

Special Specification 6110

LED Decorative Illumination Assembly



1. DESCRIPTION

Furnish, fabricate, and install decorative illumination assemblies with light-emitting diode (LED) lamp modules and pole mounted GFCI receptacles.

2. MATERIALS

Use new materials conforming to the details shown in the plans and the pertinent requirements of the following Standard Specification Items:

- Item 442, "Metal for Structures"
- Item 449, "Anchor Bolts"
- Item 616, "Performance Testing of Lighting Systems"
- Item 620, "Electrical Conductors"

- 2.1. **Submittals.** Furnish 7 sets of submittals of the illumination assemblies with GFCI outlets, banner arms, luminaires, poles, bases, and all mounting hardware to the Engineer at the project address. Do not purchase materials or begin work before these submittals are approved.
- 2.2. **Pole Options.** Furnish a fluted tapered cast iron, low copper aluminum alloy or steel pole with nominal height of 11 ft. 7 in. (with a tolerance of +/- one foot) Provide a decorative base with removable access door with a nominal height of 5 ft. and a nominal width of 8 in. in the fluted section of the base with a nominal width of 1 ft. 4 in. at the bottom of the base section. Pole section above base to be a nominal width of 4.25 in. Provide two banner arms of approximately 20 in. in length with decorative end cap balls and attachment hardware specified by the pole manufacturer to hold a single banner to be provided by others. Banner arms to be spaced with 3 ft. of separation and 7 ft. of vertical clearance from the walking surface to the lowest banner arm. Provide a 15 A, 120V GFCI receptacle with a weatherproof cover to be located above the upper banner arm and below the twin arm luminaire assembly to be in line with the access door located in the base. Pole assembly to meet the aesthetics and design criteria shown in the plans including capitals and finials as detailed. Separation between the installed luminaire globes on the twin arm luminaire assembly will be nominally 1 ft. Exposed hardware to be stainless steel. All electrical components to be UL listed. Pole assembly finish to be black color. Color chip to be delivered and approved by the Engineer. Fabricate hardware, brackets, nuts, bolts, washers, ballast tray, and parts from stainless steel or aluminum of adequate thickness as approved. Ensure compatibility of metals used in contact with one another will not induce accelerated galvanic corrosion. Pole shaft must support the luminaires, banner arms, and all equipment as detailed for typical wind load expected at location of installation. Provide grounding provision with hardware.
- 2.3. **LED Luminaire:**
- 2.3.1. **General Requirements.** Provide an acorn style luminaire with finial, 4000 lumens, type 3 fixture, 5000K with prismatic globe and "dark sky" compliant shielding. All luminaires to be installed on twin arm assemblies as detailed in the plans.
- 2.3.2. **Electronic Driver and LED Lamp Modules.** Provide replaceable LED driver modules that will operate at 240V line voltage. Provide a two-position barrier-type terminal block secured to housing. Provide lugs with captive screws for wire sizes up to 6 AWG. Identify each terminal position. Provide LED lamp modules so that catastrophic loss or failure of an individual LED will not result in the loss of the entire lamp. Provide LED lamp modules with a color temperature of 5000K. Provide sufficient thermal management of the heat generated by the lamp to ensure a minimum operable life of 90,000 hr. with an average operating time of 12 hr. per night. Provide a passive thermal management system if required. Fans or other mechanical cooling

systems will not be allowed. Design lamp so that the maximum junction temperature of the LEDs at maximum ambient temperature will not be exceeded, and will not exceed 105°C.

- 2.3.3. **Performance Requirements.** Photometric data must be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. Provide photometric data (in .ies format) for luminaires at specified color temperature and operating at 25°C ambient temperature. Ensure the fixture will be IESNA cutoff or better.
- 2.3.4. **Warranty.** The manufacturer will replace failed luminaires, when non-operable due to defect in material or workmanship, within ten years of installation with a luminaire that meets all specifications, delivered to the project location. Photocells (if used) are subject to the warranties of their respective manufacturers.

3. CONSTRUCTION

Perform work in accordance with the details shown on the plans in accordance with the manufacturers' requirements and the requirements of this Item.

Use established industry and utility safety practices when installing poles or luminaires located near overhead or underground utilities. Consult with the appropriate utility company before beginning work.

Prevent scarring or marring of poles, luminaire arms, and luminaires. Replace damaged components. Repair damaged painted areas of roadway illumination assemblies according to manufacturer's recommendation.

Stake, install and align each illumination assembly as shown on the plans. The Department may shift a luminaire's location, if necessary, to secure a more desirable location or to avoid conflict with utilities.

Fabricate and install illumination assembly components in accordance with the details, dimensions, and requirements shown on the plans. Do not use screw-in type foundations. Install anchor bolts and coat anchor bolt threads. Erect structures after foundation concrete has attained its design strength as required. Tighten anchor bolts for poles with shoe bases. Do not place grout between base plate and foundation. Test installed illumination assemblies.

4. MEASUREMENT

This Item will be measured as each LED Decorative Illumination Assembly installed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Install LED Decorative Illumination Assemblies."

This price is full compensation for furnishing, installing, and testing LED luminaires; drivers, anchor bolts, anchor plates, internal transformer, internal conductors, GFCI receptacles, poles, decorative bases, arms, brackets, and connections; system performance testing; and equipment, labor, tools, and incidentals.

New drilled shaft foundations will be paid for under Item 416, "Drilled Shaft Foundations." New conduit will be paid for under Item 618, "Conduit." New conductors, except the conductors internal to the pole, will be paid for under Item 620, "Electrical Conductors." New ground boxes will be paid for under Item 624, "Ground Boxes." New electrical services will be paid for under Item 628, "Electrical Services."