

Research Article

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Possibilities of Using Transport Terminals in South Bohemian Region

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Abstract: Currently, when there is a need for transport services adapted to the customer requirements and create a workable operational system, there is increasing talk about transport terminals. Since the South Bohemian region is one of those where this issue will be increasingly dealt with, this paper suggests ways to use transport terminals as important support systems for freight and passenger transport.

Keywords: transport terminals; passenger transport; integrated transport system; public transport

1 Introduction

Current trends in freight transport promote the dominant position of road haulage. There are several reasons for it, especially the technological and organizational aspects promoting road haulage. Those are mainly preference of direct transport between the place of production and point of destination without any risks associated with reloading and storage, with nearly permanent surveillance of the goods throughout the transport, and cost effectiveness resulting from a significant excess of capacity over demand on both domestic and foreign markets. As a consequence, road haulage is currently used also for transporting goods which by their very nature are not dependent on the aforementioned technological advantages and until recently were transported by railway.

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It should be noted that freight transport and logistics are provided exclusively by private sector, with the prevalence of foreign transport operators. The goal of the optimization process in freight is to ensure quality and adequate transport services in the area using technical and technological advantages of the individual transport modes while minimizing the costs of the company. Among the strengths and advantages of railway transport is mainly density of networks, high throughput and faster transport due to upgrading the existing rail network, high level of safety and environmentally friendly shipping process [1].

Combined transport systems belong among the modern transport modes used for transporting materials, sub-components, semi-finished and finished products within a complete logistics chain. The chain starts with the initial extraction of raw materials through the whole production and distribution process to final consumer [2–4]. Currently, conventional transshipment between transport modes cannot meet the requirements regarding high speed and operational flexibility of transport applied by “just-in-time”, “hub and spoke” or “door to door” technologies.

1.1 Technical base

Technical base of combined freight transport is based on three pillars which comprise the following [5]:

- means of transport
- transport units
- infrastructure of transport routes and transshipment points.

Transport units allow safe transport and storage of raw materials, products and goods. They include containers, (separable) swap bodies, road trailers or road trains. The most widely used ones are standardized ISO containers. There are also platform containers, tank containers, hoppers etc. In practice there are used mainly special (railroad) roller containers and air freight containers.

The vehicles for combined transport must be adapted for loading and unloading transport units and secure fas-

tening of cargo during the transportation. Rail transport uses freight wagons intended for the transport of containers (intermodal transport units).

In terms of the prospective concept of further development of transport, the key pillar of the combined transport is its infrastructure.

1.2 Transport terminals

Transport routes (roads and railways) have been described in preceding texts. Therefore, the only issue not mentioned yet is container freight stations (transport terminals – logistics centres). Those stations must be located in the places where the individual modes of transport are interconnected (in this case, the railway – road, preferably with connection to the rail corridors and routes of European importance according to AGC, AGTC and TER standards) and must be equipped with machinery necessary for handling transport units, adequate storage facilities and accompanying services (dispatching, repair and maintenance of containers, packaging of the goods, accommodation, petrol stations, freight forwarding and other services). In order to ensure higher quality of services, the use of railway sidings will be monitored in urban conurbations [6].

In terms of needs and possibilities of the South Bohemian Region, we suggest transport terminals to be situated in three locations on important railway lines, 190 and 220, which are comprised in international agreements AGC, AGTC, TINA, and suitable roads, as well as in the places of intensive production and final consumption (larger cities and conurbations):

- České Budějovice - 220 and 196 railway lines (AGC, AGTC, TER and TINA complementary network), railway lines no. 190 and 199 (TINA complementary network) and regional railway line no. 194, D3 motorway – north – south route, I/20 and I/34 roads – west–east route;
- Strakonice - Railway line no. 190 (TINA complementary network), 198 and 203 - regional railway lines, I/4 road – north-south route and I/22 road – west-east route;

- Tábor - Railway line no. 220 (AGC¹, AGTC², TER³ and TINA⁴ complementary network), railway lines of regional importance (201 and 224), 202 (regional railway line), D3 motorway (north-south route), I/19 road (west-east route).

The recommended locations for the installation of transport terminals correspond to railway stations with current peak performance of freight transport (České Budějovice, Strakonice, Tábor. For the Šumava Region, the suggested location of the terminal would be in Volary). Since the position of České Budějovice location is considered dominant, we therefore recommend its preferential support [7].

2 Passenger transport – interchange hubs, P + R parking lots

In the developed countries in Western Europe there has been a shift in opinion regarding the perception of transport systems and its impact on the development and functioning of settlements. Throughout the development period, the developed countries practised supply-based approach, where the increasing demands of car transport were addressed by the development of communication network and connected transport areas. At the same time other possibilities for the development of public passenger transport were sought, but ultimately, this approach resulted in further increase in using passenger car transport and decrease in using public transport. The entire development has reached a stage where a new strategy development proved to be necessary based on promotion of measures to increase attractiveness of primarily public passenger transport [7, 8].

