



Discrete Bracing of Timber Beams Subjected to Gravity Loads

<https://research.thinkwood.com/en/permalink/catalogue683>

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Year of Publication: 2014

Country of Publication: Canada

Format: Conference Paper

Material: Glulam (Glue-Laminated Timber)

Application: Beams

Topic: Mechanical Properties

Keywords: Gravity Loads
Buckling Strength
Brace Forces

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 10-14, 2014, Quebec City, Canada

Summary:

Slender timber beams subjected to gravity loads may buckle in the out-of-plane direction. Normally, the same bracing system that is used to prevent lateral movements of the beams, caused by external transversal loading, also serve to increase the buckling strength of the beams. For the idealized case of a perfectly straight beam with full-bracing there is no force in the braces even at buckling because there is no displacement at the brace points. However, in real beams brace forces do develop during loading. This paper describes experimental and analytical studies performed on slender glulam beams subjected to gravity loads laterally stiffened by means of discrete bracing. In particular, the influence of relevant parameters such as i) brace stiffness, ii) brace position, iii) shape and magnitude of initial imperfections on the brace force were investigated.

Online Access: Free

Resource Link

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