Editorial

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This issue of *Structures and Buildings* contains five technical papers. The first paper, by Byfield *et al.* (2014), is a review of progressive collapse research and regulations that summarises some of the most important progressive collapse events and aims to identify key attributes that lead to vulnerability to collapse. Methods and guidelines to ensure a minimum level of structural performance are reviewed and simulation approaches for structures subjected to localised damaged are described. Progressive collapse analysis procedures, such as the linear or the non-linear static, the non-linear static pushover, the linear dynamic and the fully non-linear dynamic analysis, are considered and discussed with reference to their advantages and disadvantages. The numerical modelling of the structural connections that often represent the most vulnerable structural elements in steel buildings during progressive collapse is analysed in detail. The paper highlights the benefits and the drawbacks of the aforementioned methods with respect to the treatment of the connections.

The second paper, by Bakhshi *et al.* (2014), presents an effective method to estimate spectral acceleration based on artificial intelligence, which uses the learning abilities of artificial neural networks to expand knowledge of mapping from earthquake parameters to spectral accelerations, resulting in spectral accelerations for special frequencies. For the selected faults, earthquake characteristics are used as inputs for the trained neural networks, whereas the adequacy of the trained neural networks was examined through the authors' training set and new data. The results demonstrate that neural networks can be effectively employed reliably to estimate spectral acceleration.

In the third paper, by Halabian and Birzhandi (2014), the inelastic seismic response of plan asymmetric multi-storey reinforced concrete buildings are investigated under bi-directional far-field and near-field ground motions. The non-linear ductile behaviour of the reinforced concrete members was modelled in combination with both mass and stiffness eccentricities in dynamic torsional response of asymmetric buildings. The study demonstrates that for dual lateral load-resistant systems, the ductility demands of columns at the corners of flexible sides are increased compared with those of similar frame systems.

The fourth paper, by Hassanein (2014), investigates the influence of square opening sizes on the shear behaviour of hollow tubular flange plate girders. Numerical simulation results indicated that employing web openings, instead of the corresponding I-section

plate girders, with the hollow tubular flange plate girders is a high performance solution to decrease shear owing to the presence of these openings. It is found that the design strength of hollow tubular flange plate girders should consider the sum of the contributions of both the web and the hollow flanges.

The final paper, by Ricker and Häusler (2014), concerns the European technical approvals that provide design equations for all types of failure modes of double-headed studs used as punching shear reinforcement in reinforced or prestressed slabs and footings. To quantify the safety level of the design provisions for slabs, footings and ground slabs, with or without shear reinforcement, test evaluations based on a reliable data bank are employed. Useful background information and additional design recommendations for applications not covered by the design provisions of the European technical approvals are also provided.

The views and comments from readers of the papers in this issue are, as always, very welcome through discussion articles.

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