



“Smart Crosswalk™” General Product Specification (Rev 9)

1. Lighted Crosswalk Warning system

- 1.1. The lighted crosswalk warning system consists of a power control unit, a control unit/service equipment enclosure, inset light emitting diode (LED) lighting fixtures with in-roadway base plates, activation mechanisms and related equipment as necessary for a complete operational system.
- 1.2. The installed system shall comply with National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 rated as “Low Voltage”. The System shall be installed to manufacturer’s recommended specifications and conform to federal, state or local regulations.

2. “MADE IN AMERICA”

- 2.1. SYSTEM MUST QUALIFY FOR “MADE IN THE U.S.A.” PREFERENCE.

3. Patent Allowance

- 3.1. The LightGuard Systems, Inc. crosswalk equipment is a licensed holder of Utility Patent no.6,384,742 for Pedestrian Crosswalk Signal Apparatus. All products associated with the system shall be appropriately licensed or Qualified under patent protection.
- 3.2. Vendor agrees to indemnify **solicitors** procuring agency from Claims involving infringement of patent or copyrights.

4. Enhanced Superior Flash Rate

- 4.1. The system shall have the Enlightened 1™ flash rate, a tested, proven, and effective superior flash rate.

5. Roadway Pavement Intrusion Limitation

- 5.1. The system must provide In-Roadway Warning Lights that DO NOT encroach the roadway pavement beyond 1.5 inches in depth.

6. Manufacturer System Assurance

- 6.1. Upon request, the manufacturer shall provide the purchasing agency with a minimum of three test / evaluation study reports of the manufacturer’s product which were conducted by independent agencies. Test/ evaluation study reports shall demonstrate the worthiness and effectiveness of manufacturer’s system for assurance by purchasing agency.

7. Manufacturer Proof of Insurance

- 7.1. Upon request, the manufacturer shall provide the purchasing agency with “Proof of Product Liability” Insurance covering “In-Roadway Warning Lights” for use at crosswalks.

8. Power Control Unit For Standard Controller

- 8.1. The Power Control Unit (PCU) shall be based on a high-speed 8-bit embedded micro controller and shall utilize a compiled machine control language. PCU shall include system operation software with adjustable parameters accessed via a user interface. PCU output voltage shall not exceed 15 volts.

9. Control Unit/Service Equipment Enclosure

- 9.1. An aluminum Type 111-AF or Fiberglass service equipment enclosure shall be provided. The enclosure shall meet or exceed NEMA 3R rating.

10. Data Collection

- 10.1. Flashing control units with a PCU collect and store a limited amount of operational, functional, and statistical information.

11. Data Retrieval

- 11.1. Flashing control units with a PCU must be RS232 accessible via local and remote access with data information retrieval capability.

12. Solar Power

- 12.1. System shall be solar power capable.

13. Uninterruptible Power Supply With Battery Back-Up

- 13.1. AC powered Flashing control units with a PCU shall include a battery back-up system to maintain uninterrupted operation during power outages for limited durations.

14. In-Roadway Lighting Fixtures

- 14.1. In-roadway lighting fixtures shall be light emitting diode (LED) type.
- 14.2. The light source shall be amber AlInGaP, non-diffused LED lamps.
- 14.3. The luminance of the lights shall be a minimum of 4,750 cd/m².
- 14.4. Lights shall be visible at a minimum of 400 feet in advance of the crosswalk.
- 14.5. The lighting fixtures shall be a uni-directional light source.
- 14.6. The lights shall flash at an enhanced Enlightened 1™ flash rate.
- 14.7. The flash rate shall meet or exceed standards established by the Federal Highway Administration (Manual on Uniform Traffic Control Devices).
- 14.8. The lighting fixtures shall have a black finish.
- 14.9. To avoid built up of road debris covering the facing of the LED signal light lens, the lens face surface shall be at or above the surface of the roadway grade level, and shall not extend higher than .75 inches above the surface grade level.

15. In-Roadway Light Fixture Base Plate (roadway surface mounting structure)

- 15.1. The light fixture base plate shall be either a case hardened steel with marine grade coating or high strength composite material, with anti-slip finish.
- 15.2. The light fixture housing materials shall withstand normal vehicle tire impact without sustaining permanent deformation or cracking.
- 15.3. The light fixture housing shall be: (one of the following)
 - 15.3.1. Option 1. = shall not exceed 14.5 inches in dia. and be made from a case hardened steel material (Snow Plow resistant) with marine epoxy paint finish.

- 15.3.2. Option 2. = shall not exceed 10 inches in dia. and shall not be less than 9 inches in dia. and be made from high strength composite material (Non-Snow Plow).
- 15.4. The light fixture assembly shall incorporate a “debris-free, self-clearing™ design.”

16. In-Roadway Conductors

- 16.1. In-roadway conductors for lighting fixtures shall be stranded #14 AWG, Type RHW (600 V power cables, 90°C dry and 75°C wet).
- 16.2. In-roadway conductors shall be YEL, RED, and BLK in color.
- 16.3. In-roadway conductors shall be installed according to National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 standards.
- 16.4. In-roadway conductors may be direct buried (No min. depth required per NEC).
- 16.5. In-roadway conductors for activation devices, pedestrian crossing or traffic symbol signs, and additional components shall be stranded #18 AWG/ 8 Conductor (Type TC, UL 1277 600 volt cables, 90°C) with TFN insulation and PVC jacket. In-roadway conductors may be direct buried (No minimum depth required per NEC).

