COMMITTEE ON CAMPUS PLANNING, BUILDINGS AND GROUNDS

California State University Seismic Review Board Annual Report

Presentation By

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Summary

This information item presents the CSU Seismic Review Board Annual Report. This reporting period spans September 2005 to September 2006.

Seismic Policy and History

The CSU initiated the assessment of the seismic hazards posed by CSU buildings as directed by former Governor Deukmejian's executive order and legislative provisions. In 1993, the CSU Board of Trustees adopted the following policy:

> *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. [Approved by the Board of Trustees of the California State University at its May 19, 1993 meeting (RCPBG 05-93-13)]*

Out of this policy the CSU Seismic Review Board (SRB) was established to advise and assist in determining the condition of CSU buildings and to technically oversee the trustees' seismic

policy. The CSU has identified the seismic hazard within its existing building stock and is in the process of completing their mitigation.

Seismic Review Board

The SRB is comprised of:

- Charles Thiel Jr., Ph.D., President, Telesis Engineers (Chair)
- Gregg Brandow, Ph.D., S.E., President, Brandow and Johnston, Adjunct Professor, University of Southern California
- John Egan, G.E., Principle Engineer, Geomatrix Consultants
- John A. Martin, Jr., S.E., President, John A. Martin and Associates, Inc.
- Svend Nielsen, S.E., Principle, Johnson and Nielsen
- Richard Niewiarowski, S.E., Principle, Rutherford and Chekene
- Thomas Sabol, Ph.D., S.E., Principle, Englekirk and Sabol
- Theodore C. Zsutty, Ph.D., S.E., Consulting Structural Engineer, Professor, San Jose State University, Retired (Vice Chair)

Seismic Mitigation and Oversight

The California State University seismic mitigation and oversight planning effort has six elements:

1. **Mitigate urgent falling hazard concerns.** Mitigate significant life-safety threats posed by falling hazards as a priority. All such hazards at all 23 campuses and off-campus centers have been mitigated.

2. **Identify and broadly prioritize existing seismic deficiencies.** Identify existing buildings that pose a significant life-safety threat and mitigate these hazards as soon as practical. Prioritize these buildings into two listings; urgent and less urgent. Of the more than 200 buildings identified as potentially highly hazardous since inception, most have been retrofitted. The current published priority listing identifies 18 buildings as a first priority for seismic retrofit and 15 buildings as a second priority. As an update to our report last year, two projects merit special note:

   Warren Hall (CSU East Bay) - A seismic retrofit for Warren Hall was originally approved for funding in the 2004/05 capital program. Reassessment of the project changed the scope to: a) construct the Student Services/Administrative Replacement Building for the services/programs currently housed in the upper levels of Warren Hall; b) move those students and staff from Warren Hall into the completed replacement building; and c) as a priority, request future funding for the seismic

upgrade of Warren Hall, which will include demolition of the upper levels. The Student Services Administration building is currently in construction documents with a construction start anticipated in June 2007. Feasibility and cost assessment for Warren Hall is underway.

University Park (San Francisco State University) - The SFSU campus acquired University Park (Stonestown Apartments) in a purchase agreement in 2005. A seismic retrofit plan is currently being developed by the campus and an initial seismic retrofit design is underway for the complex. Due to cost limitations it is expected that the remaining seismic strengthening will occur when the buildings are fully renovated.

3. **Perform periodic re-evaluation of existing facilities**. The current assessment was started in 2005 and will be completed by the end of this year. The purpose is to confirm a building's structural life-safety hazards in light of code changes and lessons learned since 1992 and to ensure that the priority listing is reflective of the condition and content of the CSU building stock as it evolves over time. A few buildings are likely to be added to the priority lists once the campus re-evaluations are completed.

4. **Provide peer review for all major construction.** Assure that all CSU new construction and modification of existing structures have independent, technical peer review of the earthquake performance aspects of the plans. The California Building Code includes provisions applicable to renovation work for state projects. Specifically, Division VI-R contains criteria and triggers that work to systematically raise the level of seismic safety for existing building stock over time whenever any structural modification, alteration or addition to the structure is undertaken. The SRB closely monitors for VI-R compliance as a part of its peer reviews.

5. **Have in place a Seismic Event Response Plan.** The CSU has an established and tested methodology in place to respond in the case of a significant seismic event.

6. **Conduct seismic related staff training.** CSU facilities planning and construction staff are afforded systemwide training on project management, building code, building official responsibilities and seismic emergency response and assessment procedures.

Lease and Real Property Acquisition Requirements Added to *CSU Seismic Requirements*

An important standard consistent with the underlying trustees' seismic policy has been added to the administrative section *CSU Seismic Requirements*.

The new Common Lease and Building Acquisition standard establishes a uniform, common, seismic safety standard for newly leased and newly acquired buildings. Minimum life-safety is the goal that drives this proposal. This new lease standard would be common to the California

State University, the University of California, the State Department of General Services, and other state agencies. Under this proposed standard, relative to the CSU and its foundations and auxiliary organizations, an *off-campus* building or space would need to meet this standard for occupancy under the trustees' seismic policy. Current policy requirements would continue to govern for all *on-campus* CSU locations.

