Editorial

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In recent months the global landscape has changed immeasurably due to the Covid-19 pandemic: shattering lives, closing businesses and necessitating the introduction of unprecedented travel restrictions. Alongside many other industries the construction industry is suffering the significant economic effects of the pandemic, and it is therefore vitally important that we continue to support each other professionally, collaborate openly and share knowledge. The *ICE Structures and Building Journal* provides a platform for the sharing of quality engineering thinking from across the world and this month is no exception featuring contributions from Iran, China, Turkey and the US.

This month's issue features a range of papers including experimental investigations, literature reviews, analytical studies and the development of appropriate numerical models. I find it particularly encouraging that 3 of the papers presented in this issue aim to provide practical tools and guidance for practicing engineers.

The first paper by Anil O *et al.*, (2020) documents an experimental and numerical study undertaken to explore the response of square columns to lateral impact loads. Physical tests were undertaken to investigate the effect of concrete compressive strength, transverse reinforcement spacing and loading position on the displacement, acceleration and cracking of the columns under multiple impacts. The tests were also simulated using explicit dynamic Finite Element Analysis (FEA) to ascertain if the findings could be replicated and predicted numerically. The paper concludes that transverse reinforcement spacing is an important parameter in the dynamic response, crack pattern and level of spalling observed, and that the findings could be simulated with reasonable accuracy using advanced FEA.

The second paper by Ji and Kim (2020) presents a detailed study of the load effects of light rail transit on bridges, a subject that the authors explain is not adequately covered by existing standards. The paper investigates the provisions of existing related standards and seeks to provide engineers

with guidance on how to modify the provisions specifically for light rail. The paper considers different types of bridge construction and presents studies into live load distribution, multiple presence and skew correction factors, centrifugal forces, braking forces and thermally induced loads. The paper concludes with some clear guidance for engineers on the appropriate adjustment of existing Aashto load and resistance factor design bridge design specifications provisions for light rail.

The final two papers both provide detailed literature reviews and utilise additional analytical studies to arrive at practical numerical models.

The first of these papers by Tabeshpour and Noorifard (2020) presents a procedure to determine an equivalent strut representation for infill masonry walls with openings. The paper includes a detailed literature review and a summary of recommendations for equivalent strut approximations from previous experimental studies for central, eccentric, corner and full-length openings. The paper compares the findings for micro and macro representations and undertakes an additional analytical study to derive relationships for corner openings. The paper concludes with a comprehensive algorithm, in the form of a flow chart, for engineers to use to derive the most appropriate equivalent strut to represent an infill panel with an opening.

The final paper by Isleem *et al.*, (2020) proposes a new numerical model to represent the confinement of rectangular reinforced concrete columns by fibre reinforced polymer (FRP) wrapping. The paper includes a detailed literature review and explores the effect of aspect ratio, column section size, internal hoop reinforcement and a combination of FRP wrapping and FRP anchors on the level of confinement. A review of existing confinement models is presented and assessed against previous test data. A model is then proposed to provide more accurate predictions for peak and ultimate strength of large-scale rectangular columns with FRP wraps and different configurations of FRP anchors.

I hope you enjoy this issue of *Structures and Buildings* and the published papers are of interest and of practical use. I wish all our readership well and encourage everyone to stay safe and positive during these difficult times.

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