

**ANALYSIS OF THE BASIC PARAMETERS FOR MAINTAINING THE TECHNICAL AND OPERATIONAL COMPATIBILITY OF THE 1520 mm AND 1435 mm GAUGE RAIL SYSTEMS AT THE COMMONWEALTH OF INDEPENDENT STATES (CIS)-EUROPEAN UNION (EU) BORDER**

**SUBSYSTEM: ACCESSIBILITY OF THE UNION'S RAIL SYSTEM FOR PERSONS WITH DISABILITIES AND PERSONS WITH REDUCED MOBILITY**

**Document developed by the OSJD-ERA Contact Group**

2015

REVISIONS AND AMENDMENTS / РЕВИЗИИ И ИЗМЕНЕНИЯ

<b>Date</b>	<b>Chapters</b>	<b>Explanations</b>	<b>Responsible officer</b>
08/09/2014	all	Analysis PRM (first draft)	VS
14/09/2014	4.2.1	Insertion of information provided by RU delegation	VS
18/11/2014	all	Insertion of updated information provided by RU delegation, information by BY, UA delegation	VS
21/01/2015	all	General editing	VS
12/03/2015	5	New Chapter 5 (draft conclusions) inserted	VS
14/05/2015	all	Edition of the text before approval	VS
15/10/2015	all	Final editing for publication	VS

## TABLE OF CONTENTS

1.	SCOPE OF THE DOCUMENT / ОБЛАСТЬ ПРИМЕНЕНИЯ ДОКУМЕНТА .....	4
2.	DEFINITIONS AND ABBREVIATIONS / ОПРЕДЕЛЕНИЯ И СОКРАЩЕНИЯ .....	5
3.	LIST OF BASIC PARAMETERS / СПИСОК ОСНОВНЫХ ПАРАМЕТРОВ.....	6
4.	ANALYSIS OF THE BASIC PARAMETERS / АНАЛИЗ ОСНОВНЫХ ПАРАМЕТРОВ .....	9
4.2.1.	Infrastructure Subsystem / Подсистема инфраструктуры .....	9
4.2.1.1.	Parking facilities for persons with disabilities and persons with reduced mobility / Доступность парковки для людей с ограниченными возможностями и людей с ограниченной подвижностью.....	9
4.2.1.2.	Obstacle-free route / Маршрут без препятствий .....	11
4.2.1.3.	Doors and entrances / Двери и входы.....	23
4.2.1.4.	Floor surfaces / Поверхности пола .....	27
4.2.1.5.	Highlighting of transparent obstacles / Выделение прозрачных препятствий .....	28
4.2.1.6.	Toilets and baby nappy changing facilities / Туалеты и средства для пеленания младенцев ...	29
4.2.1.7.	Furniture and free-standing devices / Мебель и свободностоящие устройства .....	31
4.2.1.8.	Ticketing, Information desks and Customer Assistance points / Билетные кассы, информационные стойки и точки помощи клиентам .....	33
4.2.1.9.	Lighting / Освещение.....	35
4.2.1.10.	Visual information: signposting, pictograms, printed or dynamic information / Визуальная информация: указатели, пиктограммы, печатная или динамическая информация .....	37
4.2.1.11.	Spoken information / Речевая информация.....	42
4.2.1.12.	Platform width and edge of platform / Ширина платформы и край платформы.....	43
4.2.1.13.	End of platform / Конец платформы .....	46
4.2.1.14.	Boarding aids stored on platforms / Вспомогательные средства для посадки, хранящиеся на платформах .....	47
4.2.1.15.	Passenger track crossing to platforms / Пассажирские переходы через пути на платформы.....	48
4.2.2.	Rolling Stock Subsystem / Подсистема подвижного состава.....	51
4.2.2.1.	Seats / Сиденья .....	52
4.2.2.2.	Wheelchair spaces / Места для инвалидных колясок .....	56
4.2.2.3.	Doors / Двери.....	62
4.2.2.4.	Lighting / Освещение.....	66
4.2.2.5.	Toilets / Туалеты .....	66
4.2.2.6.	Clearways / Проходы .....	69
4.2.2.7.	Customer Information / Информация для клиентов.....	72
4.2.2.7.1.	General / Общие положения.....	72
4.2.2.7.2.	Signage, pictograms and tactile information / Указатели, пиктограммы и тактильная информация.....	73
4.2.2.7.3.	Dynamic visual information / Динамическая визуальная информация .....	77
4.2.2.7.4.	Dynamic audible information / Динамическая аудиоинформация.....	79
4.2.2.8.	Height changes / Изменения высоты.....	80
4.2.2.9.	Handrails / Поручни .....	82
4.2.2.10.	Wheelchair accessible sleeping accommodation / Спальные места, доступные для людей в инвалидных колясках.....	84
4.2.2.11.	Step position for vehicle access and egress / Положение ступеней для входа в вагон и выхода из вагона.....	86
4.2.2.12.	Boarding aids / Вспомогательные средства для посадки.....	88
5.	COMPARISON WITH TARGET PARAMETERS FOR 1435 MM SYSTEM / СПРАВНЕНИЕ С ЦЕЛЕВЫМИ ЗНАЧЕНИЯМИ СИСТЕМЫ КОЛЕИ 1435 ММ .....	94

5.2.1.	Infrastructure subsystem / Подсистема инфраструктуры .....	94
5.2.1.1.	Parking facilities for persons with disabilities and persons with reduced mobility / Доступность парковки для людей с ограниченными возможностями и людей с ограниченной подвижностью.....	94
5.2.1.2.	Obstacle-free route / Маршрут без препятствий .....	94
5.2.1.3.	Doors and entrances / Двери и входы.....	94
5.2.1.4.	Floor surfaces / Поверхности пола .....	94
5.2.1.5.	Highlighting of transparent obstacles / Выделение прозрачных препятствий .....	95
5.2.1.6.	Toilets and baby nappy changing facilities / Туалеты и средства для пеленания младенцев ...	95
5.2.1.7.	Furniture and free-standing devices / Мебель и свободностоящие устройства .....	95
5.2.1.8.	Ticketing, information desks and customer assistance points / Билетные кассы, информационные стойки и точки помощи клиентам .....	95
5.2.1.9.	Lighting / Освещение.....	95
5.2.1.10.	Visual information: signposting, pictograms, printed or dynamic information / .....	95
5.2.1.11.	Spoken information / Речевая информация.....	95
5.2.1.12.	Platform width and edge of platform / Ширина платформы и край платформы.....	95
5.2.1.13.	End of platform / Конец платформы .....	95
5.2.1.14.	Boarding aids stored on platforms / Вспомогательные средства для посадки, хранящиеся на платформах .....	95
5.2.1.15.	Passenger track crossing to platforms / Пассажи́рские переходы через пути на платформы ...	95
5.2.2.	Rolling stock subsystem / Подсистема подвижного состава.....	96
5.2.2.1.	Seats / Сиденья .....	96
5.2.2.1.1.	General / Общие положения.....	96
5.2.2.1.2.	Priority seats .....	96
5.2.2.1.2.1.	General .....	96
5.2.2.1.2.2.	Uni-directional seats .....	96
5.2.2.1.2.3.	Facing seats arrangement .....	96
5.2.2.2.	Wheelchair spaces / Места для кресел-колясок.....	96
5.2.2.3.	Doors / Двери.....	96
5.2.2.4.	Lighting / Освещение.....	96
5.2.2.5.	Toilets / Туалеты .....	96
5.2.2.6.	Clearways / Проходы .....	96
5.2.2.7.	Customer Information / Информация для клиентов.....	96
5.2.2.8.	Height changes / Изменения высоты.....	97
5.2.2.9.	Handrails / Поручни .....	97
5.2.2.10.	Wheelchair accessible sleeping accommodation / Спальные места, доступные для людей в инвалидных колясках.....	97
5.2.2.11.	Step position for vehicle access and egress / Положение ступеней для входа в вагон и выхода из вагона .....	97
6.	LIST OF THE PARTICIPANTS: .....	98

## 1. SCOPE OF THE DOCUMENT / ОБЛАСТЬ ПРИМЕНЕНИЯ ДОКУМЕНТА

The present document was drafted by the joint Contact Group of experts (hereinafter the Contact Group) of the the EUROPEAN RAILWAY AGENCY (hereinafter the ERA) and the ORGANISATION FOR CO-OPERATION BETWEEN RAILWAYS (hereinafter the OSJD) in the framework of cooperation between these organisations on analysing the interoperability of rail systems both inside and outside of the EU.

The OSJD performed this work pursuant to its plan of action for 2014 and subsequent years.

The ERA performed this work pursuant to section 4.10 (Interconnection to a 1520/1524-mm Rail System) of the Mandate received by the Agency for Drafting Technical Specifications for Interoperability (TSI) and ERA Recommendation (ERA/REC/03-2008/INT or 17/11/2009) on Relationship with 1520/1524 mm Railway Network.

The Contact Group performed a comparative analysis of the existing technical specifications for the accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility of with the requirements used in the 1520 mm gauge rail systems of the members of OSJD. The analysis is limited to technical and operational aspects of the railway system and is aimed on facilitate technical and operational compatibility on the EU – CIS border.

The terms used in this document should not serve as legal references. The documents cited in tables of references for each parameter concerned should be consulted for precise content of the requirements.

The content (technical information) of this document may serve as the basis for reflecting the 'basic parameters' of the 1520 mm system in the EU TSI for preserving the existing technical compatibility of the 1520 mm system at the CIS-EU border.

## 2. DEFINITIONS AND ABBREVIATIONS / ОПРЕДЕЛЕНИЯ И СОКРАЩЕНИЯ

Сокращение	Определение
DBNV	Ukrainian State Construction Rules
DSTU	National Standardisation System of Ukraine
EN	European standard
GBN	Construction sector regulations of Ukraine
GOST	Interstate standard
ISO	International Organization for Standardization, International standard
PHP	Physically handicapped person
PRM	1. Railway subsystem “accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility” 2. Person with reduced mobility
RZD	Russian Railways, JSC
SP	Rule book of Russian Railways
STB	Standards of the Republic of Belarus
STO	Company standard of Russian Federation
TSI	Technical specification for interoperability
VSN	Industry construction regulations
ZSR	Railways of Slovak Republic (sl. - Železnice Slovenskej republiky, ŽSR)

### 3. LIST OF BASIC PARAMETERS / СПИСОК ОСНОВНЫХ ПАРАМЕТРОВ

<i>Paragraph No. according to PRM TSI (Commission Regulation (EU) No 1300/2014)</i>	<i>Title (English)</i>	<i>Title (Russian)</i>
<b>4.2.1.</b>	<b>Infrastructure Subsystem</b>	<b>Подсистема инфраструктуры</b>
4.2.1.1.	Parking facilities for persons with disabilities and persons with reduced mobility	Доступность парковки для людей с ограниченными возможностями и людей с ограниченной подвижностью
4.2.1.2.	Obstacle-free route	Маршрут без препятствий
4.2.1.2.1.	Horizontal circulation	Горизонтальная циркуляция
4.2.1.2.2	Vertical circulation	Вертикальная циркуляция
4.2.1.2.3	Route identification	Обозначение маршрута
4.2.1.3.	Doors and entrances	Двери и входы
4.2.1.4.	Floor surfaces	Поверхности пола
4.2.1.5.	Highlighting of transparent obstacles	Выделение прозрачных препятствий
4.2.1.6.	Toilets and baby nappy changing facilities	Туалеты и средства для пеленания младенцев
4.2.1.7.	Furniture and free-standing devices	Мебель и свободностоящие устройства
4.2.1.8.	Ticketing, Information desks and Customer Assistance points	Билетные кассы, информационные стойки и точки помощи клиентам
4.2.1.9.	Lighting	Освещение
4.2.1.10.	Visual information: signposting, pictograms, printed or dynamic information	Визуальная информация: указатели, пиктограммы, печатная или динамическая информация

4.2.1.11.	Spoken information	Устная информация
4.2.1.12.	Platform width and edge of platform	Ширина платформы и край платформы
4.2.1.13.	End of platform	Конец платформы
4.2.1.14.	Boarding aids stored on platforms	Вспомогательные средства для посадки, хранящиеся на платформах
4.2.1.15.	Passenger track crossing to platforms	Пассажирские переходы через пути на платформы
<b>4.2.2.</b>	<b>Rolling Stock Subsystem</b>	<b>Подсистема подвижного состава</b>
4.2.2.1.	Seats	Сиденья
4.2.2.1.1	General	Общие положения
4.2.2.1.2	Priority seats	Льготные места
4.2.2.1.2.1.	General	Общие положения
4.2.2.1.2.2.	Uni-directional seats	Расположение сидений в одном направлении
4.2.2.1.2.3.	Facing seats arrangement	Расположение сидений друг к другу
4.2.2.2.	Wheelchair spaces	Места для инвалидных колясок
4.2.2.3.	Doors	Двери
4.2.2.3.1	General	Общие положения
4.2.2.3.2	Exterior doors	Внешние двери
4.2.2.3.3	Interior doors	Внутренние двери
4.2.2.4.	Lighting	Освещение
4.2.2.5.	Toilets	Туалеты
4.2.2.6.	Clearways	Проходы
4.2.2.7.	Customer Information	Информация для клиентов
4.2.2.7.1	General	Общие положения
4.2.2.7.2	Signage, pictograms and tactile	Указатели, пиктограммы и



	information	тактильная информация
4.2.2.7.3	Dynamic visual information	Динамическая визуальная информация
4.2.2.7.4	Dynamic audible information	Динамическая аудиоинформация
4.2.2.8.	Height changes	Изменения высоты
4.2.2.9.	Handrails	Поручни
4.2.2.10.	Wheelchair accessible sleeping accommodation	Спальные места, доступные для людей в инвалидных колясках
4.2.2.11.	Step position for vehicle access and egress	Положение ступеней для входа в вагон и выхода из вагона
4.2.2.11.1	General requirements	Общие требования
4.2.2.11.2	Access/egress steps	Ступени входа/выхода
4.2.2.12	Boarding aids	Вспомогательные средства для посадки
4.2.2.12.1	Movable step and bridging plate	Выдвижная ступень и мостик
4.2.2.12.2	On-board ramp	Размещенная в вагоне рампа
4.2.2.12.3	On-board lift	Размещенный в вагоне подъемник

#### 4. ANALYSIS OF THE BASIC PARAMETERS / АНАЛИЗ ОСНОВНЫХ ПАРАМЕТРОВ

##### 4.2.1. Infrastructure Subsystem / Подсистема инфраструктуры

##### 4.2.1.1. Parking facilities for persons with disabilities and persons with reduced mobility / Доступность парковки для людей с ограниченными возможностями и людей с ограниченной подвижностью

- (1) Where a station specific parking area exists, there shall be sufficient and adapted parking spaces reserved for persons with disabilities and persons with reduced mobility eligible to utilise them at the nearest practicable position, within the parking area, to an accessible entrance.

**Belarus:**

Characteristics of car parking areas and stopping points for special public transport	Requirements
<p>Parkings for privately owned adapted transport of persons with locomotor disabilities next to public objects in proportion to parking capacity, % of all parking places:</p> <p>up to 100 from 101 to 200 from 201 to 1000 more than 1000</p>	<p>4 (min. 1) min. 3 min 2 (20 +1) for every additional 100</p>
<p>Parking for adapted transport of persons with locomotor disabilities:</p> <p>dimensions of 1 parking place</p> <p>information support</p> <p>placement within the parking area</p>	<p>3,5×8 m</p> <p>marking, sign on parking surface, standalone sign</p> <p>In direct proximity from parking exit (pedestrian)</p>

distance to entrances accessible for physically handicapped persons (PHP) to public buildings, residential compounds with apartments for persons with locomotor disabilities, parks, sport centres etc.	max. 50 m
Stopping points for special public transport, distance to PHP accessible entrances:  to public buildings	max 100 m

Accessible parking shall be marked with sign in accordance with requirements of STB 1140 and Traffic Code.

**Russia:**

Availability of parking facilities must comply with codified rules SP 59.13330.

**Car parking for impaired persons**

In private car parking facilities up to 100 spaces next to or inside the building of a service provider at least 10% of parking spaces (not less than 1 space) should be allocated for impaired persons, including 5% of parking spaces for the cars of wheelchair persons	5%, but not less than 1 parking space
from 101 to 200	5 spaces and 3% additionally
from 201 to 1000	8 spaces and 2% additionally
1001 space and more	24 spaces and at least 1% additionally for every exceeding 100 spaces

Allocated parking spaces shall be designated by signs in accordance with GOST R 52289 and Traffic Code on the surface of the parking space and duplicated by a sign on a vertical surface (wall, pole, stand etc.) in accordance with GOST R 12.4.026 located on at least 1.5 m height.

**Ukraine:**

In private car parking facilities next to buildings of service providers at least 10% of parking spaces (not less than 1 space) should be allocated for impaired persons. Those places shall be marked according to international practice.

It is recommended to locate parking spaces for private transport of impaired persons next to accessible entrance, in any case not more than at 50 m distance (for private residential houses – 100 m) away from the accessible entrance. Width of the parking slot for the transport of impaired person shall be at least 3,5 m.

Stopping areas for public transport intended to carry impaired persons only shall be envisaged at a maximum distance of 100 m away from entrances of accessible public buildings.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” STB 1140-2013 “Technical means of traffic management. Traffic signs. General technical conditions” Road traffic regulations of the Republic of Belarus
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	The Law on Rail Transport, March 28, 2003 (Legislative Diary of 2013 position 1594 and of 2014 position 768); Section 4A conditions to ensure the compatibility of the rail system on the territory of Poland
Russia	SP 59.13330.2012 "Set of rules. Accessibility of buildings and structures for the limited mobility of the population ", p. 4.2 GOST R 52289-2004 “Traffic control devices. Rules of application of traffic signs, markings, traffic lights, guardrails and delineators” GOST R 12.4.026-2001 “Occupational safety standards system. Safety colours, safety signs and signal marking. Purpose and rules of application. General technical requirements and characteristics. Test methods”
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> The rules of operating information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for people with limited mobility”

#### 4.2.1.2. Obstacle-free route / Маршрут без препятствий

- (1) Obstacle free routes shall be provided that interconnect the following public areas of the infrastructure if provided:
- stopping points for other connecting modes of transport within the station confines (for example, taxi, bus, tram, metro, ferry etc.);
  - car parks
  - accessible entrances and exits

- information desks
  - visual and audible information systems
  - ticketing facilities
  - customer assistance
  - waiting areas
  - toilet facilities
  - platforms
- (2) The length of the obstacle-free routes shall be the shortest practical distance.
- (3) Obstacle-free route floor surfaces and ground surfaces shall have low reflecting properties.

**Belarus:**

In accordance with STB 2030, design of railway stations, passenger platforms, sidewalks etc. shall envisage accessibility of those objects for persons with reduced capacities.

**Russia:**

Interconnection areas on a route “landside area – railway station – passenger carriage” accessible for people with reduced capacities should be envisaged. For this purpose, the following should be envisaged:

- planning, technological, construction and information support with regard to allocation of special parking places within in municipal parking areas dedicated for groups of persons with reduced mobility;
- arrangement of access to public transport and boarding platforms dedicated for groups of persons with reduced mobility;
- installation of special side-walks for movement of groups of persons with reduced mobility equipped with visual, audible and tactile (haptical) information systems including warning of possible danger.

