عنوان مقاله:

PERFORMANCE OF STEEL STRUCTURES EQUIPPED WITH BRB AND RBS

محل انتشار:

هفتمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1394)

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خلاصه مقاله:

Seismic retrofitting and rehabilitation of structures, the most important issues in earthquake engineering.One of the common methods of retrofitting steel structures, using Bracing system for increased stiffness and lateral resistance. Conventional steel bracing elements show asymmetrical behavior under cyclic loading: high ductility in tension due to the ductile yielding material characteristics and buckling under compression. This stability problem influences the overall cyclic response of the element, reflected by the cyclic degradation. By removing the buckling phenomenon, BRBs offer balanced, extremely ductile and dissipative cyclic behaviour. Buckling Restrained Braces (BRBs) are a structural component useful when providing bracing for seismic or other loads. BRBs have a large ductility capacity and are designed to yield under loads without buckling. They offer robust cyclic performance and significant cost savings, compared to conventional bracing systems (Deulkar, W. N. et al, 2010). The new high performance bracing system developed by Golafshani et al that can be installed in the braces as a supplemental part, is capable of removing the permanent drift of stories at the end of excitationand concentrating structural damage in braces. The RBS device which is assembled in a desired location of the brace memberis made of high strength steel. In comparison with conventional brace system (CBS), ribbed bracing system (RBS) can absorbed seismic energy without causing large permanent drift in structure. In this paper, performance of BRB and RBS in steel structures with modeling in OpenSees software has been investigated under earthquake load. To do this study, the nonlinear dynamic analysis under various earthquake records have been investigated on the 2D steel frames with conventional braces and equipped with BRB and RBS. The results show that these systems have suitable performance compared with conventional braces.

کلمات کلیدی:

Retrofitting,Steel Frame, Buckling Restrained Brace (BRB), Ribbed Bracing System (RBS),Nonlinear Dynamic Analysis