation is completed.

B. Primer Coating

After surface preparation is completed, the cast iron streetlight assembly shall have a primer coating as follows:

a) Use Sherwin Williams Macropoxy 646 Fast Cure Epoxy – Black (OR Mill White primer if Sacramento Green is specified as the paint color) or approved equal.
b) Mix Macropoxy per manufacturer directions.
c) Apply primer to each streetlight component separately, including the interior and exterior surfaces.
d) Apply a fog coat of primer of 1.0 – 2.0 mils, approximately 1 hour prior to full prime coat.
e) Apply full prime coat at the recommended spreading rate per coat for the Macropoxy 646 Primer; wet mills (7 minimum, 13.5 Maximum), dry Mills (5 minimum, 10.0 Maximum). See manufacturer product information for drying schedule and application conditions.

C. Paint Application

After primer coating, the streetlight assembly shall be painted as follows:

a) Use Sherwin Williams Hi–Solids Polyurethane 100 – Gloss Black (OR Sacramento green color if specified on the drawing) or approved equal.
b) Apply two (2) coats of paint to the entire streetlight assembly, including the interior and exterior surfaces.
c) Apply the paint at the recommended film thickness and spreading rate per coat; wet mills 3.6 minimum, 4.8 maximum; dry mills 3.0 minimum, 4.0 maximum. See manufacturer product information for drying schedule and application conditions.

13. ORNAMENTAL STREETLIGHT (continued)

Paint application shall be in accordance with the principles of good workmanship described in SSPC–PA1, Paint Application Specification No. 1, Shop Field and Maintenance Painting. The Quality Control/Specifications are as follows: Dry Film test per ASTM D7378–07, Holiday Porosity Test per ASTM D5162–01, Cross Hatch Adhesion per ASTM D6677–01, Pencil Hardness test per ASTM D3363, Impact Resistance per ASTM D2794, Visual Gloss Inspection, and Final Visual Inspection.

8. Design Standards

Streetlight assembly and all materials used in its manufacture shall meet the requirements of the most current adopted version of the American Association of State Highway and Transportation Officials (AASHTO) "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and this specification.

In addition to the requirements of the AASHTO Specification, the post and anchorage shall be designed with a minimum safety factor of two (2) and shall not deflect more than five (5%) percent of the above ground height at full wind loading.

9. Factory Certification

Each streetlight assembly shall be certified by the manufacturer to meet all requirements specified herein. The manufacturer shall make factory and all manufacturing processes open for City Quality Control Inspection if requested by the City Engineer. City shall incur all inspection cost.

10. Identification

Each pole shall bear an identification tag which shall list the manufacturer model number of the pole and year and location of manufacture. The identification tag shall be placed inside of the base, facing the hand hole, and clearly visible from the outside when installed and the hand hole cover is removed.

11. Material Availability

Pole manufacturer shall certify to the City that the accepted pole base, capital, shaft, and luminaire is or will become a stock item, readily available with replacement parts for a minimum ten (10) year.

12. Material Certification

Material certifications shall be provided for all components referred to in the drawing and these Special Provisions.

13. Packaging

Each streetlight assembly and luminaire shall be individually packaged to prevent damage with sufficient packaging strength for protection during shipping and storage. Small parts shall be packaged in boxes. Individual components shall be packaged in the same manner as the poles and luminaries. All handling shall be done with rope or nylon slings to prevent surface damage. Use of chains, wire slings or unprotected forks or hooks is prohibited.
Packing list and assembly instruction sheet shall be included.

14. Acceptance

After packaging is removed and prior to installation, each streetlight assembly shall be inspected for manufacturing or paint defects by the City Engineer. No streetlight assembly is to be installed without the expressed approval of the City.

15. Testing

Factory testing shall be provided at the request of the City Engineer in accordance with manufacturer's testing procedures.

16. Warranty

The streetlight manufacturer shall warrant against any defects and shall replace all defective parts or streetlight assemblies for a period of five (5) years from the date received by the City. Pole manufacturer shall provide written warranty with shipment of poles.

17. Welding

Welding shall be conducted by certified welders in compliance with the latest edition of the American Welding Society D1.1, Structural Welding Code – Steel. All parts shall be cleaned prior to welding by an approved industry standard method.

18. Wind Resistance

Entire pole and luminaire to be rated to withstand AASHTO requirements for a minimum 70 mile and hour wind load with a 30% gust factor.

13. ORNAMENTAL STREETLIGHT (continued)

19. Sealing of Streetlight Pole Foundation

The concrete for the foundation shall be finished so that the top surface is straight and smooth with a 2% grade conforming to the adjoining sidewalk.

