

California Seismic Safety Commission

Findings and Recommendations On the Use of Non-Field Act Compliant Buildings for Public Schools



California Seismic Safety Commission

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California Seismic Safety Commission

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This report was prepared in memory of Senator Leroy F. Greene and Jim Murdoch, for the dedication and service that they contributed to the California school system.

Executive Summary

Overall Findings

The California Seismic Safety Commission finds that the Division of the State Architect (DSA) can develop a regulatory process that will allow the State Architect to determine whether a building not originally constructed in compliance with the Field Act (Section 17281 of the Education Code) and its implementing regulations, either meets, or can be retrofitted to meet, the same equivalent pupil safety performance standard as a building constructed according to the Field Act and its implementing regulations.

The **Equivalent Pupil Safety Performance Standard** is defined in California Building Standards Administrative Code Title 24, Part 1, as:

“School buildings constructed pursuant to these regulations are expected to resist earthquake forces generated by major earthquakes of the intensity and severity of the strongest experienced without catastrophic collapse, but may experience some repairable architectural or structural damage.”

DSA, upon establishing new implementing regulations, should educate public school entities¹ regarding the process of conversion of non-compliant Field Act buildings. It is important to note that the new process may not necessarily expedite conversions nor save public school entities the costs of conversions.

Note: As a practical matter, and aside from the considerations of this report, a change in state law and/or regulations which allows for the use of state-provided “new construction” funds (under Chapter 12.5 of the California Education Code) by eligible public school entities for conversion of existing non-Field Act compliant buildings, should be considered.

Justification of Findings

Technology, methodologies and engineering advancements available today enable design professionals to assess and analyze existing buildings and their components by the application of performance based design techniques. These techniques enable professionals to develop designs that meet the performance objectives expected of new Field Act compliant buildings. Expert testimony and case studies illustrating the application of performance based seismic engineering proved to the Commission that **equivalent pupil safety performance standards** can be achieved and that regulations can be developed by DSA using the application of these advancements.

¹ School districts, county offices of education, charter schools, and community colleges.

Specific Recommendations for Developing New DSA Regulations Should Include:

- ***Provision of Information to Public School Entities in order to identify candidate buildings.***
Preliminary consultation with the California Department of Education (CDE) or California Community Colleges Chancellor's Office and DSA prior to deciding on a candidate for building conversion is recommended.
- ***Consideration of Performance Based Seismic Engineering (PBSE).***
PBSE is an invaluable tool to evaluate the performance of an existing building. DSA should include an independent peer review committee in the earliest stages of conceptual design in order to establish performance objectives throughout the completion of the construction process.
- ***Establishment of Building Tests and Inspection Requirements.***
DSA should develop a testing and inspection program for existing buildings, which will provide sufficient knowledge regarding the reliability of existing materials and other necessary information regarding construction of the critical elements of the building.
- ***Development of a Retrofit Feasibility Checklist.***
DSA, with the assistance of CDE and the State Fire Marshal, should develop a feasibility checklist as a guide for districts and design professionals in determining if existing buildings are candidates for conversion.
- ***Consideration of Non-Seismic Issues Related to Conversions.***
Prior to the conversion of buildings, non-seismic issues should be considered including fire-life safety, the presence of toxic substances and mold, site safety matters, disabled access requirements and similar issues important to safety and functionality.

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July 24, 2002 meeting	
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September 19, 2002 meeting	
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November 21, 2002 meeting	

Statement of Task

Assembly Bill 16 (Chapter 33, Statutes of 2002), signed by the Governor on April 29, 2002 and codified in Section 17280.5 of the Education Code, directs the California Seismic Safety Commission to:

“(a)... convene an advisory committee that shall include, but not be limited to, the State Architect, the State Fire Marshal, representatives from the major professional associations representing architects, engineers, and school facilities designers, and other interested parties.

(b) The advisory committee shall convene by August 19, 2002, and shall study and report on whether a regulatory process may be developed that will allow the State Architect to determine whether a building not originally constructed in compliance with the Field Act, as defined in Section 17281, and its implementing regulations either meets, or can be retrofitted to meet, the **equivalent pupil safety performance standard** as a building constructed according to the Field Act and its implementing regulations. If the advisory committee finds that the regulatory process may be developed, the advisory committee, shall include within its report the facts and rationale supporting the finding and the essential steps required in that regulatory process. The advisory committee shall report its findings to the Seismic Safety Commission by December 31, 2002.

