⚠️ Installation Notice:

This sensor cannot be used as a vehicle presence sensor. It can only provide a pulse when a vehicle is first detected. Therefore, it cannot be used as a safety or obstruction sensor and is ideally suited to free exit applications.

Overview

The Diablo Free Exit Probe is intended to be buried beneath the roadway surface and connected, via lead-in cable, to many of the Diablo Control products including the DML-9LP, DSP-10, DSP-19, DSP 22-1, DSP-22-2, XLP-8, and the DSP-55. Installation costs may be significantly less than those for conventional loops, because only a single, straight 1/4-in. saw cuts need to be made and a 1½-in. diameter hole drilled about 10 inches deep. Also resulting in the opportunity for greatly increased service life due to the reduced exposure to hazards such as road traffic, pavement movement, pavement deterioration, and roadwork.

The fact that the Diablo Free Exit Probe is not installed in the pavement and that the lead-in is very durable allows the Diablo Free Exit Probe to be used in situations such as cobblestone pavements, poor pavements, dirt/gravel roads, and bridge decks. Minimal intrusion into good pavements is another benefit.

The area of detection provided by a Diablo Free Exit Probe is smaller than that provided by a 6-ft. by 6-ft. loop and may be considered a point detector. This characteristic allows separation of closely spaced vehicles, good resistance to detecting vehicles or other moving objects adjacent to the installed location, and total immunity to "crosstalk" problems.

The desired installation location for the Diablo Free Exit Probe is in the center of the travel lane for the vehicles you are trying to detect. The distance from the gate will depend on several factors (acceptable time to wait for the gate to open, typical vehicle travel speed, site geometry, etc.) The sensor is typically placed 50' to 100' from the gate. When the roadway is less than 11 feet wide, it may be possible to place the probe on the side of the roadway and achieve acceptable detection performance. There will be loss of sensitivity when using the side of roadway installation. The probe can be installed at a 45-degree angle so that the end of the sensor that the wire exits from points towards where the vehicle is to be detected. This can be particularly useful in applications where there is already an existing driving surface that the customer does not want disturbed.

Installation is straight forward. A 1½-in. diameter hole (8-in to 10-in. deep) is drilled for the Diablo Free Exit Probe. A shallow, 1/4-in. saw cut from the hole to the edge of the road provides a path for the lead-in wire. The Diablo Free Exit Probe with lead-in is inserted into the hole and the hole is filled with dry sand. Detector loop sealant material is then used to fill the slot and top portion of the hole.
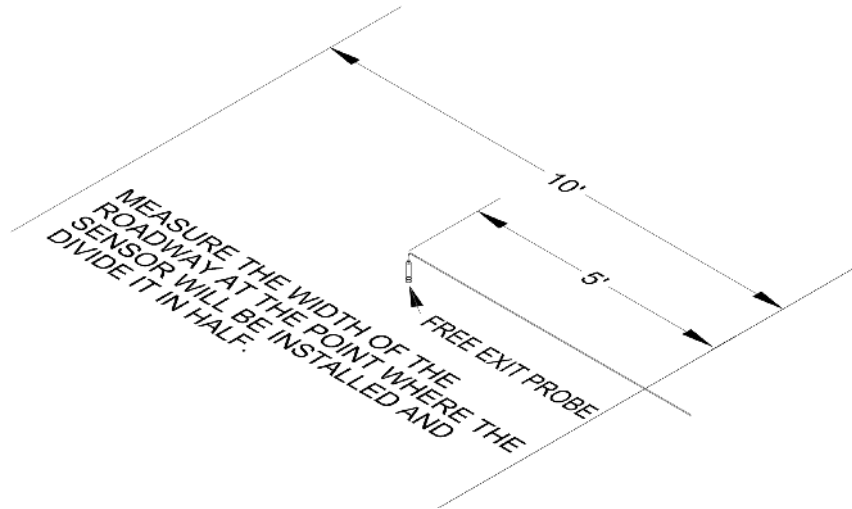
It is important that the Diablo Free Exit Probe be installed in a vertical position and that the vertical position of the Diablo Free Exit Probe be maintained. Under some soil conditions, installation can be further simplified by installing the Diablo Free Exit Probe inside a length of PVC pipe (not steel pipe) with an interior diameter of about 1 inch. In this case, the hole must be slightly larger than the outside diameter of the PVC pipe, typically 1-5/8-in. or less. After insertion of the PVC pipe and Diablo Free Exit Probe, all cavities are backfilled with fine, dry sand and the installation completed in the normal manner.

