**Overview of Recent Research on Structural Performance of Building Envelope, Light-frame and Masonry Wall Systems**

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**ABSTRACT**

Although building envelope systems such as brick veneer walls, precast concrete cladding panels, and glass curtain walls or windows are normally considered architectural components or nonstructural components, it does not mean they will not have structural behavior. In fact, these components are subjected to gravity loads, wind loads and seismic loads/displacements, and are the most vulnerable systems to damage under extreme events. The main functions of building envelope systems are, however, more serviceability in nature, meaning they are expected to provide protection to the interior against exterior environmental effects such as rain, snow, wind, and cold and hot outside temperatures, as well as provide natural lighting and views. The performance criteria for such components are, therefore, far greater than structural counterparts as these systems are expected not to crack or break under structural loads, and also provide airtight, watertight enclosure while providing thermal and sound insulation as well as daylight and energy efficiency. Above all, these systems that constitute the exposed skin of buildings, must satisfy the architectural and aesthetic criteria of the buildings as well.

In this presentation, an overview is presented mainly regarding experimental testing research on structural performance of several different types of nonstructural envelope and some load-bearing exterior or interior wall systems. In most of the studies, the drift capacity of various wall systems subjected to cyclic racking testing simulating seismic loading or static lateral load testing is evaluated. The systems that will be discussed include glass curtain wall systems, brick veneer wall systems, precast concrete cladding panels, light-frame wall systems, and masonry wall systems. In some cases, analytical and numerical studies have also been carried out to help understand or enhance analytical modeling challenges and issues. The presentation will provide a better understanding of the failure modes and drift or load resisting capacities needed for designing such systems for structural function and performance, while offering some guidelines for improvement of some systems based on what the testing programs have shown.