

Seismic Performance of RC Frames Equipped with Friction Panels Under Different Slip Load Distributions

Authors : Neda Nabid, Iman Hajirasouliha, Sanaz Shirinbar

Abstract : One of the most challenging issues in earthquake engineering is to find effective ways to reduce earthquake forces and damage to structural and non-structural elements under strong earthquakes. While friction dampers are the most efficient systems to improve the seismic performance of substandard structures, their optimum design is a challenging task. This research aims to find more appropriate slip load distribution pattern for efficient design of friction panels. Non-linear dynamic analyses are performed on 3, 5, 10, 15, and 20-story RC frame using Drain-2dx software to find the appropriate range of slip loads and investigate the effects of different distribution patterns (cantilever, uniform, triangle, and reverse triangle) under six different earthquake records. The results indicate that using triangle load distribution can significantly increase the energy dissipation capacity of the frame and reduce the maximum inter-storey drift, and roof displacement.

Keywords : friction panels, slip load, distribution patterns, RC frames, energy dissipation

Conference Title : ICESE 2014 : International Conference on Earthquake and Structural Engineering

Conference Location : London, United Kingdom

Conference Dates : September 26-27, 2014