October 13, 2020

SPECIAL PROVISION

AMENDMENT TO SECTION 616 – TRAFFIC SIGNALS

Item 616.261*XX* – Rectangular Rapid Flashing Beacon (RRFB)

This special provision provides for the construction of a new Rectangular Rapid Flashing Beacon (RRFB) System along NH Route 1A at the crosswalk located at the intersection of Wallis Road in the Town of Rye, NH.

Add to Description:

1.3 All provisions of Section 616, except as modified or changed below, shall apply.

1. The RRFB System must be inspected and approved by the Bureau of Traffic prior to placing in operation. The Contractor shall contact Peter Crouch at the Bureau of Traffic at (603) 271-2291 one week prior to installation. If the Contractor does not speak directly with Peter Crouch they must leave a detailed message with the Administrative Assistant and expect a call back. Leaving a message does not constitute an approval.
2. The RRFB installations, equipment and operation shall comply with all provisions of FHWA's Interim Approval 21 – Rectangular Rapid - Flashing Beacons at Crosswalks dated March 20, 2018 unless otherwise noted.

Add to 2.1:

2.1.3 List of Major Materials for RRFB:

2.1.3.1 Housing, Post and Signs.

1. RRFB housings shall be made from powder coated aluminum (black).
2. The outside edges of the RRFB indications, including any housing, shall not project beyond the outside edges of the W11-2 sign.
3. The RRFB shall be located between the bottom of the crossing warning sign (W11-2) and the top of the supplemental downward diagonal arrow plaque (W16-7pl).
4. Each individual RRFB assembly shall be mounted on a tapered tubular aluminum pole with a rectangular aluminum breakaway T-base. The poles and foundations shall conform to Section 616 of the Standard Specifications.
5. All signs shall conform to MUTCD and NHDOT requirements.
6. R1-6 Sign may be installed in roadway on the roadway centerline.

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2.1.3.2 LED.

1. There shall be (8) 7" x 3" amber LED arrays.
2. The 2 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.
3. 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.

2.1.3.2 Beacon Flashing Requirements.

1. When actuated, the two yellow indications in each RRFB unit shall flash in a rapidly flashing sequence.
2. As a specific exception to the requirements for the flash rate of beacons provided in Paragraph 3 of Section 4L.01, RRFBs shall use a much faster flash rate and shall provide 75 flashing sequences per minute. During each 800-millisecond flashing sequence, the left and right RRFB indications shall operate using the following sequence:
    a. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds, then both RRFB indications shall be dark for approximately 50 milliseconds.
    b. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds, then both RRFB indications shall be dark for approximately 50 milliseconds.
    c. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds then both RRFB indications shall be dark for approximately 50 milliseconds.
    d. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds, then both RRFB indications shall be dark for approximately 50 milliseconds.
    e. Both RRFB indications shall be illuminated for approximately 50 milliseconds then both RRFB indications shall be dark for approximately 50 milliseconds.
    f. Both RRFB indications shall be illuminated for approximately 50 milliseconds then both RRFB indications shall be dark for approximately 250 milliseconds.
        1. The flash rate of each individual RRFB indication, as applied over the full flashing sequence, shall not be between 5 and 30 flashes per second to avoid frequencies that might cause seizures.
        2. The light intensity of the yellow indications during daytime conditions shall meet the minimum specifications for Class 1 yellow peak luminous

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intensity in the Society of Automotive Engineers (SAE) Standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005.

3. To minimize excessive glare during nighttime conditions, an automatic signal dimming device should be used to reduce the brilliance of the RRFB indications during nighttime conditions.

2.1.3.4 Beacon Operation.

1. 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.
2. All RRFB units associated with a given crosswalk (including those with an advance crossing sign, if used) shall, when actuated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.
3. The predetermined flash period shall be immediately initiated each and every time that a pedestrian is detected as a result of pressing a pushbutton detector, including when pedestrians are detected while the RRFBs are already flashing and when pedestrians are detected immediately after the RRFBs have ceased flashing.
4. A small pilot light may be installed integral to the RRFB or pedestrian pushbutton detector to give confirmation that the RRFB is in operation.

2.1.3.5 Pushbutton & Walk Duration.

1. Pedestrian pushbuttons shall be used to actuate the RRFB, Polara Bulldog III RBDL3-Y-2H or approved equal.
2. The pedestrian push buttons shall conform to the applicable provisions of the ADA.
3. The push button shall be mounted in a 9" x 12" Aluminum Blank Face Station housing. A R10-25 instruction sign with the legend "PUSH BUTTON TO TURN ON WARNING LIGHTS" shall be mounted above the pedestrian push buttons.
4. The duration of a predetermined period of operation of the RRFB's following each actuation shall be based on the MUTCD procedures for timing of pedestrian clearance times for pedestrian signals (3.5 ft. /sec Maximum) plus an additional 4 seconds.

2.1.3.6 Accessible Pedestrians Features.

If a speech pushbutton information message is used in conjunction with an RRFB:

1. A locator tone shall be provided.
2. The audible information device shall not use vibrotactile indications or percussive indications.
3. The message should say, "Yellow lights are flashing." The message should be spoken twice.

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2.1.3.7 Solar Power and Radio Communications.

1. The solar power system (1 required per assembly, 2 total) shall be housed in a NEMA 4 rated fiberglass cabinet with lockable straps.
2. The solar panel shall be approximately 25 ¼" H x 25 ¾" W x 1 ½" D and have a articulating mount that pivots.
3. The solar power system control circuitry shall be in a NEMA IP-67 rated enclosure dustproof and waterproof in up to 3' for 30 minutes.
4. The solar panel shall produce at least 55 watts, conform to IP-67, and be adjustable to an angle of between 40 degrees and 60 degrees from the ground.
5. The solar battery shall be a 12 V, 40 AH sealed gel unit that does not require periodic watering. The battery shall be capable of operation without sun for 30 days and have a life span of 2 years.
6. Solar & Battery installation shall be installed by manufacturer recommendations for optimum performance.
7. Radio communication shall be used to connect the RRFB on either side of the street.
8. The radio shall operate at 900 MHz, and shall utilize frequency hopping spread spectrum network with an operating range of 3.6 vdc to 15 vdc.

Add to Method of Measurement:

4.2 The RRFB System shall be measured as a unit and include all appurtenances described above for two pedestrian crossing signs.

Add to Basis of Payment:

5.4 The accepted quantity of the RRFB System will be paid for at the Contract lump sum price complete in place.

Add to Pay Items and Units:

616.261*XX*	Rectangular Rapid Flashing Beacon (RRFB) System.	Unit

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