A reset control shall be provided for use if the alarm is activated by mistake. It shall be reachable from a wheelchair and, where relevant, from the WC, the tip-up seat in a shower or changing facility, or the bed in an accessible bedroom. The reset control shall be easy to operate and located with its bottom edge between 800 mm and 1 100 mm above floor level.

For a corner toilet room, the reset button should be above the fixed horizontal grab rail beside the toilet paper holder.

The marking of the reset control shall be both visible and tactile.

26.15 Emergency warning alarm

A visual emergency alarm shall be provided to alert people who are deaf or hard of hearing in the event of an emergency (see also Clause 34).

26.16 Shower

Showers can be used by people with different disabilities and different supporting aids, for instance, wheelchair users, ambulant disabled people, etc., using their own wheelchairs or special shower chairs.

The shower area shall have level entry and have no fixed elements that prevent front and side access.

The wet showering area should be 900 mm × 1 300 mm, with a transfer area of also 900 mm × 1 300 mm.

The floor in the shower recess shall have a gradient between 1:50 and 1:60 sloping to a floor drain. The area outside the shower recess shall have a gradient between 1:70 and 1:80 draining towards the shower recess. The transition into the shower recess shall be level without a step down or a kerb.

The waste outlet should be centrally located and be a round type outlet, not a channel type, to ensure the stability of the shower chair.

The shower should be fitted with an easily operable foldable seat that folds in an upward direction. If a foldable seat is provided, its minimum size shall be 450 mm × 450 mm, and, when folded down, have its top surface set between 400 mm and 480 mm above floor level and spaced a maximum of 40 mm from the rear wall. The fastenings for grab rails and the construction of the foldable seat shall be able to withstand a force of 1,1 kN applied at any position and in any direction.

NOTE Shower wheelchairs are sometimes used instead of shower seats.

The foldable seat shall have the following features:

— self-draining;

— slip-resistant and stable;

— foldable in an upwards direction; when folded, it shall not present a hazard and the grab rail shall be accessible from the foldable seat.

The foldable seat should have the following features:

— rounded front corners (radius 10 mm to 15 mm),

— rounded top edges (minimum radius of 2 mm to 3 mm).

The foldable seat should preferably be height adjustable.

Grab rails shall be set according to 26.7 and Figure 45. The shower area shall be fitted with at least one vertical grab rail which may hold the flexible shower head. The length of the flexible shower hose shall be a

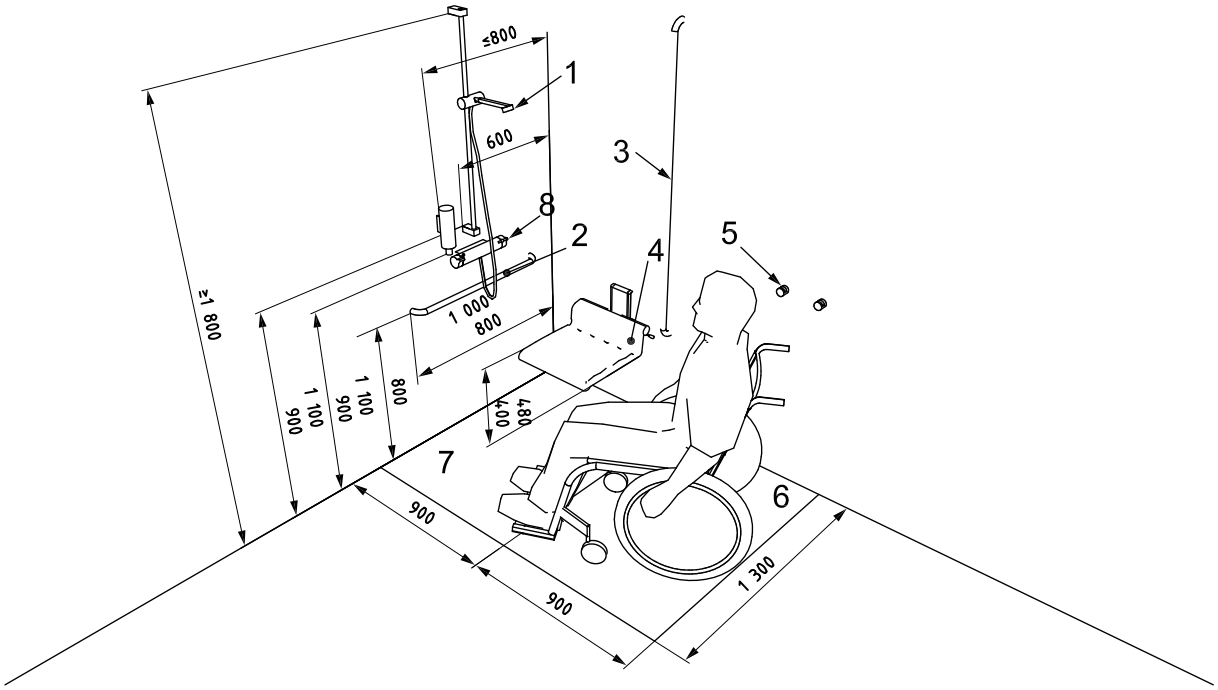
minimum 1 200 mm. The handheld shower head should be provided between 1 000 mm and 1 800 mm above the finished floor. The shower hose fitting should be a minimum 1 300 mm above floor level.

