



An Overview of CLT Research and Implementation in North America

<https://research.thinkwood.com/en/permalink/catalogue759>

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Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: General Application

Topic: Market and Adoption

Keywords: Market
North America
Building Development
Research

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria

Abstract:

Although not yet seen as common practice, building with cross laminated timber (CLT) is gaining momentum in North America. Behind the scenes of the widely publicized project initiatives such as the Wood Innovation Design Centre Building in Canada and the...

Online Access: Free

Resource Link

https://www.fpl.fs.fed.us/documnts/pdf2016/fpl_2016_pei001.pdf



Chapter 4: Lateral Design of Cross Laminated Timber Buildings

<https://research.thinkwood.com/en/permalink/catalogue823>

Author: John van de Lindt
Douglas Rammer
Marjan Popovski
Philip Line
Shiling Pei
Steven Pryor

Organization: FPInnovations
Binational Softwood Lumber Council

Year of Publication: 2013

Country of Publication: Canada
United States

Format: Book Section

Material: CLT (Cross-Laminated Timber)

Application: General Application

Topic: Seismic

Keywords: Seismic Design Coefficients
Lateral Loads
Numerical Model
R-factors
MCE

Language: English

Research Status: Complete

Series: CLT Handbook - US Edition

ISBN: 978-0-86488-553-1

ISSN: 1925-0495

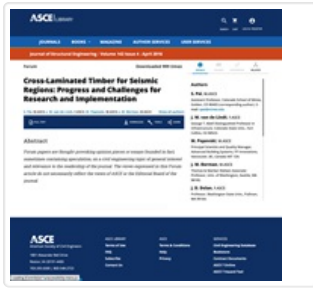
Abstract:

Cross-laminated timber (CLT) is an innovative wood product that was developed approximately two decades ago in Europe and has since been gaining in popularity. Based on the experience of European researchers and designers, it is believed that CLT can provide the U.S. market the opportunity to build mid- and high-rise wood buildings. This Chapter presents a summary of past research and state-of-the-art understanding of the seismic behavior of CLT. As a new structural system to the United States, the design of CLT for seismic applications is expected to be made through alternative method provisions of the building codes. Efforts to develop seismic design coefficients for use in the equivalent lateral force procedures in the United States are underway. Nonlinear numerical modeling of CLT is presented and used to provide an indication of the effect of designing with different R-factors. Using nominal CLT wall capacity values derived from isolated wall tests, the illustrative example showed that an R-factor of approximately 2 can result in a low probability of collapse (less than 10 percent) at MCE intensity.

Online Access: Free

Resource Link

<https://info.thinkwood.com/clt-handbook> [↗](#)



Cross-Laminated Timber for Seismic Regions: Progress and Challenges for Research and Implementation

<https://research.thinkwood.com/en/permalink/catalogue162>

Author: Shiling Pei
John van de Lindt
Marjan Popovski
Jeffrey Berman
Daniel Dolan
James Ricles
Richard Sause
Hans-Erik Blomgren
Douglas Rammer

Publisher: American Society of Civil Engineers

Year of Publication: 2014

Country of Publication: United States

Format: Journal Article

Material: CLT (Cross-Laminated Timber)

Application: Shear Walls

Topic: Seismic

Keywords: Lateral Loads
Prefabrication
US

Language: English

Research Status: Complete

Series: Journal of Structural Engineering

Online Access: Free

Resource Link

http://www.adivbois.org/wp-content/uploads/Int_0_Tech_Cross-laminated-timber-for-seismic-regions-progress-and-challenges-for-research-and-implementation.pdf



Determination of Seismic Performance Factors for CLT Shear Wall Systems

<https://research.thinkwood.com/en/permalink/catalogue770>

Author: M. Omar Amini
 John van de Lindt
 Douglas Rammer
 Shiling Pei
 Philip Line
 Marjan Popovski

Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Shear Walls

Topic: Connections
 Seismic

Keywords: Angle Bracket
 Cyclic Tests
 US
 Quasi-Static
 Seismic Performance Factors

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria

Abstract:

This paper presents selected results of connector testing and wall testing which were part of a Forest Products Lab-funded project undertaken at Colorado State University in an effort to determine seismic performance factors for cross laminated timber (C...

Online Access: Free

Resource Link

https://www.fpl.fs.fed.us/documnts/pdf2016/fpl_2016_amini001.pdf



Developing Seismic Performance Factors for Cross Laminated Timber in the United States

<https://research.thinkwood.com/en/permalink/catalogue124>

Author: John van de Lindt
M. Omar Amini
Douglas Rammer
Philip Line
Shiling Pei
Marjan Popovski

Organization: Canadian Association for Earthquake Engineering

Year of Publication: 2015

Country of Publication: Canada

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Walls

Topic: Seismic
Mechanical Properties
Connections

Keywords: Angle Bracket
Shear Test
Strength
Stiffness
Uplift Test
US

Language: English

Conference: The 11th Canadian Conference on Earthquake Engineering

Research Status: Complete

Notes: July 21-24, 2015, Victoria, BC, Canada

Online Access: Free

Resource Link

<https://www.researchgate.net/publication/280560310>



Development and Full-Scale Validation of Resilience-Based Seismic Design of Tall Wood Buildings: The NHERI Tallwood Project

