

Seismic Performance Assessment of Pre-70 RC Frame Buildings with FEMA P-58

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Abstract : Past earthquakes have shown that seismic events may incur large economic losses in buildings. FEMA P-58 provides engineers a practical tool for the performance seismic assessment of buildings. In this study, FEMA P-58 is applied to two typical Italian pre-1970 reinforced concrete frame buildings, characterized by plain rebars as steel reinforcement and masonry infills and partitions. Given that suitable tools for these buildings are missing in FEMA P-58, specific fragility curves and loss functions are first developed. Next, building performance is evaluated following a time-based assessment approach. Finally, expected annual losses for the selected buildings are derived and compared with past applications to old RC frame buildings representative of the US building stock.

Keywords : FEMA P-58, RC frame buildings, plain rebars, Masonry infills, fragility functions, loss functions, expected annual loss

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