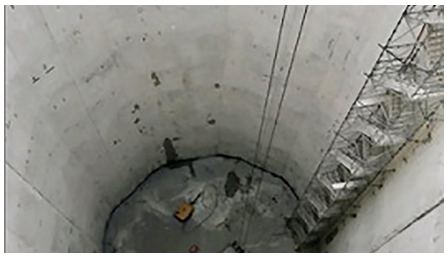
Implenia

Reference

Extension of Métro Ligne 15 South, Lot T2C, Paris









SHORT DESCRIPTION

The “Grand Paris Express” project aims to improve links between the French capital and neighboring residential areas in the Greater Paris region (Île-de-France) by building a transport network of six driverless underground railway lines by 2030. The project will require 210 kilometers of tunnel and nearly 70 new underground stations. After winning the “Lot GC01” Implenia also got the order to build the extension of the Metro line 15 in the south-east of Paris (“Lot T2C”) in a consortium.

THE PROJECT

This lot contains the construction of a 4.7 km long tunnel between Noisy-Champs and Bry-Villiers-Champigny (excluding stations), a 2.2 km long tunnel link to the maintenance and logistics station (SMR), as well as a large underground branch-off structure and further intermediate shafts. Both the main tunnel and tunnel link are driven with an EPB-TBM having an excavation diameter of 9.8 m which results in a cross-section of 75.4 m^2. After installing the final segmental lining the inner diameter is 8.7 m.

The underground branch-off structure with an inner cross-section of around 1,575 m^2 and a depth of 32.1 m and the intermediate shafts are built in conventional excavation and cut and cover method (Diaphragm wall). The start shafts OA

802 / OA 813 have an inner cross-section of around 1,980 m^2 / 902 m^2 and a depth of 22.20 m / 18.8 m.

CHALLENGES

Changing amounts of clay and gypsum in the marl layers are leading to layers with low permeability and differing pore pressures as well as swelling layers. Cutting through geological interfaces and swelling layers requires permanent regulation of the balancing earth pressure of the TBM.

The tunnel will be bored in a dense urban area, with some sensitive buildings on surface including some railway installations. An important topic on settlement monitoring has to be followed precisely.

Major difficulties:

- deployment of 6 to 7 teams for tunnel boring work (up to 150 workers) in the Paris area
- Adequate preparation of the soil for the conveyor belt
- Silicate lime layers, which damage the cutting head

FURTHER INFORMATION

Main data:

- TBM No. 1 Driving start : April 2018 / Driving end TBM : June 2019
- TBM No. 2 Start of driving: September 2018 / 1.5 km until June 2019
- Start of the cavern : May 2019

Key Figures

- **Realization** 2016 – 2020
- **Contract value** EUR 365 Mio. / CHF 394 Mio.
- **Total length** 6.9 km
- **Excav. cross section** 75.4 m2
- **Geology** Clay and gypsum marl, limestone

Implenia on site

Implenia France SA
Infrastructure - Global Projects
Immeuble ALLIANCE Bât C
237 Avenue Marie-Curie
74160 Archamps (France)

Scope of works
Tunnel technical leadership with Pizzarotti
Participation on consortium 25 %
Performed services
Tunneling works / Civil works / D-walls
Construction methods

- 2 tunnels (Ø = 9.80 m, A = 75.4 m^2) with 6+1 segments (Øi = 8.7 m, W = 1.5 & 2.0 m)

- Main tunnel EPB-TBM drive (L = 4.67 km)
- Tunnel link EPB-TBM drive (L = 2.16 km)

Conventional and cut and cover method: Branch-off structure OA 807, A = 1,575 m^2, depth = 32.1 m

Start shafts: OA 802, A = 1,980 m^2, depth = 22.20 m / OA 813, A = 902 m^2, depth = 18.8 m

Project Participants

Client
Société du Grand Paris (SGP)

Planner
Groupe ARS

Engineer
Systra

Consortium
Demathieu & Bard (Consortium mandatary)
Implenia France SA
NGE
Pizzarotti
Atlas/Franki Fondations

FACTS

Location	Paris , France
Status	Under construction
Construction volume (value of our services)	365 M EUR
Start of construction	December 2016
Completion	December 2021

SERVICES

Tunnelling

Transport tunnels

https://implenia.com/en/references/detail/ref/extension-of-metro-ligne-15-south-lot-t2c-paris/

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