

# GROUND PENETRATING RADAR METHOD IN CONCRETE STRUCTURES



Ground-penetrating radar (GPR) is a high-frequency electromagnetic method that **GEOVision** commonly applies to a number of engineering problems associated with both new and aging concrete structures.

A GPR system radiates short pulses of high-frequency EM energy into the ground from a transmitting antenna. This EM wave propagates in the ground at a velocity that is primarily a function of the relative dielectric permittivity of subsurface materials. When this wave encounters the interface of two materials having different dielectric properties, a portion of the energy is reflected back to the surface, where it is detected by a receiver antenna and transmitted to a control unit for processing and display.

- GEOVision** geophysicists use GPR in concrete to:
- Map rebar position
  - Determine depth of concrete over rebar
  - Identify air/water filled voids in or behind concrete
  - Determine concrete thickness
  - Identify rock pockets within concrete
  - Identify leak grouted voids
  - Determine asphalt thickness
  - Determine rebar corrosion/concrete condition
  - Map and define conduits and utility cables within concrete structures

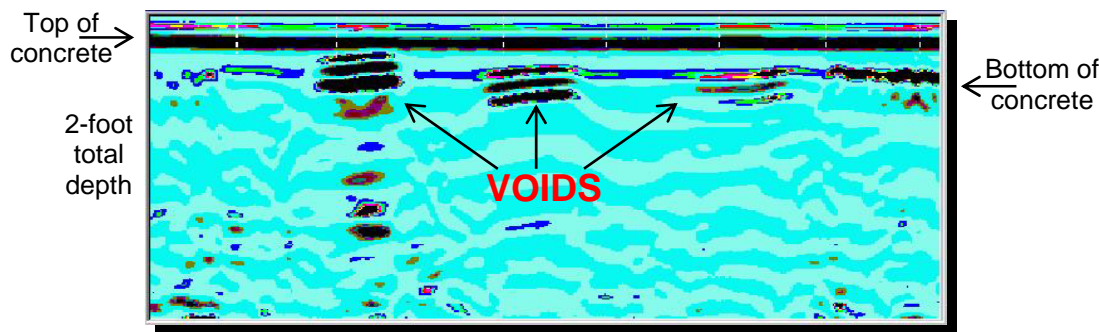


*GSSI SIR10B GPR Unit*



*Search For Voids*

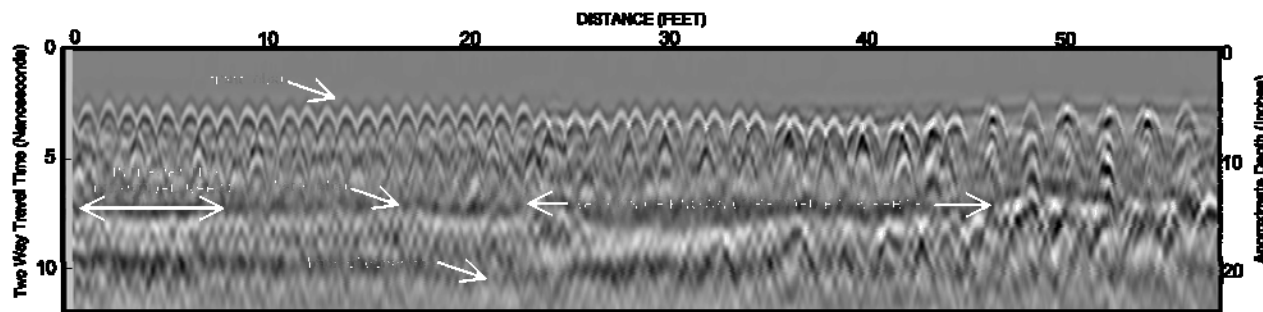
**GEOVision** has the most advanced GPR unit and processing software on the West Coast. Currently we operate GSSI's SIR10B with 900 and 1500MHz antennas coupled to survey wheels and process using GSSI's Structscan, and G. Olhoef's GRORADAR, a full waveform-processing package.



*Section Showing Voids*



*1500MHz Antenna*



*Section Showing Corroded Back Rebar*