**Notice**

The Standard Special Provision (SSP) on the following page revises or modifies CDOT’sStandard Specifications for Road and Bridge Construction*.* The Construction Engineering Services Branch has reviewed, approved, and issued it. Use as written without change. Do not use modified versions of it on CDOT construction projects. Do not use the following special provision on CDOT projects in a manner other than specified in the instructions without approval by CDOT’s Standards and Specifications Unit. The instructions for use appear below.

Other agencies using the Standard Specifications for Road and Bridge Constructionto administer construction projects may use this special provision appropriately and at their own risk.

**Instructions for use on CDOT construction projects:**

Use the following standard special provision on all projects.

**Revise Section 614 to include the following:**

##  Description

This work consists of the procurement and installation of Rectangular Rapid Flashing Beacon (RRFB) units in accordance with the plans, specifications, and all Americans with Disability Act (ADA) requirements.

 **Materials**

The RRFB unit shall be selected from CDOT’s Approved Products List (APL). The following shall be included in the installation of the unit:

 *(a)* *RRFB Light-Emitting Diode (LED) Signs*

1. RRFB LED

A. Each RRFB unit shall consist of two rapid flashing rectangular-shaped yellow indications with an LED-array-based light source and a pedestrian-actuated pilot light or rectangular-shaped indication.

B. The size of each RRFB indication facing vehicular traffic shall be at least 5 inches wide by at least 2 inches high. Pedestrian-actuated pilot lights or rectangular-shaped indications shall be visible from the actuation location, confirming the RRFB is in operation.

C. The two yellow indications for each RRFB unit shall be aligned horizontally, with the longer dimension horizontal and with a minimum space between the two indications of at least 7 inches, measured from the nearest edge of one indication to the nearest edge of the other indication.

D. The outside edges of any RRFB indication, including any housing, shall not extend beyond the outside edges of the sign it supplements.

2. Beacon Flashing Requirements

A. The LEDs used in the light bar shall meet the Society of Automotive Engineers (SAE) J595 requirement for Class 1 Yellow peak luminous intensity.

B. The flash rate of each individual RRFB indication, as applied over the full flashing sequence, shall not exceed 5 flashes per second.

C. The RRFB shall provide 75 flash sequences per minute and operate using the sequences listed:

(1) The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.

(2) Both RRFB indications shall be dark for approximately 50 milliseconds.

(3) The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.

(4) Both RRFB indications shall be dark for approximately 50 milliseconds.

(5) The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.

(6) Both RRFB indications shall be dark for approximately 50 milliseconds.

(7) The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.

(8) Both RRFB indications shall be dark for approximately 50 milliseconds.

(9) Both RRFB indications shall be illuminated for approximately 50 milliseconds.

(10) Both RRFB indications shall be dark for approximately 50 milliseconds.

(11) Both RRFB indications shall be illuminated for approximately 50 milliseconds.

(12) Both RRFB indications shall be dark for approximately 250 milliseconds.

D. An automatic signal dimming device shall be used to reduce the brilliance of the RRFB indications during nighttime conditions.

E. The vendor must submit a Certification of Compliance verifying that the RRFB meets this specification.

*(b)* Controls (Mounted within Enclosure Cabinet)

1. The RRFB may be powered by hard-wired electrical service or solar-powered systems, as indicated on the plans.

2. One each Enclosure Cabinet– NEMA 3R Aluminum w/Traffic Key (pole mount).

3. One each 12V DC Power Supply (4.2 Amp @ 110 to 120V, 50 Amp @ 12V) (Not needed for solar powered sign)

4. One 12V DC Programmable Timer. The timer shall be capable of timing crossing upon actuation and retiming crossing upon new actuation in the event that the crossing cycle has not completed.

5. The Control Cabinet shall include a disconnect for the RRFB unit.

6. The flasher shall be capable of operating in a temperature range of -30°F and +122°F.

7. The battery shall be capable of operating in a temperature range of -40°F to +140°F.

 *(c)* Solar-powered rectangular Rapid Flash Beacon signs shall include:

1. Solar Panels.

2. 900 MHz, or approved equivalent technology, wireless communication control.

3. Solar Panel Mounts.

4. Slip fitter for pole.

5. Battery.

6. Regulator Solar charge controller

7. Wiring kit- for solar panel and battery.

*(d)* Accessible Pedestrian Features:

RRFB units shall comply with R206 “Pedestrian Signal Heads and Pedestrian Activated Warning Devices” of the Public Right-of-Way Accessibility Guidelines (PROWAG). The following accessible features shall be included and available at all times for RRFB systems:

1. The pedestrian push button shall incorporate a locator tone that complies with R307.8 of PROWAG.

2. The pedestrian push button or passive detection device shall activate a speech message.

3. The volume of the speech message shall be louder than ambient sound up to a maximum volume of 5 dBA louder than ambient sound. Automatic volume adjustment in response to ambient traffic sound shall be a maximum volume of 100 dBA. Where audible beaconing is provided in response to an extended push button press, the beaconing can exceed 5 dBA louder than ambient sound.

4. The speech message shall not include vibrotactile features indicating a walk interval.

5. The pedestrian push button shall have a tactile arrow with high visual contrast that is aligned parallel to the direction of travel on its associated crosswalk.

RRFB units may incorporate an extended push button press to provide additional features and shall be installed as indicated on the plans. Where an extended push button is used to provide additional features:

A. A push button press of less than one second shall actuate only the pedestrian timing and any associated accessible walk indication.

B. A push button press of one second or more shall actuate the pedestrian timing, any associated accessible walk indication, and any additional features.

C. If additional crossing time is provided by means of an extended push button press, a sign so indicating shall be mounted adjacent to or integral with the pedestrian push button.

 **Construction Requirements**

The Contractor is required to submit shop drawings of the RRFB unit to the Engineer for review and approval two weeks prior to purchasing equipment.

All wiring, electrical connections, and controls shall conform to manufacturer recommendations. The Control Cabinet shall be wired to the RRFB through a one-inch electrical conduit capable of a 120V power connection, unless otherwise shown on the plans or directed by the Engineer.

 **Method of Measurement**

The RRFB unit shall include the LED signs, enclosure cabinet, all associated controls, pedestrian and vehicular indications, poles, signs, pushbutton, foundation, solar power system, and all other components necessary for a fully functional RRFB unit, will not be paid for separately, but shall be included in the cost of the work.

  **Basis of Payment**

Payment will be made under:

|  **Pay Item** | **Pay Unit** |
| --- | --- |
| Rectangular Rapid Flashing Beacon  | Each |