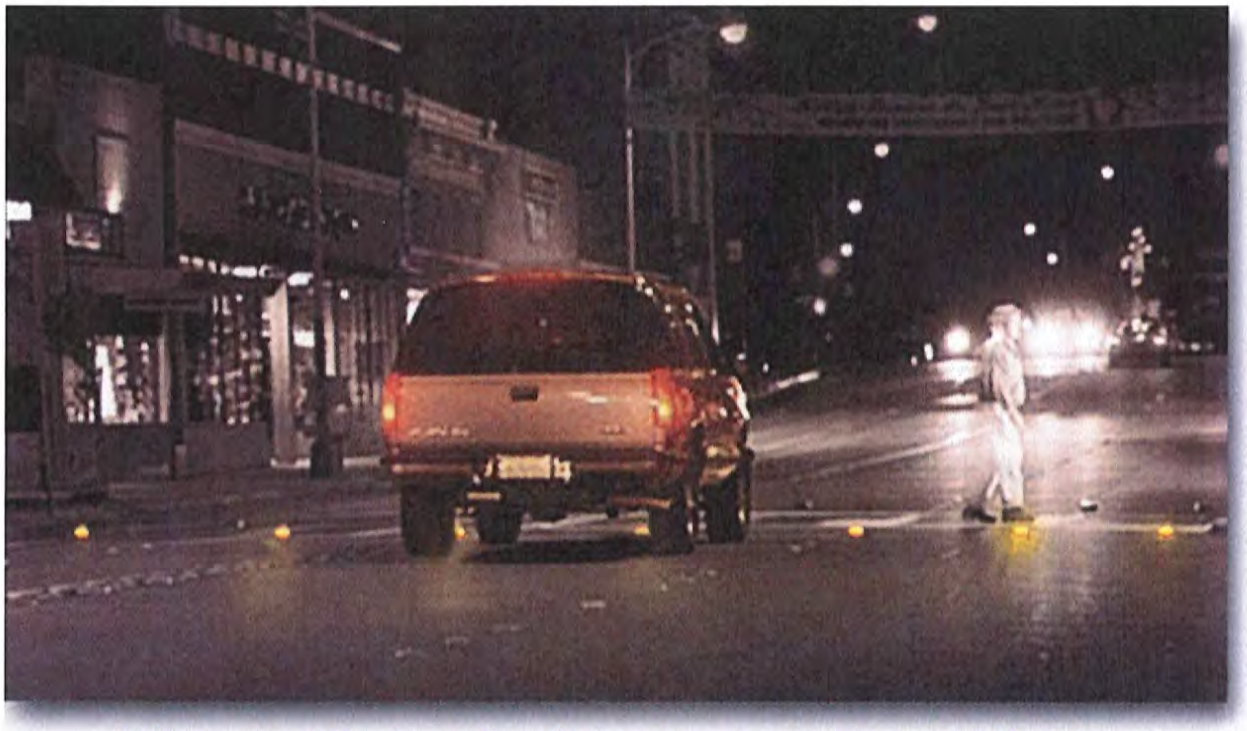
LIGHTGUARD SYSTEMS®

Visual Supplement for LightGuard® In-Roadway Warning Light (IRWL) Concrete Installations



When the Pedestrian Crossing Isn't Clearly Visible

The *LightGuard Smart Crosswalk™ System Is...*

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CONCRETE INSTALLATION PROCEDURE

The following information is a basic guideline for installing LightGuard Systems® In-Roadway Warning Lights (IRWL) at locations where new concrete is to be poured.

Conduit must be installed. It should be placed at least 3" to 4" (76mm to 101mm) below the surface of the roadway (or as required by local regulations). The single ¾" (19mm) hole in the center of the base plate can be enlarged to approximately 2½" (63mm) diameter in order to insert two ¾" PVC conduits connected to 90° elbows up into the base plate wiring cavity.

Alternatively, a single 1½" to 2" diameter metal or PVC conduit can be used with a TEE connection stub that extends at least 1" (25mm) above the surface (after concrete is poured) for pulling wire loops through TEE's. This is installed at each location where an In-Roadway Warning Light Base plate will be placed. Minimum recommended conduit is ¾" PVC to comply with NEC 14AWG type RHW-2/USE-2/ XLP conductors.

