

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

**SPECIFICATIONS FOR HIGH PRESSURE SODIUM LUMINAIRES  
HIGH MAST TYPE**

N.J. Specification No. EB-LHPS-4

Effective Date: July 1, 2001

New Jersey Department of Transportation Specifications for High Pressure Sodium Luminaires, High Mast Type.

The purpose of these specifications is to describe minimum acceptable requirements for High Pressure Sodium Luminaires, High Mast Type.

**GENERAL - I**

- 1-1 High pressure sodium luminaires, high mast type, shall be of an open ventilated design, equipped with an integral ballast assembly and shall operate at the wattages and voltages specified in the contract documents (or bid documents). Mounting height shall be as specified in the contract documents.
- 1-2 The luminaire shall attach to the bracket arm by means of a bracket entry and lamp support assembly. The bracket entry and lamp support assembly shall be a cast aluminum housing containing a 2-piece rocker action slip-fitter, lamp socket and support, and terminal block.
- 1-3 The gasketed side entry slipfitter shall accept a 2-inch bracket arm pipe inserted against a built-in stop, and include provisions for a plus or minus three (3) degrees adjustment for leveling the luminaire. An aluminum weather shield shall be provided to protect slipfitter and lamp socket.
- 1-4 Luminaire shall be equipped with a porcelain enclosed, heavy duty, anti-vibration, mogul base lamp socket.
- 1-5 A terminal block shall be included such that all electrical connections shall be protected from vibrations. The terminal block shall accommodate #6 AWG thru #14 AWG wire.
- 1-6 The fixture wire shall be capable of withstanding all adverse effects of moisture, corrosive atmosphere and various temperature associated with the operation of high mast type luminaires.
- 1-7 The luminaires shall be provided with two (2) 5-ampere internal fuses, type KTQ. Wiring to the fuses shall be provided to facilitate connecting either one or both fuses to the fixture, as required by the energizing voltage.

**OPTICAL ASSEMBLY - II**

- 2-1 The optical assembly shall consist of a pressed borosilicate glass reflector with sealed, spun aluminum cover, and an open-bottom, borosilicate glass refractor.
- 2-2 The optical assembly shall be attached to the bracket entry and lamp socket assembly by stainless steel bolts with lock washers to prevent loosening because of vibration.
- 2-3 The photometric distribution of the luminaire shall be the IES type specified in the contract documents (or bid documents) and shall conform with the attached photometric data for the specified distributions, with the following provisions:
- A. As a minimum requirement, the footcandle values up to three (3) mounting heights along the minor axis of four (4) mounting heights along the major axis of the isofootcandle curve shall not be less than 95 percent of the values shown at any point.
  - B. Footcandle values shall equal or exceed the values shown on the plans at all points beyond three (3) mounting heights along the minor axis and six (6) mounting heights along the major axis.
  - C. Isofootcandle and utilization curves based on a 100 foot mounting height of the proposed luminaire shall be certified by an independent testing laboratory, not by the luminaire manufacturer. The contractor shall submit the photometric tests data, as part of the shop drawing submission, and no approval will be granted until the photometric data has been reviewed and approved by the engineer.
- 2-4 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 isofootcandle 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 be enclosed in a weatherproof cast aluminum housing, readily detachable from the bracket entry and lamp socket support assembly without removing the luminaire from bracket arm.
- 3-2 Ballast assembly shall be equipped with quick disconnect electrical leads.
- 3-3 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 and plug-in disconnect. 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.

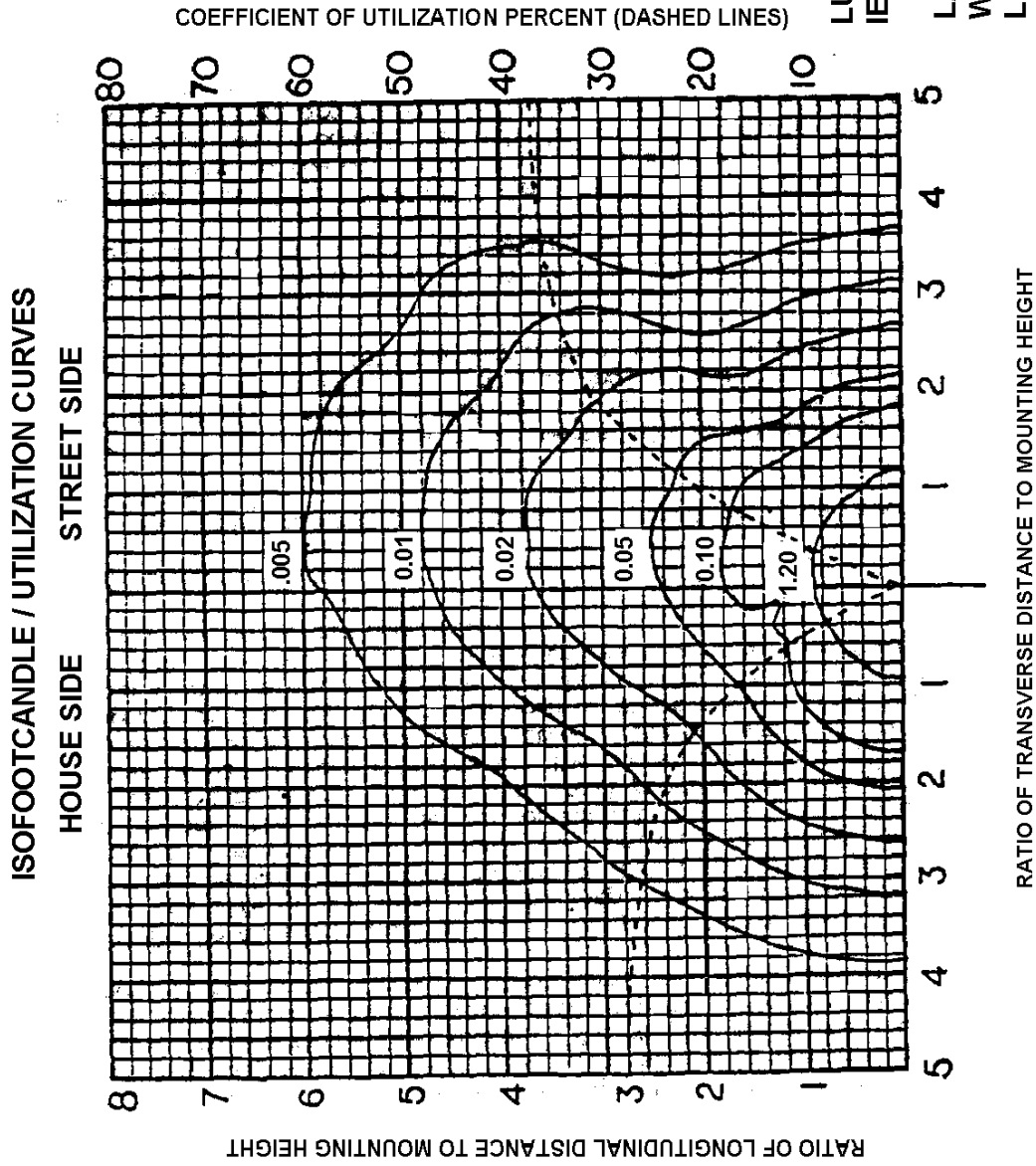
- 3-4 The ballast shall be an autoregulator type. The power factor shall be over 90 percent for the life of the lamp. At any lamp voltage, from nominal through life, lamp wattage regulation spread at that lamp voltage shall not exceed 15 percent line voltage variation. For nominal line voltage and nominal 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 -20 °F. The losses from the ballast shall not exceed 20 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.

