

Session ID: CMS-13

Title

SHEAR CRITICAL CONCRETE STRUCTURES SUBJECTED TO SEISMIC LOADS: BEHAVIOR, ASSESSMENT AND RETROFIT

Convenors

G. Proestos ¹, P.M. Calvi ²

Description

The assessment and retrofit of shear critical reinforced concrete structures persists as a complex field of study that requires continued research. This is particularly true for existing concrete structures in seismically active regions. While newly constructed structures built using modern codes are expected to perform well in earthquakes, the performance of existing structures will vary substantially. Engineers often need to evaluate the safety of existing structures that exhibit deterioration or damage from prior seismic events. Thus, being able to assess structures presenting signs of distress, and determine repair and retrofit measures is extremely important to improve the resilience of civil infrastructure. This session aims to address three important and related aspects in the evaluation of shear critical reinforced concrete structures subjected to seismic loads: (i) the shear behavior of concrete structures subjected to earthquakes, (ii) the assessment of concrete structures in distress due to the combined effects of seismic events and deterioration and (iii) methods to repair and retrofit deficient structures. To evaluate shear critical structures subjected to reverse cyclic conditions, an in depth understanding of their behavior is needed. This session will present new models and experiments that explore the fundamental response of structures subjected to reverse cyclic shear. While establishing this fundamental understanding is important, practical methods are also needed to assess existing structures both prior to seismic events and after damage has occurred. This session will explore the evaluation of aged structures and will also explore the crack-based assessment of structures. Finally, this session will examine new repair and retrofit methods to address deficient shear performance of structures. This session aims to provide engineers with the full suite of information and state-of-the art research as it relates to shear in concrete structures.

Invited Speakers

A. Ferche ³, D. Ruggiero ⁴, B. Mihaylov ⁵, T. Hrynyk ⁵, W. Galik ⁶, J. Samayoa ¹

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