<https://research.thinkwood.com/en/permalink/catalogue1477>

Author: Shiling Pei
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James Ricles
Richard Sause
Jeffrey Berman
Keri Ryan
Daniel Dolan
Andrew Buchanan
Thomas Robinson
Eric McDonnell
Hans-Erik Blomgren
Marjan Popovski
Douglas Rammer

Year of Publication: 2017

Country of Publication: New Zealand

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Walls
Wood Building Systems

Topic: Design and Systems
Seismic

Keywords: Tall Wood
Post-Tensioned
Rocking Walls
Resilience-Based Seismic Design
Shaking Table Test

Language: English

Conference: New Zealand Society for Earthquake Engineering Conference

Research Status: Complete

Notes: April 27-29, 2017, Wellington, New Zealand

Abstract:

With global urbanization trends, the demands for tall residential and mixed-use buildings in the range of 8~20 stories are increasing. One new structural system in this height range are tall wood buildings which have been built in select locations around the world...

Online Access: Free

Resource Link

http://db.nzsee.org.nz/2017/O5C.2_Ryan.pdf ↗



Development of Seismic Performance Factors for Cross Laminated Timber: Phase 2

<https://research.thinkwood.com/en/permalink/catalogue803>

Author: John van de Lindt
Douglas Rammer
Shiling Pei

Organization: Forest Products Laboratory

Year of Publication: 2012

Country of Publication: United States

Format: Report

Material: CLT (Cross-Laminated Timber)

Application: Wood Building Systems

Topic: Seismic

Keywords: Seismic Performance Factors
US

Language: English

Research Status: In Progress

Abstract:

A collaborative project between the Forest Products Laboratory and Colorado State University to develop seismic performance factors for cross laminated timber is underway. The project requires application of the FEMA P-695 methodology, which is purposely...

Online Access: Free

Resource Link

<https://www.fpl.fs.fed.us/documnts/rips/fplrip-4719-019.pdf>



Direct Displacement Design of Tall CLT Building with Deformable Diaphragms

<https://research.thinkwood.com/en/permalink/catalogue1650>

Author: Vahab Bolvardi
Shiling Pei
John van de Lindt
James Dolan

Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Wood Building Systems

Topic: Design and Systems
Seismic

Keywords: Inter-Story Isolation
Displacement-Based Design
Simulation

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria
p. 3506-3514

Abstract:

In order to cope with the speed of urbanization around the world especially in areas of high seismicity, researchers and engineers have always been investigating cost-effective building systems with high seismic performance. Cross Laminated Timber (CLT) is a wood based material that is suitable for tall building construction. However, the...

Online Access: Free

Resource Link

<http://repositum.tuwien.ac.at/obvutwoa/content/pageview/1649340> ↗



Ductility Based Force Reduction Factors for Symmetrical Cross-Laminated Timber Structures

<https://research.thinkwood.com/en/permalink/catalogue446>

| | |
|-------------------------|---|
| Author: | Marjan Popovski Shiling Pei John van de Lindt Erol Karacabeyli |
| Organization: | European Association of Earthquake Engineering |
| Year of Publication: | 2014 |
| Country of Publication: | Canada |
| Format: | Conference Paper |
| Material: | CLT (Cross-Laminated Timber) |
| Application: | Wood Building Systems Walls |
| Topic: | Mechanical Properties Seismic |
| Keywords: | Force Modification Factors Ductility National Building Code of Canada Fasteners Seismic Performance |
| Language: | English |
| Conference: | Second European Conference on Earthquake Engineering and Seismology |
| Research Status: | Complete |
| Notes: | August 25-29, 2014, Istanbul, Turkey |
| Online Access: | Free |

Resource Link

<http://doi.org/10.13140/RG.2.1.2534.3523>



Experimental Investigation of Self-Centering Cross Laminated Timber Walls

<https://research.thinkwood.com/en/permalink/catalogue1654>

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James Ricles
Shiling Pei
John van de Lindt
Hans-Erik Blomgren

Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Walls

Topic: Seismic
Mechanical Properties

Keywords: Lateral Load Resisting System
Post-Tensioning
U-Shaped Flexural Plates
Limit States
Self-Centering
Strength
Stiffness
Interstory Drifts

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria
p. 3547-3554

Abstract:

This paper describes experiments conducted to develop a resilient lateral force resisting wall system that combines cross-laminated timber (CLT) panels with vertical post-tensioning (PT) to provide post-event re-centering. Supplemental mild steel U-shaped flexural plate devices (UFPs) are intended to yield under cyclic loading while the PT...

Online Access: Free

Resource Link

<http://repositum.tuwien.ac.at/obvutwoa/content/pageview/1649345> 