

The Seismic Safety Inventory of California Public Schools can be found at the following web address:

<http://www.documents.dgs.ca.gov/Legi/Publications/2002Reports/FinalAB300Report.pdf>

It is recommended that anyone receiving the list of school buildings should read the Report. The Executive Summary of the report is attached here for your convenience:

Executive Summary

This report conforms to the requirements of Assembly Bill (AB) 300 (Corbett, Chapter 622, Statutes of 1999) which requires the California Department of General Services (DGS) to conduct an inventory of public school buildings (Kindergarten through grade 12, inclusive) 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* (UBC). Substantial improvements in the seismic design of buildings were incorporated into the 1976 UBC and were adopted for the design and construction of public schools on July 1, 1978.

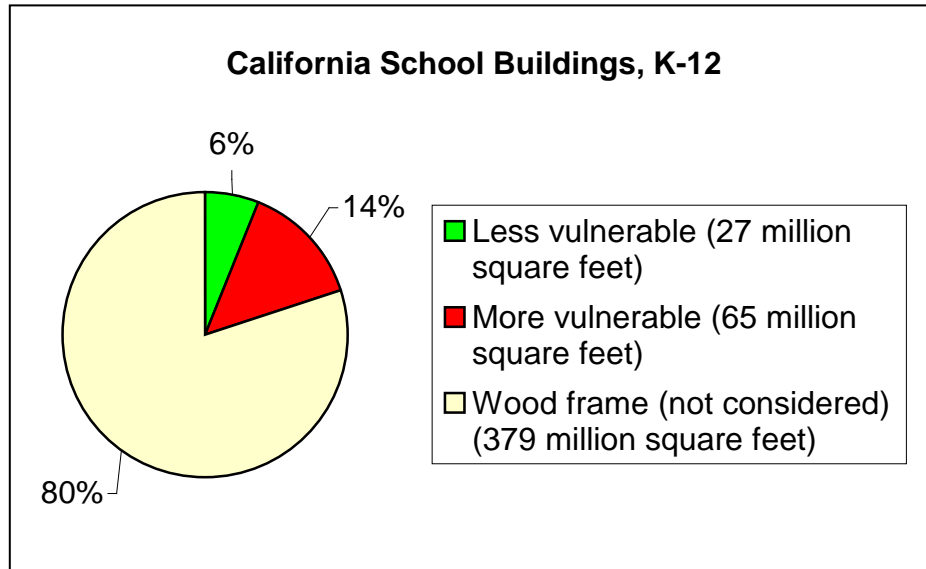
The DGS, through the Division of the State Architect (DSA), developed a seismic-safety inventory methodology to evaluate the buildings in a meaningful way without conducting costly field investigations. The screening process adopted by DSA eliminated all but approximately 16,000 school building projects that were then evaluated using a construction documents review process to identify the lateral-force-resisting systems of these buildings.

The resulting inventory of non-wood-frame California public schools designed and built before July 1, 1978, contained 9,659 buildings (91 million square feet) which were then classified in one of the following seismic vulnerability categories:

- Category 1: those building types that are likely to perform well, and are expected (but not guaranteed) to achieve life-safety performance in future earthquakes (2,122 buildings, 26 million square feet); and
- Category 2: those building types that are not expected to perform as well in future earthquakes as Category 1 building types and that require detailed seismic evaluation to determine if they can be expected to achieve life-safety performance (7,537 buildings, 65 million square feet).

Category 1 and Category 2 buildings represent 20 percent of the current total square footage of California

public schools, including wood frame buildings (see diagram below).



The report presents the results of the inventory of non-wood frame public school buildings by number, structural system vulnerability, structure type, square footage, number of students, distance from a fault, seismic forces on the building, and estimated costs for rehabilitation. This inventory demonstrates that the cost for seismic rehabilitation of all Category 2 buildings is approximately \$5 billion for work directly associated with the structural strengthening alone. Costs for improvements to the architectural, mechanical, electrical, plumbing or other systems of the building; damage repair costs, hazardous material costs; disabled access improvements, and fire and life safety upgrading and relocation of students may double or triple the costs for implementation of a seismic rehabilitation program.

Typical rehabilitation programs rank buildings according to the level of

life-safety risk to the occupants. Buildings that pose the greatest risk are scheduled for rehabilitation first. Table A provides the number of buildings relative to distance from an active fault and the approximate cost to rehabilitate. Each building will require further evaluation to determine its specific seismic strength and extent of rehabilitation to meet the desired performance objective. Table A provides estimated costs for rehabilitation to a "Damage Control" performance objective, which is equivalent to the performance objective for new public school construction.

A program that provides for evaluation, ranking and rehabilitation of those buildings most vulnerable and nearest to active faults is recommended. The costs for a comprehensive rehabilitation program can, therefore, be distributed over several years.

Table A Number of School Buildings and Total Costs for Seismic Evaluation and Rehabilitation for Category 2* Buildings for “Damage Control” Performance Objective. (Seismic Safety Inventory of California Public Schools)**

<i>Seismic Vulnerability Category 2</i>	<i>Less than 2 km from Active Fault</i>	<i>Between 2 and 5 km from Active Fault</i>	<i>Between 5 and 10 km from Active Fault</i>	<i>More than 10 km from Active Fault</i>	<i>Total All Buildings</i>
Number of Buildings	1,229	1,602	1,896	2,810	7,537
Cost in Millions	\$808	\$1,051	\$1,204	\$1,636	\$4,699

*Category 2: Cost includes evaluations, structural rehabilitation, removal and replacement of finishes, project design and administrative costs, and contingencies.

