



State Of California

ALFRED E. ALQUIST  
SEISMIC SAFETY COMMISSION



*Arnold Schwarzenegger, Governor*

Alfred E. Alquist Seismic Safety Commission  
Minutes of Meeting  
October 15, 2009  
Hotel Whitcomb, 1231 Market Street, Grand Ballroom  
San Francisco, California

**Members Participating**

Mark Church, Chair  
William Chubb  
Christina Curry  
Sally Kay  
Sharron Leason  
John Littrell  
Elizabeth Mathieson  
Gary McGavin  
Ali Sadre  
David Walls (arrived at 11:25 a.m.)

**Members Absent**

James Schwab  
Michael Stevens  
David Thorman

**Staff Participating**

Richard McCarthy, Executive Director  
Karen Cogan, Executive Assistant  
Robert Anderson, Staff Geologist  
Henry Reyes, Structural Engineer  
Fred Turner, Senior Structural Engineer

**I. CALL TO ORDER/ROLL CALL**

Commission Chairman Mark Church called the meeting of the Alfred E. Alquist Seismic Safety Commission to order at 11:11 a.m. and Executive Assistant Karen Cogan called the roll.

**II. CHAIRMAN'S REMARKS**

Chairman Church stated that the Commission was delighted to be meeting in San Francisco and participating in the Big Rumble events marking the 20th anniversary of the Loma Prieta earthquake. He remarked that many people in the community have vivid memories of that disaster, and noted that the activities this week help raise awareness of the importance of preparedness, response, and recovery. He said the drop-cover-hold drill at 10:15 a.m. that morning was the first statewide exercise ever.

Chairman Church expressed appreciation to the City and County of San Francisco and other sponsors for hosting the Commission meeting. He thanked Ms. Cogan for arranging the hotel accommodations and the Hotel Whitcomb for offering low state rates.

Chairman Church noted that state budget projections for next year remain bleak, with an anticipated deficit of \$7 billion to \$20 billion while revenues continue to decline. He said he was

pleased the Seismic Safety Commission was still able to carry out its important work despite limited staff and resources.

### **III. THE BIG RUMBLE™ SF & RELATED SHAKEOUT ACTIVITIES**

Mr. Peter Nantell, Founder, explained that The Big Rumble is a multi-activity event organized and produced by the San Francisco Marathon, with assistance from the City of San Francisco and a number of other partner organizations. He said 2009 is the first year of what he hoped would become an annual grassroots event celebrating neighborhood preparedness and creating positive energy rather than frightening people. He stated that The Big Rumble began on October 13 with a kick-off panel at City Hall and will culminate on October 17 with four major resource fairs and block parties throughout the City.

Mr. Nantell advised that The Big Rumble organizers are planning another event next April and next October. He talked about use of the organization Website to create public awareness and convey information about community resources. He said social networks will be used to publicize activities and encourage volunteers.

Chairman Church thanked Mr. Nantell for his presentation and commended him for his good work.

### **IV. COMMISSION RESEARCH PROJECT UPDATES**

#### **Performance of Field Act Buildings Report**

Commissioner Gary McGavin welcomed Professor Guna Selvaduray, San Jose State University, and his colleague, Professor Steven Vukazich, to the final version of the report on the performance of Field Act buildings. He drew attention to the chronological summary prepared by Structural Engineer Henry Reyes identifying all the meetings and steps in this Commission-sponsored research project since its inception in May of 2006. Consistent with past Commission reports, Commissioner McGavin recommended removing the report's foreword section and incorporating its contents in the executive summary instead.

Professor Selvaduray noted that the purpose of the Field Act research project was to determine if the Field Act was effective in reducing earthquake damage compared to other buildings. He stated that the researchers reviewed available literature and reports, but conducted no original research. He clarified that the report does not include a cost-benefit analysis, and the language is non-technical so it can be understood easily by legislators, government officials, and other laypeople.

