Session ID: IDD-4

Title
FRICTION-BASED STRUCTURAL COMPONENTS FOR HIGH-PERFORMANCE BUILDINGS

Convenors
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Description
In 2011, strong earthquakes occurred in New Zealand. Approximately 1240 buildings were demolished in the central city of Christchurch. For five years, the Canterbury Earthquake Recovery Authority led and coordinated the response and recovery efforts. The damage repairs required after the earthquakes and the associated downtime highlighted the need for the development of low-damage high-performance earthquake-resilient buildings.

Friction-based structural components can be placed in the seismic load path of buildings to limit the building responses and reduce the earthquake damage in the structural and non-structural components. Buildings with these components have the potential to accelerate the post-earthquake functional recovery of a community. Friction-based structural components have been used in various structural systems, including precast concrete structures, reinforced-concrete coupled wall systems, steel braced frames, steel moment-resisting frames, self-centering moment-resisting frames, and timber rocking walls. Friction-based structural components such as friction pendulum base isolators, friction dampers, negative stiffness friction dampers, and self-centering braces with friction-based energy dissipation have been developed, tested, and implemented in practice, as well.

This session aims to disseminate research findings and practical applications related to friction-based structural components used to improve the seismic performance of buildings. Attendees will learn about the state-of-research, state-of-practice, and the potential benefits of friction-based structural components for seismic resilience. Innovative and practical friction-based technologies will be presented. Results from numerical and experimental studies on the seismic response of friction-based structural components will define the state-of-research. Practical applications of friction-based structural components in new and existing buildings will define the state-of-practice.

Invited Speakers
E. Nastri [4], M. Constantinou [5], J. Ricles [6], S. Ramhormozian [3], J. Golondrino [7], K. Rangwani [2], L.-J. Jia [8], L. Cao [6], K. Lee [1], Z. Yan [3]

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