



*"Safe Tunnelling for the City
and for the Environment"*



FINAL PROGRAMME

ITA-AITES WORLD TUNNEL CONGRESS 2009
and the
35th ITA-AITES General Assembly

Budapest, Hungary
May 23–28, 2009



Visit us at WTC 2009

24-27 May 2009

Booth M 14-16



SWIETELSKY TUNNELING

Underground construction on Metro Line 4 in
Budapest at Bocskai, Kálvin and Rákóczi stations

Fit out of all stations on Metro Line 4 in Budapest

References:

Tunnel Lohberg (BRD)

Tunnel Engelberg (CH)

Wadi Mudiq Gullai Tunnel (Dubai)

S6 Tunnel Spital (AT)

Power station Kops (AT)



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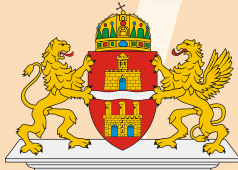
Organising Associations and Sponsors



Hungarian Tunnelling Association



International Tunnelling and Underground Space Association



Lord Mayor of the Capital City Budapest



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Message from the Minister of Transport, Telecommunication and Energy



Delegates, Ladies and Gentlemen,

It is a great pleasure for me as the minister responsible for transport, telecommunication and energy in Hungary to be able to welcome you to the ITA-AITES World Tunnel Congress 2009 in Budapest.

As highly qualified experts you work in a lesser known field of the construction industry. Lesser known, however, does not mean less important. The main title of this year's conference is "Safe Tunnelling For The City and For The Environment". I personally think that this is a very exciting topic because apart from emphasising the great impact your work on our everyday lives, it also strengthens the idea that our cities can be made better places to live in by using modern tunnelling and civil engineering technologies.

When I travel on the metro or go over the Széchenyi Chain Bridge and through the tunnel near its abutment to Buda, I encounter monuments of your work everywhere. However, it is common knowledge that there are less spectacular, still not less important forms of tunnelling and civil engineering as well. When, for instance, people switch on the lights in their homes, few think that this too requires your expertise. Forty percent of the electricity consumed in Hungary comes from the Paks Nuclear Power Plant, which means that the radioactive waste also has to be dealt with. The most common way of handling nuclear waste is shutting it away in underground storage facilities. The construction of these huge, man-made caves is another tribute to your expertise.

In my view your achievements, the fruit of your work, are all around us, penetrating our day-to-day lives. I believe that the need for underground constructions will increase in the future. Besides the spread of the use of nuclear energy, I am convinced that our cities will increasingly grow not only higher, but deeper as well.

I believe that such professional conferences are suitable not only for acquiring knowledge, but are also an ideal medium for fostering personal relationships and making new friends.

I trust that this conference will be a professional success, and hope you will enjoy your stay here, in Budapest.

Péter HÓNIG

Minister of Transport, Telecommunication and Energy

Message from the Lord Mayor of the Capital City Budapest



Ladies and Gentlemen,

It is my great pleasure to welcome in Budapest the participants of the most prestigious event of the tunnelling trade, the World Tunnelling Congress. I warmly welcome all who arrived to attend this Congress from 53 countries of the world.

I hope that besides sharing professional experiences you are also interested in the development of transport in Hungary as well as in the Hungarian capital and how the City of Budapest intends to become a more liveable European metropolis. When travelling to the venue of the Congress you may have realised that there were hardly any spots in the city without ongoing constructions or reconstructions. In the last few decades the population of Budapest increased on a scale never experienced before and both individual car traffic and public transport had to keep pace with this tendency. In

order to facilitate this process we have been reconstructing roads, connecting tram lines, we are constantly developing the quality of surface transport and besides the already existing three metro lines we are presently constructing the fourth one, which will connect South-Buda and the North-East districts of the city.

The metro project has reached its mid term. The ten stations of the first section, which serve as the cradle of the future extensions, are being built at a good rate, the tunnelling shields have already reached the Danube on the Buda side, and despite some problems soon they can continue working on the Pest side. During the construction works we have paid particular attention to the protection of houses and the environment, the buildings have been monitored 24 hours a day, the designs of stations and tracks have been modified in order to protect the trees and the hot springs located at Szent Gellért Square.

Apart from the tunnels of the new metro line having to progress under old buildings, the shields need to reach the Pest side undercrossing the river, which represents a challenge for the metro construction staff. I would like to present these challenges, hopefully of professional interest, with the help of our internationally recognised experts.

I sincerely hope that the Congress proves to be a useful experience and you would also have time to discover the beauties of Budapest.

Dr. Gábor DEMSZKY
Lord Mayor of Budapest

Message from the President of the Hungarian Tunnelling Association



Ladies and Gentlemen,

It is my great pleasure to welcome you on behalf of the Hungarian Tunnelling Association and a great honour to host the ITA-AITES WORLD TUNNEL CONGRESS 2009 and the 35th ITA-AITES GENERAL ASSEMBLY.

The title of the congress is “**Safe Tunnelling for the City and Environment**”, which is an indication of the inhabitants’ expectation from designers, builders and authorities. The duty of the Association is to gather the best professionals from around the world to give lectures that demonstrate the most up-to-date technologies, methods and bring professional colleagues together for the solution of possible and occurring problems.

The Hungarian Tunnelling Association with the WTC 2009 Organising Committee has prepared the necessary programmes, briefly summarised as follows: The ITA-AITES Pre-Congress Training Course is the first one provided for young engineers, which program will be interpreted by lecturers from all over the world within the old walls of the famous Technical University of Budapest (BME). The Keynote Lectures and Open Session lectures will be presented by internationally well-known professional speakers.

Nearly 500 abstracts have been submitted for the Technical Sessions. The selected papers amount to about 350, of which 176 oral presentations will be given in the final programme – you can find the list in the final copy. Technical visits have also been organised, you can visit four sites, two in Budapest, and two in the country. At the main venue – Budapest Congress and World Trade Centre – you can meet more than 60 professional exhibitors on three levels. In addition quality programmes will be offered for accompanying persons.

Budapest is a wonderful city with its historical heritage sites, comprising remnants of a thousand years that meet the present. While staying here, you have to visit and learn what this magic city has to offer.

I wish you the best during your stay in Hungary.

Pál KOCSONYA

President of the Hungarian Tunnelling Association

Organising Associations and Sponsors

The Congress is organised by the
Hungarian Tunnelling Association (HTA)

on behalf of the
International Tunnelling and Underground Space Association (ITA–AITES),

under the main sponsorship of the
**Minister of Transport, Telecommunication and Energy,
The Lord Mayor of the Capital City Budapest**

and patronage of the
National Infrastructural Development Corporation (NIF Corp).

In the Person of European Union takes part the
Deputy Director-General for Transport & Energy.

Committees

International Advisory Board

Greschik, Gyula – chair (Hungary)
Assis, André (Brazil)
Bai, Yun (China)
Barták, Jiří (Czech Republic)
Belenkiy, Mikhail (Russia)
Erdem, Yücel (Turkey)
Grodecki, Wojciech (Poland)
Grøv, Eivind (Norway)
Haack, Alfred (Germany)

Knights, Martin (United Kingdom)
Kovari, Kalman (Switzerland)
Lacroix, Didier (France)
Ono, Koichi (Japan)
Oud, Henk J. C. (The Netherlands)
Parker, Harvey (United States)
Pelizza, Sebastiano (Italy)
Wagner, Harald (Austria)

Organising Committee

Kocsonya, Pál – chair (president of HTA)
Balogh, Zsolt – vice chair
Balogh, Zsolt
Berenguier, Claude (ITA-AITES General Secretary)
Bognár, Árpád
Bretz, Gyula
Erős, György
Kiss, Dezső

Korpás, Rudolf
Madar, Gyula
Németh, Imre
Schulek, János
Szendrői, Tamás
Szórádi, Róbert
Varga, Attila
Zsigmondi, András

Scientific and Selection Committee

Müller, Miklós – chair (TU Budapest)
György, Pál – co-chair
Horváth, Tibor – co-chair
Andráskay, Ede
Balázs, György
Bartos, Sándor
Bohus, Géza
Bozso, Tamás
Deli, Árpád
Farkas, József
Fehérvári, Sándor Jr.
Fogarasi, István
Gálos, Miklós
Greschik, Gyula
Hargitai, Róbert S.

Hrdina, Ivan
Janitsáry, Iván
Keleti, Imre
Klados, Gusztáv
Lakatos, Ervin
Martak, Lothar
Mecsi, József
Meszlényi, Zsolt
Posgay, György
Rozgonyi, Tibor
Soós, Gábor
Szepesházi, Róbert
Szilvágyi, László
Szűcs, István

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Partner Organisations

Hungarian Academy of Sciences (MTA)

Budapest University of Technology and Economics (BME)

The Hungarian Chamber of Engineers (MMK)

Hungarian Scientific Association of Transport (KTE)

fib Hungary (fédération internationale du béton)

Hungarian Society for Trenchless Technology (HSST)

Association of Hungarian Consulting Engineers and Architects (FIDIC–TMSZ)

Hungarian Metro Society (MMT)

Hungarian Geological Society (MFT)

General Assembly

General Assembly 1–2

Date: Sunday, 24 May & Wednesday, 27 May

Time: 9:00–12:30

Venue: Hotel Bara (10 minutes walk from BCWTC)

Transfer will be provided to and back.

Departure in front of BCWTC at 08:00.

