

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

**METRIC SPECIFICATIONS FOR OPTICALLY PROGRAMMED ADJUSTABLE
FACE PEDESTRIAN SIGNAL HEADS**

N.J. Specification No. EBM-PS-4

Effective Date: July 1, 2001

New Jersey Department of Transportation Specifications for Optically Programmed Adjustable Face Pedestrian Signal Heads.

The purpose of these specifications is to describe minimum acceptable design and operating requirements for Optically Programmed Adjustable Face Pedestrian Signal Heads.

GENERAL - I

1-1 Pedestrian signal shall conform to the following:

- A. Manual on Uniform Traffic Control Devices (MUTCD)
- B. Adjustable Face Vehicle Traffic Control Head Standard
Institute of Transportation Engineers (ITE)
- C. Standard Publication No. TS 1
National Electrical Manufacturer's Association (NEMA)

1-2 Pedestrian signals shall have capability of optically limiting the visibility zone of the indication to a specific area without hoods or louvers. The projected indication may be selectively visible or visually delimited anywhere within 15 degrees of the optical axis.

CONSTRUCTION - II

2-1 Die cast aluminum parts shall conform to ITE alloy and tensile requirements and have a chromate preparatory treatment. The exterior of the signal case, lamp housing and mounting flanges shall be finished with a high quality baked enamel prime and finish paint. The color shall be highway yellow enamel conforming to FED-STD-595B color #13538. The lens holder and interior of the case shall be optical black.

2-2 The signal case and lens holder shall be pre-drilled for backplates and visors. Hinge and latch pins shall be stainless steel. All access openings shall be sealed with weather resistant rubber gaskets.

2-3 Sheet metal parts including visors and backplates shall conform to ITE material requirements and include a chromate preparatory treatment and optical black on all surfaces.

2-4 The components of the optical system shall comprise:

- A. Lamp
 - B. Lamp Collar
 - C. Optical Limiter-Diffuser
 - D. Moveable Color Filter System
 - E. Objective Lens
- 2-5 The optical limiter diffuser shall provide an accessible imaging surface on the optical axis for objects 12 meters to 42 meters distance and permit an effective veiling mask to be variously applied as determined by the desired visibility zone. The optical limiter diffuser shall be composed of heat resistant glass.
- 2-6 The moveable color filter system shall be complementary in color to the color in the objective lens such that it can effectively cancel out one message while still clearly displaying the other message to the appropriate portion of the crosswalk. The moveable filters shall provide the sweeping action from WALK to DON'T WALK across the pedestrian walkway and then back to WALK without any controller changes.
- 2-7 The objective lens shall be a high resolution planar incremental lens hermetically sealed within a flat laminate of weather resistant acrylic or approved equal. The lens shall be symmetrical in outline. Legend lettering shall be 114 millimeters in height and conform to the MUTCD.
- 2-8 The optical system shall accommodate projection of any diverse, selected indicia to separate portions of the roadway such that only one indication will be simultaneously apparent to any viewer. The projected indication shall conform to the ITE transmittance and chromaticity standards wherever possible. For the clearance interval, the signal indications shall move across the roadway at a predetermined rate displaying the appropriate message of either WALK or DON'T WALK depending on each pedestrian's position relative to the roadway.
- 2-9 The signal head shall mount to standard 41 millimeter pipe fittings. The signal section shall be provided with an adjustable connection that permits incremental tilting from 0 to 10 degrees below the horizontal while maintaining a common vertical axis through couplers and mounting. Terminal connection shall permit external adjustment about the mounting axis in 5 degree increments. The signal shall be mounted with ordinary tools.
- 2-10 Attachments such as visors, backplates or adapters shall conform and readily fasten to existing mounting surfaces without affecting water and light integrity of the signal.
- 2-11 All screws, washers, nuts and bolts shall be stainless steel.

ELECTRICAL - III

- 3-1 The lamp shall be nominal 75 watt, 120 volt AC, three prong, sealed beam having an integral reflector with stippled cover and an average rated life of at least 6 000 hours.

The lamp shall be coupled to the diffusing element with a collar including a specular inner surface.

- 3-2 Lamp fixture shall comprise a separately accessible housing and integral lamp support, indexed ceramic socket and self-aligning, quick release lamp retainer. Electrical connection between case and lamp housing shall be accomplished with an interlock assembly which disconnects the lamp holder when opened. Each signal section shall include a covered terminal block for clip or screw attachment of lead wires. Concealed No. 18 AWG, stranded and coded wires shall be used in the internal wiring. A motor shall provide the motive power for the moveable color filter system and have an average life of two years or more under normal conditions.
- 3-3 The indication shall "sweep" the intersection at a nominal 1.2 meters per second and be changeable with common tools to allow for different roadway widths. The signal shall be installed, directed and veiled in accordance with published instructions and the engineer's visibility requirements. Each section of the signal shall be masked with prescribed materials in an acceptable and workmanlike manner.
- 3-4 Each signal section shall include integral means for regulating its intensity between limits as a function of the individual background illumination. Lamp intensity shall not be less than 97 percent of the uncontrolled intensity at 10 764 lux and shall reduce to 15 \pm 2 percent of the maximum at less than 10.7 lux. Response shall be proportional and essentially instantaneous to any detectable increase of illumination from darkness to 10 764 lux and damped for any decrease from 10 764 lux.
- 3-5 Each signal section shall have a fail-safe resettable circuit breaker type device to cut power to the lamp if a conflicting indication would occur between the WALK indication and the opposing green vehicular signal. Each signal section shall contain a hermetically sealed feedback control to prevent electrical feedback from the signal section to the signal controller.

INSTRUCTIONS AND GUARANTEE - IV

- 4-1 Upon request, one wiring diagram and installation manual shall be provided with each unit.
- 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 unit 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 unit to be supplied in compliance with these specifications for inspection and test before acceptance. After completion of the test, the sample shall be returned.

