



The World Leader in Ground Penetrating Radar

Geophysical Survey Systems, Inc.

www.geophysical.com

Company Vision

GSSI is an internationally respected corporation known for our technological advancements in the geophysical, archaeological, forensics, infrastructure, public works and transportation industries. Historically, we were the first company to offer commercial ground penetrating radar (GPR) systems, and for over forty years, we have remained the world's largest GPR manufacturer. We provide our clients with superior products, technical expertise, unsurpassed customer support and formal training facilities.

At GSSI, we pride ourselves in providing an atmosphere where our people can be successful. Our greatest strength lies in our people with over 250 years of experience in GPR product design, software development and field expertise. By streamlining our processes and allowing an environment where our organization can flourish, we are proud to offer exceptional products and service to our customers.

Our Survey Solutions

- **Concrete Inspection** – Use StructureScan™ as a non-destructive method to locate the depth and position of rebar, post-tension cable and conduits before drilling, cutting or coring.
- **Utility Locating** – UtilityScan® is the most accurate GPR system on the market for the non-destructive location of all subsurface utilities. With UtilityScan, users can immediately locate and mark buried service utilities like gas, electric and sewer lines.
- **Road and Bridge Inspection** – The affordable RoadScan™ system provides users with an effective tool for quickly determining pavement layer thickness and performing base and sub-base evaluations with data densities not obtainable by other labor-intensive methods.
- **Geology** - Ground penetrating radar offers an accurate, non-destructive solution to mapping the subsurface of the earth. With GSSI GPR antennas, it is simple to locate features of interest and subsurface layers in real time, up to 100 feet or more.
- **Archaeology** - Archaeologists and remote sensing specialists around the world rely on GSSI ground penetrating radar and EM conductivity instruments as key tools for non-invasive site investigation.



"I've had a GSSI GPR system for several years now. I've always been impressed with the quality and ruggedness of the system."

Greg Shipley, WG Shipley ARLR

Our Technology Explained

GPR Method

GPR works by sending a tiny pulse of energy into a material and recording the strength and the time required for the return of any reflected signal. A series of pulses over a single area make up what is called a scan. Reflections are produced whenever the energy pulse enters into a material with different electrical conduction properties or dielectric permittivity from the material it left. The strength, or amplitude, of the reflection is determined by the contrast in the dielectric constants and conductivities of the two materials. This means that a pulse which moves from dry sand (low dielectric) to wet sand (higher dielectric) will produce a very strong reflection, while one moving from dry sand (low dielectric) to limestone (which has a close dielectric value to dry sand) will produce a very weak reflection.

While some of the GPR energy pulse is reflected back to the antenna, energy also keeps traveling through the material until the pulse signal energy dissipates (attenuates). The rate of signal attenuation varies widely and is dependent on the dielectric properties of the material through which the pulse is passing.



GPR Equipment

A GPR system is made up of three main components:

- 1 Control unit
- 2 Antenna
- 3 Survey wheel



Electromagnetic Induction Method

EM instruments contain two sets of coils that are located on opposite ends of the tool. One set of coils is used to transmit a primary magnetic field, which generates electrical current in the ground. The induced current then generates a secondary magnetic field, which is sensed by the coils in the receiver end of the instrument. Data is then displayed on a control unit indicating the conductivity of the earth.

EM Equipment

The Profiler™ EMP-400 system is made up of two main components:

- 1 EM instrument; which is comprised of the transmitter (a), receiver (b) and electronics enclosure
- 2 PDA; the instrument interface

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Geophysical Survey Systems, Inc.

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