



# Wisconsin Department of Transportation

April 28, 2016

## Division of Transportation Systems Development

Bureau of Project Development  
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### NOTICE TO ALL CONTRACTORS:

**Proposal #14: 1320-19-60**  
**Durand Avenue Village Of Sturtevant**  
**And Mount Pleasant**  
**92<sup>ND</sup> Street to 1500' West of STH 31**  
**STH 11**  
**Racine County**

### Letting of May 10, 2016

This is Addendum No. 02, which provides for the following:

#### Special Provisions

Revised Special Provisions	
Article No.	Description
37	Rectangular Rapid Flashing Beacon (RRFB) System Station 262+20 Right, Item SPV.0105.01; Station 262+20 Left, Item SPV.0105.02; Station 263+25 Right, Item SPV.0105.03; Station 263+25 Left, Item SPV.0105.04; Station 301+80 Right EB, Item SPV.0105.05; Station 301+80 Right WB, Item SPV.0105.06; Station 302+30 Left EB, Item SPV.0105.07; Station 302+30 Left WB, Item SPV.0105.08.

The responsibility for notifying potential subcontractors and suppliers of these changes remains with the prime contractor.

Sincerely,

*Mike Coleman*

Proposal Development Specialist  
Proposal Management Section

**ADDENDUM NO. 02**

**1320-19-60**

**April 28, 2016**

**Special Provisions**

37. **Rectangular Rapid Flashing Beacon (RRFB) System Station 262+20 Right, Item SPV.0105.01; Station 262+20 Left, Item SPV.0105.02; Station 263+25 Right, Item SPV.0105.03; Station 263+25 Left, Item SPV.0105.04; Station 301+80 Right EB, Item SPV.0105.05; Station 301+80 Right WB, Item SPV.0105.06; Station 302+30 Left EB, Item SPV.0105.07; Station 302+30 Left WB, Item SPV.0105.08.**

**A Description**

This work shall consist of furnishing and installing to the department a solar powered rectangular rapid flashing beacon (RRFB) system consisting of multiple assemblies as described herein and as shown in the plans. Each assembly shall be solar powered and pedestrian activated. The assemblies shall be wirelessly controlled and multiple units shall be synchronized.

**B Materials**

Furnish a RRFB system with multiple assemblies. Each assembly may consist of, but not limited to, light indications, and electrical components (wiring, solid-state circuit boards, etc). An assembly may include the following items:

- (1) Light Indications
  - 1. Each indication shall be a minimum size of approximately 7" wide x 3" high with 8 high power LEDs
  - 2. Two indications shall be installed on an assembly facing in the direction of approaching vehicular traffic. The two indications shall be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7" measured from inside edge of one indication to inside edge of second indication.
  - 3. A 6 LED indication or a single hi intensity LED shall be installed on an assembly facing in the direction of approaching pedestrian traffic to serve as a confirmation for the pedestrian that the system has been activated.
  - 4. The outside edges of the two indications, including any housing, shall not protrude beyond the outside edges of the integral signage of the assembly.
  - 5. The light intensity of the indications shall be certified to meet the minimum specifications of the Society of Automotive Engineers (SAE) standard J595 Class 1(Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005 and be available upon request
  - 6. Each indication shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.
  - 7. All exposed hardware shall be anti-vandal.
  - 8. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.
- (2) Sign
  - 1. All signs shall be supplied and installed under a separate bid item. However, the assemblies must be constructed to allow the appropriate space for the installation of the signs in the field.
- (3) Control Circuit

1. The control circuit shall have the capability of independently flashing up to two independent outputs. The LED light outputs and flash pattern shall be FHWA approved and engineer programmed.
2. The controller shall be one of the following:
  - Web enabled to allow for remote programming and system diagnostics. Including flash time, flash pattern and report system information, such as battery voltage, and temperature.
  - On-board user interface that provides system diagnostics and allows system setting changes
  - Approved equal
3. The flashing output shall have 70 to 80 periods of flashing per minute with a 100 – millisecond duration on time. The output shall reach the output current as programmed for the duration of the pulse.
4. Each of the two yellow indications shall have 70 to 80 periods of flashing per minute and shall have alternating, but approximately equal, periods of flashing light emissions and dark operation. During each of its 70 to 80 flashing periods per minute, the yellow indications on the left side of the RRFB shall emit two slow pulses of light after which the yellow indications on the right side of the RRFB shall emit four rapid pulses of light followed by a long pulse. A WW +S flash pattern is considered an equal.
5. Flash rates with the frequencies of 5 to 30 flashes/second shall not be used to avoid inducing seizures.
6. The control circuit shall be installed in an IP67 NEMA rated enclosure.
7. All circuit connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series, Carmanah RRFB, or approved equal
8. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

(4) **Battery**

1. The Battery shall be a 12VDC Absorbed Glass Mat (AGM) sealed lead-acid, maintenance-free battery.
2. The Battery shall be rated at 45AH minimum and shall conform to Battery Council International (BCI) specifications, or battery system that is 14Ah and is suitable for usage model and system autonomy requirements, or approved equal.  
All batteries shall be sealed in a plastic film to provide moisture and corrosion resistance.
3. The Battery shall have a minimum operating temperature range of -76° to 140°F (-60° to 60°C).
4. All battery connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series or approved equal
5. The Battery shall be solar-charged with a capacity up to 30 days of autonomy without sunlight, varying with ambient temperature and number of activations. Solar calculations shall be provided

(5) **Wireless Radio**

1. Radio control shall operate on 900 MHz frequency hopping spread spectrum network, or 2.4 GHz FCC ISM brand mesh network radio, or approved equal.
2. Radio shall integrate with communication of RRFB system control circuit to activate light indications from pushbutton input.

