

# **Berlin Design for All 'Barrier-Free Concept' Instructions**

## Accessible Public Buildings

Editor: Senate Department for Urban Development and Housing

***Title Page Illustration - 4 jointed dolls (with headphones, wheelchair, glasses, walking stick and pushchair) as metaphoric representation of the theme Design for All***

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## **'Barrier-Free Concept' Instructions**

***The 'Barrier-Free Concept' instructions and the manuals provide together assistance in the planning process and indicate WHO does WHAT and WHEN.***

The 'Berlin-Design for all - Publicly Accessible Buildings' and 'Berlin-Design for all - Public Space' manuals represent comprehensive planning principles for barrier-free construction in Berlin building development. Design for all is the goal for the design of our constructed environment and demands a multidisciplinary pool of expertise.

The instructions are structured chronologically based on the planning stages of a public construction project in accordance with ABau (General Instructions for the Preparation and Execution of Construction Work in Berlin). This guides the basic tenet of Design for all through the entire planning process.

The planning stages build on each other. Approved content of the above document must be adopted into the following document.

Barrier-free construction is regulated in the legal principles (Construction Directive for Berlin - BauOBl, DIN 18040 Part 1, operational regulations - BetrVO and so on). In Berlin, the *Berlin-Design for all - Publicly Accessible Buildings* and *Berlin-Design for all - Public Space* manuals must be used in accordance with ABau, Directive II 120 et seq.

For new builds, conversions and extensions, as well as complete modernisations and major changes of use, a barrier-free concept must be drafted.

Areas of use that are subject to the Workplace Ordinance (ArbStättV) are not included in this. It is however recommended that the barrier-free concept also be taken into account for workplaces (e.g. offices).

DIN 18040 Part 1 (10-2010), which is being introduced as a technical building regulations in Berlin (VV TB Bln dated 19 April 2018) sets out minimum requirements. The formulations contained therein regarding protection goals can also be satisfied in ways that differ from those defined in the standard.

### ***Graphics***

***Schedule of works from the planning stages to the transformation (requirements, pre-planning, designing, execution and documentation) including listing of all those involved in the individual planning processes (essential user / client / agent from committees of those concerned, architect, planner, surveyor SenStadtUm - centre of co-ordination for barrier free construction)***

## **Deviations from the requirements of barrier-free construction**

Deviations as detailed in Section 68 of the BauOBlN (Berlin building regulations) must be stated in factual and functional terms and suitable proposed solutions must be offered. They must be coordinated with the essential user and responsible authorities and documented. Compliance with listed building requirements must be ensured.

Specialists in Design for all, advisory organisations and/or representatives of the people affected must be included in the planning process.

*The services to be provided are not classed as special services pursuant to the HOAI, provided these services relate to services that must be provided in the context of satisfying requirements from public law directives or generally recognised rules of technology. It must be determined in each individual case whether the text-based and/or planning-related proof of barrier-free planning goes beyond the basic services to be provided pursuant to the HOAI.*

[Quote: Barrier-Free Construction Guidelines, published by the BMUB / TU Dresden 2014]

## 1. Requirements programme

The requirements programme must generally be set up by the essential user with collaboration of the building agency. The quality and quantity requirements relating to the barrier-free construction must be formulated in the spatial, functional and facilities programme as well as in the operating concept.

*Points need to be checked:*

- External access: barrier-free public transport system connection and personal transport, number of special parking spaces based on the applicable draft of the Berlin building regulations
- Definition of requirements for publicly accessible areas within the building and on the premises
- Building plot: location of accesses, topography  
Spatial programme (useful areas based on DIN 277): the required additional space requirements in the relevant areas must be checked
- Internal vertical and horizontal access
- Location and number of barrier-free sanitation rooms
- Quality-related spatial requirements - definition of rooms / areas with special requirements on barrier-free design
- Requirements on the barrier-free use of external rooms with an access and accommodation function
- Equipment causing additional costs

### ***Picture 1***

***Barrier free solution for lifts accessible at right angles with door width measuring at least 90 cm and 140 cm. Internal lift measurements of 200 cm x 140 cm***