Professor Selvaduray reviewed the methodology used in the study. He explained that the report compares the performance of public and private school buildings in major earthquakes since the Field Act was enacted in 1933. He said the researchers reviewed existing information and reports to create a searchable database that was then used to evaluate the seismic performance of buildings. He noted that the report contains a chart identifying the earthquakes studied, maps showing the sites examined, a history of the Field Act and subsequent seismic safety legislation,

and a bibliography. Professor Selvaduray expressed his appreciation to the Commission's oversight committee, chaired by Commissioner McGavin; the Commission staff; Mr. David Murphy, structural engineer; Mr. Tom Busk from the Red Cross; City of Los Angeles representatives; State Architect David Thorman and the Division of the State Architect (DSA); and his graduate students.

Professor Vukazich stated that the principal differences between the Field Act and the regular building code are found in the administrative regulations, which require Field Act buildings to be designed by licensed architects or structural engineers, undergo rigorous plan-checking by the Division of the State Architect (DSA), be inspected continuously during the construction process rather than at periodic milestones, and have Field Act compliance verified in written reports produced by the individuals involved.

Professor Selvaduray advised that the study also looked at the use of schools as emergency shelters. He noted that the Red Cross has criteria for selecting shelters based on their safety, location, and convenience, and about 97 percent of the state's shelters are public schools.

Professor Selvaduray reported that the study found that Field Act buildings perform consistently better than other buildings, and that most earthquake damage is nonstructural rather than structural.

Commissioner John Littrell noted that he raised a number of concerns at the last meeting about other factors that may have contributed to improved building performance, and he recommended mentioning them in the report to provide a better context for understanding its conclusions. He provided a written list of suggested additions. He emphasized that there have been significant advances in materials, building design, construction methods, testing, and building codes that have affected the quality of all buildings in California. Commissioner Littrell commented that the report tends to compare newer Field Act buildings with older structures. He suggested further study to isolate the effects of the Field Act and other factors.

Professor Selvaduray stated that the points raised by Commissioner Littrell were already addressed in the report, and none of Commissioner Littrell's proposed additions would change the conclusions. He agreed that more detailed research would be helpful in identifying the specific factors that contribute to better performance.

Commissioner McGavin noted that the researchers limited their study to existing data and did not conduct any original research. He pointed out that the report already alludes to each of the concerns raised by Commissioner Littrell and acknowledges that the gap in building performance has improved over time. He observed that most of the buildings in the San Fernando Valley were built at roughly the same time, so the analysis of damage from the Northridge earthquake compares buildings of comparable ages, and Field Act buildings still performed significantly better. Commissioner McGavin suggested considering adding more material to the appendix rather than the body of the report, which is intended for non-technical audiences.

Mr. McCarthy advised that the same timeline applies to the report and the appendix, and both sections must be submitted to the Administration by the end of the month. He recommended addressing the issues raised by Commissioner Littrell in a follow-up research project later.

Commissioner Littrell argued that his proposed edits were not technical, and they would help provide a context for the findings in the report. He expressed concern that the report compares schools that were built later or retrofitted to older non-Field-Act buildings, so it is not surprising they performed better. He noted the evidence cited in the report tends to be more anecdotal than persuasive.

Professor Vukazich clarified that the researchers made a distinction between pre-Field-Act buildings constructed before 1933 and newer buildings, and the data from the Northridge earthquake compares buildings of similar ages and similar locations.

Commissioner McGavin pointed out that the state has mandated seismic retrofits for schools, but not other buildings. He noted that the Garrison Act and the two Greene Acts forced this issue, and buildings subject to these laws perform better as a result. He reiterated that the report already addresses all these points in language suitable for a layperson.

Chairman Church thanked Professors Selvaduray and Vukazich and expressed his appreciation to Commissioner Littrell for his thoughtful comments.

**ACTION:** Commissioner McGavin made a motion, seconded by Commissioner Ali Sadre, that:

*The Commission approve the Field Act report and appendix as written, without the foreword.*

Due to time constraints, Commissioner McGavin proposed an amendment calling for the Commission to work in good faith to address Commissioner Littrell's concern in future research efforts. Commissioner Sadre accepted this amendment.