Now that you know what the plan is, let's take this step by step:

Specifications are subject to change.

Step 1   Locate the center of the driving surface and the desired distance away from the gate. A typical distance is 50' to 100'. The amount of lead-in cable ordered on the Diablo Free Exit Probe will typically determine your maximum distance from the gate. Care should be taken to ensure that the sensor is not within 15 feet of a manhole lid (or other metallic lid) in the driving surface.

MEASURE THE WIDTH OF THE ROADWAY AT THE POINT WHERE THE SENSOR WILL BE INSTALLED AND DIVIDE IT IN HALF.

10'

5'

FREE EXIT PROBE

Step 2   Core drill a 1½" to 2" hole at least 6" deep at the location identified in Step 1. Saw cut a slot at least ¼" wide and 1" deep from the drilled hole to the edge of the roadway. If installing at the side of the roadway this step is skipped and a 3" trench is dug to where the Diablo Free Exit Probe will be installed at the side of the roadway.

1 1/2" TO 2" CORE - 8" to 10" DEEP

1/4" SAW SLOT - 1" DEEP
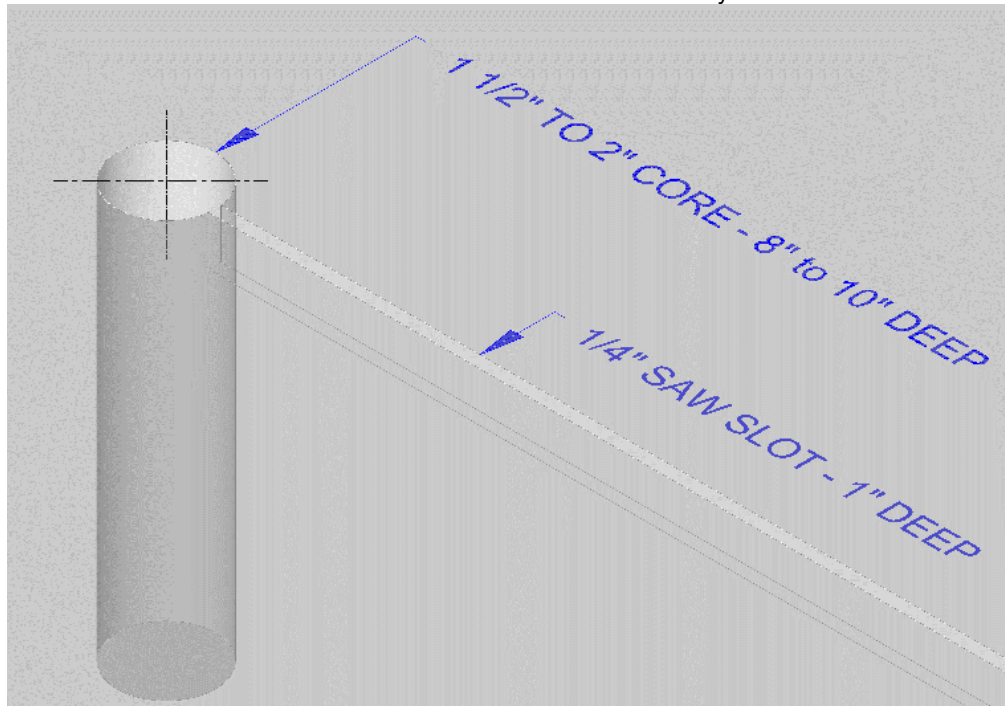
Step 3   Install the Diablo Free Exit Probe sensor and route the lead-in cable back to the control box where the detector is installed. If performing the normal installation, the sensor should be placed in the drilled hole and then filled with sand to within 1" of the roadway surface. The remaining portion of the drilled hole and the saw slot should then be filled with loop sealant or another appropriate medium.