Passenger infrastructure should be equipped with obstacle-free routes connecting the following passenger infrastructure zones (if available):

- stopping points of other connecting transport modes within the designated station area, passenger stopping point (e.g. taxi, bus, tram, metro, ferry etc.);
- car parkings;
- enters and exits for impaired persons or other passengers with reduced mobility;
- information desks, information counters and displays, passenger aid desks;

- passenger platforms.

Obstacle-free routes shall be as short as possible.

### **Ukraine:**

Considering reference gauges of wheelchairs, width of road section shall be at least 1,8 m where both directions traffic of wheelchair persons is possible.

Longitudinal inclination of the route accessible for wheelchair persons shall not exceed 5%. For exits from sidewalks and sheltered placed up to of 10% longitudinal inclination is allowed along the distance of 10 m.

Allowed transversal route inclination shall be 1-2%.

Recommended height of sidewalk borders on pedestrian routes is maximum 0,05 m.

Height of street curbs at traverses between roads and sidewalk, as well as vertical drop between sidewalks, street curbs along lawns and green areas next to pedestrian routes shall not exceed 0,04 m.

In case of impossibility to arrange dedicated passages for PRM, underground and ground passages (if available) shall be equipped with ramps.

Tactile warning means on surfaces of pedestrian passages shall be places not closer than 0,8 m before information object, start of dangerous section, changed direction of movement, entrance etc.

It is forbidden to make surfaces of pedestrian passages, sidewalks and ramps of bulk and coarse structure materials, which hinder movement of wheelchair persons and persons with crutches. Concrete surfaces shall be made even, maximum allowed width of joints between concrete tiles – 0,015 m.

It is forbidden to install non-transparent double-action gates, turn gates along PRM accessible passages.

Width of open steps shall be at least 0,4 m, maximum step rise – 0,12 m. For exterior steps, all the steps of the same run shall be of the same shape and size (tread and rise). Maximum transversal inclination of exterior steps shall be 1-2%.

Staircases shall be duplicated by ramps, if necessary – other means and shall comply with DBN V.2.3-5.

Devices and equipment (mailboxes, payphone shelters, ATMs, information hoardings) installed on walls of the buildings or separate structures, off-gauge elements of buildings and structures shall not diminish reference space of passage and manoeuvring of wheelchairs.

Objects, which have their lower part at height of 0,7 – 2,1 m from the passage surface level shall not made set-off more than 0,1 m from the structure's vertical plane; in case of using a stand-alone pole maximum set-off shall be 0,3 m. In case of bigger set-offs the objects shall be separated by street curbs of minimum 0,05 m of height of fences of minimal height of 0,7 m etc.

Payphones, ATMs and other facilities for people with reduced vision capacity shall be installed on horizontal plane using grooved coating or separated tiles of maximum 0,04 m height; their edge shall be distanced 0,7-0,8 m away from the abovementioned facilities.

Shapes and edges of hanging equipment shall be rounded.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions”
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	The draft set of rules of "Terminal buildings, structures and devices p.13.1.4 STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities” DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for people with limited mobility”

#### 4.2.1.2.1 Horizontal circulation / Горизонтальная циркуляция

- (1) All obstacle-free routes, footbridges and subways, shall have a free width of a minimum of 160cm except in areas that are specified in points 4.2.1.3 (2) (doors), 4.2.1.12 (3) (platforms) and 4.2.1.15 (2) (level crossings)).
- (2) Where thresholds are installed on a horizontal route, they shall contrast with the surrounding floor and shall not be higher than 2.5cm.

#### Belarus:

Requirements for pedestrian routes for persons with reduced capacity are set out by STB 2030 (Annex B).

Characteristics of pedestrian route	Requirements
<b>Sidewalks and pedestrian paths</b>	
<p>Obstacle-free pedestrian route:</p> <ul style="list-style-type: none"> <li>- Width</li>   <li>- transversal slope</li>   <li>- horizontal areas, dislocation</li>   <li>- horizontal areas, design dimensions</li> </ul>	<ul style="list-style-type: none"> <li>- min. 1,5 m – for one way movement of wheelchaired persons;</li> <li>- min. 1,8 m – for both-way movement</li>   <li>- from 1 % to 2 %</li>   <li>- each 12 m for longitudinal slope from 6 to 10%</li>   <li>- min. 1,5×1,5 m</li> </ul>
<p>Surface coating:</p> <ul style="list-style-type: none"> <li>- general features</li>   <li>- colour and texture along the entire length</li>   <li>- colour and texture in increased vigilance zones</li> </ul>	<ul style="list-style-type: none"> <li>- Durable, solid, non-slippery; width junctions between tiles max. 10 mm</li>   <li>- Contrasting with colour and textures of contiguous surfaces</li>   <li>- Contrasting with colour and texture of major part of the route, min. length 0,8 m</li> </ul>
<p>Areas, hardscaping, equipment, floral arrangements:</p> <ul style="list-style-type: none"> <li>- dislocation, general requirements</li>   <li>- dislocation above pedestrian route when height of the lower edge is 0,7-2,1 m from the pedestrian route level</li> </ul>	<ul style="list-style-type: none"> <li>- Away from borders of pedestrian route</li>   <li>- When dislocated on a vertical structure – value of off-gauge from the vertical plane of the structure shall be max. 0,1 m; when dislocated on a standalone support – off-</li> </ul>



<ul style="list-style-type: none"> <li>- shape, general requirement</li>   <li>- payphones, ATMs, vending machines, kiosks, other equipment, installation</li>   <li>- visual, audible, tactile information sources, dislocation</li>   <li>- illumination means, dislocation</li>   <li>- recreation areas, dislocation</li>   <li>- recreation areas, equipment</li>   <li>- benches, colour</li>   <li>- irremediable dangerous for PHP route sections</li>   <li>- public transport stops, boarding points of cable-cars, aerial conveyors</li> </ul>	<p>gauge from the support plane shall be max. 0,3 m</p> <ul style="list-style-type: none"> <li>- Rounded corners</li>   <li>- On a horizontal plane with grooved coating or standalone tiles of max. 0,04 m height. Dimensions of surface / tile shall exceed dimensions of equipment by min. 1,0 m.</li>   <li>- Indicative – all along the route; signalling – directly in complicated hubs;</li> <li>- warning – before complicated hubs and route sections</li>   <li>- On one side of the pedestrian route</li>   <li>- along the borders of the pedestrian route, in recreation areas – every 60 m, in other areas – every 200 m</li>   <li>- Benches with backrests, edge of the bench moved away from the route edge by 1,2 m, part of benches fitted with shelters.</li>   <li>- Contrasting with environment</li>   <li>- Surrounded by fencing of min. 0,7 m in high</li>   <li>- Even horizontal areas of design dimension 1,8×1,8 m.</li> </ul>
---	--

**Russia:**

Longitudinal declination of routes suitable for wheel-chaired persons shall not exceed 5%; transversal declination shall not exceed 2%. Longitudinal declination at exits from sidewalks

and in narrow spaces - up to 10% at maximum 10 m distance in accordance with SP 59.13330 (see p. 4.1.7, 4.1.8).

On obstacle-free routes it is allowed to reduce the width of the route up to 1,2 m within direct visibility range. At the same time, a horizontal site (“pocket”) of at least 2,0x1,8 m must be installed every 25 m to ensure a passage of wheel-chairs.

The possibility of wheel-chair turn by 180° must be ensured in dead-end corridors.

Thresholds installed on a horizontal route shall contrast with floor surface and shall not exceed 0,014 m height.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex B).
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	SP 59.13330.2012 “Set of rules. Accessibility of buildings and structures for limited mobility social groups”, p. 4.1.7, 4.1.8, 5.2.1-5.2.8 STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.1
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities” DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for people with limited mobility”

#### 4.2.1.2.2 Vertical circulation / Вертикальная циркуляция

- (1) Where an obstacle-free route includes a change in level, there shall be a step-free route providing an alternative to stairs for mobility impaired people.

- (2) Staircases on the obstacle-free routes shall have a minimum width of 160cm measured between the handrails. As a minimum, the first and last steps shall be indicated by a contrasting band and as a minimum tactile warning surface indicators shall be installed before the first descending step.
- (3) Ramps shall be installed for persons with disabilities and persons with reduced mobility unable to use stairs where lifts are not provided. They shall have a moderate gradient. A steep gradient is allowed for ramps on short distances only.
- (4) Stairs and ramps shall be provided with handrails on both sides and at two levels.
- (5) Lifts shall be provided where ramps are not available and shall be at least of type 2 in accordance with the specification referenced in Appendix A, index 1. Type 1 lifts are allowed in the case of stations being renewed or upgraded only.
- (6) Escalators and moving walks shall be designed in accordance with the specification referenced in Appendix A, index 2.
- (7) Level track crossings can form part of an obstacle-free route when they comply with the requirements of point 4.2.1.15.

**Belarus:**

Requirements for vertical circulation are set out in STB 2030 (Annex B).

Characteristics of pedestrian route	Requirements
<b>Staircases, ramps, lifts</b>	
Staircase: - quantity of steps in 1 stairs run  - intermediate horizontal zones on straight direction  - shape of steps  - step height - step width  - colour of step tread and rise	- min. 3, and max. 12  - after every section, length (min.) 1,5 m.  - Same shape along the section, vertical rise, horizontal tread (no off-sets), rounding radius (max.) 50 mm  - max. 120 mm - min. 400 mm  - contrasting to each other
Ramp:  Width	min. 1,0 m

<ul style="list-style-type: none"> <li>- slope for up to 10 m of length</li> <li>- slope for 10 - 15 m of length</li> <li>- single ramp inclined plane height</li> <li>- horizontal zones on straight direction</li> </ul>	<ul style="list-style-type: none"> <li>max. 10%</li> <li>max 6%</li> <li>max. 0,8 m</li> <li>min. 1,5 m</li> </ul>
<ul style="list-style-type: none"> <li>- ramp and staircases handrails, availability</li> </ul>	<ul style="list-style-type: none"> <li>- on both sides</li> </ul>
<p>Handrails:</p> <ul style="list-style-type: none"> <li>- height above horizontal area, tread</li> <li>- length</li> <li>- cross-section</li> <li>- colour</li> <li>- handrail endings</li> <li>- junction of handrails along the route and turns of staircases and ramps</li> </ul>	<ul style="list-style-type: none"> <li>0,7 and 0,9 m</li> <li>- longer than section for 0,3 m</li> <li>- diameter from 30 to 50 mm, if rectangular – width (max.) 40 mm</li> <li>- bright, visible in low-light</li> <li>- bended downwards</li> <li>- connected to shape the jointless handrail all along the staircases and ramps</li> </ul>
<p>Borders:</p> <ul style="list-style-type: none"> <li>- Availability</li> <li>- height</li> </ul>	<ul style="list-style-type: none"> <li>- on both sides of staircases and ramps</li> <li>- min. 50 mm</li> </ul>
<p>Areas in front of staircases and ramps:</p> <ul style="list-style-type: none"> <li>- length</li> <li>- texture of coating</li> <li>- colour of coating</li> </ul>	<ul style="list-style-type: none"> <li>- 0,8 m</li> <li>- contrasting to texture of basic surface, recognised by persons with reduced vision capacity and visually impaired persons in movement</li> <li>- contrasting to the colour of basic surface</li> </ul>

**Russia:**

In case of elevation of 6 or more meters, installation of passenger escalators and large passenger elevators has to be envisaged.

For the convenience of impaired persons within a railway station, installation of ramps (with inclination of at least 1:12), passenger-cargo elevators for wheelchair persons and their accompanying persons (cabin size 110x140 cm) should be envisaged.

Staircases on obstacle-free routes shall have minimum width of 1,35 m between handrails. The first and last steps and their rises or group of steps shall be indicated by a tactile warning surface indicators shall be installed in both directions in accordance with p. 10.4 of SP 136.13330.2012.

Ramps shall be installed in accordance with SP 59.13330 (points 5.2.13, 5.2.14, 5.2.15) for persons with disabilities and persons with reduced mobility unable to use stairs where lifts are not provided.

Stairs and ramps shall be provided with handrails on both sides and at two levels.

Where ramps are not available, the elevators designed for access of wheelchair persons shall be provided. Elevators must comply with requirements of GOST R 51631 and GOST R 53770. If the main route for persons with reduced mobility is equipped with escalator, for the safety of people with reduced vision capacity, the protective 1 m height and 1,0-1,5 m long fences and warning tactile signs of minimum width of not less than the moving surface shall be envisaged at both ends of the escalator

For persons with locomotor disabilities (including those with wheelchairs) to access staircases, installation of lifting platforms with vertical and diagonal movement capacity shall comply with standards GOST R 55555 and GOST R 55556. Individual mobile stairs lifts (for example crawling steps climbers) are allowed to aid wheelchair persons to climb the stairs.

If routes for persons with reduced mobility are equipped with underground or overhead passages, they shall be also equipped with ramps or lifting devices, or envisage technology for provision of situational help of the staff.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 "Habitat for physically handicapped persons. General provisions" (Annex B).
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended:

	regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	<p>SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.16, 3.1.17).</p> <p>STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.2</p> <p>SP 59.13330.2012 “Set of rules. Accessibility of buildings and structures for limited mobility social groups”, p. 4.1.7, 4.1.8, 5.2.1-5.2.8</p> <p>GOST R 51631-2008 “Passenger elevators. Technical requirements of accessibility for persons including accessibility for persons with disabilities and other reduced mobility social groups”</p> <p>GOST R 55966-2014 “Elevators. Special safety requirements for elevators used for evacuation of disabled persons and other reduced mobility social groups”</p> <p>GOST R 53770 “Passenger elevators. Basic parameters and dimensions”</p> <p>GOST R 55555-2013 “Lifting platforms for the disabled and other limited mobility social groups. Requirements for security and accessibility. Part 1. Lift platforms with vertical movement”</p> <p>GOST R 55555-2013 “Lifting platforms for the disabled and other limited mobility social groups. Requirements for security and accessibility. Part 2. Lifting platforms moving in an inclined plane”</p>
Slovakia	<p><b>R 2</b> Ensuring interoperability in ZSR</p> <p><b>W 10</b> Rules of technical operation of railway infrastructure</p> <p><b>W 15</b> Rules on operational information</p>
Ukraine	<p>DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities”</p> <p>DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”</p>

#### 4.2.1.2.3 Route identification / Обозначение маршрута

- (1) Obstacle-free routes shall be clearly identified by visual information as detailed in point 4.2.1.10.
- (2) Information on the obstacle-free route shall be given to visually impaired people by tactile and contrasting walking surface indicators as a minimum. This paragraph does not apply to obstacle free routes to and from car parks.
- (3) Technical solutions using remotely controlled audible devices or telephone applications are permitted to be used in addition or as an alternative. When they are intended to be used as an alternative, they shall be treated as innovative solutions.
- (4) If there are handrails or walls within reach along the obstacle-free route to the platform, they shall have brief information (for example platform-number or

direction-information) in Braille or in prismatic-letters or numbers on the handrail, or on the wall at a height between 145 cm and 165 cm.

**Belarus:**

Characteristics of pedestrian route	Requirements
<p>Site-areas, hardscapes, equipment, plants arrangement:</p> <ul style="list-style-type: none"> <li>- visual, audible, tactile information sources, dislocation</li> <li>- illumination means, dislocation</li> </ul>	<ul style="list-style-type: none"> <li>- Indicative – all along the route; signalling – directly in complicated hubs; warning – before complicated hubs and route sections</li> <li>- On one side of the pedestrian route</li> </ul>

**Russia:**

Obstacle-free routes shall be clearly identified by visual information, which shall be placed on a contrast surface at height of 1,5 – 4,5 m from the floor surface.

Information on the obstacle-free route shall be provided to visually impaired people by tactile signs and contrasting tactile indicators on the walking path.

Technical solutions using remotely controlled audible devices or mobile applications are allowed as an addition or as an alternative. When they are intended to be used as an alternative, they shall be treated as innovative solutions.

Technical requirements for tactile road and on-ground indicators are set out in GOST R 52875-2007 “Tactile on-ground indicators for visually impaired persons. Technical requirements”.

Requirements for identification and equipment of routes are set out in SP 59.13330.2012 «Code of rules. Accessibility of buildings and structures for persons with reduced mobility», STO RZD 03.001-2014 «Railway transport services. Requirements for servicing passengers with reduced mobility».

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex B)
Georgia	
Kazakhstan	
Latvia	TSI PRM

Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	GOST R 52875-2007 “Tactile ground indexes for visually impaired persons. Technical requirements” SP 59.13330.2012 “Set of rules. Accessibility of buildings and structures for limited mobility social groups”, p. 4.1 STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.5
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities” DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### 4.2.1.3. Doors and entrances / Двери и входы

- (1) This point applies to all doors and entrances that are on obstacle-free routes, with the exception of doors giving access to the toilets which are not dedicated to persons with disabilities and persons with reduced mobility.
- (2) Doors shall have a minimum clear useable width of 90cm and shall be operable by persons with disabilities and persons with reduced mobility.
- (3) It is permitted to use manual, semi-automatic or automatic doors.
- (4) Door operating devices shall be available at a height of between 80cm and 110cm.

#### Belarus:

Entrance accessible for PHP:	
- availability	- In publically accessible buildings with workspaces of impaired persons
- quantity	- Min. 2 in special buildings – in accordance with functioning regime
- equipment	- Remotely controlled electronic speech



	equipment
<p>Horizontal entrance area in front of PHP accessible entrance:</p> <ul style="list-style-type: none"> <li>- design dimensions</li> <li>- structure protecting entrance area from atmospheric fallout, design dimensions</li> <li>- drainage bars:</li> </ul> <p>Level</p> <ul style="list-style-type: none"> <li>- cluster clearance</li> <li>- fencing means</li> </ul>	<ul style="list-style-type: none"> <li>- Min. 1,8×1,8 m</li> <li>- Min. of the same size as the entrance area</li> <li>- flush with the surface of the entrance area</li> <li>- max 15 mm</li> <li>- in case of entrance area rise of more than 0,45 m – all around the open entrance area</li> </ul>
<p>Antium staircase:</p> <ul style="list-style-type: none"> <li>- necessity to install</li> <li>- step height</li> <li>- step width</li> <li>- fencing, availability</li> </ul>	<ul style="list-style-type: none"> <li>- in case of entrance area rise of more than 4 cm</li> <li>- Ramp installation if necessary</li> <li>- min 1,0 m</li> <li>- max 6,0 m</li> </ul>
<p>Entrance doorway:</p> <ul style="list-style-type: none"> <li>- Filling</li> </ul>	<p>Forbidden to install revolving doors and turngates; automatic doors, single action doors with fixation devices to retain the doors in “open” and “closed” positions; doors with automatic closing delay of minimum 5 seconds should be used.</p>

- entry control means	- not hindering movement of PHP
- transparent doors, material	- shockproof
- transparent doors, marking:	
colour finishing	bright, contrasting
dislocation of transparent door sections above the floor level	min 1,2 max 1,5 m
height, width	min 0,1m min 0,2 m
doorway width	min 0,9 m
maximum opening/closing effort	max 2,5 kg

### **Russia:**

Any building shall be fitted with more than one entrance accessible for passengers with reduced mobility. Doors of routes dedicated to movement of wheel-chaired persons shall have width of minimum 1,1 m.

Obstacle-free routes shall be equipped with manual, semi-automatic and automatic doors. Usable width of doorways and clearways, exits and corridors shall be at least 0,9 m.

