



Mexico - Thursday 02 – Saturday 04 May 2013

Principles in Tunneling Design

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Thursday 02 May 2013

Welcome and Opening

08:00 - 08:15 **Welcome and Opening** - AMITOS and Itacet Foundation representatives.
Seminar Introduction and welcome to the participants and instructors of the event

Session 1: Design

08:15 - 09:15 **Planning and use of the underground space** - Tarcisio Celestino
09:15 - 10:15 **Principles of Tunnel Design** - Tarcisio Celestino
10:45 - 11:45 **Design Tools** - Tarcisio Celestino
11:45 - 12:45 **Design Criteria for Tunnels** - Tarcisio Celestino

Session 2: Soft Ground

14:00 - 15:00 **Choice of Construction Method** - Felix Amberg
15:00 - 16:00 **Conventional Methods for Soft Ground** - Harald Wagner
16:30 - 17:30 **Mechanized Methods for Soft Ground** - Lars Babendererde
16.45 – 17.30 **Ground Improvement & Reinforcement** - Harald Wagner

Friday 03 May 2013

Session 3: Hard Rock

08:00 - 09:00 **Conventional Methods for Hard Ground** - Harald Wagner
09:00 - 10:00 **Mechanized Methods for Hard Ground** - Lars Babendererde
10:30 - 11:30 **Sprayed Concrete Support System** - Harald Wagner
11:30 - 12:30 **Segment Lining Design** - Lars Babendererde

Session 4: Risk Management in Tunnelling

14:00 - 15:00 **Tunnel Instrumentation** - Piergiorgio Grasso
15:00 - 16:00 **Risk Management & Contracts** - Piergiorgio Grasso
16:30 - 17:30 **Risk Management related to Geological Risks** - Piergiorgio Grasso
17:30 - 18:30 **Example of Risk Management Applied to Tunnel Projects** - Piergiorgio Grasso

Saturday 04 May 2013

Site Visit - 08:00 - 15:00 - AMITOS

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Lecturers of the seminar *in the order of their intervention during the training session)*



Tarcisio Celestino >> Consulting engineer, Themag Engenharia, São Paulo/BR; Chairman of the Organizing Committee, WTC 2014. Experience: Themag Engenharia Ltda., São Paulo, Brazil. Civil Engineering Manager. Leader of the Geotechnical Engineering, Engineering Geology and Transportation Engineering Design Groups. Technical responsibility for the geotechnical designs of several hydroelectric power plants, subways, highways, etc., including major underground works (since 1990). São Carlos Engineering School, University of São Paulo. Professor Doctor. Responsible for the graduate courses and research areas on Rock Mechanics and Underground Works. ing. Consultant for a number of underground works,.



Felix Amberg >> Consulting engineer, President of the Amberg Group Amberg Engineering Ltd. Amberg Measuring Technique Ltd. Hagerbach Test Gallery Ltd. President of the Swiss Tunneling Society. Project-related experience: L-SURF (Design Study for a Large Scale Underground Research Facility on Safety and Security). Coordination of an EU-research project. 2000 to date Tunnel TESLA (TeV Energy Superconducting Linear Accelerator), DESY (German Electron Synchrotron), Germany. 1990 to date Gotthard Base Tunnel.



Harald Wagner >> Consulting engineer, expert and Special Advisor to the Executive Council of ITA-AITES. An international well-recognized Consultant for Underground Infrastructures with more than 40 years of Professional Experience in Tunnel Design, Construction and Consultancy. Consultant to the World Bank for more than 15 years. A former Assistant Professor at Technical University Graz in Austria on Soil Mechanics & Foundation Engineering for Architects, a Vice President of ITA (International Tunnelling and Underground Space Association). An Expert member of ITA's Executive Council, who has worked throughout his career as a designer and consultant in more than 35 countries around the world.



