World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:15, No:12, 2021

Behavior of Cold Formed Steel in Trusses

Authors : Reinhard Hermawan Lasut, Henki Wibowo Ashadi

Abstract : The use of materials in Indonesia's construction sector requires engineers and practitioners to develop efficient construction technology, one of the materials used in cold-formed steel. Generally, the use of cold-formed steel is used in the construction of roof trusses found in houses or factories. The failure of the roof truss structure causes errors in the calculation analysis in the form of cross-sectional dimensions or frame configuration. The roof truss structure, vertical distance effect to the span length at the edge of the frame carries the compressive load. If the span is too long, local buckling will occur which causes problems in the frame strength. The model analysis uses various shapes of roof trusses, span lengths and angles with analysis of the structural stiffness matrix method. Model trusses with one-fifth shortened span and one-sixth shortened span also The trusses model is reviewed with increasing angles. It can be concluded that the trusses model by shortening the span in the compression area can reduce deflection and the model by increasing the angle does not get good results because the higher the roof, the heavier the load carried by the roof so that the force is not channeled properly. The shape of the truss must be calculated correctly so the truss is able to withstand the working load so that there is no structural failure.

Keywords : cold-formed, trusses, deflection, stiffness matrix method
Conference Title : ICCECSD 2021 : International Conference on Civil Engineering, Construction and Structural Design
Conference Location : Dubai, United Arab Emirates
Conference Dates : December 20-21, 2021