Experimental Investigation of the Punching Shear Behaviour of RC Slab-Column Connections Under Seismic Loading

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Abstract

Reinforced concrete flat slab-column structures are widely used because of their practicality. However, this type of structures can be subjected to punching-shear failure with in the slab-column connections. Without shear reinforcement, the slab-column connection can undergo brittle punching failure, especially when the structure is subjected to lateral loading in seismic zones. This research is a part of an extensive investigation about the punching shear behavior of interior RC slab-column connections under seismic loading. The current paper represents only the results of the first two tested specimens. The main objective is to discuss the nature and mechanism of effect seismic loading on punching shear behaviour. Finally, the experimental results are analyzed and compared to international codes such as American Code ACI318-14[1] and Euro Code EC2-2004[2]. In light of these results, some preliminary conclusions are presented.
papers will be distributed in the electronic conference proceedings.

Keywords: Punching Shear; Shear Studs; Seismic Loading; Interior slab-column connections.

1 Experimental Program

Full scale specimens were tested. The specimen can be regarded as part a prototype structure of which the flat concrete slab spans 4.5 m between columns. The slab thickness is 200 mm.

The specimens represent interior slab-column Connections, which are isolated specimens with dimensions corresponding to the lines of contra flexure under gravity loads [3,4].

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