

METRÓ 4

Hírlevél

BKV Rt. DBR Metró Projekt Igazgatóság
4. évfolyam, 2. szám 2002. október

DBR



METRO

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Debts have been settled

Following many years of hard work and the efforts of hundreds of experts, the construction of Metro 4 could finally be commenced this summer. Although not the construction of any new metro tunnels or stations in Budapest, just an advanced surface development of the areas touched by metro. And that firstly at one of the most critical locations, Bartók Béla út and surroundings. Budapest Municipality can settle with this work many years' debts towards the inhabitants of this area, since they were the biggest losers of some political struggles around metro construction. Those living in this zone could not participate at the dynamic development of other parts of the capital city. Nevertheless, from this year on they have the opportunity to witness the transformation of their environment in compliance with the conditions existing after metro completion. Investors, designers and constructors have made their best to provide Bartók Béla út and its surroundings with a modern configuration worth to the challenges of the XXIst century for the benefit of those living, working or travelling in these places. About 400 experts of 47 companies are working since the end of April and striving after completing their duty by late in November. Although extremely many unexpected events – as revealed by our present Issue – made their work difficult.

Up-to-date lane for public transport

In the frame of the renovation of Bartók Béla út a new tram lane is completed the first, which will accept also bus traffic following the completion of metro.

A rail system of 4460 metre long, fastened on reinforced concrete slab and of flexible bedding will be constructed. Thanks to the rubber bed the trams will make less noise and vibration will be lower.



Construction of a row of special calottes

About 3500 m² concrete, 1800 m² reinforced concrete, 600 m² asphalt and more than 500 tons of rail have been built in. The whole system of current supplying overhead lines of trams were replaced, as well.

The tram lane received a new asphalt pavement and a new series of calottes separate it from roadway. This was necessary to maintain the track lane as a public transport lane after the putting in operation of Metro 4, as a joint lane for trams and busses. The calottes are bevelled outwards to enable the busses to drive onto the roadway lanes. By driving accidentally on the calottes, there will be more and more intensive vibrations of the bus, which is a sign that the bus has left its correct route. In addition, the calottes prevent the passenger cars to use the lane reserved for public transport vehicles.



Road and tramway lane following the temporary reception



Completed tram track

Following reconstruction, the stations – in contrary to the earlier ones – are facing each other and are longer. In this manner they will be able to receive both busses and trams.

Although the new public transport lane is already available, it will not function with full capacity but following metro commissioning and the reduction of vehicle number. This is because the full bus family 7 and four tram lines have no sufficient place in one single lane.

More comfortable transport under the surface...

In the course of the renovation of Bartók Béla út and its surroundings we considered the facilities and technical expectations of the future Metro 4 in every respect. This was the case with utility replacing and the transformation of transport junctions. And this was the case with the construction of the subway in Móricz Zsigmond körtér, since it has to satisfy the passenger traffic of the future metro line. This engineering structure – in addition to its perspective function – can exert a significant impact on the pedestrian and vehicle traffic of the area even on short term. This is because the pedestrians' life will be more safe even before metro commissioning: they must not use pedestrian

crossing in rainfall, snow or spend a long time at traffic lights. The subway in Móricz Zsigmond körtér will assure a comfortable and safe crossing alternative to the passengers of tram and bus terminals in Villányi út, on the one hand, and the other side of the square and the trams of Fehérvári út, on the

other hand. It goes without saying that the safe traffic on pedestrian crossings will be available in all directions.

Of course, this huge structural underground intervention was not exempt of difficulties. One of the biggest problems was the lack of reliability of utility maps – which, alas, could have get accustomed within several reconstruction programmes in the Capital City. This is so that the main collecting sewage canal under the subway and to be reconstructed was not found by the constructors at the location indicated on maps. The actual location of this canal was quite different both in vertical and horizontal respect, consequently, the canal connection had to be re-designed, two large distribution and collection reinforced concrete shafts prepared and the canal section intercepted had to be substituted with large diameter pipes. For securing the work pit longer and more drilled pipes had to be implanted as initially planned. Not even the weather was favourable for constructors. Late in July, following extremely abundant rainfalls, the sewage inundated twice the work pit through the opened main collecting canal. Although a definite backlog was caused, thanks to the careful development, a proper regrouping of tools and the expertise of constructors the work could be continued at a high technological level, and the deadline of reception was not in danger.



