Seeking ‘a safer world,’ UB opens quake center

Simulations form hub of lab network

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The University at Buffalo on Friday opened a new $21.2 million earthquake-simulation center meant to boost worldwide efforts to predict quakes and mitigate their destructive impact.

The facility is outfitted with equipment that allows researchers to study the effects of quakes and other catastrophic forces on scale-model structures.

UB’s George E. Brown Jr. Network for Earthquake Engineering Simulation Facility is part of an $82 million high-tech network of 15 laboratories linked by high-speed Internet connections. The facility will boost the area economy through direct employment and collaborations with area businesses, officials said.

"This is a landmark event for the University at Buffalo, to be sure, but I think its significance extends far beyond the university community," UB President John B. Simpson said during a dedication ceremony attended by 300 people Friday in the new facility, an addition to Ketter Hall on UB’s North Campus. "The ultimate result is the building of a safer world."

UB’s existing earthquake-simulation laboratory expanded from 12,000 to 25,000 square feet as part of this project.

The centerpiece of the expansion is two shake tables that can be moved separately, each with six degrees of freedom. The tables, made by MTS Systems, can test structures up to 120 feet in length and 30 feet in height; each has a 50-ton capacity.

UB scientists Andrei Reinhorn and Michel Bruneau, the facility’s principal investigators, demonstrated the tables' capabilities during Friday’s ceremony.

First, they applied a force equivalent to a relatively small earthquake - 5 or 6 on the Richter scale - to a 20-foot-tall structure meant to simulate a five-story building.

The force was applied in one direction at a time, so the structure swayed only slightly at the top.

In the second demonstration, scientists set up a simulation of a living room, including standard-issue dormitory couches, bookshelves and two mannequins dressed in UB T-shirts.

Over the course of two simulated earthquakes, a bookshelf tipped over, books crashed to the floor and the mannequins bounced up and down in their seats.

The Network for Earthquake Engineering Simulation Facility “is truly a pioneering effort,” said A. Galip Ulsoy, director of the civil and mechanical systems division of the National Science Foundation.

This is the latest investment the federal government has made in the Multidisciplinary Center for Earthquake Engineering Research headquartered at UB. The national center was established in 1986.

Research at the earthquake center has aided in designing buildings and transportation networks to survive earthquakes, tsunamis and even terrorist attacks, UB officials said.

The new, four-story facility, named after a late California congressman who was an advocate for federal funding of engineering and science, will boost those efforts, they said.

The facility received $11.2 million from the science foundation, $6 million from the State University of New York construction fund, and $4 million from UB’s School of Engineering and Applied Sciences and one of its departments.
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