ITA-AITES WORLD TUNNEL CONGRESS 2007
& THE 33rd ITA-AITES GENERAL ASSEMBLY

UNDERGROUND SPACE
THE 4TH DIMENSION OF METROPOLISES

Final Programme

MAY 5 – 10, 2007
PRAGUE, CZECH REPUBLIC
WWW.WTC2007.ORG
## ITA-AITES WORLD TUNNEL CONGRESS 2007
### AND THE 33RD ITA-AITES GENERAL ASSEMBLY

**Underground Space – the 4th Dimension of Metropolises**

organized by the Czech Tunnelling Committee ITA/AITES

on behalf of the International Tunnelling Association ITA-AITES

under the auspices of the Mayor of the City of Prague and the Minister for Regional Development

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MESSAGE FROM THE PRESIDENT OF THE CZECH REPUBLIC

Dear delegates, ladies and gentlemen,

I am pleased that I can welcome and address the building industry experts from the world over. Your highly specialized field of expertise is not much known to the general public and yet it concerns the lives of many, if not all, people. It is a field which is remarkable both from the technical point of view, as well as by the fact that it influences the life of the cities.

I have found the main topic of your Congress – “Underground Construction: the 4th Dimension of Metropolises” – interesting because it chooses the very emphasis on everyday life of the big cities.

Underground construction offers great effects in combining the development requirements and, at the same time, in its respect to the environment. Your Congress focuses on the economic and financial aspects which are primarily the topic for your Open Session under the title „New financing trends and consequences on the tunnelling contracts”. This seems right to me, especially because it is a field which is largely dependent on public sources of funding. As such, it should be taking note of the fact that not everything that can be built must also be a public priority.

The development of big cities offers the underground a wide range of utilization for the infrastructural purposes. We are witnessing a period of growing migration and concentration of the countryside population in the big cities and it is not sufficient for the cities only to grow higher and wider, but they must also grow deeper.

Your task is to find the proportions between the general effects of underground construction and economic aspects. I believe that this Congress will represent a step forward for your field in this respect.

I wish that your Congress is successful and that it is also a significant and congenial social gathering.

Václav Klaus
President of the Czech Republic
MESSAGE FROM THE MAYOR OF THE CITY OF PRAGUE

Ladies and Gentlemen,

I take great pleasure in welcoming you to Prague, not only as ITA Congress delegates but also as visitors of the Czech Republic's capital.

The main topic of your congress “Underground Space – the 4th Dimension of Metropolises” formulates actual and future needs of metropolises all over the world, including Prague.

I am truly delighted that you have chosen Prague as your congress venue - the city with rich underground space history, interesting presence and promising future. In modern history, the development of our “fourth dimension” already began decades ago, at the time of starting the never-ending era of metro construction. Further on there were city road tunnel projects, with Strahovsk˘ and Mrázovka tunnels being already in operation and other ones under construction. The tunnels are not used solely for transportation – an extensive collector utility system has been constructed for several years now. Just recently, there has been a decision made on commencing the reconstruction of a sewerage system under the historical buildings of the Old Town, gems of the medieval since they were damaged during the floods in 2002. I would be able to keep reciting additional examples of a significant role the underground plays in development of Prague’s infrastructure but I am sure that your conference papers would deal with this topic in more detailed and professional manner.

I wish your congress every success and to you, ladies and gentlemen, a pleasant stay in Prague.

Pavel Bém
Mayor of the City of Prague

MESSAGE FROM THE CTuC PRESIDENT

On behalf of the Czech Tunnelling Committee ITA/AITES, I would like to welcome professionals involved in tunnelling and associated industrial branches from all over the world to city of Prague, the Capital of the Czech Republic. It is our great pleasure and honour to host the ITA-AITES WORLD TUNNEL CONGRESS and the 33rd ITA-AITES GENERAL ASSEMBLY from May 5 through May 10, 2007.

The Czech Tunnelling Committee and the WTC Organizing Committee have prepared a various professional programme under the theme „Underground Space – the 4th Dimension of Metropolises” for you, participants in the congress. During the pre-congress ITA-AITES Educational Workshop, experts of ITA-AITES from all over the world will give lectures to young engineers under the auspices of the Czech Technical University. Four internationally well-known speakers have been invited to presentation of Keynote Lectures. In the Open Session, eight presentations are arranged to thoroughly discuss topics related to the theme "New financing trends and consequences on the tunnelling contracts". Nine discussion topics have been picked out for this congress and I believe they would bring a comprehensive state-of-the-art of our industry and its future, as well. More than 300 papers have been submitted and included into the Congress Proceedings. List of papers selected for the oral presentation is to find in this bulletin. Six interesting sites are ready to welcome the congress participants during the technical excursions. The main venue of the congress, the Prague Congress Centre, provides sufficient space for the professional exhibition and for the poster presentations, too. Besides, I believe that the social programme during and after the congress will also satisfy you.

Prague itself with the historical centre gives visitors the pleasure of experiencing the renewed beauty of the thousand-year development of its architecture.

You will see yourself it has been worth coming to Prague and joining the professional meeting of tunnellers, rich in interesting aesthetic and tourist experiences, too.

Ivan Hrdina
President of the Czech Tunnelling Committee ITA/AITES
CONGRESS REPRESENTATIVES

INTERNATIONAL ADVISORY COMMITTEE:
Chairman: Zdeněk D. Eisenstein (Canada)
Members: André Assis (Brazil)
Jean-Paul Godard (France)
Gyula Greshik (Hungary)
Wojciech Grodecki (Poland)
Alfred Haack (Germany)
Jindřich Hess (Czech Republic)
Martin Knights (United Kingdom)
Koichi Ono (Japan)
Harvey Parker (USA)
Sebastiano Pelizza (Italy)
Sergey N. Vlasov (Russia)
Harald Wagner (Austria)
Jian Zhao (Switzerland)

WTC 2007 ORGANIZING COMMITTEE:
Chairman: Georgij Romancov
Members: Josef Aldorf
Jiří Barták
Claude Bérenguier (ITA-AITES General Secretary)
Eva Bundová
Josef Dvořák
Matouš Hilar
Ivan Hrdina
Miroslav Kadlec
Štefan Kovalčík (Slovakia)
Jana Lepičová
Libor Mařík
Karel Matzner
Petr Mičunek
Miloslav Novotný
Stanislav Sikora
Jiří Smolík
Petr Vozarík

WTC 2007 SCIENTIFIC COUNCIL:
Chairman: Jiří Barták
Secretary: Karel Matzner
Members: Josef Aldorf
Radko Bucek
František Dvořák
Josef Dvořák
Otakar Hasík
Matouš Hilar
Miroslav Kolečkář
Václav Krch
Bernhard Maidl (Germany)
Libor Mařík
Jaroslav Pacovský
Jiří Pavlík
Pavel Polák
Jan Pruška
Pavel Přibyl
Alexandr Rozsypal
Jiří Smolík
Martin Srb
Ermin Stehlik
Ludvík Šťáha
Richard Štupárek
Jan Vítek
Petr Vozarík
Jaromír Zlámal

CONTACTS

CONGRESS SECRETARIAT
METROPROJEKT Praha a.s.
I. P. Pavlova 2
120 00 Prague 2
Czech Republic
Phone: +420 296 337 171
Mobile +420 723 885 649
Fax: +420 296 337 179
E-mail: office-wtc2007@metroprojekt.cz

Responsibility: Technical programme

CONGRESS ORGANIZER
GUARANT International spol. s r.o.
Opletalova 22
110 00 Prague 1
Czech Republic
Phone: +420 284 001 444
Fax: +420 284 001 448
E-mail: registration-wtc2007@guarant.cz

Responsibility: Registration, accommodation, tours, sponsors and exhibition

Agentura BONUS
Jana Lepičová
Okružní 275
373 61 Hrdějovice
Czech Republic
Phone/Fax: +420 380 120 212
Mobile: +420 602 175 664
E-mail: lepicova@agenturabonus.com

Responsibility: Educational workshop, social events
REGISTRATION AND ACCOMMODATION

REGISTRATION AND INFORMATION DESK
The Registration Desk is located on the first floor of the PCC.