### **Ukraine:**

Buildings shall be equipped with minimum one PRM accessible entrance from the ground surface and from every on-ground or underground passage connected to the building.

Exterior steps and ramps shall have handrails considering technical requirements for stationary support facilities in accordance with reference documents.

In case main building access steps have width of more than 2,5 m or more, additional separating handrails shall be envisaged.

PRM accessible entrance area for shall have a shelter, water disposal outlet, heating (depending on climatic conditions, according to design specification).

Surfaces of entrance areas and tambours shall be solid, non-slippery if wet with transversal inclination limited to 1-2%.

In case of security access control, control devices accessible for dedicated categories of impaired persons shall be envisaged.

Width of doorways and open embrasures, exits from premises and corridors to staircases shall be at least 0,9 m. In case of more than 1,0 m deep embrasures, the width of embrasure shall match the width of communication clearway, in all cases as least 1,2 m.

Doorways shall not have sill plates and vertical drops of the floor. In case of necessity of sill plates or vertical drops their height shall not exceed 0,025 m.

Exterior doors accessible for impaired persons shall have transparent and shockproof overview panels, lower edge of the panel shall be located 0,3 – 0,9 m from the floor level and protected by shockproof stripe.

Transparent doors and fencing shall be made of durable material. Transparent doors shall have bright contrast marking of minimum 0,1 m height and minimum 0,2 m width, placed at height between 1,2 m and 1,5 m from the passage surface.

For PRM accessible passages inside buildings and structures, installation of turngates and reversal doors of less than 0,85 m of width is not allowed.

It is recommended to equip PRM accessible passages with single action doors with fixation devices to retain the doors in “open” and “closed” positions. Doors with automatic closing delay of minimum 5 seconds should also be used.

Doors opening and closing devices, as well as horizontal hand grips, levers, cranes and various apparatuses, button holes and ticket machines and other devices accessible for disabled persons inside the building, should be installed at a height of max. 1.1 m and min. 0.85 m above the floor level and at a distance of min. 0.4 metres from the sidewall or other vertical surface of the premises.

Switches and sockets in the premises should be designed according to GOST 7396.1 and at a height of 0.8 m from floor level.

It is appropriate to install door handles, locks, latches and other doors opening and closing devices that have a shape that allows disabled persons to manage them with one hand (fist) and do not require use of too much effort or major rotation of the handwrist. It is appropriate to focus on the application of easily managed devices and mechanisms, as well as the U-shaped handles.

Handles on the leafs of sliding doors must be fitted so that in fully open door position these handles are easily accessible from both sides of the wall.

Door handles, located at the corner of the corridor or premises, shall be placed at the min. distance of 0.6 m from the sidewall.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex G).
Georgia	

Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.17. STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.3
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### 4.2.1.4. Floor surfaces / Поверхности пола

- (1) All floor coverings, ground surfaces and stair tread surfaces shall be slip resistant.
- (2) Within the station buildings there shall be no irregularities in excess of 0.5cm at any given point in floor walking surface areas, except for thresholds, drainage channels and tactile walking surface indicators.

#### Belarus:

Characteristics of pedestrian route	Requirements
Public accessible corridors, galleries, passages between buildings, other linear layout elements:  - protection from floor level vertical drop (if unavoidable)	- visual and tactile warning signs, fencing of min. 0,9 m height, limiting borders of 50 mm height.

**Russia:**

If an obstacle-free route contains vertical drop exceeding 0,04 m, alternative route for persons with reduced mobility shall be envisaged.

**Ukraine:**

For PRM accessible passages, floor sections 0,6 m away from doorways, staircase entrances, ramps, and turns shall have grooved and/or contrast surface. Installation of light indicators is allowed.

In PRM accessible premises use of napped fabric carpets thicker than 0,013 is forbidden.

Carpet surfaces shall be properly fixed, particularly their joints and edges.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex C).
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.2
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### **4.2.1.5. Highlighting of transparent obstacles / Выделение прозрачных препятствий**

- (1) Transparent obstacles on or along the routes used by passengers, consisting of glass doors or transparent walls, shall be marked. These markings shall highlight the transparent obstacles. They are not required if passengers are protected from impact by other means – for example, by handrails or continuous benches.

**Belarus:**

See p. 4.2.1.3.

**Russia:**

On or along the routes used by passengers, transparent obstacles, consisting of glass doors or transparent walls, shall be marked.

These markings are not required if passengers are protected from impact by other means – for example, by handrails or continuous benches.

**Ukraine:**

See p. 4.2.1.3

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex G).
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.4.
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

**4.2.1.6. Toilets and baby nappy changing facilities / Туалеты и средства для пеленания младенцев**

- (1) If toilets are provided at a station, then a minimum of one unisex cubicle shall be wheelchair accessible.
- (2) If toilets are provided at a station, baby nappy changing facilities shall be provided which are accessible to both men and women.

**Russia:**

For the convenience of impaired persons within railway station, special toilet cabins of 225x155 cm should be envisaged (SP 2.5.1198-03).

If passenger infrastructure includes toilets, minimum one unisex (for men and women) cabin shall ensure access for people with defects of locomotor system including those moving in wheelchairs.

It is recommended to equip sanitary premises accessible for impaired (including those using wheelchairs) with emergency buttons with duplex connection. It is recommended to install blinking light indicators to indicate activation of the emergency button above the accessible cabins.

In an unisex cabin, the space for placing a wheelchair next to the watercloset shall be at least 0,75 m, space for wheelchair manoeuvre shall have radii at least 1,4 m.

Door locking/unlocking devices, horizontal handrails as well as handles, faucets and buttons of different facilities shall be installed at maximum height 1,1 m and at least 0,85 m above the floor level.

For shower rooms (if available), there shall be at least one cabin equipped for persons in a wheelchair, including space in front of the cabin to approach it in a wheelchair.

Accessible shower cabin shall be equipped with folding seat (movable or fixed to the wall) placed at maximum height of 0,48 m from the shower tray floor excluding the threshold.

Water faucet with stick handles and thermostats should be installed in accessible cabins.

Passenger infrastructure object not equipped with nursery rooms are recommended to equip with nursery premises (compartments) accessible for both women and men.

Nursery premises (compartments) shall be equipped with nursery table, water supply and drain system. Nursery compartments are allowed to be installed in toilet premises (STO RZD 03.001-2014).

**Ukraine:**

Public toilets, including those installed in residential buildings (with some regulatory exceptions) shall contain at least 1 cabin accessible for all categories of persons.

Any public buildings estimated for 50 and more visitors or if average estimated visit takes 60 min and more shall be equipped with PRM accessible toilet cabin.

Accessible public toilet cabin shall be at least 1,65 m wide and at least 1,8 m deep. Inside the cabin, space for placing a wheelchair and hooks for crutches and other equipment shall be envisaged.

In the accessible cabin and other public sanitary premises, possibility of installation of handrails, crossbars, turning or folding seats should be envisaged.

The aforementioned requirements are approved by the following documents:

Belarus		
Georgia		
Kazakhstan		
Latvia		TSI PRM
Lithuania		TSI PRM
Moldova		
Poland		Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia		SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.17. STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.3.4, 5.3.6.
Slovakia		<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine		DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### 4.2.1.7. Furniture and free-standing devices / Мебель и свободностоящие устройства

- (1) All items of furniture and free-standing devices at stations shall contrast with their background, and have rounded edges.
- (2) Within the station confines, furniture and free-standing devices (including cantilevered and suspended items) shall be positioned where they do not obstruct blind or visually impaired people, or they shall be detectable by a person using a long cane.
- (3) On each platform where passengers are allowed to wait for trains, and at every waiting area, there shall be a minimum of one area fitted with seating facilities and a space for a wheelchair.
- (4) When this area is weather protected, it shall be accessible by a wheelchair user.



**Belarus:**

Characteristics of pedestrian route	Requirements
Access to furniture and equipment:	
- width on a straight line	- min 0,9 m
- width in case of need to turn	- min 1,2 m
- free space around tables, counters, on-wall devices, self-service and service facilities	- without need of wheelchair manoeuvring - min 0,9x1,5 m, if manoeuvring is needed - 1,5x1,5 m

**Russia:**

In the stations, all furniture items and free-standing devices shall contrast with their background, and have rounded edges.

Within the infrastructure object's confines, furniture and free-standing devices (including cantilevered and suspended items) shall be positioned in a way they do not create obstacles for blind or visually impaired people, or they shall be detectable by a person using a long cane.

In wheelchair accessible premises, containing equipment and furniture, the width of the passage shall be at least 1,2 m, additionally the possibility to turn the wheelchair to 180° shall be ensured.

**Ukraine:**

Building's interior structural elements and equipment placed on the walls and other vertical surfaces within the passage's clearance must have rounded edges and not protrude by more than 0.1 m, at a height of 0.7-2.0 m above the floor. Devices and indicators placed on individual supports must not protrude by more than 0.3 m.

Barriers, fences, etc. should be installed inside buildings, under open stairs and other overhanging elements where clearance is less than 1.9 m width.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 "Habitat for physically handicapped persons. General provisions" (Annex C).
Georgia	
Kazakhstan	
Latvia	TSI PRM

Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.5
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### **4.2.1.8. Ticketing, Information desks and Customer Assistance points / Билетные кассы, информационные стойки и точки помощи клиентам**

- (1) Where manual ticket sales counters, information desks and customer assistance points are provided along the obstacle-free route, a minimum of one desk shall be accessible to a wheelchair user and to people of small stature and a minimum of one desk shall be fitted with an induction loop system for hearing assistance.
- (2) If there is a glass barrier between the passenger and sales person at the ticket counter, this shall either be removable or, if not removable, an intercom system shall be fitted. Any such glass barrier shall consist of clear glass.
- (3) If electronic devices are fitted that displays pricing information to the sales person, such devices shall also be fitted that display the price to the person purchasing the ticket.
- (4) Where ticket vending machines are provided on an obstacle free route at a station, a minimum of one of these machines shall have an interface that is reachable by a wheelchair user and people of small stature.
- (5) If ticket control machines are fitted, a minimum of one of the machines shall have a free passageway with a minimum width of 90cm and shall be able to accommodate an occupied wheelchair up to 1250mm in length. In the case of upgrade or renewal, a minimum width of 80cm is permitted.
- (6) If turnstiles are used, there shall be a non-turnstile access point available for use by persons with disabilities and persons with reduced mobility at all operational times.

#### **Russia:**

For the convenience of impaired people within the station, in lounge areas, designated places for wheelchairs (length 110 cm, width 70 cm, sitting height 52 cm) should be envisaged as well as specially designed tables in the buffets, cafes, restaurants.

For the convenience of passengers, design of audible information systems should envisage certain ticket desks equipped with devices that facilitate communication with people with diminished hearing capacity. Several pay phones should be envisaged for people with diminished hearing capacity; pay phones for wheelchair people should be placed on reduced height (SP 2.5.1198-03).

Where manual ticket sales counters, information desks and customer assistance points are provided along the obstacle-free route, minimum one desk shall be accessible to wheelchair users and people of small stature, and minimum one desk shall be fitted with an induction loop system for hearing assistance.

If passenger infrastructure objects provide vending of travel documents, at least one vending counter shall be adapted for wheelchair or small stature (1,5 m or less) passengers. The height of the counter shall be minimum 1 m long, the height shall not exceed 0,85 m from the floor level.

For the convenience of reduced mobility passengers not using wheelchairs, adaptation of one of the general admission ticket counters is recommended. The adapted counter should be equipped with induction devices for people with reduced hearing capacity as well as with information and navigation equipment for visually impaired persons.

If there is a glass barrier between the passenger and sales person at the ticket counter, this shall either be removable or, if not, an intercom system shall be fitted. Any such barrier shall consist of clear glass.

If electronic devices displaying pricing and travel documents information to the sales person are installed, it is recommended to arrange them in a way that displayed information is visible to the customer purchasing the ticket.

Where ticket vending machines are provided on an obstacle free route in a station, a minimum one of such machines shall have an interface that is reachable to a wheelchair user and people of small stature. In this case reading and control devices of terminals, displays and other equipment shall be placed at height of max 1,1 m and min 0,85 m from the floor level. If the passenger infrastructure includes ticket control machines (turnstiles), a minimum of one of the machines shall have a free passageway with a minimum width of 0,90 m and shall be able to accommodate an occupied wheelchair up to 1,3 m in length. To ensure accessibility for visually impaired persons and persons with reduced vision capacity, it is recommended to equip turnstiles with audible beacons and audible warning signalling (different signals for access granted and access forbidden cases). In case of absence of such equipment, aid provided by the staff shall be arranged. If turnstiles are used, there shall be a non-turnstile access point available to persons with disabilities and persons with reduced mobility at all operational times (STO RZD 03.001-2014).

#### **Ukraine:**

In the lobbies of public buildings, pay-phone type information equipment for visitors with hearing impairments should be envisaged.

Confined space of buildings management (various premises, cubicle toilets, elevator, etc.), as well as lift lobbies, where impaired persons including those with hearing disabilities might stay alone, must be equipped with two-way communication with assistant or the person on duty. In other cases, call buttons should be envisaged. In public toilets, electric bell or detector should be connected to an attendant room. Such premises (cabins) must be provided with emergency lighting.

Interior premises indicators should be duplicated by embossed signs located next to the door, from the side of the door handle at a height of 1.4 m to 1.75 m.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.17, 3.1.19. STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p.5.3.1.
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### 4.2.1.9. Lighting / Освещение

- (1) The illuminance level of the external areas of the station shall be sufficient to facilitate way finding and to highlight the changes of level, doors and entrances.
- (2) The illuminance level along obstacle-free routes shall be adapted to the visual task of the passenger. Particular attention shall be paid to the changes of levels, ticket vending offices and machines, information desks and information displays.
- (3) The platforms shall be illuminated according the specification referenced in Appendix A, index 3 and index 4.
- (4) Emergency lighting shall provide sufficient visibility for evacuation and for identification of fire-fighting and safety equipment.

## Russia:

Artificial illuminance of passenger platforms, railhead level pedestrian crossing of categories 1,2 and 3 and other objects [see p. 5.9.1 of STO RZD 03.001-2014] the shall comply with GOST R 54984.

Emergency (evacuation) iluminance shall be at least 5 lx and ensure sufficient visibility for evacuation and detection of firefighting and security equipment.

## Ukraine:

Illumination of premises and communications accessible for PRM should be increased by one level comparing to requirements of DBN V.2.5-23 and DBN V.2.5-28.

Illumination drop between neighbouring premises and areas shall be maximum 1:4.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 "Railway transport services. Requirements for servicing passengers with limited mobility", p. 5.6 GOST R 54984-2012 "Exterior lighting of railway transport objects. Norms and control methods.
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 "Buildings and structures. Accessibility of buildings and structures for limited mobility social groups" GBN V. 2.3-37472062-2:2013 "Technical service buildings and structures of railway station complexes and railway transport stopping points. Design, construction"

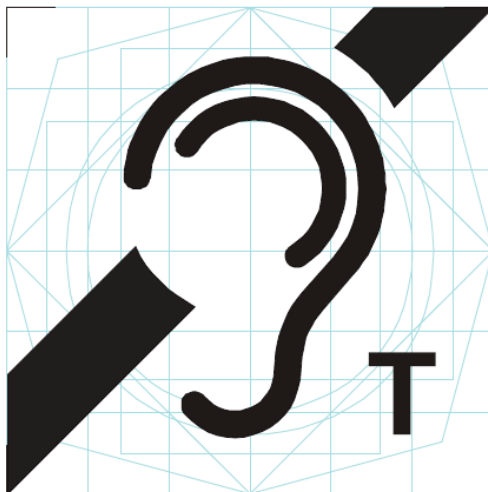
**4.2.1.10. Visual information: signposting, pictograms, printed or dynamic information /  
Визуальная информация: указатели, пиктограммы, печатная или  
динамическая информация**

- (1) The following information shall be provided:
  - Safety Information and Safety Instructions.
  - Warning, prohibition and mandatory actions signs.
  - Information concerning the departure of trains.
  - Identification of station facilities, where provided, and access routes to those facilities.
- (2) The fonts, symbols and pictograms used for visual information shall contrast with their background.
- (3) Signposting shall be provided at all points where passengers need to make a route taking decision and at intervals on the route. Signage, symbols and pictograms shall be applied consistently over the whole route.
- (4) The information concerning the departure of trains (including destination, intermediate stops, platform number and time) shall be available at a height of 160cm maximum at least in one location in the station. This requirement applies to printed and dynamic information whatever is provided.
- (5) The typeface used for texts shall be easily readable.
- (6) All safety, warning, mandatory action and prohibition signs shall include pictograms.
- (7) Tactile information signage shall be fitted in:
  - Toilets, for functional information and call for aid if appropriate
  - Lifts in accordance with the specification referenced in Appendix A, index 1, Annex E.4.
- (8) Time information presented in digits shall be in the 24h system
- (9) The following specific graphic symbols and pictograms shall be fitted with the wheelchair symbol in accordance with appendix N:
  - Directional information for wheelchair specific routes
  - Indication of the wheelchair accessible toilets and other amenities if provided
  - If there is train configuration information on the platform, indication of the wheelchair boarding location.



The symbols are permitted to be combined with other symbols (for example: lift, toilet, etc).

- (10) Where inductive loops are fitted these shall be indicated by a sign as described in appendix N.



- (11) In wheelchair accessible toilets, where hinged handrails are provided, a graphic symbol showing the rail in both the stowed and deployed position shall be provided.
- (12) There shall be no more than five pictograms, together with a directional arrow, indicating a single direction placed adjacent to each other at a single location.
- (13) Displays shall be compliant with the requirements of point 5.3.1.1. [of PRM TSI] In this point, the term “display” shall be understood as any support of dynamic information.

**Belarus:**

Characteristics of pedestrian route	Requirements
-------------------------------------	--------------

visual, audible, tactile information sources, dislocation	Indicative – all along the route; signalling – directly in complicated hubs; warning – before complicated hubs and route sections
---	---

### **Russia:**

Visual information system in the station should envisage pictograms to indicate accessibility of premises for wheel-chaired persons (SP 2.5.1198-03).

In the objects of passenger infrastructure (in obstacle-free route area), the following duplicated visual and audible information must be displayed:

- Transport safety information;
- safety rules for passengers in the railway territory; warning and prohibiting signs and mandatory action signs;
- information concerning the departure of trains;
- designation of obstacle-free routes and reduced mobility passengers service areas within passenger infrastructure object and on access way to them;
- work schedule of the main facilities of the station complex (station);
- rules on transportation of passengers, luggage and freight luggage;
- announcements about services for passengers with reduced mobility.

Passenger stations and stopping points must be equipped with a sign indicating the title of the station/stopping point.

If technically feasible, all spoken information shall be duplicated by real-time text messages using visual information devices.

All public areas accessible for passengers with reduced mobility shall be marked with approved type signs or symbols (pictograms) unified for all transport modes, in particular: private car parkings, stops of public transport, entrances of passenger building, station passages, public toilets etc.

Obstacle-free routes shall be clearly identified by visual information placed on a contrast background at height of min 1,5 m and max 4,5 m from the floor level.

Fonts, symbols, pictograms used for visual information shall contrast with general background and comply with p. 6.5.6 of GOST 12.4.026.

Technical requirements for visual information means for impaired persons shall comply with Chapter 4 of GOST R 52131.

