



An examination of the earthquake behaviour of a retaining wall considering soil-structure interaction

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The earthquake behavior of retaining walls is commonly calculated with pseudo static approaches based on Mononobe-Okabe method. The seismic ground pressure acting on the retaining wall by the Mononobe-Okabe method does not give a definite idea of the distribution of the seismic ground pressure because it is obtained by balancing the forces acting on the active wedge behind the wall. With this method, wave propagation effects and soil-structure interaction are neglected. The purpose of this study is to examine the earthquake behavior of a retaining wall taking into account the soil-structure interaction. For this purpose, time history seismic analysis of the soil-structure interaction system using finite element method has been carried out considering 3 different soil conditions. Seismic analysis of the soil-structure model was performed according to the earthquake record of "1971, San Fernando Pacoima Dam, 196 degree" existing in the library of MIDAS GTS NX software. The results obtained from the analyses show that the soil-structure interaction is very important for the seismic design of a retaining wall.

Keywords: Soil-structure interaction, Finite element model, Retaining wall