Dear Readers,

As we continue celebrating our Centenary Year, the ICJ March 2026 edition builds on our mission to spotlight ideas and innovations influencing the future of concrete and construction engineering. This edition has been shaped under the insightful guidance of our editorial board member, Dr N. Subramanian. It features articles that navigates experimental explorations, Design evolution, and emerging applications that reflects the dynamic growth of concrete systems.

Dr N. Subramanian, FNAE, FASCE, FIE is an award-winning author, consultant, researcher, and mentor, currently based in Maryland, USA, with over 47 years of experience in Industry (including consultancy, research, and teaching). A doctorate from the Indian Institute of Technology (IIT) Madras, he also worked with the Technical University Berlin and the University of Bundeswehr, Munich for 2 years as Alexander von Humboldt Fellow. He is the author of 26 books, including the famous books on Design of Steel Structures, Design of RC Structures, Principles of Space Structures, & Building Materials, Testing and Sustainability, and 320 technical papers. He served as a past vice president of Indian concrete institute (ICI) and the Association of consulting civil engineers (India) [ACCE(I)]. He is a recipient of several awards including the 2024 Edmund Friedman Professional Recognition Award of the ASCE, the ICI - L&T Life-Time Achievement Award of the ICI (2013), Tamilnadu scientist award (2001), Gourav Award of the ACCE(I) (2021), and the ACCE(I)-Nagadi best book award for three of his books (2000, 2011 and 2013). He has also been in the editorial board/review committee of several Indian and international journals, including the ICJ.

We hope this edition offers valuable insights and enriches your understanding of emerging developments in concrete science. We look forward to your feedback and valuable contributions to the ICJ.

Production Editor
Indian Concrete Journal

Dear Readers,

On behalf of The Indian Concrete Journal, I extend my warm greetings to you on the occasion of this landmark Centenary Issue (March 2026). The completion of one hundred years of uninterrupted contribution to the advancement of concrete technology and structural engineering is a moment of great pride and reflection for the Journal and the engineering community it serves.

My own association with ICJ began in 1976 with the publication of my first paper. Over the past five decades, I have had the privilege of contributing numerous articles and serving the Journal in various capacities, including as Guest Editor for special issues in 2014 and 2022. It is indeed a singular honour to be invited to guest edit this Centenary issue, marking fifty years of my association with ICJ.

This commemorative issue brings together a collection of scholarly contributions that reflect both the rich legacy and the evolving frontiers of concrete engineering. The eight papers included herein address a broad spectrum of topics encompassing experimental investigations, design developments, and emerging applications in concrete systems.

The opening paper by Dr Shambhavi Dube and Prof. Durgesh Rai of the Indian Institute of Technology Kanpur presents a systematic experimental study on the effects of strand debonding on the shear behaviour of pretensioned prestressed concrete girders representative of Indian bridge practice. The study provides valuable insights into the balance between flexural efficiency and shear safety.

The second paper by Dr S. K. Ghosh of S. K. Ghosh Associates LLC, USA, offers a comprehensive historical perspective on the evolution of design and detailing provisions for special reinforced concrete shear walls, tracing

developments from ACI 318-71 to recent editions such as ACI 318-19 and ACI 318-25. The paper highlights the significant shift in emphasis towards shear design in response to lessons learned from major seismic events.

The third contribution examines the critical issue of punching shear failure in flat slab–column connections. Drawing upon provisions in ACI 318, Eurocode 2, and IS 456, the paper underscores the need for revisiting existing Indian code provisions and proposes an improved formulation incorporating key influencing parameters.

The fourth paper by Prof. Venkatesh Kodur and colleagues from Michigan State University, USA addresses the fire performance of new-generation concretes, including ultra-high-performance, fiber-reinforced, geopolymer, and recycled aggregate concretes. The authors critically assess the adequacy of current fire design provisions and identify research needs to support performance-based fire engineering approaches.

The fifth paper, a collaborative effort by researchers from Hunan University, China, The City College of New York, and the University of Michigan, USA, presents a comprehensive review of truck impact effects on concrete bridge barriers. It highlights the transition from empirical to performance-based design methodologies and discusses advances in computational modeling and emerging applications of artificial intelligence in structural safety assessment.

The sixth paper by Prof. Eva Lantsoght of Universidad San Francisco de Quito, Ecuador and Delft University of Technology, Netherlands, addresses the pressing challenge of sustainability in concrete infrastructure. Emphasis is placed on extending the service life of existing structures, promoting circular economy principles, and adopting innovative materials for future construction.

The seventh paper provides a critical review of theoretical approaches to the size effect on shear strength in reinforced concrete members. Among the various models examined, the Size Effect Law (SEL), grounded in fracture mechanics, is identified as a rational and experimentally validated framework, with recommendations for its consideration in future code provisions.

The concluding paper by Profs. Paneer R. Selvam and Micah Hale of the University of Arkansas, USA, explores the potential of concrete as a medium for thermal energy storage. The study presents developments in high-temperature-resistant concretes, strategies for mitigating thermal cracking, and innovative applications such as conductive concrete for anti-icing of pavements.

It is hoped that this centenary issue will not only serve as a repository of current knowledge but also inspire further research and innovation in the field of concrete technology and structural engineering. The contributions herein reflect the enduring relevance of ICJ as a platform for disseminating both foundational insights and forward-looking developments.

On behalf of ICJ, I express my sincere appreciation to all the authors and reviewers for their invaluable contributions and for upholding the high standards of the Journal.

Dr N. Subramanian
Editorial Board Member, ICJ
Gaithersburg, MD, USA

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