Cyclic Performance of RC Column Embedded With X-Braced Ties

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ABSTRACT

In reinforced concrete (RC) structures, the seismic force resistance is significantly improved by the confinement reinforcement configurations provided in the column. The influence of various reinforcement configurations provided to the confinement reinforcement in the columns was explored experimentally in this present research. The cyclic behaviour of conventional confinement reinforcement embedded RC column specimen is compared with X-Shaped braced confinement reinforcement embedded RC columns. A 1:3 scaled RC column with cross section of 150 mm x 150 mm and length of 1.1 m is considered for the investigation. Except the confinement reinforcement configuration, all other features, such as section size and reinforcement percentage, are identical in RC columns. The RC column specimens are subjected to in-plane reverse cyclic loading along with the constant axial load. The structural parameter includes hysteresis response, energy dissipation behaviour, displacement ductility property, stiffness characteristics were studied. The results showed that the RC column embedded with X-shaped braced confinement reinforcement effectively enhanced the ductile hysteresis response along with augmented energy dissipation capacity and enriched resistance to stiffness degradation behaviour.

Keywords: *Confinement reinforcement, Hysteresis behaviour, Energy dissipation, displacement ductility, Stiffness characteristics*

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