



Excel Technology Co Pty Ltd

Installation Guide Placement of PIEZOs and Inductive Loops

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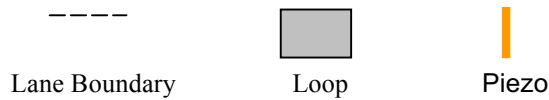
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Original Publication Date 2008:07:16\130.2 RevA ENGNOTE_INSTALLATION_LOOP&PIEZO_PLACEMENT

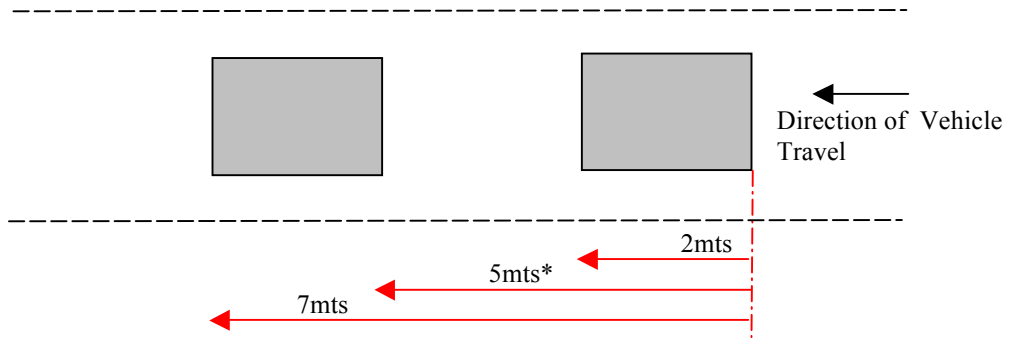
IN-PAVEMENT LOOP and PIEZO CONFIGURATION

The following configuration details are intended as a guide for Loop & Piezo placement

Legend

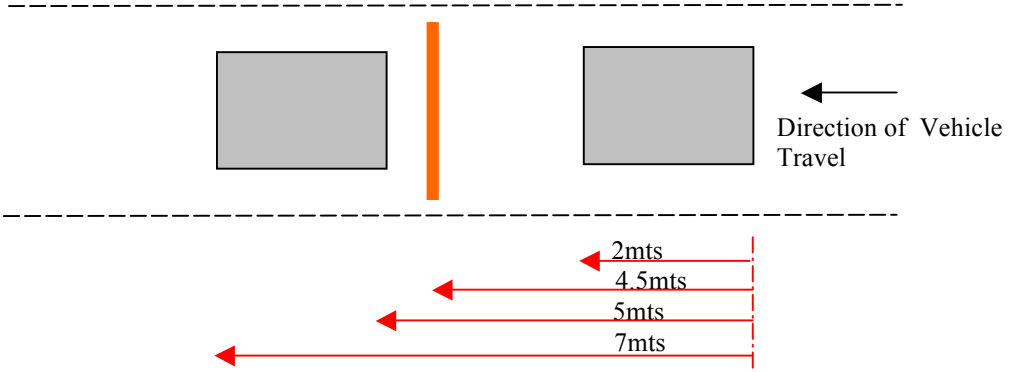


1. LOOP PAIR per lane Incident Detection & Vehicle Classification Classification - Length + Electromagnetic Profile



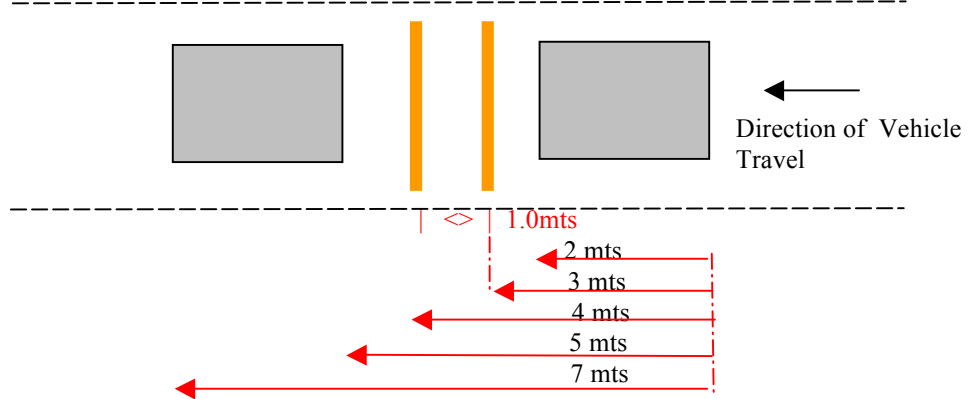
Incident Detection and Vehicle Classification. Typically 8 vehicle types reliably – using length and metal mass concentrations.
 Note: * Recommended distance 5 – 7 Metres

