

- 10:00 A. M.
9. Continuation of a discussion regarding proposed shared use path along Dunlop Road and Wooster Lane from Sanibel Library to Palm Ridge Road (Construction of shared use path along Periwinkle Way from crosswalk at St. Michael's Church to Dunlop Road and along Dunlop Road from Periwinkle Way to Sanibel Library approved by Council at the January 4, 2011 meeting)
 - a. Review of possible alterations to Periwinkle Way crosswalk at Sanibel Community Association (SCA), 2173 Periwinkle Way

Memorandum

DATE: March 1, 2011

TO: City Council

THROUGH: City Manager Judie Zimomra

FROM: Public Works Director Gates Castle *JDC*

RE: Crosswalk at Sanibel Community Association

RECOMMENDATION: Approve two LCEC-installed and maintained street lights for the Periwinkle Way crosswalk at the Sanibel Community Association

The Periwinkle Way crosswalk at the Sanibel Community Association is the City's most used crosswalk, particularly at night. It is anticipated that this usage will increase with the construction of the Dunlop Road shared use path. Over the years, crosswalk improvements have included better signage, enhanced striping and raising the crosswalk for better visibility of the crosswalk users. In response to a recent request by the Sanibel Community Association, the crosswalk was studied for possible enhancements, including:

- Construction of a pedestrian refuge island in the middle of the crosswalk
- Installation of an in-ground lighting system
- Street lighting

A pedestrian refuge island would allow crosswalk users to cross one lane of traffic and wait in the island for a break in the other traffic lane. The estimated cost of a 10' wide by 40' long raised concrete island, road widening and tapering as well as existing drainage and shared use path relocations is \$80,000. In addition to the cost, other issues with a pedestrian refuge island at this location are:

1. It is safer to have large volumes of pedestrians queued on the side of the road rather than in a narrow island in the middle of traffic.
2. When the crosswalk is being controlled by Police personnel, the island will limit their ability to control both directions of traffic.

An in-ground lighting system consisting of pavement mounted LED flashing lights housed in a receptacle similar to raised pavement reflectors, but somewhat larger was investigated for the crosswalk. The installation for this location would consist of 10 signal heads (5 facing east and 5 facing west), 4 automatic pedestrian detection bollards (rather than push button activated), 2 pedestrian signs w/LED enhanced crosswalk lines, and a solar power control unit. Attached is information by Light Guard Systems, Inc. The estimated installed cost of the system described above is \$30,000. In addition to the cost, the concerns of Council and citizens in 1995 and again in 1997 when this system was discussed included:

- Lights could frighten drivers into sudden stops, increasing the potential for rear end type accidents,
- The size and height off the pavement of the mounted light fixture could cause bicycle or moped accidents, if run over.
- Crosswalk users would get a false sense of security thinking that the lights would cause drivers to stop
- This would be the first step towards traffic signals on the island

Two options for additional street lighting at the crosswalk were investigated involving utilizing two Lee County Electric Cooperative poles and lights or two City purchased and maintained poles and lights. The LCEC poles and code compliant lights would be installed at no cost to the City, although there would be a charge for the wire and service. A monthly fee of up to \$20 per month per light fixture would be billed by LCEC to the City and LCEC would maintain the installation. The other option is for the City to purchase 2 – 15' fiberglass poles with code-complaint LED light fixtures, contract to have them installed and be responsible for their maintenance. The estimated cost to purchase and have the poles/lights installed is \$7,000 with unknown fixture maintenance costs. There is no downside to providing additional street lighting for better night time visibility of crosswalk users.

Since the main concern with the crosswalk is the visibility of the night time users, it is recommended that additional street lighting be approved for the Periwinkle Way crosswalk at the Sanibel Community Association. The City will first pursue the LCEC option for the lights. If there are problems with the LCEC fixture-type, installation location, etc., the City will pursue purchase of LED fixtures, possible solar powered, for the street lighting.

