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Carterton Events Centre A new Events Centre in Carterton is the second structure in the world to use University of Canterbury's Pre-Lam seismic timber system

THE $6 MILLION community centre at Carterton is the first civic building to be constructed there in more than 100 years.

Designed by Opus Architecture, the 330-seat Events Centre is only the second building in the world to use the timber Pres-Lam seismic strengthening system developed at University of Canterbury in 2005.

The 6.7m high by 2.4m high laminated veneer lumber (LVL) walls are 180mm thick made from four sheets glued together. Designed to rock back and forth during an earthquake, the building is expected to absorb earthquake tremors during movement.

The system consists of LVL used to form large shear walls. With embedded high-strength steel rods tested to withstand earthquake loads they are then post-tensioned to the ground.

Buildings created using the system can be easily disassembled, and the timber reused. Juken NZ manufactured the timber from local sources, giving it a low carbon footprint.

"It significantly reduces the amount of movement and damage to a building during an earthquake, meaning fewer repairs for the building after a large quake, not to mention overall safety," said Opus senior structural engineer Dave Dekker.

"The design of the post-tensioned rods causes the building to return to a vertical position, rather than to the angle

QUICK FACTS

- 11 LVL Shear walls are installed in the auditorium
- Each LVL wall (6.7m high x 2.4m) contains approximately 22 sheets of LVL (3m x 1.2m x45mm) which equates to a total 231 sheets
- Shear walls are made of four layers of 45mm LVL sheets, glue-laminated together to form a 180mm thick wall.
- Auditorium trusses contain approximately 3.5km of specially cut LVL
- Bracing and wall linings - approximately 1,000 sheets of plywood (overall centre)
- Roof and wall structure framing - approximately 3km of JNL J-frame (overall centre)

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the building happens to be at once the shaking stops."

The first stage of the building was peer reviewed by University of Canterbury senior structural engineering lecturer Alessandro Palmermo, funded by the Foundation for Science and Technology.

"It was important as this is relatively new technology and we wanted the council to be assured the design was correct and in accordance with the Building Code and standards," Mr Dekker said.

Dr Palermo said the system was easy to transport and build.

"The components can be fabricated off site allowing for cheaper, faster and safer construction on site. Its damage-free seismic structural system and low weight makes the system very safe and allows immediate occupancy after an earthquake."