

INVESTIGATION OF FLOATING SLABS FOR BOTH LOCAL SEISMIC ISOLATION AND GLOBAL MASS DAMPING

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ABSTRACT

The use of floating slabs, i.e. slabs that have been seismically isolated from the skeleton of the structure at a local scale, as structural control system is investigated herein. The purpose of these slabs is twofold; on one hand they provide seismic isolation on their contents and on the other hand they act as mass-damping system for the overall response of the structure. In this respect, they are suitable for museums and similar cases where protection of precious artifacts is of major concern and a two-line defense system against seismic risk might be unavoidable. This paper examines whether the two objectives, i.e. local/global response reduction, are contradicting. The analyses are based on several case studies with different combinations of floating/normal slabs along the height of the structure, as well as seismic isolation characteristics. The performance of each structural configuration is tested under an artificial seismic motion, generated using the SIMQKE-II software [1] and matching a particular EC8 response spectrum, yielding interesting results.

REFERENCES

[1] Vanmarcke, E.H., Fenton, G.A., Heredia-Zavoni, E. (1997) “SIMQKE-II (User’s manual version 2)” Princeton University.