SPECIAL PROVISION

SECTION 643

TRAFFIC SIGNALS

(Rectangular Rapid Flashing Beacon)

This section is amended by addition of the following:

Description The Contractor shall furnish and install rectangular rapid flashing beacons, including signage assemblies at pedestrian crossings at locations shown on the plans. Their installation shall be as described in this special provision.

Materials Each rectangular rapid flashing beacon (RRFB) assembly 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 inches wide by approximately 2 inches high.

Each RRFB signage assembly shall be mounted on a 8 foot long 4 inch diameter schedule 40 aluminum pole with square aluminum base. The base shall meet or exceed all AASHTO breakaway requirements.

Signs for RRFB signage assemblies shall be sheet aluminum and meet requirements of Section 645 for Type II regulatory, warning and route marker assembly signage. The signage assemblies shall include W11-2 pedestrian crossing signs, W16-7p diagonal arrow plaques, and R10-25 pedestrian pushbutton signs.

Pedestrian pushbutton assemblies for activating RRFB indications shall be installed on each RRFB support pole for each crossing approach (if more than one direction). They shall be mounted at 42 inches above sidewalk grade and within 10 inches of the edge of sidewalk. Pushbuttons shall meet Americans with Disabilities Act vibrotactile technical requirements for accessible pedestrian signals (APS). The pushbutton assembly shall include a raised directional arrow indicating the direction of crossing. Audible locator and percussive crossing tones and a speech message are required. Speech message shall be “Main Street. Yellow lights are flashing for Main Street”. Speech message shall be repeated at least twice for each pushbutton activation.

Construction and Operation The two RRFB indications in an assembly shall be aligned horizontally, with the longer dimension horizontal and with a minimum space between the two indications of approximately 7 inches, measured from inside edge of one indication to inside edge of the other indication.

The outside edges of the RRFB indications, including any housing, shall not project beyond the outside edges of the W11-2 sign in the beacon signage assembly.

As a specific exception to 2009 MUTCD Section 4L.01 guidance, the RRFB indications shall be located between the bottom of the W11-2 crossing warning sign and the top of the supplemental W16-7p downward diagonal arrow plaque, rather than 12 inches above or below the sign assembly.

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). 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.

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 March 2014.

The RRFBs, normally dark, shall initiate operation only upon pedestrian pushbutton actuation, and shall cease operation at a predetermined time after the pedestrian actuation. The duration of operation of the RRFBs following each actuation shall be as noted on the plans. All RRFBs associated with a given crosswalk shall, when activated, simultaneously commence operation of their alternating rapid flashing indications and shall cease operation simultaneously. Communication between the devices shall be spread spectrum wireless.

MUTCD R10-25 pedestrian instruction signage with the legend “PUSH BUTTON TO TURN ON WARNING LIGHTS” shall be mounted adjacent to or integral with each pedestrian pushbutton.

Method of Measurement

All rectangular rapid flashing beacon and sign assemblies associated with a single crosswalk shall constitute a single installation. When a third, intermediate, beacon and sign assembly is provided on a splitter or refuge island between traffic lanes but operates concurrently with other flashing beacons at each end of the same crosswalk without independent activation, the assembly shall be considered part of the total installation for that crosswalk and no additional payment will be made. Rectangular Rapid Flashing Beacon will be measured for payment by each installation complete in place.

Basis of Payment

Rectangular Rapid Flashing Beacon will be paid for at the contract unit price for each complete crosswalk installation, which payment will be full compensation for furnishing and installing all materials including, but not limited to, the RRFB LED arrays, flasher, timer, lockable controller cabinet, poles, foundations, APS pedestrian push button assemblies, crosswalk signage, solar panel, solar engine assembly, radio communication devices and all appurtenances and incidentals required for a complete and functioning installation. Wiring and necessary incidental electrical work and materials will be included in the payment for Item 643.62.

Payment will be made under:

Pay Item Pay Unit

643.62 Rectangular Rapid Flashing Beacon Each