Diagrams for Stress and Deflection Prediction in Cross-Laminated Timber (CLT) Panels with Non-Classical Boundary Conditions

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Summary:

Invention of cross-laminated timber (CLT) was a big milestone for building with wood. Due to novelty of CLT and timber's complex mechanical behavior, the existing design codes cover only rectangular CLT panels, simply supported along 2 parallel or all 4 edges, making numerical methods necessary in other cases. This paper presents a practical engineering tool for stress and deflection prediction of CLT panels with non-classical boundary conditions, based on the software for the computational analysis of laminar composites, previously developed by the authors. Diagrams applicable in engineering practice are developed for some common cases. The presented methodology could be a basis for more detailed design handbooks and guidelines for various layouts of CLT panels and different types of loadings.

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