

ABSTRACT

Cross Laminated Timber (CLT) is a lightweight construction material with a strength and stiffness comparable to Reinforced Concrete (RC). A crucial aspect of fully realizing the potential of CLT as a structural material is ability to interconnect it to similar and dissimilar materials. A study of connections was made through in-plane shear and tension tests on half-lapped and single-spline connections that make edge-to-edge jointing between CLT panels using screws. A novel aspect of the study is investigation of how placing washers under screw heads alters stiffness and strengths of connections. Subsidiary axial load tests on screws assisted explanation of the shear and tension test results. Conclusions include the importance of accounting for large displacement effects on how screws transfer forces across joint-planes, and need to improve current generation connection design methods so that they account for effects of eccentricities that result from construction arrangement and detailing decision.

Keywords: Cross Laminated Timber (CLT); connections; self-tapping screw; strength; stiffness.