Dear Colleagues,

The Indian Concrete Journal (ICJ) is pleased to issue its current edition to the readership. As the infrastructure projects around the world are developing continuously, the need for new innovative materials to satisfy the increasing demand is rising. Concrete, as the most versatile material used in structural applications, has been improved throughout the last decades with the help of different types of fibers, which not only enhance the mechanical properties of concrete, but also contribute to the global sustainability. In the current issue of the ICJ, five papers, which deal with novel developments in concrete industry and rehabilitation of bridges towards more resilient infrastructures, have been published.

The first article has proposed an alternative strategy for rehabilitation of box-girder bridge decks without long disruption of traffic, which is usually necessitated by conventional construction. The proposed technique of rehabilitation has relied upon strengthening the bridge deck with near surface mounted (NSM) fiber-reinforced polymer (FRP) strips as additional reinforcement on the overhang region of the bridge deck. The purpose for such strengthening was to enable the placement of sound/ noise barriers without extensive modification of the existing structure. The experimental test has simulated the load pattern from the addition of the sound barrier wall, and assessed the failure mode and the adequacy for carrying the additional loads. The findings have demonstrated that the capacity of the strengthened section was significantly higher than the demand. Furthermore, the achieved final failure was ductile rather than sudden/brittle, based on which the proposed technique for rehabilitation was found efficient and cost-effective. The second article has investigated on the performance of sintered fly ash lightweight aggregated concrete, whose findings resulted in the formulation of Indian Standard IS: 9142 (Part-2) 2018. The experimental program has dealt with the characterization of the investigated material (i.e., evaluation of micro-structural, mechanical, and durability properties) and its suitability for application in structures. The results have indicated the suitability of using fly ash lightweight aggregate in structural concrete, which is not prone to wearing. However, the study has highlighted the need for establishment of various more stringent structural design codal provisions as compared to those recommended for normal weight aggregate concrete members. The third article has presented a novel cavity wall panel system, using textile-reinforced concrete (TRC)-cold form steel, for fast-track construction, which is becoming the need of the day. Several advantages of the proposed panel were stated such as: easy erection on site, less labor demand, fast-track construction, better thermal/ acoustic insulation, and more strength-to-weight ratio as compared to conventional masonry walls. The developed system consisted of a pre-fabricated TRC skin material and a profiled cold form steel sheet as a core material, both connected together using self-tapping screws integrated within the system. The experimental results have demonstrated the possible potential of TRC, integrated with cold form steel sheets, for load-bearing applications, rather than the limitation to non-load-bearing applications, which was found in the past studies. The fourth article has reported details of study carried out to investigate the fracture energy of fiber-reinforced rubcrete made using steel/ polypropylene fibers with partial replacement of fine aggregate with crumb rubber. The experimental work included three-point bending tests on beam samples cast from four different concrete mixes with/ without fibers/ rubber. A notable improvement in ductility was observed with steel fiber-reinforced rubcrete, which makes it suitable for application in structures that require significant energy absorption. Furthermore, it was concluded that the use of fiber-reinforced rubcrete results in limiting the exploitation of fine aggregates, and thus helps to ensure responsible utilization of precious natural resources. The last article has discussed the combined effect of high fiber content and constant dosage of polymer on properties of so called polymer-modified fiber-reinforced high-strength concrete. The experimental work has resulted in a considerable improvement in compressive, flexural, and shear strength, as well as ductility and toughness of concrete owing to the synergistic effect of polymer and fiber.

Thus, we are glad to issue this edition of the ICJ dealing with innovative technologies that could benefit the concrete industry as well as infrastructure resilience. The topics covered in this edition are of a great significance and will be useful for structural engineers towards making more developments in construction technology. Thank you.

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Editor-in-Chief