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# APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE DESIGN OF PRE-ENGINEERED BUILDINGS

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## **ABSTRACT**

“In the present-generation of performance based seismic engineering, performance is expressed in terms of a series of discrete performance levels identified as Operational, Immediate Occupancy, Life Safety, and Collapse Prevention. These performance levels are applied to both structural and non-structural components, and are assessed at a specified seismic hazard level. The principal objective under this work effort was the establishment of a process methodology for seismic performance assessment of individual buildings that properly accounts for uncertainty in our ability to accurately predict response, and communicates performance in ways that better relate to the decision-making needs of stakeholders. The final assessments based on scenario and time basis together describe the resulting methodology, as well as the development of basic building information, response quantities, fragilities, and consequence data used as inputs to the methodology. To allow the implementation of this methodology, work including the collection of fragility and consequence data for most common structural systems and building occupancies are developed from an electronic Performance Assessment Calculation Tool (PACT) for performing the probabilistic computations and accumulation of losses while following the guidelines laid out by FEMA P58 for Seismic Performance Assessment of Building.”

*Keywords: PBEE, FEMA, probabilistic assessment, PACT*