

# Sturzenegg Tunnel renovation



**Swiss Southeastern Railway has commissioned EBP to complete the planning for the necessary renovation of the Sturzenegg Tunnel, which was originally built in 1910. The aim of the renovation measures is to guarantee compliance with the applicable structure-gauge requirements and to secure the tunnel's serviceability and long-term structural integrity. The scope of EBP's work also includes issuing invitations to tender and managing the project's realization.**

Originally built in 1910, the Sturzenegg Tunnel between St. Gallen and Herisau hasn't been renovated since 1989. The tunnel's structural state and the fact that it does not meet current structure-gauge specifications make it necessary to complete a comprehensive renovation of the tunnel arch, water drainage system and tunnel floor.

## **Goal: secure a tunnel structure gauge as per Swiss Railway Ordinance 2**

The utilization goal is to secure a structure gauge that is in compliance with the specifications outlined in the Swiss Railway Ordinance. This will require structure-gauge work on the tunnel arch. However, in order to minimize the amount of structural intervention that would be necessary, the railway-alignment had been lowered and shifted, in consultation with the client.

## **New shotcrete shell**

With clear signs of cracking and cavitation, the shotcrete shell applied to the stonework arch around 30 years ago is in need of replacement. The shell will therefore be removed using high pressure water jet machines. After renewing the stonework, a

## Client

Swiss South Eastern Railway (SOB)

## Facts

Period	2015 - 2019
Project Country	Switzerland
Submission period	March to December 2018
Realization period	January to September 2019
Construction costs	CHF 5.48 million

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new reinforced shotcrete shell will be applied. Channels and bore holes will provide a basis for the proper drainage of the arch.



### **Lowering the subgrade for compliance with latest standards**

In order to lower the track bed and comply with the currently applicable ballast-layer standards, it will also be necessary to lower the subgrade. This will require precision milling work on the bedrock. This work will be accompanied by the installation of a new tunnel drainage system with drainage pipes and new monitoring shafts. A new concrete track bed will secure lasting stability.

### **Multi-project management**

EBP will plan and implement the renovation of the substructure and superstructure both within the tunnel and the tunnel approach zones. In connection with this, the site perimeter will extend beyond the bridge approach to the adjacent Sittertobel Viaduct. The scope of our assignment encompasses the coordination of both projects, i.e. in terms of scheduling, construction logistics and execution.

### **Serviceability for the next 60 years**

The renovation of the Sturzenegg Tunnel will establish compliance with current structure-gauge requirements, restore the tunnel's structural integrity and ensure operational security, serviceability and value retention for another 60 years.