Text font shall be easy readable. Medieval or new low-contrast character strokes fonts are recommended (“Verdana”, “Times”) according to Annex 1 to GOST 3489.

Recommended font and symbol sizes shall comply with estimated read distance:



- at a distance up to 20 m – font height and width shall be at least 0,3 m;
- at a distance up to 100m – at least 1,5 m.

Dimensions of signs to be recognised at intermediate distances shall be defined using interpolation.

For signposts located under the ceiling at height more than 2 m from the floor level to the lower edge of the signpost, height of upper case letters of inscriptions shall be at least 0,075. Dimensions of signs to be recognised at intermediate distances shall be defined using interpolation.

Letters and numbers on signs shall have proportions from 3:5 to 1:1 for width and height; proportions of strokes' width to their height shall be from 1:5 to 1:10.

Signposting shall be provided at all points where passengers need to choose their route and periodically along the route. Signage, symbols and pictograms shall be applied consistently over the whole route of the passengers with reduced mobility; additionally they have to be positioned in groups for easier visual perception and concentrated in places most convenient for passengers (groups of max 5 pictograms indicating the same direction including the direction arrow are allowed).

Graphic symbols and pictograms indicating a wheelchair are being positioned to:

- inform about directions of routes accessible for wheelchaired persons,
- indicate toilets and other facilities accessible for wheelchaired persons (as shown in the Figure 1),
- inform about configuration of the train by indicating boarding areas for wheelchaired persons.

Abovementioned symbols can be combined with other symbols, for example those shown in Figures 2 and 3:



Figure 1



Figure 2



Figure 3

The information concerning the departure and arrival of trains (including destination, intermediate stops, platform number and time) shall be available at a height of 1,6 m maximum at least in one location in the station. This requirement applies to printed and dynamic information whatever is provided.

**Ukraine:**

Information and emergency alarm systems shall be integrated and shall envisage visual, audible and tactile information in premises (except wet ones) intended for all kinds of impaired persons. They shall comply with requirements of DBNV1.1-7, DBNV.2.5-13 and VSN 60.

Information (including signs and symbols) shall be unified within the building or complex of buildings situated in one area, enterprise etc. and comply with signs approved by reference documents.

In premises and areas attended or inhabited by PRM (especially in places of mass-attendance) including accessible entrances and routes, information system shall ensure continuity of provided information, timely navigation and univocal perception of objects and attended areas. The system shall envisage reception of information regarding available services, location and purpose of functional elements, location of emergency routes, warning about emergencies etc.

Visual information shall be located on a contrast background, dimensions of signs corresponding to overview distance and design solutions of interior.

The aforementioned requirements are approved by the following documents:

Belarus	STB 2030-2010 “Habitat for physically handicapped persons. General provisions” (Annex B).
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.18. STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.5.1, 5.5.2
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure

	<b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

**4.2.1.11. Spoken information / Речевая информация**

- (1) The spoken information shall have a minimum STI-PA level of 0.45, in accordance with the specification referenced in Appendix A, index 5 [TSI PRM].

**Russia:**

Loudspeaking acoustic systems shall comply with dialogue intelligibility (speech recognition (decoding) by user) index of at least 0,45.

Technical solutions which envisage use of remotely controlled acoustic devices or mobile applications for navigation can be used in addition.

In ticket vending and lounge areas, there shall be sound amplifiers (induction equipment) according to GOST R 51671 (p. 8.5, 8.7) installed for persons with reduced hearing capacity.

If passenger area of infrastructure object is equipped with induction facilities for persons with reduced hearing capacity this shall be indicated by the sign as shown in Figure 4.



Figure 4 – Accessibility sign for persons with reduced hearing capacity

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM

Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.5.3
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”

#### 4.2.1.12. Platform width and edge of platform / Ширина платформы и край платформы

- (1) The danger area of a platform commences at the rail side edge of the platform and is defined as the area where passengers are not allowed to stand when trains are passing or arriving.
- (2) It is permitted for the width of the platform to be variable on the whole length of the platform.
- (3) The minimum width of the platform without obstacles shall be the width of the danger area plus the width of two opposing freeways of 80cm (160cm). This dimension may taper to 90cm at the platform ends.
- (4) It is permitted to have obstacles inside this freeway of 160cm. Equipment required for the signalling system and safety equipment shall not be considered as obstacles in this point. The minimum distance from obstacles to the danger area shall be according to the following table:

Length of obstacles (measured parallel to the platform edge)	Minimum distance to the danger area
< 1m (note 1) – small obstacle	80cm
1m to < 10m – large obstacle	120cm

Table 1: minimum distance from obstacles to the danger area

Note 1: if the distance between two small obstacles is less than 2.4m measured parallel to the platform edge they shall be considered as one large obstacle.

Примечание 1. Если расстояние между двумя небольшими препятствиями, измеренное параллельно краю платформы, составляет меньше 2,4 м, такие препятствия считаются одним большим препятствием.

Note 2: within this minimum distance from a large obstacle to the danger area, it is permitted to have additional small obstacles as long as the requirements for small obstacles (minimum distance to danger area and minimum distance to next small obstacle) are met.

- (5) If there are auxiliary facilities on-board trains, or on the platform, to allow wheelchair users to board on or alight from trains, a free space (no obstacles) of 150cm from the edge of the facility towards the direction where the wheelchair boards/lands at/to the platform level, shall be provided where such facilities are likely to be used. A new station shall meet this requirement for all trains that are planned to stop at the platform.
- (6) The boundary of the danger area, furthest from the rail side edge of the platform, shall have a visual marking and tactile walking surface indicators.
- (7) The visual marking shall be a contrasting, slip resistant, warning line with a minimum width of 10cm.
- (8) Tactile walking surface indicators can be one of the two types:
  - an attention pattern indicating a hazard at the boundary of the danger area
  - a guiding pattern indicating a path of travel at the safe side of the platform
- (9) The material at the rail side edge of the platform shall contrast with the darkness of the gap.

#### **Russia:**

The boundary of the dangerous zone on the passenger platform (prohibited zone during movement of the train) shall be at least 0,75 m.

Dangerous zone boundary mark shall be made by antiskid signalling line which contrasts to platform surface and has 0,15 – 0,2 m in width. .

Tactile warning indicators on a platform shall be placed in front of the signalling line, at least 0.9 m from the edge of the platform or (if replacing the signalling line) at the distance of at least 0,75 m.

If the train or the platform is equipped with boarding aids to allow wheelchair users to board on or disembark from the trains, a free space (obstacles-free zone) shall be provided where such facilities are likely to be used. The obstacle-free zone shall be of 1.5 m x 1.5 m from the edge of the boarding aid and oriented towards the direction of boarding/egress area.

#### **Ukraine:**

Passenger platform shall be designed for all stations, stopping, passing and overtaking points where boarding, egress and waiting for trains is envisaged. Platform for boarding, egress and waiting at stopping points must be placed on the outside of the tracks. Stairs (steps), must be

oriented to a non-driving side at intervals of 100 m, in the case of heavy passenger traffic – every 50 m. Stairs (steps) should be duplicated by ramps and lifting devices according to DBN V.2.2-17.

Depending on height above railhead, the platforms are divided into high (1.1-1.3 m), average (0.55 m) and low (0.2 m).

Length of passenger platforms shall comply with the greatest possible length of a passenger train (at the prospect of the fifth year of operation). In case of construction of new stations, design must include the technical possibility to increase the length of platforms up to 650 m (for suburban traffic -500 m).

The width of the passenger platforms depends on:

- intensity of passenger traffic;
- speed of trains (fast, high speed);
- quantity of exits from the platform and their dislocation;
- size of structures, which should be placed on the platform (pavilions, stairways from pedestrian bridges, tunnels entrances etc.).

Depending on the location of the platform in relation to tracks, platforms may be lateral (“coastal” type) or located between the tracks (“island” type).

The platform, in particular their edges shall be equipped with tactile and contrasting elements of orientation (guides), relevant systems of light and sound alarms and warning.

Danger zone of the platform (danger zone area, in which the passengers do not appear when moving trains) must be at least 0.75 m.

Borderline (band) should be non-slippery and contrasting (usually bright yellow) comparing to surfaces of the passenger platforms and have a width of 0.15 - 0.2 m.

Warning tactile indicators on the platform must have a minimum width of 0.5 m.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for

	servicing passengers with limited mobility”, p. 5.4.2.
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	GBN V. 2.3-37472062-2:2013 “Technical service buildings and structures of railway station complexes and railway transport stopping points. Design, construction”

#### 4.2.1.13. End of platform / Конец платформы

- (1) The end of the platform shall either be fitted with a barrier that prevents public access or shall have a visual marking and tactile walking surface indicators with an attention pattern indicating a hazard.

##### Russia:

For the flat end of the platform, for the safe movement of persons with reduced vision capacity and visually impaired persons, a barrier and tactile warning sign shall be installed at distance of 0,75 m from the platform edge.

##### Ukraine:

The end of the platform shall be equipped with barrier to prevent public access, or have a visual and tactile indication on a pedestrian surface with attention pattern indicating a hazard.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.2.2
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information

Ukraine	<p>GBN V. 2.3-37472062-2:2013 “Technical service buildings and structures of railway station complexes and railway transport stopping points. Design, construction”</p> <p>DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities”</p> <p>DBNV 2.2-17:2006 “Buildings and structures. Accessibility of buildings and structures for limited mobility social groups”</p>
---------	---

**4.2.1.14. Boarding aids stored on platforms / Вспомогательные средства для посадки, хранящиеся на платформах**

- (1) If a platform ramp is used, it shall comply with the requirements of point 5.3.1.2. [of PRM TSI]
- (2) If a platform lift is used, it shall comply with the requirements of point 5.3.1.3. [of PRM TSI]
- (3) A secure storage method shall be provided to ensure that boarding aids, including portable ramps, when stored on a platform, do not cause an obstruction or pose any hazard to passengers.

**Russia:**

For the convenient stay and movement of impaired persons within the station, platform lifts and portable ramps for boarding of wheelchair persons shall be envisaged.

Board/egress aids are ramps, inclining drawbridges and elevators. Boarding aids shall withstand the weight of a user with a wheelchair according to GOST R 50602 at least 225 kg.

Mobile vertical elevators can be used on low platforms.

Inclined ramps and inclined drawbridges can be used on high platforms (STO RZD 03.001-2014).

**Ukraine:**

GOST 33190-2014 (p. 7.4) contains the requirement for lifting capacity – 300 kg.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM



Lithuania	TSI PRM
Moldova	
Poland	
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 3.1.17 STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.4.3 GOST R 50602-93 “Wheelchairs. Maximum overall dimensions”
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> Rules on operational information
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” Design documentation on assisting boarding devices for reduced mobility social groups

#### 4.2.1.15. Passenger track crossing to platforms / Пассажи́рские перехо́ды через пути на платформы

- (1) Level track crossings in stations are permitted to be used as part of a step-free route or of an obstacle-free route according to National Rules.
- (2) If level track crossings are used as parts of step free routes in addition to other routes, they shall:
  - have a minimum width of 120cm (less than 10 m in length) or 160cm (10 m or more in length).
  - have moderate slopes; a steep gradient is only allowed for ramps on short distances
  - be designed so that the smallest wheel of a wheelchair, as defined in appendix M, cannot be trapped within the crossing surface and the rail
  - where accesses to level crossings are equipped with safety chicanes in order to prevent people from unintended/uncontrolled crossing of the tracks, the minimum width of the walkways in the straight line and in the chicane can be less than 120cm with a minimum of 90cm; it shall be sufficient for a wheelchair user to manoeuvre.
- (3) If level track crossings are used as parts of obstacles free routes, unique solution for all passengers, they shall
  - meet all specifications above,
  - have visual and tactile markings to identify the beginning and the end of the crossing surface.

- be supervised, or, on the basis of national rules, equipment for a safe crossing of blind or visually impaired people shall be provided and/or the level crossing shall be operated for a safe crossing of visually impaired people
- (4) If any of the above requirements cannot be met, the level track crossing shall not be considered part of a step-free route or of an obstacle-free route.

Если какое-либо из приведенных выше требований не может быть выполнено, одноуровневый переход не будет считаться частью маршрута без ступеней или маршрута без препятствий.

### **Rusia:**

Level track crossings in stations are permitted to be used as part of a step-free route or of an obstacle-free route.

If level track crossings are used as parts of step-free routes in addition to other routes, they shall:

- have a minimum width of 1.5 m
- have maximum slopes of 5 ‰; a steep gradient of 30° is only allowed for ramps on short distances up to 0,2 m
- be constructed on the railhead level,
- comply with technical requirements for pedestrian crossings of railway tracks
- have a non-slippery surface,
- fitted with equipment for safe crossing by visually impaired persons and people with diminished vision capacity (audible and visual signalling)

To increase pedestrians' awareness about the direction of an approaching train, the pedestrian crossings on relevant tracks may be equipped with additional technical means (signalling signs, speech synthesisers, train moving direction indicators etc.) If the pedestrian crossing is equipped with train approach warning system, the audible warning system shall duplicate the visual one.

Edges of passage, which are transversal to the track axis, shall have visual and tactile marking indicating boundaries of the passage.

If underground or overhead passages are available, they have to be equipped with ramps or elevation facilities for persons with reduced mobility.

### **Ukraine:**

Station passages are designed to connect to each other platforms, passenger station and station square (taking into account passenger traffic and luggage crossing railway tracks).

Depending on local conditions, functional and space-planning decisions, station passages are designed in the middle of or about the same distance from both ends of the platform.

Designed navigation should envisage the shortest estimated ways of movement of passenger traffic.

Station passages are designed at the same level (at the level of the railhead) or above the tracks and platforms (footbridges, concourses) and/or under the tracks and platforms (pedestrian tunnels).

Transitions at various levels provided at stations, where passages from the platform to the station or locality cross railway tracks with heavy train traffic (50 or more pairs per day), as well as on railway lines with passenger trains speed over 121 km/h, or pedestrian traffic through the crossing comprises more than 75 thousand people per year.

Transitions at level of the rail head must be protected with automatic alarms, light indicators and sound signals. The situated along the railway tracks section of the transition between the descent from the platform and the transverse (via rail) passage must be secured by the fence of 0.9 m - 1.1 m.

The width of the railway crossing shall be calculated according to a formula taking into account the passenger traffic and its distribution (in general) for both long distance and the suburban traffic. The minimum width of the railway crossings and stairs (steps) is defined by DBN 2.3.14: 2006 "Bridges and pipes. Design rules".

Width of movement area for the both direction traffic of disabled persons in wheelchairs should be minimum 1.8 m, taking into account the dimensions of wheelchairs according to existing regulations.

Tactile surface and floor markers, which carry information for visually impaired people should comprise of stripes of different materials and the grooved pattern. The size and geometry of the corrugation of the tactile coating are set DSTU-N-B 2.2-31: 2011.

Tactile warning measures on the pedestrian passage should be placed not less than 0.8 m away from the object, the beginning of a dangerous route section, changes of direction etc.

The height of pedestrian tunnels, inclination of the floor, staircases, as well as dimensions of steps are defined by GBN V. 2.3-37472062-2:2013.

Inclination of the passage adapted for disabled persons in wheelchairs, shall not exceed 5%.

Stairways shall be fitted with handrails on both sides (railing). The edges of the first and the last steps must have bright contrasting marking.

Ramp slope must minimum 1:12.

Stairs (steps), ramps and transitions should be slip resistant.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport and Maritime Economy on 10.09.1998 (Legislative Diary No. 151, position 987), amended: regulation of the Minister of Infrastructure and Development of 31.07.2014 (legislative diary No. 0, the position of 867, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 5.4.1. “Technical requirements for railway pedestrian level crossings.” Approved by JSC RZD regulation No. 2655r of 23/12/2009
Slovakia	<b>R 2</b> Ensuring interoperability in ZSR <b>W 10</b> Rules of technical operation of railway infrastructure <b>W 15</b> The rules of operational information
Ukraine	DSTU-N-B 2.2-31:2011 “Buildings and structures. Recommendations on arrangement of civil buildings and facilities with elements of accessibility for persons with visual and hearing disabilities” GBN V. 2.3-37472062-2:2013 “Technical service buildings and structures of railway station complexes and railway transport stopping points. Design, construction”

#### 4.2.2. Rolling Stock Subsystem / Підсистема подвижного состава

(1) In light of the essential requirements in Section 3, the functional and technical specifications of the subsystem rolling stock related to accessibility for persons with disabilities and persons with reduced mobility are arranged as follows:

- Seats
- Wheelchair spaces
- Doors
- Lighting

- Toilets
- Clearways
- Customer information
- Height changes
- Handrails
- Wheelchair accessible sleeping accommodation
- Step position for vehicle access and egress

#### **4.2.2.1 Seats / Сиденья**

##### **4.2.2.1.1 General / Общие положения**

- (1) Handholds or vertical handrails or other items that can be used for personal stability, whilst using the aisle, shall be provided on all aisle-side seats unless the seat, when in the upright position, is within 200mm of:
  - the back of another seat facing in the opposite direction which is fitted with a handhold or a vertical handrail or other items that can be used for personal stability
  - a handrail or a partition.
- (2) Handholds or other items that can be used for personal stability shall be positioned at a height of between 800 mm and 1200 mm above the floor, measured from the centre of the usable part of the handhold, shall not protrude into the clearway and shall contrast with the seat.
- (3) In seating areas with fixed longitudinal seats, handrails shall be used for personal stability. These handrails shall be at a maximum distance of 2000 mm apart, shall be positioned at a height of between 800 mm and 1200 mm above the floor and shall contrast with the vehicle interior surroundings.
- (4) The handholds or other items shall not have sharp edges.

##### **4.2.2.1.2 Priority seats / Льготные места**

###### **4.2.2.1.2.1 General / Общие положения**

- (1) Not less than 10 percent of the seats by fixed trainset or individual vehicle, and by class shall be designated as priority seats for the use of persons with disabilities and persons with reduced mobility.
- (2) The priority seats and vehicles containing them shall be identified by signs complying with appendix N. It shall be stated that other passengers shall make such seats available to those who are eligible to use them when required.



Figure 5– Symbols for priority seats

- (3) The priority seats shall be located within the passenger saloon and in close proximity to external doors. In double deck vehicles or trainsets, priority seats can be present on both decks.
- (4) The level of equipment fitted to the priority seats shall, as a minimum, be the same as that fitted to general seats of the same type.
- (5) When seats of a certain type are fitted with armrests, priority seats of the same type shall be fitted with movable armrests. This excludes armrests placed along the vehicle body side or along a partition wall in case of compartments. The movable armrest shall move into a position in line with the seat back cushion to enable unrestricted access to the seat or to any adjacent priority seats.
- (6) Priority seats shall not be tip-up seats.
- (7) Each priority seat and the space available to its user shall comply with the Figures H1 to H4 from Appendix H [Figures 6-9 in this document].
- (8) The whole useful sitting surface of the priority seat shall be a minimum of 450mm wide (see Figure 6).

