

Abstract

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Ultimate strength of Y and T stiffeners subjected to lateral loads with three different levels of initial imperfection

This paper aims to compare between ultimate strength of T and Y stiffeners when subjected to lateral load. Two groups of Y and T stiffeners are studied. In the first group, T stiffeners with standard dimensions are compared with Y stiffeners having the same section modulus, attached plate and weight. The plates of both types of stiffeners are subjected to uniform pressure. In the second group, both T and Y stiffeners share the same section modulus with different attached plate and weight, and a pressure load is applied to a small central area of the plate. The results are shown in 2 sets of curves. In the first set, perfect T stiffeners are compared with perfect Y stiffeners. In the second set, imperfect T stiffeners are compared with imperfect Y stiffeners. Also, perfect and imperfect T stiffeners are compared as well as perfect Y and imperfect Y stiffeners. Five perfect models of T and Y stiffeners having different dimensions with three levels of initial imperfections are studied in the two groups. Nine imperfect models branch from each of the five perfect models for both groups 200 models are obtained and results from the FE analysis are shown in the form of load–displacement curves.