Opening hours:
Saturday, May 5 08:00 – 18:00
Sunday, May 6 08:00 – 19:00
Monday, May 7 08:00 – 19:00
Tuesday, May 8 08:00 – 19:00
Wednesday, May 9 08:00 – 18:00

REGISTRATION FEES
<table>
<thead>
<tr>
<th>Fee</th>
<th>From March 1 to April 27, 2007</th>
<th>On-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>21 500 CZK</td>
<td>23 000 CZK</td>
</tr>
<tr>
<td>Young participant*</td>
<td>12 000 CZK</td>
<td>13 000 CZK</td>
</tr>
<tr>
<td>Accompanying person</td>
<td>4 500 CZK</td>
<td>5 000 CZK</td>
</tr>
</tbody>
</table>

*To apply for the young participant fee, the applicant must be under 30 years of age (born in 1977 or younger). A copy of his/her ID card or passport will be required on-site.

Registration fee for participants includes:
- Admission to all technical sessions
- Admission to the exhibition
- Admission to the Opening and Closing Ceremony
- Welcome Reception
- Concert of the Czech Philharmonic Orchestra (limited number of seats, tickets will be provided on a first-come, first-served basis)
- Coffee and lunches on May 7, 8, 9
- Congress Proceedings
- Congress bag and publications
- Participation at a technical excursion

Registration fee for young participants includes:
- Admission to all technical sessions
- Admission to the exhibition
- Admission to the Opening and Closing Ceremony
- Coffee and lunches on May 7, 8, 9
- Congress Proceedings on CD-ROM
- Participation at a technical excursion

Registration fee for accompanying persons includes:
- Admission to the Opening and Closing Ceremony
- Welcome Reception
- Sightseeing tour
- Concert of the Czech Philharmonic Orchestra (limited number of seats, tickets will be provided on a first-come, first-served basis)

ACCOMMODATION

Hotel Accounts
Only the first night deposit is charged by GUARANT International to guarantee your hotel reservation. Balance payment will be requested in hotel at your check-in or check-out.

CONGRESS INFORMATION

CONGRESS MAIN THEME
Underground Space – the 4th Dimension of Metropolises

CONGRESS VENUE
Prague Congress Centre (PCC)
Třída 5. května 65
140 21 Prague 4
www.kcp.cz

How to get to the Prague Congress Centre
- from the Airport - The distance from the Prague-Ruzyně International Airport is about 15 kilometres. A taxi ride from the airport to the Prague Congress Centre will take approximately 30 - 45 minutes and cost about 700 CZK.

You can also travel by public transport. Go by bus No. 119 to the metro station “Dejvická” and carry on to the station “Muzeum”. Then change to line C and go to the station “Vyšehrad”. The PCC is just next to this station. You will need to buy a ticket for CZK 20 for this journey.

- from the city centre - There is a north-south highway just in front of the PCC and PCC itself is very easily accessible by taking the metro to “Vyšehrad” station, metro line “C”.

Car Parking
Underground parking space is available in the Prague Congress Centre and participants arriving by car are advised to use these facilities.

Price: 40 CZK / 1 hour
400 CZK / 10-24 hours

CONGRESS EVENTS VENUES
The Czech Technical University, the Masaryk’s Campus – hosts the pre-congress Educational Workshop.

Municipal House on the Square of the Republic, is ready to welcome the congress participants on the WTC Welcome Reception.

Rudolfinum, situated on the bank of the Vltava River opposite the Prague Castle, hosts the representative concert of the Czech Philharmonic Orchestra.

Spanish Hall of the Prague Castle will meet the congress participants at the final congress Gala Dinner.

Please see the map on page 51.

ITA-AITES SECRETARIAT OFFICE
The ITA-AITES Secretariat Office is located on the second floor of the PCC.

OFFICIAL LANGUAGE
The official language of the congress is English. ITA-AITES General Assembly is interpreted to French. Technical sessions are provided with Czech, German and Russian interpretation.

Translation sets are available at the registration area. A passport or any other ID is required as a guarantee.
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: accompanying persons and exhibitors will not be admitted to the technical sessions.

Price for replacing a lost or mislaid badge: 500 CZK
Price for each name change: 1 000 CZK

Name badges have been colour-coded as follows:
- **DELEGATE**
- **YOUNG DELEGATE**
- **ACCOMPANYING PERSON**
- **STUDENT**
- **ORGANIZER**
- **STAFF**
- **PRESS**
- **EXHIBITOR**

CLOAKROOM AND LUGGAGE
A cloakroom and luggage storage is located on the first floor next to the Registration Desk. Opening hours correspond with the opening hours of the Registration Desk.

COFFEE BREAKS
Free coffee is served within the exhibition area to all participants on May 7, 8 and 9 from 10:00 till 11:00 and from 16:00 till 17:00.

LUNCHES
Lunches are served on May 7, 8 and 9 from 13:00 till 15:00 in the catering area on the third and fourth floor of the PCC. Entry with lunch voucher only.
Extra lunch vouchers can be purchased in advance or on-site.

INTERNET CAFÉ
As a courtesy to all delegates, internet terminals are available on the second floor of the PCC. There is also wireless internet for your own laptop.

Opening hours:
- Monday, May 7: 08:00 - 19:00
- Tuesday, May 8: 08:00 - 19:00
- Wednesday, May 9: 08:00 - 18:00

Internet café is supported by:

TECHNICAL EXHIBITION
Technical exhibition is situated close to the meeting rooms, refreshment stations and poster area. Please see the Exhibition Catalogue.

Opening hours:
- Monday, May 7: 09:00 – 17:00
- Tuesday, May 8: 09:00 – 17:00
- Wednesday, May 9: 09:00 – 17:00

DRESS CODE
Welcome Reception
Sunday, May 6 - Municipal House
- Casual elegant

Concert of the Czech Philharmonic Orchestra
Monday, May 7 - Rudolfinum Concert Hall
- Evening dress

Evening Boat Trip
Tuesday, May 8 – Boat on the Vltava River
- Casual

Gala Dinner
Wednesday, May 9 – Prague Castle
- Evening dress

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

SMOKING
WTC 2007 is a non-smoking congress. Therefore, the organizers would like to thank the participants in advance for not smoking at the Congress Centre, exhibition and posters area as well as during the coffee breaks and lunches.

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

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

OFFICIAL CARRIER
Czech Airlines is the Official Carrier of the World Tunnel Congress 2007.
Czech Airlines offer a comprehensive global route network linking many major cities around the world with Prague. Feel free to ask for the discount of 15% from applicable Economy Class fares and 25% from Business Class fares in Czech Airlines offices worldwide. Discounts are valid for journeys in a period of one week before the event – one week after the event, for registered congress delegates and one accompanying person. The discount is also applicable for CSA code share flights OK 3000 - 5999, which are operated by its partners. The miles reached on tickets with discounts are also taken into account for OK Plus program.
Official letter of invitation or a copy of registration fee paid will be required only for the delegate and not for the accompanying person. This offer is valid for tickets booked and issued through Czech Airlines sales offices only. Please click on www.czechairlines.com and find a Czech Airlines sales office nearest to you for more details.

LIABILITY AND INSURANCE
The Organizing Committee is not liable for any damage on health or property of any congress participant or accompanying person in the course of or resulting from participation in the congress. Participants are advised to have their own insurance.

