

**STATE OF NEW JERSEY  
DEPARTMENT OF TRANSPORTATION  
TRENTON, NEW JERSEY 08625**

**METRIC SPECIFICATIONS FOR UNDERDECK LUMINAIRES,  
HIGH PRESSURE SODIUM, WALL MOUNTED TYPE**

N.J. Specification No. EBM-UHPS-1

Effective Date: July 1, 2001

New Jersey Department of Transportation Specifications for Underdeck Luminaires, High Pressure Sodium, Wall Mounted Type.

The purpose of these specifications is to describe minimum acceptable design and operating requirements for Underdeck Luminaires, High Pressure Sodium, Wall Mounted Type.

**GENERAL - I**

- 1-1 Underdeck luminaire shall be of the high pressure sodium type with a cast aluminum housing and extruded aluminum door, fully weather-tight and designed for wall mounting and for use with the horizontally mounted lamp, as specified in the contract documents (or bid documents). Luminaire shall be equipped with a built-in ballast.
- 1-2 The luminaire shall be mounted utilizing three (3) M10 stainless steel bolts and shield.
- 1-3 The rear casting shall consist of a 3 millimeter cast aluminum with a removable cast back plate to allow mounting over a junction box. Entry shall be made by means of removable entry panels on the side of the rear casting and removable back plate with gasketed conduit adapter. A conduit adapter shall be furnished and installed with each lighting assembly. The ballast assembly shall be mounted into the rear casting and shall be the regulator type, power factor corrected and shall conform to the requirements specified hereinafter.
- 1-4 The extruded door shall be furnished with two extruded hinges and extruded vandal resistant latch. A gasket shall be provided between the door and refractor. Two stainless steel cables, capable of supporting 227 kilograms, shall be used as safety cables between the rear casting and the door.
- 1-5 The luminaire shall be provided with two (2) 5-ampere fuses, Type KTQ. Wiring to the fuses shall be provided to facilitate use of either one or both fuses, as required by the supply voltage.
- 1-6 The luminaire housing shall have an anodized black finish.
- 1-7 The luminaire shall have two anodized aluminum internal shields, one top shield and one installed on the side of the luminaire facing traffic.
- 1-8 The luminaire shall be equipped with a polycarbonate externally mounted guard.

- 1-9 Adequate provisions shall be provided to the luminaire for dissipation of heat radiated from the ballast coils and lamp socket.
- 1-10 The fixture wire shall be capable of withstanding all adverse effects of moisture, corrosive atmospheres and various temperatures associated with the operation of underdeck luminaires.

### **OPTICAL ASSEMBLY - II**

- 2-1 The reflector shall be detachable type fabricated of aluminum alloy polished and alzak processed to a light specular finish, with an overall treatment to prevent tarnishing and the edge shall be flanged for additional strength.
- 2-2 The refractor shall be pressed prismatic and shall be single-piece, mechanical and thermal shock-resisting crystal glass.
- 2-3 Luminaire shall be equipped with a porcelain enclosed, heavy duty, anti-vibration, mogul base lamp socket.
- 2-4 The contractor or company shall submit for approval complete photometric data as follows:
- A. Isolux curve for each size lamp lumen specified. The curve shall indicate the horizontal lux based on the mounting height indicated on the detail sheets of the contract plans. The curve shall indicate, as a minimum, the isolux lines in an area two mounting heights transversely on the house side, four mounting heights transversely on the street side, and seven mounting heights longitudinally on each side of the luminaire.
  - B. Coefficient of utilization curve. The curve shall indicate the coefficient of utilization in percent for a transverse distance of a minimum of four mounting heights.
  - C. Light flux values. The values of light flux shall be given in lumens and percent of lamp lumens, for the output of the luminaire upward and downward, on the street side and house side.
- 2-5 Photometric data shall be supplied for each type of luminaire submitted. The data supplied shall consist of a computerized printout of the luminaires specified. The data shall represent complete isolux charts, etc. The data is to be supplied in accordance with current I.E.S. Recommended Standard Format for Electronic Transfer of Photometric Data.

**BALLAST ASSEMBLY - III**

- 3-1 The ballast assembly shall conform to the requirements of American National Standards Institute (ANSI). The ballast assembly shall be composed of the core, copper coil, lamp starter board, non-PCB type capacitor. The ballast assembly shall be easily removable from the luminaire without removing the luminaire housing from its mounting. The ballast assembly shall be completely prewired to the lamp socket and terminal board. The non-PCB type capacitors shall be so located or positioned that they will not be in the direct stream of heat radiated from the ballast coils and the lamp socket. The ballast coils shall be protected with insulation of the highest grade, capable of withstanding all adverse effects of moisture, corrosive atmospheres and high temperature.
- 3-2 The integral ballast shall be an autoregulator type. The power factor shall be over 90 percent. At any lamp voltage, from nominal through life, lamp wattage regulation spread at that lamp voltage shall not exceed 15 percent for 10 percent line voltage variation. For nominal line voltage and nominal lamp voltage, the ballast design center will not vary more than 5 percent from rated lamp watts. The ballast shall provide positive starting in temperatures of -29 °C. The losses from the ballast shall not exceed 30 percent of the lamp wattage. The ballast shall be capable of operation with the lamp in an open or short circuit condition for six months without significant loss of ballast life. The ballast shall be multi-tap (120, 208, 240 and 277 volts), unless otherwise specified in the contract documents (or bid documents).

**INSTRUCTIONS AND GUARANTEE - IV**

- 4-1 Upon request, one wiring diagram and installation manual shall be provided with each luminaire.
- 4-2 No changes or substitutions in these requirements will be accepted unless authorized in writing. Inquiries regarding this specification shall be addressed to the Manager, Office of Traffic Signal and Safety Engineering, New Jersey Department of Transportation, 1035 Parkway Avenue, P.O. Box 613, Trenton, NJ 08625.
- 4-3 The luminaire shall carry a one year guarantee from the date of delivery against any imperfections in workmanship and material.
- 4-4 The company agrees upon the request of the Manager, Office of Traffic Signal and Safety Engineering to deliver to the Office, a sample of the luminaire to be supplied in compliance with these specifications for inspection and test before acceptance. After completion of the test, the sample shall be returned.

# PHOTOMETRIC DATA FOR 150 WATT HPS UNDERDECK

LUMINAIRE: UNDERDECK WALL MOUNT  
 IES TYPE: NON CUTOFF, TYPE IV  
 LAMP: HIGH PRESSURE SODIUM  
 LUMENS: 16 000  
 WATTS: 150 WATTS  
 MOUNTING HEIGHT: 4.5 M

