

Experimental Study of Structural Insulated Panel under Lateral Load

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Abstract : A Structural Insulated Panel (SIP) is a structural element contains of foam insulation core sandwiched between two oriented-strand boards (OSB), plywood boards, steel sheets or fibre cement boards. Superior insulation, exceptional strength and fast insulation are the specifications of a SIP-based structure. There are also many other benefits such as less total construction costs, speed of construction, less expensive HVAC equipment required, favourable energy-efficient mortgages comparing to wood-framed houses. This paper presents the experimental analysis on selected foam-timber SIPs to study their structural behaviour when used as walls in residential construction under lateral loading. The experimental program has also taken several stud panels in order to compare the performance of SIP with conventional wood-frame system. The results of lateral tests performed in this study established a database that can be used further to develop design tables of SIP wall subjected to lateral loading caused by wind or earthquake. A design table for walls subjected to lateral loading was developed. Experimental results proved that the tested SIPs are 'as good as' the conventional wood-frame system.

Keywords : structural insulated panel, experimental study, lateral load, design tables

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