GENERAL INFORMATION

CLIMATE
The climate is a mixture of ocean and continental influences. The weather in May is moderate with temperatures around 20° Celsius which may fluctuate during spring. Frequent spells of rainy weather may occur.

CURRENCY AND CREDIT CARDS
The currency is the Czech Crown (koruna, CZK / Kč). The exchange rate is:
CZK 27.78 / EUR 1 or CZK 20.88 / USD 1 (March 19, 2007).
Bank cheques may be cashed in banks, cash can be exchanged in many exchange offices. You may pay with common types of credit cards in the majority of shops, hotels and restaurants. Services connected with the congress events may be paid by credit card or cash. No cheques are accepted.

ELECTRICITY NETWORK
The Czech Republic uses a 230 volt 50 Hz system, sockets have the European standard and plugs are three-prong grounded. To use electric appliances from your country you may need a special voltage converter with an adapter plug.

OPENING HOURS
Offices and banks are generally open from 9:00 to 17:00, shops are open till 18:00 and supermarkets even longer.

TIME ZONE
The Czech Republic is in the time zone that is one hour ahead of GMT. At the time of the congress, summer time will be one more hour in advance.

TRANSPORTATION
Public transport
Prague has a good public transport system, which includes 3 metro lines, trams and buses. The Prague metro is quite new and efficient. In the peak hours trains run every 1 or 2 minutes and off peak hours at least every 10 minutes. Tickets: for a journey upto 20 minutes without changing – 14 CZK ticket, for a longer journey or a journey with changing - 20 CZK ticket. Tourist tickets also available.

Taxi
Most taxis in Prague do not accept credit cards! In the city, taxis are easy to hail from the street. The official fare is approximately CZK 30 per kilometre, so please check the price list before you get into the car. However it is recommended to call a taxi in advance. Please contact our registration desk staff or your hotel reception for help.

USEFUL TELEPHONE NUMBERS
First Aid 155
Police 158
Emergency 112
Taxi operator (Profi taxi) 844 700 800
Taxi operator (AAA taxi) 222 333 222
# Programme At-a-Glance

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<tr>
<td>5.5.</td>
<td>Registration&lt;br&gt;EDUCATIONAL WORKSHOP&lt;br&gt;Czech Technical University</td>
</tr>
<tr>
<td>6.5.</td>
<td>Registration</td>
</tr>
<tr>
<td>7.5.</td>
<td>Opening Ceremony&lt;br&gt;Keynote Lectures&lt;br&gt;Poster Session &amp; Registration</td>
</tr>
<tr>
<td>8.5.</td>
<td>Open Session&lt;br&gt;Lunch&lt;br&gt;Ex-Co + ITA WG Meetings&lt;br&gt;Poster Session &amp; Registration</td>
</tr>
<tr>
<td>9.5.</td>
<td>General Assembly 1&lt;br&gt;Lunch&lt;br&gt;ITA Executive Council Meeting&lt;br&gt;Closing Ceremony&lt;br&gt;Gala Dinner&lt;br&gt;Prague Castle</td>
</tr>
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### Technical Excursions
- [PCC - Congress Hall](#)
- [PCC - Meeting Rooms](#)
- [PCC - Foyers](#)
- [PCC - Meeting Halls](#)
- [PCC - Foyers](#)

### Other Events
- [Concert<br>Rudolfinum](#)
- [WTC Welcome Reception<br>Municipal House](#)
- [Boat Trip](#)
- [Welcome Cocktail<br>Residence of the Mayor (by invitation only)](#)

### Social Events
- [Lunch](#)
- [Lunch](#)
- [Lunch](#)
- [Lunch](#)

### Key Dates
- **5-10 May 2007**
- **Prague, Czech Republic**
## Educational Workshop

**Date:** Friday, May 4 – Saturday, May 5  
**Venue:** The Czech Technical University, Masaryk's Campus, Thákurova 1, Prague 6 - Dejvice  
**Topic:** Tunnelling in urban areas  
**Official language:** English

### Registration Fees
- **Advanced payment:** 5 000 CZK  
- **On-site payment:** 5 500 CZK  
- **Registration deadline:** April 20, 2007  
- **Cancellation fee:** cancellation received after April 20, 2007 > no refund

### Technical Excursion
#### New Connection Tunnels
- **Date:** Sunday, May 6  
- **Time:** 09:00 – 12:00  
Please see page No. 20 for details

## Educational Workshop Main Theme: Tunnelling in Urban Areas

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<th>Topic</th>
<th>Lecturer/s</th>
<th>Country</th>
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<tr>
<td>Morning</td>
<td>Opening Ceremony</td>
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<tr>
<td>Morning</td>
<td>Specific conditions and requirements for tunnel construction in urban areas, environmental aspects</td>
<td>Assis André</td>
<td>Brasil</td>
</tr>
<tr>
<td>Morning</td>
<td>Conventional tunnelling in urban areas</td>
<td>Frankovsky Milošlav, Štefko Petr</td>
<td>Slovakia</td>
</tr>
<tr>
<td>Morning</td>
<td>Mechanized tunnelling in urban areas</td>
<td>Thewes Markus, Gruebl Fritz</td>
<td>Germany</td>
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<tr>
<td>Morning</td>
<td>Discussion</td>
<td></td>
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<tr>
<td>Afternoon</td>
<td>Face stability in conventional tunnelling and EPB soil conditioning</td>
<td>Peila Daniele, Oggeri Claudio</td>
<td>Italy</td>
</tr>
<tr>
<td>Afternoon</td>
<td>Risk management in tunnelling</td>
<td>Knights Martin</td>
<td>UK</td>
</tr>
<tr>
<td>Afternoon</td>
<td>Conventional tunnelling in urban areas - Case history with ground reinforcing</td>
<td>Wagner Harald</td>
<td>Austria</td>
</tr>
<tr>
<td>Afternoon</td>
<td>Urban tunnelling in hard rock conditions - Case history</td>
<td>Grov Eivind</td>
<td>Norway</td>
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<tr>
<td>Afternoon</td>
<td>Discussion</td>
<td></td>
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<tr>
<td>May 5</td>
<td>Settlements in urban areas</td>
<td>Leca Eric</td>
<td>France</td>
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<tr>
<td>Morning</td>
<td>Safety during tunnel construction</td>
<td>Lamont Donald</td>
<td>UK</td>
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<tr>
<td>Morning</td>
<td>Monitoring of tunnel in urban areas</td>
<td>Amberg Felix</td>
<td>Switzerland</td>
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<tr>
<td>Morning</td>
<td>Calculation / modelling methods</td>
<td>Bucek Radko</td>
<td>Czech Rep.</td>
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<tr>
<td>Morning</td>
<td>Discussion</td>
<td></td>
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<tr>
<td>Afternoon</td>
<td>Mechanized tunnelling in urban areas - Case history</td>
<td>Herrenknecht Martin</td>
<td>Germany</td>
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<tr>
<td>Afternoon</td>
<td>Mechanized tunnelling in urban areas - Case history</td>
<td>Lovat Rick</td>
<td>Canada</td>
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<td>Mechanized tunnelling in urban areas - Case history</td>
<td>Nakamura T.</td>
<td>Japan</td>
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<td>Afternoon</td>
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<td>Home Lok</td>
<td>USA</td>
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<tr>
<td>Afternoon</td>
<td>Conventional tunnelling in urban areas - Case history</td>
<td>Fukumoto Katsuji</td>
<td>Japan</td>
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<tr>
<td>Afternoon</td>
<td>Discussion</td>
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</table>

## Young Geotechnical Engineers Competition

The competition sponsored by Czech Tunnelling Committee ITA/AITES and FINE Ltd. is open to young geotechnical engineers who produce a poster presentation of their work. Please note that participation in the competition must be filled out in the on-line Registration Form. The posters will be exhibited during the educational workshop and will be judged by committee constituted from ITA-AITES members on the last day of the training course. The first three best poster presentations will be awarded (by the full version of GEO 4 FEM software, the Proceedings of ITA-AITES World tunnel congress 2007 “Underground Space – the 4th Dimension of Metropolises”, the new book “Tunnelling in the Czech Republic”).

