

## عنوان مقاله:

Employing Foundation Nonlinearity to Mitigate Seismic Demand in Superstructure

## محل انتشار:

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## خلاصه مقاله:

Because of difficulty in inspection and retrofit of foundation in comparison with other elements, the common design philosophy is to avoid any nonlinear deformation in the foundation. This paper shows that by employing controlled foundation nonlinearity, in predetermined sections with arrangements for inspection and retrofit, it is possible to reduce seismic demand on superstructure. Localizing nonlinear deformation to pre-specified zones in the foundation, it is possible to avoid wide spread nonlinear deformation across various members in the superstructure in the case of strong ground motions. To evaluate the efficiency of the proposed model, the response of steel braced frames is examined on rigid foundation, rocking elastic foundation and finally on rocking foundation with controlled nonlinear deformation. Results show that while rocking could be used to protect the superstructure elements from possible overloading during large earthquakes for low-rise structures; it has no remarkable effect on the response of high-rise structures. However, the proposed model with nonlinearity in the foundation could be used in both cases (low-rise and high-rise structures) to effectively control the response of structure.

## کلمات کلیدی:

RockingNonlinear DeformationSteel Braced Frames

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/542391>

