



Research on the Seismic Performance of RC Members of Existing, Modern and Strengthened RC Buildings

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Message from the Guest Editors

The behavior of reinforced concrete (RC) structural members (columns, beams, beam-column joints, walls) during strong seismic excitations decisively affects the overall seismic performance of RC buildings. The existing substandard RC buildings are particularly susceptible to severe damaging and catastrophic collapses due to numerous critical structural deficiencies, related to poor reinforcement details, low quality of the materials used and lack of capacity design approach. However, recent experimental and analytical research found in the literature indicates that unexpected brittle failure of the structural members of modern RC buildings is also possible to occur, with severe detrimental effects on the structural integrity. The latter is also true for existing RC buildings which are retrofitted according to modern design codes to withstand strong future earthquakes. Thus, further investigation, both experimental and analytical, is required to improve the provisions of modern codes for the design of earthquake-resistant RC buildings and to provide well-documented solutions for the effective strengthening of RC members.





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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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