

UCSD wins \$5.2 million for earthquake simulator

Gary Robbins, San Diego Union-Tribune, 9-25-15

A huge outdoor shake table that is used to study how earthquakes can damage buildings, bridges, freeways and tunnels will continue to operate at UC San Diego for at least another five years.

The National Science Foundation has awarded the campus \$5.2 million to run the facility in Scripps Ranch, providing researchers from around the country with a place to simulate a wide range of earthquakes.

The shake table opened in 2004 and has been used in experiments that have helped engineers improve everything from the design of freeway bridges to surgical suites in hospitals.

"Researchers all over the world are developing numerical models to predict how structures will respond to earthquakes," said Joel Conte, a structural engineer professor at UC San Diego's Jacobs School of Engineering.

"To evaluate how accurate these models are you need to do experimental testing, which we can do here at the world's largest outdoor shake table."

Conte led the school's effort to keep the program in San Diego, overcoming competition from the University of Nevada at Reno and the State University of New York at Buffalo.

The shake table is capable of holding structures weighing up to 2,000 tons and subjecting them to the sort of ground motion they would experience in a damaging quake.

In 2012, UC San Diego built a five-story building on the table and jolted it with a variety of fake quakes, including one that simulated the ground motion that occurred during the deadly magnitude 6.7 Northridge earthquake in 1994. The tests drew an unusual amount of attention because the upper floors of the building were outfitted with equipment that's commonly found in the intensive care units and surgical suites of hospitals.

The following year, Colorado State University scientists used the shake table to study how earthquakes can affect wood frame "soft story" structures. The name refers to the fact that part of the first floor of such buildings are left open to make room for parking or for large windows.

Conte said future projects might including the construction of a 10-story structure to examine the seismic properties of cross laminated timber.