### ***Picture 2***

***Illustration of fields of vision: maximum field of vision of 115 degrees (70 degrees above and 45 degrees below line of fixation) and extended field of vision of 150 degrees (90 degrees above and 60 degrees below line of fixation)***

### ***Picture 3***

***Illustration of maximum door soffit depth of 26 cm for manual opening***

### ***Picture 4***

***Illustration of markings on glass doors between 40 cm and 70 cm and between 120 cm and 160 cm. Information to be displayed at the optimum reading height of 100 cm to 140 cm and door signs at 140 to 160 cm***

## 2. Preliminary planning

The client will decide promptly on the nature and scope of the involvement as per the State Equal Rights Act (LGBG). In addition to state or district representatives for people with disabilities, the Barrier-Free Construction and Transport Working Group of the Senate Department for Urban Development and the Environment and other committees of affected parties can also be involved.

The required professional and technical expertise can be optimised by including **experts**. The project managers decide regarding commissioning. The Coordinating Office of the Senate Department for Urban Development and the Environment will clarify fundamental matters for barrier-free construction.

The barrier-free concept is to be developed in the **preliminary planning** as an **independent element**. It must be demonstrated how the requirements drafted in the requirements programme will be implemented in the planning stage; voting records must be included. The barrier-free concept must be set out in **text** and **diagrammatic form** as part of the initial planning.

*Points need to be checked:*

### **Topography:**

- Representation of external spaces provided for barrier-free use as per the requirements programme

### **Accessibility:**

- Representation of the connection (interfaces to civil engineering) between the plot of land and the public transport system in the location map with adjacent building development on a scale of 1:1000 / 1:5000 with coloured highlighting of the route relationships, e.g. from the bus stop and / or parking spaces to the horizontal or vertical access to the building
- Representation of the planned assignment of dedicated parking spaces and routes to entrances
- Schematic representation for barrier freedom of the external facilities at entrance level

### **Horizontal access:**

- Accesses, entrances, communication elements, doors, vestibules
- Access areas / guided pathways (foyers, corridors, escape routes, etc.)

### **Vertical access:**

- Stairs, ramps, lifts, escalators

### **Mobility areas:**

- In all relevant publicly accessible areas (corridors, lifts, sanitary rooms, etc.)

**Spatial programme:**

- Representation of the areas defined in accordance with the requirements planning as publicly accessible
- Labelling of rooms with special requirements on barrier-free design
- Representation of route relationships and spatial arrangement of the individual functional areas
- Labelling of barrier-free sanitary systems

**Orientation:**

- The choice of materials, colours and shapes (visual and tactile contrasts) is intended to achieve
- Concept for guidance, communication and information systems with explanation of materials, colours, shape, size and lighting
- Multisensory principle

**Amenities:**

- Furniture (e.g. machinery, counters, chairs)

**Picture 5**

***Illustration of wheelchair grip heights for children at 105 cm eye level, 70 - 75 cm working height and about 60cm knee height, as well as for adults at 125 cm eye level, 80 cm working height and about 65 cm knee height***

**Picture 6**

***Illustration of children's wheelchair grip width at a height of 30cm or 40 cm respectively for lower, and 70 - 75 cm or 100 cm respectively for upper shelves and cupboards at a depth of 40 - 55 cm, and for adults at 90 cm height and 40 - 60 cm depth for cupboards and 120 cm or maximum of 140 cm height for shelves.***

### 3. Draft planning

**The barrier-free concept must be set out in text and diagrammatic form as part of the construction planning (CPD) on a scale of 1:100.** The representation depth (scale) may need to be adapted to the specific construction task. Any **deviations** in the CPD from the approved IPD must be demonstrated. The concept must be integrated in a readable form into the CPD.

