



## An Approach to CLT Diaphragm Modeling for Seismic Design with Application to a U.S. High Rise Project

<https://research.thinkwood.com/en/permalink/catalogue1671>

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Year of Publication: 2016

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)

Application: Floors  
 Wood Building Systems

Topic: Seismic  
 Design and Systems

Keywords: US  
 Diaphragm  
 Model  
 High-Rise

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria  
 p. 3844-3852

### Summary:

A candidate CLT diaphragm analysis model approach is presented and evaluated as an engineering design tool motivated by the needs of seismic design in the United States. The modeling approach consists of explicitly modeling CLT panels as discrete orthotropic shell elements with connections between panels and connections from panels to structural framing modelled as two-point springs. The modeling approach has been compared to a developed CLT diaphragm design example based on U.S. standards showing the ability to obtain matching deflection results. The sensitivity of the deflection calculations to considering CLT panel-to-panel connection gap closure is investigated using a simple diaphragm example. The proposed modeling approach is also applied to the candidate floor diaphragm design for the Framework project, one of the two U.S. Tall Wood Building Prize Competition winners, currently under design. Observations from this effort are that the proposed method, while a more refined model than typically used during building design, shows promise to meet the needs of innovative CLT seismic designs where appropriate simpler diaphragm models are not available.

Online Access: Free

### Resource Link

<http://hdl.handle.net/20.500.12708/172>