### Poster Instructions
1. **Format**  
   - max. height 100 cm  
   - max. width 100 cm
2. **All posters should contain:**  
   - Title of the poster  
   - Authors, institute / company, address, country  
   - Text and graphics (illustrations, figures, etc.)
3. **It is recommended that lettering and drawings / figures should be well readable from a distance of 2 m (min. 20 pts., opt. approx. 28 pts.)**

### Exhibition

A poster exhibition will be installed in the lounge close to the meeting room. It provides a chance to present company activities to young engineers.

**Price:** 4 000 CZK / board 100 cm x 100 cm, surface – carpet
GENERAL ASSEMBLY

GENERAL ASSEMBLY 1
Date: Sunday, May 6
Time: 9:00 – 13:00
Venue: Prague Congress Centre

GENERAL ASSEMBLY 2
Date: Wednesday, May 9
Time: 9:00 – 13:00
Venue: Prague Congress Centre

WORKING GROUP MEETINGS
Date: Sunday, May 6; Monday, May 7
Time: 15:00 – 19:00
Venue: Prague Congress Centre

No. | Working Group | Animateur | Country
--- | -------------- | --------- | ----
WG 2 | Research | Leca Eric | Australia
WG 3 | Contractual practices | Dix Arnold | Australia
WG 5 | Health and safety in works | Lamont Donald | UK
WG 6 | Maintenance and repair | Russell Henry | USA
WG 11 | Immersed and floating tunnels | Ingerslev Lars Christian F. | USA
WG 12 | Shotcrete use | Barreto Celestino Tarcisio | Brasil
WG 14 | Mechanized tunnelling | Fukumoto Katsuji | Japan
WG 15 | Underground and environment | Rohde Jan K. G. | Norway
WG 16 | Quality | Oggeri Claudio | Italy
WG 17 | Long tunnels at great depth | Seingre Gérard | Switzerland
WG 18 | Training | Pelia Daniele | Italy
WG 19 | Conventional tunnelling | Ehrbar Heinz | Switzerland
WG 20 | Urban problems, underground solutions | Thewes Markus | Germany

OPENING / CLOSING CEREMONY

OPENING CEREMONY
Date: Monday, May 7
Time: 9:00 – 11:00
Venue: Prague Congress Centre

Closing Ceremony is supported by:

TECHNICAL PROGRAMME

KEYNOTE LECTURES
Date: Monday, May 7
Time: 11:00 – 13:00
Venue: Prague Congress Centre

Eisenstein Zdenek, Canada: Tunnels in metropolis
Thewes Markus, Germany: TBM tunnels
Zhao Jian, Switzerland: Hard rock tunnels
Powell David, UK: Tunnelling in clays

OPEN SESSION
Date: Tuesday, May 8
Time: 9:00 – 13:00
Venue: Prague Congress Centre

Main topic: New financing trends and consequences on the tunnelling contracts

Marty-Gauquie Henry, European Investment Bank
Piron Vincent, Financial Investor, VINCI Concession
Hoffelder Martin, Contractor, Bilfinger-Berger Bau
Leblaiss Yann, Engineering sector
Dix Arnold, Contractual aspects
Heiko Wannick, Re-Insurance sector (Munich-Re)
Stip Emanuel, Ministry of Transportation, Czech Republic
SPEAKERS’ ROOM
The Speakers’ Room is located on the second floor of the PCC, room No. 2.1.
Please come to the Speakers’ Room at least 30 minutes before the beginning of your session, preferably the previous day, and contact the technician, who will make sure your presentation is ready in the appropriate hall.

Opening hours
Sunday, May 6  14:00 – 19:00
Monday, May 7  08:00 – 19:00
Tuesday, May 8  08:00 – 19:00
Wednesday, May 9  08:00 – 17:00

MAIN DISCUSSION TOPICS

Topic 1
Underground city design, planning of underground constructions
Presentation:  May 8, 15:00 – 19:00  Meeting Hall V

Topic 2
Geotechnical survey and improvement of ground mass
Presentation:  May 7, 15:00 – 19:00  Meeting Hall V

Topic 3
Research, development and design of underground constructions in built-up areas
Presentation:  May 7, 15:00 – 19:00  Meeting Hall I
May 8, 15:00 – 19:00  Meeting Hall I
May 9, 14:00 – 17:00  Meeting Hall I

Topic 4
Urban tunnelling and its monitoring: conventional and mechanized tunnelling
Presentation:  May 7, 15:00 – 19:00  Panorama Hall
May 8, 15:00 – 19:00  Panorama Hall
May 9, 09:00 – 13:00  Panorama Hall

Topic 5
Underground constructions executed from surface in built-up areas
Presentation:  May 9, 14:00 – 17:00  Panorama Hall

Topic 6
Concrete in underground construction
Presentation:  May 8, 15:00 – 19:00  Meeting Hall IV

Topic 7
Distribution and management of risks and accidents during tunnelling
Presentation:  May 7, 15:00 – 19:00  Meeting Hall IV

Topic 8
Tunnel equipment: fire and operational safety
Presentation:  May 9, 09:00 – 17:00  Meeting Hall IV

Topic 9
Historical underground constructions; maintenance and reconstruction of underground constructions
Presentation:  May 9, 09:00 – 13:00  Meeting Hall I

POSTERS
Poster area is located on the second floor of the PCC and is open from May 7 from 9:00.
Posters can be displayed for the entire duration of the congress. Pins and mounting material are available in the Poster area.
Posters must be removed by 18:00 on May 9 at the latest.
Posters, which are not removed by the stated time, will be discarded.
List of submitted posters is available in the enclosure.

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## PROGRAMME OF ORAL PRESENTATIONS

### MONDAY, MAY 7

#### TOPIC 2  GEOTECHNICAL SURVEY AND IMPROVEMENT OF GROUND MASS

**Chairman:** Rozsypal Alexandr  
**Co-chairmen:** Wagner Harald, Pavlík Jiří, Pennington Tom  
**Time:** 15:00 – 19:00  
**Room:** Meeting Hall V

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<tr>
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<th>Author</th>
<th>Paper</th>
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<tr>
<td>574</td>
<td>Chmelafi Radovan</td>
<td>Two different concepts of geotechnical survey and monitoring in exploration galleries for tunnels in Prague - Lahovská exploration gallery (Road circuit around Prague) and Blanka exploration gallery (City road circuit)</td>
</tr>
<tr>
<td>1162</td>
<td>Pavlík Jiří</td>
<td>Geotechnical exploration for the Dobrovského tunnel in Brno</td>
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<td>1297</td>
<td>Pennington Tom</td>
<td>Rock mechanics of a large underground cavern in Atlanta, Georgia</td>
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<tr>
<td>1477</td>
<td>Yoon Woon-Sang</td>
<td>3D geo modelling for spillway tunnel construction in a complex fault region</td>
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<td>586</td>
<td>Zalesky Marek</td>
<td>Dilatometer tests in deep boreholes of different diameters in investigation for Brenner base tunnel</td>
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<tr>
<td>1102</td>
<td>Bahadur A. K.</td>
<td>Cost-effective pre-injection with rapid hardening microcement and colloidal silica for water ingress reduction and stabilisation of adverse conditions in a headrace tunnel</td>
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<td>1237</td>
<td>Galera José Miguel</td>
<td>Prediction of the ground conditions ahead the TBM face in the tunnels of Guadarrama using geophysical methods and in situ testing</td>
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<tr>
<td>1144</td>
<td>Kondratov Alexander B.</td>
<td>Injection techniques used at the old worked out jobs and karst voids abandonment under the built-up residential areas in the Ural</td>
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<td>Lee In-Mo</td>
<td>Rockbolt integrity evaluation in tunnelling by using non-destructive tests</td>
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<td>238</td>
<td>Kresta František</td>
<td>Reasons of swelling of Miocene clays near Trebovice in Bohemia</td>
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#### TOPIC 3  RESEARCH, DEVELOPMENT AND DESIGN OF UNDERGROUND CONSTRUCTIONS IN BUILT-UP AREAS

