

Dear Readers,

we are pleased to share with you papers covering research on various constituents of concrete and the characteristics they impart. This edition is guest edited by Dr Saikat Sarkar.

Dr Saikat Sarkar is an Assistant Professor in the Department of Civil Engineering at Indian Institute of Technology (IIT) Delhi. His research interests include fracture, and failure mechanics of structures, modeling of cement-like composites and devising seismic hazard mitigation strategies. Dr Sarkar has published around 20 research articles in international journals of repute and 3 book chapters.

We hope you enjoy reading this edition and look forward to your feedback!

Production Editor
Indian Concrete Journal



Dear Readers,

Greetings! It gives me immense pleasure to bring out the June 2023 issue of the Indian Concrete Journal (ICJ). Today, concrete is one of the most consumed materials in the world due to its diversified use in the construction industry. As a result, the production of concrete, maintenance of already built concrete structures and newer applications of this material is bringing in multi-dimensional challenges for the researchers and practitioners. This issue of the ICJ consists of four high quality technical articles addressing the above-mentioned challenges.

Out-of-phase vibrations of series configured structural systems subjected to ground shaking scenarios lead to collisions between adjacent buildings. Such collisions, known as structural pounding, can lead to devastating failures. In^[1], the authors analyze the effects of structural pounding on the displacement based demands of a non-ductile reinforced concrete frame against a stiffer frame for floor-to-column interactions. The investigation uses the empirical cumulative distribution function to derive fragility curves for estimating pounding risks.

In^[2], the authors propose an improvement of the design methodology for shear walls as prescribed by IS: 13920 (2016). P-M interaction diagrams for different grades of structural concrete permitted by IS: 456 (2000) and four grades of HYSD steel namely Fe415, Fe500, Fe550, Fe600 are proposed conforming to the fundamentals of LSM of design as per IS: 456 (2000). In addition, P-M interaction charts are prepared conforming to the requirements of IRC: 112 (2020), which has similar requirements as per EN 1992-1-1 Euro code:2. The

moment capacities calculated from two sets of P-M interaction charts prepared as per IS: 456 (2000) and IRC: 112 (2020) are compared with the corresponding values obtained from the closed form expressions available in IS: 13920 (2016). The proposed P-M interaction charts which are more convenient to use than closed form equations, cater not only to the present version of IS: 456 (2000) but are expected to find useful application for the revised version of the standard also.

Sulfate attack is a deteriorating phenomenon in concrete and is responsible for strength reduction, development of cracks, and disintegration of concrete and volume expansion. Use of supplementary cementitious materials (SCM) has been effective in improving the sulphate resistance and is dependent on the characteristics of SCM used in concrete. In^[3], the authors employ low-carbon Metakaolin (MK) as a supplemented cementitious material to prepare cement mortars and determine the sulfate resistance of these combinations to expansion and loss of compressive strength.

In^[4], the authors show experimental observations to suggest improvement of construction and demolished (C&D) waste aggregate performance and quality, especially decreasing water absorption and improve interfacial transition zone (ITZ) with reducing cost. M25 grade concrete is taken in this experimental study and natural coarse aggregate are replaced with untreated C&D waste coarse aggregate and treated C&D waste coarse aggregate in different percentages.

In nutshell, this issue of the ICJ presents the research contributions covering a wide range of new developments, and applications in the domain of pounding of RC structures, design of shear wall and improvement of concrete as a construction material. On behalf of the ICJ, I would like to extend our sincere appreciation to the contributing authors who have considered the ICJ for disseminating their research outcomes. The effort and valuable time spent by the reviewers to ensure the high standard of the published articles in a timely manner is gratefully acknowledged. It is hoped that the articles published in this issue will be beneficial to both the researchers and the practicing engineers.

Best regards,

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