

Seismic Performance Evaluation of Bridge Structures Using 3D Finite Element Methods in South Korea

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Abstract : This study described the seismic performance evaluation of bridge structures, located near Daegu metropolitan city in Korea. The structural design code or regulatory guidelines is focusing on the protection of brittle failure or collapse in bridges' lifetime during an earthquake. This paper illustrated the procedure in terms of the safety evaluation of bridges using simple linear elastic 3D Finite Element (FE) model in ABAQUS platform. The design response spectra based on KBC 2009 were then developed, in order to understand the seismic behavior of bridge structures. Besides, the multiple directional earthquakes were applied and it revealed that the most dominated earthquake direction was transverse direction of the bridge. Also, the bridge structure under the compressive stress was more fragile than the tensile stress and the vertical direction of seismic ground motions was not significantly affected to the structural system.

Keywords : seismic, bridge, FEM, evaluation, numerical analysis

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