A Collaborative Research Program on Performance-Based Design of Innovative Structural Systems for Earthquake Resistance

by

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Abstract: A comprehensive international collaborative research program is being carried out to develop performance-based design methodologies for new and innovative structural systems to provide enhanced performance, safety, economy, and sustainability when subjected to severe load conditions, such as earthquakes. The research project is a collaborative effort involving a number of researchers and academic institutions in US, Canada, Thailand, Taiwan, India and Switzerland. The program encompasses experimental and analytical studies focusing on the applications of a design methodology called Performance-Based Plastic Design (PBPD). The PBPD method is a complete design approach that considers factors such as determination of appropriate design lateral forces, member strength hierarchy, selection of desirable yield mechanism, and target drift right from the beginning of the design process. The focus in the current phase of this program is on developing innovative steel truss girder moment frames with Buckling Restrained Braces for lateral load resistance and energy dissipation under severe seismic loading.