

Analysis of Geotechnical Parameters from Geophysical Information

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Abstract

In our part of the world where legislations related to site investigations before constructions are not strictly enforced, it may be difficult to carrying out a comprehensive geotechnical investigation to characterize a site because of the expenses and the time involved. Another factor that can discourage a developer is the fact that most of the geotechnical tests procedures utilized during site investigations, to a certain extent, alter the existing environment of the site. This study suggests a quick, non-destructive and non-intrusive method of obtaining key subsoil geotechnical properties necessary for foundation design for proposed engineering facilities. Seismic wave velocities generated from near surface refraction method was used to determine the bulk density of soil, Young's modulus, bulk modulus, shear modulus and allowable bearing capacity of a competent layer that can bear structural load at the particular study site. Also, regression equations were developed in order to directly obtain the bulk density of soil, Young's modulus, bulk modulus, shear modulus and allowable bearing capacity from the compressional wave velocities. The results obtained correlated with the results of standard geotechnical investigations carried out.