

Assessment of Newmark Methods for the Prediction of Deviatoric Displacement of Earth Dams Using Energy Approach

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Abstract

In this research, permanent earthquake-induced deformations of earth dams using Newmark methods are investigated. For this purpose, the errors of all sliding block methods for the prediction of the permanent deformation of 25 real earth dams are discussed in the time domain. Also, the importance level of some related parameters, discussed by previous studies, is scrutinized using energy approach. The results of the study revealed that, the energy value, related to the velocity time history, not only acts as a separator parameter between conservative and non-conservative predictions of sliding block methods but also has a significant impact on the prediction of permanent earthquake-induced deformations of earth dams.

Keywords: Energy Approach, Earth Dams, Newmark Methods.