Systemic measurements are reflected in the development and changes in both transport infrastructure and transport management. In particular, this concerns modernization of organization of passenger public transport in conurbations and regions through the integrated transport systems. Its importance and benefits can be demonstrated on the implemented systems. For example in the

¹ European Agreement on Main International Railway Lines (AGC)

² European Agreement on Important International Combined Transport Lines and Related Installations (AGTC)

³ Trans-European Railway (TER) Project

⁴ Transport Infrastructure Needs Assessment

Federal Republic of Germany, in addition to a number of local transport systems, there are 13 major transport companies that organize passenger public transport. The largest ones include VRR - Verkehrsverbund RheinRuhr GmbH (Rhein-Ruhr Transport Company, Ltd. which organizes passenger public transport in the area of 5,000 km² with a population of 7.5 million, and VBB Verkehrsverbund Berlin-Brandenburg (Berlin-Brandenburg Transport Company) operating in the area of 30,370 km² with a population of 6 million [9].

In this chapter, the concept of development of transport infrastructure as an important technical prerequisite for functioning of integrated transport system is presented only as a part dealing with interchanges, parking lots and P+R (parking and ride) system.

In order to maintain the complexity, there are also briefly mentioned intentions related to future development of the light rail system and operation of rolling stock which will be decisive element in tackling passenger public transport and integrated transport system. Light rail rolling stock represent modern generation of electric and diesel railway vehicles technically designed on the basis of tram vehicles. Mostly these are sectional units with a capacity of 100 – 150 persons (higher standard). This system is usefully used in regular (cycle) mode for intercity, suburban and urban traffic [10].

The operation of light rail rolling stock in the region is recommended in the places of high concentration of transport. Data can be obtained from Czech statistical office (ČSÚ), for example the number of journeys represents the total commuting to work and school by all means of transport per selected working day.

3 Transport hubs, P+R parking lots

3.1 Transport hubs

The concept of addressing the issue of passenger public transport in the South Bohemian region is based on the wide use of rail transport and especially on using light rail rolling stock. In addition to the improvements of direct transport services in the region, this model requires ensuring good links to connecting bus lines or public transport as well as private motor vehicles through the P+R parking lot system. The links of regular bus service or urban public transport service to railway transport service should be tackled globally, however, interchange hubs will be of crucial importance in towns and villages which are significant local or regional centres (county seats, important railway

stations – Kaplice, Velešín, Ševětín, Dynín, Třeboň, Suchdol nad Lužnicí, Kardašova Řečice, Vyšší Brod, Milevsko, Sepekov, Zliv, Čičenice, Protivín, Ražice, Křemže, Zlatá Koprna, Kájov). As for other places, we recommend to solve this problem primarily by organizing bus transport services and bus stops at the railway stations.

Direct connection can be achieved e.g. by relocation of bus hubs to railway stations. However, since this solution is very costly, it is considered the least appropriate one. Important transport hubs must be designed also with P+R parking lots for long-term parking of passenger cars and equipped with equipment for safekeeping of bicycles. More information is indicated in Figure 1 [11].

The concept of the proposed middle-term plan is based on the defined global objectives of transport infrastructure development in the South Bohemian region, which can be met by 2030 with respect to financial possibilities and resources of the region, state, or European funds [12].

It is particularly desirable and useful:

- to provide direct funds to selected infrastructure projects (especially transport hubs) whose implementation is justifiable currently and in the near future;
- To fully use the current existing capacity of road and railway transport infrastructure (to prefer maintenance and repair to construction);
- In terms of road infrastructure, to give priority to the construction and modernization of the road network and development of new solutions for critical through roads in the settlements;
- To increase the share of rail transport in terms of long-distance and transit passenger and freight transport as well as suburban passenger transport;
- To restrict competition between bus and rail transport;
- To introduce and extend the integrated transport systems in passenger transport;
- To introduce and develop the elements of intermodal freight transport (rail – road transport);
- To implement international agreements and commitments related to road and rail infrastructures (TEN-T⁵, AGC, AGTC).

The middle-term plan of transport infrastructure development linked to the transfer terminals comprises several basic priorities [13]:

