

# Worldwide Activities



TUNNEL DESIGN

TEMPORARY WORKS DESIGN

GEOTECHNICAL ENGINEERING

CONSTRUCTION MANAGEMENT

INSTRUMENTATION & MONITORING

WATERPROOFING & WATER CONTROL

TUNNEL REHABILITATION

MINING SUPPORT SERVICES

## CONTACT

**SALZBURG**  
Dr. Sauer & Partner GmbH  
T. +43 662 879 999  
F. +43 662 878 999  
Sterneckstrasse 35-37  
5020 Salzburg  
Austria  
salzburg@dr-sauer.com

**WASHINGTON D. C.**  
Dr. Sauer & Partners Corporation  
T. +1 703 707 0700  
F. +1 703 707 0703  
560 Herndon Parkway, Suite 310  
Herndon, VA 20170-5240  
USA  
washington@dr-sauer.com

**TEL AVIV**  
Dr. Sauer & Partners  
T. +972 733903711  
Atrium Tower, 18th Floor  
Zeev Jabotinsky Rd 2  
Ramat Gan 52050501  
Israel  
telaviv@dr-sauer.com

**LONDON**  
Dr. Sauer & Partners Ltd.  
T. +44 208 339 7090  
11 Langley Avenue  
Surbiton, Surrey  
KT6 6QH  
UK  
london@dr-sauer.com

**TORONTO**  
Dr. G. Sauer & Partners Corporation  
T. +1 647 276 4000  
2200 Yonge Street  
Suite 1004  
Toronto, ON M4S 2C6  
Canada  
canada@dr-sauer.com

[www.dr-sauer.com](http://www.dr-sauer.com)



[www.dr-sauer.com](http://www.dr-sauer.com)

Salzburg | London | Washington | Toronto | Tel Aviv



Since its inception, **Dr. Sauer & Partners (DSP)** has provided construction management and inspection services in addition to design and consulting work. The company's group of field engineers and inspectors has helped to complete many successful tunnel projects all over the world.

DSP's services range from periodic site visits to document a project's progress to fully developed construction management services that deliver a complete project for the customer. The company also specializes in deploying inspection teams to handle quality assurance and quality control and support our customers during construction.

BEACON HILL STATION >  
Seattle, WA, USA



Beacon Hill Station is a deep-mined underground station located in complex glacial soils with multiple groundwater horizons. DSP was retained as a specialist consultant for the final design of the large NATM / SEM / SCL station tunnels, as well as various cross passages and adits.

During construction, DSP provided a team of highly qualified and experienced senior tunnel engineers, engineering geologists and tunnel inspectors to provide resident engineering services and support the customer's construction management team with the NATM expertise required for this complex project.

Responsibilities of DSP field staff included providing quality control, ensuring compliance with the contract documents, measuring pay items, geotechnical interpretation, and documenting the geology.

DSP's Field Engineering Group consists of seasoned individuals that have dedicated their professional careers to tunneling. Many of our staff have more than 20 years' hands-on experience in tunneling and are invaluable assets in ensuring quality, promoting safety, and improving productivity. We offer the following services:

## CONSTRUCTION MANAGEMENT

- Contract management
- Scheduling and cost control
- Claims management

## SUPERVISION

- Field inspection
- Quality control
- Materials testing

## DOCUMENTATION

- Geologic conditions
- Activities at each tunnel heading
- Ground support classes

## GEOTECHNICAL MONITORING

- Installation & reading of instruments
- Evaluation and interpretation of data
- Predicting ground conditions ahead

## DESIGN SUPPORT DURING CONSTRUCTION

- Value engineering
- Shop drawings
- As-built drawings

## TRAINING

- Tunneling workshops for customer staff
- Training of field personnel
- Equipment operator training

# Geotechnical Monitoring

In-situ monitoring installations can include extensometers, sliding micrometers, inclinometers, leveling gauges, anchor load cells, and convergence gauges. Concrete pressure cells record the load on the lining and allow calculation of its actual safety factor. Surface monitoring is necessary to document pre-construction conditions and changes during tunneling and after excavation.

DSP offers the full range of services for geotechnical monitoring, including installation and reading of instruments, evaluating and interpreting data, predicting changes in ground conditions ahead, and adjusting the tunnel support to suit the geologic conditions encountered.

