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## DRILLING SHIELDS PASS HALFWAY POINT BENEATH DANUBE

WORK TO CONTINUE SOON ON PEST SIDE OF RIVER

So far the southern tunnelling shield of Budapest's Metro4 line has progressed some 190 metres beneath the Danube without encountering problems, meaning it has covered more than half of the distance to be covered beneath the river. As soon as it has reached the Pest side, drilling of its northern counterpart can begin. The machinery serving the tunnelling shields is being gradually moved to the metro station under construction at Szent Gellért tér.

Several weeks of preparation of the shields for the section of tunnel to be drilled beneath the Danube were completed in mid-May, having been slowed in the meantime by the dispute with the tunnel-building BAMCO consortium. Following resumption of work, experts completed maintenance on the massive machines by the middle of May, allowing the southern shield to begin its journey along one of the most exciting stretches of the future metro line on May 18. Drilling beneath a river always presents a greater than average challenge, but the accuracy of measurements taken in preliminary ground testing is borne out by the

fact that work is able to proceed at almost the same speed and level of security here as it did under normal conditions beneath the built-up surface. Work on tunnel construction on the Buda side is thus now entirely complete, and the machinery serving the tunnelling shields is being gradually moved to Szent Gellért tér prior to continuation of construction on the Pest side. In a few weeks time the elements making up the lining of the tunnels will be transported into the tunnels from here, and the excavated earth carried away, right up until the shields reach the shield disassembly chamber to be built at the temporary terminus at Baross tér on the Pest side..



## EXPERTS HOLD “METRO AT HALF-WAY” CONFERENCE

GRAND METRO EXHIBITION LAID ON FOR VISITORS

The Hungarian Engineering Students' Association, in cooperation with the DBR Metro Project Directorate and the Municipality of Budapest, and with the professional support of the Hungarian Chamber of Engineers and the Chamber of Commerce and Industry, organized a day-long conference at the Budapest University of Technology and Economics on 13 May 2009, under the title of “The Metro at Half-way.”

The pretext for organizing this event within the framework of this year's Metro4 Professional Day was that construction of the Metro4 line – including the building of tunnels – has arrived at the half-way point. Its goal was to outline the professional questions, challenges and problems arising during design and construction, the answers and

solutions provided to these, and last but not least the future schedule of metro construction. The tunnelling shields recently reached the Szent Gellért tér station, the symbolic half-way point of the line currently under construction. Besides this, construction of all ten stations of the first section of the new metro is proceeding at a good pace, with some of the facilities already 80%-90% complete. Overall it can thus be said that the building of Budapest's new metro line has reached the half-way point. Technical difficulties have arisen and unforeseeable events have occurred that needed to be managed, and the metro builders have gained a great deal of new experience from these. It is these experiences which the experts wished to share with participants at the conference, utilizing the conference framework to canvass opinions from both the professional and civil sphere regarding the future of the metro project and presenting work on the new metro in the form of a visually striking exhibition.



## FŐVÁM TÉR STATION ALREADY READY TO RECEIVE DRILLING SHIELDS

PLATFORM TUNNELS EXTENDING BENEATH THE DANUBE COMPLETE

Building of the platform tunnels at the Fővám tér station of the Metro4 line was completed a few weeks ago, in the meantime enabling the tunnel-building BAMCO consortium to begin the necessary test drillings for the building of the metro tunnels beneath the Danube. The riverside station has thus reached the stage of completion where it is ready to accept the shields.

Some weeks ago reporters had the opportunity, with the professional guidance of the contractor HÍDÉPÍTŐ, to inspect the structurally complete station and the sections of tunnel reaching beneath the river, built using a special technology. Applying a solution reducing construction risks to a minimum, the contractor's experts shifted the position of the 40-metre platform tunnels extending beneath the Danube almost 20 metres in the direction of Kálvin tér in order to bring them further away from the riverbed, while construction on the other parts of the station was accelerated. In the meantime, without caving in to pressure, the DBR Metro Project Directorate secured a favourable outcome to its legal dispute with the tunnel-building BAMCO consortium, which resumed work and returned to the original contractual framework, ensuring that from now on disputed issues will be settled not by suspension of work but within the legal framework available for their resolution. Thanks to the above, the station will soon be ready to accept the drilling shields without hindrance as they arrive on the Pest side.