Mounting of a slab in the subway of Móricz Zsigmond körtér



Subway in Mórícz Zsigmond körtér

In reconstructing the circus also the pedestrian traffic became more comfortable and transparent. In contrast to the earlier practise, the pedestrians will have the possibility to approach all the facilities of the junction on the surface.

Those wishing to go to shopping or walking can further use the surface pedestrian crossings, which are more easy to overview and to access than hitherto.



Szent Gellért tér – construction of the shaft for district heating

... and on the surface

Following the reconstruction the cars will have the possibility to drive in two lanes in each direction along the full section between Tétényi út and Szabadság bridge, and that on a renewed and high bearing capacity asphalt pavement. In the by-streets – where supported by population – zones with attenuated traffic and speed restrictions of 30 km/h can be marked. In the junctions with traffic lights a separate lane will be available for the turning to left, thus, the vehicles can drive with full security in the future.

The renewal of roadway was especially difficult because we wanted to maintain continuous traffic flow in at least one lane for public transport, taxi cabs and ambulance. Following the closure of Bartók Béla út for civil cars, the constructors removed the worn out block and clinker pavement, then renewed the road base – in parallel to utility reconstruction – and laid down a new asphalt pavement. Simultaneously to road construction parking areas were arranged, too. Within this reconstruction a total of 44 thousand sq. m. road pavement was prepared.

Safe utility supply

Since the inhabitants of Budapest could well get accustomed to it, renewal of sub-surface utilities are integral part of the large volume road and tram track reconstruction. And so it happened in Bartók Béla út, too. As an investment from the part of utility companies, all outdated gas and water pipes, sewage, as well as electric and telecommunication cables were replaced on the whole section. Constructing companies met a lot of difficulties in the course of utility renewal, as well. One of the problems was the inaccuracy of the maps of utilities laid several decades ago. There were situations when the mechanical work initially planned had to be changed over to manual work in order to prevent any damage caused by machines in operating conduits. This involved not only additional costs, but also significant time loss, which caused a lot of problems in the work phases succeeding closely each other. It was another unpleasant surprise that many such utilities had to be renovated, which were not included in the initial plans, but they were in a worse condition than expected.



Móricz Zsigmond körtér – construction of tram track

Huge rainfalls inundated several times the work pit, and the work had to be suspended for several days on such occasions. Despite of all this most of the works could be completed on deadline. That's why the expert team of development is worth all respects, because they were almost always in the work site preparing jointly with designers and constructors either new plans or looking for new solutions, or even updated and co-ordinated the work of nearly 50 companies.

Explosive atmosphere

Although each of the organisations, companies made their best to cause the least possible trouble with reconstruction to the inhabitants, some traffic obstacles, diversions, noise and dust caused a lot of stress in people. But the air was not full with explosives in the abstract sense of the words. We have found extremely much and versatile explosives on the construction site. The majority of them was found at the reconstruction of the subway in Móricz Zsigmond körtér, like live bombs, artillery ammunition, mines, various ammunitions.

Experts' assumption was that these tools were collected at this place after war end, then they were buried. In discovering the explosives the constructors announced the police and assured the area to prevent any accident. Thanks to the strict observance of regulations – there was no emergency on the work site, although the explosives discovered could fill a whole storehouse.

Environment becoming nicer and more healthy

One of the central elements of the project is environment renewal. The green area will be renewed almost along the whole Bartók Béla út, the sidewalks will be covered with decorative pavement and new street furniture will be waiting for walking people. The pedestrians on the sidewalk will be protected by piles against parking cars. Also Móricz Zsigmond tér will become green: instead of the existing 41 trees in the square there will be 111, as well as a surface area of 1000 m² bushes, more than 500 m² grass and 100 m² flower beds will be implanted. Following metro commissioning – since less bus number 7 will run along the road – also air quality will be better.