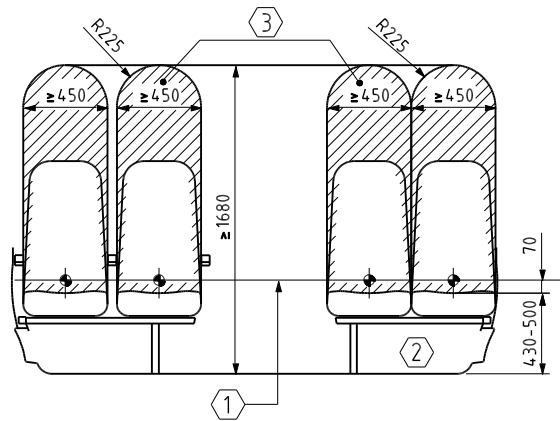


Figure 6 - Priority seat headroom

- (9) The top of each priority seat cushion shall be between 430 and 500mm above floor level at the front edge of the seat.
- (10) The clear headroom above each seat shall be at least 1680 mm from floor level, except on double-decker trains on which luggage racks are provided above the seats. In such case reduced headroom of 1520 mm is permitted for priority seats underneath the luggage racks, provided that at least 50% of priority seats maintain headroom of 1680 mm.
- (11) Where reclining seats are fitted, the dimensions shall be measured when the seats are in their fully upright position.

#### 4.2.2.1.2.2 Uni-directional seats / Расположение сидений в одном направлении

- (1) Where uni-directional priority seats are provided, the clearance in front of each seat shall comply with Figure 7.

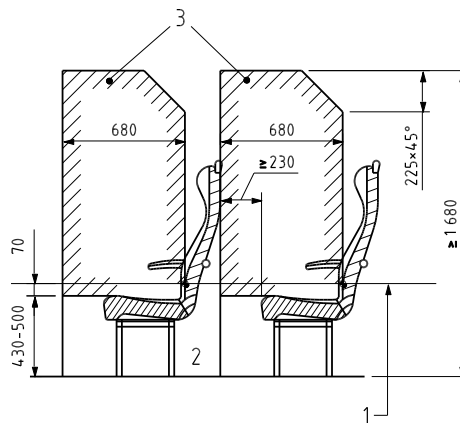


Figure 7 - Unidirectional priority seats

- (2) The distance between the front surface of the seat back and the vertical plane through the rearmost part of the seat in front shall be a minimum of 680mm, noting that the required seat pitch shall be measured from the centre of the seat 70mm above where the cushion meets the back support.
- (3) There shall also be a clear space between the front edge of the seat cushion and the same vertical plane for the seat in front of a minimum of 230 mm.

#### 4.2.2.1.2.3 Facing seats arrangement / Расположение сидений друг к другу

- (1) Where facing priority seats are provided, the distance between the front edges of the seat cushions shall be a minimum of 600mm (see Figure 8). Such distance shall be maintained even if one of the facing seats is not a priority seat.

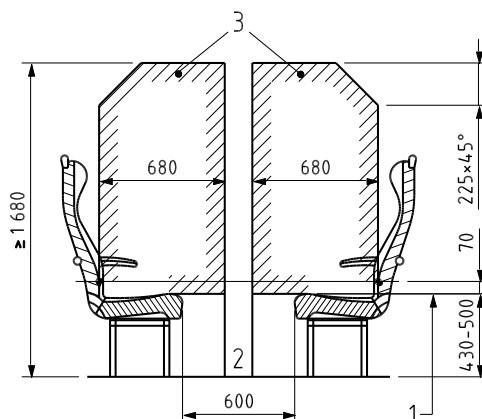


Figure 8 - Facing priority seats

- (2) Where facing priority seats are equipped with a table, there shall be a minimum clear horizontal distance between the front edge of the seat cushion and the leading edge of the table of at least 230 mm (see Figure 9). When one of the facing seats is not a priority seat, its distance to the table can be reduced provided that the distance between the front edges of the seat cushions remains 600mm. Sidewall mounted tables which length does not extend over the centre line of the window seat do not need to be considered for conformity with this paragraph.

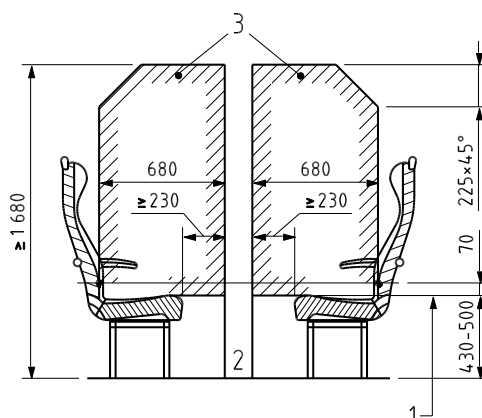


Figure 9 - Facing priority seats with table in stored position

**Russia:**

Individual seats for impaired passengers shall be equipped with sitting chairs corresponding to sitting chairs in the coach. They can be made as turning chairs or stationary chairs with folding (removable) armrests to ensure convenient access to the chair by the impaired passenger.

Individual seats in accessibility area for impaired passengers shall be equipped with reliable means of fastening of wheelchairs and individual movement aids.

The aforementioned requirements are approved by the following documents:

Belarus	
---------	--



Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p.9.2.4
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p.9.2.4

#### 4.2.2.2 Wheelchair spaces / Места для инвалидов колясок

- (1) According to the length of the unit, excluding the locomotive or power head, there shall be in that unit not less than the number of accessible wheelchair spaces shown in the following table:

Unit length	Number of wheelchair spaces by unit
Less than 30 m	1 wheelchair space
30 to 205 metres	2 wheelchair spaces
More than 205 to 300 metres	3 wheelchair spaces
More than 300 metres	4 wheelchair spaces

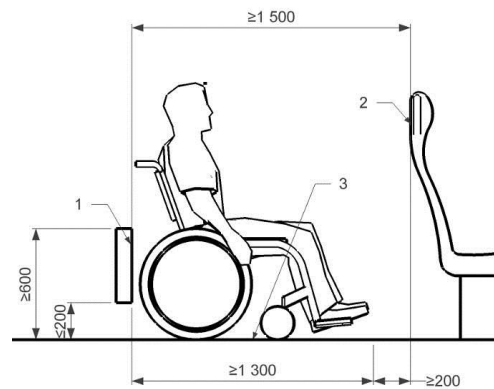
Table 2: minimum number of wheelchair spaces per unit length

- (2) To ensure stability, the wheelchair space shall be designed for the wheelchair to be positioned either facing or back to the direction of travel.
- (3) Over the full length of the wheelchair space the width shall be 700mm from floor level to a minimum height of 1450mm with an additional 50mm width to give clearance for hands on each side that is adjacent to any obstacle that will inhibit clearance for the wheelchair users hands (e.g. wall or structure) from a height of 400mm to 800mm above floor level (if one side of the wheelchair is adjacent to the

aisle there is no additional 50mm requirement for that side of the wheelchair as it is already free space).

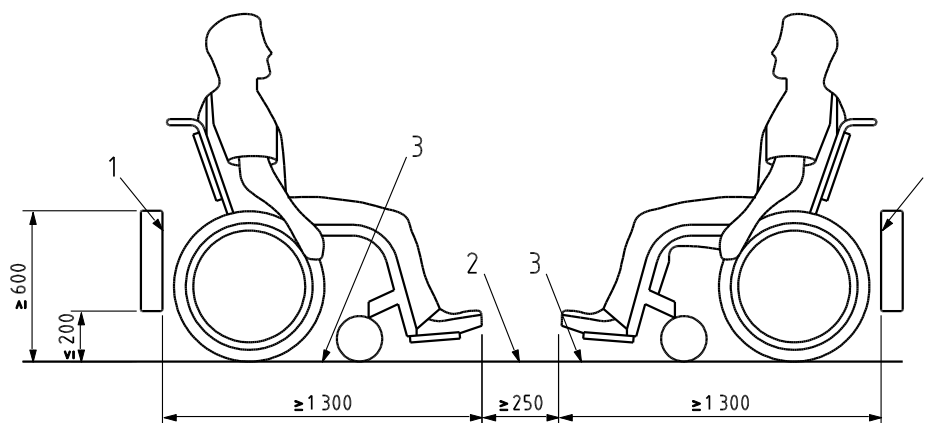
- (4) The minimum distance in the longitudinal plane between the back of the wheelchair space and the next surface shall be in accordance with Appendix I, Figures I1 to I3 [Figures 10-12 in this document].

Figure 10 - Wheelchair space in facing seating arrangement



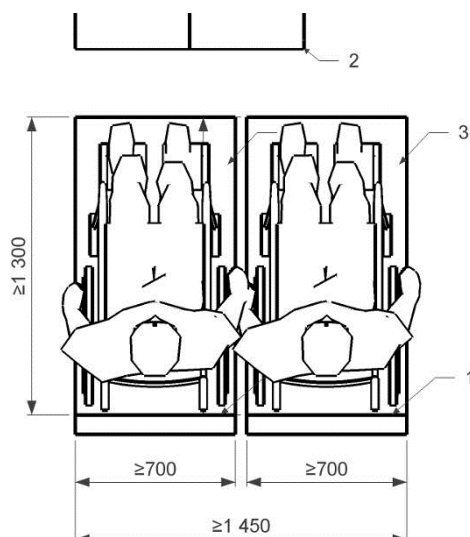
- 1 Structure at end of wheelchair space
- 2 Back of the front passenger seat
- 3 Wheelchair space

Figure 11 - Wheelchair space in unidirectional seating arrangement



- 1 Structure at end of wheelchair space
- 2 Space between wheelchair spaces min. 250 mm
- 3 Wheelchair space

Figure 12 - Two facing wheelchair spaces

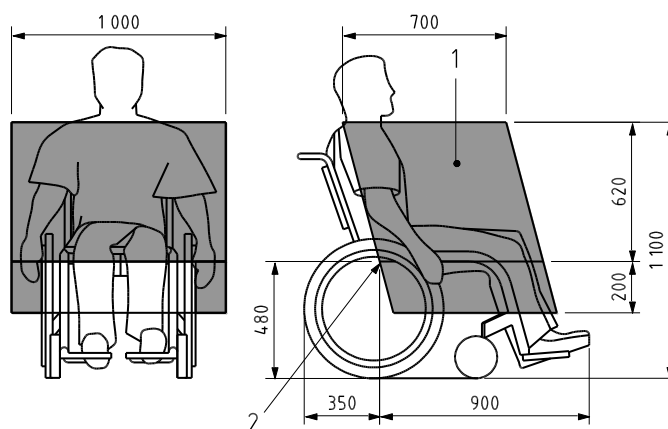


- 1 Structure at end of wheelchair space
- 2 Structure in front of wheelchair space
- 3 Dual wheelchair space

- (5) There shall be no obstruction of the designated space between the floor and the ceiling of the vehicle other than an overhead luggage rack, a horizontal handrail in accordance with the requirements of point 4.2.2.9 attached to the wall or ceiling of the vehicle, or a table.
- (6) The back of the wheelchair space shall be a structure or other acceptable fitting of at least 700mm wide. The height of the structure, or fitting, shall be capable of preventing a wheelchair that has been positioned with its back against the structure or fitting, from tipping over backwards.
- (7) Tip-up seats may be installed in the wheelchair space but, when in the stowed position, shall not encroach on the dimensional requirements of the wheelchair space.
- (8) It is not allowed to install any permanent equipment such as bicycle hooks or ski racks into the wheelchair space or directly in front of it.
- (9) At least one seat shall be available either adjacent to or facing to each of the wheelchair spaces for a companion to travel with the wheelchair user. This seat shall offer the same level of comfort as the other passenger seats, and may also be situated on the opposing side of the aisle.
- (10) On trains with a design speed higher than 250 km/h excepting double deck trains, it shall be possible for a wheelchair user occupying a wheelchair space to transfer onto a passenger seat that shall be equipped with a movable armrest. Such transfer is made by the wheelchair user in autonomy. In that case, it is allowed that the companion seat is shifted to another row. This requirement is applicable up to the number of wheelchair spaces per unit specified in table 2.
- (11) The wheelchair space shall be fitted with a call for aid device that shall, in the event of danger, provide to a wheelchair user the possibility to inform a person who can take appropriate action.

- (12) The call for aid device shall be placed within the comfortable reach range of the person using the wheelchair as shown in Appendix L, Figure L1 [Figure 14 in this document] .

Figure 14 - Reach range of a person in a wheelchair



1 – comfortable reach range

- (13) The call for aid device shall not be placed within a narrow recess which prevents immediate intentional palm operation but can be protected from unintentional use.  
The interface of the call for aid device shall be as defined in point 5.3.2.6. [TSI PRM].
- (14) A sign conforming to appendix N shall be placed immediately next to, or in the wheelchair space so as to identify the space as the wheelchair space.

#### **Russia:**

Passenger compartment shall be equipped with places for persons in wheelchairs or individual seats for impaired passengers.

Places for persons in wheelchairs shall be located along the longitudinal axis of the coach and shall be equipped with measures preventing unintentional longitudinal movement of parked wheelchairs or tipping-over while train acceleration and deceleration.

Individual seats for impaired persons can be made as turning chairs, seats for accompanying persons – as folding chairs.

Individual seats shall be equipped with fastening means for folded wheelchairs and other individual movement aids.

Spaces for persons in wheelchairs shall be equipped with horizontal handrails on sidewalls located 900 – 1200 mm height above the floor level.

In case if spaces for persons in wheelchairs are equipped with folding tables, the height of the table shall be defined considering possibility of approach by the person in a wheelchair (SP 2.5.1198-03).

In spaces for impaired persons of category 1 passenger coaches (EMUs, DMUs, EDMUs, rail buses) there shall be at least 1 space envisaged for a person in a wheelchair and at least 1 space for accompanying person as well as at least 2 spaces for impaired persons not using wheelchairs.

Design of passenger compartments shall envisage possibility for a person in a wheelchair to access his instalment space, as well as to ensure necessary manoeuvring considering the minimal turning radius and minimal U-turn width in accordance with Figure 15

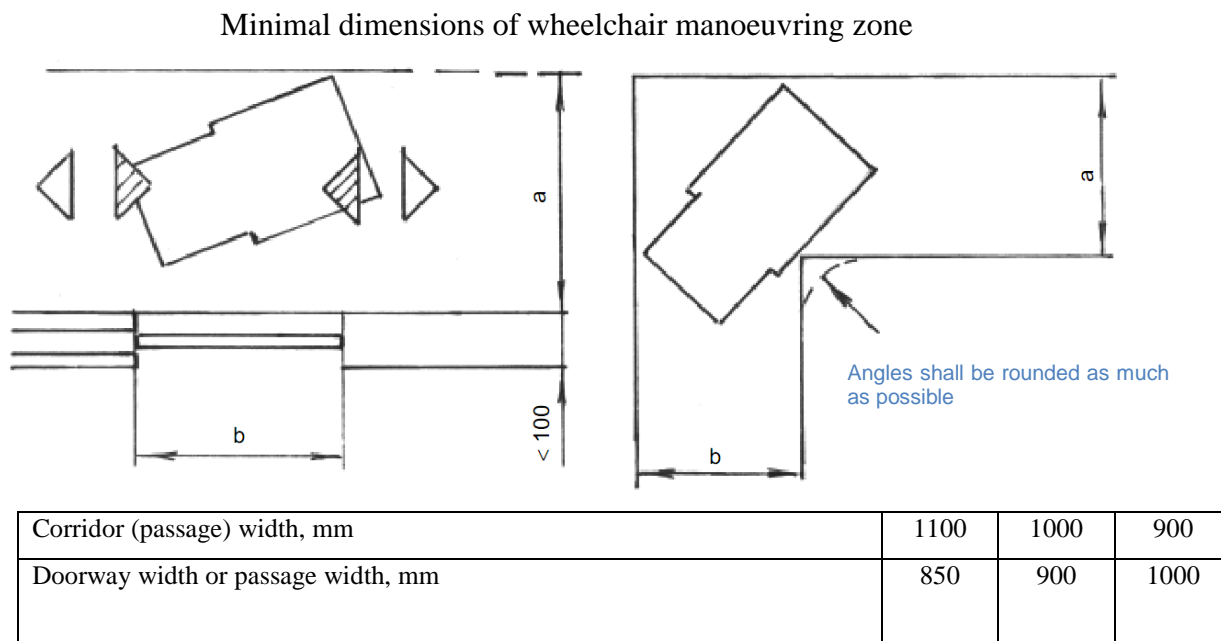


Figure 15 – Aperture for 90° turn depending on passage width

Placing of wheelchaired passengers in the compartment can be done using wheelchairs or individual seats.

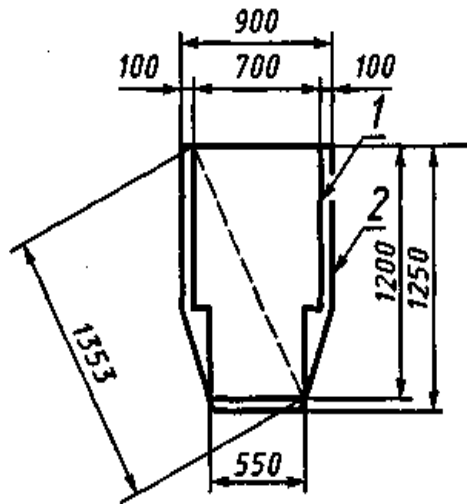
In passenger coaches, spaces (areas) for placing impaired persons, including persons with wheelchairs shall be installed next to entrance and toilet facilities for impaired persons not to hinder entrance (exit) and movement of other passengers within the coach.

Spaces (areas) for impaired passengers shall be equipped with support facilities, wheelchair holding facilities in accordance with GOST 33190-2014, stationary seats for impaired passengers not using wheelchairs, folding or fixed seats for accompanying persons.

“Passenger – train driver” communication device shall be located in direct proximity to impaired persons area.

It is allowed to equip wheelchair passage areas with folding seats to use in case if the area is not occupied.

Dimensions of wheelchaired passenger accommodation area shall comply with those that shown in Figure 16.



- 1 –area for placing empty wheelchair in operational mode;
- 2 –area for accommodation of a person in a wheelchair

Figure 16. Minimal dimensions of wheelchaired passenger accommodation area

Inscription “Place for impaired persons” or relevant pictogram shall be placed on a sidewall in the impaired persons accommodation area. The information shall duplicated by Braille script (GOST 33190-2014).

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 6.9.3.5-6.9.3.9. Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p. 9.2, 9.2.1, 9.2.2, 14.3
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired

### **4.2.2.3. Doors / Двери**

#### **4.2.2.3.1 General / Общие положения**

- (1) These requirements apply only to doors providing access to another public part of the train, with the exclusion of toilet doors.
- (2) To latch or unlatch a manually operated door, for use by the public, the control device shall be operable by the palm of the hand exerting a force not exceeding 20 N.
- (3) Door controls, whether manual, pushbuttons or other devices, shall contrast with the surface on which they are mounted.
- (4) Their interface with passengers shall comply with the specifications of point 5.3.2.1 [TSI PRM].
- (5) If both open and closed door control devices are fitted one above the other, the top device shall always be the open control.