**Non-wood-frame schools designed before July 1, 1978.

Frequently Asked Questions:

1. What does the report mean?

- The report is an inventory of public school buildings constructed of concrete, masonry, and steel and submitted to DSA before July 1, 1978 (prior to implementation of the 1976 UBC). Wood frame buildings were not part of the survey.
- Report was provided to the Governor and the Legislature to quantify the scope of seismic risk in public schools and make recommendations about future ideas to address the problems found in the inventory.
- Survey was conducted from archival records of DSA approved file sets for **new** construction projects and did **not** include alterations, additions, relocatable buildings or rehabilitation projects. The inventory is based on review of approximately 16,000 of 42,000 total projects received prior to July 1, 1978.
- Reviews consisted of quick evaluation by structural engineers of existing plans to determine the type of building construction, square footage, and lateral force resisting systems. Seismic forces and distance from a fault were determined using California Division of Mines and Geology maps.
- Report did not rank or identify specific buildings that may be at risk.

2. Are any of my buildings on the list? If so, which ones?

- The inventory is a statewide statistical database and will have substantial variability for any specific school district. The school district may have buildings that are not within the database.
- Upon request, DSA will provide a list of identified buildings based on application number, date of submittal of application, name of school at time of submittal and type of building.
- One should be aware that the accuracy of a finding pertaining to a specific building might vary from current school site or district configurations. It is not uncommon for names of schools, building designations or building use to have been changed since the time of application submittal.

3. If my building(s) are on the list, what should I do next?

- DSA recommends that a district wide survey of all campuses be conducted by a California licensed Structural Engineer to identify buildings that may pose a seismic risk and assist the district in prioritizing necessary actions to be taken.
- A more detailed evaluation, and possibly retrofit design, of identified buildings should be undertaken in order of priority and available funding.

4. How will I fund any necessary retrofit work?
 - This report is intended to provide information to enable policymakers to make informed, cost-effective decisions to address the problem. Future programs to address the inventory may be forthcoming.
 - Proposition 47 and future bonds provide funds for modernization of facilities.
5. What can DSA do for us?
 - Upon request, DSA will make available plans and records to districts for specified school buildings. DSA will charge fees to recover costs associated with retrieval and duplication of the documents.
 - After identification and assessment by the district of at risk buildings, DSA will be available for pre-retrofit evaluation and design consultations.
 - DSA will be available for consultation and advice on necessary testing of existing materials and construction during the evaluation phase.
6. What survey tools should we use to evaluate an existing building?
 - For an initial evaluation of a building, DSA recommends a Tier One evaluation, FEMA 310, Handbook for the Seismic Evaluation of Existing Buildings. A Tier Two evaluation may be utilized at the district's discretion.
 - A detailed evaluation and rehabilitation design shall follow Title 24 provisions.
7. If a building has been modernized, does that mean it has been seismically retrofitted?
 - Most modernization projects do not have a seismic retrofit component. Check with the architect for the modernization project to determine if a seismic retrofit was included.
 - The California Building Code requires seismic retrofits for projects when the construction code of the modernization project exceeds 50% of the replacement cost of the building.
8. How do I determine the Seismic Vulnerability Category for buildings on the list?
 - Table 2 on page 12 of the report shows the grouping of the structural systems for the Seismic Vulnerability Category. Each building on the inventory list has been assigned a structural system. By comparing the structural system of the specific building with the structural systems shown in Table 12, the Seismic Vulnerability Category can be determined.

Understanding the list of school buildings:

Example:

AB300Final2003									
appid	Fileid	ShortSchoolName	buildingid	AppDate	StructSys	NoStories	SqFt	SeismicRegion	class
20599	21-36	San Jose	1	1/1/1960	C1B	1	4240	ZONE 4	I

appid is the number assigned to a school construction project when it is submitted to DSA for review – they are assigned chronologically.

Fileid is composed of two parts. The number before the hyphen is the number of the county in which the school district resides. County numbers are assigned alphabetically. The number after the hyphen is the school district identifier. A unified elementary and high school district will generally have two school district identifiers one with and one without an H. The H designates that the project is on a high school or junior high school site. If no H, then the project is on an elementary school site.

Short School Name is the name of the school as shown on a handwritten register generated when the project was submitted to DSA.

Buildingid is assigned to each building within a project. The assignment of the Buildingid was done during the inventory process to assist in having a unique identifier for each building when more than one building was identified for a single project.

AppDate was assigned to each project based on the year the project was submitted to DSA. All projects submitted between January 1 and December 31 of a particular year were given January 1 as the application date.

StructSys is the type of structural system for the building. The description of each type of structural system can be found in Appendix B of the “Seismic Safety Inventory of California Public Schools”. To determine the Seismic Vulnerability Category of a building on the list, please refer to Table 2 on page 12 of the report and compare the structural system of the building to the groupings shown in Table 2.

NoStories is the number of stories for the building.

SqFt is the number of square feet of floor area for the building. The floor area for each story is included in the number of square feet.

Seismic Region is either Zone 4 or Zone 3 based on California Building Code maps. Zone 4 is assigned to locations nearer to active major earthquake faults. Buildings located in Zone 4 are designed to resist lateral loads 33% greater than Seismic Zone 3.

class is associated with the occupancy of the building. I stands for instructional, A for assembly, etc. This identifier was assigned for use in a software program that determines the estimated costs for retrofit of a large number of buildings.