Remove concrete forms on streetlight foundation upon project completion. Remove all plywood, forms, excess and leftover concrete, and other debris as a result from construction upon project completion.

Once the pole is installed and leveled on the anchor bolts, the gap between the base of the pole and the top of the foundation shall be sealed using the following procedure:

The bottom surface of the pole base shall be primed using Pecora P–120 or approved equal and the top of the foundation shall be primed using a Pecora P–150 or approved equal. The curing of the concrete used for the foundation or pavement and the application of the primer shall follow the guidelines provided by the manufacturer of the primer and sealant.

The gap to be sealed shall be partially filled by pushing in a 1.5" diameter Bi–Cellular Backer Rod (SOF Rod), cut to size, and installed around the bottom perimeter of the pole base, pushed against the anchor bolts. The backer road product shall be made by Construction Foam Products or approved equal.

A one half–inch (1/2") inside diameter drain tube shall be placed in the gap between the base of the pole and its foundation to prevent standing water. The drain tube shall be placed under the backer rod, flush with the finished surface of the concrete, and extending about 2.25" toward the center of the pole base. It shall be placed so that it is following the downward slope of the surrounding sidewalk and top of foundation (about 2%). The drain tube shall be made of PVC with a wall thickness of 1/16" or as approved by the engineer.

Once the primer is dry as recommended by the manufacturer, and the backer rod is installed, the Contractor shall apply a silicone sealant, with a minimum thickness of 0.5inch. Use a pre–tinted black color silicone, model number Pecora 890NST or approved equal. Completely seal the gap between the base of the pole and the top of the foundation with the silicone sealant. Use a masking tape when applying the sealant, in order not to smear the outside of the pole, and the surrounding pavement with the sealant material. The sealant shall be smoothed out around the base of the pole, and any excess material removed before it is set to cure as required by the sealant manufacturer.

The sealant shall be smoothed out around the base of the pole, and any excess material removed before it is set to cure as required by the sealant manufacturer.

14. POST TOP STREETLIGHT

A. General

Post top streetlights shall be in accordance with the latest City of Sacramento Standard Specifications, unless otherwise specified in these Special Provisions or Plans. All post top streetlights shall have an LED light engine.

B. Specifications for Luminaire

The LED light fixture shall be Acuitybrands Contempo LED Series Model 245L P45 AS 30k R3 RNA (blank–gray color) Style A (hood) P7 SH or approved equal. Hood Style A and Gray finish, as shown in the Acquitybrands Contempo LED Series 245L. No photocontrol receptacle.

The post top streetlight standard and luminaire shall conform to the following:
1) LED light engine. 46 input watts.
2) Multi–voltage driver. 120–277volts.
3) Color Temperature 3000K.
4) Type III distribution
5) Acrylic Rain Panel
6) Paint: Grey exterior finish.
7) Luminaire canopy shall be 22 inches in diameter.
8) LED light engine greater than 100,000 hours at 25 degree C.
9) CSA listed and suitable for up to 40 degree C.
10) Complies with ANSI: C136.2, C136.10, C136.15
11) Cone mounting fitter with three set screws to install to pole tenon. 3" diameter pole tenon. Set screws shall be hex or square head screws. Slotted or Allen set screws are not acceptable.
12) Hinged hood and captive screw latching.
13) Multi–gasketing to provide weatherproof protection of assembly.
14) Die–cast aluminum housing and spun aluminum hood.
15) All external hardware shall be stainless steel or other corrosion resistant metal.

C. Specification for Pole and Foundation
The post top pole, anchor bolt configuration, and foundation specifications and details are shown in the latest City of Sacramento Standards, page E–70.

APPROVED BY : Kaleb K. Haile — E–15137 P.E. — 06/15/2021 DATE
KALEB HAILE, SENIOR ELECTRICAL ENGINEER

CAD FILE: P:\Engineering Services\TechElec\Drawings\1Standard Details for Traffic Signals and StreetLights\2021 Electrical Standards\WORKING\New SpecialProvisions No.2.dwg Monday, June 14, 2021 3:18:07 PM

REVISIONS NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. _____ DESCRIPTION _____

FIELD BOOK N/A

SCALE HORIZ. N/A VERT. N/A

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: STAFF DATE _____
DESIGNED BY: STAFF R.E.E. _____ DATE 06/14/21
CHECKED BY: K. HAILE R.E.E. E–15137 DATE 06/15/21

PLANS FOR

STREETLIGHT SPECIAL PROVISIONS No. 2

DWG. NO.

SHEET OF

PN: