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# NUMERICAL ANALYSIS OF LOAD DISTRIBUTION IN JOINT LINES WITH PUNCHED METAL PLATE FASTENERS

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## Abstract

Wood trusses with traditional bolted or nailed connections are generally modeled as pinned joints, and the forces on the wood members are directly transmitted to the connections by shear plane contact. Other methodologies recommend that the analysis should be done more rigorously, taking into account the wood behavior and the evaluation of stress distribution within the connection area. There's a wide range of related data to pin-type connections, but the mechanical analysis of punched metal plate fasteners (nail plates) is still under development. Nail plate connections are capable of transfer moments, therefore, appropriated modeling should be applied. The present paper compares two methodologies for the stress distribution in the rupture lines of nail plates, using an analytical approach and a numerical method with the commercial software Midas/Gen. The results shows a quantitative parity for the proposed analytical model in the case of a single joint line, but the stresses diverge in both methods for zones that presents more than one joint line.

## Keywords

Timber, Nail plate, Structural analysis



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