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

METRIC SPECIFICATIONS FOR HIGH PRESSURE SODIUM LUMINAIRES OFFSET TYPE

N.J. Specification No. EBM-LHPS-3 Effective Date: July 1, 2001

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

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

GENERAL - I

1-1 High pressure sodium luminaires, offset type are for use on standard lighting poles equipped with mounting adapter to accommodate yolk mounting. The luminaires shall operate at the wattages and voltages specified in the contract documents (or bid documents).

1-2 The luminaire housings shall be of cast aluminum and joined by stainless steel hinges. All internal components shall be easily accessible with trigger latches provided for such access. All exposed hardware shall be of non-corrosive materials and the housing finish shall be baked on enamel or polyester powder coat enamel. Heat, moisture and compression resistant gaskets shall be provided at all critical points to prevent the entry of contaminants. If necessary a polyester fiber seal shall be provided at the lower edge of the front housing to filter air entering the fixture.

1-3 The yolk shall be designed to be installed on mounting adapter. A positive locking device shall be provided for vertical adjustment such that wind load of 145 kilometers per hour with a 1.3 gust factor will not affect the vertical position of the luminare.

1-4 The terminal blocks shall have compression screw type pressure terminals to accept incoming voltage lines. Terminals shall accommodate #10 AWG wire.

1-5 The fixture wire shall be capable of withstanding all adverse effects of moisture, corrosive atmospheres and various temperatures associated with the operation of offset type luminaries.

1-6 Luminaires shall be capable of being installed at a 45 degrees tilt from the vertical with adjustability of plus or minus 15 degrees. Luminaires shall be installed at the tilt specified in the contract documents.

1-7 Adequate provisions shall be provided to the luminaire for the dissipation of heat radiated from the ballast coils and lamp socket.

OPTICAL ASSEMBLY - II

2-1 The reflector shall be a highly polished anodic surfaced aluminum.

2-2 Luminaires shall be equipped with a porcelain enclosed, heavy duty, anti-vibration, mogul base lamp socket. The lamp socket shall be permanently attached to the reflector to assure correct lamp positioning at all times. A quick disconnect shall be provided for easy removal of the reflector-socket assembly.

2-3 The refractor shall be of a clear prismatic glass design with the entire interior sidewall sandblasted or of a clear glass design. It shall be highly impact resistant and shall meet the photometrics requirements on the contract plans (or bid documents). The luminaires shall comply with the attached photometric data for the specified wattage.

2-4 The contractor or company shall submit for approval complete photometric data as follows:

A. Isolux curve for each type of luminaire specified. The curve shall indicate the horizontal lux (lumens per square meter) based on the mounting height specified in the contract documents (or bid documents). 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.

D. Lamp volts versus watt trace.

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 and plug-in disconnect. The ballast assembly shall be easily removable from the luminaire as a unit by means of a quick disconnect plug. 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 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 the 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 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).

3-3 A quick disconnect and spring latch shall be provided for easy removal of the ballast assembly without the use of tools.

INSTRUCTIONS AND GUARANTEE - IV

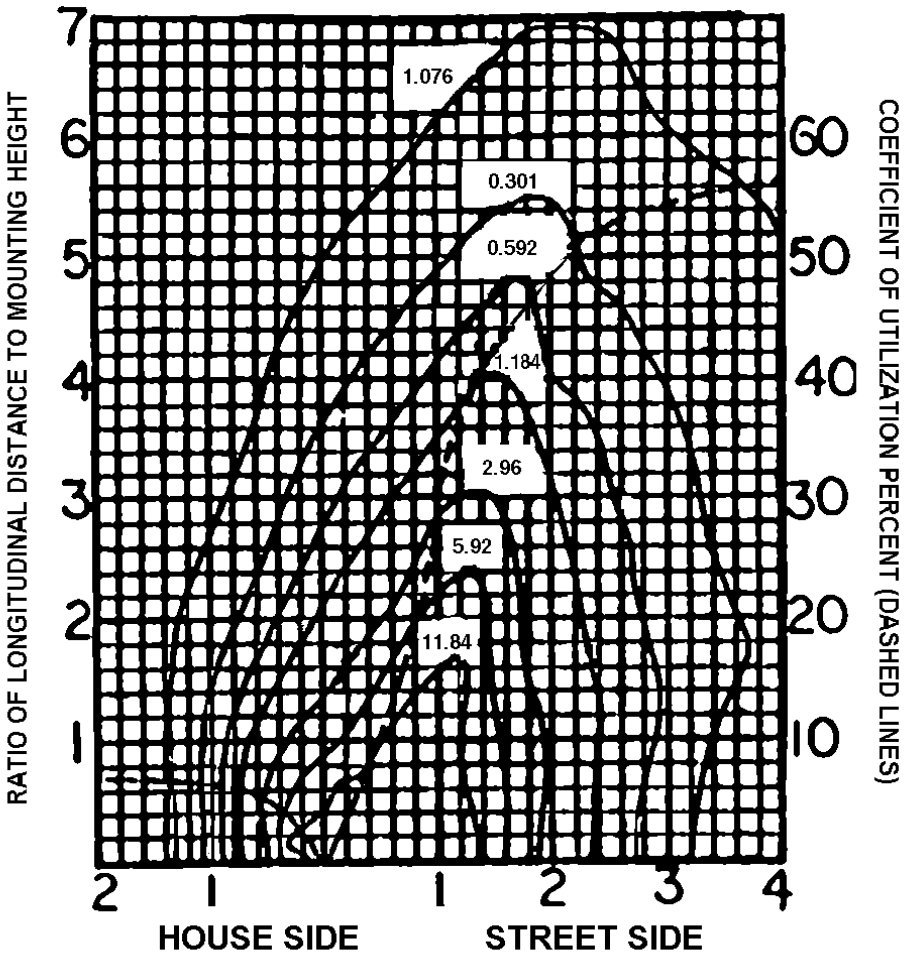
4-1 Upon request, one wiring diagram and installation manual shall be provided with each luminaire.

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, the luminare to be supplied in accordance with these specifications for inspection and test before acceptance. After completion of the test, the sample shall be returned.

ISOLUX/UTILIZATION CURVES



PHOTOMETRIC DATA FOR 250W HPS

LUMINAIRE: OFFSET LIGHTING
IES TYPE: SHORT NON CUTOFF, TYPE III
LAMP: HIGH PRESSURE SODIUM
LUMENS: 27 500
WATTS: 250
MOUNTING HEIGHT: 12 M
TILT: 45 DEGREES

FLUX DISTRIBUTION

	LUMENS	% LAMP
DOWNWARD HOUSE SIDE	2 200	8.0
DOWNWARD STREET SIDE	17 500	61.7
TOTAL DOWNWARD	19 167	69.7
TOTAL UPWARD	———	———
TOTAL FLUX	———	———

PHOTOMETRIC DATA FOR 400W HPS

LUMINAIRE: OFFSET LIGHTING
IES TYPE: SHORT NON CUTOFF, TYPE III
LAMP: HIGH PRESSURE SODIUM
LUMENS: 50 000
WATTS: 400
MOUNTING
HEIGHT: 12 M
TILT: 45 DEGREES

FLUX DISTRIBUTION

	LUMENS	% LAMP
DOWNWARD HOUSE SIDE	8 000	8.0
DOWNWARD STREET SIDE	30 850	61.7
TOTAL DOWNWARD	34 850	69.7
TOTAL UPWARD	——	——
TOTAL FLUX	——	——

ISOLUX/UTILIZATION CURVES