Ultimate Shear Resistance of Plate Girders Part 2- Höglund Theory

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Abstract : Ultimate shear resistance (USR) of slender plate girders can be predicted theoretically using Cardiff theory or Höglund theory. This paper will be concerned with predicting the USR using Höglund theory and EC3. Two main factors can affect the USR, the panel width "b" and the web depth "d", consequently, the panel aspect ratio (b/d) has to be identified by limits. In most of the previous study, there is no limit for panel aspect ratio indicated. In this paper theoretical analysis has been conducted to study the effect of (b/d) on the USR. The analysis based on ninety-six test results of steel plate girders subjected to shear executed and collected by others. New formula proposed to predict the percentage of the distance between the plastic hinges form in the flanges "c" to panel width "b". Conservative limits of (c/b) have been suggested to get a consistent value of USR.

Keywords : ultimate shear resistance, plate girder, Höglund's theory, EC3
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