LOOP SEALANT

1.0

6.0 to 12.0

FILL WITH SAND

1.5 to 2.0

Normal Installation

DIRECTION OF TRAVEL
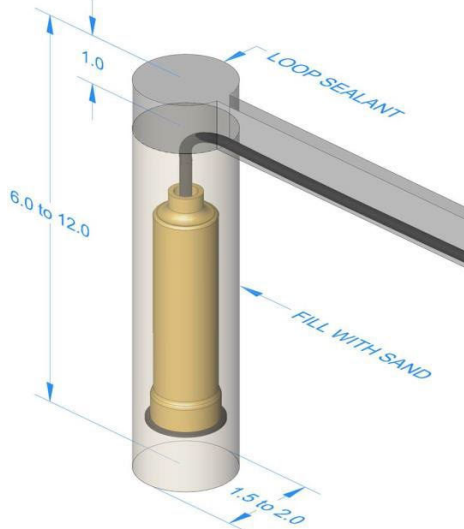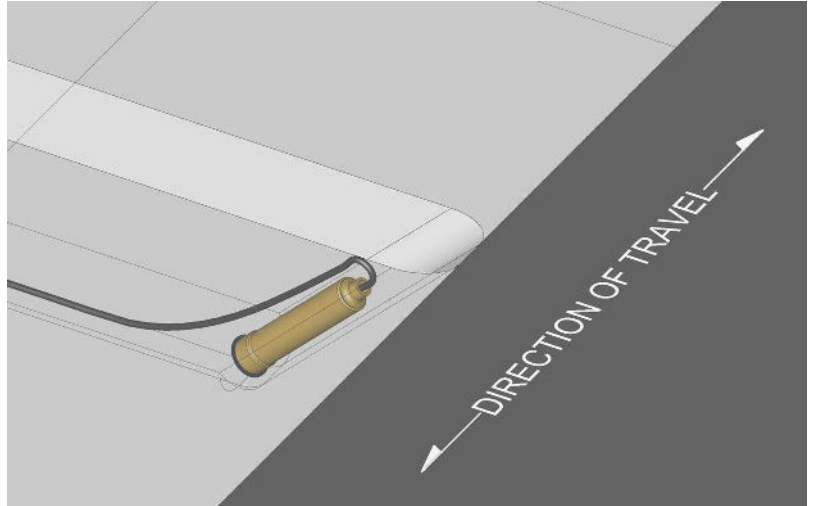
Side of Roadway Installation

Step 4   Using an Ohm meter, measure the resistance between the two wires of the sensor. For a good sensor the resistance should be between 1.5 and 7 ohms. If the reading is not between these values the sensor is defective or the lead-in cable has been damaged. In either case, the sensor will need to be replaced with a functional sensor.

Step 5   If performing the normal installation, remaining portion of the drilled hole and the saw slot should then be filled with loop sealant or another appropriate medium. Run the lead-in cable from the exit point in the driving surface to the operator. Installing a conduit will provide an additional layer of protection.
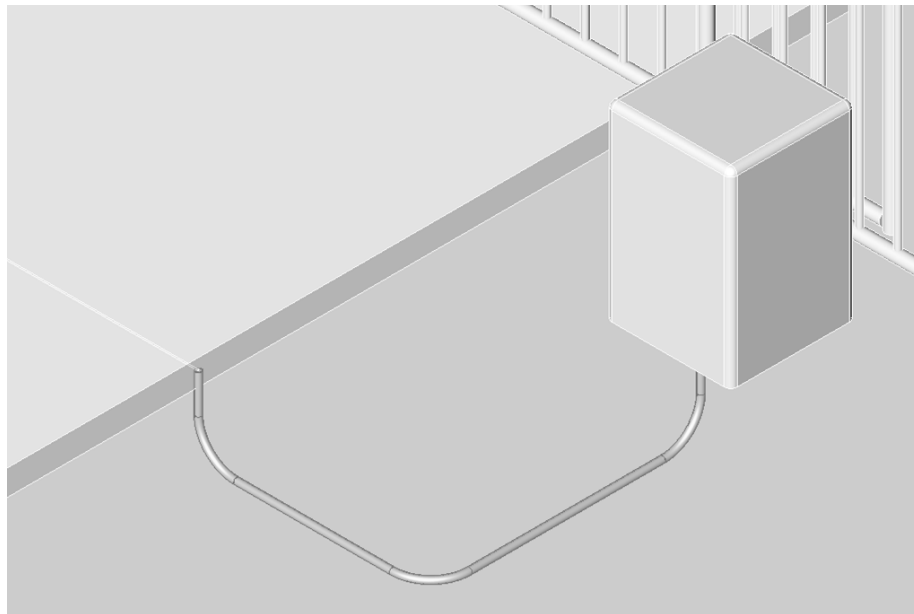
Step 6   Connect the sensor to the loop terminals of a correctly wired Diablo Controls detector.

Step 7   Use a vehicle to confirm that a vehicle is detected at the desired locations. Be sure to test being as far as possible to both sides for the driving surface with the smallest expected vehicle. This is especially important if you used the side of roadway installation method. If you used the side of roadway installation method and cannot detect vehicles at all desired locations, a second sensor on the other side of the roadway may be required for reliable operation. This second sensor should be connected to its own detector. Connecting it to the same detector as the first sensor will cut the sensitivity for both sensors in half.