

عنوان مقاله:

The Effects of Using Different Seismic Bearing on the Behavior and Seismic Response of High-Rise Building

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خلاصه مقاله:

The effects of using different seismic bearings were investigated to reduce the seismic response of buildings by assuming the vulnerability of 20-story regular RC building in this paper. The method of this study was that the studied building was studied in three different models in terms of its connection to the foundation. In the first model, the structures were placed on the rigid bearing and in the second and third models; lead-rubber bearings and friction pendulum bearings were placed at the counter between the structure and foundation, respectively. Then, the dynamic analysis was used to assess the behaviour and seismic response of the mentioned models. The results of the study showed that the structures in the first model functioned like cantilever column that would become uniaxial and biaxial bending under the effects of earthquake around the vertical axis of structure. Due to the tensile (tension) weakness in concrete, seismic loads caused major cracks in the tension part of the structures according to the place of the neutral axis that could lead to the collapse of structure. In addition, the use of mentioned seismic bearings under the earthquake caused the structure like a semi-rigid box slid on this equipment that reduced the structure s stiffness and increased the period of the structure in comparison with the first model. Using the studied seismic bearings caused the displacement of the roof of the first and twentieth stories of the structure become approximately equal and prevented the creation of the bending moment in the first model. The results of non-linear time history analysis showed that using the studied seismic bearings caused the response of the structure reduced significantly when the structure was placed on rigid bearings. It could be very valuable regarding the limitation of the capacity of the structure s members

کلمات کلیدی:

Seismic Retrofit; High-Rise Building; Lead-Rubber Bearings; Friction Pendulum Bearings

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