



Aroser Tunnel (CH) Rehabilitation

Country	Switzerland
Type	Rehabilitation, Rail Tunnel
Client	Rhätische Bahn AG
Main Contractor	Heitkamp Construction Swiss GmbH
Execution of the work	Renesco AG
Designer	Preisig AG & Amberg Engineering
Construction Period	2021

Project Description

For safety reasons, the single-track Arosler Tunnel between Haspelgrube and Arosa, which was put into operation in 1914, is being widened and renewed over its entire tunnel length, partially under rail operation, with the line layout remaining unchanged.

During a total closure period of around 10 months and night-time breaks for railroad operations, the natural stone vault of the 299m long tunnel will be completely demolished and the tunnel profile widened with the aid of a pipe shield drive.

The widened tunnel will receive a geomembrane sealing and a shotcrete inner vault. In order to preserve the UNESCO World Heritage Site, the two renewed portal areas will be masoned with local natural quarry stone, thus reproducing the original condition.

Special feature: As a result of the very low overburden (in places, the foundation of the hotel reaches as far as the existing tunnel vault), the hotel "Haus am Wald" is being carefully tunnelled under in small stages under the protection of advance grouting and a horizontally drilled pipe screen.

Scope of Service

Rehabilitation of the structural waterproofing via supply & install of a geomembrane system, drained system (umbrella seal).

- Protection & drainage geocomposite (drainage capacity, plane at 200kN/m^2 and gradient $i = 1.0:\text{m}^2/\text{s } 10 \times 10^{-4}$) and a geotextile based on polypropylene (PP) with a weight of $1'000 \text{ g/m}^2$.
- Sheet Waterproofing membrane, PVC-P with a thickness of 2mm according to SIA 272 (Swiss standard)
- Protection sheet membrane, PVC-P with 2mm thickness
- Plastic Drainage Profile



1. Original tunnel liner
2. Shotcrete substrate with drainage profile
3. Waterproofing application works