

عنوان مقاله:

USE OF ASYMMETRIC BUCKLING-RESTRAINED BRACES IN ZIPPER FRAMES FOR IMPROVEMENT OF PEAK AND RESIDUAL RESPONSE

محل انتشار:

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

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Buckling-restrained braces (BRBs) are known to improve the energy dissipation properties of structures by preventing the bracing elements from buckling in compression. As a result, structures equipped with BRBs exhibit better performance mainly in terms of maximum responses. On the other hand, the bilinear behaviour and usually low post-yield stiffness of these devices may lead to undesirable permanent drifts. An asymmetrical configuration of BRBs along with zipper elements is considered in this study to reduce the residual drifts without increasing the peak response values. This way, the advantages of zipper frames, namely the more uniform distribution of drifts along the elevation and the reduced demands on beams are combined with the enhanced energy dissipation properties of the BRBs to improve the overall seismic response of structures. Nonlinear time-history analyses have been carried out for low- and mid-rise buildings to investigate the effects of the proposed configuration on the response characteristics of the structure. It is shown that the asymmetrical configuration of BRBs together with zipper elements proposed herein is an effective approach for reduction of residual response parameters while keeping the peak demands as low as those of ordinary frames equipped with symmetrical BRBs.

کلمات کلیدی:

Concentrically Braced Frame, Inverted-V Bracing, Buckling-Restrained Brace, Zipper Column, Strength Ratio

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