

Spectral Assessing of Topographic Effects on Seismic Behavior of Trapezoidal Hill

Authors : M. Amelsakhi, A. Sohrabi-Bidar, A. Shareghi

Abstract : One of the most important issues about the structural damages caused by earthquake is the evaluating of the spectral response of the site on which the construction is built. This fact has demonstrated during many earlier earthquakes and many researchers' reports have concerned with it. According to these reports, features of the site materials and geometry of the ground surface are considered the main factors. This study concentrates on the specific form of topographies like hills. Assessing of spectral responses of different points on the hills and beside demonstrates considerable differences between 1D and 2D methods of geotechnical analyses. A general trend of amplifications on the top of the hills and de-amplifications near the toe of the hills has been appeared within the acceleration, velocity and displacement response spectrums of horizontal motion. Evaluating of spectral responses of different sizes of the hills revealed that as much as the hill-size enlarges differences between spectral responses of 1D and 2D analyses transfers to longer range of periods and becomes wider.

Keywords : topography effect, amplification ratio, response spectrum, earth resources engineering

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