 ICCES, vol.16, no.4, pp.115-115

Static Strength of RHS T-joints with Reinforced Chord under In-plane bending Load

Cui Ming.Juan , Shao YongBob

Summary

Welded tubular structures are widely used in many constructions, such as offshore platforms, which are all consisted of welded tubular members. There is high stress concentration at the intersection between the chord and the brace. As high sress concentration exists along the weld toe, failure usually occurs in this region. To increase the bearing capacity of a tubular joint, it is necessary to take measures to reinforce the region around the weld toe. Therefore, the static strength of rectangular hollow section (RHS) T-joints with local chord reinforcement under in-plane bending load is investigated by using finite element method. To study the effect of the chord reinforcement of a RHS T-joint, overall 18 T-joint models with different chord reinforcements have been analyzed numerically. This paper presents the result of a detailed parametric study of the static strength of tubular T-joints with reinforced chord subjected to in-plane bending load. The study, carried out using non-linear finite elements, demonstrates the accuracy of the finite element analysis to investigate the effects of different gometric parameterson the static strength of the stiffened joints. It is found that the effect of the chord thickness near the intersection is significant in improving the ultimate capacity of T-joint models. The ultimate strength enhances as the length of the chord reinforcement becomes longer and the chord wall thickness becomes larger. The effect of the chord wall thickness on the static strength of T-joints are remarkable. However, increasing the length of the reinforced chord to improve the static strength of tubular T-joint is relatively ineffective.