

**SECTION 26 56 00**  
**EXTERIOR LIGHTING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies the furnishing, installation, and connection of exterior fixtures, poles, and supports. The terms "lighting fixtures", "fixture" and "luminaire" are used interchangeably.

**1.2 RELATED WORK**

- A. Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: General electrical requirements and items that are common to more than one section of Division 26.
- C. Section 26 05 19, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
- D. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
- E. Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
- F. Section 26 05 41, UNDERGROUND ELECTRICAL CONSTRUCTION: Underground handholes and conduits.

**1.3 QUALITY ASSURANCE**

- A. Refer to Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES), in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

**1.4 SUBMITTALS**

- A. Submit six copies of the following in accordance with Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
  - 1. Shop Drawings:
    - a. Material and construction details.
    - b. Physical dimensions and description.
    - d. Installation details.
  - 2. Certifications: Two weeks prior to final inspection, submit the following.
    - a. Certification by the Contractor that the exterior lighting systems have been properly installed and tested.

### 1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
- B. Aluminum Association Inc. (AA):  
AAH35.1-06.....Alloy and Temper Designation Systems for  
Aluminum
- C. American Association of State Highway and Transportation Officials  
(AASHTO):  
32-LTS-6.....Structural Supports for Highway Signs,  
Luminaires and Traffic Signals
- D. American Concrete Institute (ACI):  
318-05 .....Building Code Requirements for Structural  
Concrete
- E. American National Standards Institute (ANSI):  
C81.61-09 .....Electrical Lamp Bases - Specifications for  
Bases (Caps) for Electric Lamps
- F. American Society for Testing and Materials (ASTM):  
A123/A123M-12 .....Zinc (Hot-Dip Galvanized) Coatings on Iron and  
Steel Products  
A153/A153M-09.....Zinc Coating (Hot-Dip) on Iron and Steel  
Hardware  
B108-03a-08 .....Aluminum-Alloy Permanent Mold Castings
- H. Illuminating Engineering Society of North America (IESNA):  
HB-9-00.....Lighting Handbook  
RP-8-05.....Roadway Lighting  
LM-72-10.....Directional Positioning of Photometric Data  
LM-79-08.....Approved Method for the Electrical and  
Photometric Measurements of Solid-State Lighting  
Products  
TM-15-07.....Backlight, Uplight and Glare (BUG) Ratings
- I. National Electrical Manufacturers Association (NEMA):  
C78.41-06.....Electric Lamps - Guidelines for Low-Pressure  
Sodium Lamps

- C78.42-07 .....Electric Lamps - Guidelines for High-Pressure  
Sodium Lamps
- C78.43-07 .....Electric Lamps - Single-Ended Metal-Halide  
Lamps
- C78.1381-98.....Electric Lamps - 70-Watt M85 Double-Ended  
Metal-Halide Lamps
- C82.4-02 .....Ballasts for High-Intensity-Discharge and Low-  
Pressure Sodium Lamps (Multiple-Supply Type)
- C136.3-05 .....For Roadway and Area Lighting Equipment -  
Luminaire Attachments
- C136.17-05 .....Roadway and Area Lighting Equipment - Enclosed  
Side-Mounted Luminaires for Horizontal-Burning  
High-Intensity-Discharge Lamps - Mechanical  
Interchangeability of Refractors
- ICS 2-00 (R2005) .....Controllers, Contactors and Overload Relays  
Rated 600 Volts
- J. National Fire Protection Association (NFPA):
- 70-11 .....National Electrical Code (NEC)
- K. Underwriters Laboratories, Inc. (UL):
- 496-08 .....Lampholders
- 773-95.....Plug-In, Locking Type Photocontrols for Use  
with Area Lighting
- 773A-06 .....Nonindustrial Photoelectric Switches for  
Lighting Control
- 1029-94.....High-Intensity-Discharge Lamp Ballasts
- 1598-08 .....Luminaires

#### **1.6 DELIVERY, STORAGE, AND HANDLING (NOT USED)**

#### **PART 2 - PRODUCTS**

##### **2.1 GENERAL REQUIREMENTS**

Luminaires, materials and equipment shall be in accordance with NEC,  
UL, ANSI, and as shown on the drawings and specified.

##### **2.2 POLES (NOT USED)**

##### **2.3 FOUNDATIONS FOR POLES**

- A. Foundations shall be cast-in-place concrete, having 3000 psi minimum  
28-day compressive strength.

- B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and accessories, such as shields, banner arms, and banners, under wind conditions previously specified in this section.
- C. Place concrete in spirally-wrapped treated paper forms for round foundations, and construct forms for square foundations.
- D. Rub-finish and round all above-grade concrete edges to approximately 6 mm (0.25-inch) radius.
- E. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be in a welded cage or properly positioned by the tie wire to stirrups.
- F. Prior to concrete pour, install electrode per Section 26 05 26,  
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

**2.4 LUMINAIRES (NOT USED)**

**2.5 LAMPS (NOT USED)**

**2.6 HIGH INTENSITY DISCHARGE BALLASTS (NOT USED)**

**2.7 METAL HALIDE CORE AND COIL BALLASTS (NOT USED)**

**2.8 METAL HALIDE ELECTRONIC BALLASTS (NOT USED)**

**2.10 EXISTING LIGHTING SYSTEMS**

- A. For modifications or additions to existing lighting systems, the new components shall be compatible with the existing systems.
- B. New poles and luminaires shall have approximately the same configurations, dimensions, lamping and reflector type as the existing poles and luminaires, except where otherwise shown on the drawings.++

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer's recommendations.
- B. Pole Foundations:
  - 1. Excavate only as necessary to provide sufficient working clearance for installation of forms and proper use of tamper to the full depth of the excavation. Prevent surface water from flowing into the excavation. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath, and the end of conduit.

2. Set anchor bolts according to anchor-bolt pattern on existing pole foundations. Contractor shall create templates for reinstallation of the poles.
3. Install poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.
4. After the poles have been installed, shimmed, and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Provide a plastic or copper tube, of not less than 9 mm (0.375-inch) inside diameter through the grout, tight to the top of the concrete base to prevent moisture weeping from the interior of the pole.

C. Install lamps in each luminaire.

D. Adjust luminaires that require field adjustment or aiming.

### **3.2 GROUNDING**

Ground noncurrent-carrying parts of equipment, including metal poles, luminaires, mounting arms, brackets, and metallic enclosures, as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially-treated or lined connectors suitable and listed for this purpose.

### **3.3 ACCEPTANCE CHECKS AND TESTS**

Verify operation after installing luminaires and energizing circuits.

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