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Experimental Investigation of Cold-Formed Steel-Timber Board Composite Floor Systems

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Abstract : This paper comprises an experimental investigation into the structural performance of cold formed steel (CFS) and timber board composite floor systems. The tests include a series of small-scale pushout tests and full-scale bending tests carried out using a refined loading system to simulate uniformly distributed constant load. The influence of connection details (screw spacing and adhesives) on floor performance was investigated. The results are then compared to predictions from relevant existing models for composite floor systems. The results of this research demonstrate the significant benefits of considering the composite action of the boards in floor design. Depending on connection detail, an increase in flexural stiffness of up to 40% was observed in the floor system, when compared to designing joists individually.

Keywords : cold formed steel joists, composite action, flooring systems, shear connection
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