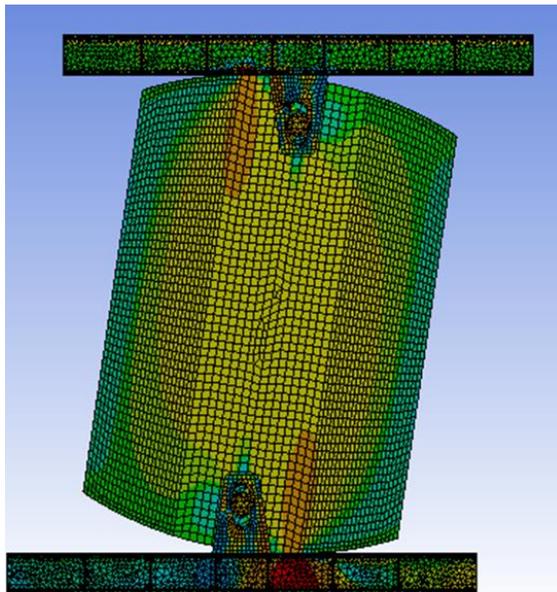




## Solid Wall Panels with Curved Bearing Edges for Seismic Pendulum Isolation of Building Structures

OTT ID #1475



### TECHNOLOGY

Cross-Laminated Timber (CLT) panelized construction is gaining worldwide popularity as a sustainable, lightweight, and rigid load-bearing material that is quick to erect on building sites. The inventor has added curvature to the load-bearing edges of a wall panel, assembled in multistory building construction, enabling the walls to act as self-centering pendulum isolators when subject to earthquake effects.

The rigid-body kinematics of rocking panels, anchored by ductile connections or post-tensioning, provide flexibility and effective means of hysteretic energy dissipation. This technology aims to further the possibilities of CLT rocking systems through the development of curved end bearings for wall panels, to induce pendulum motion. Such a system can decouple the building from ground motion, thereby isolating structures and reducing earthquake force demands.

### RESILIENCY

- **Passive self-centering** - Wall panels leverage superstructure weight using elliptical geometry to return to equilibrium
- **Minimizes Environmental Impact** - Utilizes CLT in building lateral systems to reduce carbon footprints of construction while enhancing structural performance
- **Construction Efficiency** – Works within platform assembly schemes to simplify construction sequencing
- **Cost-Effective**- Seismic solutions make good economic sense because of the resilient mechanisms that protect both property and lives
- **Versatile** – Panel geometry and connections customized to control lateral stiffness, displacement, and energy dissipation

### INTELLECTUAL PROPERTY

A U.S. Provisional patent application was filed September 2018.

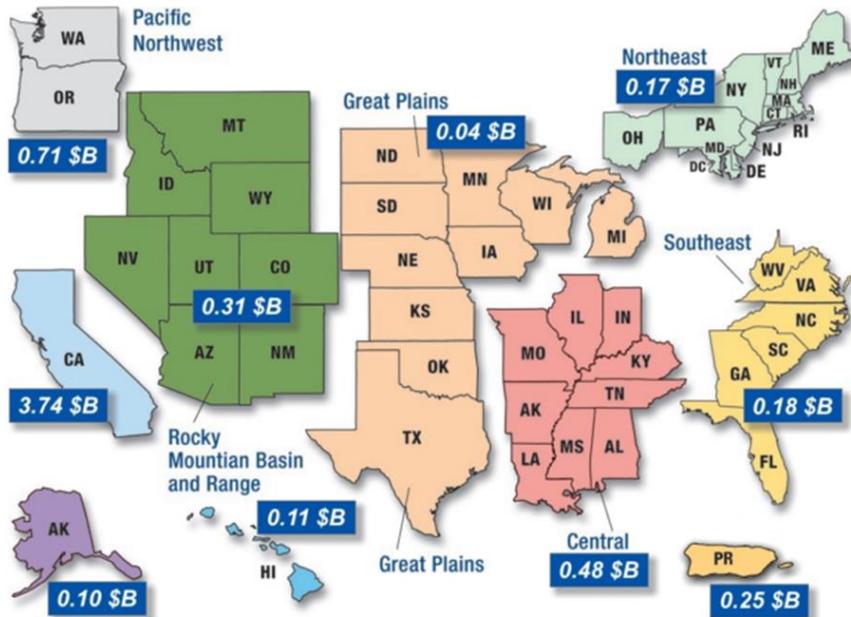
## MARKETS

The global cross laminated timber market is expected to be valued at \$2B by 2025, according to a new report by Grand View Research, Inc.

Earthquake losses in the United States add up to about \$4.4 billion dollars a year, according to a study by the Federal Emergency Management Agency (FEMA) based on a new methodology to estimate earthquake risk and future losses by geographic area.

According to the study, 84 percent of the nation's annual losses are expected to occur in California, Oregon and Washington, with California alone accounting for \$3.3 billion of the estimated damage costs.

The \$4.4 billion estimate is extremely conservative and includes only capital losses such as repairing or replacing buildings, contents and inventory (\$3.49 billion), and income losses - business interruption, wage and rental income losses (\$0.93 billion). It does not cover damage and losses to critical facilities, transportation and utility lifelines or indirect economic losses.



## INVENTORS

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Mr. Lo Ricco is a licensed Professional Engineer in Wisconsin, Structural Engineer in Illinois and pursuing his PhD from the University of Wisconsin-Milwaukee in Civil Engineering, with expected completion Spring 2019. His research focus is in the Mechanics of Composites, Mass Timber Structures, and Sustainable Construction.

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