Commissioner Elizabeth Mathieson noted that changes she identified at the last meeting had not yet been made. She drew attention to the first paragraph on Page 7 of the report and the last portion of the third paragraph on Page 16 and recommended changing "ensure seismic safety" to "improve seismic safety." Professor Selvaduray apologized and said this language would be corrected in the final version.

Commissioner Mathieson noted that the chart on Page 26 of the appendix describes the Alquist-Priolo Special Studies Zone Act incorrectly. Instead of "engineering studies," she recommended substituting "geologic studies for fault rupture hazards."

Commissioner McGavin and Commissioner Sadre agreed to include these amendments.

\* Motion carried, 9 - 1 (Commissioner Littrell opposed).

## **Tall Buildings Study Update**

Professor Jack Moehle, Pacific Earthquake Engineering Research (PEER) Institute, provided a brief report on the status of the Tall Buildings Initiative, a research study partially funded by the Commission to provide guidance regarding the safest designs and procedures for the construction of very tall buildings. He noted there had been a boom in applications to construct tall buildings several years ago, and designers were proposing plans based on alternatives other than the prescriptive provisions of the building code. Although the downturn in the economy scaled back some of these projects, there is still a need for more definite guidance to ensure that tall buildings are constructed safely.

Professor Moehle said the research funded by the Commission involves comparing the performance of nine trial designs and developing guidance based on the results of the study. He stated that this work will identify consistent and safe design practices, appropriate design criteria, desirable performance objectives, baseline acceptance criteria, and quantify ground motions and other factors used in modeling. He advised that the trial designs are based on three construction types: a 50-story building with reinforced concrete core walls, a 50-story building with reinforced concrete core walls and an earthquake-resistant perimeter frame, and a 40-story building with a steel buckling-restrained braced frame. Each type of building will be designed three ways, for a total of nine designs, including a code-based design, a performance-based earthquake engineering design (PBEE), and a PBEE design with enhanced criteria.

Professor Moehle reported that PEER has begun analyzing the results of the nine buildings in great detail and has already identified certain design problems. He displayed slides showing how swaying can result in an accumulation of axial forces that compromise structural safety. He advised that the researchers concluded there were significant shortcomings in the existing prescriptive building code provisions in this respect. He said the next phase of the study will be identifying the costs associated with each type of design. Professor Moehle indicated that PEER will hold workshops with experts during February and March to consider the results of the study, followed by a workshop with stakeholders. He noted the final report is due April 30, 2010.

At 12:50 p.m., the Commission recessed for lunch. Chairman Church reconvened the meeting at 1:23 p.m.

## **Tsunami Risk to Ports of Los Angeles and Long Beach**

Dr. Vasily Titov, National Oceanic and Atmospheric Administration (NOAA), gave a briefing on his research concerning risks to major California ports from tsunamis in the Pacific. He said new data and technologies have caused scientists to rethink previous forecasting models to recognize hazards from both near and far-field events. He noted that California's large coastal populations and important shipping ports are vulnerable to strong currents and large waves generated by tsunamis.

Dr. Titov stated that his work involved using real-time tsunami forecasting and wave detection to create models to predict damage and threats to specific locations. He said he focused on identifying sources of potentially destructive tsunamis for the ports of Los Angeles and Long

Beach. He concluded that major earthquakes in Alaska would likely create the most damage, and he showed slides and videos illustrating effects of tsunamis. Dr. Titov noted that the results of his research can be used to assess the risks to other harbors.

Mr. McCarthy encouraged commissioners to review Dr. Titov's draft report and send suggestions and comments to Dr. Titov. He said the final version of the document will come back to the Commission for approval.

Chairman Church thanked Dr. Titov for his interesting report.

