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US engineers build, rattle house in quake test

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By Jennifer Kwan

BUFFALO, New York (Reuters) - Engineers subjected a specially built Buffalo townhouse to a mock earthquake on Thursday in a lab test of a project to build homes that can withstand severe tremors.

With a flick of a switch, the two-story, 1,800 square foot, partially built house wobbled on top of two large piston-powered shake tables, moving about two inches from side to side during the 45-second tremor.

The shaking simulated the 6.7 magnitude quake in Northridge, California, in 1994, which killed 60 people and injured 7,000.

"The objective is to ultimately safely build taller, wood-frame construction in seismic zones," said Andre Filiatrault, professor of civil, structural and environmental engineering at the University of Buffalo, and leader of the \$1.2-million four-year NEESWood project investigating the quake-proof construction ideas.

"Northridge was a sort of eye-opener," he added, noting that damage to wood-framed homes in that earthquake accounted for about half of the \$40 billion in total damages.

In the Buffalo house, four fluid seismic dampers have been built into the walls and are designed to absorb an earthquake's destructive energy.

Each silicon-fluid-filled damper is about 20 inches long and as thick as a pop can, and can dissipate 15,000 pounds of force, the equivalent of 20 car shock absorbers.

"All the wood, all the nailed connections get strained and deformed," said Michael Symans, associate professor of civil and environmental engineering at Rensselaer Polytechnic Institute. "We'd like to reduce that because that's the energy that damages the building."

If the research succeeds, it could be a new market for North Tonawanda, NY-based, Taylor Devices Inc., which already has dampers installed in more than 200 commercial buildings and bridges worldwide, including the San Francisco-Oakland Bay Bridge and the Triborough Bridge in New York City, which connects the Bronx, Manhattan and Queens.

The U.S. Geological Survey estimates there are 500,000 detectable earthquakes in the world each year, 100,000 of which can be felt and 100 of which cause damage.

The Northridge earthquake left 20,000 people homeless and damaged more than 40,000 buildings in Los Angeles, Ventura, Orange and San Bernardino counties.

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