

Inductance Loop Vehicle Detector Function – The Basics!

Basic Principles:

- An inductance loop is established with a wire wound in a saw cut in the pavement.
- Wires from the loop are brought back to the inductance loop detector module.
- The detector module oscillator powers the loop causing a field to form around the loop.
- The loop automatically tunes to a resonant frequency.
- The detector module monitors the resonant frequency to determine if a vehicle is in the loop.

Detection of a vehicle is NOT from its mass. It is from changes in the resonant frequency within the magnetic field of the loop caused by the metallic surface area of the vehicle while in proximity to the loop. The greater the metallic surface areas in the same plane as the loop, the greater the increase in frequency. For example, a one square foot piece of sheet metal positioned in the same plane of the loop has the same effect as a hunk of metal one foot square and one foot thick.

The position of the vehicle relative to the loop is extremely important. This is true not only for presence within the loop area, but also for distance above the loop. If the surface area is farther away from the loop (i.e. taller vehicle), it is more difficult to detect. The maximum height of detection is roughly 2/3 the length of the short side of the loop, but no greater than 4 feet.