## **V. SAN FRANCISCO EMERGENCY OPERATIONS OVERVIEW & GENERAL SHAKEHOUT ACTIVITIES**

Ms. Vicki Hennessy, Executive Director, San Francisco Department of Emergency Management, discussed San Francisco's emergency preparedness and response efforts. She said the City and County of San Francisco worked with stakeholders in 2008 to create an all-hazards strategic plan, which is being revised this year. This plan, with its road map of 20 goals, was used to develop a complete hazard mitigation plan and emergency response plan.

Ms. Hennessy noted that Mayor Gavin Newsom has been extremely active in the area of emergency preparedness, holding 24 disaster council meetings, issuing a series of executive directives addressing emergency issues, and appointing disaster preparedness coordinators in each City department. In addition, the City's Human Resources Department has initiated mandatory training for all City employees.

Ms. Hennessy advised that the City has been working with federal and state grants to help local schools and universities develop site-specific emergency plans. She said the City is also working with the Housing Authority, disability advocates, and private organizations to identify community needs and create a database of shelters. She noted that a community hub program has been established at local libraries, and the City is encouraging people to work in their neighborhoods to disseminate information, foster individual preparedness activities, and identify resources available.

Ms. Hennessy indicated that San Francisco is working to improve communications and coordination with residents through ongoing training and drills, use of social networking, providing information on websites, and an emergency siren network. She observed that seismic safety has improved considerably over the past twenty years, with over 185 projects completed and 44 in process.

Chairman Church thanked Ms. Hennessy for her update.

Ms. Cogan expressed her appreciation to Ms. Hennessy for helping to arrange the morning duck-cover-hold drill for commissioners.

## **VI. SAN FRANCISCO WATER DELIVERY SYSTEM SEISMIC RETROFIT PROJECT - SAN FRANCISCO PUBLIC UTILITIES COMMISSION (SFPUC)**

Ms. Julie LaBonte, Director, Water System Improvement Program, San Francisco Public Utilities Commission (SFPUC) introduced her associates, Ms. Kathy How, manager of the Engineering Management Bureau, and Mr. Brian Sadden, manager of Special Engineering Projects. She provided an overview of the changes approved by the SFPUC in June and described in the September 1 Notification of Changes document. She noted the Commission and the Department of Public Health have until December 1 to review and comment on the changes before the SFPUC delivers its final report.

Ms. LaBonte summarized the purpose and scope of the SFPUC's \$4.6 billion seismic retrofit project, which includes 86 projects in seven counties. She noted that the SFPUC water system provides clean, unfiltered water through a gravity-driven system of dams and pipelines to 2.4 million customers in the Bay Area. She reviewed the four major seismic reliability goals of the retrofit project.

Ms. LaBonte discussed the Seismic Safety Commission's role in reviewing the changes made to the plans in 2008. She provided an update on progress made during the past year and identified key milestones.

Ms. LaBonte said the changes proposed in 2009 will increase the budget for two projects, add a new regional project, realign four other regional projects, and delay overall completion until December of 2015. She referred to a table summarizing the schedule revisions. She pointed out that the Calaveras Dam project is driving the ultimate completion date. Ms. LaBonte described the four regional projects with significant changes, but emphasized that none of the revisions will affect levels of service goals.

Ms. LaBonte showed slides of various construction projects underway. She said the SFPUC looks forward to working with the Commission and the staff during the upcoming review process. She offered to provide a full update to the Commission's review subcommittee.

Commissioner Littrell noted that the Commission had appointed a review subcommittee, and he said a list of questions about the proposed changes would be sent to the SFPUC staff the following week.

Commissioner Sadre recommended a field trip early next year so the Commission can observe some of the projects under construction.

Chairman Church thanked Ms. LaBonte for her information.

## **VII. CITYWIDE POST-DISASTER RESILIENCE AND DISASTER RECOVERY INITIATIVE**

Mr. Edward Lee, San Francisco City Administrator, welcomed the Commission to San Francisco and introduced Ms. Heidi Sieck, Resilience Initiative Coordinator. He said he had served as City

Administrator for five years and was responsible for directing San Francisco's ten-year capital improvement plan. He reported that over 180 projects had been completed since the Loma Prieta earthquake.