**Chairman:** Šňupárek Richard  
**Co-chairmen:** Leca Eric, Katsuji Fukumoto, Alun Thomas  
**Time:** 15:00 – 19:00  
**Room:** Meeting Hall I

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<tbody>
<tr>
<td>1429</td>
<td>Jäger Johannes</td>
<td>Deformation prediction for tunnels at PiccEx junction in London Heathrow – an engineering approach</td>
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<td>1099</td>
<td>Butovič Alexandr</td>
<td>Stability and deformations in large-scale underground constructions</td>
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<td>340</td>
<td>Palma Filho Eloi Angelo</td>
<td>Displacements estimate due twin tunnel excavation under low overburden</td>
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<tr>
<td>595</td>
<td>Chen W. China</td>
<td>Numerical modelling of tunnel excavation and lining under high initial stresses and high underground water pressures at Jinping mountain</td>
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<td>157</td>
<td>Víba Vojtěch</td>
<td>Model analysis of pre-lining methods used in tunnel construction</td>
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<td>1405</td>
<td>Bezuijen Adam</td>
<td>Bentonite and grout flow around a TBM</td>
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<td>622</td>
<td>Matsubara K.</td>
<td>Design and construction of a tunnel using the technology for controlling muck flow in the cutting chamber of an earth pressure balance shield of large cross section</td>
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<tr>
<td>382</td>
<td>Kasuga Kiyoishi</td>
<td>Design method considering construction loads during shield tunnelling using a three-dimensional FEM analysis model</td>
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### TOPIC 4  URBAN TUNNELLING AND ITS MONITORING: CONVENTIONAL AND MECHANIZED TUNNELLING

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<tr>
<th>ID</th>
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<tr>
<td>1159</td>
<td>Schubert Wulf</td>
<td>Prediction of subsidence during tunnel construction</td>
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<td>751</td>
<td>Bilfinger Werner</td>
<td>Rio de Janeiro subway – challenges of the access tunnel to the Cantagalo station</td>
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<tr>
<td>1057</td>
<td>Suwansawat Suchatvee</td>
<td>Longitudinal surface settlements induced by EPB tunneling in Bangkok clay</td>
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<tr>
<td>1024</td>
<td>Merkin Valery</td>
<td>Monitoring of structures and environment under construction and service of underground transportation projects in Russia</td>
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<tr>
<td>1108</td>
<td>Yoo Chungsik</td>
<td>Interaction between tunnelling and ground water - its impact on tunnel behavior and ground movement</td>
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<td>889</td>
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<td>Geotechnical monitoring of the excavation exploratory galleries for the Dobrovského tunnel in Brno</td>
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<tr>
<td>541</td>
<td>Marchionn Valentina</td>
<td>Guidelines for closed-face-TBM control and monitoring in an urban environment: the experience of the “Nodo di Bologna” construction (Italian high speed railway system) with an EPB shield</td>
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<td>Solak Tülin</td>
<td>Monitoring during the construction of a shallow urban tunnel and counter measures</td>
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<td>Kulagin Nikolaj</td>
<td>Geotechnical maintenance during construction and operation of metro and transport tunnels</td>
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<td>1510</td>
<td>Benecke Norbert</td>
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<td>Likar Jacob</td>
<td>Influence of the primary support stiffness on the surface subsidence during tunnel construction</td>
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<td>Experiences from driving dual-rail tunnels on Prague metro’s IV.C2 route</td>
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### TOPIC 7  DISTRIBUTION AND MANAGEMENT OF RISKS AND ACCIDENTS DURING TUNNELLING

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<th>ID</th>
<th>Author</th>
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<tbody>
<tr>
<td>400</td>
<td>Murakami Koji</td>
<td>Development and application of the new TBM risk management system</td>
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<td>529</td>
<td>Pöttler Rudolf</td>
<td>Driving of shallow tunnel in uncertain geological boundary conditions – a case history.</td>
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<td>877</td>
<td>Richards Donald</td>
<td>Geotechnical risk management for tunneling beneath open water</td>
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<td>928</td>
<td>Kim Do-Hyung</td>
<td>Risk analysis and evaluation considering geotechnical stability and environmental effect in tunnel design</td>
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<td>1249</td>
<td>Deulofeu Carme</td>
<td>Data management for highly mechanized shield tunnelling during the construction of Line 9 Metro Barcelona</td>
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<td>1414</td>
<td>Shakil Ahmed Syed</td>
<td>Risks and challenges of the construction of 3.0 meter diameter and 750 meter long micro-tunnel under the sea by pipe jacking method – Palm Jumeirah, Dubai</td>
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<td>1522</td>
<td>Schubert Wulf</td>
<td>Geotechnical safety management on site</td>
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<tr>
<td>1561</td>
<td>Williams Owen Ian</td>
<td>Managing risk – Successful project delivery, underground infrastructure for terminal 5 Heathrow airport, UK</td>
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<td>1267</td>
<td>Thomas Alun</td>
<td>Risk management during construction of tunnels using tunnel boring machines</td>
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<td>2015</td>
<td>Stehlík Ermin</td>
<td>NATM tunnelling at Dulles airport</td>
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TUESDAY, MAY 8

TOPIC 1  UNDERGROUND CITY DESIGN, PLANNING OF UNDERGROUND CONSTRUCTIONS

Chairman: Hasík Otakar
Co-chairmen: Thewes Markus, Toshihiko Niibori
Time: 15:00 – 19:00
Room: Meeting Hall V

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<tr>
<th>ID</th>
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<tbody>
<tr>
<td>610</td>
<td>Elioff Amanda</td>
<td>Why does it take so long? Planning and implementation of two major urban tunneling projects in Los Angeles, California</td>
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<tr>
<td>388</td>
<td>Nibori Toshihiko</td>
<td>Introduction of new technologies to construct a large-scale underground station under the large existing station</td>
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<td>868</td>
<td>Gaj Filippo</td>
<td>Building the underground infrastructure of Lausanne’s new M2 metro line</td>
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<td>1324</td>
<td>Gomes Alexandre R.A.</td>
<td>Design and construction evolution in the Metro Santiago</td>
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<td>Loubotski Sergei</td>
<td>Largest transportation system – metro and road in the same tunnel</td>
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<td>1423</td>
<td>Munirah Nasri</td>
<td>Expanding New Jersey transit capacity to Manhattan - The Trans Hudson Express tunnel programme</td>
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<td>847</td>
<td>Dvořák František</td>
<td>Collectors - system approach to the regeneration of technical infrastructure in the city of Prague</td>
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<td>1504</td>
<td>Zhu He-hua</td>
<td>The research for underground space planning of ShangHai EXPO 2010</td>
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<td>1156</td>
<td>Kasper Thomas</td>
<td>Design of the district heating tunnel in Copenhagen</td>
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<td>808</td>
<td>Krása David</td>
<td>Prague – Beroun, new railway connection</td>
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ID 610 Author Amanda Elioff
Author: Amanda Elioff
U.S.A.
Why does it take so long? Planning and implementation of two major urban tunneling projects in Los Angeles, California

