BID  #####

Project Name

Project Location

In-Roadway Warning Light (IRWL) Pedestrian Crosswalk System

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System Specification

# Terms and definitions

Select the option that applies, then delete the rest of the paragraphs.

For the purposes of this document, the following terms and definitions apply.

|  |  |
| --- | --- |
| **Term** | **Definition** |
|  |  |
|  |  |
|  |  |

The system shall conform to the current edition of the MUTCD or bear interim approval.

No terms and definitions are listed in this document.

# Project Location

The system consists of the materials for the installation of a [System Description] to be used for the pedestrian crossing in [Location], at [Site] to alert motorists that they are approaching an active pedestrian crossing occupied or about to be occupied by one or more pedestrians.

The installer’s responsibilities would consist of installing system and auxiliary components such as poles, signs, pushbuttons, automatic detection, and the construction of facilities to support the system, as outlined in these specifications and in strict adherence to the manufacturer’s installation requirements as outlined in, but not limited to, the manufacturer’s installation instructions.

# Installer Responsibilities

Several utilities may exist in the area; any and all utilities’ locations shown in any plans should be considered approximate. The installer shall be responsible for calling the appropriate authority and all affected utility companies prior to any drilling or excavation on this project.

The installer shall stake all proposed accessible push button station locations, ground box locations, conduit, and pole locations after utility locations are finalized. The engineer having authority must approve these locations prior to any drilling or excavation on the project.

# Warranty

System components shall have a non-pro-rated warranty period of five (5) years against manufacture defects and failure under normal use.

# Technical Specifications

**IMPORTANT**: If the installer wishes to submit an alternate system for an approved equal (“equal” is defined herein as meeting or exceeding all the specifications shown in this document), specifications of the proposed alternate that fully conform to the following specifications shall be submitted to the Engineer having jurisdiction at least sixty (60) working days prior to the bid opening date as determined in the bid solicitation notice. No proposed “equal” product proposed after the 60 day advance will be accepted, and it is therefore assumed the successful bidder on this project will install the specified product if no approval has been issued by the Engineer Having Jurisdiction.

## System Controller

***Verify details of this section depending on which controller is specified****. Refer to the current data sheet for the required system controller.*

The system controller for this system shall be as follows:

1. Type: LaneLight MK10
2. Casing material: Anodized aluminum
3. Operating temperature range: -40°C to 65°C (-40°F to 149°F)
4. Operating voltage: 10-30 VDC
5. Supply voltage: 12 VDC (typically 12V DC Photo Voltaic) **OR** 110 to 240 volts AC line voltage with factory supplied power converter
6. Output voltage: 12 VDC w/24 VDC for LaneLight IRWLs
7. Transient/Inrush current limiting – internal on all outputs
8. Overload –internal, auto-reset circuit breakers on outputs, 10A threshold on two output channels
9. Power Factor Correction – provided, Power Output limiting – 120%
10. Short Circuit – Continuous protection, intermittent cycle permitted
11. Day/ night mode control – automatic PV Panel or photocell sensed
12. Night Brightness automatic, minimum level adjustable
13. Activation time: 0 to 120 seconds, or continuous
14. Pattern Mode: All approved patterns
15. Configuration: On board menu or remote
16. Diagnostics: On board menu or remote
17. Remote access: Any modem (if applicable)
18. Terminal connection type: Screw terminals
19. Standards compliance: NEMA

## Communication

Select which options apply and delete the rest.

This section is to describe communication between system control units and/or from system to cloud, etc.

1. Stand-alone, hard-wired to flasher devices
2. Unit to unit wireless communication: Frequency: ISM-B and 2.4GHz (standard) or 900MHz (optional)/Range: Up to 1 km (3200 ft) with line of sight
3. Number of comm IDs/channels: 24
4. GPS receiver for time and location
5. Cellular network connectivity for LaneLightConnect service

## Power Supply

Select the sections that apply, then delete the rest of the sections. Update the TOC when you’re finished customizing the body of the document.

### Solar Powered System

A solar power system shall be designed to suit the application’s electrical and geographical requirements, as determined by the manufacturer. and shall consist of a single solar panel and pole mount, solar charge regulator, circuit breakers for panels, batteries, and load, terminal strip for all connections pertaining to the solar power equipment, battery capable of providing an application-suitable period of autonomy.

