

SECTION 00970 - HIGHWAY ILLUMINATION

(Follow all instructions and make all edits with "Track Changes" turned on. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the Project. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)

Comply with Section 00970 of the Standard Specifications modified as follows:

00970.03 Luminaire Submittal - Replace this subsection, except for the subsection number and title, with the following:

Furnish a sample luminaire for inspection and photometric testing if required. Sample luminaires may be considered as part of the shipment furnished for installation.

(Use the following lead-in paragraph and subsection .15 when an LED luminaire is required on a traffic signal support. Suggested mounting heights are 40 feet, but illumination designer may use a combination of different mounting height and different wattage on luminaires to achieve project site specific light level requirements. Substitute other approved product as applicable.)

Add the following subsection:

00970.15 LED Luminaires on Traffic Signal Supports, at intersections or at crosswalks - Furnish one of the following approved models or an approved equal:

- CREE LED - Guideway Series,
GWY-M-A-17L-30K7 (or 40K7) 3M-UL-GY w/7 pin receptacle
- Current LED - Evolve, ERL2-0-16-C5-30 (or 40)-D-Gray
- AEL Acuity AutoConnect - ACM-P608-Mvolt-ZT-R3-3K (or 4K)-GY-P7-SH

When higher light output is desired, higher wattage luminaires up to 160 watt within the same brand/model listed above, may be furnished.

When furnishing an LED luminaire model that is not specified as approved, the luminaire shall meet the requirements of 02926.54.

(Use the following lead-in paragraph and subsection .16 when an LED luminaire is required on a freeway interchange lighting system. Suggested mounting heights are 40 feet, but illumination designer may use a combination of different mounting

height and different wattage on luminaires to achieve project site specific light level requirements. Substitute other approved product as applicable

Replace "(Voltage Information)" with the voltage information. Check with the Illumination Designer.)

Add the following subsection:

00970.16 LED Luminaires on Freeway Interchange Lighting Systems - Furnish one of the following models or an approved equal:

AEL Acuity AutoConnect - ACL-P127-(Voltage Information)-ZT-R3-3K (or 4K)-GY-P7-SH

- Current LED - Evolve, ERL2-(Voltage Information)-25-C5-30 (or 40)-D-GRAY
- CREE LED - Guideway Series,
GWY-L-A-25L-30K7 (or 40K7) 3M -(Voltage Information)-GY w/7 pin receptacle

When higher light output is desired, higher wattage luminaires up to 250 watt within the same brand/model listed above, may be furnished.

When furnishing an LED luminaire model that is not specified as approved, the luminaire shall meet the requirements of 02926.54.

00970.42 Cable and Wire - Replace the paragraph that begins "Support the conductors ..." with the following paragraph:

Support the conductors at the top of the pole using a flexible metal cable support grip to prevent insulation damage at the upsweep arm opening. When splicing cable into a new or existing circuit at a pole base (minimum wire length: 18 inches outside handhole), install a watertight, in-line fuse holder in the pole base for each current-carrying wire going up the pole. Construct the fuse holder so the wire to the ballast can be disconnected without cutting or disconnecting wiring at the ballast. Insulate terminal ends of the in-line fuse holder using either heat shrink tubing or electrical insulating rubber tape over-wrapped with electrical vinyl plastic tape as specified.

Replace the paragraph that begins "For double arm illumination ..." with the following paragraph:

For double arm illumination pole, install two sets of wires separately from the pole base to each luminaire end. Do not splice wires inside the illumination pole except at the pole base.

Replace the paragraph that begins "Wires from the ballast ..." with the following paragraph:

Furnish wires from the ballast to the lamp holders according to the manufacturer's recommendations.

00970.43 Photocontrol Electronic Relay - Replace the paragraph that begins "Use 1 1/4-inch welded ..." with the following paragraph:

Use 1 1/4-inch welded hub in top of cabinet to install photocontrol electronic relay with minimum 24-inch-long galvanized metal conduit and twistlock plug. When photocontrol relay is attached on the side of the cabinet, use LB type conduit outlet body, 1 1/4-inch galvanized metal conduit riser, and galvanized channel support for the riser. Ensure riser conduit is a minimum of 2 feet above the top of the control cabinet. Secure field installed relay and conduit extensions against vandalism and ensure they are rain tight.

00970.44(c)(2) Lamp Size and Identification Decal Code - Replace the paragraph that begins "Use the lamp size ..." with the following paragraph:

Use the lamp size and color codes according to the following:

Replace the paragraph that begins "¹ In addition, metal ..." with the following paragraph:

¹ In addition, metal halide lamp targets include a 1/2 inch wide by 3 inch long strip of pressure sensitive, flat top, wide angle reflective tape to show lamp burning position requirements. Apply tape 1/2 inch from the lamp size target as follows:

00970.45 LED Luminaires - Replace this subsection, except for the subsection number and title, with the following:

Install LED luminaires as shown or as specified. See 02926.54.

00970.46 Pole Identification - Replace the paragraph that begins "Identify luminaire poles ..." with the following paragraph:

Identify luminaire poles with a numbered label corresponding to the pole numbers on the highway illumination Plans. Provide labels that:

Replace the bullet that begins "Be made of ..." with the following bullet:

- Are made of noncorrosive, pressure-sensitive Material suitable for outdoor use and resistant to fading and abrasion.

00970.47 HDPE Conduit and Connectors - Replace the paragraph that begins "High Density Polyethylene (HDPE) conduit may be used..." with the following paragraph:

High Density Polyethylene (HDPE) conduit may be used for horizontal directional drilling (HDD) applications. Provide HDPE conduit that is gray in color. Join HDPE conduit sections by mechanical fittings that have barbed threads on both ends or by a swedge coupler with two-part conduit adhesive.

00970.60 Maintaining Existing and Temporary Illumination Systems - Replace the paragraph that begins "Protect existing illumination ..." with the following paragraph:

Protect existing illumination systems and approved temporary replacements. Shutdown of a system may be allowed for alterations or final removal, as approved. Ensure lighting system shutdowns do not interfere with the regular lighting schedule. Notify the Engineer before performing any Work on existing systems.

00970.70 Field Test - Replace the bullet that begins "A Megger test on each ..." with the following bullet:

- A Megger test on each circuit between the conductor and ground with all switchboards, panelboards, fuse holders, switches, receptacles and overcurrent devices in place. Record all readings. Provide the Engineer with one copy of the test results identifying observed readings with their respective circuits.

Replace the bullet that begins "Test the insulation ..." with the following bullet:

- Test the insulation resistance between conductor and ground. Ensure resistance is as follows on circuits with total single conduction length of:
~~(Use the following .90 when refurbishing and reinstalling existing illumination systems.)~~

00970.90 Payment - Replace the paragraph that begins "Payment will be payment ..." with the following paragraph:

Payment will be payment in full for furnishing and placing all Materials, and for providing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

~~(Use the following .90two paragraphs when refurbishing and reinstalling existing illumination systems.)~~

Replace the paragraph that begins "Item (e) includes..." with the following paragraph:

Item (e) includes all refurbishing, reinstalling, and other Work as specified or shown.