

**992 HIGHWAY LIGHTING MATERIALS.**  
**(REV 7-14-16) (FA 8-1-16) (9-16)**

SUBARTICLE 992-1.2 is deleted and the following substituted:

**992-1.2 Luminaires, Driver, etc.:** All luminaries shall be one of the products listed in the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6.

The light source for luminaires shall be either light emitting diodes (LED), magnetic induction or plazma induction.

The luminaire shall be constructed of precision cast aluminum with a corrosive resistant polyester powder coat finish. The standard color shall be gray. The refractor and lens shall consist of glass or an optical grade polymer. The manufacturer shall place a permanent tag in the luminaire housing imprinted with: the manufacturer name, luminaire voltage, lamp wattage, and provide a blank area for the Contractor to inscribe the installation date.

Luminaires shall meet the following requirements: UL 1598 listed and labeled for installation in wet locations by an OSHA recognized "Nationally Recognized Testing Laboratory" (NRTL), be capable of maintaining 94.1% intensity at 10,000 hours with an ambient temperature of 25°C (IES LM-80) and have IESNA light distribution curves (IES LM-79) by an EPA recognized laboratory.

The driver shall be rated for 100,000 hours and have a power factor greater than or equal to 90% at full load with a total harmonic distortion less than or equal to 20% at full load. The fixture shall accommodate a circuit voltage of 480V.

Luminaries shall be provided with a minimum 10kV/10kA internal surge suppression module meeting UL 1449/ANSI C62.41.2 Category C.

The manufacturer shall submit a five year non-prorated full warranty on all components of the luminaire to the Department. The warranty shall begin on the project acceptance date and include all components of luminaire.

SUBARTICLE 992-2.4 is deleted and the following substituted:

**992-2.4 Luminaires:** The luminaires shall meet the requirements shown in the Plans and the following additional requirements.

a. A maximum correlated color temperature (CCT) of 4000°K meeting ANSI C78.377A (3985°K, plus or minus 275°K).

b. The optical portion of the housing shall be sealed to provide an IP 66 rating.

The luminaire mounting assembly shall be a slipfitter type designed to accommodate a nominal 2 inch pipe size (2-3/8 inch O.D.) arm or a pole top mounting assembly designed to accommodate a 2-3/8 inch pole top tenon.

For APL qualification, the manufacturer must have a fixture with an IESNA light distribution curve (IES LM-79) by an EPA recognized laboratory, meeting a minimum pole spacing of 215 feet using the AGi32 lighting optimization tool with the following settings:

Setting	Requirement
Roadway Standard	IES RP-8-200
R-Table	R3 (Q0=0.07)
Roadway Layout	Two Rows Opposite, With Median, 2R OPP w/M
Roadway Width	40 feet
Median Width	22 feet
Number of Lanes in Direction of Travel	3
Driver's Side of Roadway	Right
Calculation Area	Bottom
Mounting Height	As per manufacturer's recommendation
Setback	12 feet
Tilt	0°
Optimization Criteria	Avg. Illuminance = 1.5 fc Avg./Min. Ratio = 4 Max./Min. Ratio= 10 Lv Max./L Avg. Ratio= 0.3
Arm Length	Pole top fixtures – as provided by the IES file Arm mounted fixtures – 12 feet

SUBARTICLE 992-3.2 is deleted and the following substituted:

**992-3.2 Luminaires:** The luminaires shall meet the following requirements.

a. A maximum correlated color temperature (CCT) of 4000°K meeting ANSI C78.377A (3985°K, plus or minus 275°K).

b. The optical portion of the housing shall be sealed to provide an IP 66 rating.

The luminaire mounting assembly shall be a slip fitter type designed to accommodate a nominal 2 inch pipe size (2-3/8 inch O.D.) connection. For qualification, the manufacturer must have a fixture with a Type V IESNA light distribution curve (IES LM-79) by an EPA recognized laboratory, capable of providing photometrics similar to a 1000 W HPS fixture when mounted on 80 to 120 foot poles.

SUBARTICLE 992-4.1 is deleted and the following substituted:

**992-4.1 Luminaires:** The luminaires shall meet the following requirements.

a. A maximum correlated color temperature (CCT) of 5000°K meeting ANSI C78.377A (3985°K, plus or minus 275°K).

b. The optical portion of the housing shall be sealed to provide an IP 66 rating.

The luminaire mounting assembly for a sign luminaire shall be a slipfitter type designed to accommodate a 1-1/2 inch, Schedule 40 steel pipe arm connection.

SUBARTICLE 992-5.1 is deleted and the following substituted:

**992-5.1 Luminaires:** The luminaires shall meet the following requirements.

a. A maximum correlated color temperature (CCT) of 4000°K meeting ANSI C78.377A (3985°K, plus or minus 275°K).

b. The optical portion of the housing shall be sealed to provide an IP 55 rating.

Underdeck fixtures shall be wall mounted fixtures.