

**METROPOLITAN SECTION
AMERICAN SOCIETY OF
CIVIL ENGINEERS
GEOTECHNICAL GROUP**

PRESENTS:
THE WILLIAM BARCLAY
PARSONS TECHNICAL LECTURE

TOPIC :
Tunneling and Beyond

**Gerhard Sauer, Dipl. Ing., Dr. tech.,
P.E.**
President, the Dr. G. Sauer Group
Salzburg, Austria

AT:
**CUNY Graduate Center
Recital Hall, New York City**

Thursday, April 17, 2008
Refreshments: 5:30 p.m.
Lecture: 6:00 p.m.
Attendance is free

**Professional Development Hours
(PDHs) are Applied for -
PDH certificates are free to ASCE
members, \$10 fee for non-members**

CUNY Graduate Center-Recital Hall
365 Fifth Avenue
(Northeast corner of Fifth
Ave. and 34th Street)
New York City

For more information, contact
Terence P. Holman, Ph.D., P.E. at 973-
627-2100 x245 or tholman@mtac.com

LECTURE SUMMARY

Underground excavation is a dynamic process where geotechnical properties, excavation sequences and immediate support in tandem with the excavation rate interact with each other creating the final raw product. Waterproofing and final lining then form a stable lasting 100% dry and clean tunnel cavern or U-Station. This kind of work though cannot be replicated. It has to be done right the first time! Today, there is an array of means and measures "Toolbox Items" available allowing us to mine under virtually any circumstances, geotechnical parameters, geometrical and environmental constraints. This presentation also aims to describe some recent developments in sectional construction methods providing flexibility and cost effectiveness instead of getting stuck in conservatism. Flexibility in design (i.e. dual design) needs to be supported with a flexible fair contract allowing alternate proposal by the contractor based on unit price system! This avoids gridlocks at the site and minimizes disputes. We are now in a position to prove that tunnel cost's compare favorably with elevated structures, especially those in urban settings, and definitely with the classic Cut-and-Cover method. Also, just as significant, the life cycle of tunnels is at the minimum three times that of aerial structures with much less maintenance. These findings can lead to fundamental changes in the planning process of new or alternate traffic arteries with the realization that underground construction also dramatically reduces the time and effort for environmental and other approval actions. Balanced contract documents are the base; and competence acting on all angles of the project is the vehicle to a safe construction and a quality end product.

The Speaker: Dr. Gerhard Sauer is highly reputed among professionals as an outstanding tunneling expert. His educational background and own intensive and detailed investigations led to a remarkable assortment of publications, and his patented tunneling techniques for tunnels in urban areas (Doorframe Slab and Barrel Vault Method) and under streams and rivers (Caisson Method). On more than 100 projects, Dr. Sauer has responsibly headed design work on tunnels in rock and soft ground, slope protection, value engineering, consulting and construction supervision, and rehabilitation of existing tunnels, always striving to implement state-of-the-art techniques. Dr. Sauer provided the NATM value engineering design for WMATA's section B10. The design included the use of a PVC sealing membrane for complete watertightness, which was the initiation of a new era of waterproofing methods for tunnels in the U.S. The contract won the 1987 ASCE Award for best civil engineering project from the National Capitol Section. Dr. Sauer has been selected prime consultant for many cities to review existing designs and comment on design alternatives for subway and roadway tunnels. Major U.S. projects include the NATM Pedestrian Walkback Tunnel at the Washington Dulles International Airport, VA, the Lehigh Tunnel No.2, design of WMATA's section E8a in soft ground, and the design of light rail tunnels for the DART section NC1-A1/A2 in mixed face conditions and Section NC-1B in Dallas, TX.

Dr. Sauer holds memberships and affiliations in multiple professional societies and organizations dedicated to civil engineering and underground construction, including ASCE, ACI, British Tunneling Society, ISRM, Austrian Society for Geomechanics, and the Austrian Society for Engineers and Architects.

UPCOMING GEOTECHNICAL GROUP LECTURES:
May 8, 2008 "Manhattan on the Rocks,"
One-Day Seminar