

# Quality Geophysics

## Geophysical Application

### Ground Penetrating Radar

Ground penetrating radar (GPR) is a high-resolution tool that has a broad range of applications. Quality Geophysics personnel typically follow ASTM D-6432 protocols in designing and collecting surface GPR data. When high-resolution surveys are applied to bridges D-6087 is used.

The equipment used for GPR surveys generally includes a centralized data storage unit that often incorporates a data display, and antennas. Antennas are selected based on the depth of the survey and required survey resolution as shown on the table below. High frequency antennas

Antenna Frequency	Typical Maximum Depth	Typical Applications
1.5 GHz	1.5 ft.	Structural Concrete, Roadways, Bridge Decks
900 MHz	3 ft.	Concrete, Concrete Voids, Shallow Soils, Archaeology
500 MHz	6ft.	Concrete Voids, Shallow Geology, Utility, Environmental
400 MHz	9 ft.	Shallow Geology, Utility, Environmental
270 MHz	20 ft.	Geology, Large Utility
200 MHz	25 ft.	Geology, Environmental

have higher resolution, but do not penetrate deep. Lower frequency antennas will penetrate deeper, but have lower resolution. Proper GPR antenna selection is important to the successful implementation of any GPR investigation.



GPR surveys are extremely versatile. Surveys can be performed using a cart to carry the antenna, or towed behind a vehicle. Data may be integrated with global positioning system equipment or, more commonly, tracked using a survey wheel to measure inline distances from a known location.



Quality Geophysics experienced personnel can combine knowledge of electromagnetic wave propagation with dielectric constants of various properties to design an appropriate survey for your site.



GPR has been successfully applied to geologic, geotechnical, and structural projects.