C: City Attorney Ken Cuyler
Finance Director Sylvia Edwards



Features/Benefits

- 16 LED Module Signal Lights
- "Dove Prism™ Lens Technology
- Easily Mounts To Roadway Base
- 12VDC Operation (Down To 9VDC)
- Visible to 1,500 Feet From Signal Head
- Rugged, Reliable, With Little Maintenance
- Snap Together, Waterproof Electrical Connection

IN-ROADWAY WARNING LIGHTS (IRWL)

Signal Head Series 9X

LightGuard Systems Part Number: LGS-9X

Description: The signal head contains the in-pavement LED light module.

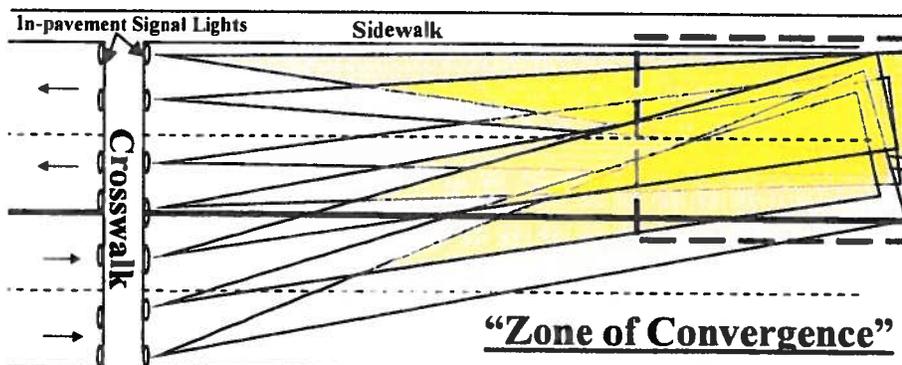
Compliant to FHWA Standards: MUTCD Chapter 4, Section L

Application Notes

LightGuard Systems' newest technology is our System 9X LED dubbed "LightStar™." The In-Roadway Warning Light (IRWL) signal head module meets Federal Highway Administration — Manual on Uniform Traffic Devices (FHWA MUTCD) standards. The signal head module features a watertight cable connector, solid-state electronics and sealed LED modules which isolate the electronic components from environmental moisture intrusion. The "Debris Free™"-Self Clearing Design eliminates most issues relating to lens blockage.

The signal head is designed to tightly fit into the protective base plate. It is easily connected to the electrical cable system wires with snap together, water tight connectors. The interior of the signal head unit is designed with double redundancy, isolating the solid state LED modules from roadway moisture and corrosive intrusion. The signal head unit is fastened to the base plate with stainless steel socket head ¼"-20 screws with thread locks and anti-seize compound applied to the threads in the factory.

Typical IRWL system use employs several signal heads on both side of the crosswalk using the **Enlighten1™** flash rate operating at a 50% duty cycle. The flashing light beam can easily be seen in daylight from 200 to 600 feet (or more) away and at night up to 1,500 feet (or more) away.



The **Enlighten1™** flash rate was developed in cooperation with University of California, Berkley Vision Detection Laboratory, specifically to capture and hold driver awareness.

The "Zone of Convergence" refers to the area in the traffic lanes where specialized lenses direct beams of bright light from the signal head LED light modules to merge.

This "zone" is configured to give the driver adequate time to react to the presence of a pedestrian in the crosswalk. During installation the signal head modules must be properly positioned and directed towards the approaching motorist.

The chart on the left provides details for determining the "Zone of Convergence" based on the stopping distances on dry road conditions and rate of vehicular speed. Source: Santa Rosa Police Department 1994.

