

عنوان مقاله:

EFFECT OF FRP-STRENGTHENING ON THE PERFORMANCE OF REAL-SCALE SHS BRACE

محل انتشار:

هشتمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1398)

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خلاصه مقاله:

Under large ground motions, diagonal steel members of lateral bracing systems dissipate the energy by yielding in tension and buckling in compression. However, after several loading cycles, the development of local buckling at the mid-length of the brace exposes the section to the threat of fracture. Square Hollow Section (SHS) which commonly used in concentrically braced frames, is highly prone to this premature failure. In this paper, the use of Fibre Reinforced Polymer (FRP) was proposed to improve the behavior of Square Hollow Section (SHS) braces, and this retrofitting strategy was selected in a way to mitigate the local buckling which plays a key role in the failure of braces. Results of the study show that strengthening with FRP is effective at enhancing the performance of SHS braces. The strengthening method could postpone local buckling into next cycles which expectedly lead to a delay in collapse of brace. Enhancing with FRP could improve the seismic performance of braces by increasing the energy dissipation capacity and ductility of SHS braces. However, with increase in the slenderness ratio of the brace, the efficiency of FRP-strengthening was reduced.

کلمات کلیدی:

Square hollow section brace, Local buckling inhibition, FRP strengthening, Numerical modeling, Carbon fiber–(reinforced polymer (CFRP

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