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PRESUPPOSED STATE OF MODERNISATION ON THE CORRIDOR LINES OF ŽSR

Summary. The article deals with the main directions of the development of the Slovak railway transport. It's focused mainly on the supposed state of the modernisation of the ŽSR corridor lines. The article contains time and economic horizons of the modernisation of the corridors No. 4,5 and 6 and it also includes some new construction units of permanent way and their use for the purpose of modernisation of ŽSR lines.

ZAKŁADANY STAN MODERNIZACJI KORYTARZY KOLEJOWYCH ŽSR

Streszczenie. Artykuł omawia główne kierunki rozwoju kolejowego na Słowacji, ze szczególnym uwzględnieniem stanu modernizacji korytarzy transportowych ŽSR. Przedstawiono prognozy czasowe i ekonomiczne modernizacji korytarzy nr 4, 5 i 6. Praca omawia również konstrukcje elementów nawierzchni kolejowej oraz ich zastosowanie podczas rekonstrukcji linii ŽSR.

1. INTRODUCTION

The Slovak Republic has a favourable geographic position, it is situated in the middle of Europe and several important railway lines, which have been included into the European corridors, cross its territory.

In 1995 The Ministry of Transport elaborated the programme of railway lines development by means of their modernisation. In 1996 The Slovak Government took up this programme with the title "A long – term programme of railway lines development" followed by the resolution No. 197/1996.

According to this programme the main directions of the railway transport development in Slovakia were defined until the year 2010. The modernisation of the railway corridor Bratislava – Žilina – Skalité – the state frontier with Poland and the modernisation of the railway line Kúty – Bratislava – Štúrovo were agreed, including also the way of financing of

these modernisations. The Government confirmed the participation of the state budget on financing of the modernisation Bratislava – Žilina – Skalitz - the state frontier with Poland within the years 1997 – 2005 with paying interest from 1998, as well as with the participation of own sources of the Railways of the Slovak Republic (ŽSR). At the same time the Government took into account the proposed solution of the financial support from own sources in the first part of the modernisation of the corridor Kúty – Bratislava – Stúrovo and it also ordered to prepare a time plan of the mentioned programme, the aim of which is to reach the planned raise of track speeds until the year 2000 and to quicken the end of the modernisation at the section Bratislava – Žilina – Čadca until the year 2005.

2. MODERNISATION OF ŽSR CORRIDOR LINES

The main aim of the corridor modernisation is to reach technical parameters according to the international agreements AGC (European Agreement for International Railway Arterial Roads) and AGTC (European Agreement for the Most Important Arterial Roads of International Combined Transport and Connected Objects). The most serious tasks of this process are revealing of permanent slow drives, various limitations and critical places what can help to reach the maximum speed 160 km/h; as well as lengthening of useful length of main and running tracks up to 850m, together with the raising of axial trust to 22.5t, if it's possible, by means of establishing of structure gauge UIC C and without level crossings on the track.

Modernisation of corridors is divided into the following sections:

Corridor No. 4

Section	Distance [km]	Proposed speed [km.h ⁻¹]	Contemporary track speed [km.h ⁻¹]
The state frontier Czech Republic/Slovak – Kúty	7	160	80 – 120
Kúty – Malacky	26	160	100 – 140
Malacky – Devínska Nová Ves	25	160	100 – 120
Devínska Nová Ves – Bratislava Močiar	18	120	80 – 120
Bratislava Močiar – Galanta	44	160	80 – 140
Galanta – Nové Zámky	42	160	100 – 120
Nové Zámky – Stúrovo	45	160	60 – 120
Stúrovo- the state frontier with Hungary	14	160	100 – 120

Corridor No. 5, branch A

Section	Distance [km]	Proposed speed [km.h ⁻¹]	Contemporary track speed [km.h ⁻¹]
Bratislava Rača – Trnava	46	160	100 – 120
Trnava – Nové Mesto nad Váhom	53	160	70 – 120
Nové Mesto nad Váhom – Púchov	59	160	40 – 140
Púchov– Žilina	45	120–140	80 – 120
Žilina – Košice	242	120	40 – 100
Košice – Čierna nad Tisou	95	140–160	30 – 100
Čierna nad Tisou - the state frontier with Ukraine	4	140	50

Corridor No. 6

Section	Distance [km]	Proposed speed [km.h ⁻¹]	Contemporary track speed [km.h ⁻¹]
Žilina – Čadca	31	120	40 – 100
Čadca – Skalité - the Poland state frontier	21	70 – 100	20 – 60

Modernisation of the corridor No.4

This corridor is oriented from the north – west to the south – east in the direction the state frontier with the Czech Republic – Kúty – Bratislava – the state frontier with Hungary and the length of the railway track, crossing our territory, is 206 km. The whole track section is electrified and double line. With regard to the excellent geographic position of Slovak territory, it is possible to modernise the whole track for the speed 160 km/h. The geographic conditions of the territory are problematic only in surroundings of Bratislava. But this problem of Bratislava railway junction has been solved in other parallel projects. The comparison of the present – day condition with European requirements shows that it's possible to reach the European standard at the whole section of this track.