Posted Speed Limit	1 Second Reaction Time	Braking Distance	Total Stopping Distance
25 mph	37 feet	53 feet	90 feet
30 mph	44 feet	81 feet	125 feet
35 mph	51 feet	110 feet	161 feet
40 mph	59 feet	143 feet	202 feet
45 mph	66 feet	184 feet	250 feet
50 mph	73 feet	227 feet	300 feet
55 mph	81 feet	271 feet	352 feet
60 mph	88 feet	323 feet	411 feet



Features/Benefits

- Secures to Roadway
- Sloped Edged to Signal Head
- Easy to Install Into Pavement
- Maintenance Free Operation
- Simple Electrical Connections
- Debris Free™ Self Clearing Design
- Adaptable to Tamper Resistant Hardware
- High Strength Impact Resistant Composite

Standard In-Roadway Warning Light Base Plate

LightGuard Systems Part Number: LGS-SD10-C

Description: 10" Composite Base Plate

Compliant to FHWA Standards: MUTCD Chapter 4, Section L

Application Notes

The SD10 mounting base plate is used to secure and protect In Roadway Warning Lights (IRWL) module. The dimensions of the base plate are 10" diameter and 1½" depth. The shallow depth ensures that the lower roadbed is not penetrated. Two part epoxy compound permanently embeds the base plate into the roadway.

The interior cavity is designed to contain all the electrical wiring for the IRWL. An elastomer O ring is placed into the horse shoe shaped lip creating a seal interface between the signal head and the base plate.

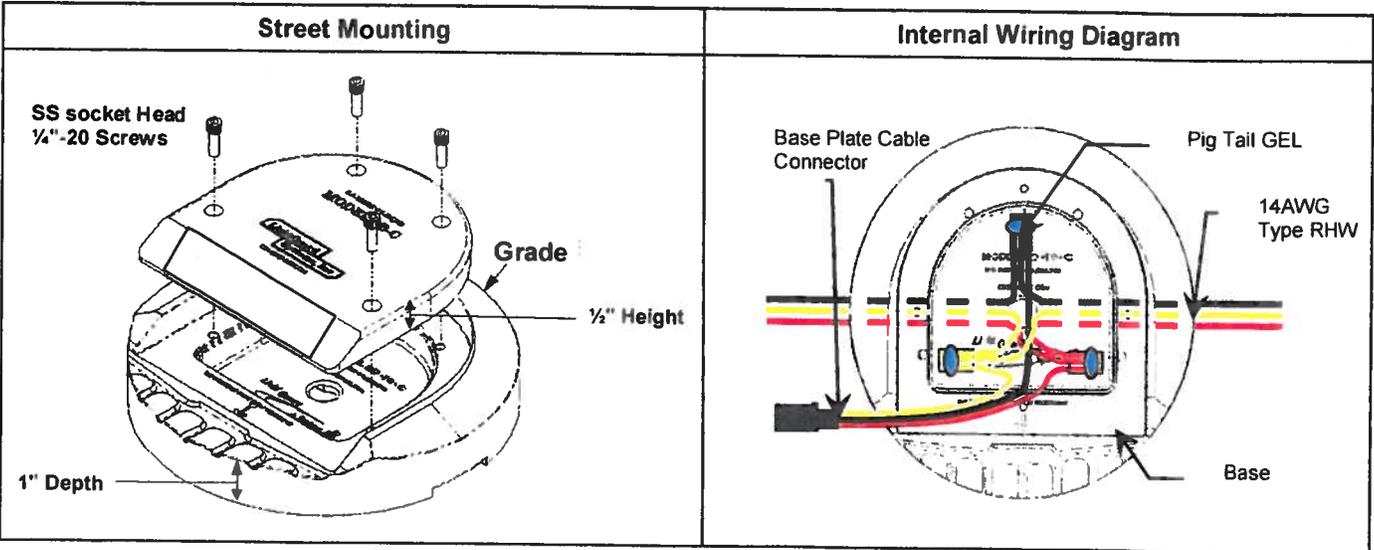
The signal head is fastened to the base plate with stainless steel socket head ¼"-20 screws with thread locks, anti-seize compound applied to the threads in the factory.

