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New Publications on the Seismic Collapse Performance of Short-Period Buildings

The Applied Technology Council (ATC) is pleased to announce the availability of the four-volume FEMA P-2139 report series, *Short-Period Building Collapse Performance and Recommendations for Improving Seismic Design*. The series was produced as part of a seven-year project (ATC-116) managed by ATC for the Federal Emergency Management Agency (FEMA).



Previous analytical studies investigating a wide range of modern seismic-force-resisting systems (SFRSs) have predicted collapse rates for short-period buildings that are significantly larger than those observed in earthquakes in the United States during the past 50 years. This gap between analytically predicted and historically observed collapse rates is known as the *short-period building seismic performance paradox*. Additionally, analytically predicted collapse rates for short-period buildings historically have been larger than maximum collapse rates targeted by national model codes *and* standards.

Since a majority of the building stock is composed of low-rise buildings, resolving the paradox could help to improve our understanding of short-period building seismic performance and the reliability of seismic codes and design practices.

The FEMA P-2139 report series documents an investigation to identify causes and develop solutions for the short-period building seismic performance paradox. Studies investigated three structural systems: wood light-frame, special reinforced masonry shear wall, and steel special concentrically braced frame systems.

Volume 1 summarizes results, conclusions, and recommendations from the three-system specific studies and presents a common understanding of the seismic response and collapse performance of short-period buildings. Volumes 2, 3, and 4 summarize results, conclusions, and recommendations from the studies of wood light-frame, special reinforced masonry shear wall, and steel special concentrically braced frame systems, respectively.

Each volume includes recommendations organized into three categories: improved seismic design codes and standards; advanced seismic design and analysis practice; and enhanced modeling, testing, and data collection. Some recommendations are specific to the three SFRSs studied whereas others are generally applicable to all short-period systems. A summary of the key findings and recommendations can be found [here](#). Peak response calculations from the three system-specific analytical studies have been archived and are available for download [here](#).



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