





## Tensile Performance of CLT Screw Joint with Steel Plate

<https://research.thinkwood.com/en/permalink/catalogue1010>

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### Summary:

The wood engineering community has dedicated a significant amount of effort over the last decades to establish a reliable predictive model for the load-carrying capacity of timber connections under wood failure mechanisms. Test results from various sources (Foschi and Longworth 1975; Johnsson 2003; Quenneville and Mohammad 2000; Stahl et al. 2004; Zamani and Quenneville 2012a) demonstrate that for multi-fastener connections, failure of wood can be the dominant mode. In existing wood strength prediction models for parallel to grain failure in timber connections using dowel-type fasteners, different methods consider the minimum, maximum or the summation of the tensile and shear capacities of the failed wood block planes. This results in disagreements between the experimental values and the predictions. It is postulated that these methods are not appropriate since the stiffness in the wood blocks adjacent to the tensile and shear planes differs and this leads to uneven load distribution amongst the resisting planes (Johnsson 2004; Zamani and Quenneville 2012a). The present study focuses on the nailed connections. A closed-form analytical method to determine the load-carrying capacity of wood under parallel-to-grain loading in small dowel-type connections in timber products is thus proposed. The proposed stiffness-based model has already been verified in brittle and mixed failure modes of timber rivet connections (Zamani and Quenneville 2013b).

Online Access: Free

### Resource Link

[https://www.researchgate.net/profile/Pouyan\\_Zamani/publication/261367110\\_Wood\\_Load-Carrying\\_Capacity\\_of\\_Timber\\_Connections\\_An\\_Extended\\_Application\\_for\\_Nails\\_and\\_Screws/link/s/00b7d53643e3279199000000/Wood-Load-Carrying-Capacity-of-Timber-Connections-An-Extended-Application-for-Nails-and-Screws.pdf](https://www.researchgate.net/profile/Pouyan_Zamani/publication/261367110_Wood_Load-Carrying_Capacity_of_Timber_Connections_An_Extended_Application_for_Nails_and_Screws/link/s/00b7d53643e3279199000000/Wood-Load-Carrying-Capacity-of-Timber-Connections-An-Extended-Application-for-Nails-and-Screws.pdf)