



Illinois Department of Transportation

Memorandum

To: Regional Engineers
From: Jack A. Elston 
Subject: Special Provision for Obstruction Warning Luminaires, LED
Date: April 19, 2019

This special provision was developed to create a statewide specification for light emitting diode (LED) obstruction warning luminaires.

This special provision should be inserted into contracts requiring the furnishing or installation of either waterway or aviation LED obstruction warning luminaires.

The districts should include the BDE Check Sheet marked with the applicable special provisions for the August 2, 2019 and subsequent lettings. The Project Coordination and Implementation Section will include a copy in the contract.

This special provision will be available on the transfer directory April 19, 2019.

80412m

OBSTRUCTION WARNING LUMINAIRES, LED (BDE)

Effective: August 1, 2019

Description. This work shall consist of furnishing and installing light emitting diode (LED) obstruction warning luminaires. Work shall be according to Sections 801, 822, and 1067 of the Standard Specifications, except as modified herein.

Submittals. Submittal requirements for waterway obstruction warning luminaires shall include, as a minimum, the following photometric test reports for both the red and green luminaires.

- Full test report from an independent laboratory
- Isocandela diagram
- Chromaticity diagram
- Candlepower values at every 2.5 degree interval
- Candlepower curves shall be provided in the IES format
- Calculated visibility service range in nautical miles for 11 viewing angles from -5 to 5 degrees

Warranty. Replace the last sentence of Article 801.14(a) with the following.

“The warranty, including the maintained minimum luminance, for LED signal head modules, optically programmed LED signal head modules, and LED pedestrian signal head modules shall cover a minimum of 60 months from the date of delivery. The warranty for LED roadway luminaires, LED highmast luminaires, LED underpass luminaires, LED sign lighting luminaires, LED obstruction warning luminaires, and all of their components shall cover a minimum of ten years from the date of delivery.”

Obstruction Warning Luminaires. Revise Section 822 to read:

“SECTION 822. OBSTRUCTION WARNING LUMINAIRES

822.01 Description. This work shall consist of furnishing and installing obstruction warning luminaires complete with all supports, hardware, wiring, and connections to the structure or pole, and appurtenant mounting accessories.

822.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Waterway Obstruction Warning Luminaire	1067.07(a)
(b) Aviation Obstruction Warning Luminaire	1067.07(b)
(c) Fuseholders and Fuses	1065.01
(d) Transformer, General Purpose	1068.02

CONSTRUCTION REQUIREMENTS

822.03 Installation. Mounting of the luminaire shall be as recommended by the luminaire manufacturer in such a manner that they clear all obstacles when retrieved for maintenance and relamping.

822.04 Basis of Payment. This work will be paid for at the contract unit price per each for WATERWAY OBSTRUCTION WARNING LUMINAIRE, LED or AVIATION OBSTRUCTION WARNING LUMINAIRE, LED.”

Revise Article 1067.07 to read:

“1067.07 Obstruction Warning Luminaires.

- (a) Waterway Obstruction Warning Luminaire. The Fresnel lens shall be one piece, precision molded, color impregnated tempered glass. Astragals shall be stainless steel and oriented to minimize their impact on the light beam at all viewing angles.

The luminaire shall have a bronze housing and shall meet the requirements set forth by the United States Coast Guard in Title 33, Part 118 of the Code of Federal Regulations. Nuts, bolts, thumb screws, hardware, thread rods, and mounting bases which are exterior, shall be stainless steel (300 series) or bronze. Hardware on the interior of the lamp cavity shall be stainless steel or bronze.

The luminaire shall be optically sealed, mechanically strong, and easy to maintain. The luminaire shall be designed to operate on a 120 VAC power supply. The lamp cavities shall be watertight, weatherproof, and bug proof. The housing shall be easily accessible for replacement of the LED light source through gasketed doors which are held captive by means of hinges.

The pivot type mounting assembly shall be stainless steel or bronze and shall be mounted on an external vibration isolator. The pivot assembly shall include a sealed bearing or a grease fitting shall be positioned such that an unsealed bearing can be lubricated from the bridge deck. A stainless steel extension tube shall run from the grease fitting to the bearing. A grease fitting shall also be positioned at the unsealed bearing. The manufacturer shall recommend a high-quality grease that is suitable for the environment and the grease tube and bearing components.

Stainless steel pipes shall be used to attach the pivot assembly to both the luminaire housing and counterweights. A stainless steel locknut shall be used at all threaded connections to the pipes. Pipes shall have permanently mounted reflective signs of the type and size required by the United States Coast Guard.

A stainless steel hook, ring, and connecting plate shall be attached to the bridge railing with stainless steel hardware or shall be anchored in the parapet. The connecting plate shall include a vandal-resistant rod locking mechanism. A locking rod assembly, made of aluminum or stainless steel, shall secure the luminaire in the operating position and shall

include padlock provisions. The service chain shall be stainless steel with adequate rated breaking strength.

LED life for the optic shall exceed 50,000 hours and the end of life output shall not depreciate below 70 percent of its initial rating or a level established by the U.S. Coast Guard, whichever is greater. The LED array shall be mounted on a shock and vibration isolator in the center of the lens focal point. Surge protection for the luminaire shall be integral to the luminaire housing.

- (b) Aviation Obstruction Warning Luminaire. The luminaire shall meet all FCC and FAA requirements for continuous service under all weather conditions. The cavity for the LED light source shall be weather and insect proof. All hardware shall be stainless steel (300 series). The luminaire shall have a 120 V, LED light source. Life for the LED light source shall exceed 50,000 hours and the end of life output shall not depreciate below 70 percent of its initial rating or a level established by the FAA, whichever is greater. Normally closed solid state relay configuration shall prove a "lights on" condition for fail safe operation. It shall be equipped with built-in surge and transient protection and furnished in a NEMA Type 3 enclosure.

The luminaire shall come complete with a control panel and lowering means to operate and maintain the system from the bridge deck. The lowering device shall be compatible with the bridge steel to facilitate safe and smooth retrieval of the luminaire from its operating position atop the structure. The track, lowering cables, winch, mounting hardware, controls enclosure and all exposed system components shall be stainless steel or similar corrosion resistant material."