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Experimental Investigation on the Effect of Bond Thickness on the Interface Behaviour of Fibre Reinforced Polymer Sheet Bonded to Timber

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Abstract : The bond mechanism between timber and fibre reinforced polymer (FRP) is relatively complex and is influenced by a number of variables including bond thickness, bond width, bond length, material properties, and geometries. This study investigates the influence of bond thickness on the behaviour of interface, failure mode, and bond strength of externally bonded FRP-to-timber interface. In the present study, 106 single shear joint specimens have been investigated. Experiment results showed that higher layers of FRP increase the ultimate load carrying capacity of interface; conversely, such increase led to decrease the slip of interface. Moreover, samples with more layers of FRPs may fail in a brittle manner without noticeable warning that collapse is imminent.

Keywords : fibre reinforced polymer, FRP, single shear test, bond thickness, bond strength
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