(c) By January 8, 2003, and after reviewing the advisory committee's findings, the Seismic Safety Commission shall make a determination as to whether the regulatory process described in subdivision (b) may be developed, and shall report that determination to the Governor and the Legislature.”

The following issues were deemed outside the scope of this Commission report:

- Costs and cost-effectiveness of seismic retrofits; and
- Non-seismic issues affecting the feasibility of retrofitting non-Field Act compliant buildings for public school use.

The Field Act

In 1933, the Long Beach earthquake destroyed 70 schools and damaged 120, of these, 41 were rendered unsafe for occupancy and remained closed. As a result, legislation (known as the Field Act) was enacted to give the State the authority to approve public school construction plans, inspect ongoing new school construction, and inspect existing school buildings for safety. Today, the Field Act is administered by the Division of the State Architect (DSA), within the State Department of General Services, and helps ensure the safety of California’s school children.

The Field Act is found in Sections 17280–17317 and 81130–81149 of the Education Code. The intent of the Field Act is to protect life, encourage school safety and enable school

buildings to resist earthquakes as far as practicable. The State Supreme Court has held that the Act is broad and comprehensive and includes the entire field of construction regulations.

According to Title 24, Part 1 of the California Building Standards Administrative Code,

“School buildings constructed pursuant to these regulations are expected to resist earthquake forces generated by major earthquakes of the intensity and severity of the strongest experienced without catastrophic collapse, but may experience some repairable architectural or structural damage.”

In attempting to carry out the provisions of the Field Act, DSA has promulgated regulations to achieve the objectives of the above Buildings Standards Administrative Code provision.

Post-earthquake studies indicate that public school buildings have performed better than the general population of buildings during an earthquake. This is largely attributable to the enhanced performance objectives and the quality control of the design and construction processes defined in the Field Act. Because of this performance, many school buildings are used as emergency shelters and emergency operation centers after damaging earthquakes.

The Field Act requires that:

1. School building construction plans be prepared by qualified persons who are familiar with the principles of safe building construction (i.e., California licensed structural engineers and architects).
2. Designs be checked by the Department of General Services (an independent State agency) and design errors or omissions be corrected or included on the plans before a contract for construction is let.
3. Construction be continuously inspected by a qualified person who is independent of the contractor, hired by the school district and who shall verify full compliance with the plans.
4. The responsible architects and/or structural engineers must observe the construction periodically and prepare changes to plans if needed (and subject to acceptance of DSA) to overcome unforeseen field conditions.
5. All parties concerned (architects, engineers, inspectors, and contractors) must file reports, under penalty of perjury, to verify compliance of the construction with the approved plans.

The Division of the State Architect's Current Policy for Rehabilitation of Non-Field Act Compliant Buildings for School Use

Since the inception of the Field Act, DSA has allowed retrofits according to their policies for converting non-Field Act-compliant buildings to public school use. The current DSA policy is an Interpretation of Regulations (IR), number A-1, entitled *Rehabilitation of Buildings for School Use*. This policy provides general guidance to public school entities and building design professionals for conversion of non-Field Act compliant buildings.

DSA's current interpretation of regulations as reviewed by the Commission requires:

- The establishment of an agreement between DSA and design professionals defining the retrofit scheme and design criteria.
- A testing program developed with DSA approval for the evaluation of the strength of materials used in the existing and retrofitted buildings.
- Evaluation, analysis and design by an architect and/or structural engineer.
- DSA review and approval of plans, calculations and specifications.
- Continuous inspection mandated by DSA during retrofit construction.
- Certification by the Architect and/or Engineer that the building was constructed according to the approved plans.

Several key differences exist between the Field Act implementing regulations and IR, A-1. While the Field Act requires personal knowledge of the construction of schools in every respect, IR, A-1 requires only verification and general compliance of the construction to Field Act provisions. IR, A-1 allows for some relaxation of certain minor provisions of the Field Act, therefore strict equivalence to the Field Act is not assured. IR, A-1 lacks specificity, is out of date in its references to allowable stress design and does not include references to strength design. For the above reasons, IR, A-1 does not allow DSA to certify that converted buildings fully comply with the Field Act. This creates the possibility of personal liability for both design professionals and school districts and serves as a major disincentive to a wider use of building conversions.