*Required documents*

- Complete draft drawings
- Relevant design, detail and construction drawings
- Text explanations required for execution
- Voting records

*Points need to be checked:*

#### **Topography:**

- Presentation of the measures required for the barrier-free use of external rooms

#### **Accessibility:**

- Connection (interfaces to civil engineering) of the plot to the public transport network in the location map with adjacent building developments
- Route relationships, e.g. from the bus stop and/or parking spaces to the horizontal or vertical access of the building
- External installations on a suitable scale with a floor plan of the entrance level
- Assignment of barrier-free parking spaces to entrances and proof of the number based on the applicable draft of the Berlin building regulations

#### **Horizontal access:**

- Entrances, accesses, doors, vestibules, communication elements, etc.
- Access areas / guided pathways (foyers, corridors, escape routes)

#### **Vertical access:**

- Detailed representation of stairs, ramps, lifts, escalators

#### **Mobility areas:**

- In all relevant publicly accessible areas (corridors, lifts, sanitary rooms, etc.)

**Spatial programme:**

- Representation of the areas defined in accordance with the requirements planning as publicly accessible
- Labelling of rooms with particular requirements in terms of barrier-free design and representation of measures required for this
- Representation of spatial sequences, route relationships between functional areas
- Representation of barrier-free sanitary systems

**Orientation:**

- Communication, guidance and orientation systems (e.g. relevant details such as transitions, blind guidance system)
- Information on materials for internal and external spaces where relevant for facilitating an understanding of the barrier-free design
- Colour and material design of walls and floors (e.g. details of wall elements, photographic representations, examples of patterns)
- External facilities - representation of the materials of surfaces, planting areas

**Amenities:**

- Statements on the lighting concept and acoustic installations where they are relevant to the barrier-free design
- Furniture (e.g. supplemented by detailed drawings)
- Control elements, technology

## 4. Implementation planning

Details and/or special designs must be detailed in the appropriate scale.

## 5. Documentation, success monitoring

*Points need to be checked:*

- Summary of results
- General information on operational measures (e.g. interfaces to service), possibly justification for deviations

**Picture 7**

***Illustration of door opener measurements for wheelchair users with aisle width of 150 cm, door width of 90 cm and 50 cm distance from the wall at one side***

***Distance of door opener to wall with door closing inwards 150 cm to 250 cm, and 50 cm to 150 cm with door closing outwards***



**Picture 8**

**Illustration of door opener measurements for wheelchair users for side-on door with aisle width of 180 cm and door width of 90 cm**

**Picture 9**

**Illustration of gaps in barrier free WC of 220 cm length and width, toilet (40 cm width, 70 cm depth, and 65 cm - 70 cm breadth of supporting back rest) in the centre opposite door at 90 cm distance from wall on left and right**

**Picture 10**

**Illustration of measurements of area for movement in parking spaces of 150 cm width (350 cm total width including car) and 500 cm length for car spaces - 750 cm for van and rear loading vehicles**

**Picture 11**

**Illustration of measurements of a ramp with a 6 percent gradient and 600 cm length for a ramp section with tread and intermittent landings at 36 cm, 72 cm and 108 cm**

**Indication of calculation formulae:**

- $\text{gradient length (m)} - \text{height (cm)} / \text{gradient (percentage)}$
- $\text{gradient (\%)} - \text{height (cm)} / \text{length (m)}$
- $\text{height (cm)} - \text{gradient (percentage)} \times \text{length (m)}$

**Picture 12**

**Illustration of stairs with step markings, handrails. Handrail height approx. 70 cm for children and less tall people and approx. 90 cm height for adults**

**Handrail starts at least 30 cm in front of the first step and behind the last step**

**Range of awareness 60 cm - 120 cm before start of top step, tactile surface where steps are free standing.**

**Picture 13**

**Detailed presentation of a step with edge markings at 3 cm to 5 cm on the step and at the front of the riser at 1 cm to 2 cm, and a diagonal riser of max. 2 cm**

**Picture 14**

**Detailed presentation of cross section of handrail with a 3 cm - 4.5 cm diameter at a minimum distance from the wall of 5cm**

**Picture 15**

**Illustration of different floor coverings (pavement slabs, lawn, sand, etc.) as guiding and orientation features in a town**

## **Loose leaf**

### ***Picture 16***

***Fictitious map representation of a barrier free exhibition with a tactile and visual guiding system on the floor, tactile guiding features on banisters, step markers and barrier free information counter***