Working Group Meetings

Date: Sunday, 24 May & Monday, 25 May

Time: 14:00–18:00

Venue: BCWTC

WG2 Research

E. Leca (animateur), C.-S. Yoo (vice-animateur), S. D. Eskesen (tutor)

WG3 Contractual practices in underground construction

A. Dix (animateur), M. Smith (vice-animateur), M. C. Knights (tutor)

WG5 Health and safety in works

D. Lamont (animateur), M. Vogel (vice-animateur), V. A. Umnov (tutor)

WG6 Maintenance and repair of underground structure

H. Russell (animateur), R. van den Bosch (vice-animateur), Y. Bai (tutor)

WG11 Immersed and floating tunnels

Ch. F. Ingerslev (animateur), J. Baber (vice-animateur), Y. Leblais (tutor)

WG12 Shotcrete use

T. B. Celestino (animateur), A. Ishida (vice-animateur), E. Grov (tutor)

WG14 Mechanization of excavation

L. Babendererde (animateur), F. Amberg (vice-animateur), K. Fukumoto (tutor)

WG15 Underground and environment

J. K. G. Rohde (animateur), J. Y. Kaneshiro (vice-animateur), I.-M. Lee (tutor)

WG17 Long tunnels at great depth

G. Seingre (animateur), M. Shimokawachi (vice-animateur), P. Grasso (tutor)

WG18 Training

D. Peila (animateur), M. Thewes (tutor)

WG19 Conventional tunnelling

H. Ehrbar (animateur), R. Galler (vice-animateur), F. Vuilleumier (tutor)

WG20 Urban problems – Underground solutions

A. Elioff (animateur), W. Broere and J. Nishi (vice-animateurs), H. Parker (tutor)


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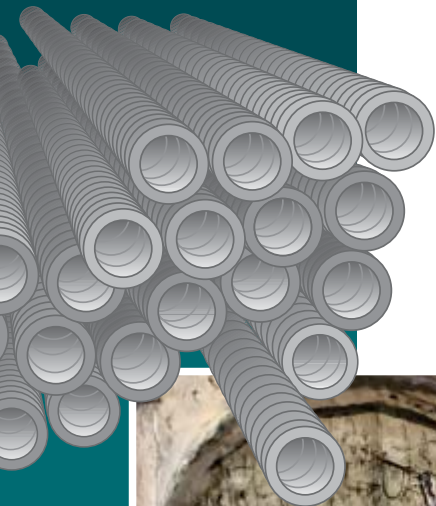
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AT – Drainage System
AT – GRP Injection System

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Congress Main Topics

- 1 Risk analysis, finances and contractual relationships
- 2 Geological and geotechnical investigations
- 3 Tunnelling in soft ground with shotcrete method
- 4 Cut- and cover constructions
- 5 Mechanized tunnelling
- 6 Monitoring, settlement control
- 7 Quality Management
- 8 Miscellaneous (storing facilities, research and development etc)
- 9 Architectural design, structural design and management policy
- 10 City, tunnel, environment and safety
- 11 Maintenance, repair and rehabilitation
- 12 Special tunnels (long tunnels)

Opening & Closing

Opening ceremony

Date: Monday, 25 May

Time: 9:00–10:30

Venue: BCWTC, Pátria Hall – Plenary Lecture Hall (level –1)

Closing ceremony

Date: Wednesday, 27 May

Time: 17:45–18:00

Venue: BCWTC, Pátria Hall – Plenary Lecture Hall (level –1)

Keynote Lectures (Energy-Transport, Risk-Safety, Technology)

Date: Monday, 25 May

Time: 10:50–12:30

Venue: BCWTC, Pátria Hall – Plenary Lecture Hall (level –1)

Chairs: *Martin Knights* and *Pál Kocsonya*

KAZATSAY, Zoltán (EU Deputy Director-General for Transport): European Transport, Tendencies, Developments

KNIGHTS, Martin (ITA-AITES President): Contemporary Issues Related to Tunnelling

WITTKÉ, Walter (General Manager of WBI Eng Co.): Conventional Tunnelling Methods in Soft Ground in Urban Areas – Risks and Chances



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Programme at a Glance

Time	Saturday, 23 May	Sunday, 24 May	Monday, 25 May	Tuesday, 26 May	Wednesday, 27 May	Thursday, 28 May	
8:30		General Assembly (Hotel Bara)	Opening Ceremony	Open Sessions	Technical Sessions	COSUF	
10:30			coffee break	coffee break	coffee break		
10:50			Keynote Lectures	Open Sessions	Technical Sessions		
12:30		lunch break	lunch break	lunch break	lunch break		
14:00		WG Meetings	WG Meetings	Technical Sessions	Technical Sessions	EX-CO Meeting	
15:40				coffee break	coffee break		coffee break
16:00				Technical Sessions	Technical Sessions		Tech. Sess.
18:00					Closing Ceremony		
19:00		WTC Welcome party		Concert	WTC Banquet (extra registration only)		

Registration

Education Training Course
(22-23 May at Technical University)

Technical Exhibition and Poster Sessions

Accompanying Persons Programmes

WG: Working Group,
EX-CO: Executive Council

* Lunch will be served in the Sportmax Hall, 3 minutes far from the Congress Center.



BUDAPEST: A NEW SUBWAY LINE FOR 600,000 NEW PASSENGERS.

Budapest has one of the oldest subway networks in Europe. 1.3 million passengers use the three existing lines daily – too much for the network of just 31.7 kilometers. Therefore, a fourth line is being built which connects the south western part of the city, Buda, with the north eastern Pest. The core element of line 4 will be a tunnel beneath the Danube River of which 5.35 kilometers are being excavated by machine. The crossing under the river is a premiere in Budapest, as the subway has only crossed the Danube above ground in the past.

The two identical Herrenknecht EPB machines S-354 and S-355 (Ø 6.05m) started tunnelling in May 2007. With small overburdens of sometimes only 6 meters they successfully cut through clay, fine sandy silt and marl. The S-354 achieved weekly top performances of almost 130 meters, its sister machine even proved its worth with performances of up to 160 meters. After completion of the construction work, line 4 will transport around 600,000 additional passengers a day.

BUDAPEST | HUNGARY

PROJECT DATA

 S-354, S-355
2x EPB Shields
Diameter: 6,050mm
Installed power: 1,200kW
Tunnel lengths: 5,350m
Geology: clay, fine sandy silt, marl

CONTRACTOR

Strabag AG,
Vinci Construction

Open Session

“Planning of Modern Tunnel Projects with Emphasis on Urban Areas”

Date: Tuesday, 26 May

Time: 8:30–12:30

Venue: BCWTC, Pátria Hall – Plenary Lecture Hall (level –1)

Chairs: *Martin Knights* and *Pál Kocsonya*

Coordinators: *Piergiorgio Grasso* and *Eivind Grøv*, ITA Secretariat

First a general and generic approach followed by specific examples that are outlining the importance of actively utilising and planning the underground for the best of the public.

Presentation of the works of the WG 5 “Health and Safety in Works” by *Mr. Donald Lamont*, Animateur

Presentation of the works of the WG 19 “Conventional Tunnelling” by *Mr. Heinz Ehrbar*, Animateur

1. *GRASSO, Piergiorgio*: Introduction
2. *ELIOFF, Amanda*: WG 20 – Modern Tunnel planning, a US perspective
3. *KLADOS, Gusztáv*: The SMART project in Malaysia
4. *ARNÁIZ RONDA, Manuel*: Madrid Metro and M30 Project
5. Master plan for the utilisation of the underground:
 - a) *VÁHÁAHO, Ilkka HKI/Kv*: Underground (UG) – Master Plan of Helsinki
 - b) *GU, Xin*: Master plan of Shenzhen (China)
6. *TSANG, Keith*: Deep Sewage Tunnels in Hong Kong
7. *PARKER, Harvey*: A new tunnel in Seattle to replace the aging and earthquake-damaged viaduct along the waterfront
8. Discussion and conclusions

Technical Information for WTC2009 Speakers and Poster Presenters

Instruction for speakers

Authors are kindly requested to give their presentation file to the technicians in the file upload room (**Bizet Hall on Level –1**), preferably a half day before the beginning of the corresponding session. This is necessary of course only in case the file is not sent to us until 21 May. **The file upload room will be at speakers’ disposal from Sunday afternoon until Wednesday afternoon during the normal working hours of the congress.** The file will be copied to a central ftp server from where the projection is handled. The name of the file should be that of the “lecturecode_lastname” e.g. O-01-01_Smith.ppt. The file will be copied to the appropriate directory of the lecture room by the technicians.

Power Point software will be installed on all the computers. Preferred file format is in PPT for MS Office (Office XP, Office 2003 or 2007 etc.). Please, do not use MAC file format, if possible. If you edited your presentation in a MAC, you are advised to have a pdf version with you, as pdf versions can be projected without any problem. Make sure to bring your presentation file written on a properly closed CD ROM, or USB pen drive. It is recommended that you ensure a backup file as well. There will be technicians in the file upload room as well as in the lecture rooms to assist you with your presentation.

Optimal conditions of presentation files:

- **Presentation file:** Microsoft Powerpoint
- **Resolution:** 1024*768 XGA
- **In your slides:** Do not use letters smaller than 12 pt.
- If you use **animations** please embed them, if it is a special animation send the codec also and bring all the files on a CD to the Congress.
- If you have a **Macintosh computer**, it can be plugged in having a conventional, 15-pin socket. If your computer does not have this connection, please bring an appropriate converter with you.

Software installed on presentation laptops:

- Windows XP Professional service pack 3
- Office 2003 service pack 3 + compatibility pack or office 2007 service pack 1
- Acrobat Reader 9
- VLC player 0.9.8
- K-Lite
- Codec pack 4.7.5 full
- Media Player 11
- Java 13

Speakers should be aware of the time limit of 15 minutes, devoted to session talks, and kindly asked to hold the time of their presentations.

Time for questions and answers will be devoted before the end of each session. Participants may write their questions on a paper and hand it over to the hostess that will be on duty in each lecture hall. Please note that the first row of seats will be reserved for speakers.

Instruction for poster presenters

Poster area is located on the 1st floor during the normal working hours of the congress. **The useful area of the poster board is 90 cm at width and 125 cm at height.** The recommended size for your poster is about the standing A/0 standard (cca. 84 × 119 cm). Pins are to be provided to fix the posters. Posters will be identified by posters numbers, which are printed in the proceedings book.

Poster presenters are kindly requested to hang up and remove their posters according to the following schedule.

POSTER SESSION I.

From Monday morning (25 May) until Tuesday lunch break (26 May)

Posters of the following topics can be viewed: Topic number 1–6, (P-01-01 – P-06-20)

Poster presenters can mount their posters from Sunday afternoon (24 May) and should remove them latest by Tuesday noon (26 May).

POSTER SESSION II.

