

Effects of Local Ground Conditions on Site Response Analysis Results in Hungary

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Abstract : Local ground conditions have a substantial influence on the seismic response of structures. Their inclusion in seismic hazard assessment and structural design can be realized at different levels of sophistication. However, response results based on more advanced calculation methods e.g. nonlinear or equivalent linear site analysis tend to show significant discrepancies when compared to simpler approaches. This project's main objective was to compare results from several 1-D response programs to Eurocode 8 design spectra. Data from in-situ site investigations were used for assessing local ground conditions at several locations in Hungary. After discussion of the in-situ measurements and calculation methods used, a comprehensive evaluation of all major contributing factors for site response is given. While the Eurocode spectra should account for local ground conditions based on soil classification, there is a wide variation in peak ground acceleration determined from 1-D analyses versus Eurocode. Results show that current Eurocode 8 design spectra may not be conservative enough to account for local ground conditions typical for Hungary.

Keywords : 1-D site response analysis, multichannel analysis of surface waves (MASW), seismic CPT, seismic hazard assessment

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