17. Non-In Roadway Conductors

- 17.1. Non in-roadway conductors shall be stranded #18 AWG,
- 17.2. Type RHH or RHW-2 (Type EPR/Hypalon 600-volt power cables, 90°C dry and 75°C wet), unless installed in conduit.

18. Conduit

- 18.1. When required, conduit shall be NEC compliant.

19. Signage

- 19.1. Pedestrian Crossing Symbol Sign shall include Amber LED lights.
- 19.2. Pedestrian Crossing Symbol Sign LED lights shall flash at an enhanced rate of multiple flashes per second, synchronized with all other crosswalk system lights except where deviation is required by local regulation.
- 19.3. Pedestrian Crossing Symbol Sign shall include mounting bracket assembly.
- 19.4. Tamper resistant hardware will be supplied by installer.
- 19.5. Pedestrian Crossing Symbol Sign shall be Federal Designation in size, color and description.

Size:	30 inches by 30 inches
Federal Designation Color:	Fluorescent Yellow Green (FYG)

20. Automatic Activation Gates (Bollard System)

- 20.1. Automatic infrared beam interruption detection device shall be supplied at each side of crosswalk entrance zone.
- 20.2. Optical beam sensors shall automatically activate the system upon interruption by a pedestrian entering the crosswalk between the bollard gates.
- 20.3. Automatic Activation System shall not re-activate the system when pedestrian exits crosswalk.
- 20.4. Automatic Activation Bollard shall include low-level courtesy LED lighting.

Size:	Height: 42 inches, Diameter: 8.5 inches
Color:	Powder Coat White (standard – colors optional)
Material:	Extruded Aluminum Body with Cast Top
Detection Method:	Break Beam, Modulated @ 880nm

Detection Type:	Infrared
Rating:	250 ma /12.5 volts DC (not to exceed 15V)
Maximum Distance:	Not to Exceed 60-feet between bollards
Operating Temp:	-20°C to +70° C
Humidity:	90-percent at 50°C (non-condensing)

21. In-Sidewalk Activation Device (ISAD)

- 21.1. In-Sidewalk Activation Device shall be installed in conjunction with Uni-Bollard assembly (Section 22) for automatic system activation.
- 21.2. Automatic infrared beam interruption detection device shall be supplied at each side of crosswalk entrance zone.
- 21.3. Optical beam sensors shall automatically activate the system upon interruption by a pedestrian entering the crosswalk between the ISAD & Uni-Bollard.
- 21.4. Automatic Activation System shall not re-activate the system when pedestrian exits crosswalk.
- 21.5. ISAD contains 1 DC powered photoelectric sensor Emitter. The ISAD shall have a standard black anodized finish and be installed in Option 2 Base Plate (Section 2.4). The ISAD shall incorporate a “debris-free, self-clearing™ design.”

Detection Method:	Break Beam, Modulated @ 880nm
Detection Type:	Infrared
Rating:	250 ma /12.5 volts DC (not to exceed 15V)
Maximum Distance:	Not to Exceed 20-feet ISAD & Uni-Bollard
Operating Temp:	-20°C to +70° C
Humidity:	90-percent at 50°C (non-condensing)

22. Automatic Activation Gate (Uni-Bollard System)

- 22.1. Uni-Bollard assembly shall be installed in conjunction with In-Sidewalk Activation Device (Section 21) for automatic system activation.
- 22.2. Automatic infrared beam interruption detection device shall be supplied at each side of crosswalk entrance zone.
- 22.3. Optical beam sensors shall automatically activate the system upon interruption by a pedestrian entering the crosswalk between the Uni-Bollard. & ISAD.
- 22.4. Automatic Activation System shall not re-activate the system when pedestrian exits crosswalk.
- 22.5. Automatic Activation Bollard shall include low-level courtesy LED lighting.
- 22.6. Uni-Bollard to contain 2 DC powered photoelectric sensor Receivers.

Size:	Height: 42 inches, Diameter: 8.5 inches
Color:	Powder Coat White (standard – colors optional)
Material:	Extruded Aluminum Body with Cast Top
Detection Method:	Break Beam, Modulated @ 880nm
Detection Type:	Infrared
Rating:	250 ma /12.5 volts DC (not to exceed 15V)
Maximum Distance:	Not to Exceed 20-feet between bollards
Operating Temp:	-20°C to +70° C
Humidity:	90-percent at 50°C (non-condensing)

23. Pushbutton Activation

23.1. Push Button activation assembly shall include Amber LED lights.

Assembly Size:	Height: 12 inches, Width: 5.25 inches
Assembly Color:	Green
Faceplate Size:	Height: 7.75 inches, Width: 5 inches
Faceplate Color:	Yellow Background w/ Black Lettering
Material:	Cast Aluminum
Faceplate Lights:	Amber, Light Emitting Diodes (LED)
Push Button:	ADA Compliant, 2 inch SS Mushroom w/shield & microswitch
Mounting:	Pole mounted per local height requirements