2. LOOP PAIR + PIEZO per lane Incident detection and Vehicle Clsfy. Classification - Axle Configuration & Vehicle Length



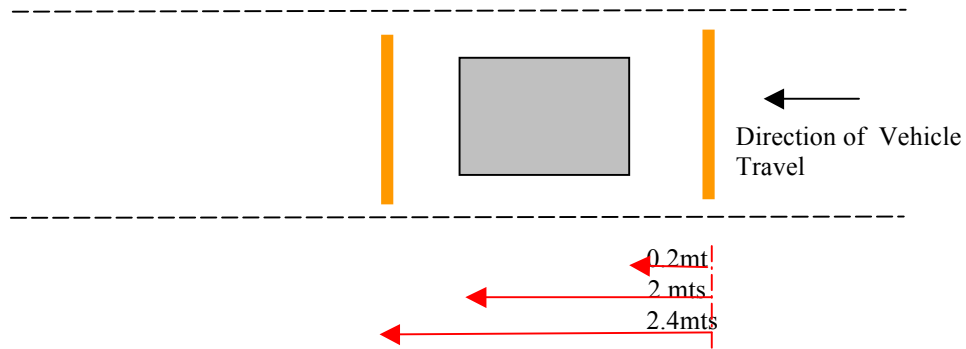
Incident Detection, Vehicle Classification Typically 14 to 21+ vehicle types and vehicle loaded/unloaded status (binary weight)
 Locating the PIEZO closer to the lagging loop in congested traffic applications provides an enhanced performance.

3. LOOP + PIEZO WEIGHT – Loop – piezo-piezo - Loop Vehicle Length, Axle Configuration & Weight



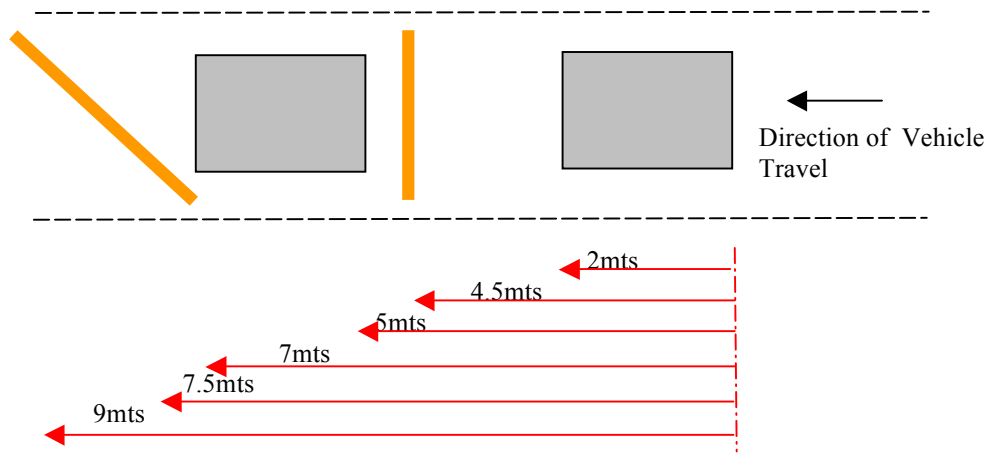
Incident Detection, Vehicle Classification and Weigh in Motion Axle weights and Vehicle aggregate weight

4. **LOOP + PIEZO WEIGHT - PIEZO – loop - PIEZO**
Vehicle Length, Axle Configuration & Weight



Incident Detection, Vehicle Classification and Weigh in Motion Axle weights and Vehicle aggregate weight

5. **Loop Pair plus PIEZO - Axle, Vehicle Length & Single / Dual Wheel**
Axle Configuration - Classification typically 21 vehicle types



Incident Detection, Classification & Weigh in Motion

NOTE 1: The in-pavement PIEZO sensors are placed proportionally within the lane width to maximise detection function. The in-pavement loop size is typically 2 Mts x 2 Mts (4 turns). A PIEZO length should be chosen to within typically 200mms of the lane width. Piezo feeder cable must not be extended – refer to manufacturers recommendations.

NOTE2: Loop Separation may be set to a maximum of 7 mts edge to edge as a maximum but varies according to specific road authority specifications. High speed detector scanning reduces the requirement for excessive loop separation. (adjust piezo position accordingly)

NOTE 3: When PIEZOS are used for any weight function the ETG Temperature probe must installed and connected to the temperature monitoring module. This may be installed in the same slot as a selected PIEZO strip.