IR, A-1 also contains a summary of the types of tests and inspections of existing building materials and the connections necessary for retrofitting. Certain archaic building materials are listed as "not acceptable" for resisting forces therefore, applicants must develop ways of meeting the objectives of the Field Act without relying on these materials. Applicants must then establish project-specific testing and inspection programs, in consultation with DSA, in order to obtain approval of the structural integrity of the existing materials and the proposed retrofits.

IR, A-1 **does not** result in a certification by DSA that the project complies with the Field Act. Since the IR, A-1 process cannot address design review and continuous inspection during

construction of the original project, the retrofit project cannot be certified as meeting all of the requirements of the Field Act and its implementing regulations. For these reasons, new approaches are necessary to meet **equivalent pupil safety standards**.

Since 1990, DSA estimates that fewer than thirty (30) non-school Uniform Building Code (UBC) compliant buildings have been converted to school use using IR, A-1. The Commission reviewed case studies of four of these school buildings (Pueblo Elementary School-Pomona Unified School District, Mountain Avenue Adult Education-Monrovia Unified School District, Los Angeles Department of Water and Power Conversion-Los Angeles Unified School District and Hoover Middle School-San Jose Unified School District).

Commission Findings

The California Seismic Safety Commission finds that the Division of the State Architect can develop a regulatory process that will allow the State Architect to determine whether a building not originally constructed in compliance with the Field Act (Section 17281 of the Education Code) and its implementing regulations, either meets, or can be retrofitted to meet, the same equivalent pupil safety performance standard as a building constructed according to the Field Act and its implementing regulations.

Justification of Findings

New methodologies and advancements available today in performance based engineering enable design professionals to assess and analyze existing buildings and their components to determine if they meet the performance objectives expected for new Field Act compliant buildings. Expert testimony and case studies², presented to the Commission, demonstrated that pupil safety performance standards equivalent to the Field Act may be achieved using performance based engineering techniques. The Commission recognized five factors supporting its findings.

First, existing seismic code regulations, including those used for the design of schools, do not require design engineers to simulate the actual behavior of buildings during an earthquake. This behavior becomes quite complex when the building is damaged, as is often seen in larger earthquakes. Instead, the code regulations consist of an extensive set of design rules to be followed by design engineers and checked in the plan review process. These rules, known as prescriptive requirements, have been developed and refined over the last eighty years through observation of the performance of buildings in earthquakes.

² Mr. Daniel Lewin, S.E., Mr. Arthur Ross, S.E., Mr. Kenneth Luttrell, S.E., Mr. John Coil, S.E. and Mr. Anthony Court, S.E.

Second, in the last ten years, advancement in computer analysis and the systematic studies of materials behavior have led to the development of techniques and procedures that predict actual building behavior during earthquake shaking, even in **older** buildings. During the same period of time, concern regarding excessive monetary losses caused by the Loma Prieta and Northridge earthquakes created a demand to develop standardized methods of building performance predictions. These methods enable owners to obtain improved knowledge regarding the expected performance of their buildings during an earthquake. The methods, known as Performance Based Seismic Engineering, were formalized in the document: *Guidelines and Commentary for the Seismic Rehabilitation of Buildings (FEMA 273/274)*. The guidelines were funded by FEMA and developed by a large team of earthquake engineers over a period of seven years.

Several building performance levels are defined in this document (see Figure A below), as well as a description of engineering design guidelines to achieve them. The use of performance based seismic engineering is becoming common for both the design of new buildings and the retrofit of existing buildings, where the owner needs a more accurate prediction of performance than afforded by prescriptive code rules. Recently, FEMA 273 has been updated and converted from a guideline to a more code-like document: *Prestandard and Commentary for the Seismic Rehabilitation of Building (FEMA 356)*.

