

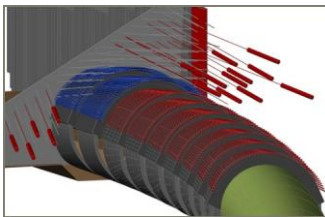
ENGINEERING SERVICES FOR CONTRACTORS

Contractors require targeted and effective contributions to streamline their complex construction projects.

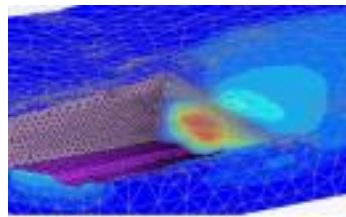
Optimizing the alignment, modelling the cross section, or performing a numerical or geotechnical analysis during the design phase leads to considerable savings and achieves desired results of structural excellence.

We therefore offer a range of services of value to contractors, from pre-design to detailed design, through to construction and operation, for all kinds of underground structures.

We have supported numerous clients with our valued added knowledge, derived from our experience from a big range of successfully completed underground engineering projects.



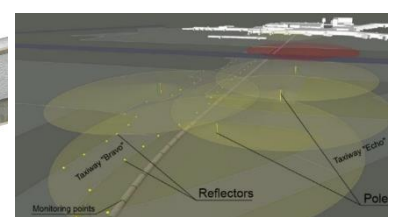
Collision check in anchor



Model calculation Excavation / securing entry-cut



Bim Modell Bözberg



Monitoring of Taxiway with automatic total stations

Our Services

Design

- Feasibility Design
- Tender Design
- Detailed Design
- BIM, 2D and 3D models and drawings

All types of underground structures

- Tunnels, Adits, Shafts and Galleries
- Caverns and Underground space

For any type of use

- Rail, Road and Metro
- Hydro and Utilities
- Underground Space

Geology & ground conditions

- Rock, soft ground and unconsolidated rock
- Long & deep alpine tunnels & underground structures

Excavation methods

- TBM
- Drill & blast
- Shielded machines in soil
- Mechanically assisted excavation (road headers, excavators, rippers, etc)

Additional Expertise

- Ventilation and Safety
- Assessment and Rehabilitation of existing structures
- Pipe umbrella, Jetting, Grouting, temporary-, and final support
- Risk Assessment, Project Management, Cost Control

Partner for all Project Phases (Prequal, Tender, Construction)

- Review tender from a designer view
- Gap analysis
- Identify and assess critical areas
- Geological assessments
- Value engineering to reduce costs and speed up the process
- Review contractor's alternative ideas from a designer view
- Estimate and programme design efforts on Design & Build tenders
- Assess & Design temporary ventilation for construction

Construction

- Value engineering
- Detailed Design incl. reports, models and drawings
- Independent design checker
- Site supervision for contractor
- Quality Control tasks
- As built documentation
- Geological monitoring
- Monitoring of structures

Troubleshooting on site

- Expertise, consultancy
- Evaluation and design of possible solutions
- Analysis and Evaluation of various Construction Methods

Our Competence

- Comprehensive experience in underground design, from early feasibility to final detailed design
- Site supervision to support you all the way
- Smart and feasible underground and geotechnical engineering solutions
- Solid track record of working with contractors
- Clever, cost sensitive, value added alternatives
- Independent design checker

Your Benefits

- A competent partner and trouble shooter at any stage of your project
- Fast reliable and competent engineering solutions to complex geotechnical tasks
- Direct access to skilled and internationally trained engineers with solid practical know how
- Solutions that help you manage your risk, speed up the project schedule and reduce your costs



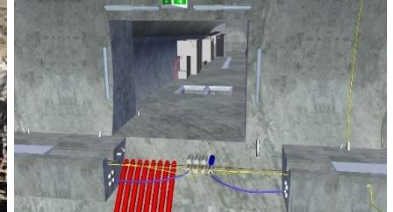
Start shaft for TBM



Niagara Tunnel



TBM starting wall



Cross connection Bözbergtunnel

Selected References

Project	Boezberg rail tunnel Switzerland	Project	Delhi Metro line India
Services	IG-Management, Contractor's engineering, Detailed design for new double track railway tunnel; part of the 4 m corridor project Basel – Chiasso	Services	Detailed design, Site supervision, Prediction of ground settlements Twin bored tunnels with shield TBM and an inner diameter of 5.7 m.
Client	Implenia	Client	Thai Development Public Company Ltd
Project	Nürnberg – Ingolstadt – HSR Germany	Project	Ahwaz Metro Iran
Services	Technical approval, Detailed design, Structural documentation Double track line rail tunnel with 2.2 km length and double shell lining. Excavation by drill and blast.	Services	Design & design Reviews, Alignment optimization, Quality and Risk Management Two metro tunnels of 23 km each, 23 stations by cut & cover. Excavation by EPB-TBMs Ø = 6.78 m.
Client	Bilfinger Berger	Client	Kayson
Project	Suez Canal road tunnel Egypt	Project	Downtown metro line 2 Singapore
Services	Detailed design, Geotechnical interpretation, Implementation project Two 2.8 km long highway tunnels with 6 cross passages under the Suez Canal	Services	Contractor's engineering, Detailed design & design review, Site supervision, Twin bored tunnels with a total length of 5.4 km and 5.8 m inner diameter.
Client	Orascom / Arab Contractors	Client	SK Engineering and Construction

**We are pleased to advise you in detail.
Contact us.**



Frank Wiegand
Head of International Projects

fwiegand@amberg.ch



Amberg Engineering AG
Trockenloostrasse 21
8105 Regensdorf Watt, Switzerland
Tel: +41 44 870 91 11
information@amberg.ch, www.amberg.ch

Regensdorf, Sargans, Chur, Nyon (Switzerland),
Brno (Czech Republic), Madrid (Spain),
Lysaker (Norway), Gurgaon-Haryana (India),
Kuala Lumpur (Malaysia), Bratislava (Slovakia)