ID 388 Author Nibori Toshihiko
Author: Toshihiko Niibori
Japan
Introduction of new technologies to construct a large-scale underground station under the large existing station

ID 868 Author Gaj Filippo
Author: Filippo Gaj
Switzerland
Building the underground infrastructure of Lausanne’s new M2 metro line

ID 1324 Author Gomes Alexandre R.A.
Author: Alexandre R.A. Gomes
Chile
Design and construction evolution in the Metro Santiago

ID 1093 Author Loubotski Sergei
Author: Sergei Loubotski
Russia
Largest transportation system – metro and road in the same tunnel

ID 1423 Author Munirah Nasri
Author: Nasri Munirah
U.S.A.
Expanding New Jersey transit capacity to Manhattan - The Trans Hudson Express tunnel programme

ID 847 Author Dvořák František
Author: František Dvořák
Czech Republic
Collectors - system approach to the regeneration of technical infrastructure in the city of Prague

ID 1504 Author Zhu He-hua
Author: He-hua Zhu
China
The research for underground space planning of ShangHai EXPO 2010

ID 1156 Author Kasper Thomas
Author: Thomas Kasper
Denmark
Design of the district heating tunnel in Copenhagen

ID 808 Author Krása David
Author: David Krása
Czech Republic
Prague – Beroun, new railway connection

TOPIC 3  RESEARCH, DEVELOPMENT AND DESIGN OF UNDERGROUND CONSTRUCTIONS IN BUILT-UP AREAS

Chairman: Štipárek Richard
Co-chairmen: Němeček Jaroslav, Wittke Walter, Bulychev Nickolay, Sousa Luis
Time: 15:00 – 19:00
Room: Meeting Hall I

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<thead>
<tr>
<th>ID</th>
<th>Author</th>
<th>Paper</th>
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<tbody>
<tr>
<td>2000</td>
<td>Wittke Walter</td>
<td>New high-speed railway lines Stuttgart 21 and Wendlingen-Ulm - approximately 100 km of tunnels</td>
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<tr>
<td>514</td>
<td>Rossier Karel</td>
<td>New York Second Avenue subway – initial support of shallow rock cavens</td>
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<td>910</td>
<td>Ribeiro e Sousa Luis</td>
<td>Geomechanical studies for a road tunnel in volcanic formations</td>
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<td>Pelizza Sebastiano</td>
<td>Underground exploitation of a granite mine by large rooms: stability aspects</td>
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<td>739</td>
<td>Bieth Emmanuel</td>
<td>Software solutions for sensitivity studies in design of tunnels</td>
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<td>358</td>
<td>Yu Chiwen</td>
<td>Tunnel expert system for estimating support requirement and excavation method</td>
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<tr>
<td>490</td>
<td>Kaláb Zdeněk</td>
<td>Measurements and seismic effects of vibrations caused by urban tunnelling</td>
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ID 2000 Author Wittke Walter
Author: Walter Wittke
Germany
New high-speed railway lines Stuttgart 21 and Wendlingen-Ulm - approximately 100 km of tunnels

ID 514 Author Rossier Karel
Author: Karel Rossier
U.S.A.
New York Second Avenue subway – initial support of shallow rock cavens

ID 910 Author Ribeiro e Sousa Luis
Author: Luis Ribeiro e Sousa
Portugal
Geomechanical studies for a road tunnel in volcanic formations

ID 184 Author Pelizza Sebastiano
Author: Sebastiano Pelizza
Italy
Underground exploitation of a granite mine by large rooms: stability aspects

ID 739 Author Bieth Emmanuel
Author: Emmanuel Bieth
France
Software solutions for sensitivity studies in design of tunnels

ID 358 Author Yu Chiwen
Author: Chiwen Yu
Taiwan
Tunnel expert system for estimating support requirement and excavation method
## TOPIC 4  URBAN TUNNELLING AND ITS MONITORING: CONVENTIONAL AND MECHANIZED TUNNELLING

**Chairman:** Smolík Jiří  
**Time:** 15:00 – 19:00  
**Room:** Panorama Hall

### Subtopic  Conventional tunnelling

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<th>Paper</th>
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<tr>
<td>1594</td>
<td>Lee Hong-Sung Korea</td>
<td>Urban tunnelling under existing structures</td>
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<td>394</td>
<td>Shiokawa Hiroyuki Japan</td>
<td>Study on the behavior of an ultra-large section tunnel project</td>
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<tr>
<td>682</td>
<td>Frankovsky Miloslav Slovakia</td>
<td>Aspects of urban tunnelling within the project of Sitina tunnel located in the capital of Slovakia, Bratislava</td>
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<tr>
<td>1495</td>
<td>Haifeng Qu China</td>
<td>Design and construction of the longest road tunnel with eight-lane in China</td>
</tr>
<tr>
<td>748</td>
<td>Ireland Tom United Kingdom</td>
<td>Planning and design of the A3 Hindhead Tunnel, Surrey, United Kingdom</td>
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<td>475</td>
<td>Gramblíčka Michal Czech Republic</td>
<td>Construction of New Connection railway tunnels in Prague</td>
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<tr>
<td>430</td>
<td>Fujimoto Koji Japan</td>
<td>New Austrian tunneling method directly under an expressway on weak silt</td>
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<td>Laušman Petr Czech Republic</td>
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<td>Carvalho Jorge M. C. Portugal</td>
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<td>Horák Vlastimil Czech Republic</td>
<td>Kralovopolsky tunnel in Brno, Czech Republic</td>
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<td>1054</td>
<td>Yatskov Boris I. Russia</td>
<td>Construction of transportation tunnels in Moscow</td>
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<td>1492</td>
<td>Sourek Pavel Czech Republic</td>
<td>Blanka tunnel complex in Prague</td>
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## TOPIC 6  CONCRETE IN UNDERGROUND CONSTRUCTION

**Chairman:** Polák Pavel  
**Co-chairmen:** Tarcisio Celestino, Vítek Jan, Ingerslev Christian  
**Time:** 15:00 – 19:00  
**Room:** Meeting Hall IV

### Subtopic  Shotcrete

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<td>Kanazawa Hiroshi Japan</td>
<td>The development of rapid high strength shotcrete and the evaluation of improved tunnel support system.</td>
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<tr>
<td>694</td>
<td>Thewes Markus Germany</td>
<td>Applications of a shotcrete robot for creating an immediate comparability of mix-designs</td>
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<tr>
<td>718</td>
<td>Weiss Roland Switzerland</td>
<td>Concrete and shotcrete with crushed aggregates, experiences from the Alps transit construction site Mitholz</td>
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<td>Sprayed concrete for primary tunnel lining</td>
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### Subtopic 4: Forensic Engineering

#### Paper 1: Design of inner lining at the Gotthard Base Tunnel, approach for the evaluation of loads, different types of linings
- **Author:** Stadelmann Rolf, Switzerland
- **Author:** Ingerslev Christian, U.S.A.
- **Author:** Vozarik Zbyšek, Czech Republic
- **Author:** Plizzari Giovanni, Italy
- **Author:** Marí Antonio B., Spain
- **Author:** Seki Sinji, Japan

#### Paper 2: Immersed tunnels state-of-the-art
- **Author:** Stadelmann Rolf, Switzerland
- **Author:** Ingerslev Christian, U.S.A.
- **Author:** Vozarik Zbyšek, Czech Republic
- **Author:** Plizzari Giovanni, Italy
- **Author:** Marí Antonio B., Spain
- **Author:** Seki Sinji, Japan

#### Paper 3: Final lining of Valík Tunnel on the D5 highway - the vault construction
- **Author:** Stadelmann Rolf, Switzerland
- **Author:** Ingerslev Christian, U.S.A.
- **Author:** Vozarik Zbyšek, Czech Republic
- **Author:** Plizzari Giovanni, Italy
- **Author:** Marí Antonio B., Spain
- **Author:** Seki Sinji, Japan

