





## Cyclic Testing and Simulation of Hold Down Connections in Radiata Pine CLT Shear Walls

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### Summary:

Structures built with cross laminated timber (CLT) are an attractive alternative to traditional construction materials in terms of environmental performance and habitability, but its structural behavior is not well understood for each timber specie. This work provides a comprehensive study of the structural behavior of radiata pine CLT shear walls, by means of laboratory testing and numerical analysis of hold down connections. The observed test response of connections is replicated by calibrating two hysteretic models on OpenSees, and its fidelity is revised through the analysis of a full scale wall test and simulation. Main outcomes suggest that advanced modelling tools can accurately reproduce the hysteretic behaviour of the connections of timber panels. In terms of connections behaviour, it is observed that hold downs on radiata pine CLT elements reach less load capacity than hold downs on other wood specie, and no significant difference with the parallel to grain capacity of angle brackets connections is noticed. Besides, it is found that radiata pine CLT walls can achieve suitable cyclic loading performance and reach high levels of displacement ductility. Furthermore, the importance of friction on the load capacity of the wall is showed.

Online Access: Free

### Resource Link

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