**SP- 152066**
**(New)**

**SPECIAL PROVISIONS**
**FOR**
**EMERGENCY VEHICLE WARNING BEACON SYSTEM**

**Black Hawk County**
**STP-U-1185(657)--SG-07**

**Effective Date**
**November 15, 2022**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

## 152066.01 DESCRIPTION

**A.** This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental for the installation of the manually activated emergency vehicle warning beacon system as indicated in the contract documents.

**B.** This work shall consist of furnishing and installing the four solar-powered flashing beacon assemblies complete with 12 inch amber heads, solar panel, battery pack with charger, LED driver, and wireless communications equipment, attached to a breakaway post or other approved mounting system as shown in the plans and as specified by the Engineer.

## 152066.02 MATERIALS

### A. General System Requirements

**1.** All materials furnished, assembled, fabricated, or installed shall be corrosion resistant. All mounting hardware shall be Type 304 stainless steel.

**2.** All components shall be manufactured and assembled as a complete system rated for 24 hour/7 day a week/365 days a year operation.

**3.** The entire system shall have a minimum 3 year warranty.

### B. Flashing Beacon Heads

**1.** The Contractor shall furnish and install two amber flashing signal heads mounted to each pole as indicated on the plans.

**2.** Each flashing beacon unit shall satisfy the MUTCD, including the unit size, mounting location, flash rate, and operational parameters.

### C. Solar-assisted Battery-powered System

1. The solar-powered system shall be an easy to install, fully self-contained, weather, corrosion, and vandal-resistant unit with a premium grade UV-resistant head. The system shall be power autonomous without the need for an external power supply. The system shall have an operating temperature range of -35°F to 140°F.

2. The batteries shall be sealed, maintenance free, field-replaceable and rated best-in-class. The battery pack shall have a minimum rated lifespan of 3 years.

3. The solar engine shall be the high-efficiency type and rated for 40 watts. The system shall have the capacity to operate the beacons for 300 cycles per day with 25 second activation for 30 days without solar charging and have automatic light control to provide useful light during extreme conditions that prevent charging over an extended period of time.

### D. Wireless Communication System

1. At each location specified in the plans, all installed solar powered flashing beacon assemblies must communicate wirelessly using an unlicensed radio band so as to simultaneously commence operation of their alternating flashing indications and cease operation simultaneously. The communication equipment shall comply with FCC requirements and the vendor representative shall field test the equipment prior to placing the units in operation to demonstrate the beacon's ability to achieve proper operation. The wireless communications of one beacon installation shall not interfere with, or cause unintended operation of, beacons at nearby intersections.

2. The system shall have push-button activation. The battery powered, handheld transmitter shall be compatible with the beacon and allow for remote operation.

### E. Pole and Concrete Footing

The flashing beacon assembly shall be installed and mounted as indicated in the plans, using a concrete footing meeting the requirements of the Standard Specifications and the plans. The footing shall include a 2 inch PVC conduit that stubs-out from the side of the footing as detailed per the plans. A traffic signal post meeting the requirements of the Standard Specifications, of the diameter and length recommended by the beacon manufacturer, up to a maximum length of 18 feet, shall be used to support the flashing beacon assembly hardware. All posts shall meet the standard specifications for traffic signal pedestal poles.

### F. Signage

All signs shall meet MUTCD requirements. Signs to be installed as part of the flashing beacon assembly and required mounting hardware shall be considered incidental to this item.

## 152066.03 CONSTRUCTION

### A. Construction Requirements

1. The solar powered flashing beacon assembly and system shall be installed in strict accordance with the manufacturer's recommendations, applicable portions of the Standard Specifications, as shown on the plans, and as directed by the Engineer.

2. Mounting of the hardware to the foundation shall be in accordance with the Standard Specifications and shall follow all manufacturer recommendations. The traffic signal post and pedestal base shall be installed on the foundation in accordance with the manufacturer recommendations.

**3.** The beacons and solar engine shall be attached to the structure using rigid galvanized steel conduit, stainless steel straps, manufacturer recommended mounting brackets, and U-bolts.

**4.** The beacons shall be installed as shown on the plans. The final elevation and location of the beacons must be approved by the Engineer prior to beginning work.

**5.** The solar panel shall be installed at the highest point on the assembly structure, or as directed by the Engineer, and away from the travelled way. The solar engine shall be installed at a 45 degree angle facing the equator (due south) with full unobstructed solar exposure for optimum performance of the system, or as recommended by the manufacturer and directed by the Engineer.

**B. Inspection**

The Contractor shall inspect all the electrical equipment and shall notify the Engineer in writing before the equipment is installed if the equipment appears to be deficient in fit, form or function.

**C. Coordination**

It shall be the sole responsibility of the Contractor to coordinate among suppliers and contractors providing equipment for the project.

## 152066.04 METHOD OF MEASUREMENT

Lump Sum item, no measurement will be made.

## 152066.05 BASIS OF PAYMENT

**A.** This item will be paid at the contract lump sum price for Emergency Vehicle Warning Beacon System. All labor, materials, and equipment necessary for installation of a functioning emergency Vehicle flashing beacon system will not be paid for separately but shall be considered incidental to this item.

**B.** Each unit includes, but is not limited to the following:

- Programming Software Kit
- Wireless Communication System
- LED signal head
- Solar Panels
- Battery-powered, hand-held transmitter is for use with any the beacons, and allows for remote operation.
- 18 foot Pedestal Pole Kit with anchor bolts for Concrete Installation
- Concrete Footings (2 foot diameter by 4 feet deep)
- 36 inch Emergency Vehicle Signs (MUTCD W11-8, fluorescent yellow-green)
- 24 inch by 18 inch When Flashing Signs (MUTCD W16-13, fluorescent yellow-green)
- Sign Mounting Brackets
- Wiring, conduit, and other miscellaneous brackets and mounting hardware