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ANALYSIS OF THE REGULATORY PROVISIONS FOR ENGINEERING CONSTRUCTION AND TRAFFIC MANAGEMENT COURSE FOR PROJECTING PUBLIC TRANSPORT TO THE NEEDS OF PEOPLE WITH LIMITED MOBILITY

We have analyzed the basic regulatory requirements for construction and traffic public transport engineering to the needs of people with limited mobility. We have investigated public transport placing requirements and their settings. Result is some technical means of traffic management (information security), do not take into account the needs of all road users.

Keywords: groups of people with limited mobility, public transport stops, engineering improvement, traffic management.

The problem. For recent years in different countries work of adapting environment including street and road network to the needs of people with limited mobility is underway. It is aimed at using of street and road network for various categories of people without no restrictions to their rights and freedoms. These groups include not only people with different nosology disability but elderly people, pregnant women, preschool children, adult children in their arms or in wheelchairs and others.

Communication space for groups of people with limited possibilities moving are street and road network in the locality and beyond and one of the most important elements of which are stops of public transport. Basic requirements for the movement for groups of people with limited possibilities concerning barrier-free environment inside buildings and in open spaces and do not include some features of certain categories of persons with disabilities using elements of transport infrastructure. People in wheelchairs for normal moving need next conditions: sufficient size of road, availability for wheelchairs reversal, no extreme elevation or availability of ramps, lifts and elevators for extreme elevations, special tactile indicators for the visually impaired, specialized information support for the deaf and people with mental disorders, etc.

So, **the purpose** is the analysis of current regulatory requirements to the design, construction, reconstruction, construction and engineering of traffic on bus stops that would take into account the needs of people with limited mobility.

Results. We have analyzed the current regulatory requirements for engineering construction and traffic management to the needs of peoples with limited possibilities (table 1) and formulated the task to researching of road network elements.

Table 1
Regulatory requirements for the construction and traffic organization of public transport stops (PTS)

<i>Parameters and elements of public transport stops</i>	<i>Requirements for public transport design</i>	
	<i>Ukraine</i>	<i>Aboard</i>
<i>PTS placing</i>	<p>Stops should be placed and arranged in such a way:</p> <ul style="list-style-type: none"> – that buses and pavilions, located on the stops are visibility for drivers of other vehicles; – that pedestrians (passengers) could smoothly be coming to landing pad, moving beyond the roadway on the sidewalk or footpath; – that passengers' route to other transport transfer should be fast and safe way; – that passengers in wheelchairs can move freely from the stop to the pavement or pedestrian paths [1]. <p style="text-align: center;">Intermediate stops are recommended</p>	<p>Bus stops should be located for passenger's comfort to leave public transport. Ideally, they should be located near places of special need, such as shops, libraries, clubs and medical facilities. Location determined after consultation with local authorities and the police. Important in the distribution of public transport is its accessibility for people in wheelchairs</p> <p style="text-align: center;">This requires additional reduction at intersections and roadsides.</p> <p>The ideal interval for the bus stop is about 400 m., but a shorter interval in the city center and residential areas may be required to provide specific</p>

	to arrange on the road outside settlements no more than 0.6 km in resort areas and densely populated areas – after 0.3 km in settlements – 0.2 km [2, 3].	passenger requirements [4, 5, 6].
<i>Information support</i>	The information system about direction of movement of objects on the road network of the state and abroad created using established local recreation information and additional information boards (if necessary) [9].	Public transport stops should contain the following traffic signs: the sign «Bus Stop» and / or «bus» icon; stop's name; list of service numbers; phone's number of information center and website address; bus timetable; information of fares; maps or diagrams of bus routes [4].
<i>Landing pad</i>	Landing pads at stops of passenger transport should be raised to 0.2 m above the ground stops. The surface of the landing pads should have hard surface with length more than landing pad length, and width more than 2m. The distance from construction of the pavilion for passengers to the edge of the platform stops must be more than 2 m [7, 8, 9].	The width of the landing sites receiving at least 2.5 m, and length depending on the type of stop. Landing sites at public transport stops should be at 0.14 m higher than stops ones. The surface coating should be homogeneous which makes it possible to quickly and smoothly move for people with disabilities [5, 6].
<i>Stopping pad</i>	Width of stopping pad should be more than 3 m, width of half-stopping pad should be more than 2m. The length of the platforms (pads) should be: one bus a stop to –13 m, two – 25 meters, three – 37 m [1].	The length of stops areas depend on the vehicle is 20 m for a bus or trolley, but no more than 60 m [5].
<i>Islets of safety</i>	Safety islands should be organized by the width of the roadway 15 meters width equal to the central dual carriageway, in the case of its absence – a width of at least 2 m by narrowing lanes to 3,25 m on main streets and city roads citywide and regional importance, and by planting strips and sidewalks. The length of the islands should be taken as equal the width of a pedestrian crossing [1, 3].	Safety islands should be placed of transition roadway street, where possible. It is important that their placement was at a sufficient distance from public transport that will make their use safer passengers and pedestrians and convenient for drivers. Width of safety islands should be at least 2 m [4, 6].
<i>The width of the pavement and walkways</i>	The width of the sidewalks should be determined taking into account the category and functionality streets (roads), depending on the intensity of foot traffic and placement within them towers, poles, trees and etc. The width of one lane of pedestrian traffic should be multiples of 0.75 m [8]. The minimum width of sidewalks should be 1.8 m [1, 8].	The recommended width of sidewalks near public transport is 3 m, which allows to freely move passengers leaving the vehicle and passengers who sit in it and is convenient for people in wheelchairs. In places where passenger traffic is low, pavement width may be reduced to 1.8 m [4].

