



Geo Jarf Azma Consulting Engineers

Established from 2011 with the mission to implement geophysical studies related to geotechnical engineering.

Today, the company's main activity targets specialized geophysical projects within geotechnical schemes and other relevant fields such as mine exploration and other subsurface detecting approaches by highly trained geophysicists and geological experts and technicians with Doctoral and Master Degrees in geophysics, mine engineering and other geological sub branches.

Seismic Methods (Refraction and Reflection)

Method and Application

Seismic methods involves measuring the travel time of certain types of seismic energy from the source of impact at the surface (i.e. an explosion, weight drop or hammer) through the subsurface to geophone arrays. There are two common methods in engineering scale:

1. Refraction
2. Reflection

The seismic refraction method utilizes the refraction of seismic waves on geologic layers and rock/soil units in order to characterize the geologic conditions of the subsurface and geologic structure.

Seismic refraction involves measuring the travel time of the P and S seismic waves, which travels down to the top of the rock surface or other distinct density contrasts, refracted along the top of the layer with high density and velocity contrast, and returns to the surface as a head wave. In seismic reflection, equipment used are similar to seismic refraction, however, in this method, initially waves travel downward and are reflected at some point back to the surface, the overall path being essentially vertical.

Seismic Methods Services

1. Subsurface structure determination i.e. hidden fault and subsurface anomalies with P and S wave velocity and density contrast, such as cavity and underground spaces.
2. Layers embedment determination and their dynamical parameters measurements such as its corresponding P and S velocity.
3. Manmade soil and bedrock depth identification.
4. Soil dynamic parameters determination such as P and S waves velocity (V_p and V_s), Poisson ratio, bulk, shear, and elasticity modules.

Facilities and Appliances

1. ABEM (MK6 Model) -24channel seismometer, made in Sweden.
2. A 24 set package of S and P wave geophones.
3. Cables and subsidiary tools.