#### Charge Regulator

1. Type: MPPT
2. Shall be built into the controller for up to 50W solar panel, or, sized to the application by the factory.

#### Circuit Breakers/Terminal Strips

1. AC in: As determined by the manufacturer.
2. DC: As determined by the manufacturer.

#### Batteries

1. Type and size: As determined by the manufacturer.
2. Quantity: As determined by the manufacturer.

### AC (Grid) Powered System

System powered by 120 volts line voltage; converted to DC by manufacturer designed and supplied device.

## In-Road Warning Lights (IRWL)

### Upper module

1. The mechanical characteristics of the upper module of the in-road warning lights shall be as follows: upper housing nominal dimensions, diameter = 150mm, height = 30.5 m, material = heat-treated, M8x20 DIN912 cast A4 stainless steel.
2. The in-roadway profile of the IRWL shall not exceed 0.14 inches (3.5 mm) above the pavement surface.
3. IRWL lenses shall be prismatic hardened borosilicate glass, two (2) per IRWL marker.
4. No plastic lens or body components of the IRWL shall be exposed to traffic.
5. All electrical terminations shall occur within the marker housing; under no circumstances shall any electrical connection be made in the pavement outside the marker housing.
6. Connection housing of the module shall accommodate further encapsulation of the wiring connectors, as specified by the manufacturer’s installation document, and all connectors shall be encapsulated, within the module fixture body, without exception.
7. Cable length between modules shall be adjustable by altering the cable length within the module fixture, and shall not be accomplished by, or be required to be accomplished by folding or layering cable in the between-module saw cuts.
8. The LED module shall be water ingress tested to IP68.
9. The LED module shall be attached to the base with two stainless steel high grade screws; removal/replacement of the upper module shall be capable of being accomplished in five minutes or less.

### Lower Module

1. The mechanical characteristics of the lower module of the in-road warning lights shall be as follows: lower housing nominal dimensions, outer diameter = 7 in. (178.5 mm), hosing height = 1.375 in. (35 mm), material = corrosion resistant aluminum alloy or equivalent, tested to a minimum compression strength of 99,208 lb (45,000 kg).
2. Installation depth with wiring sub-base = 2.75 in. (65 mm), installation depth shall not exceed this.

### Optical Characteristics

1. LEDs: there shall be 16 total, eight (8) per lens, proprietary specification, CREE LED ultra bright design.
2. Color metrics: Amber, 596 nm to comply with MUTCD specifications.
3. Daytime visibility: Range to exceed 3000 ft (914 m) regardless of ambient light conditions.

### Electrical Characteristics

1. Supply voltage: 12 to 48 VDC
2. Power consumption per marker: 2.5W daytime amber, 2W daytime white
3. Ambient temperature range: -22°F to 149°F (-30°C to 65°C)

### Installation

1. One 3/8 in. slot to be cut, 2 ½ in. depth; and 7 in. or 8 in. diameter (NOT TO EXCEED 8 in. DIAMETER) round holes in roadway.
2. 2 ¾ in. depth (NOT TO EXCEED 3 in. DEPTH) round cores cut, centered over the slot where markers are to be placed. To avoid risk of stress fractures being produced by ingress into the road surface, ONLY ROUND, CORED HOLES ARE TO BE MADE IN THE PAVEMENT FOR INSTALLATION OF THE ROAD MARKERS, WITHOUT EXCEPTION.
3. The uppermost part of the module housing shall be mounted flush with the pavement surface, centered in the pavement where the LED module is located. WITHOUT EXCEPTION, NO PART OF THE MODULE SHALL PROTRUDE IN EXCESS OF .14 in. OF THE PAVEMENT SURFACE.
4. In locations where snow plowing may occur, the uppermost part of the LED module shall be mounted FLUSH WITH THE PAVEMENT SURFACE, to the rear of the opening in the pavement where the LED module is located. WITHOUT EXCEPTION, NO DEFLECTORS OR OTHER PROTECTIVE APPARATUS SHALL BE REQUIRED FOR PROTECTION OF THE LED MODULE.
5. Mounting and Bedding: ITEM approved resilient-setting Epoxy Resin ITEM-Flex or factory approved equal shall be used.
6. Alternately, installation of LaneLights with trade size ½ in. flexible conduit may be substituted for the cut and core method of installation. Conduit shall not be used as a chase. All IRWL purposed conduit, if used, must mechanically attach to the IRWL junction box fittings.

