

BRIEF

Action Item

Agenda Item 7
May 19, 1993

COMMITTEE ON CAMPUS PLANNING, BUILDINGS AND GROUNDS

CALIFORNIA STATE UNIVERSITY POLICY ON SEISMIC SAFETY

Presentation By

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Summary

This item presents a proposed CSU policy on seismic safety.

Recommended Action

Approval of the resolution.

COMMITTEE ON CAMPUS PLANNING, BUILDINGS AND GROUNDS**CALIFORNIA STATE UNIVERSITY POLICY ON SEISMIC SAFETY****Background**

The California State University (CSU) does not have a specific seismic policy to guide its facilities management program. The trustees' adopted categories and criteria for prioritizing capital outlay projects have historically placed seismic safety in the high priority category titled "Funds to Correct Structural, Health and Safety Code Deficiencies." CSU relies on the requirements of Title 24 of the California Code of Regulations, which provides the building standards state agencies are required to implement. Two recent earthquakes point to the type and extent of our earthquake vulnerability. The 1989 Loma Prieta earthquake (magnitude 7.0 at a distance of over 40 miles) did substantial damage to the San Francisco campus, where a major building is still closed (Verducci Hall) and six others are awaiting resolution of Federal Emergency Management Agency determinations for repair funding. At the Los Angeles campus, the 1987 Whittier Narrows earthquake (magnitude 5.7 nearly) caused one death when a precast panel fell from a parking structure, and the use of substantial office, laboratory and classroom space was lost.

The 1992-93 Budget Act provided for seismic reviews of CSU facilities. To assist in the process of implementing the technical program, a Seismic Review Board (SRB) was formed by the Chancellor's Office Division of Physical Planning and Development to advise CSU on the conduct of its seismic review program. The SRB is made up of seven distinguished earthquake engineers. They have met numerous times, and individual SRB members have visited all the campuses.

The focus of the seismic safety program is to identify and mitigate high life safety risks. While the life safety threat posed by a given building is closely tied to the building's seismic hazard, not all seismic hazard modes pose substantial life safety hazards to their occupants. Life safety threats considered are principally those from failure of the building's structure and from falling of building elements. The SRB took the position that even a total economic loss in an earthquake is acceptable if there is little risk of serious injury or death to the building's occupants. At some future time, when major life safety problems have been resolved, the problems of seismic hazard can and should be addressed.

The SRB has recommended, and we have adopted, a CSU Seismic Retrofit Program consisting of the following activities:

- Estimation of the life safety hazard posed by structures on CSU campuses and rank ordering structures by the degree of seismic hazard they pose.
- Engineering investigation of each structure identified in Phase 1 to determine if it poses a hazard and development of a retrofit approach for mitigation of the hazard; this includes development of preliminary design documents and cost estimates for construction, including seismic and non-seismic requirements.
- Recommendation of priority ranking for capital outlay projects for the retrofit projects developed in Phase 3.
- For those projects approved, development of working drawings and construction documents, and construction implementation.

The SRB has completed the identification of buildings that may represent a public life safety concern and

which require further evaluation. The priority listing of life safety problems included buildings on every campus. Two types of engineering investigations are nearing completion: the first type involves

development of retrofit plans to mitigate the structural and nonstructural hazards for buildings identified as posing potential life safety threats. The second type develops falling hazard mitigation plans for all other buildings on each of the campuses. Buildings were identified at every campus and studies are under way. While some buildings have proven to be safe, many will require seismic retrofitting to meet a reasonable life safety performance standard. The priority ranking for recommended capital outlay projects will be completed in late spring and presented to the trustees in the near future.

CSU has taken several other steps to address its seismic safety problems. These include an assessment of library stack safety problems and recommendations for their mitigation, and detailed seismic assessments of parking structures. The technical aspects of these actions will be under the review of the SRB. These initiatives in seismic safety offer substantial opportunities to improve the seismic safety of CSU facilities.

CSU campuses are clearly at risk of earthquake occurrence and many buildings on our campuses are vulnerable. The SRB review of these life safety conditions and the engineering assessments now nearing completion indicate that most, if not all, of these hazardous conditions can be reduced to acceptable levels by applying current earthquake engineering practices, backed by independent technical peer review of the proposed work.

The Need for a Policy

Governor Deukmejian in Executive Order D-86-90 signed on June 2, 1990, declared:

1. It is the policy of the State of California that seismic safety shall be given priority consideration in the allocation of resources for transportation construction projects, and in the design and construction of all state structures, including transportation structures and public buildings.
2. The University of California and the California State University shall give priority consideration to seismic safety in the allocation of resources available for construction projects. The University of California and the California State University shall prepare and transmit to the Governor by August 31, 1990 a description of their plans to increase seismic safety at facilities which they maintain or operate.

These directions are at the root of the CSU appointment of the SRB and for the allocation of budgetary resources to the detailed engineering assessments discussed above.

Last fall the state Seismic Safety Commission asked the chancellor to detail CSU actions on seismic safety to implement the governor's order. This was done as part of the preparation of a report requested by the governor on the status of implementation of the order. The chancellor noted that the trustees had not adopted a specific policy regarding seismic safety since the issuance of the governor's executive order. The chancellor stated that he had directed staff to develop a recommended policy statement for review, consideration and action by the Board of Trustees.

Through a seismic safety policy the Board of Trustees of The California State University will

expressly recognize that the CSU is committed to mitigating unacceptable life safety risks in its facilities.

CSU Policy On Seismic Safety

The following resolution is recommended for approval:

RESOLVED, By the Board of Trustees of The California State University, that the following policy is adopted:

It is the policy of the Board of Trustees of The California State University that to the maximum extent feasible by present earthquake engineering practice to acquire, build, maintain, and rehabilitate buildings and other facilities that provide an acceptable level of earthquake safety for students, employees, and the public who occupy these buildings and other facilities at all locations where CSU operations and activities occur. The standard for new construction is that it meets the life safety and seismic hazard objectives of the pertinent provisions of Title 24 of the California Code of Regulations; the standard for existing construction is that it provides reasonable life safety protection, consistent with that for typical new buildings. The California State University shall cause to be performed independent technical peer reviews of the seismic aspects of all construction projects from their design initiation, including both new construction and remodeling, for conformance to good seismic resistant practices consistent with this policy. The feasibility of all construction projects shall include seismic safety implications and shall be determined by weighing the practicality and cost of protective measures against the severity and probability of injury resulting from seismic occurrences.

Responsibility

The chancellor is responsible for overall administration of this policy and shall provide for:

- 1) Interpretation of the policy as may be required;
- 2) Development of seismic safety criteria, standards, and guidelines supplemental to this policy;
- 3) Evaluation of the seismic safety programs and review of specific proposals for the abatement of seismic hazards; and
- 4) Determination of systemwide priorities, from among seismic safety projects and other projects, for inclusion in the Capital Outlay Program.

The chancellor shall assign specific duties and authority to individuals within the Office of the chancellor who may engage professional consultants or other specialists to advise and assist them in matters involving seismic safety. The presidents are the officials responsible for taking all reasonable steps to assure the protection of persons under their respective jurisdictions against the effects of earthquakes that could result in loss of life or serious injury to persons. Each president shall assign specific duties and authority to individuals under his or her jurisdiction for discharging this responsibility.

The chancellor shall maintain a plan for implementation of this policy. The chancellor shall report annually to the trustees on actions taken in the past year and actions planned for the coming years.