COLLEGE OF ENGINEERING
COLLEGE OF FORESTRY

Civil & Construction Engineering
Wood Science & Engineering

CLT DIAPHRAGM PANEL-TO-PANEL CONNECTIONS

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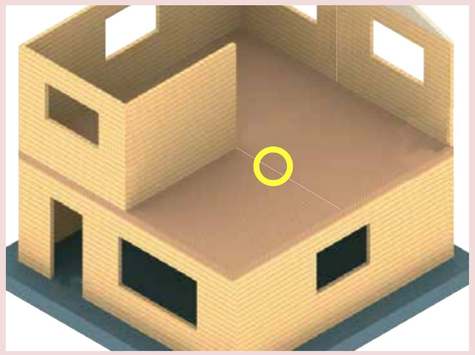
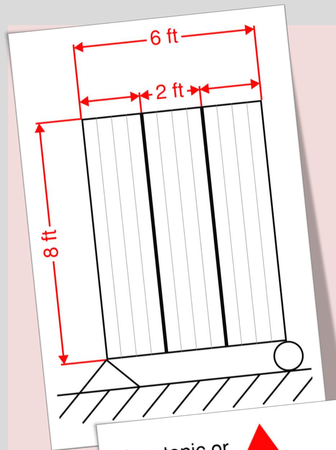
Background

- Cross Laminated Timber (CLT) means mid-rise (6-12 story) and tall (+/- 30 story) wood buildings.
- Design guidelines for **lateral force-resisting systems** (LFRS), including roof and floor diaphragms, are under development
- **Shear connections** are most important in CLT diaphragms

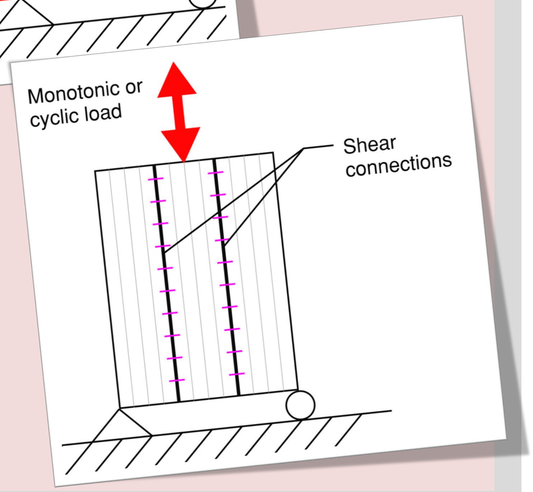


U.S. CLT Handbook

Full-size Specimens



- **ASTM E455** Static Load Testing of Framed Floor or Roof Diaphragm Constructions for Buildings
- **ASTM E2126** Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of the Lateral Force Resisting Systems for Buildings.
- **CUREE** Testing Protocol for Woodframe Structures



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Objectives

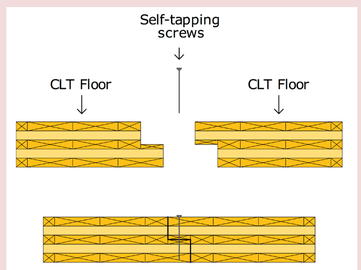
Immediate:

1. Strengths/stiffnesses of two connection types
2. Ductility/energy dissipation of the connections

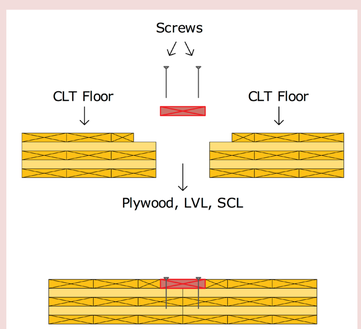
Long-term:

1. Develop/improve design methods for diaphragms in resisting shear
2. Rigid or flexible diaphragm design

Connection Types



Half-Lap Joint



Single Surface Spline

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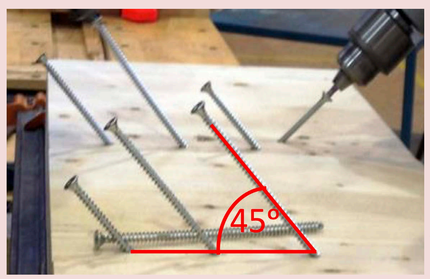

MyTiCon 2015

Installed @ 90 and 45 degrees

Screws in tension and shear

Increased strength AND ductility

Further Implications

- CLT has been introduced in the last few years in North America
- Seismic loadings are critical in the design of buildings, especially on the West Coast
- CLT panels are so strong and stiff that the connections govern the shear behavior of diaphragms

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Acknowledgements

OSU College of Engineering

OSU College of Forestry

MyTiCon Timber Connectors

Oregon State UNIVERSITY