

Underground Loops and Loop Detectors

A loop detection system is a method of sensing vehicles and is typically used in automated gate applications to prevent a gate from automatically closing on a vehicle or to automatically open the gate when a vehicle is exiting a property. When loops are properly installed they are an extremely reliable form of vehicle detection. The loop detection system operates by creating an electrical field of sensitivity that tunes to the surrounding environment. When a metallic object enters this electrical field, the loop detector senses a change in the field and generates an output, usually activating a relay in a gate operator or other access control device that controls the operation of the gate.

There are three basic components in a loop detection system:

- Underground loop
- Loop lead-in wire or cable
- Loop detector

Underground Loop The loop is made from a continuous piece of wire (NO SPLICES) that is coiled around for a number of turns in a square or rectangular pattern. The wire is embedded into pavement either as a preformed loop placed prior to paving or buried in gravel, or into a saw cut that is cut into existing pavement. Both ends of this wire are then extended to the edge of the pavement.

Loop Lead-In Wire or Cable The lead-in wire cable extends the two ends of the loop wire back to the loop detector. On short runs (Loop is within ten feet from the loop detector), the two wires exiting the loop can be twisted together, run in conduit to the operator and connected directly to the loop detector.

The lead-in wire: it is recommended that lead-in wire be twisted a minimum of six turns per foot.

The lead-in cable: If additional lead-in wire is required. It is recommended that you use a shielded twisted pair (Insulated (floated) at one end and grounded at gate operator) with a direct burial rated jacket or be placed in PVC conduit. All splices must be soldered and placed in a watertight J-box.

Loop Detector The loop detector is the electronic component that controls the loop system. The most common loop detectors are the ones that plug into a socket inside gate operators control box, which is wired directly to the control board. The lead-in wire is connected to the socket base. There are various other types of detectors available on the market that can be hard wired into the gate operator control board.

Proper installation of the loops is essential for reliable functioning of the detector system. Most detector problems are caused by improper loop installation. Loop size may vary and will depend on lane width, traffic patterns and types of vehicles to be detected. Normal loops (6 ft x 6 ft) are used to detect motorcycles and automobiles.

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