Mr. Lee noted that he visited New Orleans after Hurricane Katrina to get a firsthand look at restoration and recovery efforts, and this experience led him to create a resilience and recovery initiative for San Francisco. He noted that disasters are destructive for a region's utilities, housing, and jobs, and they can lead to a long period of social and economic turmoil if recovery takes too long. He said the purpose of San Francisco's resilience and recovery initiative is focus issues that need to be addressed in terms of finances, housing, utilities, governance, and community relations. He observed that taking mitigation steps now and having clearly defined response roles can allow a city to recover and rebuild rapidly.

Ms. Sieck stated that San Francisco's resilience initiative is a unique program based on the goals identified in the City's all-hazards response plan. She said the City works with a variety of executive sponsors and team partners to identify all the tasks that need to be done in order to fully recover. She advised that 75 projects grouped by subject matter were currently underway, and more would be added as new issues were identified.

Mr. Lee provided a general overview of the resilience and recovery initiative. He emphasized the importance of reforming FEMA's reimbursement process to provide block grants and other sources of funds communities can access immediately after a disaster. He advocated strengthening neighborhood associations, involving residents in the planning process, and working to attract investors back to an area after a natural disaster.

Commissioner Sadre asked if anything could be done to expedite the permit and rebuilding process. He said people complain that after a disaster, they have difficulty rebuilding to current codes and paying permit fees. Mr. Lee replied that part of the City's master plan establishes an expedited rebuilding process. He also emphasized the importance of rebuilding better and stronger rather than just replacing old structures.

Mr. McCarthy commented that the Governor's Office and Legislature are very interested in the concept of economic recovery and preventing losses to businesses after a disaster. He observed that the Commission and other groups may have a window of opportunity to push statewide recovery legislation that could garner bipartisan support. He noted the next presenter, the guest speaker from Business Executives for National Security (BENS), would be talking about this possibility.

Chairman Church commended San Francisco for its forward-thinking approach, and he asked if other cities had developed similar initiatives. Mr. Lee said San Francisco had been working with the Association of Bay Area Governments to address regional transportation issues. He noted that areas like housing and jobs need to be planned on both a local and regional basis. He advised that the resilience initiative would be presented to the San Francisco disaster council in December for official adoption.



Chairman Church thanked Mr. Lee and Ms. Sieck for the update and wished San Francisco well in this exciting endeavor.

**VIII. POST-DISASTER RESPONSE AND LONG-TERM RECOVERY:  
CONTINUITY OF COMMUNITY THROUGH PUBLIC-PRIVATE  
PARTNERSHIP**

Mr. Peter Ohtaki, Executive Director, Business Executives for National Security (BENS) California Resiliency Alliance, explained that his organization was established as a way for businesses to interact with government agencies to assist after disasters. He stated that 200 businesses are participating in seven partnerships in the U.S., with 50 companies engaged in the Bay Area partnership that began in 2005. He said the California Resiliency Alliance is a new entity to expand this activity statewide.

Mr. Ohtaki discussed ways businesses can interact and assist public agencies after a disaster. He noted that many lessons have been learned from past disasters, and BENS promotes a number of good ideas, such as establishing neighborhood hubs to speed community recovery; arranging for rapid building inspections, having an expedited permitting program and a mutual aid system to assist local building departments that are overwhelmed with rebuilding applications; establishing stand-by emergency orders that can be implemented quickly and making disaster recovery bond funds available immediately; having systems in place to ease small business recovery, technology recovery, and tourism recovery; consumer protections; and recovery exercises and drills.

Chairman Church thanked Mr. Ohtaki for his presentation and expressed appreciation to BENS for its work.

**X. APPROVAL OF SEPTEMBER 2009 MEETING MINUTES (Out of Order)**

Commissioner Walls proposed taking the remaining action items out of order while a quorum was still present.

