World Academy of Science, Engineering and Technology
International Journal of Geotechnical and Geological Engineering
Vol:13, No:7, 2019

Seismic Investigation on the Effect of Surface Structures and Twin Tunnel on the Site Response in Urban Areas

Authors : Seyed Abolhasan Naeini, Saeideh Mohammadi

Abstract : Site response has a profound effect on earthquake damages. Seismic interaction of urban tunnels with surface structures could also affect seismic site response**.** Here, we use FLAC 2D to investigate the interaction of a single tunnel and twin tunnels-surface structures on the site response. Soil stratification and properties are selected based on Line. No 7 of the Tehran subway. The effect of surface structure is considered in two ways: Equivalent surcharge and geometrical modeling of the structure. Comparison of the results shows that consideration of the structure geometry is vital in dynamic analysis and leads to the changes in the magnitude of displacements, accelerations and response spectrum. Therefore it is necessary for the surface structures to be wholly modeled and not just considered as a surcharge in dynamic analysis. The use of twin tunnel also leads to the reduction of dynamic residual settlement.

Keywords : superstructure, tunnel, site response, surcharge, interaction
Conference Title : ICGAGT 2019 : International Conference on Geomechanical Analysis and Geomechanical Tests
Conference Location : Dublin, Ireland
Conference Dates : July 29-30, 2019