Use a circular wooden plug or equivalent 1½" (38mm) thick by approximately 10" (257mm) diameter for SD-10 Base plate or 14" (355mm) diameter for CHS-14 Base plate with a center hole having a diameter larger than the conduit stub(s) protruding up from the road bed as a concrete forming tool .

The plug center hole diameter should be minimum 1/8" (3mm) smaller than center hole in base plate to ensure subsequent base plate seating. The plug is placed over the conduit stub (or elbows) during the concrete pour to create a depression form for installing the base plate when concrete is dry.

After the concrete is dry, the wooden plug is removed & the base plate is affixed into the road. Excess concrete around the conduit should be removed to allow epoxy to bond the conduit to the base plate at the center hole. After the base plate is installed, the extended conduit can then be cut flush to the inside surface of the base plate.

Remove any excess epoxy &/or concrete from the base plate. After conductors are terminated, the exposed portion of the conduit opening should be filled with duct seal to minimize the potential of moisture or contaminants from entering the conduit.

The asphalt surface is cut open to meet project specifications. Then the conduit and rebar are placed in the trench.

Once the stub pipes and 90 degree elbow to the conduit are installed along with the base plate plug, the concrete pour can begin.

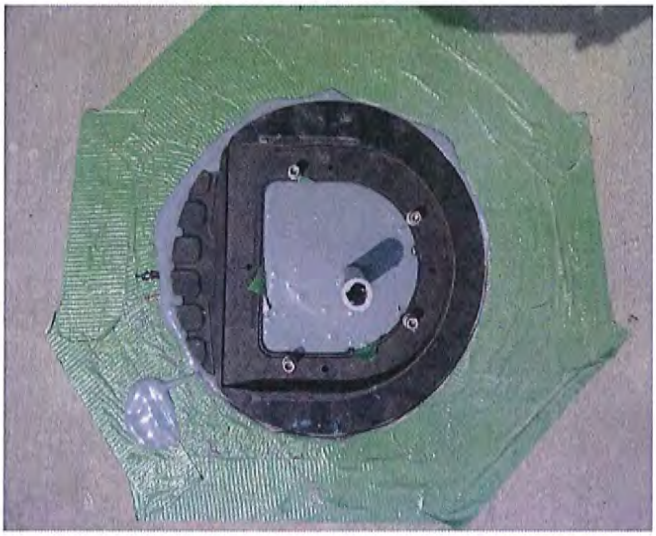
The finished concrete pour is surface flush to the adjoining asphalt road and the base plate plug surface top.

The pictures on this page show the steps for preparing the hole depression for the epoxy pour and embedding the base plate into the concrete surface.

Place thick duct tape product around the perimeter of the hole depression.

The hole depression circumference is completely protected and ready to receive the Epoxy epoxy pour and baseplate.

The baseplate is placed into the depression. It is important that the front is properly aligned,



The epoxy may flow up into the base plate cavity (not a desirable result).

Manually chip out the excess epoxy material and cut the conduit.

Examples of hole depressions with tape around the circumference and ready to receive the Epoxy pour.