Based on the analysis and infrastructure research developed proposals for public transport to the needs of people with limited mobility in the village, which includes 3 main options: 1) on streets with limited dimensions (fig.1); 2) on main and residential streets with the new buildings (fig.2); 3) on the final stops (fig.3).

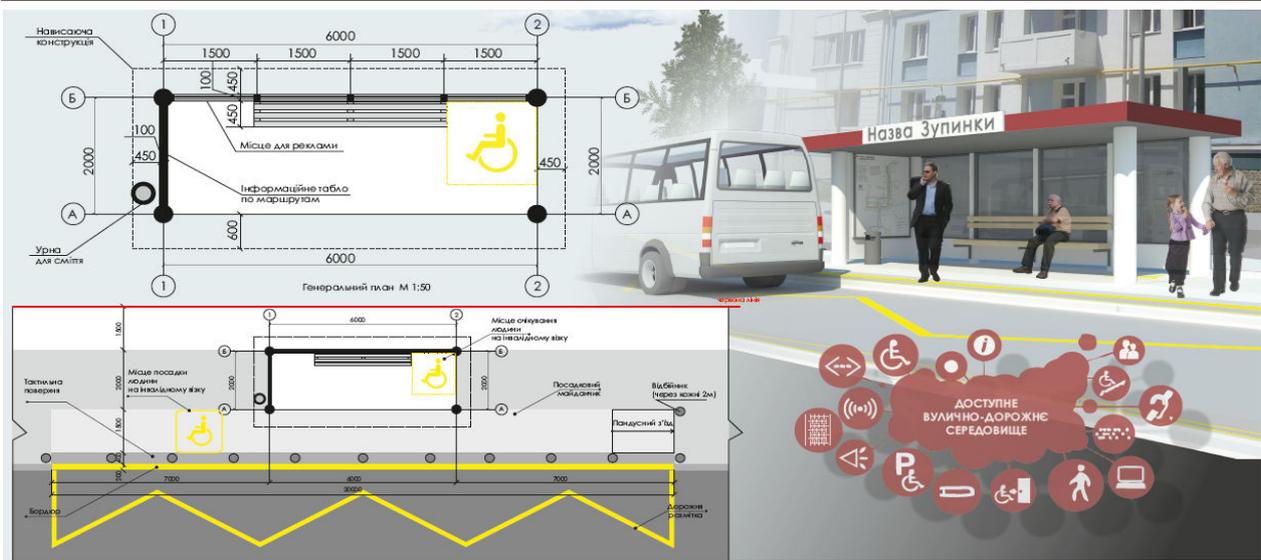


Figure 1. The scheme of public transport plan to the needs of people with limited mobility (on streets with limited dimensions)

