



Seismic Performance of Embedded Steel Beam Connection in Cross-Laminated Timber Panels for Tall-Wood Hybrid System

<https://research.thinkwood.com/en/permalink/catalogue415>

Author: Zhang, Xiaoyue
Azim, Riasat
Bhat, Pooja
Popovski, Marjan
Tannert, Thomas

Publisher: Canadian Science Publishing

Year of Publication: 2017

Country of Publication: Canada

Format: Journal Article

Material: CLT (Cross-Laminated Timber)

Application: Hybrid Building Systems

Topic: Seismic

Keywords: Timber-Steel Hybrid
Energy Dissipation
FFTT
Quasi-Static
Monotonic Test
Reverse Cyclic Test
Failure mechanism
Beam Profiles
Embedment

Language: English

Research Status: Complete

Series: Canadian Journal of Civil Engineering

Summary:

Recent developments in novel engineered mass timber products and connection systems have created the possibility to design and construct tall timber-based buildings. This research presents the experiments conducted on the steel-wood connection as main energy dissipating part of a novel steel-timber hybrid system labelled Finding the Forest Through the Trees (FFTT). The performance was investigated using quasi-static monotonic and reversed cyclic tests. The influence of different steel beam profiles (wide flange I-sections and hollow rectangular sections), and the embedment approaches (partial and full embedment) was investigated. The test results demonstrated that appropriate connection layouts can lead to the desired failure mechanism while avoiding excessive crushing of the mass timber panels. The research can serve as a precursor for developing design guidelines for the FFTT systems as an option for tall wood-hybrid building systems in seismic regions.

Copyright: Courtesy of Canadian Science Publishing

Online Access: Free

Resource Link

<https://tspace.library.utoronto.ca/bitstream/1807/77971/1/cjce-2016-0386.pdf>