

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

**METRIC SPECIFICATIONS FOR UNDERDECK LIGHTING, HIGH PRESSURE
SODIUM, PENDANT MOUNTED TYPE**

N.J. Specification No. EBM-UHPS-2

Effective Date: July 1, 2001

New Jersey Department of Transportation Specifications for an Underdeck Luminaire, High Pressure Sodium, Pendant Mounted Type.

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

UNDERDECK LIGHTING ASSEMBLY - PENDANT MOUNTED - I

- 1-1 Underdeck lighting assembly shall be of the high pressure sodium type with a precision die-cast aluminum housing and door, fully weather-tight, designed for pendant mounting and for use with the high pressure sodium lamp, specified in the contract documents (or bid documents).
- 1-2 The luminaire shall be equipped with a built-up ballast. The ballast shall conform to the specifications for a high pressure sodium ballast as specified hereinafter.
- 1-3 The luminaires shall be equipped with either a 35 millimeter pipe thread in the top of the luminaire for pendant mounting, or a side-entry slipfitter suitable for mounting on a standard 35 millimeter and a 53 millimeter pipe bracket, inserted against a built-in pipe stop. Leveling and clamping of the luminaires to the bracket arm shall be accomplished by tightening a minimum of two (2) bolts. When equipped with side-entry slipfitter, luminaire shall be capable of a minimum adjustment of 3 degrees above and below horizontal. The mounting opening of the luminaires shall be provided with a means of covering the opening to prevent insect infiltration into the luminaire.
- 1-4 The terminal board shall be molded plastic with clamp-type pressure terminals to accommodate No. 10 AWG wire.
- 1-5 The hood-baffle shall be die-cast aluminum completely isolating the optical system from the surrounding atmosphere and shall separate the electrical components in the housing. It shall be hinged and latch operated to permit easy inspection of the electrical components in the housing. The hood-baffle shall be equipped with a breathing fiberglass filter that will effectively filter out dirt and particle size contaminants from the optical system.
- 1-6 Adequate provisions shall be provided to the luminaire for dissipation of heat radiated from the ballast coils and lamp socket.

- 1-7 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 Luminaire shall be equipped with a porcelain enclosed, heavy duty, anti-vibration, mogul base lamp socket.
- 2-2 Each luminaire shall be equipped with a one-piece annealed, pressed, oro-silicate glass refractor with prisms on both inside and outside.
- 2-3 The photometric distribution of the luminaire shall be the IES type specified in the contract documents (or bid documents) and shall conform to the attached photometric data.
- 2-4 The contractor or company shall submit for approval complete photometric data as follows:
- A. Isolux curve for each size lamp. The curve shall indicate the horizontal lux (lumens per square meter) based on the mounting heights 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 of street side, and two mounting heights of house side.
 - 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.

HIGH PRESSURE SODIUM BALLAST ASSEMBLY - III

- 3-1 The ballast assembly shall conform to the requirements of American National Standards Institutes (ANSI). The ballast assembly shall be composed of the core, copper coil, lamp starter board, non-PCB type capacitor and plug-in disconnect to lamp socket. The ballast assembly shall be easily removable from the luminaire as a unit 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 temperatures.

- 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 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 specified in 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, New Jersey 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 PENDANT

LUMINAIRE: UNDERDECK PENDANT
MOUNT
IES TYPE: MEDIUM NON CUTOFF
TYPE II
LAMP: 150 WATT HPS
LUMENS: 16 000
WATTS: 150
MOUNTING
HEIGHT: 7.5 M

ISOLUX/UTILIZATION CURVES