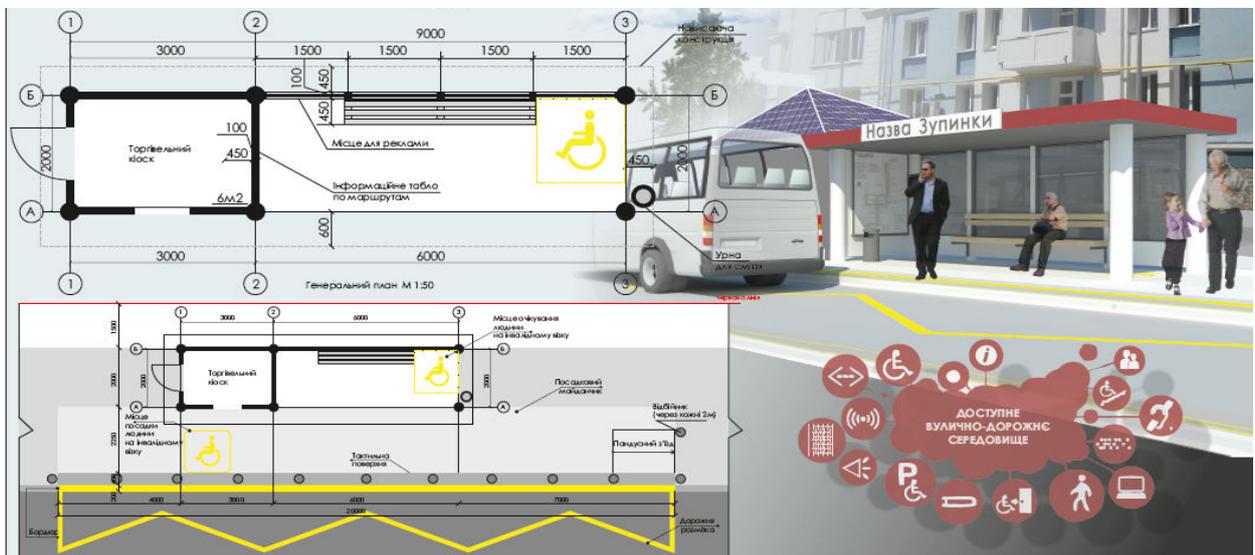


Figure 2. The scheme of public transport plan to the needs of people with limited mobility (on main and residential streets with the new buildings)

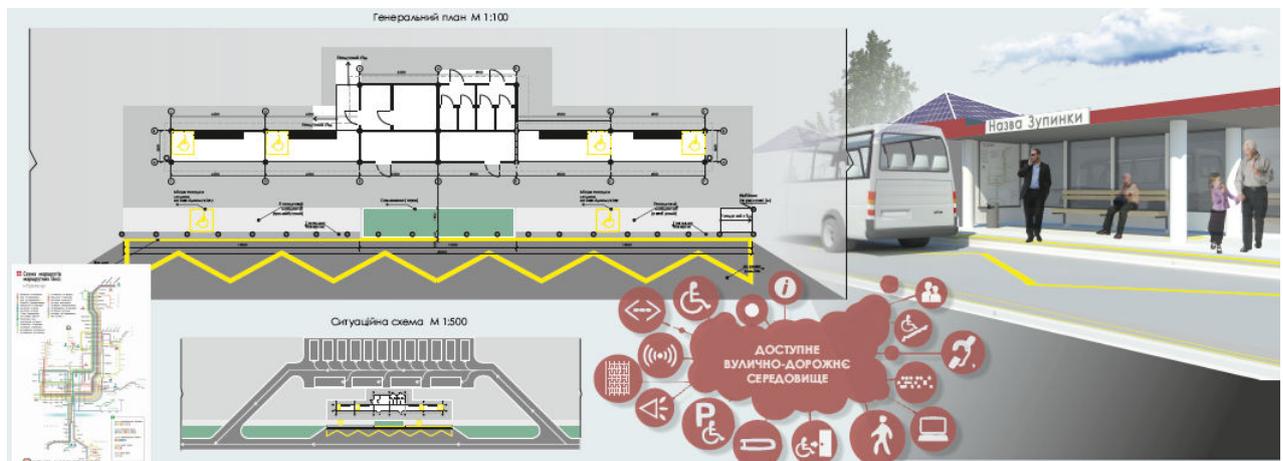


Figure 3. The scheme of public transport plan to the needs of people with limited mobility (on the final steps)

Summary. Requirements to the engineering construction of public transports traffic for the needs of people with limited mobility is analyzed. Proved tasks of supplement statutory requirements to designing

public transport for the needs of people with limited mobility with: placing reasonable distance of public transport; establishing the required common elements of information support for all road users; height and width of the landing pad; parameters area stops; the width of the pavements. Public transport options are developed for different urban conditions and needs of people with limited mobility.