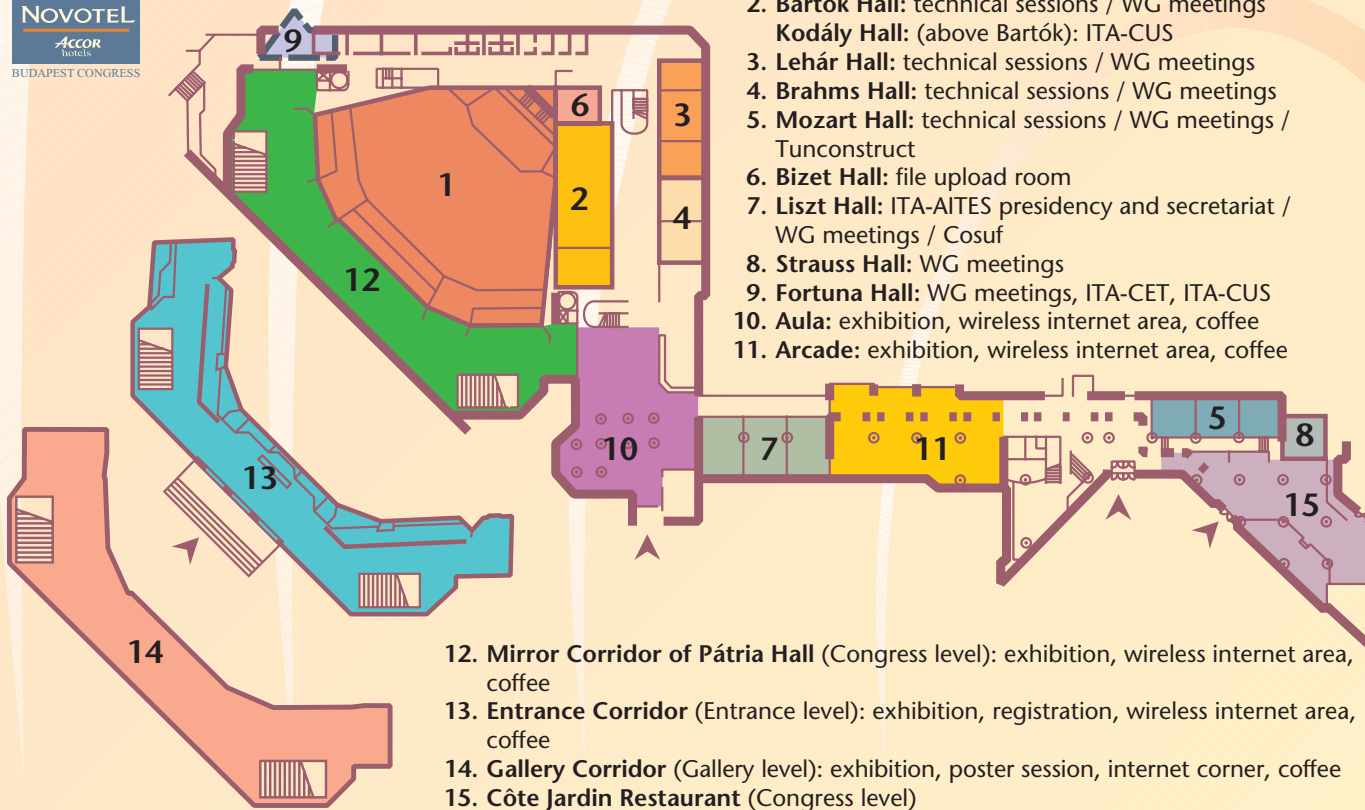
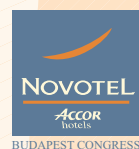
From Tuesday afternoon (26 May) until Wednesday evening (27 May)

Posters of the following topics can be viewed: Topic number 7–12, (P-07-01 – P-12-14)

Poster presenters can mount their posters from Tuesday lunch time (26 May) and should remove them latest by Wednesday evening (27 May).

As there is no organised attended poster session, we will ensure an electronic message board with two message sending points to post messages to each other. Thereby we intend to facilitate a more intense communication of poster presenters and attendees to fix appointments for poster discussion. Certainly the conventional way is also an option, presenters may prepare an envelope for visit cards as well.

Legend of the Congress level



WTC 2009 – DETAILED PROGRAMME OF THE TECHNICAL SESSIONS

Monday, 25 May, 14:00–15:40

TOPIC 10/1 City, tunnel, environment and safety

PÁTRIA HALL – Chairman: KOCSONYA, Pál – Co-Chairman: BAI, Yun

- O-10-01 *BALOGH, Zsolt* (Hungary): The 4th metro line of Budapest is under construction
- O-10-02 *GYÖRGY, Pál* (Hungary): Management of the valuable underground space as primary aspect at urban planning and architectural/Structural design of urban tunnels
- O-10-03 *ASTORE, Giuseppe* (Italy): Bologna metro line 1: underground station in a complex area
- O-10-04 *TOLPPANEN, Pasi* (Finland): New rail connection to the city centre of Helsinki
- O-10-05 *CHOMOVA, Viktoria* (Slovakia): Tunnel interconnection of the TEN-T railway corridors in Bratislava, the capital of the Slovak Republic
- O-10-06 *BOSCH, Johan* (The Netherlands): Small incident, big consequences: leakage of a building pit causes major settlement of historical houses. Amsterdam North–South metro line project.

TOPIC 09/1 Architectural design, structural design and management policy

BARTÓK HALL – Chairman: PETHŐ, Csaba – Co-Chairman: LEBLAIS, Yann

- O-09-01 *GÖTZ, Vollmann* (Germany): Integrated escape galleries – an alternative approach for road tunnel cross sections
- O-09-02 *ROSAS SÁNCHEZ, Leonardo* (Austria): Risk management using a Game Model Tunnel Collapse
- O-09-03 *KOLIC, Davorin* (Austria): Segmental lining tolerances and imperfections
- O-09-04 *YOON, Woon Sang* (Korea): 3D dynamic geo-modeling system using mobile units during tunnel excavation
- O-09-10 *VERGEINER, Ralf* (Austria): The Tauerntunnel – the two extremes between cohesionless gravel and hard rock with overburden of more than 1.000 m

TOPIC 05/1 Mechanized tunnelling

LEHÁR HALL – Chairman: LAKATOS, Ervin – Co-Chairman: LAMONT, Donald

- O-05-01 *OGGERI, Claudio* (Italy): Monitoring of EPBM tunnelling at LOT 2 of turin metro
- O-05-02 *LANGMAACK, Lars* (Switzerland): The truth about EPB soil conditioning – do's and don'ts
- O-05-03 *BOSSHARD, Martin* (Switzerland): The Zurich cross rail
- O-05-04 *KÖHLER, Hans* (Austria): The new Unterinntal Railway – Section H3–4
- O-05-05 *OCAK, Ibrahim* (Turkey): The performance of two EPB machines in istanbul metro tunnel drivages in soft and shallow ground
- O-05-06 *CELADA TAMAMES, Benjamin* (Spain): Prediction of cutter wear using RME

Monday, 25 May, 16:00–18:00

TOPIC 03/1 Tunnelling in soft ground with shotcrete method

PÁTRIA HALL – Chairman: GRESCHIK, Gyula – Co-Chairman: VUILLEUMIER, François

- O-03-01 *ZIEGLER, Martin* (Germany): Optimization of artificial ground freezing applications for tunneling subject to water seepage
- O-03-02 *CHOTIDILOK, Pisut* (Thailand): Ground improvement design and technique for supporting the construction of Bangkok blue line south extension subway
- O-03-03 *HÖFLE, Roger* (Germany): Time depending stability of tunnel faces
- O-03-04 *ROCHA, Hugo* (Brazil): Design and excavation aspects for the new Alto do Ipiranga tunnel station for the Sao Paulo metro
- O-03-05 *BARTON, Nick* (Norway): The main causes of the Pinheiros cavern collapse
- O-03-15 *CHO, Gye-Chun* (Korea): Effect of the spatial variability of shotcrete and soft ground on the plastic region around a tunnel

TOPIC 01/1 Risk analysis, finances and contractual relationships

BARTÓK HALL – Chairman: SMITH, Martin – Co-Chairman: DIX, Arnold

- O-01-01 *FOGARASI, Steve* (Canada): Risk factors and risk sharing at tenders and contracts of tunnelling and underground projects
- O-01-02 *YAN, Jinxiu* (China): Risk evaluation and control of Yesanguan railway tunnel on Yiwan railway line, China
- O-01-03 *SANDER, Philip* (Austria): Risk management for large infrastructure projects using probabilistic methods
- O-01-04 *BRUDERER, Werner* (Switzerland): Bypass flims / CH: karst risk and chances
- O-01-05 *ROZEK, James* (Australia): Geotechnical baseline report as an underground construction risk management tool
- O-01-07 *MARCHER, Thomas* (Austria): Stability analyses of tunnels – an approach using random set method
- O-01-06 *SHIMODA, Akifumi* (Japan): Research on risk analysis of fires in expressway tunnels in Japan

TOPIC 08/1 Miscellaneous (storing facilities, research and development, etc)

LEHÁR HALL – Chairman: FRIGYIK, László – Co-Chairman: UMNOV, Vitaly

- O-08-01 *KELETI, Imre* (Hungary): The first tunnels of the Hungarian motorway system
- O-08-02 *SHIN, Hee-Soon* (Korea): Current status of tunnel construction in Korea
- O-08-03 *OH, Beon Jin* (Korea): Optimal pillar width of twin tunnels in horizontal jointed rocks
- O-08-04 *KOOIJ, M.* (The Netherlands): The last development in the Netherlands to control extensive tunnel fires: The Steamexfire
- O-08-05 *KUKKONEN, Juha* (Finland): Experiences of the use of new generation drill plan design software in practice. Effects on excavation quality and total cost of excavation.