#### Paper 4: Structural behavior of SFRC Tunnel Segments during TBM operations
- **Author:** Stadelmann Rolf, Switzerland
- **Author:** Ingerslev Christian, U.S.A.
- **Author:** Vozarik Zbyšek, Czech Republic
- **Author:** Plizzari Giovanni, Italy
- **Author:** Marí Antonio B., Spain
- **Author:** Seki Sinji, Japan

#### Paper 5: Design of the structural strengthening of tunnel linings subjected to severe localized earth pressures
- **Author:** Stadelmann Rolf, Switzerland
- **Author:** Ingerslev Christian, U.S.A.
- **Author:** Vozarik Zbyšek, Czech Republic
- **Author:** Plizzari Giovanni, Italy
- **Author:** Marí Antonio B., Spain
- **Author:** Seki Sinji, Japan

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### WEDNESDAY, MAY 9

#### TOPIC 4: Urban Tunnelling and Its Monitoring: Conventional and Mechanized Tunnelling

**Chairman:** Smolík Jiří

**Time:** 09:00 – 13:00

**Room:** Panorama Hall

### Subtopic: Mechanized tunnelling

**Chairing:** Eisenstein Zdeněk, Herrenknecht Martin, Kolečkář Miroslav

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### TUNNEL EQUIPMENT: FIRE AND OPERATIONAL SAFETY

**Chairman:** Šajtar Ludvík  
**Co-chairmen:** Haack Alfred, Holický Milan, Makoto Murakami  
**Time:** 9:00 – 17:00  
**Room:** Meeting Hall IV

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## TOPIC 9  
### HISTORICAL UNDERGROUND CONSTRUCTIONS; MAINTENANCE AND RECONSTRUCTION OF UNDERGROUND CONSTRUCTIONS

**Chairman:** Aldorf Josef  
**Co-chairmen:** Russel Henry, Vozark Petr, Mitsuru Shimizu, Vojtasik Karel  
**Time:** 9:00 – 13:00  
**Room:** Meeting Hall I

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**Chairman:** Štupárek Richard  
**Co-chairmen:** Leca Eric, Němeček Jaroslav, Bulychev Nickolay  
**Time:** 14:00 – 17:00  
**Room:** Meeting Hall I

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## TOPIC 5  UNDERGROUND CONSTRUCTIONS EXECUTED FROM SURFACE IN BUILT-UP AREAS

**Chairman:** Pruška Jan  
**Co-chairmen:** Gruebl Fritz, Krch Václav, Gahir Jack  
**Time:** 14:00 – 17:00  
**Room:** Panorama Hall

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<td>Enrione Riccardo</td>
<td>Numerical modelling of the interference between underground structures and aquifers in urban environment. Turin subway - Line 1.</td>
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TECHNICAL EXCURSIONS

Date: Thursday, May 10
Time: 9:00 – 12:00
Meeting point: parking area in front of the PCC
Price: included in the registration fee for delegates

1. MRAZOVKA TUNNEL
A visit to the Mrazovka and Strahov tunnels (both in operation), visit to the Traffic Control Centre. The Strahov tunnel is an older tunnelled part of the City Circle Road (the inner circle) in Prague. Two double-lane tunnel tubes, which are separated by an intermediate rock pillar, are 2.0 km long and their cross-section areas are 125 m² each. The tunnel was built in years 1986 and 1997 using two traditional techniques, namely the ring method and shield tunnelling.

The Mražovka tunnel is a newer tunnelled part of the City Circle Road. It consists of two three-lane tunnel tubes - at the lengths of 2 x 1.3 km and cross-section areas of 160 m², separated by an intermediate rock pillar. There are bifurcation chambers in both tunnel tubes allowing transition into single-lane plus double-lane tunnel tubes. The excavated cross-section area at the chambers amounted up to 324 and 340 m². The tunnel was built between the years 1998 and 2004 by the New Austrian Tunnelling Method.

2. METRO – LINE C
A visit to another section of the Metro IVC Line Extension - under construction. There are two stations completed in the 3.9 km long IVC1 operational section; of them, the Kobylisy station is the first one-vault station built within the Prague metro system. This section was commissioned in 2004. The IVC2 section, which links to the IVC1, will extend the line by 4.6 km; it will temporarily become an end of the line C, which crosses the whole Prague from the north to the south. This section comprises three cut-and-cover stations and running tunnels of both types - cut-and-cover and driven - at the lengths of 1252 m and 2445 m respectively. The work on this section has still been in progress. The metro operation should start by the end of the first half of 2008 at the latest.

3. SLIVENEC TUNNEL
A visit to the Slivenec tunnel under construction, further part of the Prague City Ring Road. The construction of two new tunnels nearly started on the Prague City Ring Road once the assessment of the excavation of exploration galleries had been finished. The Slivenec tunnel will be built in the southern part of the ring road, on the sloping left bank of the valley common for the Vltava and Berounka Rivers, near the confluence of the rivers. The pair of the 1650 m long tunnel tubes, one in the two-lane configuration, the other with three lanes, will be driven through very variable environment of Ordovician and Silurian rock interwoven with dike bodies of hard diabase. A progressive element of the excavation of the exploration gallery was the application of passing bays, for which the entire cross section of the top heading was excavated, as trial excavation cases. The New Austrian Tunnelling Method is designed for the excavation.

4. NEW CONNECTION TUNNELS
A visit to the New Connection tunnels under construction, part of the Prague renewed railway net project. The 1316 m and 1365 m long double-rail tunnels which are being built on the New Connection railway lines passing under Vítkov Hill will remove the negative impact of railway traffic on residents of the adjacent districts of the city. The parts of the city where the construction is located are architecturally exposed, therefore the solution to technical issues and the architectural solution had to be matched up, both in terms of visual complexes and the design of details. The tunnels, which are driven using the New Austrian Tunnelling Method, pass under the preserved building of National Monument with the great equestrian monument of Jan Žižka of Trocnov. Stringent limits of deformation of the ground surface above the mined tunnels were maintained, therefore the above-mentioned structures suffered no damage.

5. UTILITY TUNNELS
A visit to utility tunnels under the Prague Centre, both under construction and in operation. The construction of driven utility tunnels in the central part of Prague started as long ago as 1975 by building the “Zíkov Utility Tunnel”. The length of the routes of the currently operated extensive network of utility tunnels exceeds 90 km. Of this length, nearly 18 km are currently in operation, other utility tunnels are under construction or in advanced design phases. The remaining approximately 80 % comprise subsurface reinforced concrete tunnels in new residential areas on the outskirts of the city. The Control Centre which was built as a part of the system is the only control and management centre for the system: it continually monitors the operation of the complex system in whole Prague. Final lining is being completed in the Vodičkova utility tunnel, which is being built in the very centre of the city.

6. UNDERGROUND EDUCATIONAL FACILITY JOSEF
Time: 09:00 – 14:00

The Josef underground educational and research facility (UEF), is located 50 km south of Prague in a former gold exploration mine (close to the Slapy reservoir) and is operated by the Faculty of Civil Engineering - Centre of Experimental Geotechnics (CEG) of the Czech Technical University in Prague. The total length of the main drifts and galleries is more than 9km (approximately 90 - 110 m below the surface) of which, to date, the first 600 m is available for educational and research activities. The Josef UEF aims to cater for a wide range of educational and research activities and not simply for work on geotechnical projects and underground structures. Projects funded by the EU ESF and 6th Framework Programme will commence at the Josef UEF later this year.
SOCIAL EVENTS

WELCOME RECEPTION
Date: Sunday, May 6
Time: 20:00
Venue: Municipal House
Náměstí Republiky 5, Prague 1
Price: included in the registration fee for delegates and accompanying persons
2 500 CZK for other participants

CONCERT OF THE CZECH PHILHARMONIC ORCHESTRA
Date: Monday, May 7
Time: 20:00
Venue: Rudolfinum Concert Hall
Alšovo nábřeží 12, Prague 1
Price: included in the registration fee for delegates and accompanying persons, limited number of seats, tickets will be provided on a first-come, first-served basis

Delegates and accompanying persons are registered for the Welcome Reception and Concert automatically.

