Editorial

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I am delighted to introduce the excellent papers in this February issue of *Structures and Buildings*. I hope that in these unusual and difficult times that were all facing around the world, reading these papers can provide an interesting distraction and some light relief.

As usual, there are 6 papers in the issue, with a good variety of topics covered which should appeal to a wide audience. Subjects covered include structural strengthening, responses of structures during and after a seismic event, progressive collapse, load transfer in piles and alkali-silica reaction at the Lucinda Jetty. The authors span both academic and industrial sectors, bringing a range of views and perspectives.

The first paper in this issue (Azami *et al.*, 2021) deals with the important topic of strengthening existing lightweight reinforced concrete slabs, through the application of prestressed, carbon-fibre-reinforced polymer sheets. The paper details both experimental and numerical investigations and it is shown that using these polymer sheets can provide an excellent structural solution for slabs that require strengthening.

The second and third papers are both related to structural performance during a seismic event. Sun (2021) proposes a new damage simulation algorithm for reinforced concrete structures under seismic loading. A damage cloud chart of the whole structure and the damage evolution process and responses of each component can be obtained and monitored during the simulation, using this algorithm. Importantly, it is shown in this paper that taking a holistic view and analysing the seismic damage evolution of all components of a reinforced concrete building together is more important than analysing individual components in isolation, in order to get a realistic and accurate depiction of the seismic damage mechanisms. Ghadadian and Alirezai (2021) focuses on progressive collapse in reinforced concrete structures during an earthquake. It is identified that this type of hazard has not been researched in great detail, compared with other extreme events. The authors describe an experimental programme in which an intermediate moment frame is studied under three different column removal scenarios. It is shown that structures with an irregular plan and of a relatively low height are more vulnerable to progressive collapse compared with regular, higher structures.

The following article (Xie *et al.*, 2021) relates to the specific challenge of understanding the post-earthquake fire behaviour of steel-to-concrete joints using post-installed anchorages. Generally, the subject of post-earthquake fire as a multi-hazard event is less understood than single hazard events, so it is good to see more research in this area. This work focusses on structures with

post-installed anchors, which are used to connect new structural steel components to existing concrete structures – there is almost no knowledge on this topic previously available in the public domain. The results from a series of experimental and numerical investigations are presented. The results show that ductile steel failure of the anchor system can be achieved even under a post-earthquake fire scenario.

The final two papers are on completely different topics. Fattah *et al.*, (2021) looks into the effect of soil saturation on load transfer in a pile excited by pure vertical vibration. A small-scale physical model is described which is then employed to study the influence of a variety of factors. Finally, Berndt (2021) revisits the Lucinda Jetty in Australia which was one of the first prestressed concrete structures to be identified with alkali-silica reaction (ASR). This paper presents a very interesting examination of the long-term performance of ASR-affected prestressed concrete in an aggressive marine environment and the interrelationships between ASR and corrosion. It is shown that long-term issues can arise when reactive aggregates are used in concrete and also highlights the problems of using prestressed concrete in marine splash environments.

I am sure that you will find the range and quality of these papers to be both inspiring and useful. As always, comments and discussions from the readers of *Structures and Buildings* are encouraged.

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