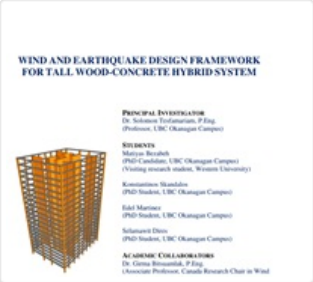


# Wind and Earthquake Design Framework for Tall Wood-Concrete Hybrid System

**https://research.thinkwood.com/en/permalink/catalogue2143**

| | |
|---|---|
| Author: | Tesfamariam, Solomon |
| | Bezabeh, Matiyas |
| | Skandalos, Konstantinos |
| | Martinez, Edel |
| | Dires, Selamawit |
| | Bitsuamlak, Girma |
| | Goda, Katsuichiro |
| Year of Publication: | 2019 |
| Country of Publication: | Canada |
| Format: | Report |
| Material: | CLT (Cross-Laminated Timber) |
| Application: | Wood Building Systems |
| Topic: | Seismic |
| | Wind |
| Keywords: | Tall Wood |
| | Seismic design factors |
| | Wind tunnel test |
| | Ductility Factors |
| | Timber-reinforced concrete |
| | Force Modification Factors |
| | Probabilistic Model |
| | Wind Load |
| | Overstrength seismic force |
| Language: | English |
| Research Status: | Complete |
| Notes: | DOI 10.14288/1.0380777 |

Summary:

Advancement in engineered wood products altered the existing building height limitations and enhanced wooden structural members that are available on the market. These coupled with the need for a sustainable and green solution to address the ever-growing urbanization demand, avails wood as possible candidate for primary structural material in the construction industry. To this end, several researches carried out in the past decade to come up with sound structural solutions using a timber based structural system. Green and Karsh (2012) introduced the FFTT system; Tesfamariam et al. (2015) developed force-based design guideline for steel infilled with CLT shear walls, and SOM (2013) introduced the concrete jointed mass timber hybrid structural concepts. In this research, the basic structural concepts proposed by SOM (2013) is adopted. The objective of this research is to develop a wind and earthquake design guideline for concrete jointed tall mass timber buildings in scope from 10- to 40-storey office or residential buildings. The specific objective of this research is as follow:
Wind serviceability design guideline for hybrid mass-timber structures.
Calibration of design wind load factors for the serviceability wind design of hybrid tall mass timber structures.
Guidelines to perform probabilistic modeling, reliability assessment, and wind load factor calibration.
Overstrength related modification factor Ro and ductility related modification factor Rd for future implementation in the NBCC.
Force-based design guideline following the capacity based design principles.

Online Access: Free

**Resource Link**

http://hdl.handle.net/2429/71592