

## **Experiential study of the Static Strenth of Square Tubular Y-Joints with Reinforced Chord under Axial Compression**

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### **Summary**

A typical square tubular Y-joint is consisted of a chord and a brace member. Due to the square hollow section, the stiffness of the chord in the radial direction is much smaller than that of the brace in axial direction, and thus failure usually occurs at the weld toe in the form of local buckling. To improve the ultimate bearing capacity of the welded square tubular joints, various reinforcement measures were studied in the literature. Chord reinforcement is an available alternative which can avoid the disadvantage that it is difficult to strengthen a multi-planar tubular joint which may have several brace members connecting to the chord, and it also does not influence the appearance of the joint. Four full-scale square tubular Y-joints are studied experimentally for investigating the effect of local chord reinforcement near the intersection on the static strength. From experimental results, it is found that the static strength of a square tubular Y-joint can be improved greatly by increasing the chord thickness near the intersection locally. In addition, the failure mode of the unreinforced joint may be also changed when the local chord thickness is increased to certain extent, i.e., local buckling may be changed to flexural yielding.

