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**Structures and Buildings**

# Editorial

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This issue of '*Structures and Buildings*' comprises five academic papers. These papers primarily focus on novel structural members or systems with potential applications in civil engineering, as well as their disaster resistance performance.

In the first paper, Zheng *et al*. (2025) introduced a chevron-braced frame integrated with an arc-shaped energy-dissipating structure, building upon the conventional chevron-braced frame described in prior literature. Finite element modelling was conducted to compare the proposed frames with their counterparts, thereby evaluating the seismic performance of the new structural system. The results demonstrated that, compared to the traditional chevron-braced frame, the newly proposed frames effectively reduced the interaction between the brace and the external steel frame without compromising the lateral bearing capacity of the brace, exhibiting superior seismic performance.

In the second paper, Ahmadi *et al*. (2025) presented a novel seismic-resistant system termed the zipper eccentrically braced frame (ZEBF), which consists of four primary components: the zipper element, diagonal brace element, link element, and column elements. To understand the mechanism of the zipper elements and dual-fuse in improving the structural seismic resilience, pseudo-static tests were performed on three half-scale specimens, complemented by numerical simulations of multi-span and multi-story structures. The findings revealed that ZEBFs exhibited significantly enhanced seismic performance compared to conventional systems, particularly in terms of spectral acceleration capacity. The inclusion of zipper elements and link beams resulted in a more resilient and adaptable system capable of withstanding a broader range of seismic demands.

In the third paper, Sallal *et al*. (2025) examined the fire resistance of concentrically or eccentrically loaded reinforced concrete (RC) columns fabricated using steel bars, glass fiber-reinforced polymer (GFRP) bars, or hybrid (steel and GFRP) bars. Experimental tests and numerical simulations were conducted on typical RC columns under high-temperature conditions. The results indicated that load eccentricity, maximum temperature, and reinforcement type significantly influenced the ultimate capacity and deformations of the column specimens. Furthermore, RC columns reinforced with steel bars demonstrated superior performance in resisting high temperatures compared to those reinforced with GFRP bars.

In the fourth paper, Chanzagh *et al*. (2025) investigated the behaviour of a bare steel buckling-restrained brace (BRB) with restrained web under cyclic loads. Following an evaluation of the all-steel BRB's performance based on experimental results, numerical simulations were employed to study the impacts of key parameters on the cyclic behaviour of the all-steel BRB and the seismic behaviour of a four-story steel frame equipped with the BRB bracing system. The results confirmed that appropriate parameter settings ensured favorable cyclic performance of the all-steel BRB with restrained web. Additionally, the steel frame with the BRB system exhibited enhanced seismic performance, rendering it suitable for resisting high-intensity earthquakes.

In the fifth paper, Sharbatdar *et al*. (2025) conducted pull-out tests to evaluate the bond strength between steel bars and normal or self-compacting concrete (SCC) with and without steel fibers. The experimental results indicated that the incorporation of steel fibers generally improved the bond strength between the bar and concrete, with macro steel fibers demonstrating a particularly pronounced effect. Moreover, the measured bond strength was utilized to assess the prediction accuracy of existing models.

## REFERENCES

Ahmadi A, Alirezaei M and Sharifi M (2025) Experimental study of improved seismic behaviour of eccentrically braced frames by zipper elements. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **178(6)**: 516–525, https://doi.org/10.1680/jstbu.24.00076.

Chanzagh AR, Hoveidae N and Maleki A (2025) Behaviour of an all-steel buckling-restrained brace with restrained web under cyclic loads. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **178(6)**: 548–560, https://doi.org/10.1680/jstbu.25.00014.

Sallal AK, Zareei SA, Al-Thairy HA and Salemi N (2025) Study the effect of high temperature on behavior of R.C. columns. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **178(6)**: 526–547, https://doi.org/10.1680/jstbu.24.00172.

Sharbatdar MK, Rostamian A, Kheyroddin A and Sennah K (2025) Bond strength of steel bars in steel-fibre-reinforced normal and self-compacting concretes. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **178(6)**: 561–578, https://doi.org/10.1680/jstbu.24.00213.

Zheng L, Zheng Y, Wang W *et al.* (2025) Seismic performance of a chevron-braced frame with an arc-shaped energy-dissipating structure. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **178(6)**: 496–515, https://doi.org/10.1680/jstbu.24.00181.