The base plate can be installed into asphalt or concrete roadbeds. The electrical conductors are embedded in the road bed via direct burial or in conduit. This base plate is compatible with IRWL LightGuard signal head models 6, 7, & 8.



General Performance Specifications

Parameter	Value
Operating Temp	-20° to +80°C
Material	High Strength Composite
Color	Black
Size	10.5" diameter, 1.5" deep





Features/Benefits

- Aesthetically Pleasing
- Optional Audible Sounds
- Easily Installed In Sidewalk
- Simple Control Panel Installations
- 12VDC Operation (Down To 9VDC)
- Recognized As "The Place to Cross"
- Internally Illuminated Courtesy Light
- Directional Detecting Infrared Sensors

AUTOMATIC ACTIVATION BOLLARDS

LightGuard Systems Part Number: LGS-T3

Description: Automatic Pedestrian Detection Bollard

Automatic Series — Bollards

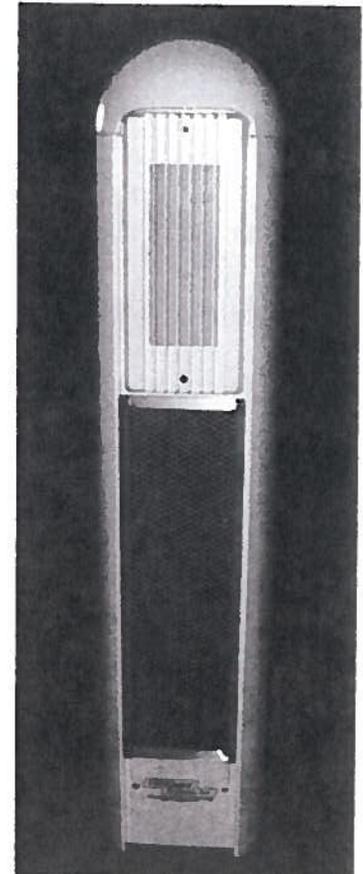
Application Notes

Automatic Activation System consists of "gateways" comprised of bollards. Each bollard contains sensor circuitry. The built-in sensor module projects infrared beams of modulated light to the respective receiver module. Each module incorporates a high gain detector. The bollard "gate" system is directionally sensitive. It is only activated when entering not exiting the crosswalk.

A pair of bollard devices are placed opposing each other at either end of the crosswalk entrances. There are a total of 4 bollards per crosswalk. They are positioned so that as pedestrians entering a crosswalk passing between them automatically activate the Smart Crosswalk™ system. The bollards are design and situated so as to "invite" pedestrians to enter a crosswalk at a desired location.

Prior to installing bollards, the proposed site should be reviewed to observe the habits of local citizens using the crosswalk. Particular attention should be paid as to how far back pedestrians may "cut the corner" when entering the crosswalk. The enhanced crosswalk system is set to a predetermined crossing time duration. The bollards can be placed to accommodate as much as a 60' entry zone.

The infrared sensing devices typically are preset. Factory alignment of the sensor modules facilitates bollard installation in the field. Audible sound cards can be added to the system. Each bollard contains a courtesy light so as to be visible at night.



General Performance Specifications

Parameter	Value
Maximum Separation Distance	60 Feet
Power consumption	2.5 Watts
Operating Temp	-20° to +80°C
Operating Voltage	9VDC to 15VDC
Color	White (Other Colors Available Upon Request)
Courtesy Light Color	Amber
Size	42" Tall, 8" Diameter



"Pursuing Safety Through Technology"

PRODUCT SPECIFICATION SHEET

Item Name:

ACTIVE PEDESTRIAN CROSSING SIGN

Description: These LED active signs are placed adjacent to the crossing location to provide additional warning to approaching motorists and flash when system is activated. NOTE: This LED enhanced sign should only be used in conjunction with an in-roadway LightGuard System. Stand-alone flashing operation use is prohibited.



