

Seismic Performance of Two-Storey RC Frame Designed EC8 under In-Plane Cyclic Loading

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Abstract : This main purpose of this paper is to evaluate the seismic performance of double bay two-storey reinforced concrete frame under in-plane lateral cyclic loading which designed using Eurocode 8 (EC8) by taking into account of seismic loading. The prototype model of reinforced concrete frame was constructed in one-half scale tested under in-plane lateral cyclic loading starts with $\pm 0.2\%$ drift, $\pm 0.25\%$ up to $\pm 3.0\%$ drift with the increment of $\pm 0.25\%$. The performance of the RC frame is evaluated in terms of the hysteresis loop (load vs. displacement), stiffness, ductility, lateral strength, stress-strain relationship and equivalent viscous damping. Visual observation of the crack pattern after testing were observed where the beam- column joint suffer the most severe damage as it is the critical part in moment resisting frame. Spalling of concrete starts occurred at $\pm 2.0\%$ drift and become worse at $\pm 2.5\%$ drift. The experimental result shows that the maximum lateral strength of specimen is 99.98 kN and ductility of the specimen is $\mu=4.07$ which lies between $3 \leq \mu \leq 6$ in order to withstand moderate to severe earthquakes.

Keywords : ductility, equivalent viscous damping, hysteresis loops, lateral strength, stiffness

Conference Title : ICCAE 2015 : International Conference on Civil Society and Architectural Engineering

Conference Location : Singapore, Singapore

Conference Dates : September 10-11, 2015