

عنوان مقاله:

SEISMIC PERFORMANCE ASSESSMENT OF OPTIMALLY DESIGNED BASE ISOLATION SYSTEM UNDER
MAINSHOCK-AFTERSHOCK SEQUENCES

محل انتشار:

هشتمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1398)

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خلاصه مقاله:

Application of base isolation systems in different types of buildings is increasing very fast all around the world. All of the design procedures of buildings equipped with the base isolation systems are defined only to withstand the mainshocks. Whereas, this system not only can lead to a significant performance under the mainshock event, but also under the following aftershocks. Accordingly, in this research, an attempted is made to evaluate the performance of seismically isolated buildings under mainshock-aftershock sequences. In this regard, three separate 4-, 8-, and 12-story buildings are considered and designed with the lead rubber bearing isolation system applying a multi-objective optimization procedure to reduce the seismic isolation deformation and the superstructure base shear. Afterward, mainshock-aftershock accelerogram sequences are selected from the existing database of Iranian plateau as an area with a high seismicity level, and the performance of isolated buildings are assessed under the whole scenarios by considering the non-linear behavior of structures. The results show that the base isolation system is well capable of mitigating sequential earthquake excitation. Additionally, it is verified that the residual deformation of lead rubber bearings remains in an acceptable range and hence it does not affect the performance of vibration control system under mainshock-aftershock sequences

کلمات کلیدی:

Base Isolation System, Lead Rubber Bearing, Mainshock-Aftershock Sequences, Multi-Objective Optimization, Non-linear Structure

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