⁵ Trans-European Transport Networks,

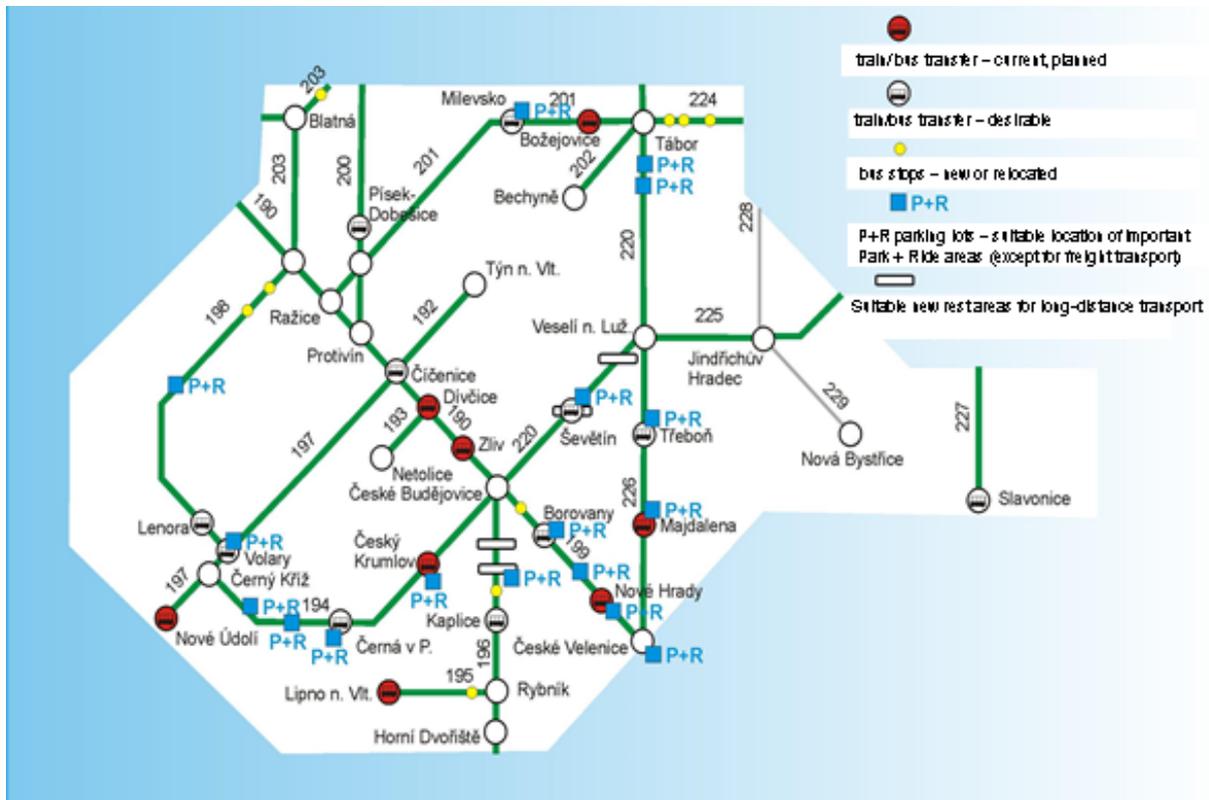


Figure 1: The concept of location of transport hubs in South Bohemian Region. Legend: Red: train/ bus transfer – current, planned; White: train/bus transfer – desirable; Yellow: bus stops – new or relocated; Blue: P+R parking lots – suitable location of important Park + Ride areas (except for freight transport); White: suitable new rest areas for long-distance transport [11].

1. completion of buildings currently under construction (unfinished construction projects);
2. prompt start of constructing approved construction projects (with granted building permit);
3. speedy preparation of project documentation of buildings in accordance with site permit and subsequent start of construction.

The measures proposed within intermodal freight transport aim to increasing the share of freight transport using special transport units – containers – and implementation of international agreements and commitments. Therefore, the highest priorities in the transport development are focused on the construction of adequate infrastructure of transport routes and transshipment designed for intermodal freight transport (rail – road transport). This means especially promotion of the implementation of these development plans:

- modernization of 220 (Benešov u Prahy – České Budějovice) and 196 (České Budějovice – Horní Dvořiště) corridor according to the AGTC international agreement;

- construction of a container terminal (logistics centre) in České Budějovice.

3.2 P + R Parking lots

The short-term measurements proposed in terms of ensuring a quality connection links between private car transport and various types of public transport in towns and urban conurbations concern mainly to the construction of transport hubs in places of connection of individual modes of transport. Therefore, the development priorities are focused on the construction of parking lots (car parks) using the P + R (Park and Ride) system [14]. The concept of P + R system development in the context of the medium-term plan consists mainly in constructing new parking lots in České Budějovice which would be linked to high capacity trolleybus transport, in connection with the construction of the D3 motorway, north and south tangents and roads near railway stations.

4 Conclusion

With regard to the outputs, it can be stated that the issue of transport infrastructure aimed at transport hubs in the South Bohemian region is not ideal. The implementation of the planned projects, especially the project of IV corridor modernization, has been launched. However, compared to the original construction schedule, the implementation of modernization of individual network segments has been postponed (Veselí nad Lužnicí – Soběslav). The modernization of some segments (in particular Ševětín – Nemanice) has not been decided yet. A number of railway lines in the South Bohemian region have not been modernized and primarily for this reason, it gets increasingly difficult for the rail transport to become competitive. In the long term, it is necessary to put emphasis on the modernization of 225 railway line which in broader terms forms a connection between Plzeň and Brno, and in the context of long-distance transport is not competitive compared to personal public transport and bus transport.

In terms of freight transport, it must be noted that there is no central logistics centre. The volume of transport by rail continues to decrease, which makes the development of connection of regional or national railway siding rather problematic [15]. The railway infrastructure of the South Bohemian region has substantial reserves (capacity, speed, preference and advantages which are necessary to be taken so that a large part of the network could be used in 2030.

Some of the information presented in this paper is not the latest one, as it was not possible to modify the values that were available both because of the short processing time and lack of current data.

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