Installation notes

The sensor is installed into a small slot cut in the road surface, the slot is nominally 3.5m long (dependant upon lane width), 20mm wide (in the direction of traffic flow) and only 20mm deep. Unlike other traffic sensors the shallow cut ensures that the road substructure is not disturbed, the slot being within the wearing course which is normally 40-50mm thick. In addition the sensor does not present a solid or rigid intrusion in the road surface hence any bending moment within the pavement due to the passage of heavy axles does not cause differing movement of sensor against asphalt. This latter effect causes loosening of material around the sensor; is predominant problem with rigid type sensors and the major cause of sensor failure.

The small cut in the road minimizes the damage done to the road, speeds up the installation and reduces the amount of grout used for the installation. The Roadtrax BL sensor is available both as a Class I sensor for the highest level of uniformity needed for Weigh in Motion applications and as a Class II sensor which is more cost effective for Counting, Classifying, High Speed Toll Booths, Speed Detection, and Red Light Cameras.

The sensor is mounted in the slot with small plastic clips and the slot is backfilled with a polyurethane adhesive thus completely encapsulating the sensor within the wearing course.

Features

Easy installation in a 20 x 20mm slot, which minimizes the disturbance of the road, decreases the depth of the road cut, and minimizes the amount of grout needed.

Flexible sensor - conforms to any road profile while maintaining a uniform distance to the road surface.

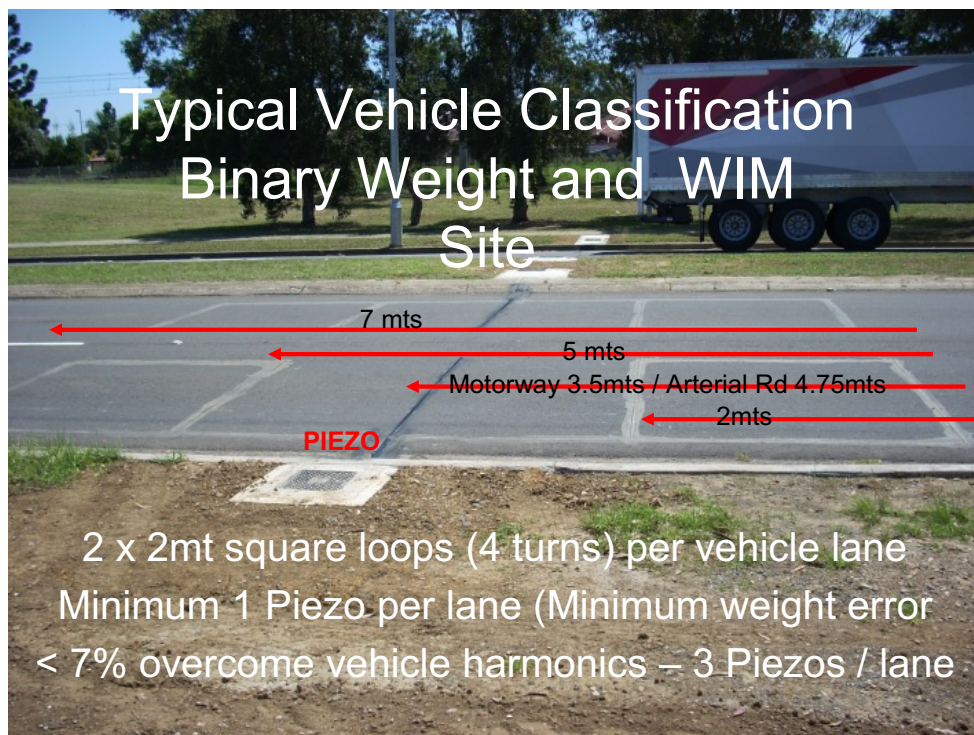
Durable enough to withstand normal installation handling and hundreds of millions of axle actuations.

Uniform, high amplitude piezoelectric output compatible with existing counters and classifiers on the market.

Excellent Signal to Noise Ratio which has an inherent 10:1 rejection of road noise due to road bending, adjacent lanes and bow waves of approaching vehicles.

Custom Passive Signal Cable with High Density Poly Ethylene Jacket which is rated for direct burial and resists nicks and cuts.

Typical R&TA Vehicle Classification Site



For detailed installation instructions please:

Loops: Refer to Document **Engineering Note: ETGENG:2007:L130.1.B**

Piezos: Refer to Document **Engineering Note: ETGENG:2010:L130.3.A**