Training session WTC2016

'MONITORING & CONTROL in TUNNELLING'

22nd – 23rd April 2016

Venue: Moscone Center – Marriot Marquis

San Francisco - USA

Objective: This training provides the purpose, methods, and examples of "monitoring" the effects of tunnelling, including the monitoring of tunnel machine performance, to control tunnelling to achieve acceptable excavation performance with stable underground structures, and prevent damage to existing structures and utilities. Due to the great variability in ground conditions, monitoring has an essential role in tunnelling regardless of method of excavation. It is the only effective means to allow the tunnel design and construction procedures to be adjusted and validated as tunnelling takes place. Topics include instrumentation (equipment and typical applications), interpretation of monitoring data, role of monitoring in risk management, contractual aspects, and case histories. The course is of interest for owners, designers and construction engineers, supervisors, and managers.

Friday, 22nd April 2016

Session 1: Introduction and Overview

09.00 – 09.30: Welcome and Opening: ITA and local representatives – S. Eskesen & W. Hansmire
09.30 – 10.00: General presentation on tunnel monitoring (objectives, why, what and who) – E. Cording
10.00 – 10.30: Types of instruments, data collection, information management – K. Rabensteiner
10.30 – 11.00: Coffee Break
11.00 – 11.45: Instrumentation installation – F. Amberg
11:45 – 12:30: Topographical methods to monitor deformations - GPS, LiDAR, InSAR – L. Gallison
12.30 – 14.00: Lunch

Session 2: Methods and Interpretation

14.00 – 14.30: Monitoring methods and layout in conventional tunnelling **-** A. Marr
14.30 – 15.00: Monitoring methods and layout in mechanized tunnelling – J. Yan
15.00 – 15.30: Control of Settlement in TBM Tunnels – A. Maxwell
15.30 – 16.00: Coffee Break
16.00 – 1645: Design criteria of monitoring and relationship to tunnel design and construction (part 1) – P. Grasso
16.45 – 17:30: Design criteria of monitoring and relationship to tunnel design and construction (part 2) **–** V. Gall
17.30 – 18.00: Questions and Answers

Saturday, 23rd April 2016

Session 3: Contractual Aspects, Roles and Responsibilities

09.00 – 09.45: Contractual roles and responsibilities: what entity has responsibility**? –** E. Grøv
09.45 – 10:30: Transferring monitored data into information for the contract management – R. Galler
10.30 – 11.00: Coffee Break
11.00 – 11:45: Control of Tunnelling Works using In Tunnel Data (from WG2 Report) – C. Yoo

11:45 – 12:30: Hazards warning level and countermeasures in tunnelling – T. Celestino

12.30 – 14.00: Lunch

Session 4: Monitoring interferences, risk management, and case histories

14.00 – 14.30: Role of monitoring on risk management – A. Assis
14:30 – 15:00: Monitoring Interpretation – Case Studies – G. Jedlitschka (GEOCONSULT)
15:00 – 15:15: Case Study: Interferences with excavation works – ATLAS COPCO (TBC)
15.15 – 15.30: Modern Monitoring on Machines for Conventional Tunnelling – T. Melbye & M. Hauki (Co-author - NORMET)
15.30 – 16.00: Coffee Break
16.00 – 16:20: Modern Monitoring on Drilling Jumbos – A. Laitinen (SANDVIK)
16.20 – 16.40: Monitoring for Soft rock TBMs – K. Bäppler (HERRENKNECHT)
16.40 – 17.00: Monitoring on Hard Rock TBMs – ROBBINS

17:00 – 17:30: Discussion, Summary and Closing of the Seminar