EVENING BOAT TRIP
Date: Tuesday, May 8
Time: 19:30
Venue: Na Františku, Prague 1
Price: 1 250 CZK per person, dinner included

GALA DINNER
Date: Wednesday, May 9
Time: 20:00
Venue: Spanish Hall, Prague Castle
Price: 4 500 CZK per person

Concert is supported by:
SIGHTSEEING TOURS

Interesting sightseeing tours have been arranged for the participants and accompanying persons. All tours will leave from and return to the Prague Congress Centre. Meeting point for all tours is at the registration desk.

A minimum number of participants is 15. Congress Organizer reserves the right to cancel the tour for which a minimum number of participants have not registered. In this case, paid amount will be reimbursed or another tour will be offered.

Accompanying person can choose one of the following tours free of charge.

TOURS OVERVIEW

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<td>09:00 – 13:00</td>
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<td>Wednesday, May 9</td>
<td>09:00 – 17:00</td>
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HALF DAY TOURS

1. PRAGUE CITY TOUR

   Date: Monday, May 7
   Time: 14:00 – 18:00
   Price: 928 CZK per person
   (including transfers, English-speaking guide)

This tour offers a general impression of the „Golden City“ through walks and visits to several important sites. It starts at the Prague Castle and continues to the Lesser Town, Charles Bridge and the Old Town Square where you can see Old Town Hall and its 15th century astronomical clock, as well as the Church of Our Lady of Tyn and Royal Way romantic street. Enjoy this tour listening to ancient legends and tales and at the same time observing and monitoring the pulsation of a modern Central European metropolis.

2. PRAGUE CASTLE TOUR

   Date: Tuesday, May 8
   Time: 09:00 – 13:00
   Price: 1 160 CZK per person
   (including transfers, English-speaking guide, admissions)

A half-day sightseeing tour to Prague Castle, which is the seat of the Czech President, includes the Royal Palace, the seat of the kings of Bohemia with Vladislav Hall, St Vitus Cathedral from 14th century, St George’s Basilica with its treasury of old Czech art, Baroque paintings and sculpture, the Royal Garden and Golden Lane whose famous inhabitants included the writer Franz Kafka. You will have an opportunity to admire a variety of architectonic styles showing the progress of European architecture throughout the centuries.

3. PRAGUE OLD TOWN AND JEWISH PRAGUE

   Date: Wednesday, May 9
   Time: 09:00 – 13:00
   Price: 1 624 CZK per person
   (including transfers, English-speaking guide, admissions)

This half-day walking tour will take you to the historical heart of the city – Old Town, which was settled more than 1000 years ago. The tour begins by the Powder Gate which directs you to Old-Town Square with beautiful houses, palaces and churches of various architectonic styles and a famous astronomical clock. The tour continues to the Jewish Quarter, home to medieval Jewish Ghetto. The story of Prague’s Jewish community can be traced back to the middle of the 10th century. This tour will visit the evocative Old Jewish Cemetery, which dates from the 15th century, the Europe’s oldest Synagogue – the Gothic style Old-New Synagogue, the High Synagogue, the Town Hall, the Pinkas Synagogue and the Ceremonial Hall with its collection of children’s art from the Terezin concentration camp.
FULL DAY TOURS

4. KARLOVY VARY (KARLSBAD)
Date: Tuesday, May 8
Time: 09:00 – 18:00
Price: 2 378 CZK per person
   (including transfers, English-speaking guide, admissions, lunch)

This full-day trip out of Prague will take you to the most famous West Bohemian spa town of Karlovy Vary, which was founded by the Bohemian King Charles the IV. in the 14th century. You can taste the water from the 12 curative thermal mineral springs, admire the beauty of both the historic and modern colonnades, and purchase some of the typical souvenirs such as special wafers, Moser porcelain and glass, or the Becherovka liqueur, also known as the 13th curative spring of Karlovy Vary. The spa Karlovy Vary is known for treatment of diseases of the digestive tract and metabolic and endocrinal disorders. The tour includes city sightseeing and a visit to the Becherovka factory, where the participants will taste this delicious liqueur.

5. KŘIVOKLÁT CASTLE AND NIŽBOR GLASSWORSK
Date: Wednesday, May 9
Time: 09:00 – 17:00
Price: 2 378 CZK per person
   (including transfers, English-speaking guide, admissions, lunch)

During this tour you will visit the 12th century Krivoklat Castle, tucked away in pinewoods along the Berounka river valley. King Otakar II of the Přemysls’ dynasty built the castle, which was later inhabited by King Vaclav IV. The Round Tower and a dungeon served as prisons, and the brutal instruments of torture are on display today. The castle’s chapel, 55 000-volume library, and works of art can be seen on this tour. Internationally renowned Bohemian crystal will be featured on the visit to the Nizbor Glassworks. Company owner Jiri Ruckl continues the family tradition of manufacturing and marketing high-quality household and decorative glassware perfume bottles, decanter sets and other beautiful items in crystal and glass.

POST-CONGRESS TOURS

Due to a limited number of registered participants for post-congress tours, these were cancelled and are no longer available.

Thank you for your understanding.
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- Wienerwald Railway Tunnel 13.35 km, Austria
- Perschling Railway Tunnels 7.44 km, Austria
- Sir Adam Beck Hydropower Project, Niagara Tunnel 10.4 km, Canada
- Crossrail Project 7.0 km, Great Britain
- City Tunnel Dobrovského Brno 1.2 km, Czech Republic
- Landek and Strenger Road Tunnel 12.8 km, Austria
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- Contour Plot
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Analysis Capabilities
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  - Tunnel lining Structure analysis / Construction stage analysis / Elasto-plastic analysis
  - Consolidation analysis
02 Seepage analysis
  - Steady State analysis / Transient State analysis
03 Coupled analysis
  - Stress-Seepage coupled analysis / Drain, Undrain analysis / Staged Consolidation analysis
04 Slope Stability analysis
  - Strength Reduction Method / Minimum Safety & Failure analysis / Slope Failure analysis
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Applications
- Stability analysis of a tunnel beneath valleys through construction stages
- Stability check for a tunnel connection
- Slope Stability in Fault Zone

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FIRST FLOOR

SECOND FLOOR
MAP OF PRAGUE

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2. Holiday Inn PCC - Na Pankráci 15/1684, Praha 4
3. Corinthia Panorama - Milevská 7, Praha 4
4. 987 Praguehotel - Senovážné nám. 15, Praha 1
5. Oya - Na Pankráci 1337/109, Praha 4
6. Radisson SAS - Štěpánská 40, Praha 1
7. Jalta - Václavské nám. 45, Praha 1
8. Seven Days - Žitná 46/572, Praha 2
9. Otar - Sevřená 1320/2, Praha 4
10. IBIS Praha City - Kateřinská 36, Praha 2
11. IBIS Praha Olt Town - Na Pofíclí 1076/5, Praha 1
12. Inos - Sinkulova 411/11, Praha 4
13. Novotel Praha City - Kateřinská 1476/38, Praha 2

1. Municipal House
2. Rudolfinum Concert Hall
3. Boat Trip - Pier
4. Prague Castle
5. Czech Technical University
6. Prague Congress Centre
7. Ruzyně International Airport
8. Residence of the Mayor of Prague

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- Metro Line B
- Metro Line C