Dear Readers,

The current issue of the Indian Concrete Journal (ICJ) is introducing to the audience a variety of essential topics pertaining code provisions, field evaluation methodologies, and field-based assessment in construction technology. Promoting adoption of the code guidelines given in the Indian Standard (IS) is becoming a need to cope with the latest state-of-the-art knowledge developed in engineering and technology. Further, new techniques in both construction field generally and particularly new monitoring/ evaluation approaches are crucial to compliment on the merits gained by the innovation in the analysis methods for civil infrastructure. To continue contributing technically to the development of codes and standards, in the current issue of the ICJ, four papers have been published on various topics which cover quite needful aspects of concrete structures in civil engineering.

The first article has proposed a possible promotion for the Indian Standard IS: 456 (2000) in one of its essential provisions related to modelling of the compressive behaviour of the concrete. The author has introduced the Whitney's rectangular stress block, specified in most of the international codes/ standards, in place of the parabolic-rectangular stress block adopted in the Indian Standard, which was developed during the 1970s when normal-strength concrete was governing the construction. The rapid development in construction materials necessitates a reconsideration on the analytical assumptions to reduce the computational efforts, which is achievable with the equivalent rectangular stress block as one of the basic requirements in the analysis of structures. The author has discussed and comparatively assessed the different approaches recommended in the international codes with the help of experimental data from the literature, and based on extensive discussion, the suggested expressions have been verified and found reasonable with quite simplified calculations. As a result of these investigations, a suitable approach has been recommended to be used in the future version of the IS: 456 (2000).

The second article has reported a seismic performance evaluation of reinforced concrete (RC) multi-storey frames carried out using two design methods proposed in the Indian Standards, which are: the force-based design (FBD) method and the displacement-based design (DDBD) method. Two different section properties have been considered, which are the gross section of the member conforming to the IS: 1893 (2002) and the effective section conforming to the IS: 1893 (2016). The results of the study have shown that both the methodologies are capable of designing safe structures from the strength point of view with controlled residual behaviour, i.e., with inter-storey drift ratio (IDR) within the permissible limits. However, the DDBD has proved exhibiting higher energy dissipation ability during the nonlinear behaviour, and relatively more economical as compared to the FBD. The authors have further pointed out on the current IS: 1893 provision related to the value of the seismic response reduction (*R*) factor for RC frames, which is suggested to be based solely on the type of structural system regardless of its height or type of section used in the design, implying that the recommended values are overvalued or undervalued in comparison with their true state.

The third article has addressed one of the most important technologies in placing the concrete in sites, which is pumping the concrete to greater distance horizontally and/ or vertically. The pressure required for pumping the concrete is of prime importance; therefore, an attempt has been made here to predict the required pumping pressure by modifying the existing equations based on field measurements. Data collection from different construction sites with different pipe circuits and further rheological experiments on the respective mixtures have been carried out, and appropriate correction factors have been introduced. Consequently, a simple framework has been proposed for prediction of the concrete pumping pressure to a reasonable extent. Indian standards may in future give more emphasis on this construction technology used for mass concreting in mega civil infrastructure development.

The fourth article has elaborated an advanced investigation on the basic stress-strain response of the concrete in uniaxial compression, which is crucial for more rational and reliable design of concrete structures. The study has focused on determination of the post-peak softening response for different grades of concrete with and without fibres. An extensive experimental work has been carried out to elucidate the influence of different test variables, such as: type of contact, specimen size, loading rate, grade of concrete, and fibre dosage, on the compressive response of concrete. Consequently, a full description on the different parameters and a set of requirements has been given to achieve a robust testing procedure, which can be applied in laboratory in an objective manner, for obtaining the complete stress-strain response of the concrete under uniaxial compression.

Thus, we are glad to issue this edition of the ICJ covering various topics in analysis, field evaluation, and construction technology, which possess the potential to benefit the design and construction of concrete structures. Thank you.

Vasant Matsagar

CONGRATULATIONS

We are pleased to share the awards Committee of the Association of Consulting Civil Engineers (India) ACCE(I) has selected our editorial board member and our regular contributor Dr N. Subramanian, Ph.D., FNAE, to receive the Gourav Award for the year 2021, in recognition of his significant contributions to the Civil Engineering Consultancy profession. The Gourav Award is the highest award given by ACCE(I) and is limited to a maximum of 5 people/organizations for lifetime contributions in the field of Civil Engineering.