

September 2012, rev. 00

26 5600 – Exterior Lighting

PART 1. GENERAL

1.01 Related Documents

- A. Deviation from this standard must be approved by the Project Architect.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Div. 26 0533 Conduit
- D. Div. 26 2813 Fuses
- E. Div. 26 2816 Disconnect Switches

1.02 Summary

- A. This Section includes the following:
 - 1. This Section specifies the exterior lighting fixtures for, structures, and exterior areas.
 - 2. Specification for exterior lighting for buildings is architecture specific and shall be approved by the Project Architect.
 - 3. Provide all labor, materials, and equipment as necessary to complete all work as indicated on the drawings, and as specified herein.
 - 4. The Contractor shall furnish and install all fixtures, as shown on the drawing. Fixtures shall conform to the types and manufacturers as hereinafter specified.
 - 5. The Contractor shall furnish all lamps and necessary hangers, supports, wiring, etc., for installation of fixtures.
- B. Related Sections include the following:
 - 1. Applicable sections of Division 26 – Electrical

1.03 Definitions

- A. CRI: Color-rendering index.
- B. HID: High-intensity discharge.
- C. Luminaire: Complete lighting fixture, including ballast housing if provided.

- D. Pole: Luminaire support structure, including tower used for large area illumination.
 - E. Standard: Same definition as "Pole" above.
- 1.04 Submittals
- A. Shop Drawings: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, for the following:
 - 1. Lighting fixtures
 - 2. Poles
 - 3. Street light conductors
 - 4. Pull boxes/handholes
 - B. Field quality test reports
- 1.05 Quality Assurance
- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - B. Comply with NFPA 70, "National Electrical Code"
- 1.06 Delivery, Storage, and Handling
- A. Package aluminum poles for shipping according to ASTM B 660.
 - B. Store aluminum and steel poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
 - C. Remove factory-applied pole wrappings upon receipt. Tarp and protect until prior to installation. Handle poles with web fabric straps.

PART 2. PRODUCTS

2.01 Area Lights

- A. New area light poles manufacturer shall Holophane
 - 1. NIU Standard Description:

- a). North Yorkshire Aluminum Pole 17 inch base (NYA): North Yorkshire Pole, 12 feet, L5J Sitelink 5 inch, 17 inch Round Base for Sitelink, 3X3 Tenon, Anchor bolts, galvanized steel, Powder Coat Paint, Black.
- b). Base size may be adjusted to accommodate existing installations.
- c). Banner Arms shall be Holophane SLBA24A0.75T2D1. Quantity of 2 per pole.

2. NIU Standard Pole Part Number:

- a). Holophane Sitelink NYA 12 L5J 17 P07 ABG BK

B. Installation:

1. The post shall be provided with four, hot dipped L-type anchor bolts. A door shall be provided in the base for anchorage and wiring access. A grounding screw shall be provided inside the base opposite the door.

C. Area light luminaire Manufacturer shall be Holophane:

1. NIU Description for LED applications:

- a). Granville II LED (GVD): II LED (GVD), 80W 400mA Driver, 5000 Series CCT, Auto-Sensing Voltage (120-277), Modern Style – Swing Open Design, Black, Distribution to be determined (X), Not Trim, Painted Cast Aluminum Standard, Black.
- b). NIU Standard Part Number: GVD 80 5K AS M B 5 S B

2.02 Exterior Building Light Fixtures

A. Preferred Light Source: LED

- B. Exterior Building Light Fixtures to be evaluated for Architectural merit on an individual building basis.

2.03 Street Lights

A. 27 Foot Street Light Standards

1. Standards shall be aluminum poles, type as manufactured by the following:
 - a). USS Manufacturing 27 foot pole with 8 foot mast arm. USS part number USS8050D27ABSP-ANOD
2. Street light standard anchor bolts shall be galvanized steel, size as noted on the drawing.
3. Base size may be adjusted to accommodate existing installations.

- B. 27 Foot Street Light Luminaires
 - 1. Luminaires shall be of a size and type as manufactured by:
 - a). Lumark , LED, part number: LDRCT3B04EBK
 - 2. Distribution and wattage to be coordinated with design
- 2.04 Parking Lot Lighting
- A. Standard shall be steel poles
 - 1. Basis of design shall be poles manufactured by WJM, square non-tapered steel. Part No. SS5001128BKDM28BC.
 - 2. Base size may be adjusted to accommodate existing installations.
 - B. Luminaires shall be size and type as manufactured by Lumark.
 - 1. Type RVLED Ridgeview area lighting. Part No. LDRXXXB04XXXBK.
 - 2. Distribution (XXX as noted in part number) and accessories (XXX as noted in part number) to be specified by Project Engineer.
- 2.05 Lighting Conduit Requirements
- 1. Schedule 40, in greenspace
 - 2. Schedule 80 under roadways or parking lots
- 2.06 Lighting Conductors (To be added)
- 2.07 Lighting Handholes
- A. Handholes shall be manufactured by Quazite.
- 2.08 Lighting Fusing
- A. Install one fuse in each phase conductor at each pole, accessible from handhole at base of pole.
 - B. Fuses for street lights and area lights shall be Buchanan Breakaway, in-line fuses, type D65 with KTK-5 or approved equivalent. Fuses shall be sized for the fixtures being protected.

