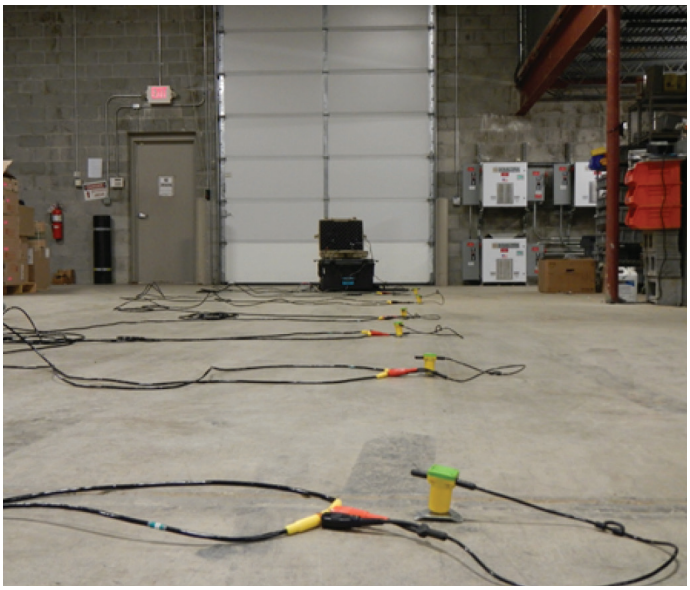
REFRACTION MICROTREMOR

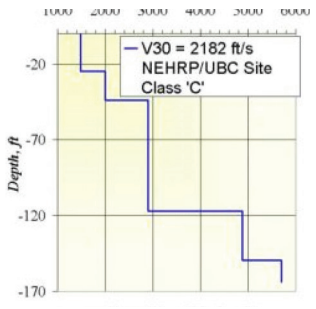


CTL ENGINEERING HAS THE ABILITY TO PROVIDE GEOPHYSICAL TESTING INCLUDING REFRACTION MICROTREMOR (REMI) SURVEYING TO ASSIST IN PERFORMING NON-DESTRUCTIVE SUBSURFACE INVESTIGATIONS

ReMi technology functions by measuring the velocity of ambient acoustic waves (Shear Waves) beneath the surface, effectively returning a reviewable image of subsurface conditions.

Shear Wave receivers, known as geophones, are placed in intervals above the area being explored. These receivers take individual readings of incoming shear wave velocities and compile them inside a computer. A graph, like the one shown below, is then created from the data.

Based on the wave velocities read from the geophone, engineers are able to decipher what materials lie beneath the surface. In the graph, ReMi readings indicate that a level of rock is present approximately 120 feet beneath the surface.



Refraction MicroTremor is significant because it is both cost efficient and simple to use as the equipment consists of a small receiver, and an array of fist-sized geophones. The use of this technology has practical applications that can allow CTL to potentially return 5% or more of a project's total cost to the client.

SEISMIC DESIGN CATEGORIES

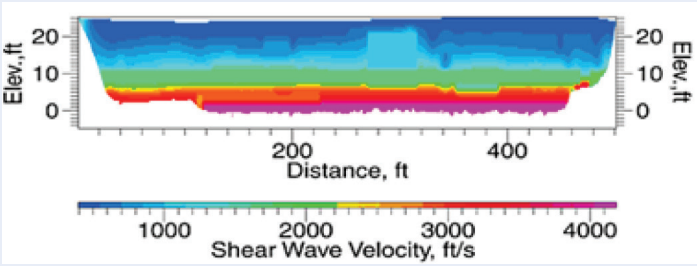
The Seismic Design Category of a structure is a leading determinant for the selection of materials used to support both the foundation and internal systems of a structure. The Seismic Site Classification is a critical component for determining the Seismic Design Category.

By using ReMi to measure the Shear Wave Velocities of the soils, we can eliminate the conservative constraints that are required in the International Building Code through using the traditional method of Standard Penetration Testing (SPT) to determine the Seismic Site Classification. This design scale rates the earthquake resistivity of soils at the site of construction. As a building's Seismic Design Category increases, building material costs tend to dramatically increase in response.

By providing a more accurate, non-destructive profile of the underlying soils, ReMi can provide information that will decrease the Seismic Design Category and furthermore provide thousands of dollars in materials costs savings.

SUBSURFACE MAPPING

ReMi is also capable of mapping the subsurface prior to excavation. ReMi's geophones return information on wave velocities that depict the strength and density of underlying materials. This information can then be used to determine the size and shape of subsurface abnormalities, ranging from a layer of rock to an unmapped utility tunnel. After uploading the information to a computer, the user has an option to view the information depicted in multiple graphical formats.



The above map depicts an utility tunnel, shown as a blue square which is sitting just below a layer of concrete depicted as the long green line.