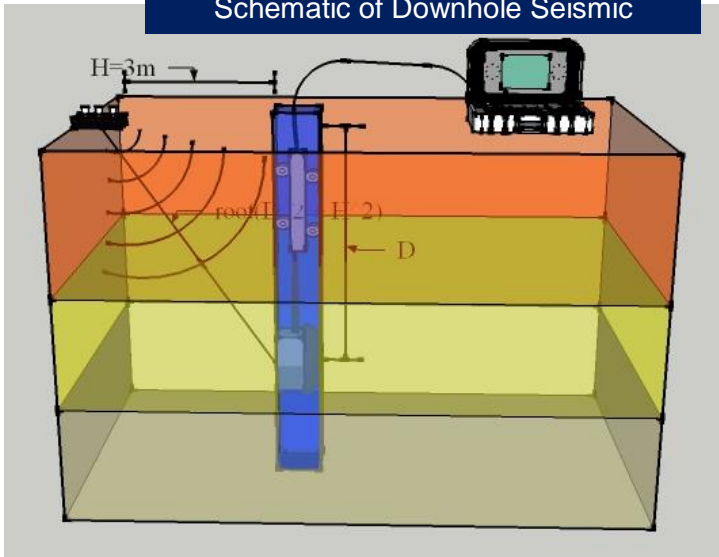


## Schematic of Downhole Seismic



Downhole seismic test is an in-situ test and determine the velocity of primary (P) and secondary (S) seismic waves to provide the elastic soil parameters. The P and S waves velocities are used in geotechnical foundation analysis, static and dynamic soil analysis, liquefaction assessment and etc.

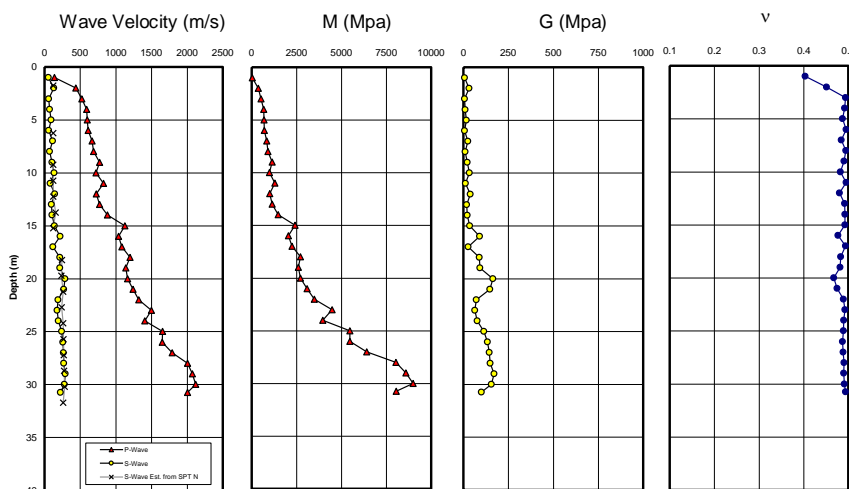
Downhole seismic test is carried out according to ASTM D7400. The wooden plank, the hammer and triaxial geophone will be required for this test.

The borehole required for the testing is prepared according to the ASTM procedures using PVD pipe. The wooden plank is placed on firmed soil surface 3m away from the borehole and put the soil bags on it for the stability. The geophone is connected with the computer by using the cable and placed at the bottom of the borehole. The S-waves are generated by hitting separately at each end of the wooden plank with hammer and the P waves are generated by hitting wooden plank in downward vertical direction for each test location. The velocities of both P and S waves are received by the geophones and recorded by using the specified computer program. The testing is carried out up to the top of the borehole by lifting the geophone about 0.5 to 1 m of the previous test location with the same procedure. The depth of penetration can be up to 100 m.

## Field Test



## Results



A time-depth graph and velocities-depth can be obtained for P and S waves. Based on the values of P and S waves, the Poisson's ratio, constrained and shear modulus of the soil can be determined.