**ACTION:** Commissioner McGavin made a motion, seconded by Commissioner Walls, that:

*The Commission approve the minutes of the September meeting as presented.*

\* Motion carried, 8 - 0 (Commissioners Chubb and Sadre absent during voting).

**XI. SEISMIC SAFETY COMMISSION NOMINATING COMMITTEE (Out of Order)**

Commissioner McGavin reported that the Nominating Committee had met a couple times to consider candidates for the chair and vice chair positions. He said two people had expressed interest in serving as vice chair, and one had expressed interest in chairing the Commission. On behalf of the Nominating Committee, he proposed re-electing Mark Church as chairman and selecting William Chubb as the new vice chair.

Chairman Church noted that Commission officers traditionally serve one-year terms. He indicated that he was willing to continue as chair if the Commission desired. Commissioner McGavin supported re-electing Chairman Church, noting that continuity of leadership would be helpful in times of uncertainty.

Chairman Church asked if there were any other nominations, but none were proposed.

ACTION: Commissioner Littrell made a motion, seconded by Commissioner Mathieson, that:

*The Commission close the nominations.*

\* Motion carried, 8 - 0 (Commissioners Chubb and Sadre absent during voting).

ACTION: Commissioner McGavin made a motion, seconded by Commissioner Walls, that:

*The Commission re-elect Chairman Church as chair and elect Commissioner Chubb to serve as vice-chair.*

\* Motion carried, 8 - 0 (Commissioners Chubb and Sadre absent during voting).

Commissioners congratulated Chairman Church on his re-election. Chairman Church said he was honored and humbled to be chosen to chair the Commission for another year.

## **IX. TSUNAMI RISK TO COASTAL CALIFORNIA**

Dr. Costas Synolakis, University of Southern California (USC), discussed the history of California's inundation mapping efforts and reviewed recent progress in forecasting tsunamis. He showed video simulations of tsunamis along the California coast. He described how the California Geological Survey, California Emergency Management Agency (Cal EMA), U.S. Geological Survey, and NOAA have collaborated to identify local and distant sources of Pacific tsunamis, develop inundation models, and produce maps of the California coastline. He reported that about 85 percent of California's mapping has been completed and an extensive database of information has been compiled. Dr. Synolakis advised that USC is negotiating an extension of its contract with Cal EMA to present the maps to various coastal communities.

Commissioner Littrell asked if the research could be used to improve designs for bridges, piers, and other marine structures. Dr. Synolakis replied that FEMA's existing manual for coastal construction provides broad design guidance now. He expressed his hope that his research will be used in the future to develop better tools for designers of coastal facilities.

Commissioner Walls asked if Dr. Synolakis knew if there were other countries or cities working on ways to mitigate tsunami flooding. Dr. Synolakis said he was not aware of any such efforts and observed that California relies primarily on public education. He added that seawalls were not practical in most California locations.

Commissioner McGavin indicated that he had sent information to Mr. McCarthy some time ago about a tsunami filter system for vulnerable coastal areas. He said he would try to find that material again.

Commissioner Littrell observed that tsunami mitigation might be a useful topic for a future research project.

Dr. Synolakis displayed a series of slides showing damage from the recent tsunami in Samoa.

Chairman Church thanked Dr. Synolakis for his presentation.

Mr. McCarthy recommended that the Commission support a proposal to designate USC as a state tsunami center. He said this facility would give California a tremendous opportunity to promote research in tsunami-resistant structural design.

## **XII. EXECUTIVE DIRECTOR'S REPORT**

Mr. McCarthy said he covered all the items in his report at the October 14 committee meeting.

## **XIII. PUBLIC COMMENT**

There were no members of the public who wished to address the Commission.

## **XIV. MISCELLANEOUS AND GOOD OF THE MEETING**

There were no other items brought to the Commission's attention.

## **XV. ADJOURNMENT**

Chairman Church thanked everyone for attending. There being no further business, the meeting was adjourned at 4:10 p.m.

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Sue Celli  
Office Manager

Approved by:

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Richard McCarthy  
Executive Director