

## Dear Readers,

We are pleased to introduce Dr Damodar Maity, Professor, Department of Civil Engineering, IIT Kharagpur who has guest edited the August edition. He has over 20 years of teaching and research experience in structural engineering. He specializes in Structural Dynamics and Earthquake Engineering, Advance Structural Analysis, Finite Element Method.

Prof. Maity has developed video courses on "Design of Steel Structures" under NPTEL, MHRD and authored a book titled "Computer Analysis of Framed Structures". His research area of interest includes Seismic control of high-rise structures, Structural health monitoring, Fluid-structure interaction, Earthquake resistant structures etc. He is a recipient of two best paper awards from The Institution of Engineers (India). He was joint convener of The Second International Congress on Computational Mechanics and Simulation (ICCMS06) - 2006. Prof. Maity was Secretary of The Indian Society of Theoretical and Applied Mechanics (ISTAM) and was instrumental in organizing three International conferences in three different cities in India. The International Conference on Recent Advances in Computational and Experimental Mechanics (ICRACEM) - 2020 was organized under his chairmanship. Prof. Maity has more than 200 research publications in journals and conference proceedings of national and international repute. Prof. Maity served as Technical Advisory Committee Member of National Disaster Management Authority, Government of India, related to Design and Construction of Cyclone Resistant Shelter.

Production Editor  
Indian Concrete Journal

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## Dear Readers,

The Indian Concrete Journal (ICJ) is pleased to publish the current edition to all its readers. It is well known that earthquakes can neither be prevented nor be predicted and earthquakes occur suddenly causing large scale destruction in a few seconds. About 56% of the land area of our country is liable to seismic prone area. Creation of proper awareness towards education and training of personnel; land use zoning and use of building codes, guidelines and byelaws; disaster resistant new constructions as well as retrofit-strengthening of existing structures, are the major important steps towards reduction of vulnerability and mitigation of risk. With these in mind, ICJ is bringing six thought provoking articles in this edition covering few of the above issues.

The first article investigates the seismic performance of framed reinforced concrete buildings with and without ductile detailing. The authors have chosen two three-storey half-scale RC buildings for comparison of their behaviour. Experimental studies are carried out using the tri-axial shake-table facility to evaluate the seismic performance of RC buildings with and without ductile detailing. The seismic performance of the ductile

detailing over the non-ductile detailing has been studied from these experiments. The authors have nicely presented the crack pattern and failure behavior of the both RC buildings for comparison purpose. The outcomes of this paper clearly indicate the importance of ductile detailing of the RC members for withstanding earthquake forces.

The second paper highlights the presence of soft storey and its consequences during earthquakes. In spite of its severe impact observed during past earthquake events, most of the tall buildings are being constructed with open ground storey because of the functional requirement. As a result it is essential to provide designers a simple correlation for adopting in design practice. This paper attempts to develop certain correlation for linear analysis of soft storey buildings. The authors have proposed a design amplification factor for overcoming the soft storey effect.

The third paper focuses on the estimation of natural period of vibration of reinforced concrete buildings located on soft soil sites. Ambient vibration tests have been performed for fifty one

reinforced concrete buildings at different parts of Patna, Bihar. The authors have proposed empirical relationships between the natural period and the number of storey of residential buildings in Patna based on their observations. From the exhaustive study, the authors suggest that local vibration period vs number of storey relationship for a particular site may be required to design buildings as well as to evaluate building responses and seismic demands.

A detailed study on the seismic resilience evaluation of an unsymmetrical (L-shaped) reinforced concrete building with and without unreinforced masonry infill walls has been presented in the fourth paper. The damage ratios, reduction in functionality, loss of resilience of the building subjected to a PGA of 0.21g have been investigated for both the cases. The authors opine on the urgency of considering infill-frame interaction as it changes the dynamic characteristics of structure and increase the seismic vulnerability, functionality and resilience. From this study the authors have observed that the probability of damage at extreme damage state is significantly higher as compared to bare frame.

Fifth paper of this issue explores on the constructability and detailing of reinforced concrete coupling beams. Various alternate reinforcement details involving diagonal reinforcement,

which are bent at the beam ends inside the coupling beam have been proposed. The author also opines the use of high-performance fibre-reinforced concrete with low volume fractions of fibres which can reduce the amount of steel used, as well as labour by simplifying the placement of reinforcement and accelerate construction schedule of the coupling beams.

The sixth paper investigates the reasons of seismic vulnerability of different types of plan irregular buildings. The study was conducted for comparison of various types of plan irregular buildings with a regular building having similar types of frames. First six lateral natural periods and base shears have been computed. The corresponding mode shapes have been plotted to exhibit the nature of deformation in various modes. The study indicates the possibilities of stress concentration at edge or corner of such buildings due to influence of fourth, fifth or sixth modes.

The ICJ team is extremely happy to publish this special edition dealing with seismic resistant structures that could benefit the practicing design engineers, architects, decision makers and structural engineers. We appreciate and thank all the authors and reviewers for their contribution to bring out this issue.

Thanking you,  
**Damodar Maity**

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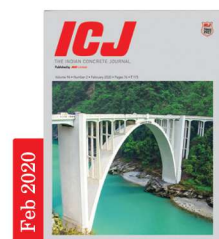
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