

REPORT OF THE CHIEF LEGISLATIVE ANALYST

DATE: December 27, 2013

TO: Honorable Members of the Rules, Elections and the Intergovernmental Relations Committee

FROM: Gerry F. Miller *Gerry F. Miller*
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Council File No.:13-0002-S135
Assignment No. :13-11-0954

SUBJECT: Resolution (LaBonge - Englander) to support or sponsor any legislation seeking voter approval of a State ballot measure, at the next statewide election, to provide funding to localities for earthquake safety improvements, including efforts to improve the structural safety of old concrete structures.

CLA RECOMMENDATION: Adopt Resolution (LaBonge - Englander) to include in its 2013-2014 State Legislative Program support or sponsorship of any legislation seeking voter approval of a State ballot measure, at the next statewide election, to provide funding to localities for earthquake safety improvements, including efforts to improve the structural safety of old concrete structures.

SUMMARY

On November 1, 2013, the subject Resolution was introduced to seek a statewide ballot measure to provide funding for the improved seismic safety of concrete structures and states the following:

- The Los Angeles Times has recently reported that more than 1,000 old concrete buildings within the City of Los Angeles may be at risk of structural failure in the event of a major earthquake;
- Of these buildings, it is estimated that as many as 50 may be destroyed in the event of a major earthquake resulting in injury or death to thousands;
- The Los Angeles Times analysis states that many older concrete buildings are vulnerable to the sideway motion created by a major earthquake because the concrete columns do not contain sufficient steel reinforcement to keep them from moving;
- Seismologists have stated that a bigger quake is overdue and researchers advise that an estimated 5% of concrete structures may fail during the earthquake; and,
- Past earthquakes that have shown the deadly potential of concrete buildings include : the 2011 earthquake in New Zealand toppled two concrete office towers, killing 133; many of those killed in the Kobe, Japan quakes of 1995 were in concrete structures; the 1971 Sylmar earthquake destroyed several concrete structures, killing 52; the 1994 Northridge earthquake significantly damaged a Bullock's department store and a Kaiser medical office.

BACKGROUND

Recently, Los Angeles Times published an article that revealed that more than 1,000 older concrete buildings located in the City of Los Angeles may be vulnerable in an earthquake, and noted that a team of UC Berkeley researchers had compiled a list of 1,500 older concrete buildings which pose a danger during an earthquake. The article further noted that while these structures present a significant public safety concern, their remediation also requires substantial financial resources, where the initial engineering assessments present costs in the thousands of dollars per structure. For many of the City's commercial and

residential property owners, including buildings housing renters and low-income families, the expense of remediation can be onerous.

At the request of the Southern California Earthquake Center and former City Councilmember Greig Smith, the University of Southern California in 2008 prepared a report entitled "Earthquakes and Nonductile Concrete Buildings in the City of Los Angeles." The report was prepared to study potential policies to reduce earthquake hazards by encouraging the retrofitting of nonductile concrete structures. The USC Report noted that the impact of a major earthquake striking Los Angeles would be substantial, estimating, at that time, an economic loss of \$252 billion in addition to thousands of fatalities. While the report stated that the City of Los Angeles had made significant progress in improving building safety, the retrofitting of nonductile concrete buildings remained challenging. The report further stated that retrofitting these dangerous structures is critical to reducing earthquake damage, but is costly and private property owners often lack incentives to take action.

At the 2008 World Conference on Earthquake Engineering in Beijing China, a paper was presented that stated the following:

"Nonductile concrete buildings arguable represent the greatest seismic life safety hazard in many urban centers worldwide because of their collapse potential."

At that time, the report estimated there were 1,600 potential nonductile concrete buildings in the City of Los Angeles.

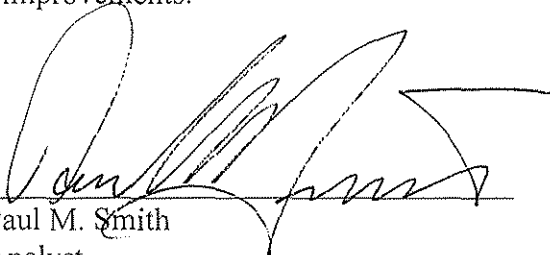
The USC report states that nonductile concrete structures present high risk to their occupants because they are not only dangerous, but also difficult to identify. These structures were generally built prior to 1976 with stiff reinforced concrete frames that do not bend when shaken or twisted. This inflexibility increases the likelihood of structural failure and collapse. Unfortunately, nonductile concrete buildings look similar to other reinforced concrete frame buildings constructed to higher seismic safety standards, and accurate identification of concrete structures requires considerable review of architectural/as built plans or the undertaking of costly structural assessments.

As noted by the Department of Building and Safety, the City is committed to the safety of its building stock and over the years has adopted two mandatory seismic retrofit ordinances for unreinforced masonry buildings and tilt-up concrete buildings. The City has also established voluntary retrofit ordinances for soft story residential wood frame buildings and non-ductile concrete buildings.

Given the significant costs associated with the seismic retrofit of older nonductile concrete buildings, the grave risks these structures present here and throughout the State, and need to plan and implement seismic safety improvements, the Resolution seeks a State Ballot Measure at the next statewide election to provide financial assistance to localities for earthquake safety improvements.

DEPARTMENTS NOTIFIED

Building and Safety



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Analyst

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