California quake points to research advancements in retrofitting older buildings

September 2 2014, by Purdue University

The 6.0 earthquake that rocked Napa, California, on Aug. 24 is placing the spotlight on efforts by property owners and municipalities to retrofit older buildings and improve their ability to withstand earthquakes.

Researchers affiliated with the Purdue University-led George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) have studied ways to strengthen older masonry- and wood-framed buildings to minimize earthquake damage and save lives.

The city of Los Angeles enacted a law in the early 1980s that required brick buildings to be retrofitted. While many of those retrofitted buildings were damaged in the Napa quake, no lives were lost, according to media reports.

Data recently published by the California Seismic Safety Commission indicates that about 70 percent of the 26,000 brick buildings across California have been seismically retrofitted or demolished, with major cities such as San Francisco and Los Angeles requiring action. As many as 8,000 remaining brick buildings are at risk of collapse, data published by the state in 2006 shows.

Smaller cities such as Napa have mandatory rules for retrofitting older buildings, and experts have been reported as saying that might have helped prevent widespread destruction during the recent quake.

The Earthquake Engineering Research Institute (EERI) reports that

while damage still occurred in both retrofitted and un-retrofitted buildings in Napa, no retrofitted buildings collapsed.

Some success stories of buildings that implemented cripple wall retrofits were documented, EERI reports. Efforts are underway to collect detailed performance data to understand the effectiveness of implemented retrofits.

Provided by Purdue University