Measurement of Rolling Shear Modulus of Cross Laminated Timber: Exploratory Study Using Downscaled Specimens Under Variable Span Bending Tests

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Summary:

The purpose of this study was to measure the rolling shear modulus of Cross Laminated Timber (CLT), which was achieved by conducting 3-point bending tests with variable span using downscaled sandwich specimens. Two types of sandwich specimens were employed: steel-wood-steel (SWS) and wood-wood-wood (WWW). Experimental results from SWS specimens were verified with those predicted from WWW ones through the shear analogy method. Effects of span-to-depth ratio (l/h) and growth ring orientation on rolling shear modulus (G RT) were also examined. It was found that the average deflection of WWW specimens tested at l/h of 6.5 could be well predicted using the shear analogy method based on true elasticity of modulus (E m) and G RT of the cross layer measured using SWS specimens under variable span tests. The results also showed that the cross layer of `in-between' growth ring orientation could gain the higher rolling shear modulus than that of flat sawn or quarter sawn one.

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