Proposed Best Practice

School Facilities Seismic Improvement Program
Berkeley Unified School District
Implemented in early 1990’s

Description
The Berkeley Unified School District (BUSD) has implemented an extensive facilities seismic improvement program that was initiated after the 1989 Loma Prieta earthquake. The BUSD has successfully completed strengthening of all the high to moderate risk schools and will continue the comprehensive plan to address all 13 campuses by 2009.

Problem
The October 1989 Loma Prieta earthquake caused relatively little damage in Berkeley, but it did alert a number of parents to how poorly prepared the school district was for a future large earthquake. It was determined that many school buildings were not seismically safe, that the District’s emergency plans were out-of-date, that teachers and staff were not properly trained in disaster response, that alternate communications equipment was scarce and outmoded, and that few first aid, water, food or emergency supplies were stored in any facility. The Katz Bill, adopted in 1984, requiring that all public and private schools develop earthquake emergency plans and mitigate their nonstructural hazards, was not being implemented nor enforced, mainly due to the lack of funding.

Solution
The PTA took the initiative to gather information on the Bay Area seismic risk and safety, and with their lobbying efforts, convinced the school board to fund an earthquake planning and preparedness effort that also included an engineering study of several schools. The funding came from the District’s Reserve for Economic Uncertainties, an emergency fund required by the state of all school districts. The results of this study, which was also reviewed by the Division of the State Architect (DSA), led to a more comprehensive engineering study, undertaken in 1991, of all the schools in the District. It was discovered that several of the schools were high risks, including some potential collapse hazards.

Finding the funding for construction was the next challenge. The District applied to the State Allocation Board (SAB) for grants to “modernize” the seismically unsafe portions of the schools. The State Allocation Board is a state agency that oversees school facilities funding in California. The SAB was reluctant to fund the BUSD seismic strengthening project in fear of setting a precedent that would open the door for other urban school districts in California to expect retrofit money. Legislators from the East Bay succeeded in adding to a pending state schools bond on the June 1992 ballot two propositions (152 and 155) to increase monies available to older urban school districts. Some of these funds could be used for the seismic upgrade of old school structures. Also, the BUSD was successful in putting Measure A for Schools on the June 1992 ballot. The measure proposed to raise money for school reconstruction, of which some was to be spent on seismic retrofit. The passage of the two propositions and Measure A marked the first time that older urban districts gained access to SAB funds for substantial renovation projects.

The school district also applied to the Federal Emergency Management Agency (FEMA) for hazard mitigation grants. In the counties affected by the Loma Prieta earthquake, FEMA offered matching funds to public and private sector organizations proposing hazard reduction projects.
Ultimately, by 1998, the BUSD had been promised more than $6 million in matching funds from FEMA for its seismic strengthening program.

Other Examples

Additional examples of seismic mitigation programs related to educational facilities include:

- **University of California (UC) System**: The UC system has been encouraging the evaluation and retrofitting of facilities since 1978. UC Berkeley sits astride the Hayward fault, and currently has a comprehensive program (SAFER) to both increase life safety and decrease downtime in a large earthquake.

- **California State University (CSU) System**: In 1992, the CSU system established a Seismic Review Board to perform a seismic risk assessment of buildings at 23 campuses. Approximately 10% of all the facilities assessed were identified as needing further detailed evaluations. Most of these facilities have been or are going through retrofit.

- **Community Colleges**: In 1996, the Community College Chancellor’s Office undertook a seismic risk assessment of community colleges statewide. A number of buildings were slated for more detailed seismic evaluations. Community colleges are integrating this information into future capital outlay plans.

- **Public K – 12 Schools**: In 1999, California passed AB 300, which requires the Department of General Services to conduct an inventory of public school buildings that are of concrete tilt-up construction and those with non-wood frame walls that do not meet the minimum requirements of the 1976 Uniform Building Code. The study has been completed, but the report has not been made public.

- **Stanford University**: Following the 1989 Loma Prieta earthquake, Stanford University implemented a seismic mitigation program. Stanford also has a Post-Earthquake Response and Building Inspection Program in place.

Resources

Berkeley’s expenditures for various facilities provide a guide as to the resources needed to assure school earthquake safety:

<table>
<thead>
<tr>
<th>Campus</th>
<th>Cost ($)</th>
<th>Cost ($/sq. ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cragmont</td>
<td>New Building</td>
<td>$197</td>
</tr>
<tr>
<td>Washington</td>
<td>Retrofit only</td>
<td>$106</td>
</tr>
<tr>
<td>Whittier / Arts Magnet</td>
<td>Retrofit only</td>
<td>$82</td>
</tr>
<tr>
<td>Columbus</td>
<td>New Campus</td>
<td>$199</td>
</tr>
<tr>
<td>Berkeley High School</td>
<td>Retrofit only</td>
<td>$127</td>
</tr>
</tbody>
</table>

Adaptability/Sustainability

The success of a school seismic mitigation program depends on people’s commitment. Some of the lessons learned from the BUSD case study are:

- Ordinary citizens can take the initiative to ensure that adequate seismic preparations have been made by their school district.
- Understanding the potential risk to schools is key to sound decision-making.
- Public expectations and perceptions of school building performance during a severe earthquake are high.
- Constant and diligent pursuit of public funding is required for success.