WESTERN STATES SEISMIC POLICY COUNCIL
POLICY RECOMMENDATION 10-8

Identification and Potential Mitigation of Seismically Vulnerable School Buildings

Policy Recommendation 10-8

Children have the right to be safe in school buildings during earthquakes. WSSPC recommends each state, province, territory, and community adopt a program that would identify and rank the potential seismic vulnerability of schools in their communities in a timely manner. Furthermore, programs to reduce the seismic vulnerability of those schools at greatest risk should be developed. WSSPC also recommends that FEMA provide dedicated financial support for the establishment of a program that improves the safety of seismically vulnerable schools.

Background

Every community is required to educate children and it is the responsibility of governmental agencies to design and construct safe buildings to house them. While current building codes and construction practices have recognized the effects of earthquakes and provide state-of-the art design considerations, many older school buildings were built before these principles were understood. Additionally, many existing buildings are constructed of materials such as unreinforced masonry, which are not in common use today due to their poor performance in past earthquakes throughout the world. These older buildings have not been properly graded or passed the test of seismic safety. Consequently, many students face significant seismic risk.

Schools are a vital piece of the fabric of communities and are often considered to be part of their critical infrastructure. Some communities view these resources as potential post-disaster gathering places, yet virtually all will agree that their loss of function as an educational facility after an earthquake would seriously affect recovery.

With the economic emphasis on the reuse of existing resources, it is important to recognize the need to assure that existing buildings are properly retrofitted to extend their life and create greater assurance of their safety against future earthquakes.

Public safety is a distinct presumption and should be considered outside of the realm of education spending. Furthermore, the costs for seismic retrofitting can often be segregated into discreet projects that can be incrementally achieved through the existing maintenance and upkeep programs already a part of most school building programs.

WSSPC strongly believes that protecting children from preventable injury during a seismic event is of the highest priority. Jurisdictions must proactively address this issue by undertaking a systematic program to inventory and rank unsafe buildings in their communities, and to develop a related follow-on program to reduce the seismic vulnerability of those buildings. Occupant safety should not be deemed "lucky" as has occurred in many school buildings in past earthquakes when they occur outside of school hours.

WSSPC understands the costs associated with such a program can be challenging and needs to be fully justified in order to be properly assessed and ranked within the budgeting process. Therefore it is necessary to put sufficient energy and resources into quantifying the extent of the problem in communities and provide measurable metrics that will help decision-makers adequately measure the degree of risk within their communities. The first step toward seismic safety of schools should be to demonstrate the magnitude of the problem; then the community can prepare to take the necessary preventative measures.

Facilitation and Communication

A program to identify, rank, and address the risk presented by unsafe schools in their communities in a timely manner should consist of the following steps:

1. **Inventory All Existing School Buildings.** The creation of an initial rapid visual inventory of all existing school buildings should be undertaken in order to quantify the extent of buildings that should be further investigated. The inventory should be made available to the public. This process can be achieved through the use of the Federal Emergency Management Agency's procedures described in FEMA 154, *Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook, Second Edition.* Buildings which fail to meet an appropriate building performance level should be investigated by more advanced means. An available tool is ASCE-31, *Seismic Evaluation of Existing Buildings,* to allow for proper ranking within the inventory for appropriate rehabilitation measures.

2. **Rank School Buildings for Seismic Safety.** This step will include the determination of the state, province, territory, or community's appropriate building performance level (Table C1-2, Damage Control

and Building Performance Levels, in ASCE-41, *Seismic Rehabilitation of Existing Buildings)* such that the building stock may be prioritized. It is recommended that this process include a broad number of stakeholders in order to engage the largest possible audience in determination of thresholds for public school safety. All schools that are collapse prone under current design levels should be ranked as a high priority. The rankings should be made available to the public.

3. **Develop a Program to Reduce Seismic Vulnerability of School Buildings**. Each state, province, territory, or community will want to balance its available resources and degree of public concern with programs to achieve seismic safety for their schools. This may range from short-term mandatory programs to implement retrofitting to phase-out programs to eliminate the most dangerous buildings. Additionally, incentive-based, grant funding, or incremental strengthening programs which move toward safer schools within a certain timeframe can also be effective.

Assessment

The effectiveness of this policy can be determined by maintaining an inventory of states, provinces, territories, and communities that have developed programs to address unsafe school buildings. This should include the type of program, its stage of development and any legislative initiatives, which are in support of the policy. By collecting and identifying these individual efforts, WSSPC will provide a clearinghouse of information that can be used to help promote public policy and advocate the need for greater safety for school buildings.

History

Policy Recommendation 10-8 was adopted as amended by unanimous voice vote of the WSSPC members on July 9, 2010 at the WSSPC Annual Business Meeting in Broomfield, Colorado.