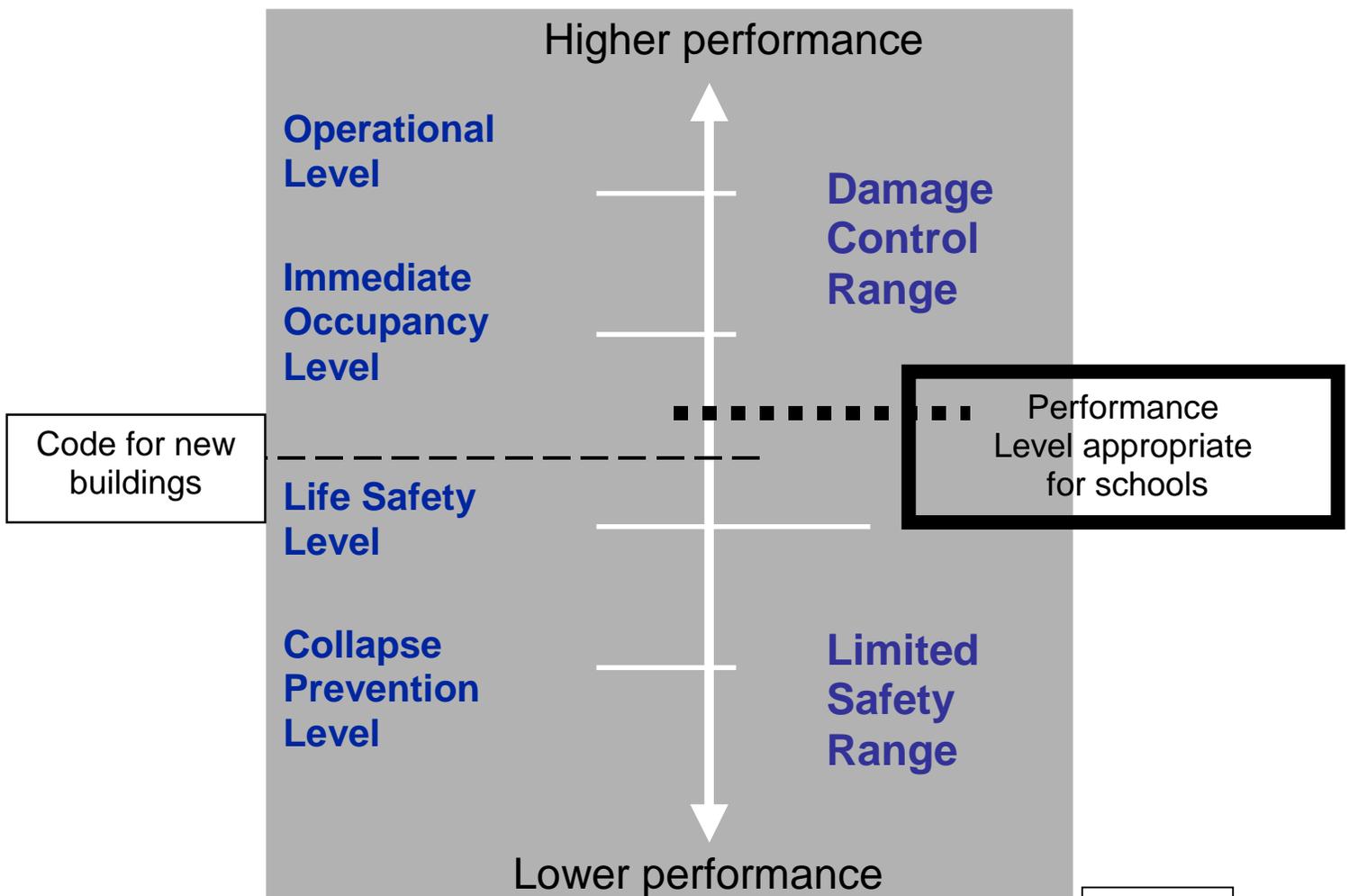


Figure A

Third, Performance Based Seismic Engineering can be used to provide **equivalent pupil safety performance** in existing buildings not originally designed under the Field Act.

Fourth, advancements in post-construction investigative technologies have enabled design professionals, evaluating existing non-Field Act compliant buildings, to achieve more confidence regarding existing materials and construction. The confidence level is basically equivalent to the knowledge obtained through continuous inspection of Field Act compliant buildings. Technologies utilizing radiographic and ultrasonic devices provide for non-destructive investigation. Full-scale testing facilities enable the testing of actual building materials (or building mock-ups) which can then predict their seismic performance³.

Fifth, the absence of DSA plan review and continuous onsite inspection, characteristic of non-Field Act compliant buildings, can be compensated for by utilizing available technology, methodologies and engineering advancements. Through these advancements, DSA can evaluate retrofit designs that meet basically the same **equivalent pupil safety performance standards** as buildings constructed according to the Field Act and its implementing regulations.