Tuesday, 26 May, 14:00–15:40**TOPIC 05/2 Mechanized tunnelling**

PÁTRIA HALL – Chairman: KLADOS, Gusztáv – Co-Chairman: FUKUMOTO, Katsuji

- O-05-07 *BÄPPLER, Karin* (Germany): Mechanized tunnelling for new, highly efficient infrastructures for traffic and supply systems
- O-05-08 *BILGIN, Nuh* (Turkey): Factors affecting the economy and the efficiency of metro tunnel drive with two TBM's in Istanbul in a very fractured rock formation
- O-05-09 *CHAIWONGLEK, Chat* (Thailand): Shield's three-zones mechanism approach for predicting ground deformations
- O-05-10 *IZUMI, Chitoshi* (Japan): A review of Delhi metro tunnel construction with 14 EPB shield TBMs

TOPIC 12/1 Special tunnels (long tunnels)

BARTÓK HALL – Chairman: VAGÁCS, József – Co-Chairman: SEINGRE, Gérard

- O-12-01 *BUSILLO, Aristodemo* (Italy): Brenner basis tunnel project – the exploratory and service tunnel
- O-12-02 *SCHLUMPF, Jürg* (Switzerland): Validation of sprayed concrete accelerators in relation to job safety, technical, commercial and ecological performance and the selection criteria for the construction of the Gotthard base tunnel
- O-12-03 *GRANTZ, WALTER C.* (United States): Bosphorus rail tunnel: unique construction techniques
- O-12-04 *KOVARI, Kalman* (Switzerland): Design methods with yielding support in squeezing and swelling rocks

TOPIC 02/1 Geological and geotechnical investigations

LEHÁR HALL – Chairman: HORVÁTH, Tibor – Co-Chairman: GRØV, Eivind

- O-02-01 *PEILA, Daniele* (Italy): Soil conditioning of cohesionless soil for EPBS: laboratory research and on-site application
- O-02-02 *SZILVÁGYI, László* (Hungary): Geological and geotechnical conditions of the first Hungarian motorway tunnels on M6 Szekszárd – Bóly project
- O-02-03 *BIANCHI, Gianpino W.* (Italy): Determination of reliability in geological forecasting for tunnel projects: the method of the R-index and its application on two case studies
- O-02-04 *OKAZAKI, Kenji* (Japan): Geotechnical estimation of large overburden tunnel ground by combination of HEM and CSAMT
- O-02-05 *JOHN, Max* (Austria): Considerations of swelling for the second tube Pfändertunnel
- O-02-06 *TORRES PRADA, Adolfo Camillo* (Colombia): Study of settlements induced by TBM in soft grounds in Bogotá – Colombia

TOPIC 11/1 Maintenance, repair and rehabilitation

BRAHMS HALL – Chairman: POSGAY, György – Co-Chairman: RUSSELL, Henry

- O-11-01 *SCABBIA, André* (Brazil): Brazilian road tunnels – Proposal for testing and inspecting according to Directive 2004/54/EC
- O-11-02 *MODETTA, Flavio* (Switzerland): Cost-effective rehabilitation of masonry lined rail tunnels with sprayed concrete and sprayable waterproofing membrane
- O-11-03 *MASHIMO, Hideto* (Japan): Experimental research on the effect of inner reinforcement on damaged tunnel linings
- O-11-04 *MORITZ, Ralf* (Germany): Reduction of tunnel maintenance costs by environmentally friendly water hardness stabilisation
- O-11-05 *IGLESIAS FIGUEREDO, Erik* (Switzerland): Influence of porosity and stiffness of specimen on the fire resistance of PP fiber mixed concrete
- O-11-06 *MELO CABRAL, Miguel* (Portugal): Rehabilitation of the Rossio tunnel in Lisbon – Portugal

Tuesday, 26 May, 16:00–18:00**TOPIC 09/2 Architectural design, structural design and management policy**

PÁTRIA HALL – Chairman: BALOGH, Zsolt – Co-Chairman: LECA, Eric

- O-09-05 *RADONCIC, Nedim* (Austria): Expert system for tunnel pre-design
- O-09-06 *KOREJCÍK, Jan* (Czech Republic): Prague metro line A extension – design of the first section
- O-09-07 *LUEPRASERT, Prateep* (Thailand): 3-D fea of NATM excavation for Bangkok MRT blue line south extension
- O-09-08 *POLI, Andrea* (Italy): Low overburden underpasses in urban areas without traffic limitations – Some examples
- O-09-09 *YOKOTA, Yasuhiro* (Japan): Numerical approach for simple estimation of reinforcing effects of facebolts

TOPIC 10/2 City, tunnel, environment and safety

BARTÓK HALL – Chairman: FOGARASI, István – Co-Chairman: LEE, In-Mo

- O-10-07 *THEWES, Markus* (Germany): Life cycle costing as a decision-making aid to the planning of underground infrastructure
- O-10-08 *DELFGAAUW, Steven* (The Netherlands): Jetgrout strut for deep station boxes of the north/south metro line Amsterdam – Design and back analysis
- O-10-09 *KIM, Hong-Moon* (Korea): Loads on pillar and block displacement during two-arch tunnel excavation in jointed rock mass
- O-10-10 *KOBLER, Thomas* (Switzerland): Northern bypass of the city of Zurich: Third tube Gubrist tunnel
- O-10-11 *FEHÉRVÁRI, Sándor* (Hungary): Effect of the concrete's component on the heat shock bearing capacity of tunnel linings
- O-10-12 *CHU, Freda* (Hong Kong): A systematic approach to construction risk assessment for the drainage tunnel of Kai Tak transfer scheme of Hong Kong
- O-10-13 *KOSHIMA, Akira* (Brazil): Test tunnel in Barcelona (Spain) for the feasibility of a 360° and frontal septum jet grouted treatment

TOPIC 06/1 Monitoring, settlement control

LEHÁR HALL – Chairman: DELI, Árpád – Co-Chairman: EHRBAR, Heinz

- O-06-01 *GALLER, Robert* (Austria): The new guideline – NATM – the Austrian way of conventional tunnelling
- O-06-02 *UNLUTEPE, Ahmet* (Turkey): Predicted and observed ground deformations due to TBM tunnel excavations on the Izmir metro project
- O-06-03 *HONGJIN, Jiang* (China): Time-dependant settlement vary in soils around a slurry-shield
- O-06-04 *ROZEK, Jan* (Czech Republic): Example of excavation of a shallow city ring tunnel in soft ground by the observational method – expectations and reality
- O-06-05 *ANGISTALIS, Georgios* (Greece): Practical discussion on the interpretation of geomonitoring measurements and their influence on tunnel support design, a case study

TOPIC 08/2 Miscellaneous (storing facilities, research and development, etc)

BRAHMS HALL – Chairman: SZŰCS, István – Co-Chairman: ROHDE, Jan

- O-08-06 *GREEN, Wayne* (Canada): How to deliver your project on time – An owners procurement strategy
- O-08-07 *DUIJVESTIJN, Bart* (The Netherlands): Strategic maintenance planning for tunnels optimizing tunnel safety
- O-08-08 *CHOW, Weng Lee* (Singapore): Design of segmental tunnel lining in an earthquake zone
- O-08-09 *PLIZZARI, Giovanni A.* (Italy): Parametric study on tunnel linings in fiber reinforced concrete combined with traditional reinforcement
- O-08-10 *NASRI, Verya* (United States): Continuum and discontinuum modeling for the design of shallow caverns in jointed Manhattan schist

Wednesday, 27 May, 8:30–10:30**TOPIC 09/3 Architectural design, structural design and management policy**

LEHÁR HALL – Chairman: SOÓS, Gábor – Co-Chairman: YOO, Chungsik

- O-09-11 *MONTENEGRO PALMERO, Natalia & PELÁEZ GONZÁLEZ, Mario* (Spain): Pressure wave measurements inside tunnels of the Spanish railway and inside a high velocity streamlined test train
- O-09-12 *KIRSCH, Ansgar* (Austria): Experimental and numerical investigation of the face stability of shallow tunnels in sand
- O-09-13 *VAN EMPEL, Nikolaas* (The Netherlands): Innovative joint design bored tunnels north/south metroline Amsterdam
- O-09-14 *FORGO, Lea* (Hungary): A case study in advanced numerical modelling in design: Heathrow Airport transfer baggage tunnel, UK

TOPIC 03/2 Tunnelling in soft ground with shotcrete method

BARTÓK HALL – Chairman: BENKOVICS, István – Co-Chairman: ISHIDA, Atsumu

- O-03-06 *BRANDL, Johann* (Austria): Metro Delhi Airport link – Large diameter NATM tunnelling under various ground conditions
- O-03-07 *CELADA TAMAMES, Benjamin* (Spain): Construction of an urban tunnel in loose and inhomogeneous soils under water table
- O-03-08 *QUICK, Hubert* (Germany): Urban tunnelling projects in soft soil conditions
- O-03-09 *IURA, Tomomi* (Japan): Economical and widely-applicable new construction method for shallow tunnels in loose sandy ground with high groundwater level
- O-03-10 *VOLKMANN, Guenther M.* (Austria): Back-calculated interacting loads on pipes of pipe umbrella support systems
- O-03-11 *LIKAR, Jakob* (Slovenia): Construction of twin road tunnel Cenkova – First tunnel with intermediate reinforced concrete Waa in Slovenia

TOPIC 04 Cut- and cover constructions

PÁTRIA HALL – Chairman: ZSIGMONDI, András – Co-Chairman: BABER, Jonathan

- O-04-01 *FRIEDRICH, Gyula* (Hungary): Construction of Kalvin ter and Bocskai ut stations Metro4 Budapest
- O-04-02 *BILFINGER, Werner* (Brazil): Rio de Janeiro subway: Safe and economic cut and cover construction using elliptical shafts
- O-04-03 *AYE, Zaw Zaw* (Thailand): Diaphragm wall support deep-excavations in Bangkok
- O-04-04 *KÁNTOR, Ervin* (Hungary): Challenges of the construction at Fővám station on Budapest metro line 4
- O-04-05 *HWANG, Chang Hee* (Korea): Behavior of the cut-and-cover tunnel in unsymmetrical Condition
- O-04-06 *SIGL, Oskar* (Singapore): Temporary earth retaining Structures in Perth's CBD
- O-04-07 *KOVÁCS, Árpád* (Hungary): Metro Line 4, Rákóczi tér station

TOPIC 12/2 Special tunnels (long tunnels)

MOZART HALL – Chairman: KOVÁRI, Kálmán – Co-Chairman: TBD

- O-12-05 *RENNEN, Markus* (Iceland): Challenges in tunnelling at the Icelandic Kárahnjúkar hydro-electric Project and solutions by use of advanced gyroscope measurements
- O-12-06 *NYIREGYHÁZI, Tamás* (Hungary): Tunnelling on an epic scale. The Kárahnjúkar Hydroelectric project
- O-12-07 *SMADING, Steve* (United States): Onsite assembly and hard rock tunnelling at the Jinping-II hydropower station power tunnel project
- O-12-08 *KIM, Sang-Hwan* (Korea): A study on the groundwater management system of the liver crossing long tunnels
- O-12-09 *HILAR, Matous* (Czech Republic): Long railway tunnels – Comparison of major projects

TOPIC 08/3 Miscellaneous (storing facilities, research and development, etc)

BRAHMS HALL – Chairman: KELETI, Imre – Co-Chairman: KANESHIRO, Jon

- O-08-11 *HIDEG, József* (Hungary): Tunneling in the low and intermediate level radioactive waste repository to be constructed at Bataapáti
- O-08-12 *NOVÁK, Miroslav* (Czech Republic): Ventilation of Prague metro
- O-08-14 *CHEUNG, Peter* (Hong Kong): Design and planning of Lai Chi Kok transfer scheme, Hong Kong
- O-08-15 *GARG, Pramit* (India): Environmental risk assessment and mitigation of NATM Tunneling on airport express line in New Delhi (India)
- O-08-16 *DE RIVAZ, Benoit* (France): Durability issue for SFRC precast segment in tunnelling application

