عنوان مقاله:
ANALYTICAL STUDY OF STEEL I-BEAM WITH STEPPED FLANGES

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خلاصه مقاله:
This paper presents a parametric study of steel I- beam with stepped flanges by using finite element analysis. Stepped flange beam is used in structures to decrease the negative bending moments near interior supports that causes failure due to buckling. Steps in the cross section can be achieved by adding cover plates to the beam flanges, changing the size of the hot rolled section, or changing the flange thickness and/or width for built-up section. The stress concentration with variation in stepped beam configuration such as doubly and singly stepped I-beams has been examined thoroughly. The loadings are limited to those having an inflection point of zero under point load at mid span. Beams with degree of symmetry, ρ of ۰.۲ are investigated for the present study. Unbraced length to height ratio of the beam to be analyzed is considered as ۱۵. In addition, to check the effect of steps, stepped parameters α, β and γ are varied. The results shows that, a change of flange thickness is more significant than a change of flange width on the lateral torsional buckling capacity of a singly stepped beam.

کلمات کلیدی:
Parametric Study, Stepped I-Beam, Stepped Parameters, Negative Bending Moment, Non Linear Buckling.