



## Traffic loads for the assessment of existing bridges

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## Abstract

IABSE TG 1.3 aims to identify appropriate approaches for applications of the partial factor format in assessment of existing bridges. A sub-group was formed to investigate and provide recommendations on updating road traffic loads. Commonly, these are assessed by complex numerical simulations. While this study does not provide a universal solution, it demonstrates by a case study a simple and reasonably conservative way of using simulations to update traffic load effects, meanwhile continuously highlighting the objectives, potential alternatives or pitfalls of simulations. The results indicate that, for the short, single span bridge under consideration, the characteristic values given in Eurocodes provide conservative estimates. The probabilistic model for traffic loading obtained by bridge- and route-specific simulations will yield substantially more favourable reliability levels in comparison to the general model in fib Bulletin 80.

**Keywords:** existing structures; bridges; traffic loads.

## 1 Introduction

The objective of the IABSE Task Group 1.3 is the identification of advanced approaches for the use of the partial factor format for the assessment of existing bridges. Initially, the Design Value Method and Adjusted Partial Factor Method introduced in fib Bulletin 80 [1] were applied in two case studies [2]. As the study promptly revealed, in contrast to other basic variables such as self-weight or the material parameters, there is no established approach to update the traffic load model for an

existing bridge. Therefore, a sub-group was formed to investigate this special topic in further detail.

The modelling of traffic loads for highway bridges can be a very intricate task, where several characteristics of the road traffic, the structure and the road network need to be taken into consideration. Since there is no one-size-fits-all approach to the problem, the Task Group decided to provide some basic examples for possible solutions based on the selected case study. Throughout the process the most important fundamental decisions are highlighted, providing an outlook on alternative paths that may be taken