

Specification: Delineation System - AC

Date: 03/01/2015

DESCRIPTION

The system consists of the materials for the installation of a hardwired LaneLight In-Roadway Illuminated Marker Delineation System to be used in (Location), at (Site) to enhance lane visibility to motorists at (specified section) of (roadway / highway).

The installer's responsibilities would consist of installing the In-Roadway Illuminated Marker System and auxiliary components such as LED signs, 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.

PRIOR TO INSTALLATION

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 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.

The in-roadway lights shall conform to the current edition of the MUTCD as it applied to internally illuminated pavement markers (section 3B).

Roadside beacons or LED signs shall conform to the current edition of the MUTCD, or bear interim approval.

WARRANTY

System components shall have a warranty period of 5 years against manufacture defects and failure under normal use.

TECHNICAL SPECIFICATION

High Performance LED In-Roadway Marker: ITEM LaneLight model MLK150 uni directional Amber LED).

IMPORTANT: If the installer wishes to submit an alternate system for an approved equal, specifications of the proposed alternate that conform to the following specifications shall be submitted to the Engineer having jurisdiction at least twenty (20) working days prior to the bid opening date as determined in the bid solicitation notice. No proposed "equal" product proposed after the ten 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.

IN-ROADWAY LIGHTS

Mechanical Characteristics – Upper Housing

Nominal Dimensions – diameter = 150mm; height = 30.5mm,
Assembly Material – Heat treated, M8x20 DIN912 cast A4 stainless steel or equal,
bi-directional) configuration,

IN-ROADWAY PROFILE SHALL NOT EXCEED 0.125 INCHES ABOVE PAVEMENT SURFACE.

Lens – prismatic- Borofloat hardened glass, 2 per marker; **NO PLASTIC LENS OR BODY COMPONENTS SHALL BE EXPOSED TO TRAFFIC.**

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. Connection housing shall accommodate further encapsulation of the wiring connectors, and all connectors shall be encapsulated.

Tested - Water ingress to IP68.

LED Module attached to the base with two stainless steel high grade screws;
Removal/replacement of the upper housing shall be capable of being accomplished in five minutes or less.

Mechanical Characteristics – Lower Housing

Nominal Dimensions – diameter = 7 inches (178.5mm); housing height = 1.375 inches (35mm).

Material – Corrosion-resistant aluminum alloy or equal,

Tested - Minimum of 45,000 kg compressive strength,

Install depth w/wiring sub base – 2.75 inches (65mm)

Optical Characteristics

Bulbs – 16 (sixteen total, eight per lens) proprietary ITEM specification, ultra bright design

Colormetrics: Amber, white, green, red: to comply with MUTCD specifications

Daytime visibility – range: to exceed **3000 feet** regardless of ambient light conditions.

Electrical Characteristics

Supply Voltage: 9 to 36VAC,

Power consumption /marker: 2.5W daytime amber/ 2W daytime white,

Ambient temperature range: -22F to 185F

Installation into Roadway

One 3/8" slot to be cut, 2 1/2" depth; and 7" or 8" diameter round holes, 2 3/4" 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 CORE HOLES ARE TO BE MADE IN THE PAVEMENT FOR INSTALLATION OF THE ROAD MARKERS, WITHOUT EXCEPTION.

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.**

Mounting and Bedding; ITEM approved resilient-setting Epoxy Resin ITEM-Flex or factory approved equal.

PERIPHERAL CONTROL EQUIPMENT

Signal Interface LaneLight Controller AC-Carrier Signal output Mk7 (SILC)

Process Control Unit (PCU) LaneLight Signal Interface **designed for connection with intersection signal controller**

Supply Voltage 120VAC (+/-5%), 60Hz

Capacity-20 amp output (100 LaneLight MLK150 maximum connected load) or unlimited capacity with addition of repeater units, controlled by the controller

Temperature range: -40 to +160 degrees F

Transient/Inrush current limiting – internal on all outputs,

Overload –internal, auto-reset electronic circuit breakers on outputs,

Power Factor Correction – provided, Power Output limiting – 120%,

Short Circuit – Continuous protection, intermittent cycle permitted,

Day/ night mode control – Dynamic photo-sensor activated, Night Brightness

Adjust 20%-100%,

Control Inputs: 120V AC from Amber or Red signal outputs of intersection controller

Flash pattern: Selectable "pulsed" flash rate or steady on, either selectable in either AMBER signal controller output activated or signal controller RED signal output activated LaneLight phases.

Various flash patterns shall be available e.g. chasing lights to/away from driver, etc...

Configuration shall be via USB port. Ethernet-based remote monitoring shall be available.

Remote firmware upgrade capable

Accessible log files for historical data retrieval

Shelf or rack mountable

Cooling by internal fan

Color: Black

Cabinet shall be supplied with mounting hardware for a 3.5" to 4.5" OD pole.

LaneLight Delineation Rack-mount Controller AC-Carrier Signal output Mk7 (SILC)

Process Control Unit (PCU) LaneLight Signal Interface **designed for connection with intersection signal controller**

Supply Voltage 120VAC (+/-5%), 60Hz

Capacity-20 amp output (100 LaneLight MLK150 maximum connected load) or unlimited capacity with addition of repeater units, controlled by the controller

Temperature range: -40 to +160 degrees F

Transient/Inrush current limiting – internal on all outputs,

Overload –internal, auto-reset electric circuit breakers on outputs,

Power Factor Correction – provided, Power Output limiting – 120%,

Short Circuit – Continuous protection, intermittent cycle permitted,

Day/ night mode control – Dynamic photo-sensor activated, Night Brightness

Adjust 20%-100%,

Control Inputs: Contact closure or analog/digital signal

Flash pattern: Selectable "pulsed" flash rate or steady on, either selectable in either AMBER signal controller output activated or signal controller RED signal output activated LaneLight phases.

Various flash patterns shall be available e.g. chasing lights to/away from driver, etc...

Configuration shall be via USB port. Ethernet-based remote monitoring shall be available.

Remote firmware upgrade capable

Accessible log files for historical data retrieval

Shelf or rack mountable

Cooling by internal fan

Color: Black

Cabinet shall be supplied with mounting hardware for a 3.5" to 4.5" OD pole.

PERIPHERAL ACTIVATION EQUIPMENT

Loop Detectors

System shall accept output signals from standard loop detectors (Opto-coupler, dry contact N.O./N.C. configurable).

Speed –dependent activation with 2 loops (configurable) shall be an available option.

Other Trigger Sources

System shall be configurable for various input signals:

- Opto-coupler for 120VAC input from load switches controlling traffic lights
- Contact inputs (N.O./N.C. configurable)
- Timer controlled

IN-ROAD WIRING SYSTEM

LaneLight shielded direct-burial control cable –14/2 + drain wire 0.31" o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled "LANELIGHT Delineation".

Sub-Base Encapsulation – 3M Scotchcast 8882, or equal.

Waterproof connectors: Silicon filled w/cap; 3M 314, 316IR; or ITEM engineer approved equal.

POWER SUPPLY

AC (Grid) Powered System

Integrated in controller unit. 120VAC(+/-5%), 60Hz , 350VA max

AC output 36VAC.

Marker AC output galvanic isolated from AC input 3.5kV.

PERIPHERAL EQUIPMENT OPTIONS

LED ENHANCED SIGNS

Signs shall be LANELIGHT LED signs or approved equal

Signs shall connect directly to the in-pavement lighting wiring with same color coded connectors, or direct to the controller.

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