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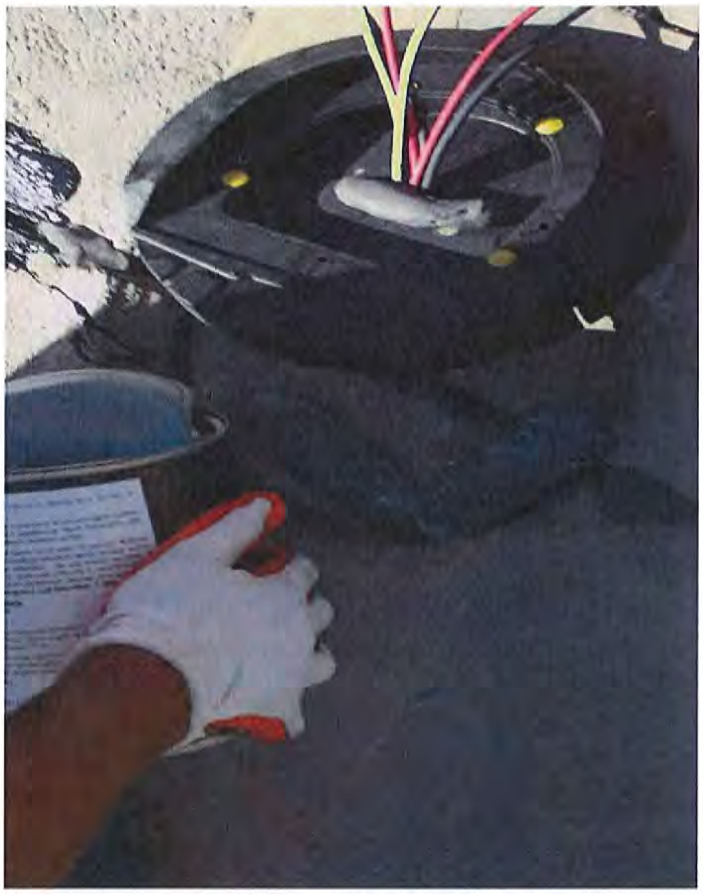
Mix only enough 2-part epoxy (BONDO 7084) for 2 to 3 base plates, since Epoxy working life is approximately 10 minutes. Surfaces should be cleaned of dirt or debris, and dry before applying adhesive. Ensure that wires are vertical in the center of the depression cut. Pour epoxy into depression cut (approximately ¼" depth). Pull wire through center hole in base plate. Minimize the amount of epoxy that flows into the base plate. Secure base plates to roadway surface by pressing the base plate into the epoxy in the depression cut.



Ensure that epoxy flows around the outside diameter of the base plate and slightly around the wires emerging from the center hole of the base plate, but DOES NOT flow into the base plate. Ensure that epoxy fills outside diameter of base plate up to grade level. Ensure that the base plate is aligned with the mark made in step 6 (See Installation Manual Section 3.5) and is aimed correctly both horizontally and vertically toward the zone of convergence *prior to epoxy curing*. Allow minimum of 30 minutes of epoxy cure time prior to moving wires for connecting pigtail gel plugs (Sec. 3.6).

Allow minimum of 1 hour cure time (above 70°F & 2 hours if colder temperatures), and be certain that the bondo is fully cured before opening traffic lanes to vehicles travelling over recently epoxied base plates. Signal heads can be secured to base plates as soon as epoxy has sufficiently hardened. *NOTE: Temperature is critical.*

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NEW ROAD SURFACE CONSTRUCTION INSTALLATIONS

If site is new construction, conduit under the roadway surface and knockout templates (to achieve base plate depression excavation for installation) is an option for the installer/contractor. This will avoid or minimize saw cutting into new roadway surfaces.