3. The Radio shall synchronize all of the remote light indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle.
4. Radio systems shall operate from 3.6 vdc to 15vdc.
5. The Radio unit shall have an LCD display to program flash time and communicate system information, such as battery voltage, battery temperature and solar charge level an onboard diagnostics.6. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

(6) Pushbutton

1. The pushbutton shall be capable of continuous operation over a temperature range of -30 degrees F to 165 degrees F (-34 degrees C to 74 degrees C).
2. Pushbutton shall be ADA compliant.

(7) Solar Panel

1. The Solar Panel shall provide a minimum of 10 watts and maximum of 55 watts at peak total output, or approved equal.
2. The Solar Panel shall be affixed to an aluminum plate and bracket, a minimum angle of 45° to allow for maximum solar collection and optimal battery strength, or approved equal.
3. The Solar Panel Assembly (panel, plate and bracket) shall be mounted on a pole cap mount, or aluminum mouting bracket to allow for maximum solar collection and optimal bather strength, or approved equal.
4. The Solar Panel shall have a minimum operating temperature range of -40° to 185°F (-40° to 85°C).

(8) Pedestal Shaft

1. Shall meet the requirements as set forth in standard spec 657.2.4 for highway and structure construction.
2. Shall be a standard 4.5" OD aluminum pedestal pole. Supplied with one end threaded for easy installation into a pedestal base.
3. Shall be a 13' Schedule 80 pipe raw aluminum.
4. Incidental to RRFB.

(9) Pedestal Base

1. Shall meet the requirements as set forth in standard spec 657.2.5 for highway and structure construction.
2. The pedestal base shall be a cast aluminum pedestals mount on a concrete base attached by four internal anchor bolts imbedded in the base.
3. The Base shall have a large 8.5" square hand hole cover allowing access to the interior of the base.
4. Incidental to RRFB.

(10) Concrete Base

1. Shall meet the requirements as set forth in standard spec 654.2.1 for highway and structure construction, as applicable.
2. The concrete base shall be a Type 1 base (WisDOT bid item 654.0101) or approved equivalent.
3. Incidental to RRFB

(11) Anchor Bolts

1. The anchor bolts shall be galvanized steel 1" x 42".
2. Set of 4 includes lock washer and nut.
3. Incidental to RRFB.

- (12) Remote Wireless Pedestal Bollard and Push Button – Solar Powered
1. 3.5 foot aluminum threaded pole and pedestal base per SDD 9E 7-5 for pedestrian push button typical mounting for remote button to activate the RRFB.
  2. Aluminum breakaway pedestal base.
  3. Aluminum cabinet with lock and key with external antenna.
  4. Radio control shall operate on 900 mhz frequency hopping spread spectrum network.
  5. Radio shall integrate with communication of LED sign control circuit to activate sign from pushbutton input.
  6. All radio systems shall operate on 3.6 vdc or 15 vdc.
  7. The push button shall be capable of continuous operation over a temperature range of -30 F to 165 degrees F (-34 degrees C to 74 degrees C).
  8. Push button shall be ADA compliant.
  9. Locate next to crosswalk at curb ramp as directed by construction engineer in the field.
  10. Provide necessary concrete base per SDD 9C 2-6.
  11. Incidental to RRFB's.

### **C Construction**

The RRFB system will consist of multiple assemblies to be constructed by the contractor as shown on the plans.

### **D Measurement**

The department will measure furnishing to the department a rectangular rapid flashing beacon (RRFB) system as a lump sum, as shown on the plans, acceptable furnished and delivered.

**E Warranty:** System shall be supported by a one year manufacturer's warranty.

### **F Payment**

The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.01	Rectangular Rapid Flashing Beacon (RRFB) System Station 262+20 Right	LS
SPV.0105.02	Rectangular Rapid Flashing Beacon (RRFB) System Station 262+20 Left	LS
SPV.0105.03	Rectangular Rapid Flashing Beacon (RRFB) System Station 263+25 Right	LS
SPV.0105.04	Rectangular Rapid Flashing Beacon (RRFB) System Station 263+25 Left	LS
SPV.0105.05	Rectangular Rapid Flashing Beacon (RRFB) System Station 301+80 Right EB	LS
SPV.0105.06	Rectangular Rapid Flashing Beacon (RRFB) System Station 301+80 Right WB	LS
SPV.0105.07	Rectangular Rapid Flashing Beacon (RRFB) System Station 302+30 Left EB	LS
SPV.0105.08	Rectangular Rapid Flashing Beacon (RRFB) System Station 302+30 Left WB	LS

Payment is full compensation for providing and installing a fully operational RRFB system consisting of multiple assemblies.

NOTE: The RRFB's at Station 301 +80 and Station 302 +30 are back to back and on one pole with 2 RRFB's mounted on either side with one push button pedestrian remote pole facing the trail crossing.

NOTE: The RRFB's at 86<sup>th</sup> Street have 4 remote push button pedestrian poles next to the sidewalk in each quadrant of the intersection. Contact engineer to determine exact locations.

NOTE: The RRFB's at the Trail Crossing near Station 312 have 2 remote push button pedestrian poles next to the trail on each side of the road. Contact engineer to determine exact locations.

END OF ADDENDUM