Models of explosives discovered during construction	Quantity
Rocket 44 M	1 PC
Bomb model FAB-100ZE	1 PC
81 mm mortar bomb	27 PCs
82 mm mortar bomb	3 PCs
Stabilising wing to 81-82 mm mortar bomb	30 PCs
Mortar bomb stabilising wing	1 PC
40 mm armour piercing grenade	40 PCs
40 mm fragmentation shell	12 PCs
20 mm armour piercing grenade	3 PCs
13 mm fragmentation shell	4 PCs
30 mm rifle grenade	1 PC
Cartridges of 75 mm artillery ammunition	12 PCs
PAK 40 cartridges	4 PCs
7.92 mm rifle ammunition	20 PCs
"Vécsey" hand-grenade	1 PC
German handled grenade	1 PC
Mixed infantry ammunition	7 to 8 kg



Szent Gellért tér – the tram station put into operation

The complex renewal will enable to replace all trees along Bartók Béla út this very autumn with young ashes of 4 to 6 years old and developing a large treetop. The trees will grow in a healthier environment than before, since under the sidewalk sections surrounding them an irrigation system will be installed, which is reckoned as novelty in Budapest.

In order to substitute 130 cut out trees – thereof 90 sick ones – 704 new trees will be implanted, which is equivalent to the timbering of 2 hectares wood. Thereof 369 trees will be implanted in the renewed Bartók Béla út, thus, the total number of trees in this road will be 691. Further 335 trees will enrich other parts of the district XI, the exact location thereof being suggested by the local government.



Szemt Gellért tér – utilities and tram track in construction

No interruption in work

Reconstruction of the region will not be interrupted after the reception of the sidewalk section and green areas concerned. A new subway will be constructed at the intersection of Fehérvári út with Bocskai út, also related to metro construction, the completion of which can be expected in June 2003. This subway will provide the passengers changing tram with more comfort and safety. Later also metro passengers will be able to use these facilities.

During the winter season coming required utility substitutions and reconstruction will be performed. Such works cause only minor transport troubles, than starting in January with the construction of subway in two phases. Although this process will affect the section between the circus, Fehérvári út and Skála Buda shopping centre, car drivers have to fear of no diversion similar to the one in this year: the road section concerned will continuously be practicable for motor vehicles.

Although the construction in Bartók Béla út will continue another several weeks, one thing is definite: we are past the worst. Organisations, companies taking part at reconstruction had a lot of exciting and unexpected experience, however, we are deeply persuaded that thanks to the careful design and the preparation considering everything we could produce renewal and development works at a high level, in compliance with expectations. We do hope that the construction of the future metro line will be completed in a similar manner.

Companies participating in construction	Works carried out
Strabag Építő Rt.	Construction of roadway and sidewalk on internal Bartók Béla út
Gárdonyi 2002 Kkt. (Members: Betonút Szolgáltató és Építő Rt. and Swietelsky Útvasút Kft.)	Construction of roadway and sidewalk on external Bartók Béla út
BBV Consortium (Strabag Építő kft. – Mélyépítő Budapest Kft.)	Construction of tram track on the internal Bartók Béla út
Consortium Ring Kkt. – Betonút Szolgáltató és Építő Rt. – Swietelsky Útvasút Kft.	Construction of tram track on the external Bartók Béla út
Consortium Alterra Kft. – EGÚT Rt.	Móricz Zsigmond körtér – Fehérvári út
Main subcontractors	
PULZUS Kft.	
PENTA Kft.	
VIV Rt.	
VILLKOR Bt.	
TEN-T Rt.	
Co-investors	
FŐGÁZ Rt.	
FCSM Rt.	
ELMŰ Rt.	
Engineer	
Eurometro Projekttervezési Tanácsadó Kft.	
General designer	
Főmterv Rt.	

Construction sections	Work commencement and completion
Tram track	June 21 to September 2
Subway in the circus	July 7 to October 15
Utilities	May 2 to October 30
Roadway	June 11 to October 30
Sidewalk and green area	June 11 to November 30



Szent Gellért tér – construction of a special track section in small arc