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Editorial

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This October 2021 issue of the *Structures and Buildings* journal presents five papers. We start with Imjai *et al*., (2021) who address strength reductions in bent fibre reinforced polymer (FRP) bars used as reinforcement in concrete members. One issue which has limited this use of FRP is the difficulty of obtaining bent bars for use as stirrups or to accommodate laps, etc. A macro-mechanical modelling approach is used including the Tsai-Hill failure criterion and with allowance for weakening due to geometry change at the bend. Wide validation based on tests in the literature leads to a proposed model which is stated to improve design economy by up to 15%.

The next paper, by Shaaban and Mustafa (2021), presents test results to failure for high strength concrete T-beams of varying shear and flexural reinforcement ratios. Using the test data along with numerical modelling and an earlier empirical model developed by the authors, it is suggested that the Branson equation used for load-deflection prediction in codes may need some adjustment for application to these beams.

Then, Shaaban *et al*. (2021) continue on the high strength concrete (HSC) theme but this time with a focus on columns. A nonlinear finite element analysis, verified by tests from the literature, is used to show that various codes either over- or under-estimate load capacity especially for eccentric loading. Inconsistent allowance for confinement effects is cited as a likely reason, and the need for special clauses towards more accurate design is highlighted.

The fourth paper switches to the effect of high strength (steel) reinforcement (HSR) – of yield strength up to 580 MPa – on the seismic performance of beam-column joints. Arshadi *et al*., (2021) report on their own tests which show that while the use of HSR led to drift ratios exceeding 4% before significant strength drops occurred, the HSR also reduced energy dissipation and increased joint damage by causing wider and deeper cracks. It is also reported that use of HSR as stirrups led to better performance than its use as longitudinal reinforcement.

In closing this issue of *Structures and Buildings*, the paper by Nahvinia and Tasmini (2021) presents numerical analyses and tests to show that headed studs acting with steel coupling beams between reinforced concrete shear walls enhance flexural (rather than shear) coupling. A model based on the studs acting in shear and flexure, not by axial action, is shown to predict behaviour in good agreement with a spectrum of test data found in the literature.

Of course, please do contact the journal if you wish to discuss any aspects of any of these thought-provoking papers. The editorial panel and our readers welcome the continued dialogue.

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