***Legend including symbols and information for an application based on plans:***

- ***Space requirement 150 x 150 cm and space requirement 130 x 90 cm (scale representation)***
- ***Passage 90 cm (scale representation)***
- ***Lift barrier free TVP 2:110 x 140 cm (scale representation)***
- ***passage without threshold outside/inside***
- ***communication aids***
- ***swing door with request button (scale representation)***
- ***guiding strips to increase awareness of range***
- ***contrasting floor material, tactile and visual***
- ***light guiding system***
- ***acoustic guiding system***
- ***tactile floor guiding system***
- ***visual floor guiding system***
- ***step markings***
- ***barrier free information counter***
- ***guiding system along wall or handrail***

### ***Picture 17***

***Colour contrasts in two different colour combinations (yellow-pink, blue-light blue, blue-white, yellow-black) and respective light density contrasts in shades of grey***

### ***Picture 18***

***Illustration of tactile pyramid inscriptions, minimum size 10-13 mm and maximum size 50 mm, height 1 - 2.5 mm and letter web width 1.2 mm***

## **Space requirement: traffic, meeting and mobility areas, dimensions as per DIN 18040 Part 1**

### **Table**

*Space requirement meeting areas at least 180 cm width and 180 cm depth*

- *For meetings between wheelchair users*
- *On walkways / corridors after max. 15 m length*

*Space requirement movement areas at least 150 cm width and 150 cm depth*

- *For changing direction, parking, meetings*
- *In front of swing doors (opening side)*
- *Waiting area in front of lift doors, additional thoroughfare width of 90 cm in the event of overlap with other traffic areas*
- *At the start and end of a ramp*
- *In front of service units (e.g. cash desks, machines, letterboxes, tel. ☎ intercom systems)*
- *In front of control elements*
- *E.g. in front of WC bowls, sink stands, shower area*

*Space requirement car parking space at least 350 cm width and 500 cm depth*

- *In the case of garages with automatic door opening*

*Space requirement Standing wheelchair parking spot at least 180 cm width and 150 cm depth*

- *Also equal surface in front of the wheelchair parking space*

*Space requirement Standing surface where seats are fixed at least 150 cm width and 90 cm depth*

- *Where a side approach is possible*

*Space requirement Standing surface where seats are fixed at least 130 cm width and 90 cm depth*

- *Where a backward or front-facing approach is possible*

*Depth at least 300 cm distance from downwards-leading stairs opposite lift doors*

*Depth at least 250 cm distance of button from wing door (opening side) based on a front-facing approach*

*Depth at least 150 cm*

- *Doors with wall opposite*
- *In case of frontal approaches to door: sliding door button; wing door (closing side)*
- *Intermediate podium on ramps after 600 cm of ramp run*
- *In front of wheelchair parking spaces*
- *In front of couches 180 cm wide (e.g. in changing rooms)*

*Depth at least 120 cm*

- *If the floor clearance is > 150 cm, otherwise T = 150 cm*

*Depth at least 70 cm*

- *From the front edge of the WC bowl to the back wall*

*Depth at least 55 cm*

- *Floor clearance*

*Depth at least 05 cm*

- *Distance to the main closing edge in the case of lateral approaches to doors*
- *Distance between control elements and room corners*

*Depth at least 45 cm*

- *Washbasin, shower folding seat*

*Depth at least 26 cm*

- *Reveal depth (reach depth for door handles, see graphic for doors)*

*Width at least 150 cm*

- *Walkways, corridors and other traffic areas with meeting up to 15 m in length*

*Width at least 120 cm*

- *Walkways, corridors, ramps and other traffic areas up to max. 6 m without change of direction, turning option before and after*
- *Lateral approach with 150 cm surface length in the direction of travel*

*Width at least 90 cm*

- *Passages, doors*
- *Floor clearance*
- *On either side of the WC bowl*

# **Imprint**

## **More information about Design for all**

### **Brochure Berlin - Design for all**

Publicly Accessible Buildings

### **Brochure Berlin - Design for all**

Public Space

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## **Internet version**

[http://stadtentwicklung.berlin.de/bauen/barrierefreies\\_bauen/de/handbuch.shtml](http://stadtentwicklung.berlin.de/bauen/barrierefreies_bauen/de/handbuch.shtml)

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