Wednesday, 27 May, 10:50–12:30**TOPIC 03/3 Tunnelling in soft ground with shotcrete method**

LEHÁR HALL – Chairman: KÁNTOR, Ervin – Co-Chairman: TBD

- O-03-13 *GRABARITS, József* (Hungary): Tunnels on the Bataaszék–Bóly section of M6 motorway
- O-03-14 *TAHERIAN, Abdolreza* (Iran): Design and construction of a soft rock cavern
- O-03-16 *MERKIN, V.* (Russia): The efficient construction of single vault station with primary shotcrete lining used for the underground in Yekaterinburg
- O-03-22 *GOMES, Alexandre* (Chile): Metro Santiago – Underground works of the new line 5 to Maipu

TOPIC 02/2 Geological and geotechnical investigations

PÁTRIA HALL – Chairman: SZILVÁGYI, László – Co-Chairman: STERLING, Raymond

- O-02-07 *RICHTER, Thomas* (Germany): Geophysical investigations in advance and of the surrounding karstified rock during the construction of the “Katzenberg Tunnel” in Germany
- O-02-08 *SHIN, Koichi* (Japan): An engineering rock mass classification to estimate rock properties, support and excavation rate
- O-02-09 *TÖRÖS, Endre* (Hungary): Geophysical characterization of rocks for designing underground excavations
- O-02-10 *DOMBROWSKI, Boris* (Germany): Combination of rockburst monitoring and seismic exploration ahead of the tunnel face: A new seismic concept for risk reduction
- O-02-11 *KOVÁCS, László* (Hungary): In situ geotechnical and rock mechanical investigations for preparing the Hungarian L/ILW repository

TOPIC 06/2 Monitoring, settlement control**BARTÓK HALL – Chairman: HORVÁTH, Tibor – Co-Chairman: VOGEL, M.**

- O-06-06 *FILLIBECK, Jochen* (Germany): Shotcrete excavations for the Munich subway – Comparison of different methods of face support in settlement-prone areas
- O-06-07 *KALTENBACHER, Tamás* (Hungary): Monitoring and analyzing the behavior of diaphragm wall in Fővám and Gellért squares deep metro stations in Budapest
- O-06-08 *MOCCICHINO, Marco* (Italy): EPB TBM under the city centre of Vancouver: risk management and settlement control
- O-06-09 *AKEWANLOP, Kittti* (Thailand): Ground Responses during EPB Shield Tunneling in Bangkok
- O-06-10 *BEZRODNYI, Konstantin* (Russia): Ways to reduce the impact of metro construction in St. Petersburg on above-ground structures

TOPIC 10/3 City, tunnel, environment and safety**MOZART HALL – Chairman: TBD – Co-Chairman: BROERE, Wout**

- O-10-14 *POSCHER, Gerhard* (Austria): The 'A26 Linzer Autobahn' – Protection of the environment and tunneling in the city of Linz / Austria
- O-10-15 *NEUGEBAUER, Erich* (Austria): A new way to tackle safety in underground operations – Roofex a new rock bolting concept for underground excavations under high stress conditions
- O-10-16 *LEE, Myoung-jae* (Korea): A study on behavior of center pillar in 2-Arch tunnel when it is blasted
- O-10-17 *SERRA, Joao B.* (Portugal): Risks assessment and mitigation of an urban shield tunnel demolition and consequent excavation of a branch tunnel
- O-10-18 *SRB, Martin* (Czech Republic): Preparation and construction coordination of the slivenec tunnel on Prague ring road

TOPIC 11/2 Maintenance, repair and rehabilitation**BRAHMS HALL – Chairman: KOCSIS, István – Co-Chairman: VAN DEN BOSH, R.**

- O-11-07 *BUSSLINGER, Andreas* (Switzerland): Aerodynamics and climate in the Loetschberg Base tunnel – Prediction and findings
- O-11-08 *KUSAKA, Astushi* (Japan): Fundamental examination on mechanism of seismic damage of mountain tunnel
- O-11-09 *RODÓN ORTIZ, Santiago* (Spain): Adaptation of the AP-6 Guadarrama tunnels to European safety regulations. Actions carried out
- O-11-10 *YE, Yongfeng* (China): The risk and safety analysis and evaluation model study of long road tunnel operation
- O-11-11 *ARGHIROIU, Ovidiu* (Romania): Global strategy for development and modernization of Bucharest metro transport system between 2008–2030
- O-11-12 *SHIMAMOTO, Keisuke* (Japan): Study of prediction concerning tunnel deformation and effect of countermeasure by simulation analysis using ground strength reduction model

Wednesday, 27 May, 14:00–15:40**TOPIC 05/3 Mechanized tunnelling****PÁTRIA HALL – Chairman: ERTL, Hannes – Co-Chairman: BABENDERERDE, Lars**

- O-05-11 *SLINCHENKO, Denys* (Canada): Control of ground settlement in EPB tunnelling
- O-05-12 *IJJIMA, Tomoya* (Bulgaria): Excavation management with use of shield tunnel boring machine in rapidly changing soil conditions
- O-05-13 *VAN DER VLIET, Cornelis* (The Netherlands): Shield tail deformations: experience, mechanics and lessons
- O-05-14 *SRIJUNTHONG, Pichakorn* (Thailand): A study of shield operational factors on surface settlements using ANN
- O-05-15 *TAKAHASHI, Hiroshi* (Japan): EPB shield tunneling for shallow twin tunnels under railway in operation

TOPIC 10/4 City, tunnel, environment and safety**BARTÓK HALL – Chairman: TBD – Co-Chairman: ELIOFF, Amanda**

- O-10-19 *RYJEVSKI, Mikhail Efimovich* (United Arab Emirates): Jet-grouting application for Dubai metro construction
- O-10-20 *IZAWA, Masayoshi* (Japan): URUP (Ultra Rapid Under Pass) method – The first shield tunneling method for launching and arrival at the ground level
- O-10-21 *SAHARA, Fumihiko* (Japan): Construction of an urban arterial road tunnel by a non-open-cut method using a long pipe roof
- O-10-22 *MUNFAH, Nasri* (United States): Safety and security of tunnels and underground facilities
- O-10-23 *GALVIN, Mark* (Canada): Tunnels connect and protect communities

TOPIC 06/3 Monitoring, settlement control**LEHÁR HALL – Chairman: MARTAK, Lothar – Co-Chairman: TBD**

- O-06-11 *FRIGYIK, László* (Hungary): Description, analysis of unexpected events during the construction of the Budapest metro 4 line, lessons learnt
- O-06-12 *LEE, In-Mo* (Korea): Reflection method of guided ultrasonic waves induced by hammer impact for integrity evaluation of rock bolts in field
- O-06-13 *SUNTHORNJAK, Sedtawut* (Thailand): Optimized ground movement variables using field and shield operational parameters correlation
- O-06-14 *YOO, Chungsik* (Korea): Lessons learned from case histories of tunnelling-induced groundwater drawdown and associated settlement
- O-06-15 *SMIRNOVA, G. O.* (Russia): Ground consolidation for driving cross-passages between transport tunnels

TOPIC 12/3 Special tunnels (long tunnels)**MOZART HALL – Chairman: GRESCHIK, Gyula – Co-Chairman: AMBERG, Felix**

- O-12-10 *MICLEA, Paul C.* (United States): Evolution of tunnel ventilation and safety criteria in a changing city environment
- O-12-11 *VUOLLE, Pasi* (Finland): Water mist concept – effective choice for improving safety in road tunnels
- O-12-12 *PIGORINI, Andrea* (Italy): The application of compensation grouting to protect a railway viaduct from tunnelling induced movements
- O-12-13 *SEIFERT, Nicolaus* (Switzerland): Automatic fire extinction in road tunnels – State-of-the-art and practical applications
- O-12-14 *BARTEN, Piet* (The Netherlands): Design of the Coatzacoalcos immersed tunnel

TOPIC 03/4 Tunnelling in soft ground with shotcrete method**BRAHMS HALL – Chairman: THOMAS, Alun – Co-Chairman: CELESTINO, Tarcisio**

- O-03-12 *CELESTINO, Tarcisio* (Brazil): Shotcrete supported shafts for urban underground construction
- O-03-17 *FRANCA, Pedro T.* (Brazil): Three-dimensional tunnel analysis with elasto-plastic constitutive models
- O-03-19 *AOKI, Tomoyuki* (Japan): Design and construction of concrete center pillars in a large double adjoined binocular tunnel system
- O-03-20 *ROMANA, Manuel* (Spain): Could the New Austrian Tunnelling Method be used safely in cities?
- O-03-21 *THOMAS, Alun* (Hungary): Advanced numerical modelling in tunnel design – the example of a major project in the UK

Wednesday, 27 May, 16:00–17:30**TOPIC 01/2 Risk analysis, finances and contractual relationships****PÁTRIA HALL – Chairman: GYÖRGY, Pál – Co-Chairman: SMITH, Martin**

- O-01-08** *PARKER, Harvey W.* (United States): Life cycle cost considerations using risk management techniques
- O-01-09** *REILLY, John* (United States): Alternative contracting and delivery methods
- O-01-10** *SMITH, Martin* (United Kingdom): Major issues in the construction of large underground works – an international perspective
- O-01-11** *RIVAL, Fabien* (France): Geological risk: a methodological approach and its application to 65 km of tunnels under the Alps, in France
- O-01-12** *STACHERL, Bernhard* (Austria): Challenges for a new base tunnel project through the Andes

TOPIC 05/4 Mechanized tunnelling**BARTÓK HALL – Chairman: HARGITAI, Róbert – Co-Chairman: PEILA, Daniele**

- O-05-16** *KOUROSH, Shahriar* (Iran): TBM tunneling and analysis of high gas emission accident in Zagros long tunnel
- O-05-17** *BALCI, Cemal* (Turkey): Performance prediction and comparison of in-situ values of a TBM: A case study of Otogar–Bagcilar metro tunnel in Istanbul
- O-05-18** *QUI, Wenge* (China): Study on longitudinal mechanical behavior during adjacent construction for overlapping shield tunnels
- O-05-19** *ZHENG, Yu-chao* (China): Study on the construction technology of full-face pipe-roofing method in large-span tunnel with 4 holes underpass of railway
- O-05-20** *HIRSCHER, Julius & POGU, Francois* (Hungary): Mined section at Gellert station and related structures

