Editorial

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This issue of *Structures and Buildings* consists of five technical papers. Research investigations concerning structural response of reinforced embankment, seismic performance and fragility of reinforced-concrete (RC) frame shear-wall buildings, structural behaviour of RC frames with and without masonry, seismic behaviour of two super-tall buildings with a connecting skybridge, and moment redistribution in the design of continuous RC beams with fibre-reinforced polymer are covered.

The first paper by Fattah *et al.* (2016) examined the structural response of reinforced embankment concerning the load transfer and arching analysis. Firstly, a reanalysis was performed of previous experimental work of embankment models constructed on soft clay treated with ordinary stone columns (OSC) and encased stone columns (ESC) by the finite-element method. After that, embankment models reinforced by a horizontal layer of geogrid were analysed. The authors also provided a discussion about the ultimate bearing capacity, stress in soil, stress on columns and arching stress in sub-soil. Finally, the authors concluded that in some cases, an improvement of 33 and 59% can be achieved in the bearing resistance for OSC and ESC, respectively.

In the second paper by Surana *et al.* (2016), the authors investigated the seismic performance and fragility of RC frame shear-wall buildings designed for Indian codes using the displacement-based design methodology of ASCE 41 and capacity spectrum approach of HAZUS, respectively. The authors used an equivalent-frame and finite-element models calibrated against experimental results available in the literature in order to simulate the non-linear behaviour of two representative 15-storey concrete-frame buildings with concrete shear walls. The authors observed that both methodologies predict strength capacities when compared with the experimental results, but the equivalent-frame model produces slightly conservative estimates of the deformation capacity. Furthermore, it was concluded that the two studied cases exhibit similar probabilities of different damage grades, which are slightly lower compared to the frame buildings without concrete shear walls designed using the same codes.

The next paper (Bob *et al.*, 2016) presents the results of a set of experiments and a literature review on RC frames with and without masonry infill in response to seismic actions. The tested structures were considered as a reference frame without masonry infill and as a frame with infill walls made of solid bricks, bricks with vertical hollows and cellular concrete

bricks. The main results of the tests, including shear resistance, structure stiffness and structure ductility are also reported and discussed. Finally, the authors concluded that the masonry infill has an important influence on the behaviour of an RC framed structure; a good agreement between the available theoretical formulas and the experimental results at the service limit state has been obtained for the horizontal force and the structure stiffness and the energy dissipated by the composite system is 55–75% higher than that of the reference frame.

In the fourth paper, Mahmoud *et al.* (2016) present a three dimensional numerical modelling of the seismic behaviour of two super-tall buildings with a connecting skybridge – the Petronas Twin Towers in Malaysia. The authors considered two strong earthquake records scaled to 0.15g, representing the expected ground motion in Cairo, Egypt for time history analyses. In order to investigate the response in the direction of the connecting bridge as well as in the perpendicular direction, selected ground motion records were applied separately, in both longitudinal and transverse directions. Overall, the results indicate that the seismic response of super-tall structures in either longitudinal or transverse directions seems to be insensitive to the location of a linking skybridge under the considered ground excitations. On the other hand, amplifications of the responses induced in the skybridge were noted, especially at upper storeys.

In the last paper, Tajaddini *et al.* (2016) developed a novel theoretical strategy in order to investigate the moment redistribution in the design of continuous RC beams with fibre-reinforced polymer (FRP) looking for an efficient and economical design. The developed numerical model was validated against experimental data from the literature. A good agreement was achieved comparing the experimental and numerical results. According to the authors, the main contribution of the paper is to consider for the first time that the moment redistribution could credibly and confidently to be incorporated into design guides for FRP strengthening of RC structures.

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