

Reserves in load capacity assessment of existing bridges

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Abstract. High percentage of all railway bridges in the Czech Republic is made of structural steel. Majority of these bridges is designed according to historical codes and according to the deterioration, they have to be assessed if they satisfy the needs of modern railway traffic. The load capacity assessment of existing bridges according to Eurocodes is however often too conservative and especially, braking and acceleration forces cause huge problems to structural elements of the bridge superstructure. The aim of this paper is to review the different approaches for the determination of braking and acceleration forces. Both, current and historical theoretical models and in-situ measurements are considered. The research of several local European state norms superior to Eurocode for assessment of existing railway bridges shows the big diversity of used local approaches and the conservativeness of Eurocode. This paper should also work as an overview for designers dealing with load capacity assessment, revealing the reserves for existing bridges. Based on these different approaches, theoretical models and data obtained from the measurements, the method for determination of braking and acceleration forces on the basis of real traffic data should be proposed.