

SEISMIC REFRACTION SURVEYING

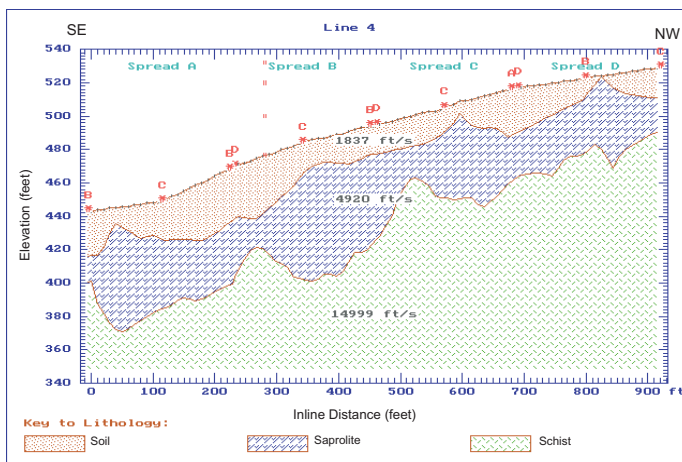
HIGH-RESOLUTION GEOPHYSICAL TECHNOLOGIES

ARM Geophysics uses seismic refraction methods to determine bedrock depth and rippability as well as to delineate fractures. The earth is made up of various materials that have specific physical properties. One of the properties is the rate at which compressional energy travels through the ground. This energy is generated by a sledge hammer hitting against a metal plate on the ground, massive weights thrown against the ground, or even by explosives. As the energy travels through the subsurface, it will reflect and refract at interfaces between different subsurface layers.



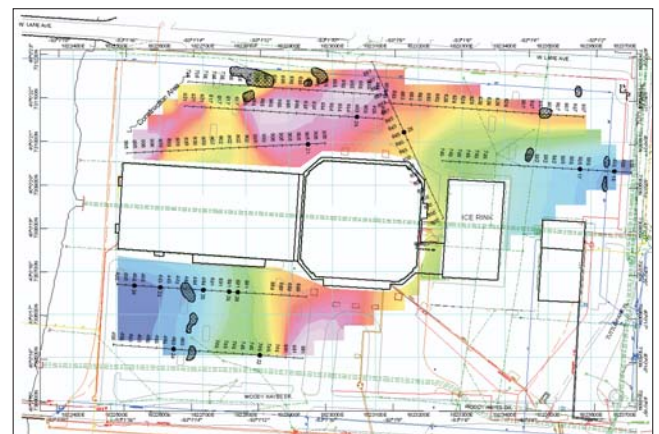
Seismic refraction survey in Dalton, Georgia.

A seismograph measures the travel time from the source to a set of geophones which are at a known distance from the source. Given the travel time and the distance, a seismic layer model can be obtained.



Seismic refraction layer model.

From the seismic model, rippability can be estimated. Rippability is a measure of the ease at which rock is excavated. Excavation of materials that are not rippable requires drilling and blasting. The seismic velocity of earth materials is directly related to their strength and hence their rippability.



Seismic velocity map showing areas of less competent bedrock.

APPLICATIONS

- Top of Bedrock
- Water Table Depth
- Rippability
- Fracture Delineation