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State of the Art Review on Performance Based Retrofitting of Structures

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Abstract

Performance-based design (PBSD) procedure, allows for selecting the desired performance objectives for a structure subjected to seismic events based on the functionality or importance of the structure. The PBSD methodology significantly improves the building performance required for varying seismic demands. This approach reduces the seismic damage to infrastructures at the Design Basis Earthquake (DBE) and Maximum Considered Earthquake (MCE) levels. Based on FEMA P-58, the performance-based seismic design involves steps such as selecting appropriate performance objectives, selecting seismic force-resisting systems, determining appropriate stiffness/strength of structural members, and finally verifying design adequacy. Performance-Based Seismic Retrofitting of Structures (PBSR) is highly relevant in the present scenario of seismic hazards. This paper reviews the current state of performance-based retrofitting from national/international literature and code provisions. The configuration, structural characteristics, and seismic deficiencies of the structures, which has significant importance, are evaluated from the literature. The appropriate performance parameters are analysed based on the seismic tests carried out in the literature.

Keywords: Retrofitting, Performance objectives, Shake table testing