

RANDOM STRENGTH PARAMETERS OF STEEL CORRUGATED WEBS AND THEIR INFLUENCE ON THE RESISTANCE OF SIN PLATE GIRDERS

Witold BASIŃSKI ^{a*}, Zbigniew KOWAL ^b

^a PhD Eng.; Faculty of Civil Engineering. The Silesian University of Technology, Akademicka 5, 44-100 Gliwice, Poland
*E-mail address: witold.basinski@polsl.pl

^b Prof.; Faculty of Civil Engineering and Architecture. The Kielce University of Technology, Tysiąclecia Państwa Polskiego 7, 25-314 Kielce, Poland

Received: 28.09.2017; Revised: 6.03.2018; Accepted: 9.05.2018

Abstract

In the study, the results of statistical investigations into random strength parameters of steel used to manufacture corrugated webs of SIN plate girders were discussed. The investigations were conducted on samples randomly collected from twenty SIN girders. The corrugated web of the girders was 2, 2.5 and 3 mm in thickness. The girders had been examined before statistical investigations were conducted. Based on the analysis, coefficients of variation of yield strength $V_{Re}=D(R_e)/E(R_e)$ and partial factors of yield strength γ_m were identified. The results were compared with factors γ_m obtained from investigations into thin flat sheets [10]. The impact of yield strength and random cross-sectional area of folded web on the quantile of girder web resistance was shown. Taking into account random character of yield strength and web thickness offers a sensible approach to SIN girder design and computations.

Keywords: Corrugated web; Coefficients of variation; Normal distribution.