



Experimental Study on Flexural Performance of Glued-Laminated-Timber-Bamboo Beams

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Summary:

Engineered bamboo, produced through the technique of gluing and reconstituting, has better mechanical properties than round bamboo and some wood products. This paper studies the flexural performance of laminated beams produced with timber and engineered bamboo. The six-layer beams were made from Douglas fir, spruce, bamboo scrimber and laminated bamboo, or a combination of these. It is confirmed that glued-laminated wood beams produced with wood of weak strength, like spruce, can be strengthened by gluing engineered bamboo lumbers on the outer faces, thus achieving better utilization of the fast growing economic wood species. Flexural failure of the laminated beams was primarily triggered by tensile fracture of the bottom fiber in mid-span, followed by horizontal tearing beside the broken surface. No relative slip between layers was observed before failure, therefore the flexural capacity of the laminated beams can be predicted using equilibrium and compatibility conditions according to the plane section assumption

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