



## Reconstruction of the Vilemov Viaduct on the railway line Rumburk - Sebnitz

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### Abstract

On the railway track from Rumburk to Sebnitz, near the village Vilémov u Šluknova, there is a seven-span bridge structure with a total length of 217.3 m. In the first half of 2021, five bridge spans of the original riveted steel structures from 1904, which was at the end of its service life, were replaced by welded steel truss bridge superstructures.

Two remaining adjacent arched spans were also part of the renovation and their stone arches were rehabilitated as part of this process.

The outermost stone arches have a span of 7.00 m and the span of each of the five inner steel truss superstructures is 36.80 m.

The bridge crosses the Vilemov Brook valley and at its highest point it stands 34.20 m above the existing terrain. The height of the bridge in particular, combined with an unfavourable course of the terrain below the bridge, was the reason for the chosen erection procedure - a combination of longitudinal launching and lowering onto the bridge piers through a set of temporary structures.

FIRESTA, as the leading participant of the association of companies "Společnost – most přes Karolinino údolí", is the supplier of production and assembly documentation for the whole bridge and manufacturer of three out of five of the aforementioned new steel superstructures. In total about 581 t of structural steel was used for the production of all five steel spans.

**Keywords:** steel bridge; railway bridge; truss structure; bridge erection; reconstruction; replacement; installation; launching; lifting; lowering

### 1 Introduction

At line-kilometre 21.502 on the railway line Rumburk – Sebnitz, near the village Vilémov u Šluknova, there is a seven-span bridge structure with a total length of 217.30 m, which crosses the Vilemov Brook valley. Five inner bridge spans, each with a span of 36.80 m, are steel deck truss structures. Two adjacent spans are stone arch structures, each spanning 7.00 m.

The original riveted structures, built in 1904, had reached the limit of their service life and were the limit of the entire line's passability. Due to severe corrosion of the whole existing bridge, the maximum speed limit on the bridge was reduced to 30 km/h. In 2021, all five original riveted superstructures were replaced by a set of new welded steel bridge superstructures and the adjacent original stone arches and piers were rehabilitated and strengthened. The replacement of the steel structures was carried out by the