TOPIC 02/3 Geological and geotechnical investigations**LEHÁR HALL – Chairman: TÖRÖS, Endre – Co-Chairman: ADMIRAAL, Han**

- O-02-12** *ANAGNOSTOU, Georg* (Switzerland): Geotechnical and contractual aspects of urban tunnelling with closed shields
- O-02-13** *WU, Jian-Hong* (Taiwan): Investigating the Kaiser Effect of Changchiken sandstone in Taiwan
- O-02-14** *NAKTHONG, Siripong* (Thailand): Design and appraisal of twin tunnels for Bangkok MRTA extension project
- O-02-15** *HARER, Gerhard* (Austria): Koralm tunnel: Benefits of a structured investigation process for a large tunnel project – the clients view
- O-02-16** *CHUN, Byung Sik* (Korea): Earth pressure acting on the diaphragm wall of a shaft in cohesionless soil

TOPIC 06/4 Monitoring, settlement control**MOZART HALL – Chairman: MECSEI, József – Co-Chairman: INGERSLEV, Christian**

- O-06-16** *AOKI, Tomoyuki* (Japan): Behaviour of large double adjoined binocular tunnels at shallow depth during excavation
- O-06-17** *OGGERI, Claudio* (Italy): Assessment of F.R. shotcrete behaviour during tunnel convergence
- O-06-18** *SCHUBERT, Wulf* (Austria): Development of expert system for the interpretation of monitoring data
- O-06-19** *STADELMANN, Rolf* (Singapore): Interaction between twin tunnels at close proximity and under shallow overburden in urbanised area
- O-06-20** *YU, Chi-wen* (Taiwan): Prediction of tunnel behaviors in intersection area

The names of the chairmen and co-chairmen may be subject to change.

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Final List of Accepted Poster Presentations

TOPIC 01 Risk analysis, finances and contractual relationships

- P-01-01 *BLINDOW, Friedrich*: Risk analysis and risk-controlling in infrastructure projects
 P-01-02 *FERKL, Lukas*: Risk management in tunnels: what can we learn from aerospace industry?
 P-01-03 *HODGKINSON, Alan*: Engineering classification: the key to filing and finding construction project information
 P-01-04 *HU, Min*: Dynamic risk identification in underground tunnel engineering
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 P-02-04 *ITO, Yoshihiko*: Geological estimation and countermeasure for toxic elements of natural origin in rock muck of two tunnels in hydrothermally altered area
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Further details on exhibition e.g. floor plans, list of exhibitors, stand numbers, please see the Exhibition Catalogue. **Opening hours correspond with the opening hours of the Congress.**

List of Exhibitors

Stand No. Company

C12–13	AFTES Plant & Equipment Branch	G1–2	MAPEI S.p.A. – Underground Technology Team
E16–17	Amberg Engineering AG / Amberg Technologies AG	A2	Marioff Corporation Oy
E18	ARCADIS	C8	MATRICS Consult Ltd.
M21–22	Atlas Copco s.r.o. Construction and Mining Technique Division	G3	Mining Equipment Ltd.
A5	Babendererde Engineers GmbH	C9–10	Minova
M8–9	BASF Construction Chemicals Europe AG – MEYCO Global Underground Construction	A21–22	NFM Technologies
M20	Ceresola TLS AG	A8–9	Normet International Ltd.
E12	Consorzio TRE ESSE	A3	Norwegian Tunnelling Society
E3	CRC Press/Balkema	M1	Rascor International Ltd.
E4	DENKA	E12	Rocksoil S.p.A.
E9	DMT GmbH & Co. KG	A19	S&B Industrial Minerals GmbH
M5–7	DYWIDAG-Systems International GmbH (DSI)	A10	Schauenburg MAB GmbH / Boenigk Consult GmbH
E1	EDILMAC of FRATELLI MACCABELLI S.r.l.	A18	Schauenburg Tunnel-Ventilation GmbH
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A20	FiReP International AG, Switzerland	C6	Sociedade Portuguesa de Geotecnia
C2	FŐMTERV Civil Engineering Designer Ltd.	E8	SolData
E7	Geoconsult ZT GmbH, Consulting Engineers	E14	Solexperts AG
E13	Geodata Geoengineering Consultants	A25	Spelsberg, Günther, GmbH + Co. KG
E10	Geodata Group	E2	STRABAG-MML Building and Civil Engineering Construction Ltd.
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GENERAL INFORMATION

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The Congress is held at the Budapest Congress and World Trade Center (BCWTC) from the 23 to 28 May, 2009.

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The electricity is 230 V, 50 Hz. Japanese, UK, USA and other visitors: please note that Hungary has European/continental-type electric plugs.

Liability and Insurance

The organisers cannot accept liability for any personal accidents, loss of belongings or damage to private property of participants and accompanying persons that may occur during the Congress. Participants are advised to make their own arrangements to obtain health, travel and property insurance before their departure.

Official Language

The official language of the Congress is English. ITA-AITES General Assembly will have simultaneous French interpretation. Technical sessions are provided with Hungarian interpretation in Room Pátria and Bartók.

Registration and Information Desk

The registration desk is located on the entrance level of the Congress Venue (BCWTC).

Opening hours: on Saturday, 23 May 15:00–20:00, on Sunday, 24 May 9:00–20:00, from Monday, 25 May – till Wednesday, 27 May 8:00–18:00.

Conference delegates and their companions will receive their badges, conference materials, social event tickets at the desk.

Subscription for optional tours also takes place in this area.

Badges

All participants and accompanying persons will receive a personal badge upon registration. You are kindly requested to wear your name badge when attending the meeting or social events. Only participants who are wearing their name badge will be admitted to the lecture halls.

Please note that accompanying persons and exhibitors will be not be admitted to the technical sessions.

Name badge have been colour-coded as follows:

■ delegate, press

Including the following services:

- Participation in scientific sessions
- Admission to the Opening and Closing Ceremony
- Admission to the exhibition
- Printed material of the Congress
- Congress bag with proceedings
- Welcome reception (24 May)
- Congress concert in the Basilica (26 May)
- Coffee breaks (25–26–27 May)
- Lunches (25–26–27 May)
- Post-congress technical tours (advance booking is required)

■ exhibitor

Including the following services:

- Exhibitor Catalogue
- Visiting the exhibiton and coffeee break area

■ exhibitor (upgraded exhibition badge)

Including the following services:

- Admission to the Opening and Closing Ceremony
- Admission to the exhibition
- Welcome reception (24 May)
- Congress concert in the Basilica (26 May)
- Coffee breaks (25–26–27 May)
- Lunches (25–26–27 May)

■ accompanying person

Including the following services:

- Admission to the Opening and Closing Ceremony
- Welcome reception (24 May)
- Congress concert in the Basilica (26 May)
- Budapest sightseeing tour with visiting the Synagogue (half day)
- Gödöllő tour (half day)

■ visitor

Including the following services:

- Exhibitor Catalogue
- Visiting the exhibiton area

On-site Registration

Deadline for the payment of the early bird registration fee was **31 January 2009**. Normal registration fees could be paid until **15 May 2009**, after that on-site fees should be paid on spot.

On-site registration fees* for WTC2009

Congress participants: 820 EUR

Student participants: 360 EUR

Accompanying persons: 200 EUR

* Registration fees include 20% VAT.

Registration fee for congress participants include:

- Participation in scientific sessions
- Admission to the Opening and Closing Ceremony
- Admission to the exhibition
- Printed material of the Congress
- Congress bag with proceedings
- Welcome reception (24 May)
- Congress concert in the Basilica (26 May)
- Coffee breaks (25–26–27 May)
- Lunches (25–26–27 May)
- Technical tours

Registered accompanying persons are entitled to receive:

- Admission to the Opening and Closing Ceremony
- Welcome reception (24 May)
- Congress concert in the Basilica (26 May)
- Budapest sightseeing tour with visiting the Synagogue (half day)
- Gödöllő tour (half day)

Admission to lunches and technical sessions is not included in the accompanying persons' registration fee.

Programme Changes

The organisers cannot assume liability for any changes in the programme due to external or unforeseen circumstances.

Message

Personal message can be placed on the message board located at the registration area.

Internet Corner

As a courtesy to all delegates, internet terminals are available on the Gallery of BCWTC. There is also wireless internet for your own laptop. Password & web-key: WTC2009

Opening hours:

Sunday, 24 May – Wednesday, 27 May 08:00 – 18:00

Car Parking

Parking space is available in front of the Congress Center (BCWTC). Price: 200 HUF/hour (cca 0.7 EUR)

Mobile Phones

Delegates are politely requested to keep their mobile phones switched off in the meeting rooms during all sessions.

Smoking

WTC2009 is a non-smoking congress. Therefore, the organisers would like to thank the participants in advance for not smoking in the Congress Center.

First Aid and Pharmacy

There is a First Aid room in the Conference site, which is open between 9:00–18:00 between 25–27 May, 2009.

The nearest Pharmacy can be found next to the Congress Center (5 minutes on foot) in the shopping mol of MOM PARK.