ЛІТЕРАТУРА

1. Автомобільні дороги. Частина I. Проектування. Частина II. Будівництво: Зміна №3 ДБН В.2.3-4:2007.- К.: Мінрегіон України, 2013.
2. Безпека дорожнього руху. Загальні технічні вимоги, правила застосування та вимоги безпеки: ДСТУ 4092-2002 . - [Чинний від 2002.06.03]. – К.: Держстандарт України, 2002. - (Державний стандарт України).
3. Споруди транспорту. Перехрещення та примикання автомобільних доріг в одному рівні. Методи проектування та організації дорожнього руху: ВБН В.2.3-218-192-2005. – [Чинний від 2006.05.26]. – К.:Укравтодор, 2005. – (Відомчі будівельні норми України).
4. Доступність в місцях громадського користування. 581: Відкритий контрольний список норм. Керівництво з дотримання, США, видавництво Томпсон, 1991. - с. 113-119.
5. Автобусна зупинка. Дизайн. Керівництво, Белфаст BT2 8GB, жовтень 2005, Лондон. – с. 46.
6. Транспорт для Лондона. Зручний доступ до зупинки автобуса. Дизайн. Керівництво, січень 2006 р, Лондон. – с.33
7. Споруди транспорту. Автомобільні дороги. Зупинки маршрутного транспорту. Загальні вимоги проектування: ГБН В.2.3-218-550:2010. - [Чинний від 2010.24.10]. - К.: Державна служба автомобільних доріг України (Укравтодор), 2010. – (Галузеві будівельні норми України).
8. Споруди транспорту. Вулиці та дороги населених пунктів: ДБН В. 2. 3 – 5 – 2001.- [Чинний від 2001.10.01]. – К.: Держбуд України, 2001. – (Державні будівельні норми).
9. Споруди транспорту. Автомобільні дороги. Стоянки і майданчики для відпочинку та короткочасної зупинки автомобілів. Загальні вимоги проектування: ГБН В.2.3-218-549:2010.- [Чинний від 2010.24.12]. - К.: Державна служба автомобільних доріг України (Укравтодор), 2010. – (Галузеві будівельні норми України).

REFERENCES

1. Highways. Part I. Design. Part II. Construction Change №3 DBN V.2.3-4: 2007.- K.: Regional Development of Ukraine 2013.
2. Road Safety. General specifications, rules and application security requirements: ISO 4092-2002. - [Valid from 2002.06.03]. - K. : State Standard of Ukraine, 2002 - (State standard of Ukraine).
3. Transport facilities. Contiguity and intersection of roads in one level. Methods of design and traffic management: VBN V.2.3-218-192-2005. - [Valid from 2006.05.26]. - K., Ukravtodor, 2005 - (Departmental building codes Ukraine).
4. "Accessibility in Public Accommodations". 581: Readily Achievable Checklist .ADA Compliance Guide, USA, Thompson Publishing Group, December 1991. pp. 113-119.
5. Bus Stop Design Guide, Belfast BT2 8GB, October 2005, London. - pp.46.
6. Transport for London, Accessible bus stop design guidance, January 2006, London, pp.33.
7. Transport facilities. Highways. Bus stop. General requirements for the design: HDN V.2.3-218-550: 2010. - [Valid from 2010.24.10]. - K. : State Road Administration of Ukraine (Ukravtodor), 2010 - (Branch Construction Norms of Ukraine).
8. Transport facilities. Streets and roads settlements: DBN B. 2. 3 - 5 - 2001 - [Effective as of 2001.10.01]. - K. : State Building Ukraine, 2001 - (Government building regulations).
9. Transport facilities. Highways. Parks and playgrounds for recreation and short stopping cars. General requirements for the design: HDN V.2.3-218-549: 2010. - [Valid from 2010.24.12]. - K. : State Road Administration of Ukraine (Ukravtodor), 2010 - (Branch Construction Norms of Ukraine).

Гвасенко В.В. Аналіз нормативних вимог до інженерного облаштування та організації дорожнього руху при проектуванні зупинок громадського транспорту з урахування потреб маломобільних груп населення.

Проаналізовано основні нормативні вимоги до інженерного облаштування та організації дорожнього руху зупинок громадського транспорту з урахуванням потреб маломобільних груп населення. Досліджені вимоги до розміщення зупинок громадського транспорту та їх основні параметри. Визначено, що окремі технічні засоби організації дорожнього руху (інформаційне забезпечення), не враховують потреби всіх учасників дорожнього руху.

Ключові слова: маломобільні групи населення, зупинки громадського транспорту, інженерне облаштування, організація дорожнього руху.

Ивасенко В.В. Анализ нормативных требований к инженерному обустройству и организации дорожного движения при проектировании остановок общественного транспорта с учетом потребностей маломобильных групп населения.

Проанализированы основные нормативные требования к инженерному обустройству и организации дорожного движения остановок общественного транспорта с учетом потребностей маломобильных групп населения. Исследованы нормативные требования к размещению остановок общественного транспорта и их основные параметры. Определено, что некоторые технические средства организации дорожного движения (информационное обеспечение), не учитывают потребности всех участников дорожного движения.

Ключевые слова: маломобильные группы населения, остановки общественного транспорта, инженерное обустройство, организация дорожного движения.

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