



Turin–Lyon railway link (TELT project)

Project management of the CO6 and CO7
Operational Worksites

2018 - 2019



FRANCE, ITALY

Client

TELT TUNNEL
EURALPIN LYON
TURIN

Partners
SETEC TPI

Setec subsidiary fees
105 000 €



The Project

The S2IP consortium lead by SETEC TPI and including SYSTRA, ITALFERR and PINI SWISS ENGINEERS won the call for tenders for the project management of the CO6 and CO7 Operational Worksites, as part of the european "TELT" project (Turin-Lyon railway link).

These sites correspond to the excavation of the central part of the base tunnel between PM 6 + 760 and PM 29 + 900 (ie 23 km). They also include the extension of the excavations carried out as part of the "SMP4" exploratory works: this involves the connection of the Saint-Martin-la-Porte and La Praz access tunnels to the South tube.

Key features

- Analysis of the available data (exploratory galleries in the coal grounds)
- Back-analysis of the massif behaviour using FLAC 2D and 3D calculations
- Justification of the temporary support and final lining

Our Services

TERRASOL is involved mainly to study the topic of the deferred behaviour (squeezing) of the carbonaceous shales at the crossing of the Briançonnais coal grounds. In this context, we were led to analyse the large volume of data collected throughout the excavation works of the exploratory galleries in the coal grounds.

After a first phase of appropriation of the works already carried out, and after a detailed analysis of the collected data (geology, in-situ measurements, monitoring, ...), we were able to approach analytically the soil behaviour along the base tunnel. In a second phase, the mechanical and deferred behaviour of the massif could be adjusted thanks to 2D and 3D numerical studies performed as back-analysis using FLAC software. The numerical model thus obtained made it possible to approach satisfactorily the massif behaviour observed during the excavation of the SMP4 gallery as well as to justify the temporary support and final lining (for 120 years).

The main challenges during this study were the very tight deadlines (less than 5 months), the important amount of data collected over more than 10 years, and the intrinsic complexity of the project. The monitoring measurements (convergences, convergences' speeds, extrusions...) could be globally calibrated with the same behaviour law thanks to the back-analysis.