Recommended Essential Steps

1. Information for Public School Entities

OBSERVATIONS: With increasing demand for more school buildings and fewer sites available, public school entities are (or may be) desirous of using existing non-Field Act compliant buildings as school facilities. The challenges and considerations for public school entities to convert these buildings and to provide an **equivalent pupil safety performance standard** include:

- Preliminary consultation with the California Department of Education or California Community Colleges Chancellor's Office and DSA, prior to deciding on a candidate for building conversion;
- Performance of a detailed feasibility study (by qualified design professionals selected by the district);
- Compilation of existing documentation of the building's construction, inspection process and materials testing results;
- Extensive analysis of the project must be undertaken which may prove costly and may result in a conclusion that the building is an unacceptable retrofit candidate. This analysis must include
 - Consideration of complications due to site and conditions
 - Evaluation of potential working conditions
 - Listing of project-specific concerns; and

³ Lewin, Court.

- Awareness that conversion of an existing, non-Field Act compliant building for school use may sometimes take longer to complete than constructing a new Field Act compliant facility.

RECOMMENDATION: DSA should provide general information to public school entities regarding the conversion of non-Field Act compliant buildings, the essential steps in the process and the necessary documentation required.

2. Performance Based Seismic Engineering

OBSERVATIONS: Performance Based Seismic Engineering is an analysis and design technique that allows owners and design professionals to retrofit an existing structure in order to achieve a selected performance objective, rather than a prescriptive code requirement. DSA can allow such designs under the general alternate design provisions of the California Building Code. DSA has no specific implementing regulations regarding the application of Performance Based Seismic Engineering principles to new or existing construction. DSA does not routinely review plans for public school construction utilizing Performance Based Seismic Engineering. Defining “equivalence” to the Field Act, in the strictest sense for new construction and retrofit projects, will require the development of new regulations.

Performance Based Seismic Engineering designs and DSA approvals may take longer, and cost more, than code-based designs. As the building industry becomes more familiar with the application of Performance Based Seismic Engineering, costs and delays will likely be reduced. In some cases, increases in design and approval fees for Performance Based Seismic Engineering may be offset by refinements and reductions in retrofit construction budgets. In other cases, total project savings may not be realized.

RECOMMENDATION: DSA should develop new regulations using *PreStandard and Commentary for the Seismic Rehabilitation of Buildings (FEMA 356)* as a model. In the interim, DSA should use its independent review provisions, with appropriate amendments, as a basis for certifying public school building conversions.

Until DSA develops its own detailed regulations (and in-house expertise) to provide design reviews for Performance Based Seismic Engineering designs, DSA should require design review by a specially qualified review committee. This process should begin at the earliest stages of the conceptual design, maintained through the establishment of performance objectives and continue throughout the completion of construction.

3. Building Tests and Inspection Requirements:

OBSERVATIONS: New building materials and connections which owners add to existing buildings during retrofits may be readily certified as Field Act compliant, using existing test inspection regulations. Although many existing parts and

connections of existing buildings are often not easily accessible, it is still possible to verify their composition by alternate testing and/or inspection. Indirect tests and inspections alone may not be sufficiently reliable. Short of taking entire buildings apart and reconstructing them, new alternatives clearly need to be developed in order to establish Field Act equivalent confidence in the safety and performance of existing buildings. The amount of, and expenses for, testing and inspection vary with each building and depend upon the state of repair and quality of the original design and construction.

RECOMMENDATION: DSA should develop a testing and inspection program for existing buildings through DSA qualified testing laboratories. The program must provide sufficient knowledge of the building's materials reliability and properties and the construction of the building's elements, including its lateral force resisting system.

4. Feasibility Checklist

OBSERVATIONS: Public school entities may have opportunities to purchase and convert buildings to public school use. They need detailed guidance to help them quickly and reliably determine if these opportunities are likely to be viable, problematic or infeasible to convert. To meet current engineering standards of practice, districts must address many key considerations before investing in more detailed tests and investigations. These considerations should precede purchases in order to ensure the success of the conversion project. It is in the public's best interest to select candidate buildings for conversion to public school use from building types that have proven track records of reliable earthquake performance.

