

CENERI BASE TUNNEL



Ceneri Base Tunnel, Bellinzona – Lugano, Switzerland

The Ceneri Base Tunnel in the Ticino is part of the Gotthard high speed railway line and connects directly the cities Lugano and Bellinzona. The Base tunnel underpasses the mount Ceneri and includes 2 single track tunnels of 17 km length.

Scope

- 2 Tunnel, length almost 17 km, drill & blast heading
- Cross-passages every 320 m
- Access gallery Siginino (2.7 km) excavated with TBM (10.70 m diameter)

Challenges

- Very heterogeneous alpine Geology
- Linea Valcolla: difficult Geology and poor rock quality in combination with an overburden of 600 m, deformations
- Low coverage at under passing of national highway A2 in soft soil section
- Highly sensible urban area at the south portal at Vezia regarding vibrations and structure-borne noise

Amberg Services

- Consulting for layout of the construction project
- Establishment of tendering documents
- Evaluation of offers, customer support for award procedure
- Final and detailed design
- Client representation



■ Portal at Vigana



■ Sealing and establishment of lining



■ Track change in Ceneri tunnel

AMBERG FACTS

Contracted value Amberg

- Total 13.7 Mio. CHF

Project Phases & Duration

- Planning & tendering/awarding 2005 – 2006
- Realization Since 2006
- Expected completion 2019

Project Details & Challenges

- Very heterogeneous alpine geology. High demand for seismic prediction ahead surveys and decision making process at site, based on boundary conditions of the contract for work
- Linea Valcolla: bad geology in combination with overburden up to 600 m, including large plastic deformation. Application of flexible reinforcement measures and intensive geotechnical surveying
- Low overburden at under passing of national highway A2 in soft soil section. Planning and tendering of the complex construction process incl. jet grouting, pipe umbrella, reinforcement and lining
- Highly sensible urban area at the south portal at Vezia. Vibrations and structure borne noise were playing a decisive role
- Complex coordination processes/activities between the different entities, railway equipment and infrastructure
- Know-How-transfer from Gotthard Base tunnel

CLIENT FACTS

Overall costs

- Total 2.1 Billion CHF

Overview Project

- 2 single-track tunnels, length almost 17 km each, cross-section 70 m², drill & blast excavation
- Cross-passages between the single-track tunnels every 320 m
- 4 cavers for track changes, 2 in the north and 2 in the south
- Access gallery Sigirino (2.7 km) with TBM heading, diameter 10.70 m
- Drained sealing and cast in place inner lining

Geology

- Faulted gneiss formation
- Fault zones of structural relevance
- Linea Valcolla: bad geological conditions, in combination with high overburden, deformations, requiring flexible reinforcement and lining

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