Cite this article
Dirar S (2023)
Editorial.
Proceedings of the Institution of Civil Engineers – Structures and Buildings **176(8)**: 565–566,
https://doi.org/10.1680/jstbu.2023.176.8.565

Structures and Buildings

Editorial

Samir Dirar BSc (Hons), MPhil (Cantab), PhD (Cantab), PCAP, FHEA
Associate Professor, College of Engineering, University of Sharjah, Sharjah, UAE; School of Engineering, University of Birmingham, Birmingham, UK

It gives me great pleasure to introduce this issue of *Structures and Buildings*. The issue comprises one commentary on professional development and recognition together with five papers that examine various aspects of material and/or structural behaviour. Undoubtedly, understanding both material and structural behaviour is essential for extending the service life and enhancing the sustainability credentials of existing and new civil engineering structures. This has never been more important, given the international endeavour to reduce the carbon footprint of the global construction industry.

The commentary by Cashell (2023) gives an inspiring account of her journey to Fellowship with the Institution of Civil Engineers (ICE). The author highlights the issue of appropriate self-evaluation, as many potential applicants don't think there are ready for a higher professional recognition until they are told so! Cashell points out that ICE regional support and/or membership teams do provide an initial review that helps interested candidates understand how they can achieve professional recognition. She concludes her commentary by urging existing Fellows to support the professional development of their colleagues.

The paper by Kaya and Anil (2023) presents a nonlinear finite element model (NLFE) for carbon-fibre-reinforced polymer-strengthened reinforced concrete (RC) one-way slabs with openings. The authors validated the NLFE model against previous experimental work. Subsequently, they used the validated model to investigate the effect of opening size and location on slab load-carrying capacity. Finally, they used the NLFE analysis results to develop equations for the variations of slab load-carrying capacity with opening size and location.

In the second paper, Raiyani and Patel (2023) investigated, both experimentally and numerically, torsional strengthening of RC hollow beams with stainless steel wire mesh. The study provided valuable findings, particularly with regard to the efficacy of the strengthening technique. The strengthened beams failed due to tearing of the stainless steel wire mesh, indicating good bond behaviour between stainless steel wire mesh and concrete.

The following paper by Thapa and Sharma (2023) examined replacing stone with brick as coarse aggregate in RC beams. The authors studied the effect of stone aggregate replacement ratio on the durability and flexural strength of test specimens subjected to a marine environment. They found that corrosion potential and water absorption increased, while resistivity, elastic modulus, flexural strength and density decreased with increasing stone aggregate replacement ratio. The authors concluded that a replacement ratio of up to 20% had insignificant effect on durability and strength parameters.

In the fourth paper, Khademi *et al*. (2023) used a risk-targeted approach to identify the peak ground acceleration (PGA) for designing RC moment-resisting-frame (MRF) buildings in Iran. They considered three parameters, namely the structural fragility curve, the seismic hazard curve and the target annual collapse probability, for determining risk-targeted PGA. They concluded that their results were consistent with the results of another approach proposed for MRF buildings in Europe.

The last paper by Cheng *et al*. (2023) investigated wind effects on a large cooling tower in velocity fields of different non-stationary levels. The authors found that the non-stationary indicator of the wind velocity field tends to increase with the increase in the turbulence intensity of the oncoming flow, and it tends to decrease with the increase in the wind velocity of the oncoming flow. They also concluded that the wind effects obtained in a velocity field of high non-stationarity are generally more unfavourable than those obtained in a velocity field of low non-stationarity.

I believe that you will find the papers published in this issue both interesting and informative. As always, comments and discussions from the readers of *Structures and Buildings* are encouraged. The procedure for doing so is detailed on the last page of each paper.

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