Powell Structural Testing Lab to test shock absorbers

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POWELL STRUCTURAL TESTING LAB TO TEST SEISMIC SHOCK ABSORBERS

A new type of "shock absorbers," designed to protect buildings in severe earthquakes, will be tested in the Charles Lee Powell Structural Testing Laboratory at the University of California, San Diego on February 28, prior to installation in a building to be constructed in Los Angeles County next month.

The 14.2" high by 19" square rubber and steel pads, called "elastomeric isolators," will be installed at the base of the Los Angeles County Fire Department Fire Command and Control Facility, designed by Fluor Daniel.

Professor Nigel Priestley will use a specially designed machine at the Powell Laboratory to twist and turn the isolators in a simulation of the maximum possible earthquake likely to strike the Los Angeles area.

This "base isolation" technique is already widely used in Japan, New Zealand and Europe, but the command facility will be only the third building in the United States, and first in Los Angeles County, built using the technique.

Construction on the two-story structure, which will receive and respond to all fire and media 911 emergency calls in the Los Angeles area, is scheduled to begin April 3. It is essential that the building withstand a major earthquake since it will be the control center for emergency efforts affecting three million residents in the event of a large scale disaster.

Economic studies undertaken during design clearly favored seismic isolation as the lowest cost method available to achieve the high level of seismic protection demanded for the facility.

The isolator system was invented and designed by Ed Fyfe of Fyfe Associates, a Del Mar engineering firm, and researchers at the Powell Lab have been contracted to do the final testing on the pads before their installation.

Officials from Fluor Daniel, the architects and engineers for the facility, will be on hand to view the final testing process.

"The building will be built on elastomeric isolators which are essentially large rubber pads," Fyfe said. "In the event of a major earthquake the building moves slowly back and forth on isolators. This reduces accelerations and eliminates damage to the structure."

Fyfe noted that this would be the third new building in North America to be equipped with the isolators, and the first building in the U.S. where base isolation was incorporated in the design process at the concept development stage.

Other buildings which use the base isolators are the Foothill Community Law and Justice Center for San Bernardino County, located in Rancho Cucamonga, and the Flight Simulator Building in Salt Lake City.

"What we are doing at UCSD is carrying out validation testing to insure that these are absolutely perfect for the job," said Fyfe. "We are testing four isolators--two exterior and two interior. They will be taken to extremes of their designed displacement and all loads and conditions will be simulated."

The Powell Laboratory was completed in March 1986, and is the leading earthquake testing facility in the western hemisphere. The laboratory, funded by the Charles Lee Powell Foundation and the National Science Foundation, also tests structural materials, components and connections. (Illustration attached)

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