



## B 10-Rosensteintunnel, Stuttgart (DE) Sealing Grouting Works

<b>Country</b>	Germany
<b>Type</b>	Road tunnel
<b>Client</b>	Landeshauptstadt Stuttgart, Tiefbauamt
<b>Main Contractor</b>	ARGE Marti Tunnel Rosenstein
<b>Designer/Site Supervision</b>	WBI Prof. Dr.-Ing. W. Wittke
<b>Execution of the work</b>	Renesco GmbH, Dept. Marti Geotechnik
<b>Construction Period</b>	June 2015 – August 2018
<b>Contract Sum</b>	3.700.000 €



## Project Description

The B10 Rosenstein Tunnel is a two-tube road tunnel in Stuttgart with a total length of about 1'300 meters passing the "Rosensteinpark" and parts of the "Zoological-Botanical Garden Wilhelma". The Tunnel is executed of about 750 meters using conventional methods (shotcrete with cast in place concrete lining) and in both portal areas in open constructions pits. Due to the location within the mineral water conservation area a temporary dewatering of the groundwater was not permitted. In consequence, advanced sealing works by grouting/injection of the tunnel face and open pits were designed in areas of existing groundwater.

## Injection/Grouting Works

Two aquifers were sealed by curtain injections inside the tunnel. The specialized drilling operation and grouting works were executed from the calotte to allow a dry bench and invert excavation. Eight grouting/injection fans were used to avoid longitudinal flow. Spot-wise inflow of water were also injected with 2K polyurethane. The open pits in front of the portal located inside "Neckar Gravel" were grouted by sleeve pipes.

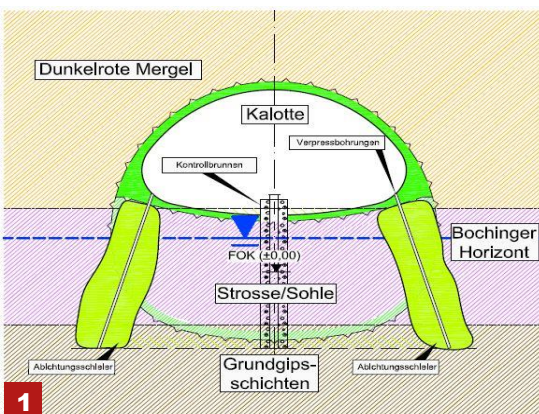
## Scope of Services

### Mining Tunnel

- 75 exploration holes
- Cementitious Grouting
  - 1350 holes (total 8'750 m)
  - 390m<sup>3</sup> grouted in 3'175 operations
- PU Injection of 20to over 1'900 packers

### Open Pits

- 25 exploratory drillings
- 510 holes (total 6'000m)
- 640m<sup>3</sup> grouted in 11'750 operations



1. Injection/Grouting Concept in the tunnel
2. Grouting unit in the tunnel
3. Drilling in the portal area
4. Grouting System for the Excavation