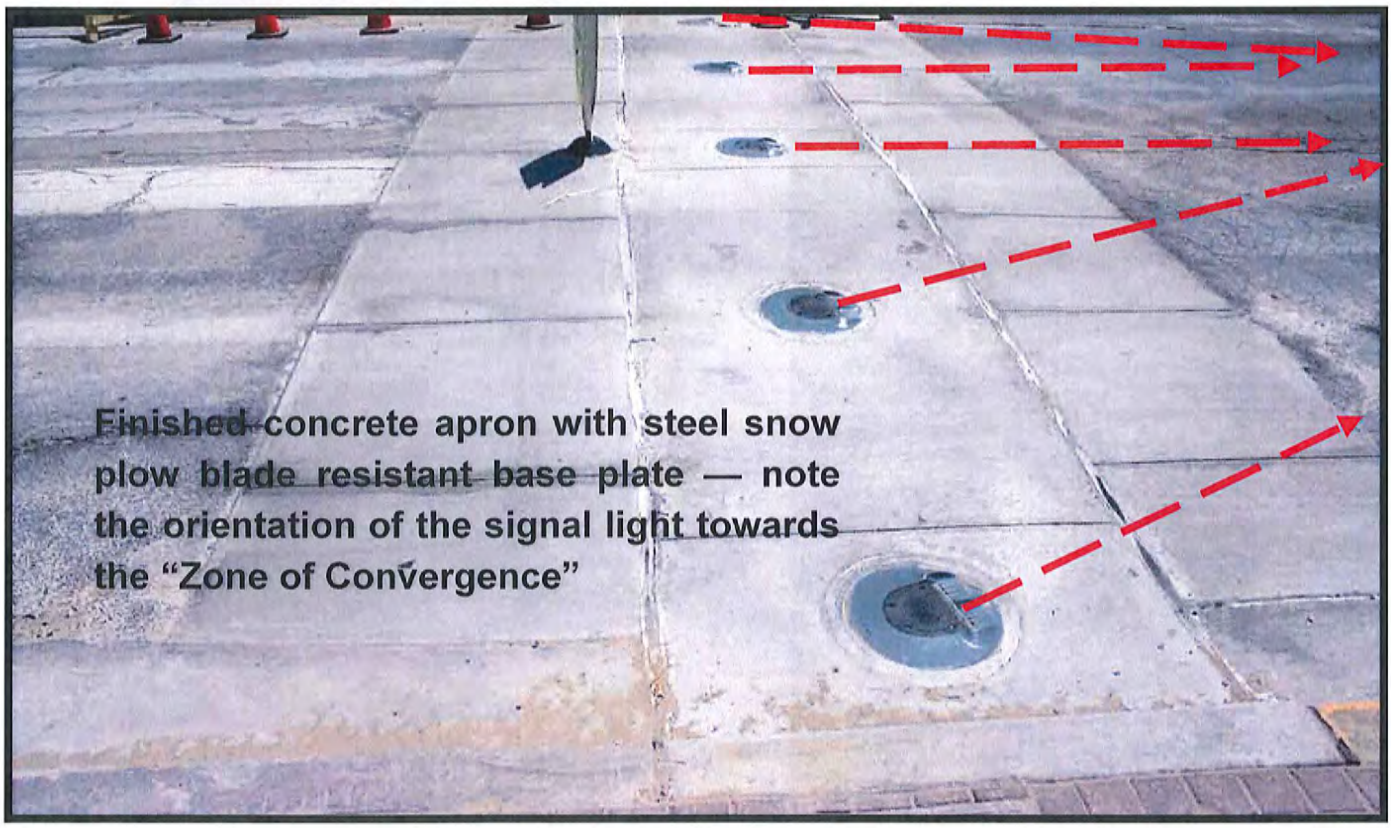
Plywood cutouts or similar knockouts to match the base plate assembly size may be utilized in preparation for the installation of the base plates upon completion of the roadway surface.

Precise engineering must be exercised to insure proper placement and alignment of the in-roadway modules on the lane lines and travel lanes once the work is completed. A separate conduit is recommended for the single run of tray cable across the street.

Finished Installation Of Snow Plow Blade Resistant Base Plate Into Concrete

Forming up the concrete apron, note the pink plugs. After the concrete is poured and set, these plugs will be removed and the steel snowplow resistant base plates can be installed.

Concrete Curing



Finished concrete apron with steel snow plow blade resistant base plate — note the orientation of the signal light towards the "Zone of Convergence"

REFERENCE DIMENSIONS FOR BASE PLATE MOUNTING TO ROADWAY USED FOR RETRO-FITTING EXISTING CONCRETE SURFACES

Base Plate Model	Base Plate Material	Base Plate OD - Outside Diameter	Base Plate Height	Recommended Depression Cut Hole Diameter	Recommended Depression Cut Hole Depth
CHS-14 revH min	Steel	13¾" (350mm)	1⅜" (35mm)	14" (356mm)	1½"max (38mm)
SD-10C	Composite	9 ⅞" (251mm)	1⅜" (35mm)	10" (254mm) min	1½"max (38mm)

Recommended custom core drill for boring both 10 inch and 14 inch hole depression cuts for LightGuard's In-Roadway Warning Light (IRWL) in-pavement signal lights. Specify asphalt or concrete applications. The recommended suppler is CDP Diamond , Livonia, Michigan ask for Robert Capling, robertc@cdpdiamond.com; phone (734) 591-1041; http://www.cdpdiamond.com; lead time 3—4 weeks.

Side view:

- **Made from harden steel**
- **Coated with lacquer based paint**
- **Core drill, either 10" or 14" diameter**
- **Height - 15"**
- **Shipping weight: 10" - 40lbs.; 14"- 70 lbs.**

Top view:

Core drill center bolt is 1 1/4" - 7 female

Bottom view:

Core drill hatch pattern provides for smooth bottom cuts.