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New bridge at Výtoň will be up to CZK 1.1 billion cheaper and can serve for at least 100 years

An analysis by the international consulting group JASPERS, which is part of the European Investment Bank, has confirmed that a new three-track bridge is the most economically and technically advantageous option to solve the problem of the obsolete railway bridge at Prague's Výtoň.

Today, the double-track bridge, built in 1901, is part of an important railway connection from the west of the country to Prague's main railway station and from there on to the east. The bridge is already in a very poor condition and the passage of trains on it is severely restricted – the two tracks will soon not be sufficient for the growing demand for line capacity. The question of whether to replace it with a new bridge or just renovate it has been debated at both professional and lay level for many years. All the local experts in the field of bridge engineering who have been entrusted with this task in the past have come to a clear recommendation for the construction of a new bridge.

However, as there are constantly opinions contradicting this solution, Správa železnic decided to order the elaboration of an evaluation by a renowned international institution. The JASPERS expert team compared the two most discussed options, i.e., the construction of a new three-track bridge, the design of which emerged from an international architectural competition at the end of last year, and the renovation of the existing steel bridge with the addition of a third track.

From the results of the study, it was concluded that the construction of a new three-track bridge:

- can be at least 40 % cheaper than the reconstruction (difference of CZK 1.1 billion);
- can be completed up to 1.5 years earlier than the reconstruction;
- as opposed to the reconstruction, it will allow full compliance with technical standards (TSIs);
- is also likely to achieve lower noise and vibration.

Another important conclusion of the JASPERS analysis is that the reconstruction of the old bridge would probably extend its lifetime by only about 30 years. Moreover, given the expected complexity of the reconstruction, the authors of the study note that this forecast is highly uncertain. *“Taking into account that the preparation of similar transport structures in our country takes several decades, the reconstruction option would mean the need to almost*

immediately restart the search for a solution for what to do with the bridge after another three decades. The service life of the new bridge would be at least 100 years, with appropriate maintenance even 150 years,” says Pavel Paidar, Director of the Construction Planning Department of Správa železnic.

Main conclusions of the JASPERS data-driven analysis:

	Reconstruction with addition of the third track	New three-track bridge
Investment costs	CZK 1.75–2 billion	CZK 1–1.2 billion
Operation and maintenance costs in 30 years	CZK 280 million	CZK 80 million
Total	CZK 2–2.3 billion	CZK 1.1–1.3 billion
Forecast of operation and maintenance costs in 60 years	Probably more than in the first 30 years. Due to the high level of uncertainty about the condition of the bridge, it is not possible to quantify more precisely.	173–185 million CZK
Duration of construction	33–41 months with potentially higher uncertainty	24 months with greater certainty of the accuracy of the estimation
Time losses for passengers during construction work	up to 420 million CZK	approx. 247 million CZK

Time losses for passengers will arise due to the restriction of operation on one track throughout the construction works (cancellation or shortening of trains). Up to 6,000 passengers per day can be affected, which equates to a socio-economic cost of up to EUR 5 million per year. Since traffic restrictions are already in place due to the poor technical condition of the old bridge, passengers are very likely to incur similar losses already.

Decision-making is complicated by monument protection

If the decision were made solely on the basis of technical and economic criteria, the decision – with the expert evidence available to date – would be unambiguous. However, the railway bridge in Výtoň has also been a cultural monument since 2004 and is part of the Prague Monument Reserve, a UNESCO World Heritage Site. This complicates the decision-making process considerably and shifts it to a level where the weight of somewhat conflicting social interests must be carefully assessed: the need to modernise transport infrastructure, the efficiency of spending public funds or the preservation of a technical monument in its original form.

According to JASPERS experts, a potentially suitable compromise could be to move the old bridge to another location where it could serve as a footbridge for pedestrians and cyclists. The City of Prague and Správa železnic are already analysing the solution options and will publish them in the foreseeable future.

Správa železnic: the new bridge project is ready

On the basis of a number of expert opinions, which proved the problematic nature of the bridge repair in its current form, and after considering the growing needs of railway transport, Správa železnic decided to organise a competition for a new comprehensive solution of the bridge in May 2021.

"The winning design, selected last November, best met all the criteria of the brief. It offers a compact solution with the extension of the line to three tracks instead of the existing two, a new railway stop at Výtoň with a connection to the tram and the cultivation of the bridge surroundings – for leisure activities at Výtoň side and for sports at the Smíchov side. In addition, pedestrian and cyclist accessibility and safety will be improved. The architectural design is now being refined by an expert group composed of representatives of the institutions involved in deciding on the final design." adds Pavel Paidar.

The design will be finalised by the end of this year at the latest and then the documentation for the administrative procedure for the building permit should follow. If the preparation starts in the first quarter of next year, it is realistic to start construction in 2026 with completion in 2029.

ABOUT JASPERS

The JASPERS team is an initiative of the European Commission, the European Investment Bank and the European Bank for Reconstruction and Development that has been helping cities and regions deliver high-quality projects since November 2005.

JASPERS experts provide independent and practical support on strategies, programmes and projects to deliver EU-funded investments that support growth and pave the way for a greener, more connected and innovative Europe.

Since its inception, JASPERS has helped implement more than 2,240 projects in 27 countries and with an investment value of more than EUR 317 billion.

JASPERS assistance is free of charge for local authorities and organisers and is available to most EU and candidate countries.

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