

Engineers demonstrate strength of new metal shear wall that could lower construction cost

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Engineers pushed a newly designed, metal shear wall to its limits at a Nov. 20 seismic test at the University of California, Berkeley's Structural Engineering Research Lab. The panel proved strong enough for use in California and other earthquake-prone regions throughout the world, researchers said.

The new wall system employs a corrugated metal decking material screwed to metal studs. Researchers estimate that the new panels are three times stronger than equivalent plywood panels, and twice as strong as comparable metal framing material currently on the market. The metal panels can be prefabricated and delivered to the construction jobsite, helping lower costs.

It could become an alternative lateral bracing system that is stronger, more flexible and less expensive than traditional bracing systems now used for multi-unit residential buildings.

Engineers at Tipping Mar & Associates, a Berkeley-based structural engineering firm, came up with the concept of the simple, non-proprietary wall system, and UC Berkeley researchers are helping to test and develop the system.

"This will greatly simplify the design of light gauge metal-frame buildings," said Tipping Mar president Steve Tipping, who oversaw the development of this new class of metal shear wall.

At the UC Berkeley seismic test, researchers demonstrated the ability of the technology to withstand the type of major earthquake expected to occur in the Bay Area, subjecting the panel to 25,000 pounds of force and cyclic displacement.

"This system will lead to important safety improvements in the construction of new homes, as well as provide economical retrofitting solutions for existing buildings," said Bozidar Stojadinovic, UC Berkeley associate professor of civil and environmental engineering. "We want this accessible to any contractor who is interested, which is why we are making the final design freely available to the public."

Source: UC Berkeley

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