RECOMMENDATION: DSA, in consultation with the California Department of Education and the State Fire Marshal, should develop a feasibility checklist as a guide for public school entities and design professionals to assist them in screening candidate buildings for conversion to public school use.

Buildings recommended as candidates for conversion include, but are not limited to:

- Recently constructed buildings in jurisdictions with building departments that have plans checked by a licensed engineer and strictly enforce the Uniform Building Code in design and construction requirements;
- Buildings with an available set of construction documents that thoroughly detail the vertical load and lateral force resisting systems; and
- Buildings incorporating details of construction and quality of materials that can be readily determined by observation and testing.

5. Considerations Other than Earthquake Safety

OBSERVATIONS: Prior to the conversion of buildings, non-seismic considerations should include, among other issues, fire-life safety, the presence of toxic substances

and mold, site safety issues, and disabled access requirements. These considerations are beyond the scope of this report.

RECOMMENDATION: The Commission recommends that these issues also be considered prior to converting buildings by public school entities.

California Seismic Safety Commission Advisory Committee Composition and Protocol

Committee Member

Qualifications

Commissioner Stan Y. Moy,
Chairman

Architect, *Finger, Moy, and Guadagne Architects*, Oakland, CA. Expertise in architectural, planning and non-structural safety issues confronting public school districts contemplating converting existing buildings to Field Act compliant facilities.

Commissioner William Gates, Esq.

Attorney at Law, *Mesirow, Fink, Eisenhart, and Dawson*, San Jose, CA. Expertise in legal considerations regarding safeguards, roles and responsibilities for earthquake safety under the Field Act.

Commissioner Daniel Shapiro

Structural Engineer, *SOH & Associates*, San Francisco, CA. Expertise in structural safety issues, performance-based seismic engineering, and the application of available seismic evaluation and retrofit research, guidelines and regulations for potential consideration in converting existing buildings to Field Act compliant facilities.

Commissioner Andrew Adelman

Chief Building Official, *Department of Building and Safety, City of Los Angeles*, Los Angeles, CA. Expertise in building code enforcement by local governments, knowledge of the existing building stock that may be candidates for retrofitting and public school use.

State Fire Marshal
John Tennant

State Fire Marshal, (*alternate*: Gini Krippner, Division Chief, Code Development) Sacramento, CA. Expertise in Field Act requirements for fire safety in public schools. Experience in fire, panic and egress safety issues common to existing building retrofits.

Division of State Architect
Stephan Castellanos

State Architect, (*alternate*: Dennis Bellet, Chief Structural Engineer) Sacramento, CA. Expertise in the Field Act, its administration, regulations and application to converting existing buildings.

Department of Education
Stephen Newsom

Senior Architect, School Facilities Planning Division, Sacramento, CA. Expertise in public school facilities regulation, funding, design, construction, and other school safety and functional considerations.

California School Boards
Association
Lupita Cortez

Legislative Advocate, West Sacramento, CA. Former Legislative Analyst for CSBA's Government Relations Department. Assisted with passage of AB 16 during the legislative process.

Coalition for Adequate School
Housing
Dr. Tom Duffy

Legislative Advocate for CASH and former District Superintendent, Moorpark Unified School District, Sacramento, CA. Responsible for the planning and construction of numerous schools. Experience representing the interests of public school facility managers, awareness of the legal responsibilities associated with the Field Act and earthquake safety.

American Institute Of Architects
Gary McGavin

Architect, California State Polytechnic University, Pomona, CA. Knowledge and experience regarding issues relating to seismic safety and the Field Act. Served as the architect member of the California Seismic Safety Commission and as the AIA representative to the Division of the State Architect's Field Act Advisory Board. Expertise in design and

professional responsibilities for architectural, planning and nonstructural safety issues confronting public school districts.

Structural Engineers Association
of California
William T. Holmes

Structural Engineer, *Rutherford & Chekene*, Oakland, CA. Expertise in structural safety issues, performance-based seismic engineering, and seismic evaluation and retrofit guidelines. Experience with retrofitting existing buildings to meet specified earthquake performance objectives.

Earthquake Engineering Research
Institute
Richard Phillips

Structural Engineer, *Martin & HBL*, Los Angeles, CA. Expertise in structural safety issues for Field Act and private buildings, seismic evaluation, retrofit guidelines and regulations for potential use in converting existing buildings in Field Act compliant facilities. Experience with retrofitting existing buildings to meet specified earthquake performance objectives.

