

Seismic Assessment of RC Structures

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Abstract : A great number of existing buildings are designed without seismic design criteria and detailing rules for dissipative structural behavior. Thus, it is of critical importance that the structures that need seismic retrofitting are correctly identified, and an optimal retrofitting is conducted in a cost effective fashion. Among the retrofitting techniques available, steel braces can be considered as one of the most efficient solution among seismic performance upgrading methods of RC structures. This paper investigates the seismic behavior of RC buildings strengthened with different types of steel braces, X-braced, inverted V braced, ZX braced, and Zipper braced. Static non linear pushover analysis has been conducted to estimate the capacity of three story and six story buildings with different brace-frame systems and different cross sections for the braces. It is found that adding braces enhances the global capacity of the buildings compared to the case with no bracing and that the X and Zipper bracing systems performed better depending on the type and size of the cross section.

Keywords : seismic design, strengthening, RC frames, steel bracing, pushover analysis

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