Catering Services during WTC

- **Welcome reception** – BCWTC / Pátria Hall, 24 May (including in the appropriate registration fees)
- **Lunch** – Budapest Sportmax Hall 25–26–27 May (including in the appropriate registration fees)
- **Lunch for Members of General Assembly** – 24 May at Côte Jardin Restaurant, Novotel Budapest Congress and 27 May at Budapest Sportmax Hall
- **Coffee breaks** – BCWTC / Exhibition area (including in the appropriate registration fees)
- **Banquet** – Museum of Fine Arts 27 May (not included in any type of registration fees)

Cancellation Policy

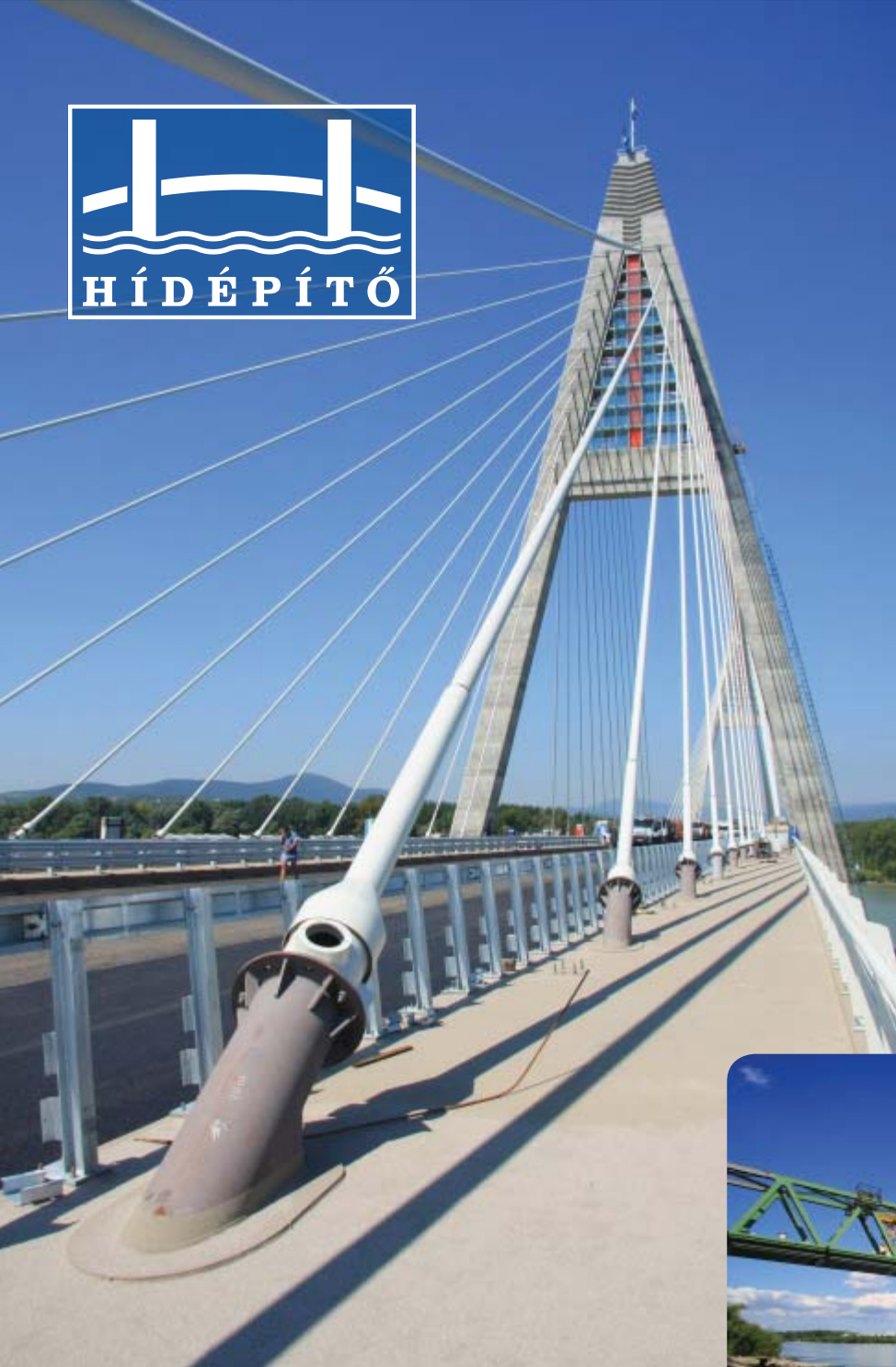
Cancellations are accepted only in writing.

In case of cancellation of registration received till 28 February 2009, the refund was 100%.

From 1 March to 15 April 2009, the penalty was 50%.

No refund is possible for cancellations submitted after 15 April 2009.

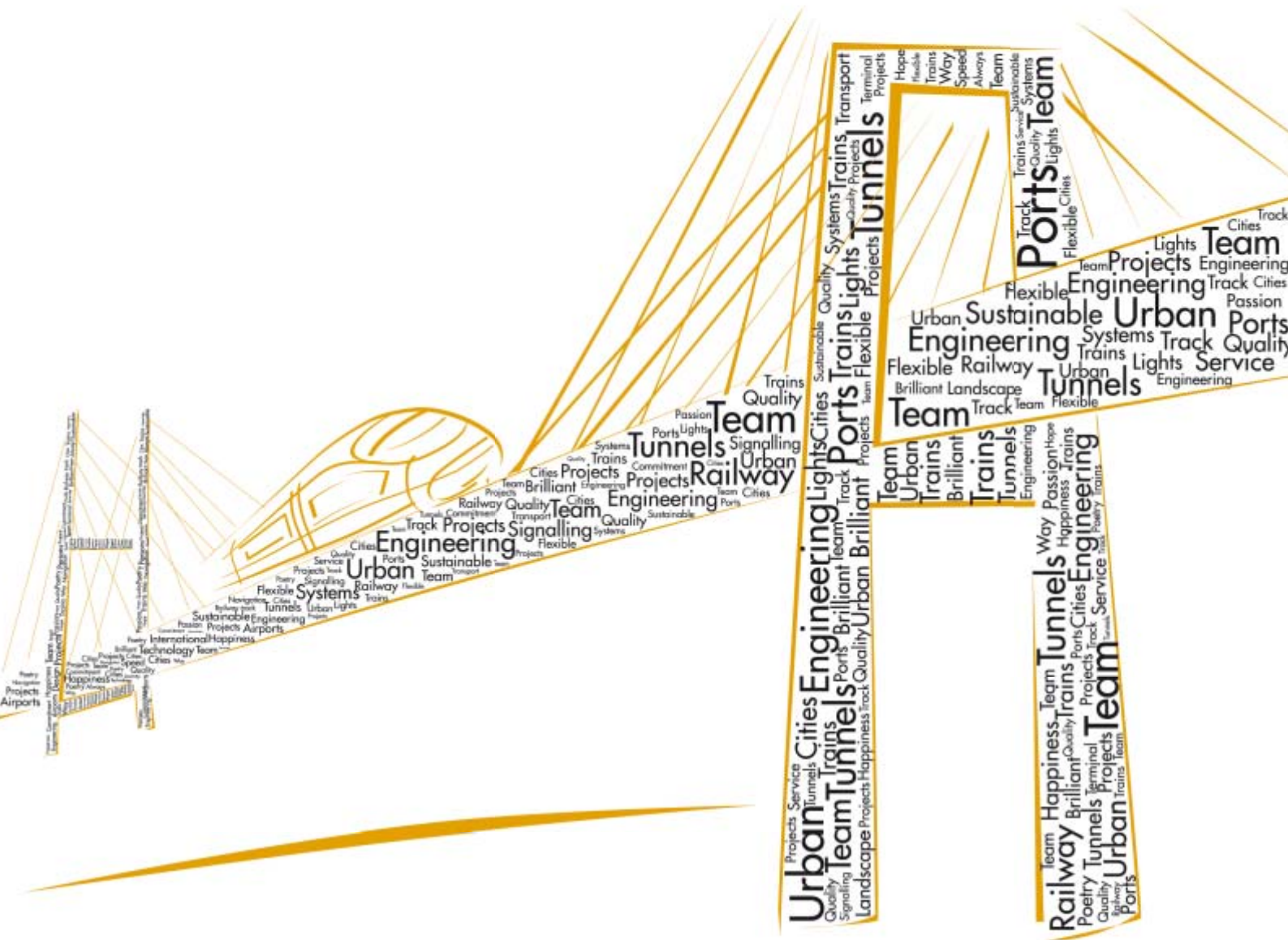
In case of cancellation of hotel reservation received till 31 March 2009 the refund was 100%. After that date prepaid hotel deposits are not refundable.



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Accommodation Information

Hotel prices are in EUR, per room per night, including breakfast and all kinds of taxes. Check in time from 2 pm, check out time till 10 am.

For the location of the hotels, please refer to the map on the rear cover.

Novotel Budapest Congress**** (Conference venue)

Address: H-1123 Budapest, Alkotás u. 63–67.

Phone: (+361) 372-5400

Website: www.accorhotels.com

Location from congress venue: 1 minute on foot

Single room: 154 EUR

Double room: 178 EUR

Hotel Mediterran****

Address: H-1118 Budapest, Budaörsi út 20/a.

Phone: (+361) 372-7020

Website: www.hotelmediterran.hu

Location from congress venue: 2 minutes on foot

Single room: 95 EUR

Double room: 125 EUR

Hotel Bara***

Address: H-1118 Budapest, Hegyalja út 34–36.

Phone: (+361) 385-3445

Website: www.hotelbara.hu

Location from congress venue: 10 minutes on foot

Building "A"

Room for 1 person: 64 EUR

Room for 2 persons: 74 EUR

Room for 3 persons: 99 EUR

Building "B"

Room for 1 person: 53 EUR

Room for 2 persons: 60 EUR

Room for 3 persons: 81 EUR

Building "C"

Room for 1 person: 44 EUR

Room for 2 persons: 54 EUR

Room for 3 persons: 72 EUR

Hotel Charles***

Address: H-1016 Budapest, Hegyalja út 23.

Phone: (+361) 212-9169

Website: www.charleshotel.hu

Location from congress venue: 10 minutes on foot

Single room: 88 EUR

Double room: 96 EUR

Gold Hotel Buda****

Address: H-1016 Budapest, Hegyalja út 14.

Phone: (+361) 209-4775

Website: www.goldhotel.hu

Location from congress venue: 15 minutes on foot

Single room: 99 EUR

Double room: 110 EUR

Mercure Hotel Buda****

Address: H-1013 Budapest, Krisztina körút 41–43.

Phone: (+361) 488-8100

Website: www.accorhotels.com

Location from congress venue: 15 minutes by public transportation

Single room: 120 EUR

Double room: 136 EUR

Danubius Hotel Flamenco****

Address: H-1113 Budapest, Tas vezér u. 3–7.

Phone: (+361) 889-5600

Website: www.danubiushotels.com

Location from congress venue: 20 minutes by public transportation

Single room: 99 EUR

Double room: 115 EUR

Hilton Budapest****

Address: H-1014 Budapest, Hess András tér 1–3.

Phone: (+361) 888-8200

Website: www.budapest.hilton.com

Location from congress venue: 25 minutes by public transportation

Single room: 210 EUR

Double room: 230 EUR

Hilton WestEnd Budapest****

Address: H-1069 Budapest, Váci út 1–3.