#### **4.2.2.3.2 Exterior doors / Внешние двери**

- (1) All exterior passenger doorways shall have a minimum clear useable width of 800mm when open.
- (2) On trains with a design speed lower than 250 km/h, wheelchair access doors offering a level access as defined in point 2.3 shall have a minimum clear useable width of 1000mm when open.
- (3) All exterior passenger doorways shall be marked on the outside in a way that gives a contrast to the vehicle body-side surrounding them.
- (4) The designated wheelchair exterior accessible doorways shall be the closest doorways to the designated wheelchair spaces.
- (5) The doors to be used for wheelchair access shall be clearly labelled with a sign in accordance with appendix N.
- (6) From the inside of the vehicle the position of external doorways shall clearly be marked by use of contrasted adjacent flooring.
- (7) When a door is released for opening a signal shall be given that is clearly audible and visible to persons inside and outside the train. This alert signal shall last for a minimum of five seconds unless the door is operated, in which case it may cease after 3 seconds.
- (8) When a door is automatically or remotely opened by the driver or other member of the train crew, the alert signal shall last for a minimum 3 seconds from the moment that the door starts to open.
- (9) When a door that is automatically or remotely closed, is about to operate, an audible and visible alert signal shall be given to persons inside and outside the train. The alert signal shall start a minimum of 2 seconds before the door starts to close and shall continue while the door is closing.
- (10) The sound source for door alert signals shall be located in the area local to the control device or, if there is no such control device, adjacent to the doorway.

- (11) The visible signal shall be visible from inside and outside the train and shall be located such that it minimises the opportunity for it to be obscured by passengers located in the vestibule.
- (12) Passenger doors audible alert signals shall be according to the specification in appendix G.
- (13) The method of door activation shall be by train crew, semi-automatic (i.e. passenger pushbutton operation) or automatic.
- (14) The door control shall be located either next to or on the door leaf.
- (15) The centre of exterior door opening control, operable from the platform, shall be not less than 800 mm and not more than 1200 mm measured vertically above platforms, for all platforms for which the train is designed. If the train is designed for a single platform height, the centre of exterior door opening control shall be not less than 800 mm and not more than 1100 mm measured vertically above that platform height.
- (16) The centre of internal door opening control for the exterior door shall be not less than 800mm and not more than 1100 mm measured vertically above the vehicle floor level.

### **Russia:**

To ensure access of impaired passengers including those with wheelchairs, at least one exterior entrance door with inner dimensions of minimum 900 mm in width and 1880 mm in height shall be envisaged from each side of carriage.

Exterior entrance doors of category 1 coaches (DMUs, DEMUs, EMUs, rail buses) intended to allow accessibility of impaired passengers shall have individual control and ability to block during boarding and egress of impaired passenger. Exterior doors of category 1 coaches shall be equipped with exterior and interior buttons for signalling to the train driver and/or coach attendant about the movement of the impaired passenger through the door.

Impaired passenger next stop egress buttons shall be placed at minimum 700 mm and maximum 1200 mm height from the floor level and in direct proximity from the coach exterior door.

It is allowed to place signalling buttons in impaired persons accommodation areas of the passenger compartment.

Buttons for signalling to the train driver and/or coach attendant about the movement of the impaired passenger through the door shall be placed at minimum 700 mm and maximum 1200 mm height from the platform level (considering both low and high passenger platforms). For a case of operation of a train consisting of category 1 and category 2 (locomotive traction coaches: sleeping carriages, open space sitting carriages) on track lines with low and high passenger platforms, there shall be envisaged 2 buttons to ensure signalling to the train driver and/or coach attendant from both low and high platforms.

Buttons for signalling to the train driver and/or coach attendant shall have contrast colour comparing to the wall they are positioned on. Recommended length and width of rectangular design – at least 20 mm, for round design – at least 25 mm.

Buttons shall be fitted with tactile symbols, light and audible signalisation allowing impaired passenger to percept that device is operational.



Exterior doors of category 2 coaches shall have locking equipment to fix or block them in opened position during boarding (egress) of impaired person (GOST 33190-2014).

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Chapter 6
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Chapter 6

#### 4.2.2.3.3 Interior doors / Внутренние двери

- (1) Internal automatic and semi-automatic doors shall incorporate devices that prevent passengers becoming trapped during operation of the doors.
- (2) Interior doors that are made available for wheelchair users shall have a minimum clear useable width of 800mm.
- (3) The force required to open or close a manual door shall not exceed 60 N.
- (4) The centre of interior door controls shall be not less than 800 mm and not more than 1100mm measured vertically above the vehicle floor level.
- (5) Automatic inter-vehicle connecting doors shall operate either synchronously as a pair, or the second door shall automatically detect the person moving towards it and open.
- (6) If more than 75% of a door’s surface is made of a transparent material, it shall be clearly marked with visual indicators.

**Russia:**

Transit door of category 1 coaches intended for passage of impaired passengers including those with wheelchairs shall be sliding, equipped with individual control and locking means to fix them in open position. Transit door width shall be at least 900 mm.

Use of shockproof protection elements is recommended for doors, walls and internal finishing elements in impaired passengers' passage and accommodation areas at maximum 400 mm height.

If more than 75 % of door surface is made of transparent material, the door shall be clearly indicated by visual indicators.

Door handles and other means of control shall be placed 800 – 1200 mm height from the floor level.

Transit door (from tambour to corridor) shall have an internal doorway width at least 900 mm and locking means for fixation in open position. Maximum height of the transit door threshold shall be 30 mm.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

#### 4.2.2.4. Lighting / Освещение

- (1) Minimum values of average illuminance in the passenger areas shall be according to point 4.1.2 of the specification referenced in Appendix A, index 6. Requirements relative to the uniformity of these values are not applicable for conformity with this TSI.

#### Russia:

Requirements for illumination are set out in SP 2.5.1198-03:

- Annex 6. Artificial illumination parameters for passenger coaches (locomotive traction)
- Annex 20. Artificial illuminations of premises (multiple units).

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 "Sanitary regulations on the organization of passenger transportation by rail."
Slovakia	
Ukraine	GOST 33190-2014 "Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods"

#### 4.2.2.5. Toilets / Туалеты

- (1) When toilets are fitted in a train, a universal toilet shall be provided accessible from the wheelchair space.
- (2) The standard toilet shall be compliant with the requirements of points 5.3.2.2 and 5.3.2.3. [TSI PRM]
- (3) The universal toilet shall be compliant with the requirements of points 5.3.2.2 and 5.3.2.4. [TSI PRM]
- (4) When toilets are fitted in a train a baby nappy changing facility shall be provided. If separate nursery facilities are not provided or if separate nursery facilities are provided but are not accessible to a wheelchair user, a table shall be incorporated

within the universal toilets. It shall be compliant with the requirements of point 5.3.2.5. [TSI PRM]

### **Russia:**

If spaces for transportation of impaired persons are available in a coach, dimensions of toilet premises shall comprise 1825x1500 mm to make possible for the wheelchair person and accompanying persons to stay in the toilet at the same time. The height of the handrail for the wheelchair person shall be 900-1100 mm from the floor level (SP 2.5.1198-03).

Design of the toilet facilities intended to use by impaired persons shall envisage:

- free space for manoeuvring of the person in a wheelchair;
- space (area) for placing a wheelchair, dimensions of which shall comply with those indicated in Figure 17.

Space (area) for placing a wheelchair shall be positioned to ensure possibility for a person in a wheelchair to independently use of the toilet.

Space (area) for placing a wheelchair is recommended to locate in parallel direction to longitudinal axis of the watercloset.

Free floor space of minimum 900x1500 mm shall be ensured in the toilet premises for free manoeuvring of a person in a wheelchair.

Toilet premises intended to use by impaired persons shall be equipped with:

- watercloset;
- wash-basin;
- mirror;
- horizontal handrails to support impaired persons and change position from a wheelchair to a watercloset;
- electrical sockets (for electric shaver and mobile phone charger);
- train driver / coach attendant emergency call buttons;
- sanitary equipment and devices (paper towels and toilet paper trays, soap-box, coat hooks, crutch fastening devices and other accessories etc.);
- sliding door.

Position of a water closet shall ensure possibility to place a wheelchair next to it.

Height of a water closet shall be  $510 \pm 10$  mm.

Back wall of toilet premises in the water closet area shall be equipped with paired turning round shape handrails at least 650 mm long. Distance between the handrails shall be at least 600 mm. Handrails shall be fixed in operational position and shall be able to turn in vertical and horizontal planes.

If water closet is placed at less than 1520 mm distance from the wall which is equipped with stationary horizontal round shape handrail of at least 650 mm, the second handrail placed at minimum 600 mm distance from the first one shall be turning, fixing in operational position and shall easily turn in horizontal of vertical planes.

Water closet shall be equipped with manual flush control. Manual flush control unit shall be placed in reach area of impaired passenger on a water closet. It is recommended to equip

water closets with manual and treadle flush controls.

Upper part of a wash-basin shall be placed at 900 – 1000 mm height from the floor level. The following shall be envisaged under the wash-basin:

- free space of at least 400 mm of depth;
- recess at least 150 mm deep and of at least 300 mm height from the floor level.

Mirror shall be positioned above the wash-basin, its lower edge shall be placed at 1000 – 1050 mm height above the floor level.

Sanitary equipment and facilities (paper towels and toilet paper trays, soap-box, coat hooks, crutch fastening devices and other accessories etc.) shall be placed in toilet premises at the height which takes into consideration the reach-limit zones of impaired passengers in wheelchair as shown in Figures 17.1 and 17.2.

Figure 17 - Reach-limit zones for persons in wheelchairs

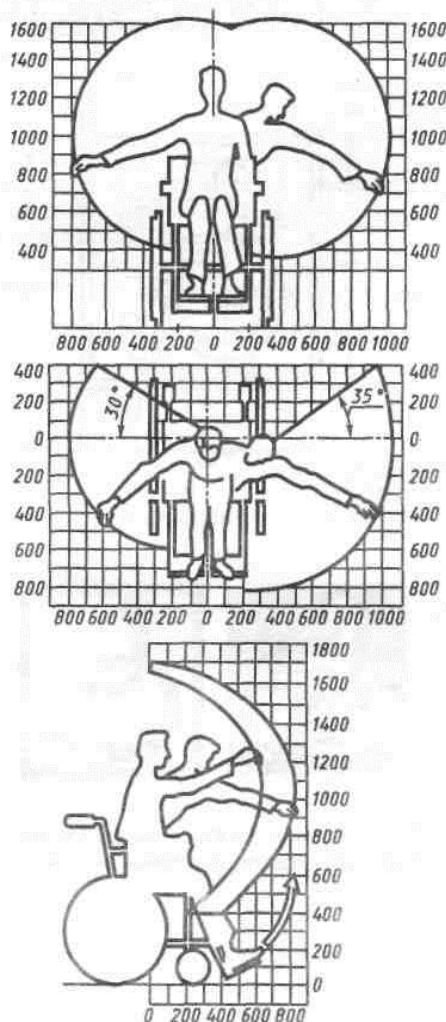


Figure 17.1 – Reach-limit zone for men

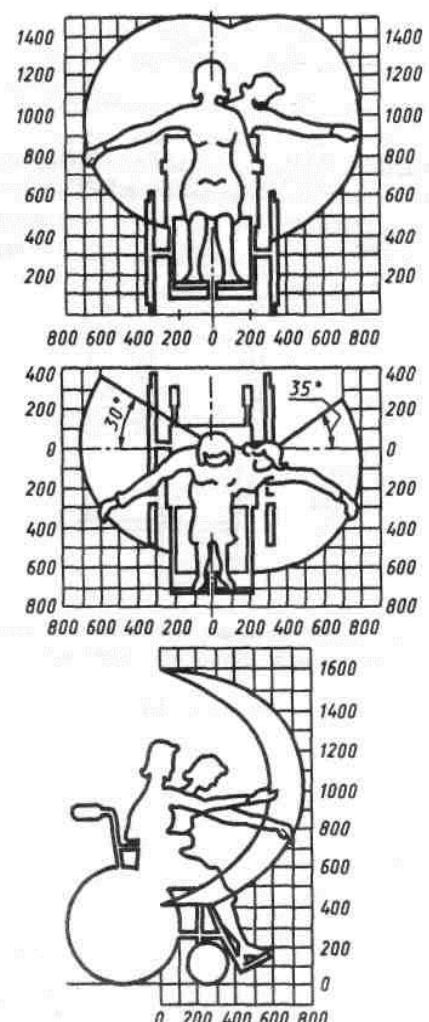


Figure 17.2 – Reach-limit zone for women

The door to the toilet premises shall have a doorway with internal width of at least 900 mm. Lower guiding rail of a sliding door shall be at maximum 30 mm height from the floor level.

Exterior side of the toilet premises door shall be marked accordingly (by inscription or pictogram), the information shall be additionally duplicated by Braille script (draft GOST).

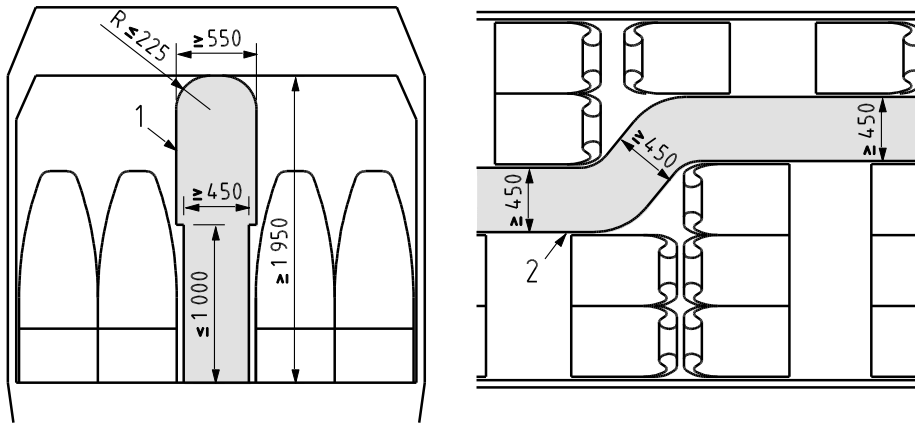
The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 5.1.21, 6.6.7, 6.9.5.1, 6.9.5.3-6.9.5.9 Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Ch. 11
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Ch. 11

#### 4.2.2.6 Clearways / Проходы

(1) From the vehicle entrance, the section of the clearway shall be as follows:

- through the vehicles according to Figure J1 of Appendix J [Figure 18 in this document],
- between connecting vehicles of a single trainset, according to Figure J2 of Appendix J [Figure 19 in this document],
- to and from wheelchair accessible doors, wheelchair spaces and wheelchair accessible areas including sleeping accommodation and universal toilets if provided, according to Figure J3 of Appendix J of TSI PRM [Figure 20 in this document].



1 Through section of clearway  
2 Plan view at height range 25 – 975 mm from floor level

Figure 18 - Minimum clearway width from floor level to a height of 1 000 mm

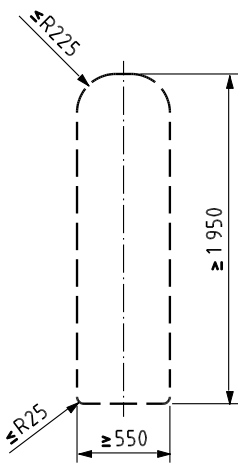


Figure 19 - Minimum clearway profile between connecting vehicles of a single trainset

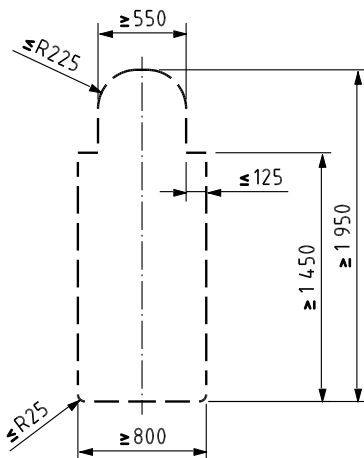


Figure 20 - Minimum clearway profile to and from wheelchair spaces

(2) The minimum height requirement does not need to be verified in:

- all areas of double-deck vehicles,
- gangways and door areas of single deck vehicles,

In those areas, reduced headroom is accepted as a consequence of structural constraints (gauge, physical space).

- (3) A turning space, with a minimum diameter of 1500 mm, shall be provided adjacent to the wheelchair space and in other locations where wheelchairs are supposed to turn 180°. The wheelchair space may be part of the turning circle.
- (4) If a change in direction is required for a wheelchair user, the clearway width of both corridors shall be in accordance to table K1 of Appendix K [table 3 in this document].

Corridor clearway width (mm)	1200	1100	1000	900	850	800
Door usable width, or a perpendicular corridor clearway width (mm)	800	850	900	1000	1100	1200

Table 3 – Clearway/door widths

**Russia:**

Equipment of passenger compartment shall ensure free access of passengers with wheelchairs and other reduced mobility persons to accommodation places, their convenient and safe accommodation in dedicated seats.

In the passenger compartment the clearway to reach wheelchair passengers accommodation zone shall be estimated to ensure possibility of manoeuvring in a wheelchair.

Minimal allowed width of a clearway for wheelchairs (in narrow places maximum 1000 mm in length) shall be at least 800 mm.

The corridor, which connects passenger compartment, toilet premises and tambour inside the coach, shall be clear of folding seats and emergency window-exits, the clearway shall be equipped with horizontal handrail. Lower part of handrail’s working surface shall be at (900 – 1100) mm from the floor level.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	



Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 6.9.3.1, 6.9.3.4 Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p. 9.4, 9.5.3
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

#### **4.2.2.7. Customer Information / Информация для клиентов**

##### **4.2.2.7.1 General / Общие положения**

- (1) The following information shall be provided:
  - Safety Information and safety instructions
  - Audible safety instructions coupled with visible signals in case of emergency
  - Warning, prohibition and mandatory actions signs
  - Information concerning the route of the train, including information about delays and unplanned stops,
  - Information concerning the location of on-board facilities
- (2) Visual information shall contrast with its background.
- (3) The typeface used for texts shall be easily readable.
- (4) Time information presented in digits shall be in the 24h system.

#### **Russia:**

Passenger coach for wheelchair passengers and PRMs shall be equipped with information and communication means accessible for those persons. Visual information to duplicate audible information, places for route schemes and other information embossed for visually impaired persons shall be envisaged.

Seats and toilet accessible for impaired persons shall be equipped with emergency call button (СП 2.5.1198-03).

Coaches intended to be used by impaired passengers shall be equipped with audible and duplicating visual information as well as with tactile information:

- safety information and safety instructions;
- information on dislocation of universal toilets in the train;
- tactile information, pictograms and indications, including warning ones, forbidding signs and mandatory action signs (draft organisation standard).

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 6.9.6 STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 6.4.1
Slovakia	
Ukraine	National rules and regulations in accordance with the UN Convention on the rights of persons with disabilities

#### **4.2.2.7.2 Signage, pictograms and tactile information / Указатели, пиктограммы и тактильная информация**

- (1) All safety, warning, mandatory action and prohibition signs shall include pictograms and shall be designed according to the specification referenced in Appendix A, index 7 [i.e. standard ISO 3864-1:2011].
- (2) There shall be no more than five pictograms, together with a directional arrow, indicating a single direction placed adjacent to each other at a single location.
- (3) The following specific pictograms shall be fitted with the wheelchair symbol in accordance with appendix N [TSI PRM]:
  - Directional information for wheelchair accessible amenities
  - Indication of the wheelchair accessible door location outside the train

- Indication of the wheelchair space inside the train
- Indication of the universal toilets

The symbols can be combined with other symbols (for example: carriage number, toilet, etc).

