

Effects of Damping Ratio of Restoring force Device on Response of a Structure Resting on Sliding Supports with Restoring Force Device

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ABSTRACT

Effects of damping ratio of the restoring force device on the response of a space frame structure resting on sliding type of bearing with restoring force device is studied. The NS component of the El – Centro earthquake and harmonic ground acceleration is considered for earthquake excitation. The structure is modelled considering six-degrees of freedom (three translations and three rotations) at each node. The sliding support is modelled as a fictitious spring with two horizontal degrees of freedom. The response quantities considered for the study are the top floor acceleration, base shear, bending moment and base displacement. It is concluded from the study that the displacement of the structure reduces as the damping of the restoring force device increases. Also, the peak values of acceleration, bending moment and base shear decreases as the damping of the restoring force device increases.

KEYWORDS

Base isolation, restoring force device, damping of restoring force device, El – Centro earthquake, sinusoidal ground acceleration.
