

Stability of Castellated Beams During Erection

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(ABSTRACT)

The increased depth of castellated beams presents stability problems, specifically during erection. During erection the castellated beam must support the weight of an erector and self-weight until the continuous bracing of the floor deck is in place. The stability of the unbraced member is based on its resistance to lateral-torsional buckling.

The cross-sectional properties that are related to lateral-torsional buckling, such as out-of-plane bending, warping constant, and torsional constant were calculated using three different approaches to model the unique geometry of castellated beams. These properties were used in various lateral-torsional buckling solutions to determine which procedure should be used to check for this mode of failure.

Two specimens were tested to evaluate the results of the analytical unbraced length determination process. The tests results were used to better model the contribution of the web-to-column flange double angle connection on the stability of the castellated beam.

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