## TOP TUNNEL-BUILDING EXPERTS VISIT BUDAPEST

THIS YEAR'S WORLD TUNNEL CONGRESS HELD IN HUNGARIAN CAPITAL

Almost 1,000 experts from 53 countries worldwide arrived in Budapest at the end of May to learn about civil engineering projects in Hungary and share their professional experiences within the framework of this year's World Tunnel Congress.

In the life of a metropolis of two million people, development of transport – and particularly of the fixed-track transport system – is indispensable. Throughout the world in recent years, the need to reduce the surface burden on built-up areas has focused attention on tunnel building, and this is becoming an increasingly discernible trend. The International Tunnelling and Underground Space Association, the global organization of the tunnel-building profession, this year granted the right to organize the World Tunnel Congress to Hungary. The Hungarian Tunnelling Association enabled participants to learn about tunnel-building projects in Hungary. Besides the major tunnel system at Bátaapáti and the underground sections of the M6 motorway, the four-day conference series naturally provided an opportunity to present the tunnels of the Metro4 line being built in parallel beneath built-up areas of the city, and for one section beneath the river, together with the applied technologies and security-enhancing methods.





## BUDAPEST METRO OPENS ITS DOORS

OPEN DAY HELD ON THE METRO UNDER CONSTRUCTION

The DBR Metro Project Directorate, STRABAG and HÍDÉPÍTŐ threw open the doors of the Szent Gellért tér and Fővám tér construction sites for an entire day in mid-May to allow citizens of the capital – escorted by experts – to inspect the tunnelling shields and the two deepest and most impressive stations of the new metro line from beneath the Danube riverbed, at a depth of more than 30 metres.

Last year almost 2,000 people had the opportunity to inspect the Bocskai út and Rákóczi tér stations of the Metro4 line over two days. This year construction has reached such an intensive phase that only one day was available for this, but even so experts were able to accompany some 1,000 Budapest residents on a descent to the stations under construction on May 18. While observing work safety regulations and without obstructing ongoing work, 50-60 people an hour at each location were able to get up close for a “tangible” sense of what exactly is going on beneath the capital.

## CHARITY CONCERT HELD ON METRO4 LINE

SOUNDS OF PINK FLOYD HEARD AT 20-METRE DEPTH AT RÁKÓCZI TÉR STATION



Budapest group Keep Floyd gave a unique concert for charity on May 16 at the construction site of the Rákóczi tér station of the Metro4 line, more than 20 metres beneath the surface of the earth. The group that covers the music of the British rock legends for Hungarian audiences, together with SWIETELKSY and the DBR Metro Project Directorate, which took up and supported the initiative, offered the entire ticket proceeds from the concert to the Reménysugár (Ray of Hope) band that consists of young people living with disabilities. The event raised Ft 200,000.

Recalling the memorable concert of Pink Floyd in the ruins of an amphitheatre in Pompeii in the 1970s, Keep Floyd wanted to find a similarly grand venue in Budapest to perform the best-known compositions from that concert. Some 400 tickets were sold out in scarcely more than 24 hours. Structurally the station is close to 90% complete, and the event offered the opportunity for the general public to view the progress of the construction in unusual circumstances. The Rákóczi tér station has a unique design from the architectural point of view, as when complete the galleries embracing the more than 600 square-metre public space will feature the names of the historical estates of Prince Ferenc Rákóczi II. The project managers have also paid special attention to environmental considerations, not only planting new trees but ensuring that experts have designed the station's geometry so that the ancient sycamore trees on the surface may remain in their original setting.