

## **POLICY RECOMMENDATION 2015-3**

### **IDENTIFICATION AND PRIORITIZING MITIGATION OF SEISMICALLY VULNERABLE PUBLIC BUILDINGS**

**(ADOPTED 30 SEPTEMBER 2015)**

Alaskans expect that the state's public buildings are resistant to damaging earthquake hazards, such as strong shaking, ground failure, and tsunami inundation. Further, many public buildings in Alaska are also used as community gathering places and as emergency shelters in times of natural disaster. Therefore, the Alaska Seismic Hazards Safety Commission recommends that the State support and appropriate resources for programs that identify and prioritize rehabilitation or replacement of those public buildings most at risk from earthquakes, to mitigate risk to our citizens, and to assure those facilities can be used as emergency shelters in times of need.

This policy recommendation expands upon elements addressed in the Western States Seismic Policy Council<sup>a</sup> (WSSPC) Policy Recommendation 12-2<sup>[1]</sup>.

#### **INTRODUCTION**

Alaska has more earthquakes than any other region of the United States and is, in fact, one of the most seismically active areas of the world; with a potential across the entire state for earthquakes strong enough to damage local buildings. It is without question that the citizens of Alaska should expect that the state's public buildings are resistant to damaging earthquake hazards such as strong shaking, ground failure, and tsunami inundation. Furthermore, many of our public buildings are presumed to be the safest structures in a community, and functioning as designated emergency shelters in the case of a natural disaster.

However, despite the active seismic setting and potential for damaging earthquakes, the State does not have an established program(s) or policy to actively identify the vulnerability of existing public buildings to damaging earthquake hazards, or to prioritize rehabilitation or replacement of those structures most at risk from earthquakes.

#### **METHODS**

There are several methodologies routinely used to efficiently, economically, and rapidly screen and rank the vulnerability of a structure to damage during a codified design-level earthquakes, based on building age, type of structural and foundation, and local geologic conditions. The most common of these screening methods include FEMA's *Rapid Visual Screening of Buildings*<sup>[2]</sup>, ASCE/SEI's *Seismic Evaluation of Existing Buildings - Tier I Screening*<sup>[3]</sup> and FEMA's *Reducing the Risks of Nonstructural Earthquake Damage*<sup>[4]</sup>. All of these methods can be used as the basis for identifying, at very little cost, effort or time, which facilities are most likely prone to major damage or collapse in the event of a strong earthquake.

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<sup>a</sup> The Alaska Division of Homeland Security & Emergency Management, Alaska Division of Geologic & Geophysical Survey, and the Alaska Seismic Hazards Safety Commission are members of WSSPC

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It is important to understand that the above screening methods simply qualify the vulnerability of an existing building to damage during a codified design earthquake; but are not sufficient to determine the full scope of rehabilitation that could be required. Therefore, more detailed evaluations would be required for the structures found to be most at risk. However, the results from a program using the above rapid and inexpensive screening methods would provide a logical and validated approach to prioritizing and directing funds towards those public buildings most at risk.

These methodologies to review the vulnerability of buildings described above have been successfully used in other states and countries with high-seismic risk; including Alaska (e.g. Kenai Peninsula and Matanuska-Susitna school districts). Other states using this methodology to economically assess and prioritize public school buildings include Washington, Oregon, California and Utah. These states are members of the Western States Seismic Policy Council (WSSPC), which develop and provide information intended to reduce earthquake related losses.

## **CONCLUSION**

The Commission firmly believes that the state's citizens have the right to be safe in our public buildings during earthquakes. Some of these public facilities may also be relied upon to shelter Alaska's vulnerable populations from harsh climate following a severe seismic event. Therefore, the Commission recommends that the State Legislature and Alaska Department of Transportation and Public Facilities (DOT&PF) establish and implement a program(s) to assess and prioritize public buildings that may be vulnerable to seismic hazards and pose a potential life safety threat to their occupants. The Commission further suggests that structural and non-structural elements be evaluated, since both can result in injuries or death in the event of a damaging earthquake. Evaluation for potential tsunami inundation, earthquake-induced ground failure below foundations, and local landslide effects also should be considered during the process. Such information will help prioritize funding for projects that will improve the safety and resiliency of existing public buildings throughout Alaska.

## **REFERENCES**

- <sup>[1]</sup> Western States Seismic Policy Council (WSSPC), Policy Recommendation 12-2, Developing Earthquake Risk-Reduction Strategies.
- <sup>[2]</sup> Federal Emergency Management Agency (FEMA). Rapid Visual Screening of Buildings for Potential Seismic Hazards: A handbook. (FEMA 154 or P154)
- <sup>[3]</sup> American Society of Civil Engineers (ASCE). Seismic Evaluation and Retrofit of Existing Buildings. (ASCE/SEI 41-13).
- <sup>[4]</sup> Federal Emergency Management Agency (FEMA). Reducing the Risks of Nonstructural Earthquake Damage – A Practical Guide (FEMA E-74)