

## BOSTON TRANSPORTATION DEPARTMENT

### SPECIFICATIONS FOR LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNALS

September 28, 2005

The purpose of this specification is to provide the minimum performance requirements for LED pedestrian symbol (FHWA-configuration) indications as per BTM specifications. This specification refers to the definitions and practices described in “**Pedestrian Traffic Control Signal Indications, Part 2**” published in the *Equipment and Materials Standards of the Institute of Transportation Engineers*. This document shall be referred to as “PTCSI”.

LED units purchased under this specification shall comply with the Massachusetts Department of Public Works specification supplemented by the following requirements. Where requirements of the addenda conflict with the standard specifications, these addendum shall govern. The manufacturer of the units shall have an LED type pedestrian signal on the Massachusetts Highway “Approved List”.

#### **Physical and Mechanical Requirements**

##### **General:**

LED pedestrian signal modules shall be designed as a sealed retrofit replacement for existing signal lamps and shall not require special tools for installation. Retrofit replacement LED pedestrian signal modules shall fit into existing or proposed pedestrian signal housings built to the PTCSI Standard and BTM Pedestrian Signal Specifications dated June 5, 1991 without modification to the housing.

Installation of a retrofit replacement LED pedestrian signal module into an existing pedestrian housing shall only require removal of the existing glass legend and egg crate visor. This LED signal module shall conform to ITE color requirements (Portland Orange for HAND symbol, and Lunar White for MAN symbol). The LED module shall be designed to use existing housing. The LED signal shall be rated for 100,000 hours of continuous operation from -40 to +74 Degrees Celsius.

The manufacturer’s name, trademark, serial number and other necessary identification shall be permanently marked on the backside of the LED signal module. A label shall be placed on the LED signal module certifying compliance to this specification.

The unit shall include a count down display for Flashing Don’t Walk timing as per MUTCD requirements.

Hand/man display shall be mounted side by side with the count down display. Symbols shall be “full” type. LED outline of symbols will not be acceptable.

### **LED Drive Circuitry**

The individual LED light sources shall be wired so that a catastrophic failure of one LED light source will not result in the loss of illumination in more than 20 percent of the LED light sources. The LED signal module shall be operationally compatible with currently used controllers and conflict monitors. The LED signal circuitry shall prevent false controller conflict monitor action due to excessively high off-state input impedance.

### **Connections**

Three color coded, 600 volt, #16AWG minimum, jacketed wires conforming to the National Electric Code, rated for 105 degrees Celsius shall be supplied to connect to the signal housing terminal block via standard fork/spade adapter to female slip terminations. The fork/spade adapter shall allow the connection of wires to a screw terminal or quick connect terminal block.

### **Burn-in Procedure**

Each new LED pedestrian signal module shall undergo the burn-in procedure in order to cause any electronic infant mortality to occur and to detect any electronic component reliability problem before the product is shipped to be installed. This procedure requires the LED module to be energized for minimum of continuous 24 hours at operating voltage at a 100% duty cycle, and in an ambient temperature of 60 Degrees Celsius (140F).

### **Submittal**

Prior to manufacture of the order, the supplier shall submit a cut sheet with proposed mechanical and electrical features for approval by the Engineer. If so requested, the supplier shall provide a sample of the proposed product for evaluation and approval by the Engineer.

## **Warranty Provision**

MANUFACTURERS SHALL PROVIDE A CERTIFICATE OF CONFORMANCE to this specification for each lot of LED signal modules shipped to the City of Boston Transportation Department. Each LED signal module shall be serialized by the manufacturer. Manufacturers shall comply with the following provisions:

1. Replacement or repair of an LED pedestrian signal module that exhibits a failure due to workmanship or material defects within the first 60 months of field operation
2. Replacement or repair of LED pedestrian signal modules that exhibit either greater than 50 percent light output degradation or that fall below the minimum intensity levels within the first 60 months of field operation.

LED Ped 9/28/05