Phone: (+361) 288-5500

Website: www.hilton.com

Location from congress venue: 30 minutes by public transportation

Guest room

Single occupancy: 154 EUR

Double occupancy: 166 EUR

Executive room

Single occupancy: 228 EUR

Double occupancy: 240 EUR

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UVATERV Engineering Consultants C. C. Ltd, one of the largest consultancy firms of Hungary, celebrated its 60th anniversary in autumn 2008. The activity of the company comprises a very large variety of engineering services: tunnels, metro networks, motorways, roads, airports, railway lines, bridges, inland ports, buildings, vehicle depots, garages, multi-storey car parks, telecommunication towers have been realized on the basis of the designs of the company, both in Hungary and abroad. The major part of our multi-disciplinary design tasks have been performed by our own designers, owing from the one hand to our excellent experts staff and specialists representing every design sector, and from the other to our advanced technical and technological system.

Social Events

WTC2009 Welcome reception

Sunday, 24 May 2009

The official welcome reception of WTC2009 will be held in the Pátria Hall at BCWTC, Congress venue. Admission is free for all registered delegates, accompanying persons and exhibitors with registration fee.



Organ Concert in the St. Stephen Basilica

Tuesday, 26 May 2009



This organ concert is organised exclusively for participants of the Congress at the St. Stephen Basilica in the city centre. Admission is free for all registered delegates, accompanying persons and exhibitors with registration fee. **Event sponsor: BASF**

WTC2009 Banquet

Wednesday, 27 May 2009

The official closing banquet of WTC2009 will be held in the Museum of Fine Arts, located next to the Heroes' Square, the Vajdahunyad Castle and the Museum of Contemporary Art. Admission is not included in any type of registration fees. Price: 120 EUR/person



Optional and Accompanying Persons' Programmes

Budapest sightseeing tour with Synagogue

Monday, 25 May 2009



The first programme will be a sightseeing in the Buda side of the city by bus. Among several famous sights, the following places will be visited: Buda Castle, Fisherman's Bastion, etc. The tour continues with the visit of the Synagogue. After a guided tour in the largest Synagogue in Europe, sightseeing in the Pest side: Heroes' Square,

Basilica, Opera House etc. Lunch is not included in the tour. Participation in this programme is included in the accompanying persons' registration fee only. **Departure at 13:30 in front of the Congress Venue (BCWTC).**

Hollókő tour

Tuesday, 26 May 2009

The village of Hollókő (listed UNESCO World Cultural Heritage site) is a living museum today preserving the culture of the "Palóc" people, their houses, and decorated folk costumes. The village contains 67 protected buildings. Guided sightseeing tour and lunch in a local restaurant is included in the full-day optional excursion. Participation in this programme is not included in any type of registration fees. Price: 65 EUR/person. **Departure at 9:00 in front of the Congress Venue (BCWTC).**



Gödöllő tour

Wednesday, 27 May 2009



This is a half day guided tour by bus to the former summer residence of Queen Elisabeth which is near to Budapest. The town's greatest treasure for tourists is its 250 years old Royal Palace. Visitors can see the living quarters of Emperor Franz Joseph and Empress Elizabeth (Sissi).

Participation in this programme is included in the accompanying persons' registration fee only. **Departure at 9:00 in front of the Congress Venue (BCWTC).**

Technical Tours

The technical tours will be organised on **Thursday, 28 May 2009**. The 4 parallel technical tours are included in the registration fee. Minimum number of participants are 15 pax / tour. Application in the technical tours can be made online after having arranged your final registration via www.wtc2009.org. Booking is possible on a first come first serve basis in the personal registration record.



TT-1. Budapest Metro stations of Line 4,

Buda side – under construction

There are structure-ready 3 of five stations, where inner structures are under construction. The other 2 station-structures are under construction. TBM-bored tunnels between stations are ready. Depot in Kelenföld is under construction. Half day programme. **Departure at 8:00 in front of the Congress Venue (BCWTC).**



TT-2. Budapest Metro stations on the Pest side of the Line 4 – under construction



All of the five stations are under construction, under the densely built-in narrow streets-area of the inner city. Special technology needed, because of very old listed buildings are near to the stations building site. Construction of TBM tunnels will be arriving after May 2009, only. Half day programme. **Departure at 8:00 in front of the Congress Venue (BCWTC).**

TT-3. Motorway tunnels on M6 motorway Szekszárd-Boly section

There are 4 motorway tunnels in a total length of 3 km under construction by NATM tunnelling method in loess soil on **M6 motorway Szekszárd-Boly** section near town of Bátaszék. Tunnels are located on a 10 km long subsection of motorway within range of a 5 km. Between the tunnels viaducts are under construction will also be seen. Full day programme by bus. Light lunch will be provided. **Departure at 7:30 in front of the Congress Venue (BCWTC).**



TT-4. Underground disposal facility

– under construction

For storing low and intermediate level radioactive wastes in South Hungary. The exploration activities and the implementation of facilities (the access-tunnel) will be shown. Full day programme by bus. Light lunch will be provided. **Departure at 7:30 in front of the Congress Venue (BCWTC).**



TT-5. Budapest Metro stations on the Pest side of the Line 4 – under construction

All of the five stations are under construction, under the densely built-in narrow streets-area of the inner city: Keleti railway station, Rákóczi tér station.

This tour can be booked on spot, and will be departed in case of significant interest. Half day programme. Departure at 8:00 in front of the Congress Venue (BCWTC).

Post-Congress Tour

Danube Bend tour: Szentendre

Thursday, 28 May 2009



Half day tour starts at 13:30. The tour includes a visit to Szentendre, the artists' town with its cobble-stone squares and picturesque old streets and alleys. Visiting the Skanzen, which is an Open Air Ethnographical museum. The architecture of almost every region of the country is represented in this collection of more

than 300 buildings. There will be possibility for shopping in the many handicrafts' and souvenirs shops. Coming back to Budapest at around 18:00. The price of the tour: 40 EUR / person.

Danube Bend tour: Esztergom – Visegrád

Friday, 29 May 2009

North-Eastern Hungary tour: Szalajka valley – Aggtelek – Eger

Thursday & Friday, 28–29 May 2009

Due to limited number of participants, these tours were cancelled and no longer available. Thank you for your understanding.

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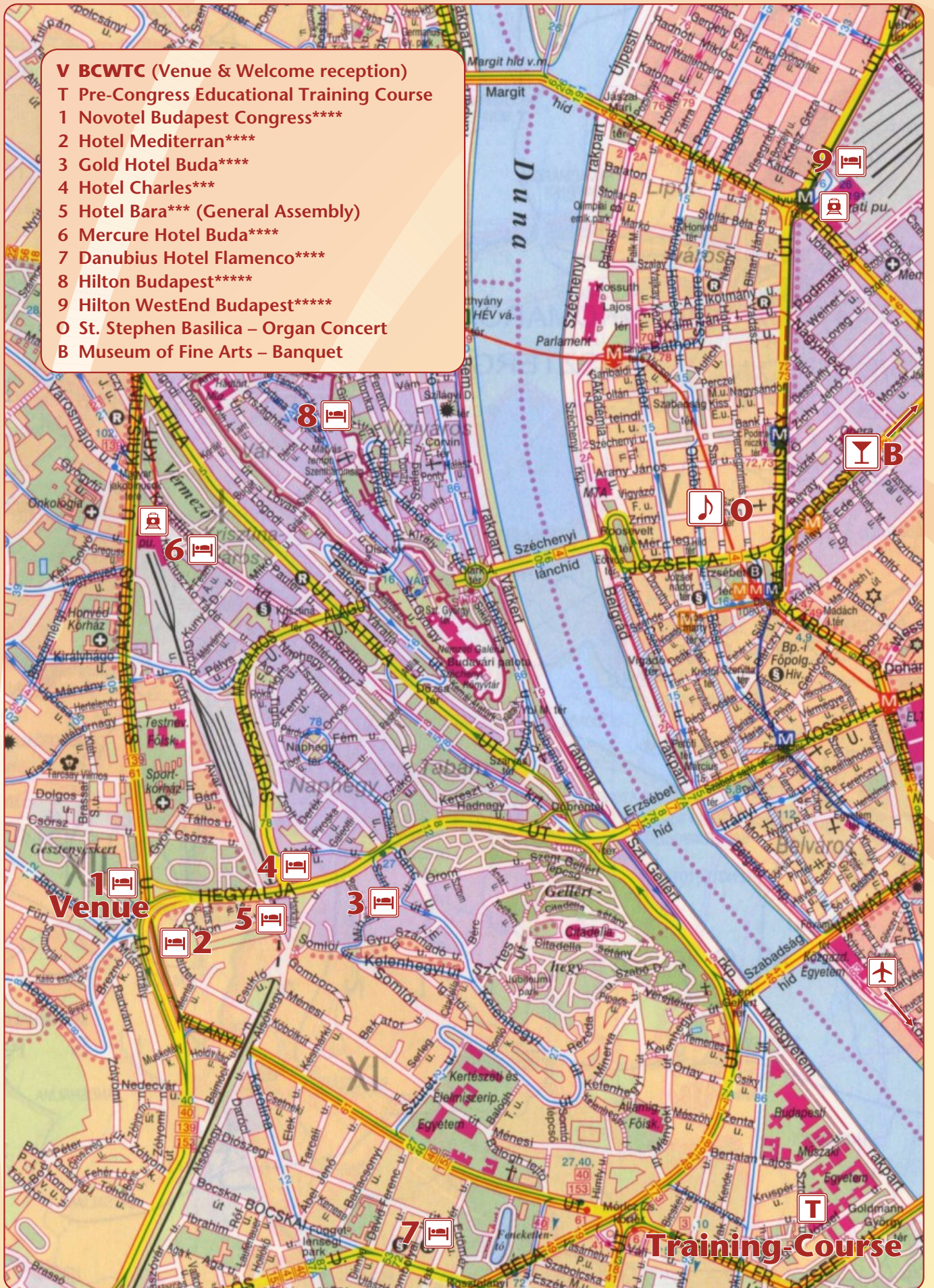


Expanding horizons

underground

MEYCO

- V BCWTC (Venue & Welcome reception)**
- T Pre-Congress Educational Training Course**
- 1 Novotel Budapest Congress******
- 2 Hotel Mediterran******
- 3 Gold Hotel Buda******
- 4 Hotel Charles*****
- 5 Hotel Bara*** (General Assembly)**
- 6 Mercure Hotel Buda******
- 7 Danubius Hotel Flamenco******
- 8 Hilton Budapest******
- 9 Hilton WestEnd Budapest*******
- O St. Stephen Basilica – Organ Concert**
- B Museum of Fine Arts – Banquet**



1 Venue

T Training-Course