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Editorial

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This issue of *Structures and Buildings* is a collection of experimental and numerical studies concerned with performance of reinforced concrete and cementitious composite structures. Apart from the use of classical steel reinforcement, one paper examines effects of hybrid reinforcement composed of steel bars and fibre-reinforced polymer (FRP) ties on concrete performance. A few papers follow in the path of our continuous quest to improve design guidelines, while the others propose new numerical insights into structural behaviour.

The punching shear is one of the typical collapse modes of reinforced concrete (RC) slabs. Ricker *et al.*, (2022) provide a systematic insight into this mode of collapse specifically related to the edge column – slab connections. They consider scenarios with and without shear reinforcement, and look at the effect of post-tensioning. Experimental results from 15 slabs showed that shear reinforcement and post-tensioning increase punching shear capacity, with shear reinforcement adding to ductility too. They also provide a useful evaluation of ACI 318-14 (ACI, 2014) and Eurocode 2 for design of concrete structures (BSI, 2014) and make recommendations in relation to applicability of these codes to evaluation of punching shear for edge column – slab connections.

In another paper, Tahir *et al.*, (2022) propose a model for predicting a stress–strain response of concrete columns reinforced with longitudinal steel bars with FRP ties. Their comprehensive study into this hybrid reinforcement considers the effects of factors such as reinforcing configuration, volumetric ratio and spacing of ties. The model was shown to perform very well on the existing, albeit limited in amount, experimental data. With additional verification, the model could pave the way for wider use of hybrid reinforcement and lead to an improved durability of concrete structures.

The next two papers investigate behaviour of reinforcing steel bars in the context of bond properties and corrosion. Chen *et al.*, (2022) performed an experimental study on bond strength for bars in the fibre-reinforced engineered cementitious composites that are becoming popular in construction due to favourable durability properties. They conducted pull-out tests for different combinations of bar diameter, concrete cover size and embedded length. These results formed a basis for developing a model for calculating the bond strength for reinforcing bars embedded in composites. Yuksel and Barış Sakcalı (2022), on the other hand, considered the effects of corrosion of reinforcing bars on RC buildings. They devised a computational study to look at the detrimental effects of corrosion on a hypothetical five-storey building. They provided insight into the deterioration of building performance for different levels of corrosion, including during earthquakes.

The final paper by Lu and Feng (2022) is a theoretical contribution to predicting the response of defective periodic viaducts in earthquakes. Viaducts are typically made with repetitive spans, but on occasions some spans differ from the others making the structure a 'defective' periodic viaduct. The authors considered how these viaducts respond to a range of defects (including span length and beam stiffness) under incident Rayleigh wave, and commented on importance of additional resonances due to the presence of defects.

I hope that you will enjoy reading this issue, and find the experimental and numerical papers interesting as well as useful for your own design and research work.

Finally, I would like to mention that the journal publishes its most recent articles Ahead of Print on its Virtual Library homepage.

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