17th Symposium on Earthquake Engineering
November 14-17, 2022
IIT Roorkee, India
Paper No. 640

Comparative Study on Seismic Performance of RC Frame with Different Types of Steel Bracing System

Parth Akbari[1], Abdul Miya[1], Pankaj Agarwal[2]

[1]M.Tech. Student, Dept. of Earthquake Engineering, IIT Roorkee
[2]Professor, Dept. of Earthquake Engineering, IIT Roorkee

Abstract

The steel bracing technique has proven the most efficient system to resist lateral load in earthquake resistant design. It offers excellent energy dissipation capacity in case of earthquake induced ground motion. This technique for new building construction or as a retrofitting method is used to strengthen the earthquake damaged structure or to enhance the strength of old and capacity deficient structures. In the present study, an analytical study is carried out to show how the bracing system affects the structural performance of buildings in high seismic regions. The objective is to determine the effectiveness of the different bracing systems, namely X, Chevron, V, and diagonal shapes, in increasing the lateral load capacity and decreasing the overall displacement of the RC frame. The non-linear static analysis is carried out using ETABS 2020 software to evaluate the different bracing systems. The results are presented in terms of base shear, drift ratio, lateral displacement, and stiffness.

Keywords: Steel bracing, RC frame, Lateral strength, Seismic design