

State of California  
Seismic Safety Commission

Memo

To: Seismic Safety Commission

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Subject: Update on Shake Table and Fire Tests of a Building at UC San Diego

The test portion of a \$5 million project at UC San Diego (UCSD) that the Commission co-funded has been completed. At the Commission's hearing on September 13, Professor Tara Hutchinson, the project's manager, will summarize the tests and present excerpts of a draft second video that is slated to be released to the public at the end of September.

Please note that while the Commission has granted UCSD creative control over the video to its videographer Richard Wargo, UCSD is still interested in obtaining the Commission's first impressions about its latest video. Professor Hutchinson will also provide discs of the complete draft video to allow for more in depth viewing and comments in the weeks after the hearing. Due to time constraints and the practicalities of creative control over the video as well as many comments from multiple stakeholders, Commissioners and staff should be aware that UCSD is under no obligation to make major changes to the video in response to our comments.

The Commission's \$360,027 in funds or 7 percent of the project helped:

- 1) Design two floors of a five story building to represent an intensive care hospital unit that was constructed on a movable table that simulates earthquake shaking;
- 2) Design a seismic isolation system for the building so that the responses of nonstructural systems to the shaking from different structural systems can be compared;
- 3) Address the adverse effects of damage caused by shaking on the ability of the building to resist the spread of smoke and fires; and
- 4) Develop two educational videos targeted to hospital personnel. The first video was issued in March 2012 and is linked at: <http://bncs.ucsd.edu/index.html>

UCSD, its industry partners and government collaborators completed the shaking and fire tests in May 2012. More information about the tests and other videos are available at: <http://bncs.ucsd.edu/index.html>

The tests documented damage to a hospital building and its contents from a range of earthquake motions and post-earthquake fires. The tests are generating research results that improve our understanding of performance and help identify ways to ensure safer hospitals by helping to calibrate our building codes and regulations and improve our understanding of how complex building systems interact during earthquakes. They also show how shaking damage can

compromise fire resistance. Over the next several years, technical papers and doctoral dissertations will be generated using test results, but in the meantime, initial impressions are generating quite a lot of interest among earthquake engineering and fire protection professionals.

On April 17, UCSD held a media outreach event during which the project received news coverage from all the major national television stations, several major newspapers, and hundreds of other smaller news feeds. Chairman Michael Gardner, Commissioner Tim Strack, and Executive Director Dick McCarthy were featured prominently in many of the media reports.

1200 videos that captured detailed aspects of the building's response during the shaking and fire tests will be made available soon by UCSD through an online, searchable library. This resource is expected to be used by industry representatives, fire professionals, architects, regulators, and structural engineers to help inform stakeholders and train individuals.

### **Staff Recommendation**

The staff recommends that Commissioners listen to Professor Hutchinson's summary, watch excerpts of the draft second video, and provide feedback on progress to date and suggest next steps that the Commission and UCSD should consider taking.