EDITORIAL



Dear Readers,

Happy New Year 2024.

It is indeed a pleasure to present before you yet another edition of the Indian Concrete Journal (ICJ) - the persistent journey started since 1927. All the past 97

volumes of the ICJ have constantly delivered state-of-the-art knowledge, propagated among the industry and academia, aptly helping elevate the practice from enriching academic research - jointly contributing to infrastructure development. The everlasting endeavor of the ICJ has been sustainability, which of late has been linked with climate action, too. A recap of the latest volumes of the ICJ from the past several years reveals the fact that the ICJ fraternity is highly keen towards environmentfriendliness. Particularly, the 12 editions published last year with 55 papers have mainly focused on (a) sustainable materials, (b) resiliency of structures, and (c) specific climate actions.

With the turn of the calendar now, we strive to further escalate our tryst with sustainable and climate-friendly infrastructure development, a journey in which your patronage is utmost important for the ICJ to be able to meaningfully contribute to the Net Zero target of India by the year 2070. Furthermore, we have been sensitizing the ICJ fraternity towards "water footprint" in addition to the carbon footprint. The new technologies being researched and disseminated to the construction industry ought to have reduced water footprint as well as carbon. Our commitment to the facets of sustainability and climate action is fittingly reflected from cover-page themes we have carried over the past few years - including that now for the present January-2024 edition.

In years to come, the ICJ plans to promote bio-based deep technologies, having high environment-friendly attributes while necessarily fulfilling the requirements of low water and carbon footprints. Therefore, special (themed) editions of the ICJ hence on will adequately provide a platform to extensively showcase the research works on these frontier areas of research in the construction industry. Your varied roles in the journey ahead are crucial through various means, as an author, reviewer, editor, reader, and for apt advocacy of resilient infrastructure development by using environment-friendly sustainable materials.

In the present edition, we are pleased to share with you five articles that deal with numerical and experimental studies on concrete materials and structures. Kopuri *et al.*^[1] have presented a numerical study on concrete-filled steel tube (CFST) columns, concrete-filled glass fiber-reinforced polymer tube (CFFT) columns, and concrete-filled double tube sections (CFDTS) columns. In general, axial load-carrying capacity and stiffness enhancement have been shown by providing tubes made of steel and fiber-reinforced polymer (FRP). On the other hand, alternative materials in concrete have been researched on, and adding fine recycled concrete aggregates has been proposed by Al-Odaini *et al.*^[2] aided with water-reducing admixture.

In the earthquake-prone regions, reinforced concrete (RC) members are designed such that sequential failure of members is ascertained so that sudden global collapse is avoided and localized gradual collapse at the member level is facilitated. In that, strong column weak beam concept is adopted, which has been elaborated from a ductility viewpoint by Chowdhury and Bhanja^[3]. Curvature ductility and plastic rotation play crucial roles in ensuring the predetermined collapse behavior of RC structural systems subjected to seismic actions.

In an exclusive application of concrete in making a canoe, Joshi *et al.* ^[4] have developed sustainable lightweight geopolymer concrete to make construction eco-friendly. Another article subsequently deals with quaternary blended concrete reinforced with multiwalled carbon nanotubes ^[5]. Several mechanical properties of concrete have been shown to be enhanced with the addition of the multiwalled carbon nanotubes. Nonetheless, how the carbon nanotubes are dispersed in the mix is uncertain, which however, does influence the performance. In future, the desired dispersion of the carbon nanotubes in concrete mix can specifically be investigated.

These five articles have addressed several contemporary issues/ challenges in the concrete industry and provided solutions thereto. You are requested to kindly communicate us with your suggestions and critiques, not only related to these articles but also on the ICJ functioning overall, which would enable us to improve our standards further and evolve with time. Thank you, and have a wonderful year ahead.

Vasant Matsagar Editor-in-Chief (ICJ)

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