



Safety and Serviceability Assessment of Existing Railway Bridges in Poland

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Abstract

This paper briefly describes the current state-of-the-art in the area of bridge assessment and summarizes the best practice that is aimed to be implemented in the new guideline for the assessment of existing bridges in Poland. It also advocates the use of advanced techniques for the safety and serviceability evaluations. It is expected that the development of a new bridge assessment guideline will help to improve the estimation of the service lives of Polish bridges and, in effect, improve the sustainability, reduce the environmental footprint and bring other monetary and non-monetary savings through the best-practice asset management approaches.

Keywords: railway bridge; structural assessment; serviceability; safety; asset management.

1 Introduction

PKP Polskie Linie Kolejowe S.A. (Polish Railway Lines) is a Polish state company managing over 19 000 km of railway lines and 27 727 engineering structures, with a total length of 775 820 meters, including:

- 3561 bridges - with a total operational length of 137 071 meters,
- 3191 overpasses - with a total operational length of 137 071 meters,
- 427 underpasses - with a total operational length of 13 506 meters,
- 19555 culverts - with a total operational length of 379 762 meters,

- 26 line tunnels - with a total operational length of 22 195 meters,
- 166 pedestrian bridges - with a total operational length of 15 896 meters,
- 801 retaining walls- with a total operational length of 119 465 meters.

A large part of the railway infrastructure in Poland was build more than 40-50 years ago and a significant part of it is even older. Consequently, many of railway bridges and other engineering structures are currently approaching the end of their service lives. Meanwhile, they are being subjected to continuously increasing passenger and freight traffic volumes caused by the development of the transport demands in the rapidly growing Polish economy.