STUTTGART 21

Stuttgart 21, Railway Tunnel, Germany

Construction of the new railway Filder Tunnel (PFA 1.2) and the tunnels towards Ober- / Untertürkheim (PFA 1.6a/b)

Scope

- Tunnel in urban surroundings
- Inner diameter of 8.10 m to 9.40 m
- Length of all tunnels approx. 30 km
- Branch-off structures and flyovers as well as an underground crossing of the river Neckar

Challenges

- The tunnel is passing through layers of undrained anhydrite-bearing Keuper gypsum (highly swelling conditions), drained Keuper gypsum, reed sand-stone,
- Upper / Lower coloured marls, German Stubensandstein, nodule marls as well as Lias formations
- The strata is bearing mineral water in parts

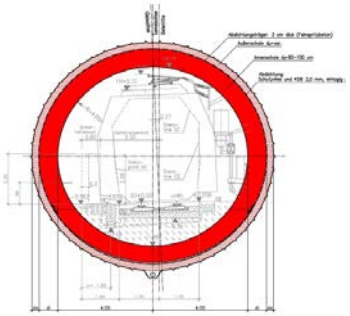
Amberg Services

- Preliminary design for alternatives with shotcrete lining method and TBM heading method
- Tender Design and preparation of Tender documents for both methods

AMBERG ENGINEERING

- Layout of tunnel projects

- Railway section at Filden



- Inner lining

AMBERG FACTS

Contracted value JV

- Total JV 19.5 Mio. €

Contracted value Amberg

- Total 3.6 Mio €

Project Phases & Duration

Elaboration of preliminary design	2008
Elaboration of tender	2010
Realisation	since 2011

Project Details

- Conventionally driven tunnel in urban surroundings and formation with high swelling potential
- Inner diameter of 8.10 m to 9.40 m
- Total length of all tunnels approx. 30‘000 m
- Inner Lining up to 100 cm (due to swelling conditions)
- Overburden up to 220 m
- Undercrossing the river of Neckar with an overburden of only 6 m
- Distance between the different tunnel tubes at the flyovers down to only 1 m
- Downtown access adit to the tunnel works with a 22 m deep vertical shaft
- Caverns up to 180 m² for TBM installation
- Design of water partitioning structures to stop water flow along the tunnel (to reduce swelling potential)

CLIENT FACTS

Overall costs

- Total 2’000 Mio. €

Project Overview

- Construction of a railway tunnel in lot PFA 1.2 (Filder Tunnel) and PFA 1.6a/b (Tunnel to Ober- / Untertürkheim), inclusive of all branch-off structures and flyovers as well as an underground crossing of the river Neckar

Geology

- The tunnel is passing through layers of undrained anhydrite bearing Keuper gypsum, drained Keuper gyp-sum, and reed sandstone, upper / Lower coloured marls, German Stubensandstein, nodule marls as well as Lias α. The strata are bearing mineral water in parts

Contact person

DB Project Stuttgart-Ulm GmbH (German Railways), Stuttgart, Germany
Mr Jochen Lutz
Phone: +49 711 933 19-425
Email: jochen.j.lutz@deutschebahn.com

AMBERG ENGINEERING

AMBERG KEY PEOPLE INVOLVED

Paul Erdmann
Civil Engineer
Project Manager

perdmann@amberg.ch

Dr Roman Wahlen
Civil Engineer
Deputy Project Manager

rwahlen@amberg.ch

Michael Rehbock-Sander
Civil Engineer
Expert and Overall Project Manager

mrehbock@amberg.ch

AMBERG ENGINEERING