LIGHTGUARD P/N: LGS -W11-2

(with mounting kit)

- Size:** 30" x 30" approximately
Type: W 11-2 or W 54-A
Color: Standard fluorescent-yellow-green
Lighting: Amber LED's that flash with system activation
Input Voltage: 12.5 volts DC (not to exceed 15v)
Power Dissipation: 1.5watts at 50% duty cycle
Mounting: Bracket assembly provided w/tamper proof hardware
(see local agency standards for mounting details)
Application: To be used as a supplement to in-roadway system

Spec #009 revision B

Sheet 1 of 1

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Features/Benefits

- Stand Alone Solar Powered
- Pad or Pole Mount Enclosure
- Available With DC Upgrade Kits
- Lockable Weatherproof Cabinet
- Internal Branch Circuit Protection
- Long Life SLA Back-Up Batteries
- Easy to Install Electrical Connections

Smart Crosswalk™ Solar Power Control Unit (PCU)

LightGuard Systems Part Number: LGS-Solar System

Description: Solar powered PCU with programmable interface, batteries, and cabinet

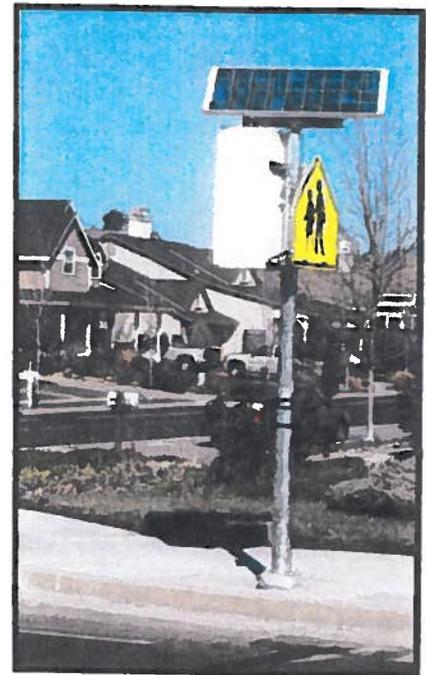
Application Notes

The solar powered control unit accepts call signal inputs from either manual push button or automatic Bollard activation. The activation devices initiate the Enlighten1™ flashing signal light sequence. Approaching motorists are alerted to the presence of pedestrians entering the crosswalk. The flashing sequence is activated for a preset duration to allow pedestrians adequate time to cross the street.

System includes enclosure, solar panel, mounting brackets, & batteries. Available with multiple DC related upgrade kits: DC beacons, constant DC output, audible notification, etc. User interface allows for multiple option selection and preset programming

The programmable control unit user interface has a 16 digit keypad and a 2 line-20 character liquid crystal display with 2 megabyte external memory. The programmable control unit is based on a high-speed 8 bit embedded micro-controller utilizing compiled machine control language. A LightGuard proprietary software program provides effective reliable operation allowing the user to make simple adjustments to the System parameters.

The enclosure contains 2 SLA batteries, they are 12 volt deep cycle sealed gel-cell batteries. Each battery is rated at approximately 100 amp hours. The batteries are wired in parallel to give 12 volts nominal at 200 amp hours of storage.



General Performance Specifications		Solar Control Panel Schematic	
Parameter	Value		
Power consumption	1 Watt (In Standby Mode)		
Operating Temp	0°C to +50°C		
Input Operating Voltage	17 VDC Solar Panel (Peak Sun)		
Input Current Protection	10A Fast Acting Circuit Breaker		
Input Solar Panel Power	80 Watts @ 4.7A (Peak Sun)		
Output Operating Voltage	13.5 VDC to 15VDC		
Output DC Load maximum	10 Amps		
Enclosure Type	NEMA 3R Aluminum (Lockable)		
Enclosure Color	White (Standard)		
Enclosure Size	45" x 15" x 15"		