

UNDERPASS OF THE SOUTHERN RAILWAY LINE IN THE AREA OF STACHEGASSE / ALTMANNSDORFER ANGER, VIENNA

Client: CITY OF VIENNA, Department 31 - Vienna Water
Development Period: 2024

THE PROJECT

Along the Southern Railway Line (Vienna South - Spielfeld/Straß), the Vienna Main Water Conduit no. 4 is to be replaced in the area of the existing pedestrian underpass Stache Road/Altmannsdorfer Anger. The advance is planned by means of a road header excavation. In this section, the rail line runs on an embankment with a height of 7 m.

The outer diameter of the advancing pipe (reinforced concrete) is 3.6 m. The upper edge of the pipe is situated between 5.3 m and 6.1 m below the surface of the walkway and 12.5 m below the upper edge of the railway sleeper respectively. The foundation level of the underpass is located 4.0 m above the pipe. The advance extends to a length of 51 m.

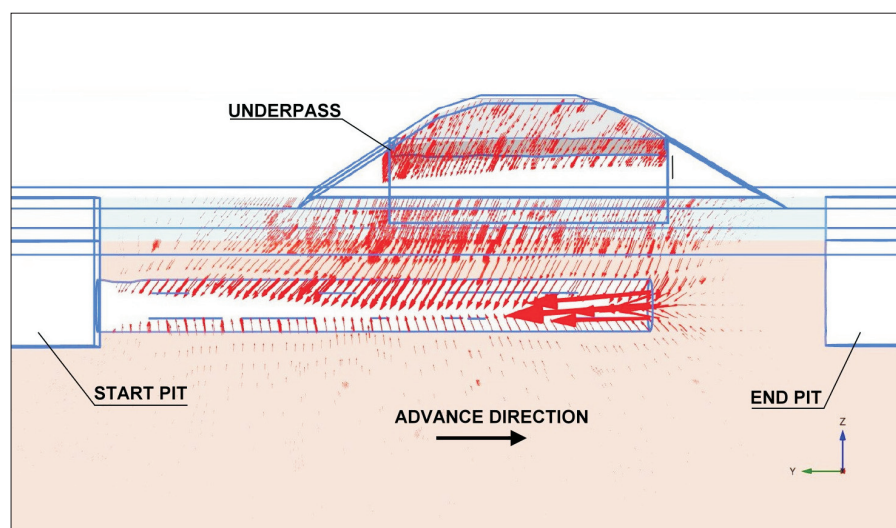
OUR FUNCTION

For this project, BGG Consult was commissioned to assess the impact of the construction on the railway as the basis for the working contract between the City Department 31 and the Austrian Railways.

Based on the subsoil investigations supervised by BGG Consult during the expansion of the Southern Railway Line and investigations by the City Department 29 (Bridge Construction and Soil Engineering), numerical deformation analyses were conducted, using a 3-dimensional finite element method. With this information, a Geotechnical Expert's Report was worked out regarding the impacts on the railway. Additionally, BGG Consult is also responsible for the elaboration of the Geotechnical Safety Management Plan.

3D Deformation Analyses:

Since the pipe crossing runs below the foundation level of the crossing structure, both the deformations of the structure and those of the track were relevant. Due to the relatively large cross-section of the advance (Ø 3.6 m), it was essential to also consider the effects of the progressive relaxation processes at the tunnel face. The tunnelling process was therefore modelled in 40 individual phases.



Deformation trajectories along the tunnel axis, advance phase 32