World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:8, No:11, 2014

Multichannel Analysis of the Surface Waves of Earth Materials in Some Parts of Lagos State, Nigeria

Authors : R. B. Adegbola, K. F. Oyedele, L. Adeoti

Abstract : We present a method that utilizes Multi-channel Analysis of Surface Waves, which was used to measure shear wave velocities with a view to establishing the probable causes of road failure, subsidence and weakening of structures in some Local Government Area, Lagos, Nigeria. Multi channel Analysis of Surface waves (MASW) data were acquired using 24-channel seismograph. The acquired data were processed and transformed into two-dimensional (2-D) structure reflective of depth and surface wave velocity distribution within a depth of 0–15m beneath the surface using SURFSEIS software. The shear wave velocity data were compared with other geophysical/borehole data that were acquired along the same profile. The comparison and correlation illustrates the accuracy and consistency of MASW derived-shear wave velocity profiles. Rigidity modulus and N-value were also generated. The study showed that the low velocity/very low velocity are reflective of organic clay/peat materials and thus likely responsible for the failed, subsidence/weakening of structures within the study areas.

Keywords : seismograph, road failure, rigidity modulus, N-value, subsidence
Conference Title : ICCEABME 2014 : International Conference on Civil Engineering, Architecture, Building Materials and Environment
Conference Location : London, United Kingdom
Conference Dates : November 28-29, 2014