PART 3. EXECUTION

3.01 Lubrication

- A. Lubricate all pole mounting screws and bolts, handhole screws, and any other threaded device with an anti-seize lubricant to prevent long term corrosion and aid in future maintenance.

3.02 Street Lights

A. Parkway Street Light Bases

1. Bases for Parkway street light poles shall be constructed as shown on the drawing. Bases shall be 24" diameter and minimum 6" above grade.
 2. Bases for Parking Lot street light poles shall be constructed as shown in the drawings. Bases shall be 24" minimum diameter and 30" above grade.
 3. Bases shall be made of a 3,000 psi stone concrete mixture.
 4. Chamfer top edge of the base according to detail.
 5. After the base has cured the form shall be removed.
 6. Base size may be adjusted to accommodate existing installations
- B. Install the street light pole with one nut above and one nut below the standard base. The nut below shall be used as a leveling nut.
 - C. After the pole is plumb, grout the opening between the concrete base and pole base full from the conduit to the edge of the standard base.

3.03 Grounding

- A. Each street and walk light shall be grounded with a 5/8 inch x 8 foot copperweld ground rod driven adjacent to the base, covered by a minimum of 6 inches of earth and connected to the standard or post with a No. 6 stranded THW copper wire in accordance to detail.
- B. Install a No. 6 AWG THWN ground wire from the luminaire grounding lug to the ground rod for concrete poles in accordance to detail.

3.04 Trenching

- A. The Contractor shall use a trenching machine or back hoe in digging trench for conductors. Trench shall have a minimum width of 6 inches and a maximum width of 12 inches. Depth of trench shall be a minimum of 30 inches.
- B. Trench shall be free of stones or debris before conductors are installed.
- C. When backfilling, fill first 6 inches of trench with sand. Earth removed may only be used in this first 6 inches of fill if it is hand shoveled and kept free of stone, cinders, and other debris.
- D. Backfill with spoils shall not be permitted under roadways.

- E. All backfill placed under roadways, sidewalks, parking areas, or other surfaced areas shall be compacted to 95 maximum density. All backfill placed in lawn or field areas shall be compacted to 90 maximum density. Density tests shall conform to A.A.S.H. Test T-180 and field test T-147.
- F. Failures of any surface areas caused by settlement shall be repaired at the contractor's expense for a period of 3 years after completion of contract.

3.05 Street Light Handholes

A. Pull Box Location

1. A street light pull box shall be located at all locations where a three-way splice is made with the street light circuit cable or as otherwise shown on the drawings.
2. A street light pull box shall be located at all locations where a three-way splice is made with the street light circuit cable and a tap is made with the conductors feeding the light, or as otherwise shown on the drawings.
3. A box is not necessary where only a tap is made to serve the light, unless noted otherwise. The street light cable shall be looped in to and out of the light standard and the tap made in the handhole.

B. Hand Hole (Turf Box) Installation

1. Install street light conduits to enter the bottom of the street light pull box.
2. Install 6 inches of crushed limestone around the conduits to form a level base for the pull box to set on. Install the pull box on the limestone so that the top of the box even with grade.
3. Install crushed limestone inside the pull box to a depth of 2 inches around the conduits. Leave conduits extended a minimum of 3 inches above the limestone.

3.06 Conductor Installation

A. Care shall be taken not to cross conductors in the trench.

B. Connections Made In Street Light Standard or Area Light Pole.

1. Extend the street light conductors up into pole so that 10 inches of each conductor is accessible out through hand hole.
2. Install 3#10 AWG USE stranded copper conductors from luminaire to hand hole.

C. Connections Made In Street Light Pull Box

1. Extend the street light conductors up into pull box so that 24 inches of each conductor is accessible from the end of the conduit.

2. Install 3#10 AWG USE stranded copper conductors from luminaire to pull box.
3. Street light conductors shall be connected to luminaire conductors in hand holes utilizing a weather proof rated connector.

3.07 Conductor Splicing

- A. Street light conductors shall be installed in continuous lengths from light to light with connections in the base of lights or street light pull boxes. Where a pipe in an existing base is filled, drill an additional hole in base to insert new conductors.
- B. Buried splices shall not be permitted.

3.08 Street Light and Area Light Fuses

- A. Install Buchanan Breakaway, in-line fuses, type D65 with KTK-5 or approved equivalent in the pole handhole.

3.09 Field Quality Control

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
- C. Illumination Tests:
 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
 - a). IESNA LM-5, "Photometric Measurements of Area and Sports Lighting."
 - b). IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."
 - c). IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."
 - d). IESNA LM-64, "Photometric Measurements of Parking Areas."
 - e). IESNA LM-72, "Directional Positioning of Photometric Data."
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.



End of Division 26 5600

This section of the NIU Design and Construction Standards establishes minimum requirements only. It should not be used as a complete specification.