Correction Requirement to AISC Design Guide 31: Case Study of Web Post Buckling Design for Castellated Beams

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Abstract : In the design of Castellated beams (CB), the web post buckling acted by horizontal shear force is one of the important failure modes that have to be considered. It is also a dominant governing mode when design following the AISC 31 design guideline which is just published. However, the equation of the web post buckling given by the guideline is still questionable for most of the engineers. So the purpose of this paper is to study and provide a proposed equation for design the web post buckling with more simplified and convenient to use. The study is also including the improper of the safety factor given by the guideline. The proposed design equation is acquired by regression method based on the results of finite element analysis. An amount of Cellular beam simulated to study is modelled by using shell element, analysis with both geometric and material nonlinearity. The results of the study show that the use of the proposed equation to design the web post buckling in Castellated beams is more simple and precise for computation than the equations provided from the guideline.

Keywords : castellated beam, web opening, web post buckling, design equation
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