EXPERIMENTAL RESEARCH INTO THE INFLUENCE PRODUCED BY PROCESS-RELATED AND STRUCTURAL PARAMETERS ON THE BEARING CAPACITY OF METAL BEAMS WITH CORRUGATED WEBS

The article covers the experimental research into corrugated web beams exposed to the concentrated static load that has varied values of the width of load exposure. The authors describe the methodology of the experiment, instruments and machines involved in it, as well as the findings of the tests.

Six beams with sinusoidal webs were selected for testing purposes. The beams were 6, 9 and 12 m long, and their cross sections were 500, 750 and 1,250 mm long. All beams were tested as single-span simply supported structures with hinged rigidly or loosely fixed supports.

Beam tests have demonstrated that any failure to adhere to the beam manufacturing technology may seriously affect the load-bearing capacity of a beam. Any deviation of longitudinal axis flanges of beams from the longitudinal axis of a corrugated web in excess of 3 mm adversely affects the bearing capacity of beams and contributes to the overall beam stability loss.

The research findings have demonstrated that the limit state of tested beams arises due to the stress in the web corrugation.

Key words: corrugated web beams, experiment, buckling, deflection.

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About the authors: **Zubkov Vladimir Aleksandrovich** — Candidate of Technical Sciences, Professor, Department of Steel and Timber Structures, **Samara State University of Architecture and Civil Engineering (SSUACE)**, 194 Molodogvardeyskaya st., Samara, 443001, Russian Federation;

Lukin Aleksey Olegovich — assistant lecturer, Department of Metal and Timber Structures, Samara State University of Architecture and Civil Engineering (SSUACE), 194 Molodogvardeyskaya st., Samara, 443001, Russian Federation; a.o.lukin@ rambler.ru; +7 (846) 332-14-65.

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