Lars Babendererde >> Consulting engineer and Founding Partner of engineering consultancy Babendererde Engineers GmbH. Site Experience (selection) : Metro tunnel, conventional driven, Frankfurt. Metro tunnel, TBM drive Lyon, France, Metro tunnel, TBM drive o.d. 6,50 m, Edmonton, Canada, Pipe jacking projects, TBM drives in Berlin, Mannheim and Karlsruhe, Project development and design (selection). Remote controlled pipe jacking machine for a shipyard in Rostock, Germany, Transport system for concrete segments in a tunnel boring machine for a shipyard in Kiel, Germany, Pre-calculation of an underground Railway Station in London, GB, Consultation (selection): TBM drive and construction of mined underground station in Lisboa, Portugal. Metro Rome Metropolitana Linea A, Italy, Prolungamento Ottaviano- Battistini. Slurry-TBM. Metro Rotterdam Noordlijn, Rotterdam, The Netherlands.



Piergiorgio Grasso >> Consulting Engineer, Founder and President of Geodata engineering Spa. Graduated from the 'Politecnico di Torino' of Italy in civil engineering, I began my engineering career in 1975; and I am the founder, President and Principal Engineer of Geodata since 1984, which is a consultancy specialised in the design and management of underground works, both in urban environments and in mountain areas. I was part of the ITA Executive Council member and I was the ITA past Vice President. I also served the ITA Working Group 17 on "Long and Deep Tunnels" as its animateur and tutor. Mr. Grasso is one of ITA expert & is ITACET Foundation Vice President.

Lecturers of the event:



Lars Babendererde

Consulting engineer and Founding Partner of engineering consultancy Babendererde Engineers GmbH.



Tarcisio B. Celestino

Consulting engineer, Themag Engenharia, São Paulo/BR; Chairman of the Organizing Committee, WTC 2014.



Piergiorgio GRASSO

Consulting Engineer, Founder and President of Geodata engineering Spa.



Harald Wagner

Consulting engineer, expert and Special Advisor to the Executive Council of ITA-AITES.

XIV CONSEJO DE DIRECTORES DE AMITOS

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Curso Internacional de Túneles



Mayo 2 – 4, 2013

SEDE

Centro Asturiano

Arquímedes 4

Col. Polanco, 11570 México, D.F.

Objetivo:

Promover el mejoramiento técnico y la capacitación entre los profesionistas vinculados con los túneles y obras subterráneas, presentando los conocimientos, experiencias y tecnologías disponibles del tema.

Dirigido a:

Ingenieros, técnicos, estudiantes, y profesionistas que, en el ámbito de sus actividades, se dediquen a la planeación, proyecto, construcción, mantenimiento y operación de este tipo de obras.

Cuota de recuperación:

Socios \$ 4,500.00

No Socios \$ 5,000.00

La inscripción podrá realizarse al siguiente correo:

amitos@amitos.org

El importe de la cuota de recuperación puede liquidarse en efectivo, cheque o depósito bancario a la cuenta de AMITOS, A.C. en BBVA Bancomer, Cuenta No. 0 4 5 0 3 6 4 0 6 1 CLABE 012 180 00045 036 4061 9

Nota: Puede presentarse CARTA – COMPROMISO de la empresa o institución de trabajo que ampare la inscripción al curso.

PROGRAMA

Jueves 2 de mayo

- 1.1 Planificación y uso del espacio subterráneo
- 1.2 Principio del diseño de túneles
- 1.3 Herramientas de diseño
- 1.4 Criterio de diseño para túneles

- 2.1 Elección de los métodos de construcción
- 2.2 Métodos convencionales para suelos blandos
- 2.3 Métodos mecanizados para suelos blandos
- 2.4 Diseño de revestimiento con dovelas precoladas

Viernes 3 de mayo

- 3.1 Métodos convencionales para terreno duro
- 3.2 Métodos mecanizados para terreno duro
- 3.3 Concreto lanzado como sistema de soporte
- 3.4 Mejoramiento y refuerzo del terreno

4.1 Instrumentación en túneles

- 4.2 Administración de riesgos y contratos
- 4.3 Administración de riesgos relacionados con riesgos geológicos
- 4.4 Ejemplo de administración de riesgos aplicado a los proyectos de túneles

Sábado 4 de mayo

Visita técnica al TEO.