



In-Plane Stiffness of Timber Floors Strengthened with CLT

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Summary:

Five full-scale timber floors were tested in order to analyse the in-plane behaviour of these structural systems. The main objective was an assessment of the effectiveness of in-plane strengthening using cross-laminated timber (CLT). To that end, one unstrengthened specimen (original), one specimen strengthened with a second layer of floorboards, two specimens strengthened with three CLT panels, and one specimen strengthened with two CLT panels, were tested. A numerical analysis was then performed in order to analyse the composite behaviour of the timber floors in more detail. Due to its importance as regards composite behaviour, the first phase of the experimental programme was composed of push out tests on specimens representing the shear connection between the timber beams and the CLT pan CLT panels. This paper describes els. This paper describes the tests performed and the numerical modelling applied the tests performed and the numerical modelling applied to evaluate the composite behaviour of the strengthened timber floors. The use of CLT panels is revealed to be an effective way to increase the in-plane stiffness of timber floors, through which the behaviour of the composite structure can be significantly changed, depending on the connection applied, or modified as required.

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