- (4) Where inductive loops are fitted these shall be indicated by a pictogram complying with appendix N [TSI PRM].
- (5) In universal toilets, where hinged handrails are provided, a pictogram showing the rail in both the stowed and deployed positions shall be provided.
- (6) If a vehicle provides reserved seats then the number or letter of that vehicle (as used in the reservation system) shall be displayed externally on or adjacent to all its access doors. The number or letter shall be displayed in characters not less than 70 mm high and shall be visible when the door is open and closed.
- (7) If seats are identified by numbers or letters, the number or letter of the seat shall be displayed on or adjacent to every seat in characters not less than 12 mm high. Such numbers and letters shall contrast with their background.
- (8) Tactile information signage shall be fitted in:
  - Toilets and wheelchair accessible sleeping accommodation, for functional information and call for aid device if appropriate
  - Rolling stock, for the open/close button of passenger accessible doors and call for aid devices

#### **Russia:**

In coaches intended for passengers in wheelchairs and other PRMs, indicative inscriptions or relevant (indication signs) pictograms shall be envisaged: in coach entrance door area; on exterior surface of entrance door; in impaired passengers accommodation area; on the door of the toilet for impaired passenger or next to it. (SP 2.5.1198-03)

All devices and equipment to control mechanisms or technical facilities for use by impaired passengers shall be fitted with round-edges information plates in Braille script.

On exterior side wall of the coach intended to use by impaired passengers there shall be a pictogram or relevant inscription about accessibility for impaired persons. Colour of the pictogram shall be blue on white (yellow) background or white (yellow) on a blue background.

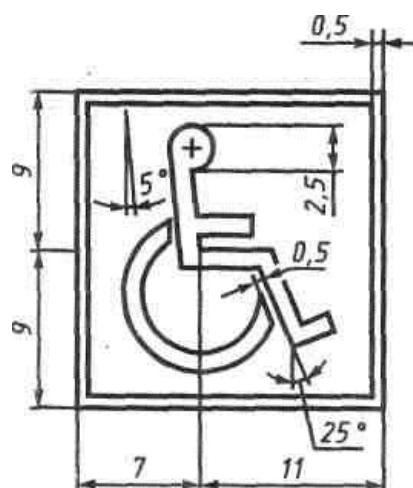


Figure 21 – Proportions of pictogram

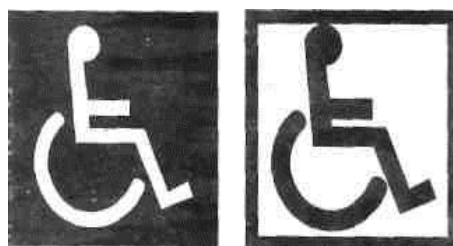


Figure 22 – Versions of pictograms for coaches accessible for impaired passengers

On exterior side of the entrance door of the coach intended to use by impaired passengers, there shall be an inscription: “Entrance for impaired persons” or relevant pictogram. On interior side of the door there shall be an inscription “Exit for impaired persons” or relevant pictogram. The information shall be duplicated by Braille script.

Sidewalls in the impaired passengers accommodation area shall be marked with inscription “Seats for impaired persons” or relevant pictogram. The information shall be duplicated by the Braille script.

All warning or prohibiting signs as well as safety and mandatory action signs shall include pictograms. Geometry, colour codes and meaning of the basic safety signs shall comply with GOST R 12.4.026.

Minimal internal diameter of indicators inside rolling stock shall be 85 mm.

It is forbidden to place more than 5 pictograms next to direction indication arrow.

The following pictograms shall have a wheelchair sign:

- Information about convenient direction accessible for wheelchair persons;
- Indications of doors accessible for wheelchair persons;
- Indication of wheelchairs placing areas;
- Indication of accessible toilets.

Symbols can be combined with the others (example: number of coach, toilet, etc.)

If induction contours are installed for persons with reduced hearing capacity, it has to be indicated by a pictogram compliant with the drawing



Figure 23 - Symbol of accessibility for persons with reduced hearing capacity

In toilets accessible for persons with reduced mobility there shall be a pictogram demonstrating a handrail in folded and operation positions.

Tactile informational signs shall be placed in the following areas:

- toilets and slipping areas accessible for wheelchair persons, for functional information and call of coach attendant (driver/driver's assistant);
- inside the coach and in tambour, for passenger door open/close.

In coaches accessible for impaired persons, information shall be duplicated by tactile indications including the warning, prohibiting and mandatory action ones.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 "Sanitary regulations on the organization of passenger transportation by rail." p.6.9.7  STO RZD 03.001-2014 "Railway transport services. Requirements for servicing passengers with limited mobility", p. 6.4.5  Informative – GOST 33190-2014 "Passenger coaches on locomotive traction and

	multiple units. Technical requirements for transportation of impaired persons and control methods” p.13.1, п.14.1-14.3
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p.13.1, п.14.1-14.3

#### 4.2.2.7.3 Dynamic visual information / Динамическая визуальная информация

- (1) The final destination or route shall be displayed on the outside of the train on the platform side adjacent to at least one of the passenger access doors on a minimum of alternate vehicles of the train.
- (2) Where trains operate in a system, in which dynamic visual information is given on the station platform every 50 m or less, and destination or route information is also provided on the front of the train, it is not mandatory to provide information on the sides of vehicles.
- (3) The final destination or route of the train shall be displayed inside each vehicle.
- (4) The next stop of the train shall be displayed such that it can be read from a minimum of 51% of passenger seats inside each vehicle including 51% of the priority seats, and from all wheelchair spaces.
- (5) This information shall be displayed at least two minutes before arrival at the station concerned. If the next station is less than two minutes planned journey time away, the next station shall be displayed immediately following departure from the previous station.
- (6) The requirement to make the destination and ‘next stop’ information visible from 51% of passenger seats does not apply to compartment carriages where the compartments have a maximum of 8 seats and are served by an adjacent corridor. However, this information shall be visible to a person standing in a corridor outside a compartment and to a passenger occupying a wheelchair space.
- (7) The information about the next stop may be displayed on the same support as the final destination. However, it shall revert to show the final destination as soon as the train has stopped.
- (8) If the system is automated, it shall be possible to suppress or correct incorrect or misleading information.
- (9) Internal and external displays shall comply with the requirements of point 5.3.2.7. [TSI PRM] In this point, the term “display” shall be understood as any support of dynamic information.

#### Russia:

Every coach accessible for impaired passengers shall be equipped with audible and visual (panel, display etc.) information systems to ensure awareness of impaired persons about the route, stops and any other warning information.

Information systems have to inform in national language. Envisaging of information for passenger in other languages (example: English and Russian) is recommended.

Letters and numbers in inscriptions and texts (text messages) shall be made in solid edge without connection elements (GOST 33190-2014).

For every coach in long-distance train and every second coach in suburban train, the destination point or the route shall be shown on exterior side of the coach from the platform side.

Next stop should be shown the way it is readable from minimum 51% of passenger seats inside every coach, including 51% seats for impaired persons and from all places for wheelchairs.

Dynamic visual information about the next train stop shall appear minimum 2 minutes before the arrival to the corresponding railway station. In case the next stop is in less than 2 minutes of journey, the next station shall be immediately shown after departure from the previous station.

Requirement to ensure visual information about the train destination and the next stop visible from 51% of passenger seats is not applicable to slipping coaches. This information shall be visible to the person standing in the passage outside the sleeping compartment and to the passenger sitting in a wheelchair.

Coaches of multiple units intended for transportation of persons with reduced mobility are recommended to equip with information and navigation system for persons with reduced vision capacity and visually impaired persons. Transmitting unit shall be placed above the door next to driver cabin. If the system envisages possibility to transmit speech information, the possibility to change the content in real-time shall be ensured.

For long-distance trains, in coaches accessible for passengers with reduced mobility, information and navigation for persons with reduced vision capacity and visually impaired persons are provided by train crewmembers on situational basis.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	STO RZD 03.001-2014 "Railway transport services. Requirements for servicing passengers with limited mobility", p. 6.4.6

	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p. 13.3, 13.4
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p.13.3, 13.4

#### 4.2.2.7.4 Dynamic audible information / Динамическая аудиоинформация

- (1) The train shall be fitted with a public address system which shall be used either for routine or emergency announcements by the driver or by another crew member who has specific responsibility for passengers.
- (2) The public address system may operate on a manual, an automated or pre-programmed basis. If the public address system is automated, it shall be possible to suppress, or correct, incorrect or misleading information.
- (3) The public address system shall be capable of announcing the destination and next stop of the train at each stop, or on departure from each stop.
- (4) The public address system shall be capable of announcing the next stop of the train at least two minutes before the arrival of the train at that stop. If the next station is less than two minutes planned journey time away, the next station shall be announced immediately following departure from the previous station.
- (5) The spoken information shall have a minimum STI-PA level of 0.45, in accordance with the specification referenced in Appendix A, index 5 [TSI PRM]. The public address system shall meet the requirement at all seat locations and wheelchair spaces.

#### Russia:

Trains shall be equipped with radio communication system.

In case of automatic radio communication system, there shall be a possibility to delete or amend incorrect or imprecise information.

Radio communication system shall ensure possibility to announce the train destination point and the next train stop.

Audible information devices of the communication system shall have minimal speech transmission index (correlation between real and reference loudness) at least 0,45 for all locations of seats and places for wheelchairs.

Coaches of multiple units accessible for passengers with reduced mobility are recommended to equip with information systems for passengers with reduced hearing capacity and visually impaired ones. Transmitting device shall be placed above the door to driver cabin. If the system envisages possibility to transmit speech information, the possibility to change the content in real-time shall be ensured.



Long-distance coaches accessible for passengers with reduced mobility information and navigation for persons with reduced vision capacity and visually impaired persons are provided by train crew members on situational basis.

Procedure for audible security announcements in case of emergency in long-distance trains is beings set out by the operator.

Procedure for announcements in long-distance trains shall be set by the train operator. In railway connection with countries which are not members of Railway Transport Council of CIS, as well as with Bulgaria and Finland information shall be duplicated in German or English languages, or the national language of the country of destination.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	STO RZD 03.001-2014 “Railway transport services. Requirements for servicing passengers with limited mobility”, p. 6.4.7-6.4.9
Slovakia	
Ukraine	National legislation of Ukraine

#### 4.2.2.8. Height changes / Изменения высоты

- (1) Internal steps (other than those for external access) shall have a maximum height of 200mm and a minimum depth of 280 mm, measured at the central axis of the stairs. For double deck trains it is permitted to reduce this value to 270mm for the stairs accessing the upper deck and the lower deck.
- (2) As a minimum the first and the last step shall be indicated by a contrasting band with a depth of 45mm to 55mm extending the full width of the steps on both the front and the top surfaces of the step nosing.
- (3) Stairs constituted of more than three steps shall be provided with handrails on both sides and at two levels. The higher handrail shall be positioned at a height of 850 mm to 1 000 mm above floor level. The lower handrail shall be positioned at a height of 500 mm to 750 mm above floor level.
- (4) Stairs constituted of one, two or three steps shall be provided on both sides with a minimum of one handrail or other item that can be used for personal stability.

- (5) Handrails shall be compliant with point 4.2.2.9 [TSI PRM].
- (6) No steps are allowed between the vestibule of a wheelchair accessible exterior door, the wheelchair space, a universal sleeping compartment and the universal toilet except for a door threshold strip that shall not exceed 15mm in height or except in case that a lift is provided to overcome the step. The lift shall comply with the requirements of point 5.3.2.10 [TSI PRM].
- (7) For ramps in rolling stock the maximum slope shall not exceed the following values:

<u>Length of ramp</u>	<u>Maximum gradient (degrees)</u>	<u>Maximum gradient (%)</u>
Paths between the vestibule of a wheelchair accessible exterior door, the wheelchair space, a wheelchair accessible sleeping accommodation and the universal toilet		
Up to 840 mm in single deck carriages	6,84	12
Up to 840 mm in double deck carriages	8.5	15
> 840 mm	3,58	6,25
Other areas of the train		
> 1000mm	6.84	12
600mm to 1000mm	8,5	15
Less than 600mm	10,2	18

Table 4: maximum slope for ramps in rolling stock

Note: These gradients shall be measured when the vehicle is stationary on straight and level track.

**Russia:**

Floor of the passenger coach compartment areas dedicated for movement of impaired passengers shall not have thresholds higher than 30 mm and inclinations of more than 6%.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	

Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods” p. 9.1
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

#### 4.2.2.9. Handrails / Поручни

- (1) All handrails fitted to a vehicle shall be round in section with an outside diameter of 30 mm to 40 mm, and shall have a minimum clear distance of 45 mm to any adjacent surface other than its mountings.
- (2) If a handrail is curved, the radius to the inside face of the curve shall be a minimum of 50mm.
- (3) All handrails shall contrast with their background.
- (4) External doorways shall be provided with handrails on both sides, fitted internally as close as practicable to the vehicle outer wall. Exception can be made for one side of the doorway if it is fitted with a device such as an on-board lift.
- (5) Those handrails shall be:
  - vertical handrails that shall extend from 700 mm to 1200 mm above the threshold of the first step for all external doorways.
  - additional handrails at a height of between 800 mm and 900 mm above the first useable step and parallel with the line of the step nosing for doorways with more than two entrance steps.
- (6) Where the clearway of the gangway is narrower than 1000mm and longer than 2000mm there shall be handrails or handholds provided in, or adjacent to, inter-vehicle gangways that are provided for passenger use.
- (7) Where the clearway of the gangway is wider than or equal to 1000mm handrails or handholds shall be provided in the gangway.

#### Russia:

Passenger coach shall be equipped with specific support devices (handrails, stands, handles) to ensure convenient and safe boarding (egress), movement inside the coach, accommodation and exit of wheelchair passengers and other PRM.

Both sides of exterior doorway shall be fitted with comfortable support measures (with both or one hand) for boarding.

Design and placement of support devices in the coach shall not hinder space for turning and manoeuvring of passengers in wheelchairs, hinder the movement of other passengers and shall eliminate possibility of traumatization of passengers, including those with reduced vision capacity. Handrails and stands shall be in contrast to the wall and floor surfaces of the passenger compartment (SP 2.5.1198-03).

Entrance of the coach shall envisage handrails and stands designed and placed to allow impaired passengers to use them on the exterior side while boarding.

Handrails and stands inside the passenger compartment shall not hinder space for turning and manoeuvring of passengers in wheelchairs according to Figure 15 during their move from exterior door to accommodation area, shall not hinder movement of other passengers.

Lower part of working surface of horizontal handrails shall be at  $(1000 \pm 100)$  mm from the floor level.

Diameter of handrails and stands shall be from 30 to 38 mm.

Distance between handrail (stand) and the closest equipment or wall surface shall be at least 40 mm.

Minimal length of the working surface of a support device shall be at least 1000 mm.

Note – Length of support device working surface is considered to be any free space to capture by human hand in any position of the device.

For better navigation of persons with reduced vision capacity during boarding and movement inside the coach, handrails and stands shall have the colour contrasting to the interior walls and floor surfaces.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 6.9.4 Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Ch.8.
Slovakia	

Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”
---------	--

**4.2.2.10. Wheelchair accessible sleeping accommodation / Спальные места, доступные для людей в инвалидных колясках**

- (1) When a train is equipped with sleeping accommodation for passengers, it shall provide a vehicle containing at least one wheelchair accessible sleeping accommodation.
- (2) If there is more than one vehicle with sleeping accommodation for passengers in a train, there shall be not less than two wheelchair accessible sleeping accommodations in the train.
- (3) If a rail vehicle provides wheelchair accessible sleeping accommodation, the exterior of the relevant vehicle door and the wheelchair accessible sleeping accommodation door shall be marked with a sign in accordance with appendix N [TSI PRM].
- (4) The wheelchair accessible sleeping accommodation internal space shall take in consideration the requirements of point 4.2.2.6 [TSI PRM] for actions expected from the wheelchair user in the sleeping accommodation.
- (5) The sleeping accommodation shall be fitted with not less than two call for aid devices that shall when operated, send a signal to a person who can take appropriate action; they need not initiate a communication.
- (6) The interface of the call for aid devices shall be as defined in point 5.3.2.6. [TSI PRM]
- (7) One call for aid device shall be placed not more than 450 mm above the floor, measured vertically from the surface of the floor to the centre of the control. It shall be positioned so that the control can be reached by a person lying on the floor.
- (8) The other call for aid device shall be not less than 600 mm and not more than 800 mm above the floor measured vertically to the centre of the control.
- (9) These two call for aid devices shall be located on different vertical surfaces of the sleeping accommodation.
- (10) The call for aid devices shall be distinct from any other control within the sleeping accommodation, be coloured differently from other control devices and contrast with their background.

**Russia:**

Design of a sleeping compartment accessible by impaired passengers shall envisage:

- free space to ensure wheelchair manoeuvring according to Figure 15
- space (area) for placing a wheelchair, dimensions shall comply with those in Figure 16;
- space for luggage.

Design of a sleeping compartment accessible by impaired passengers shall include the following equipment:

- 2 sleeping places positioned in 2 levels one above the other (lower place for the impaired passenger, upper place – for the accompanying person);
- seating place for the impaired passenger;
- window-side table;
- ladders to access luggage storage and upper sleeping place;
- horizontal handrails;
- mirror;
- electrical socket (220V);
- sliding door.

Lower sleeping place shall be arranged as soft or semi-soft couch at least 1800 mm long and at least 700 mm wide. Design of the couch shall ensure change of vertical angle of the head up to 75° and its fixation in all intermediate positions.

Vertical angle change control shall be placed in the area of accessibility of the impaired persons in this sleeping place.

Handrail of 650 mm in length shall be placed at height of maximum 600 mm from the bed level along the lower sleeping place to ensure movement of the impaired passenger.

Lower and upper sleeping places shall be equipped with safety devices (ledges) of minimum 230 mm high, which shall be able to fix in vertical position to prevent falling from the sleeping places.

Sitting place shall have a seatback with headrest, crux support, feet and armrests. The armrest situated on the approachable side of the seat shall be foldable.

The seating cushion shall be at least 450 mm wide.

Exterior side of the door to the sleeping compartment accessible for impaired passengers shall have relevant marking (inscription or pentagram), the information shall be duplicated by Braille script.

General and local illumination switches, radio volume control handle, sunblind curtain control, cabin attendant call button, information display, electrical socket have to be located in the area or reach for impaired passengers, t 1000 – 1200 mm height from the floor level.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	
Lithuania	
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative

	Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, Ch.10
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

**4.2.2.11. Step position for vehicle access and egress / Положение ступеней для входа в вагон и выхода из вагона**

**4.2.2.11.1 General requirements / Общие требования**

- (1) It shall be demonstrated that the point situated in the central position on the nose of the access step of each passenger access door on both sides of a vehicle in working order with new wheels standing centrally on the rails , shall be located inside the surface identified as "step location" on the Figure 24 below.

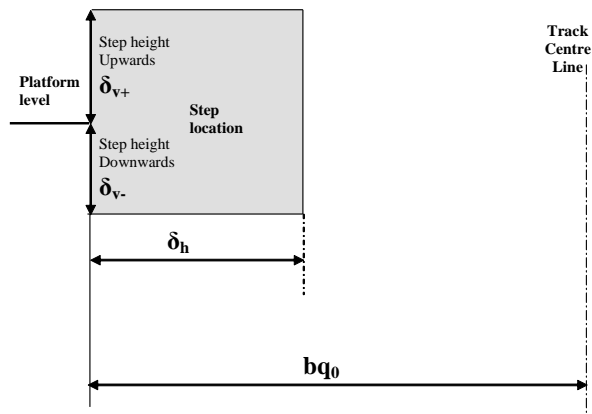


FIGURE 24

Platform level
Step height Upwards
Step height Downwards
Step location
Track Centre line

- (2) The values of  $bq_0$ ,  $\delta_h$ ,  $\delta_{v+}$  and  $\delta_{v-}$  depend on the type of platform where the rolling stock is intended to stop. They shall be as follows:

- $bq_0$  shall be calculated based on the gauge of the track in which the train is intended to operate in accordance with the specification referenced in Appendix A, index 8. Gauges are defined in chapter 4.2.3.1 of INF TSI.
- $\delta_h$ ,  $\delta_{v+}$  and  $\delta_{v-}$  are defined in tables 7 - 9.

