Pedestrian Zones as an Integral Part of Territorial Development

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Abstract. The analysis of the pedestrian zones issue in this paper uses the publicly available information taken especially from the field of selected traffic in the Czech Republic and the Federal Republic of Germany where, with respect to the public transport development, the latter is at the top as far as quality and the level of public transport are concerned (except for the Swiss Confederation). The paper reflects and describes exclusively comparable examples of traffic, such as the traffic in České Budějovice provided upon the bus concept. Providing of transport operation by means of other types of transport is not considered, although especially the tram transport is very common in the traffic in pedestrian zones.

1 Introduction

Pedestrian zones are the streets and areas adapted to the movement of people; their entire width is mainly designed for pedestrians. The pedestrian zone is marked with a relevant traffic sign. The traffic sign indicating the pedestrian zone may allow the entry of selected types of vehicles or all vehicles in the restricted time-limit. The speed of vehicles driving in the pedestrian zone must not exceed 20 kmph. Formation of pedestrian zones is a response to the growing motorised transport. Centres of municipalities, especially the towns were devoured by cars and pedestrians were almost crowded out of the streets. The change in general understanding of pedestrian zones puts the emphasis on ecology and health of the population. The entrance of vehicles into the pedestrian zone is regulated by a special regulation under determined conditions [1].

2 Research

2.1 Characteristics

Pedestrian zones are urban (or private) roads, classified as the functional subgroup D1 – roads with the mixed traffic. Act No. 13/1997 Sb. on the infrastructure ranks the pedestrian zone among the urban roads of the class IV [2]. Pedestrian zones promote the pedestrian mobility. They support the quality of the environment, especially in the centre of

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towns/cities and business and spa-oriented portions of towns. The goal of the pedestrian zone designing is to enable the safe movement of pedestrians, therefore, the foot traffic is preferred in the pedestrian zone. Other types of transport are excluded in the pedestrian zone, except for service vehicles, cycle transport and the public transport under the determined traffic conditions. Pedestrian zones are mostly created in the centres of towns/cities in areas highly attractive for pedestrians, e.g. where the stores, cafés, cultural facilities, historic monuments, etc. are present. Formation of the pedestrian zone is preceded by the need for solving the traffic in the wider area, including the stationary traffic and delivery of goods to shops. The prerequisite for creating the pedestrian zone is the design of such transport and organizational measure which provides the basic transport services in the given area. The design of the transport solution of a wider area must be adapted to the above measure. The entrance to the pedestrian zone should be connected to the private or another quiet road. Its connection to a feeder road is inappropriate and the connection to an express road is excluded [3].

The figure below shows the visualisation of the public transport in the pedestrian zone in Vienna and the traffic in the pedestrian zone.

Fig. 1. Visualisation of the public transport in the pedestrian zone in Vienna and the traffic in the pedestrian zone. Source: [4]

2.2 Use of Vehicles in Pedestrian Zones in the Czech Republic

The entrance to the pedestrian zone is considered as an intersection and must meet the conditions required for visibility pursuant to Article 56.2.9.2.4. of ČSN 73 6102. For the needs of specific conditions of behaviour in the pedestrian zone, supplemented with the building measures ensuring the speed limit by 20 kmph, the length of visibility for stopping the vehicle may be calculated in line with the methodology imposed by ČSN 73 6101, Annex B. The length of visibility for stopping the vehicle in the pedestrian zone is 11 metres. In case of the bi-directional traffic in the pedestrian zone, it is necessary to double this value if we consider the exclusion of the collision of oncoming vehicles. This is the reason why the pedestrian zone is perceived as a single-lane road [5, 6].

Rules of the use of vehicles and the movement of people in the pedestrian zones are addressed in the following legislation:

- Act No. 361/2000 Sb. on the road traffic, as amended by Act No. 411/2005 Sb. and Act No. 226/2006 Sb.

- Regulation No. 30/2001 Sb. implementing the rules of the road traffic and the traffic regulation and control on the roads, as amended by Regulations No. 153/2003 Sb., No. 176/2004 Sb., No. 193/2006 Sb., No. 507/2006 Sb.
- Regulation of the Ministry of Transport and Communications No. 104/1997 Sb. implementing the Act on the Road Traffic, as amended.
- ČSN 73 6056 Parking areas for road vehicles, 1987,
- ČSN 73 6102 Design of intersections on highways, 2007,
- ČSN 73 6110 Design of urban roads, 2006,
- ČSN 73 6425-1 Bus, trolleybus and tramway lines halts, 2006,
- ČSN TP 65 Principles of road marking, Brno CDV, 2003.

The design must include the solution of the necessary parking areas and garages for the inhabitants and visitors of the pedestrian zone in the minimum possible walking distance. The pedestrian zone is a specific type of the road which requires high aesthetic appeal of the environment. It should be, therefore, designed by an architect in cooperation with the traffic engineer.

2.3 Public Transport in Centres of Towns and Pedestrian Zones in the Czech Republic

The public transport operation in the centres of the Czech towns/cities is not as common as abroad. We can, however, claim that the situation considerably gets better with time. Especially the trams can be found in pedestrian zones in the centres of the Czech towns (Pilsen, Prague, Brno, etc.). Trolleybuses (Pardubice, Jihlava) and buses (Tábor, Strakonice, Prague, Brno, and the like) gradually return to the pedestrian zones.

The traffic in pedestrian zones abroad is normal and is taken for granted. The figure below shows the public transport vehicle driving through the pedestrian zone in Marburg and Emmendigen.

Fig. 2. The public transport vehicle driving through the pedestrian zone in Marburg. Source: [7]

Fig. 3. Public transport in the pedestrian zone – 15-minute interval. Source: [8]

Routing of regular lines of the public transport, especially trams and trolleybuses, is possible. If the public transport stop needs to be located in the pedestrian zone, specified parameters of the ascending area must be adhered to, such as the height of the ascending edge, minimum width of the ascending area, measures for the persons with reduced mobility [9]. If the trolleybus or bus line is routed through the pedestrian zone, it is appropriate to highlight its route using a different lane of the surface. The boundary of the not elevated tram, trolleybus or bus lane must be marked with warning indicators. The warning indicators do not have to be placed, if the tram, trolleybus or bus lane is elevated at least by 0.08 metres [10].

3 Conclusion

The paper lists the fundamental legislative standards in solving the public transport operation in pedestrian zones. It does not address the building and urban planning of pedestrian zones and the issue of operating the rolling stock in pedestrian zones. The paper exclusively focuses on the operation of the public line passenger transport in pedestrian zones where this operation is recommended in line with applicable legislative standards [11]. The valid licence granted to the carrier which provides the transport services on the line is an integral part of the public transport operation. The tram lines are routed on the basis of their historical layout. Introducing of the trolleybus system is not so common in the conditions of pedestrian zones. Routing of the bus transport represents a new modern trend in the city logistics system which comes especially from Germany.

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