The formation of this common standard will make the leasing of space to the State, and its allied organizations, more attractive to private owners in that all of these agencies would use a common set of requirements to qualify a proposed building as meeting minimal seismic life-safety standards. The standard is designed to be a practical document and includes appropriate waivers and exceptions for small spaces and short term uses. The standard would apply to future leased spaces and building acquisitions. Property and leases currently in place would not be affected until the lease is being considered for renewal.

The SRB completed its trial review to assess the impact of this standard on existing leases at several representative campuses. In some cases, accompanying campus personnel were asked to conduct supervised individual building assessments to ensure that typical campus facilities and planning staff would be able to conduct the self-evaluation that determines compliance.

The table below summarizes the survey results. Most buildings (40 out of 57) passed the initial self-assessment. An additional twelve buildings were identified as needing an engineering assessment, but are likely to meet the common safety standard after the supplemental engineering review. When needed, the engineering assessments are scoped to be a one-day effort designed to provide a stamped professional assessment letter with the cost on the order of $2,000. The last column indicates five buildings that had clear seismic safety issues, such as being constructed of un-reinforced masonry, and the outcome of an engineering assessment is uncertain.

Campus	SRB Reviewer	Total buildings reviewed	Pass campus self-assessment	Engineering assessment needed. Outcome likely positive	Engineering assessment needed. Outcome uncertain
Chico	Niewiarowski	6	5	1	0
East Bay	Niewiarowski	3	2	0	1
Humboldt	Thiel	12	12	0	0
Long Beach	Brandow	8	5	1	2
San Diego	Brandow	9	2	6	1
San Francisco	Thiel	14	10	3	1
San Jose	Zsutty	5	4	1	0
Totals		**57**	**40**	**12**	**5**

In a survey that purposely included an overweighting of seismically active campuses, 91% (52 of the 57) would likely be found acceptable (70% of leased facilities passed the self-assessment criteria and another 21% are considered likely be found acceptable after the engineering review). The five instances where the outcome is uncertain serve to highlight potential seismic concerns that might not be readily apparent.

2005/2006 Seismic Review Board Activities

The SRB met six times during the reporting time period, four meetings at the Chancellor's Office and two meetings at campuses (San Luis Obispo and Monterey Bay). The SRB members continue to provide peer review of construction activities at all of the campuses and technical support to the CSU Building Official and the Deputy Building Officials at each campus.

Notable activities of the SRB since the last report to the trustees include the following:

1. Revised administrative sections of the trustees' *CSU Seismic Requirements.* New to this revision are standards defining baseline life-safety standards for off-campus lease and acquisitions.
2. Developed a lease/purchase standard for use by CSU. The SRB and Chancellor's Office spearheaded efforts for joint adoption of the standard by the University of California (UC) and the Department of General Services (DGS) for the seismic evaluation of acquired facilities. The standard, now pending similar adoption by UC and DGS, will set the same procurement standard on seismic evaluation of properties and should increase the availability and competitiveness of leased property.
3. Lead the effort of state agencies (UC, DGS, Administrative Office of the Courts, and others) to propose existing building regulatory requirements for existing state buildings to be incorporated into the new edition of the State Building Code. The previous editions used VI-R language keyed to the previously adopted Uniform Building Code. The Building Standards Commission adopted the 2006 International Building Code as a replacement to the Uniform Building Code. Its technical requirements are significantly different than the old code, thereby requiring a thorough reworking of the provisions. The board reviewed and drafted changes to the existing code language in order to provide technical input to the state as part of the new code adoption process. The CSU was successful in having the Division of the State Architect submit this amendment on its behalf to the Building Standards Commission for inclusion in the pending major revision to the California Building Code. The CSU's amendment was one of the very few amendments prepared, submitted, and accepted by the Building Standards Commission without modification. It is now under public review.
4. The SRB acted as a systemwide resource providing respected technical expertise to investigate the construction of the Humboldt State University Behavioral and Social Science facility being constructed under a design/build contract. Continued construction of this

facility was in jeopardy after the general contractor raised concerns whether a heretofore unknown subsurface fault had been unearthed during excavation for the building's foundation. The SRB team met on site and conducted an in-depth review of supplemental trenching site excavations to determine if indeed active fault traces were present, which would have ended construction at this location if true. Based on careful direct examination within multiple test trenches, fault traces were determined not to be present at the project site and construction was allowed to continue.

5. Continuation of a comprehensive re-assessment of the seismic characteristics of the current existing CSU building stock. This is the first general re-assessment to take place since the CSU seismic program was begun in 1993. The purpose is to ensure that buildings with potential life-safety hazards to students, faculty, and staff have not been inadvertently overlooked. Sixteen campuses have been re-assessed, and the balance are planned to be completed by the end of 2006.

6. Maintained the CSU priority list for the seismic retrofits. There are two parts: first, those projects that are priority actions that should be undertaken solely because of the seismic hazard posed by the building; and second, those buildings that have significant seismic issues that need to be recognized when the campus is contemplating alterations or modifications of the building. The latter is to recognize the seismic issues of the building during the planning stage for such modifications or alterations. A revised priority listing incorporating findings from campus building re-assessments is scheduled to be published January 2007.