Modernisation of the corridors No.5 and 6

The corridor No.5 is led in the direction Bratislava – Žilina – Poprad – Košice – Čierna nad Tisou - the state frontier with Ukraine. The corridor No.6 runs through Žilina and Čadca to the state frontier with Poland - the frontier exchange station Skalité ŽSR – Zwardoń PKP. These corridors are oriented from the south towards the north and east. The priority for Slovakia is to modernise this south – northern corridor which is the part of the corridor No. 6 and 5a, that is, the corridor Bratislava – Žilina – Čadca - the state frontier with Poland.

The length of track on our territory is 251 km, including 231 km of electrified double – line track together with 20 km of one – line unelectrified track at the section Čadca – Skalité Serafinov - the state frontier with Poland. Nowadays the process of electrification has already started and it is supposed to be completed until the end of the year 1999.

Considering the geographic unevenity of the territory crossed by the track the north – south connection has several speed sections which nowadays vary from 50 km/h to 120 km/h, in reconstructed sections to 140 km/h. This track is the most used track on the territory of the Slovak Republic.

The comparison with the European parameters shows that it will not be possible to reach the European standard on the whole section of the track. At the section Bratislava – Púchov there are excellent conditions for the modernisation to the speed 160 km/h according to the European standard. The section Púchov – Žilina – Čadca – Skalité – Serafinov, the length of which is 96 km (that is 38.25 % of the total length), can't be fully modernised according to the required international parameters. The speed at the section Púchov – Žilina – Čadca will be to 120km/h, at the section Čadca – Skalité 100km/h and at the section Skalité - the state frontier 70 km/h. Raising of speed at the mentioned sections isn't economically possible. In spite of that it is necessary to perform all possible technical improvements (except speed parameters) according to the European agreements at these sections. Detailed projects of some sections show that it is possible to raise speed to 160 km/h here without increasing budget costs, e.g. at the section Považská Teplá – Bytča – Dolný Hričov.

Another modernised corridor, except for the mentioned main corridors, is also the corridor No.9. This corridor is in the direction the state frontier with Poland – Plaveč – Prešov – Košice – Čaňa - the state frontier with Hungary and with the possible branching off the corridor No. 5 (Čierna nad Tisou - the state frontier with Ukraine). The total length of the track on our territory is 113 km. So far several construction activities have been performed at the mentioned sections, especially at the track sections Bratislava – Žilina, Plaveč – Kysak, and at the railway stations Čadca, Kúty, Bratislava – Petržalka. Most activities, however, were made as the part of restorations or complex reconstruction of railway tracks and stations during which new construction components of the railway permanent way were used: e.g. the rails of the form UIC 60, the welded rail with elastic fastening without baseplate on the concrete sleeper of the type B 91 S with the use of the fastening system Vossloh or PANDROL FASTCLIP. Then turnouts in some station gridirons were built up on the concrete bearers with elastic baseplate fastening.

To increase the stability of the geometric position of the track carrying capacity of the railway subgrade for the class of load D4, the restorations of railway subgrade are performed at the sections with unsuitable carrying capacity of railway subgrade. The choice of sections, the proposal of the structure of railway subgrade construction and its dimensioning depends on the results of geotechnical research carried out by the diagnostic set for railway subgrade. Since this set came to use in the year 1994, approximately 480 km of the track and station tracks have been diagnosed for the preparation of their reconstruction and modernisation.

3. CONCLUSION

ŽSR investment programme must respect meeting the obligations, resulting from international agreements. Although the present – day financial situation isn't very good and modernisation in our country has some time delay, all construction works are supposed to be finished until the year 2015, as it has been mentioned. The main priority of the coming period is to continue in the following activities.

1. Electrification of the track Čadca – Zvardoň – with the attachment to Poland,
2. Modernisation of the track Bratislava – Rača – Trnava – Žilina, the first stage. This stage takes into account the track speed raise to 160 km/h.

3. Modernisation of the Railway Station Čierna nad Tisou in which we take into account the higher capacity of transport from and to the countries of the former Soviet Union.
4. Modernisation of the mobile means of ŽSR, that is, modernisation and purchasing of new goods wagons, then purchasing and modernisation of trains for passenger transport, wagons for Inter City and Euro City trains.
5. Integration of information systems and telecommunication infrastructure.

The economic recovery of ŽSR should be the main effect expected from the performed investment programmes.

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Abstract

V článku sú rozobraté hlavné smery rozvoja železničnej dopravy na Slovensku do r. 2015. Jedná sa hlavne o modernizáciu žel. tratí a staníc zaradených do medzinárodných koridorov prechádzajúcich cez naše územie. Sú tu spracované tabuľkové prehľady po jednotlivých trasách koridorov č. 4, 5 a 6. V tabuľkách sú údaje o dĺžke trasy, navrhovanej a súčasnej traťovej rýchlosti. Ďalej sú uvedené niektoré už modernizované úseky a nové konštrukcie žel. zvršku a spodku. Na záver sú uvedené hlavné priority ŽSR v najbližšom období.