### In-Road Wiring System

1. All system cable shall be provided by the IRWL equipment manufacturer.
2. LaneLight Crosswalk control cable –18/3, 0.23 in. o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT XW”.
3. LaneLight Activation–18/4, 0.24 in. o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT ACT”.
4. Control and activation cable must be of a water-block design, UL and 300v certified and stamped, rated for direct burial installation method, WITHOUT EXCEPTION.
5. Control and activation cable shall be installed using the direct bury method as directed in the manufacturer’s installation manual.
6. Control cable may be contained in ½ in. (trade size) manufacturer provided flexible non-metallic conduit, if used instead of direct bury method. Conduit shall be mechanically fitted to the LED module housings. Both conduit and LED module fittings shall be factory supplied. Duct seal shall be used to seal the junction box conduit entrances, to prevent encapsulant gel from escaping the junction box during final encapsulation process. All installation of a conduit equipped system to be performed as directed in the manufacturer’s installation manual.
7. Conductors for Pedestrian Activation Devices, Beacons, and LED signs, if installed using conduit, shall be run in a conduit separate from that of the LED modules, that conduit provided by the contractor.
8. Sub-Base (junction box) encapsulation – 3M Scotchcast 8882, factory supplied.
9. Waterproof connectors: Silicon filled w/cap; 3M 314, factory supplied.

## RRFB Light Bar (optional)

1. Each RRFB shall consist of two rapidly and alternately flashing rectangular yellow indications having LED array based pulsing light sources; each rectangular indication being of US manufacture and of a design suitable for all-condition emergency vehicle use.
2. Each RRFB LED beacon shall be a minimum size of 7 in. wide x 3 in. high.
3. The light intensity of the RRFB’s indications shall be Society of Automotive Engineers (SAE) standard J595 certified.
4. The light bar housing shall be finished entirely in [black] [yellow] [RAL color #], powder coated finish.
5. Each light bar shall display four LED indicators on [one end] [both ends] of the light bar housing which flash in unison with the LED beacons facing traffic.

## LED-Enhanced Signs (optional)

**CONFIRM** the specifications if included. Update the TOC when you’re finished customizing the body of the document.

1. Sign Type: W11-2 **OR** S1-1
2. Sign Surface: Reflective Sheeting: 3M™ Diamond Grade™ DG3 with anti-graffiti overlay
3. Sign Color: Diamond Grade Fluorescent Yellow or Fluorescent Yellow Green
4. Sign Size: [30 in.] [36 in.]
5. LED Flash Pattern: Pulsed flash; in synch with IRWLs
6. LED Size: 25 mm (1 in.) Signs shall be equipped with mounting brackets.
7. LED Number: 8 LEDs per sign
8. LED Color: Amber 590 nm
9. Mounting Hardware: Mounting brackets

## Standard Signs (optional)

CONFIRM the specifications if included. Update the TOC when you’re finished customizing the body of the document.

1. Sign Type: W11-2 **OR** S1-1
2. Sign Surface: Reflective Sheeting: 3M™ Diamond Grade™ DG3 with anti-graffiti overlay
3. Sign Color: Diamond Grade Fluorescent Yellow or Fluorescent Yellow Green
4. Sign Size: [30 in.] [36 in.]
5. Mounting Hardware: Mounting brackets

## Push-to-Walk Assemblies (optional)

Select the option that applies, then delete the rest of the sections. Update the TOC when you’re finished customizing the body of the document.

### Polara Bulldog Pedestrian Pushbutton

1. Model: BDLM3 2 in. ADA equipped with Frame and 9x12 R10-(type) or R62-E or LED embedded Sig
2. Quantity: xx
3. Casing color: Yellow (standard), Green, Black
4. ??

### Polara Model X Annunciating Pushbutton

1. Model: XAVCU2-DC controlled
2. Quantity: xx
3. Casing color:
4. Dynamic volume level control
5. ?

### Polara INX Annunciating Pushbutton

1. Model:
2. Quantity: xx
3. Casing color:
4. ??

## No Touch Activation Assemblies (optional)

Select the option that applies, then delete the rest of the sections. Update the TOC when you’re finished customizing the body of the document.