**Table 5 for all rolling stock intended to stop, in normal operation, at platforms of 550mm height:**

	$\delta_h$ mm	$\delta_{v+}$ mm	$\delta_{v-}$ mm
on a straight level track	<b>200</b>	<b>230</b>	<b>160</b>
on a track with a curve radius of 300m	<b>290</b>	<b>230</b>	<b>160</b>

Table 5: values of  $\delta_h$ ,  $\delta_{v+}$  and  $\delta_{v-}$  for a 550mm platform

**Table 6 for all rolling stock intended to stop, in normal operation, at platforms of 760mm height:**

	$\delta_h$ mm	$\delta_{v+}$ mm	$\delta_{v-}$ mm
on a straight level track	<b>200</b>	<b>230</b>	<b>160</b>
on a track with a curve radius of 300 m	<b>290</b>	<b>230</b>	<b>160</b>

Table 6: values of  $\delta_h$ ,  $\delta_{v+}$  and  $\delta_{v-}$  for a 760mm platform

**Table 7 for all rolling stock intended to stop, in normal operation, at both platforms of 760mm height and platforms of 550mm height, and having two or more access steps:**

For one step, values of the table 7 above apply, and for the next step towards the vehicle interior the following values apply, based upon a nominal platform height of 760 mm:

	$\delta_h$ mm	$\delta_{v+}$ mm	$\delta_{v-}$ mm
on a straight level track	<b>380</b>	<b>230</b>	<b>160</b>
on a track with a curve radius of 300 m	<b>470</b>	<b>230</b>	<b>160</b>

Table 7: values of  $\delta_h$ ,  $\delta_{v+}$  and  $\delta_{v-}$  for the second step for a 760mm platform



- (3) The technical documentation requested in point 4.2.12 of the LOC&PAS TSI shall include information about the height and offset of the theoretical platform resulting in a vertical gap ( $\delta_{v+}$ ) of 230mm and in a horizontal gap ( $\delta_h$ ) of 200mm from the point situated in the central position of the nose of the rolling stock's lowest step on a straight level track.

#### **4.2.2.11.2 Access/egress steps / Ступени входа/выхода**

- (1) All steps for access and egress shall be slip resistant and shall have an effective clear width as large as the doorway width.
- (2) Internal steps for external access shall have a minimum depth of 240 mm between the vertical edges of the step and a maximum height of 200 mm. The height of each step may be increased to a maximum of 230 mm if it can be demonstrated that this achieves a reduction of one in the total number of steps required.
- (3) The rising height of each step shall be equal.
- (4) As a minimum the first and the last steps shall be indicated by a contrasting band with a depth of 45 mm to 55 mm extending a minimum of 80% of the width of the steps on the top surface of the step nosing. A similar band shall indicate the front surface of the last step when entering the unit.
- (5) An external access step, fixed or moveable, shall have a maximum height of 230 mm between steps and a minimum depth of 150 mm.
- (6) If a step board is fitted and it is an extension of a door sill outside the vehicle, and there is no change in level between the step board and the floor of the vehicle, this shall not be considered to be a step for the purposes of this specification. A minimal drop in level, with a maximum of 60 mm, between the floor surface at door sill and that of the exterior of the vehicle, used to guide and seal the door is also permissible and shall not be considered as a step.
- (7) Access to the vestibule of the vehicle shall be achieved with a maximum of 4 steps of which one may be external.
- (8) Rolling stock intended to stop, in normal operation, at existing platforms below 380mm height and having their passenger access doors above bogies need not comply with points (2) and (5) above if it can be demonstrated that this achieves a more even distribution of the steps height.

#### **4.2.2.12. Boarding aids / Вспомогательные средства для посадки**

- (1) A secure storage system shall be provided to ensure that boarding aids, including portable ramps, do not impinge on a passenger's wheelchair or mobility aid or pose any hazard to passengers in the event of a sudden stop.
- (2) The following types of boarding aids may be present in the rolling stock according to the rules defined in point 4.4.3 [TSI PRM]:
- Movable step and bridging plate
  - On-board ramp

- On-board lift

**Russia:**

All coaches accessible for impaired passengers shall be equipped with boarding aids – lifting devices, folding of retractable ramps.

Note – Design of boarding aids shall be selected depending on coach operational conditions (boarding from high and low platforms, high or low platforms only).

Boarding aids shall ensure boarding (egress) of impaired passengers from both longitudinal sides of the coach.

Boarding aid in transportation mode shall comply with train gauge.

Boarding aid surface shall not have overhangs of more than 5 mm of height; any apertures on a surface shall be maximum 15 mm in diameter.

Boarding aid surface is recommended to be painted in contrast to the coach floor and platform surfaces.

Safety barriers of boarding aids, folding edge of lifting device platform are recommended to be painted in repeating yellow and black or orange and black stripes at a 45-60° angle; recommended distance between stripes is 50 mm.

Area of an exterior door equipped with boarding aids shall be fitted with artificial illumination means, which ensure at least 10 lx illumination of the working surface of lift platform (or ramp) in operational mode at distance of 750 mm from the exterior doorway plane.

Information plates with safety indications for correct and safe use of boarding aids (user manuals supported by pictures and schemes) shall be placed inside the coach passenger compartment (tambour) next to the exterior door.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative –

	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, p. 7.1, 7.3, 7.5-7.9
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

#### 4.2.2.12.1 Movable step and bridging plate / Выдвижная ступень и мостик

- (1) A moveable step is a retractable device integrated into the vehicle lower than the door threshold level, fully automatic and activated in conjunction with the door opening/closing sequences.
- (2) A bridging plate is a retractable device integrated into the vehicle as close as possible to the door threshold level, fully automatic and activated in conjunction with the door opening/closing sequences.
- (3) In the case of the movable step or bridging plate extending beyond that permitted by the gauging rules, the train shall be immobilised whilst the step or plate is extended.
- (4) The extension of the moveable step or bridging plate shall be completed before the door opening permits the passengers to cross and conversely, removal of the step or plate may only begin when the door opening no longer permits any crossing of passengers.
- (5) Movable steps and bridging plates shall comply with the requirements of point 5.3.2.8. [TSI PRM]

#### 4.2.2.12.2 On-board ramp / Размещенная в вагоне рампа

- (1) An on-board ramp is a device that is positioned between the vehicle door threshold and the platform. It can be manual, semi-automatic or automatic.
- (2) On-board ramps shall comply with the requirements of point 5.3.2.9. [TSI PRM]

#### Russia:

Ramp is a boarding aid, surface of which covers space (horizontal gap) between boarding the area of the passenger platform and the floor area of the coach (exterior door threshold) to ensure boarding of impaired passengers.

Folding (retractable) ramps shall comply with the following requirements:

- withstand 300 kg equivalent loads;
- working surface of at least 900 mm in width in operational mode to completely cover distance between the coach floor and the passenger platform surface;
- vertical drop between the coach floor or the passenger platform surface and the operational ramp surface shall be maximum 30 mm;
- maximum 15% of gradient in operational mode;
- work cycle of retractable ramp is maximum 120 seconds.

## Notes

1. Work cycle of retractable ramp is considered to be setting-up into operational mode, lifting (drawing) and return into transportation mode. In this case, duration of movement of user through the ramp is not taken into account.
2. Time limits requirement is not applicable for manual gearshift ramps operated by the coach attendant (driver assistant).

Folding (retractable) ramp shall be equipped with safety side barriers of at least 50 mm in height to ensure protection of impaired passenger from falling.

Control of the ramp can be:

- automatic from the driver cabin;
- operated from the console unit located in immediate proximity to the exterior door;
- mechanic by train crew (coach attendant of driver assistant).

Design of the ramp shall envisage block system to prevent set-up of the ramp without intervention of coach attendant (or driver assistant).

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	
Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, p. 3.6, 7.5
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

### 4.2.2.12.3 On-board lift / Размещенный в вагоне подъемник

- (1) An on-board lift is a device integrated into the doorway of a vehicle that shall be able to overcome the maximum height difference between the vehicle floor and the station platform where operated.
- (2) When the lift is in the stowed position the doorway shall have a minimum useable width according to point 4.2.2.3.2.

(3) On-board lifts shall comply with the requirements of point 5.3.2.10. [TSI PRM]

**Russia:**

On-board lifting device is a boarding aid with horizontal space for placement of impaired passengers in a wheelchair accompanied by another person and ability to move up-down and (if necessary) left-right.

Lifting devices shall comply with the following requirements:

- lifting capacity at least 300 kg;
- platform width at least 80 mm;
- platform length at least 1400 mm;
- vertical drop between coach floor and lift platform surface (in operational mode) maximum 20 mm;
- horizontal gap between coach threshold and aligned lift platform (in operational mode) maximum 30 mm;
- lift platform operational movement speed maximum 0,15 m/s

Lift platform shall be equipped with paired handrails to support impaired passenger on a moving lift platform and side barriers to prevent from falling off the platform.

Note – Handrails are considered to be paired if they are located in the same plane in parallel and have different height.

Handrails working surface length shall be at least 700 mm, lower part of the handrails working surface shall be positioned at least 750 mm from the lift platform surface, upper part at maximum 950 mm height, diameter of the handrails working surface shall be from 30 to 38 mm.

Note – working surface of the handrails is considered to be free space of the handrail for persons to support on.

Protective side barriers shall be at least 50 mm in height.

Paired handrails and protective side barriers shall be placed on those sides of the lift platform that are not involved in boarding/egress of the wheelchair passenger.

Lifting device shall be equipped with individual gear and control console with blocking system located in direct proximity to the exterior door.

Blocking system shall eliminate possibility of set-up of the lifting device without intervention of the coach attendant (driver assistant).

Design of the lifting device shall ensure manual set-up by the coach attendant (driver assistant). The effort needed to set-up the lifting device using manual gear shall not exceed 100 N.

The aforementioned requirements are approved by the following documents:

Belarus	
Georgia	
Kazakhstan	

Latvia	TSI PRM
Lithuania	TSI PRM
Moldova	
Poland	Regulation of the Minister of Transport, Construction and Maritime Economy of November 6, 2013 year (Legislative Diary No. 0, position 1297, § 3 and § 4), amended: Regulation of the Minister of Infrastructure and Development of December 15, 2014 on amending the provisions on the interoperability of the rail system (Legislative Diary No. 0, the position of 1976, § 1)
Russia	SP 2.5.1198-03 “Sanitary regulations on the organization of passenger transportation by rail.” p. 5.1.6, 6.9.2  Informative – GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”, p. 7.4
Slovakia	
Ukraine	GOST 33190-2014 “Passenger coaches on locomotive traction and multiple units. Technical requirements for transportation of impaired persons and control methods”

## **5. COMPARISON WITH TARGET PARAMETERS FOR 1435 MM SYSTEM / СРАВНЕНИЕ С ЦЕЛЕВЫМИ ЗНАЧЕНИЯМИ СИСТЕМЫ КОЛЕИ 1435 ММ**

### **5.2.1. Infrastructure Subsystem / Подсистема инфраструктуры**

For the Infrastructure subsystem, the TSI PRM sets out significant number of functional requirements. The TSI does not provide technical detail how to meet the functional requirements: international or national standards/rules can apply.

As a rule, in the OSJD 1520 mm area the requirements are defined by various national legislation (national standard, national rules, company standard etc.) of each OSJD member.

#### **5.2.1.1. Parking facilities for persons with disabilities and persons with reduced mobility / Доступность парковки для людей с ограниченными возможностями и людей с ограниченной подвижностью**

According to the information provided by the OSJD delegations, requirements existing in majority of OSJD 1520 mm area are detailed and fully coincide with the requirements of TSI PRM.

#### **5.2.1.2. Obstacle-free route / Маршрут без препятствий**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and in no contradiction to the requirements of TSI PRM.

##### **5.2.1.2.1. Horizontal circulation / Горизонтальная циркуляция**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and in no contradiction to the requirements of TSI PRM.

##### **5.2.1.2.2. Vertical circulation / Вертикальная циркуляция**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and compatible or in no contradiction to the requirements of TSI PRM.

##### **5.2.1.2.3. Route identification / Обозначение маршрута**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and compatible with requirements of TSI PRM.

#### **5.2.1.3. Doors and entrances / Двери и входы**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and compatible with the requirements of TSI PRM.

#### **5.2.1.4. Floor surfaces / Поверхности пола**

Requirements existing in the OSJD 1520 mm area are detailed and coincide with TSI PRM provisions in their purpose, i.e. increased accessibility of infrastructure for passengers with reduced mobility. At the same time, the requirement provided for the analysis apparently regulate different aspects of accessibility.

#### **5.2.1.5. Highlighting of transparent obstacles / Выделение прозрачных препятствий**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and compatible with the requirements of TSI PRM.

#### **5.2.1.6. Toilets and baby nappy changing facilities / Туалеты и средства для пеленания младенцев**

Requirements existing in the majority of the OSJD 1520 mm area are detailed and compatible with requirements of TSI PRM.

#### **5.2.1.7. Furniture and free-standing devices / Мебель и свободностоящие устройства**

Requirements existing in the OSJD 1520 mm area are detailed and coincide with TSI PRM provisions in their purpose, i.e. increased accessibility of infrastructure for passengers with reduced mobility and/or is compatible with TSI.

#### **5.2.1.8. Ticketing, Information desks and Customer Assistance points / Билетные кассы, информационные стойки и точки помощи клиентам**

The information provided for the analysis contains detailed requirements, which are compatible with the TSI.

#### **5.2.1.9. Lighting / Освещение**

The information provided for the analysis contains detailed requirements, which are believed to be in no contradiction to the TSI and does not influence technical and operational compatibility on CIS-EU border.

#### **5.2.1.10. Visual information: signposting, pictograms, printed or dynamic information /**

The information provided for the analysis contains detailed requirements which are believed to be compatible or in no contradiction to the TSI.

#### **5.2.1.11. Spoken information / Речевая информация**

The information provided for the analysis contains detailed requirements, which are believed to be in no contradiction to the TSI.

#### **5.2.1.12. Platform width and edge of platform / Ширина платформы и край платформы**

The information provided for the analysis contains detailed requirements, which are believed to be compatible with the TSI.

#### **5.2.1.13. End of platform / Конец платформы**

The information provided for the analysis contains detailed requirements, which are believed to be compatible with the TSI.

#### **5.2.1.14. Boarding aids stored on platforms / Вспомогательные средства для посадки, хранящиеся на платформах**

The information provided for the analysis contains detailed requirements for lifting capacity of boarding aids: 225 – 300 kg.

#### **5.2.1.15. Passenger track crossing to platforms / Пассажирские переходы через пути на платформы**

The information provided for the analysis contains detailed requirements, which are believed to be compatible with the TSI.



## **5.2.2. Rolling Stock Subsystem / Подсистема подвижного состава**

### **5.2.2.1. Seats / Сиденья**

#### **5.2.2.1.1. General / Общие положения**

#### **5.2.2.1.2. Priority seats**

##### **5.2.2.1.2.1. General**

##### **5.2.2.1.2.2. Uni-directional seats**

##### **5.2.2.1.2.3. Facing seats arrangement**

Rules in the OSJD 1520 mm area contain general functional requirements regarding presence and type of individual seats for passengers with reduced mobility.

### **5.2.2.2. Wheelchair spaces / Места для кресел-колясок**

Information provided for the analysis contains detailed requirements about the quantity of wheelchair spaces, their location, characteristics and dimensions and the equipment provided. No contradiction or incompatibility with the TSI.

Additional requirement to the TSI: need for wheelchair fastening systems.

### **5.2.2.3. Doors / Двери**

#### **5.2.2.3.1. General / Общие положения**

#### **5.2.2.3.2. Exterior doors / Внешние двери**

Information provided for the analysis is believed to be in no contradiction or incompatibility with the TSI.

#### **5.2.2.3.3. Interior doors / Внутренние двери**

Information provided for the analysis contains detailed requirements, which are believed to be compatible with the TSI.

### **5.2.2.4. Lighting / Освещение**

Information provided for the analysis requires additional comparison of provisions of relevant reference documents and EN standards.

### **5.2.2.5. Toilets / Туалеты**

Information provided for the analysis is compatible with the TSI.

### **5.2.2.6. Clearways / Проходы**

Information provided for the analysis is compatible with the TSI.

### **5.2.2.7. Customer Information / Информация для клиентов**

#### **5.2.2.7.1. General / Общие положения**

Information provided for the analysis is compatible with the TSI.

#### **5.2.2.7.2. Signage, pictograms and tactile information / Указатели, пиктограммы и тактильная информация**

Information provided for the analysis is compatible with TSI.

#### **5.2.2.7.3. Dynamic visual information / Динамическая визуальная информация**

Information provided for the analysis contains requirements coinciding in their meaning with the TSI.

#### **5.2.2.7.4. Dynamic audible information / Динамическая аудиоинформация**

Information on requirements provided for the analysis is compatible with the TSI.

#### **5.2.2.8. Height changes / Изменения высоты**

Information provided for the analysis is partially compatible with TSI and contains stricter relevant provisions for stairs than the TSI.

#### **5.2.2.9. Handrails / Поручни**

Information provided for the analysis is equivalent to the requirements of the TSI.

#### **5.2.2.10. Wheelchair accessible sleeping accommodation / Спальные места, доступные для людей в инвалидных колясках**

Information provided for the analysis is compatible with the TSI.

Call for aid device is required (in point 4.2.2.7.2).

#### **5.2.2.11. Step position for vehicle access and egress / Положение ступеней для входа в вагон и выхода из вагона**

##### **5.2.2.11.1. General requirements / Общие положения**

No contribution received on this topic.

##### **5.2.2.11.2. Access/egress steps / Ступени входа/выхода**

No contribution received on this topic.

##### **5.2.2.12. Boarding aids / Вспомогательные средства для посадки**

###### **5.2.2.12.1. Movable step and bridging plate/ Выдвижная ступень и мостик**

No contribution received on this topic.

###### **5.2.2.12.2. On-board ramp / Размещенная в вагоне рампа**

Information provided for the analysis is compatible with TSI, in particular for what concerns the size and the weight of the wheelchair to be carried (300 kg, 900 mm wide ramp).

###### **5.2.2.12.3. On-board lift / Размещенный в вагоне подъемник**

Information provided for the analysis is compatible with TSI, in particular for what concerns the size and the weight of the wheelchair to be carried (300 kg, 800 mm x 1400 mm platform).

## **6. LIST OF THE PARTICIPANTS / СПИСОК УЧАСТНИКОВ:**

The following delegations have participated in the work on the document:

- Republic of Belarus
- Georgia
- Republic of Kazakhstan
- Republic of Latvia
- Republic of Lithuania
- Republic of Moldova
- Republic of Poland
- Russian Federation
- Slovak Republic
- Ukraine
- Organisation for Co-Operation Between Railways (OSJD)
- European Railway Agency (ERA)

\*\*\*