

X-Bracing Configuration and Seismic Response

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Abstract : Concentric bracing systems have been in practice for many years because of their effectiveness in reducing seismic response. Depending on concept, seismic design codes provide various response modification factors (R), which itself consists of different terms, for different types of lateral load bearing systems but configuration of these systems are often ignored in the proposed values. This study aims at considering the effect of different x-bracing diagonal configuration on values of ductility dependent term in R computation. 51 models were created and nonlinear push over analysis has been performed. The main variables of this study were the suitable location of X-bracing diagonal configurations, which establishes better nonlinear behavior in concentric braced steel frames. Results show that some x-bracing diagonal configurations improve the seismic performance of CBF significantly and explicit consideration of lateral load bearing systems seems necessary.

Keywords : bracing configuration, concentrically braced frame (CBF), push over analyses, response reduction factor

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