### Touchless Pole Mounted Sentinel Sensor

1. Accuracy: Reaction to passing pedestrians: >99.9%
2. Dimensions: 4.8 in. x 4.8 in. x3 in. (122 x 122 x 76 mm)
3. Case construction: Aluminium
4. Finish: Powder Coated
5. Color: (Black)
6. Ingress protection: IP67
7. Sign/Frame: [No sign/frame] [Instruction sign/frame] [Other?]
8. Sensors: LED single beam, with data acquisition of up to eight segments simultaneously, data refresh rate 10-100 Hz
9. No Internal heating required
10. Power consumption <2W at 12 VDC
11. Logic: Entry detection, system activated. Exit detection, no activation
12. Wiring: ITEM 18/4 auxiliary cable, color coded; direct burial rated
13. Range: Up to 606 ft. [185m] depending on optics

### Photo Bollard Assembly

1. Accuracy: Reaction to passing pedestrians: >99.9%
2. Dimensions: (8 in. x 8 in. square x 42 in.)
3. Construction: Square 0.125 in. aluminium
4. Finish: Powder Coated
5. Color: (White) (Black) (Forest Green) (Bronze) (Gray) or (Custom per client provided RAL #)
6. Sensors: Infrared, through-beam, high gain, wide angle, cross talk prevention design, easy set up
7. No Internal heating required
8. Power consumption (per bollard) non illuminated 0.5w at 12 VDC; illuminated 1.5w at 12 VDC
9. Logic: Entry detection, system activated. Exit detection, no activation
10. Wiring: ITEM 18/4 auxiliary cable, color coded; direct burial rated
11. Range 70 feet
12. Optional 8 in. round configuration

### Sentinel Bollard Assembly

1. Accuracy: Reaction to passing pedestrians: >99.9%
2. Dimensions: 8 in. x 8 in. x 42 in. (203 x 203 x 1073 mm)
3. Construction: Aluminium
4. Finish: Powder Coated
5. Color: (White) (Black) (Forest Green) (Bronze) (Gray) or (Custom per client provided RAL #)
6. Sensors: LED single beam, with data acquisition of up to eight segments simultaneously, data refresh rate 10-100 Hz
7. No Internal heating required
8. Power consumption (per bollard) non illuminated <2W at 12 VDC; illumination module 0.6W – 3W (field adjustable) at 12 VDC
9. Logic: Entry detection, system activated. Exit detection, no activation
10. Wiring: ITEM 18/4 auxiliary cable, color coded; direct burial rated
11. Range: Up to 606 ft. [185m] depending on optics

### FLIR TrafiOne Sensor

CONFIRM specifications if included. Update the TOC when you’re finished customizing the body of the document.

1. Model: 156 OR 194
2. Quantity: 1 OR 2

## In-Road Wiring System (wired systems only)

Delete this section if it’s not required.

1. LaneLight Crosswalk control cable –18/3, 0.25 in. o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT XW”.
2. LaneLight Activation–18/4, 0.26 in. o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT ACT”
3. Control and activation cable must be UL and direct-bury rated, for direct burial installation method, WITHOUT EXCEPTION.
4. Control cable may be contained in ½ in. (trade size) manufacturer provided flexible non-metallic conduit, if used instead of direct bury method. Conduit shall be mechanically fitted to the LED module housings. Both conduit and LED module fittings shall be factory supplied. Duct seal shall be used to seal the junction box conduit entrances, to prevent encapsulant gel from escaping the junction box during final encapsulation process.
5. Conductors for Pedestrian Activation Devices, Beacons, and LED signs, if installed using conduit, shall be run in a conduit separate from that of the LED modules, that conduit provided by the contractor.
6. Sub-Base Encapsulation – 3M Scotchcast 8882, or manufacturer approved equal.
7. Waterproof connectors: Silicon filled w/cap; 3M 314.

## Cabinet

Select the option that applies, then delete the rest of the sections. Update the TOC when you’re finished customizing the body of the document.

### Side of Pole Cabinet

1. NEMA 3R cabinet with Corbin #2 lock, with controller and any auxiliary activation controllers or equipment interfaces capable of being mounted within.
2. Cabinet shall be supplied with mounting hardware for a variety of poles, or as specified by the client.
3. Fully equipped weight shall not exceed 25 lb.

### Top of Pole Cabinet

1. Type shall be LaneLight Top of Pole RRFB solar engine
2. Fully equipped weight shall not exceed [xx lb (xx kg)]
3. Battery: As determined by the manufacturer