Community Colleges Chancellor's
Office
Dave Clinchy

Director of Facilities Planning and Construction, Los Rios Community College District, Sacramento, CA. Experience representing the interests of community college school boards, awareness of legal responsibilities associated with the Field Act, earthquake safety, facilities development and management.

AB 16 Advisory Committee Meetings

- July 24, 2002 (Sacramento, CA)
 - *State Architect's Current Policies for the Rehabilitation of Buildings for School Use*
- August 15, 2002 (Pomona, CA)
 - *Design Professionals and Researchers (Three Case Studies)*
- September 19, 2002 (Oakland, CA)
 - *Equivalent Earthquake Safety Performance Standards*
- October 17, 2002 (San Diego, CA)
 - *School Districts and Their Issues*
- November 21, 2002 (Sacramento, CA)
 - *Final Draft Findings*

Testimony and Topics

The Advisory Committee heard expert testimony and discussed the following issues:

- The current DSA process for the retrofit of existing buildings for school use, including the Interpretation of Regulations (IR), A-1 and DSA’s existing procedures for use of this IR;
- A comparison of processes to ensure safety of construction in
 - 1) existing buildings
 - 2) existing buildings converted to school use
 - 3) new public school construction;
- The requirements for performance goals, measures to ensure compliance of plans & specifications, site information, materials testing, inspection, non-structural hazards and verification of construction in accordance with plans and specifications;
- The role that mechanical, plumbing, and electrical issues play in conversion projects;
- The current state-of-the-art to converting retrofitted existing buildings to meet Field Act equivalent standards;
- Case studies of conversions by four school districts;
- Common seismic designs, construction constraints, costs, phasing and other issues regarding potential building conversion projects;
- The definition of the term “**equivalent pupil safety performance standard**”, as it is understood by the engineering community today;
- Typical due diligence practices regarding school districts purchase of buildings, opinions of school district facility managers and school board members regarding conversion objectives, proposed conversion sites, availability of conversion sites, pre-purchase decisions, and potential problems relating to conversions;
- The Department of Education’s role in facility planning and site selection; and
- Legal responsibilities and liabilities related to stakeholders such as public school entities, facility managers, architects, structural engineers and others responsible for seismic retrofits and public school construction.

Invited Speakers

The Advisory Committee consulted with the following individuals who have experience and knowledge in the application of the Field Act:

- Jeff Bell, Department of Finance, Sacramento, CA.
- Walt Schaff, Department of Finance, Sacramento, CA.
- Lowell Shields, Mechanical Engineer, *Capitol Engineering Consultants, Inc.*, Sacramento, CA.
- Jim Ward, Contractor, *Sausal Corporation*, San Leandro, CA.
- Thomas Blurock and Barbara Helton-Berg, Principals, *Thomas Blurock Architects*, Costa Mesa, CA.

- Jack Bruce, Structural Engineer and Regional Manager, Division of the State Architect, Los Angeles, CA.
- Greg Windsor, Architect, *Osborn Architects*, Glendale, CA.
- Art Ross, Structural Engineer and Kenneth Luttrell, Structural Engineer, *Cole/Yee/Schubert & Associates*, Sacramento, CA.
- John Coil, Structural Engineer, *LZA Technology/Thornton-Tomasetti*, Los Angeles, CA.
- Dan Lewin, Structural Engineer, *Hohbach-Lewin, Inc*, Palo Alto, CA.
- Anthony Court, Structural Engineer, *Curry Price Court*, San Diego, CA.
- Tom Winter, Executive Director, California State Historic Building Safety Board, Sacramento, CA.
- Jim Watts, Architect and Facility Manager, San Diego Unified School District, San Diego, CA.
- Richard Luke, Director of Planning & Design, Los Angeles Unified School District, Los Angeles, CA.
- Ronald Young, Program Manager, Pomona Unified School District, Pomona, CA.
- Isela Lovato, Construction Manager, Pomona Unified School District, Pomona, CA.
- Jim Hackett, Structural Engineer, Division of the State Architect, Sacramento, CA.
- Howard “Chip” Smith, Structural Engineer, Division of the State Architect, Sacramento, CA.