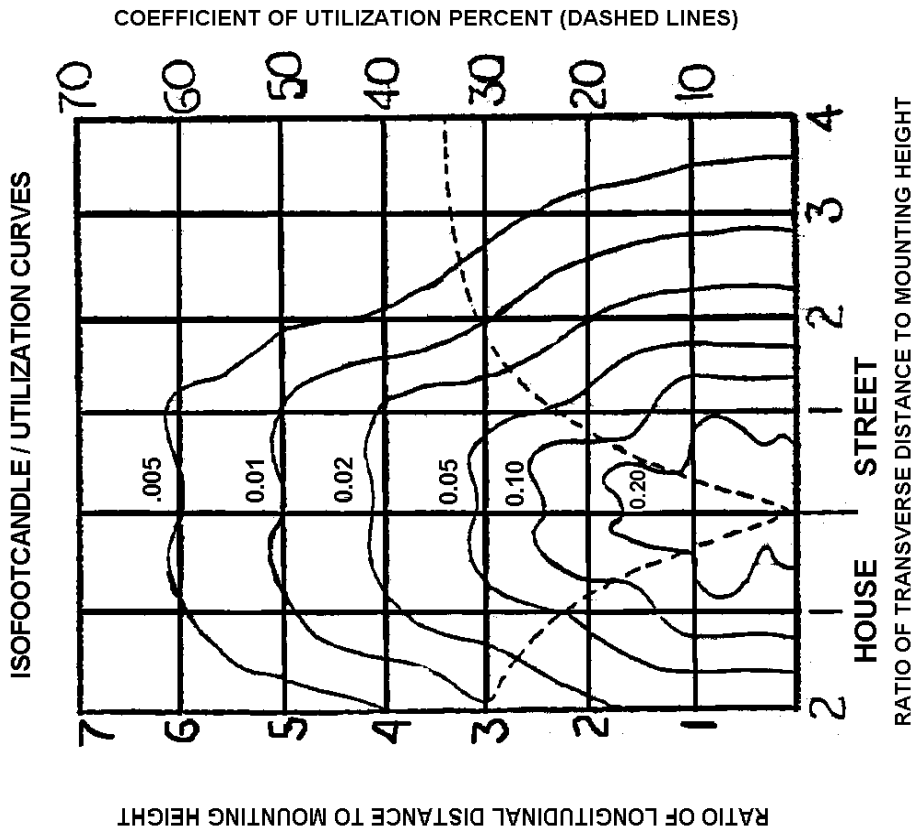
# PHOTOMETRIC DATA FOR 400W HPS HIGH MAST

LUMINAIRE: HIGH MAST LIGHTING  
IES TYPE: MEDIUM NON CUTOFF  
TYPE IV  
LAMP: HIGH PRESSURE SODIUM  
WATTS: 400  
LUMENS: 50 000  
MOUNTING  
HEIGHT: 100'



# PHOTOMETRIC DATA FOR 400 WATT HPS HIGH MAST

LUMINAIRE: HIGH MAST LIGHTING  
IES TYPE: MEDIUM, NON CUTOFF TYPE II  
LAMP: 400W HIGH PRESSURE SODIUM  
WATTS: 400  
LUMENS: 50 000  
MOUNTING HEIGHT: 100'



# PHOTOMETRIC DATA FOR 400W HPS HIGH MAST

LUMINAIRE: HIGH MAST LIGHTING  
IES TYPE: SEMI CUTOFF TYPE V  
LAMP: 400 WATT HPS  
WATTS: 400  
LUMENS: 50 000  
MOUNTING  
HEIGHT: 100'

