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VERIFICATION OF DESIGN EQUATIONS FOR BRITTLE FAILURE MODE IN BOLTED CONNECTIONS OF LOCAL HARDWOODS

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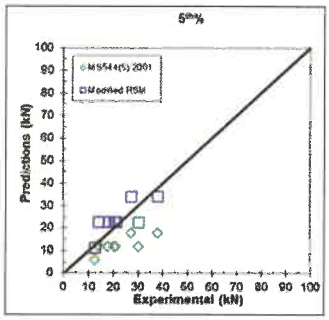

Due to the existing design equations of MS544: Part 5: 2001 are only considering a ductile failure mode, this study was initiated because many published experimental works had identified a brittle failure mode in timber joints. Because of this study was executed to provide a set of optimised design equations for retrofitting the unreinforced masonry buildings, the use of the current Malaysian Timber Standard, as it is now can cause inaccuracy in designing the connection capacity. A lack of experimental data to examine the effectiveness of the code in predicting the timber bolted connection strength, especially in local hardwoods, also motivates this present study to be conducted. From the results obtained, the use of the timber standard and other design equations was validated.

VERIFICATION OF DESIGN EQUATIONS FOR DUCTILE FAILURE MODE IN BOLTED CONNECTIONS OF LOCAL HARDWOODS

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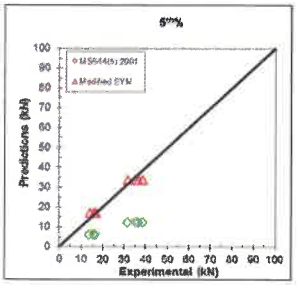

Referring to the Malaysian Timber Standard (MS544: Part 5: 2001), it should be capable in estimating the bolted connection capacity for bearing failure as the development of the code is based on the ductile failure mode. However, in the previous research studies conducted by the author on bolted joints of local hardwoods such as Meraka, Belian and Selangan Batu, it was found that the code provides too conservative design strength values. This can lead to an uneconomical wall-diaphragm connection retrofit design for the unreinforced masonry buildings because of more fabrication of steel in the design output is produced due to the increment of the number or size of bolts. Thus, this present experimental study was performed in an effort to extend the use of European Yield Model (EYM) in predicting the bolted connections for local Kapur hardwood. From the comparison made between the laboratory data and EYM, the potential of the design equation was verified.
