

Comparison of ANN and Finite Element Model for the Prediction of Ultimate Load of Thin-Walled Steel Perforated Sections in Compression

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Abstract : The analysis of perforated steel members is a 3D problem in nature, therefore the traditional analytical expressions for the ultimate load of thin-walled steel sections cannot be used for the perforated steel member design. In this study, finite element method (FEM) and artificial neural network (ANN) were used to simulate the process of stub column tests based on specific codes. Results show that compared with those of the FEM model, the ultimate load predictions obtained from ANN technique were much closer to those obtained from the physical experiments. The ANN model for the solving the hard problem of complex steel perforated sections is very promising.

Keywords : artificial neural network (ANN), finite element method (FEM), perforated sections, thin-walled Steel, ultimate load

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