

BOSTON TRANSPORTATION DEPARTMENT
Specification for LED Rectangular Rapid-Flash Beacon (RRFB)
For 120 VAC Power Source

April 20, 2016

General:

The RRFB system shall be compliant with the MUTCD Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons. The RRFB system shall include two RRFB units and corresponding BTM W-6 (Pedestrian W11-2) or W-1 (School S1-1) crossing warning sign with a diagonal downward arrow (W16-7P) plaque mounted on BTM standard poles/pedestal bases to be installed to either side of a crosswalk. At each pole, LED displays shall be provided for each direction of travel. **Refer to BTM drawing A42 latest revision.**

The system shall be designed to operate from a 120VAC power source and shall include an electric meter socket and a circuit breaker of appropriate rating.

The system shall be designed to operate over a temperature range from -30F to + 165F.

Wiring diagrams and manuals shall be supplied for all equipment installed as part of the System. Documentation shall involve instructions for set up and troubleshooting of all components in the system.

Training sessions shall be conducted by the supplier in the setup and troubleshooting of the system. Four (4) hours of training shall be provided during periods to be approved by the Boston Transportation Department Engineer.

The RRFB system shall include a warranty by its supplier for two (2) years from the date of installation.

The system shall utilize an audible information pushbutton device to actuate the RRFBs and a pedestrian instruction sign at a size of 5" x 7 3/4" with the legend "PUSH BUTTON TO TURN ON WARNING LIGHTS" shall be mounted adjacent to or integral with each audible information pushbutton device.

The audible information pushbutton device shall feature a pushbutton locator tone, a speech pushbutton information message and an audible message when the RRFB is flashing. The audible message, "Yellow lights are flashing" shall be programmed to repeat twice at the beginning of the flashing period.

Beacon Dimensions and Placement in Sign Assembly:

a. Each **RRFB** shall consist of two rectangular-shaped yellow indications, each with an LED-array based light source. Each **RRFB** indication shall be a minimum of approximately 5" wide by approximately 2" high.

- b. The two **RRFB** indications shall be aligned horizontally, with the longer dimension horizontal and with a minimum space between the two indications of approximately seven inches (7"), measured from inside edge of one indication to inside edge of the other indication.
- c. The outside edges of the **RRFB** indications, including any housings, shall not project beyond the outside edges of the BTD W-6 or W-1 sign.
- d. A small LED light integral to the pushbutton or RRFB directed at and visible to pedestrians shall be provided to give confirmation that the RRFB is in operation.

Beacon Flashing Requirements:

- a. When activated, the **two** yellow indications in each **RRFB** shall flash in a rapidly alternating "wig-wag" flashing sequence (left light on, then right light on).
- b. Each of the two yellow indications of an **RRFB** shall have 70 to 80 periods of flashing per minute and shall have alternating but approximately equal periods of rapid pulsing light emissions and dark operation. During each of its 70 to 80 flashing periods per minute, one of the yellow indications shall emit two rapid pulses of light and the other yellow indication shall emit three rapid pulses of light.
- c. The flash rate of each individual yellow indication, as applied over the full on-off sequence of a flashing period of the indication, shall not be between 5 and 30 flashes per second, to avoid frequencies that might cause seizures.
- d. The light intensity of the yellow indications shall meet the minimum specifications of Society of Automotive Engineers (SAE) standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005.

Beacon Operation:

- a. The **RRFB** shall be normally dark, shall initiate operation only upon pedestrian actuation, and shall cease operation at a predetermined time after the pedestrian actuation.
- b. All RRFBs associated with a given crosswalk shall, when activated, simultaneously commence operation of their alternating rapid flashing indications and shall cease operation simultaneously.
- c. The duration of the predetermined flashing period after actuation shall be based on the MUTCD procedures for timing of pedestrian clearance times for pedestrian signals unless otherwise directed by the BTD engineer. This time setting shall be adjustable by the user.