Shower controls and folding seat shall be set according to Figure 45.

If the shower is combined with an accessible toilet, the manoeuvring areas may overlap, as shown in Figure 46.

If two or more shower recesses are provided, at least one shall have the seat on the opposite side.

Dimensions in millimetres



Key

1 hand-held shower head
2 horizontal grab rail
3 vertical grab rail
4 foldable shower seat
5 towel hooks
6 transfer area
7 wet showering area with gradient 1:50 – 1:60
8 shower controls

Figure 45 — Example of a shower place with grab rails, adjustable shower head and folding seat

26.17 Individual shower room

A free space at least 1 300 mm × 900 mm shall be provided on the clear side of the foldable seat, to allow access from a wheelchair, in addition to the manoeuvring space of 1 500 mm.

The screening of a shower recess shall be either a curtain or a door system that maintains the required circulation and manoeuvring space and does not interfere with the level entry.

A shower head support grab rail shall be fixed on the wall in the position shown in Figure 45.

A hand held detachable shower head shall be provided with a flexible hose of minimum length 1 200 mm, and it shall be able to reach within 100 mm of the shower floor.

An adjustable shower head holder shall be provided to support the shower head, and shall:

— be installed on the shower head holder support grab rail as shown in Figure 45,

— allow the graspable portion of the shower head to be positioned at various angles and heights,

— allow the graspable portion of the shower head to be located at heights between 1 000 mm and 1 800 mm above the finished floor.

The fastenings, materials and construction of the seat shall withstand a force of 1,1 kN applied at any position and in any direction.

Grab rails shall be fixed on the walls in the positions shown in Figure 45. All other devices, e.g. taps, soap holder, shall be situated in an accessible range between 900 mm to 1 100 mm.

26.18 Bathrooms

This subclause applies to buildings that provide bathing facilities, such as hotels, motels, hostels and sports buildings, where baths may be an alternative, or a supplement to showers (see Figures 46 to 49 as examples).

If only one accessible bedroom for people with disabilities is provided, it should be connected to an accessible shower room, rather than a bathroom, since many disabled people can only use a shower, due to their physical limitations. If more than one accessible bedroom is provided, a choice of shower or bath and a choice of right or left hand transfer to the toilet and shower or bath should be provided.

All accessible bathrooms should always contain an accessible toilet.

En suite facilities should be chosen as the preferred solution for accessible bedrooms, even when they are not provided generally for guests or residents in a hotel, motel or nursing home. If this is not possible, bathroom accommodation should be provided in close proximity to the accessible bedrooms.

The minimum overall dimensions of a bathroom intended principally for independent use, incorporating a corner toilet and a large basin, should be as shown in Figures 46, 48 and 49.

In bathrooms with a toilet that is intended for independent use, the direction of transfer to both the bath and toilet should be consistent.

When more than one bathroom for independent use incorporating a corner toilet is planned, a choice of left hand and right hand transfer layouts should be provided.

Auxiliary grab rails should be located in accordance with Figure 47.

Exceptional considerations in existing buildings: If the measures given above cannot be achieved due to technical reasons, the manoeuvring space at floor level may be reduced to a minimum clearance besides the toilet seat of 800 mm × 1 200 mm and a clear manoeuvring space diameter of 1 200 mm. However, it should be recognized that such a reduction may limit the use to wheelchair users with small chairs.

NOTE To make a bathtub accessible for users of a bath lift or hoist, a free unobstructed space under the bathtub is needed.

Dimensions in millimetres

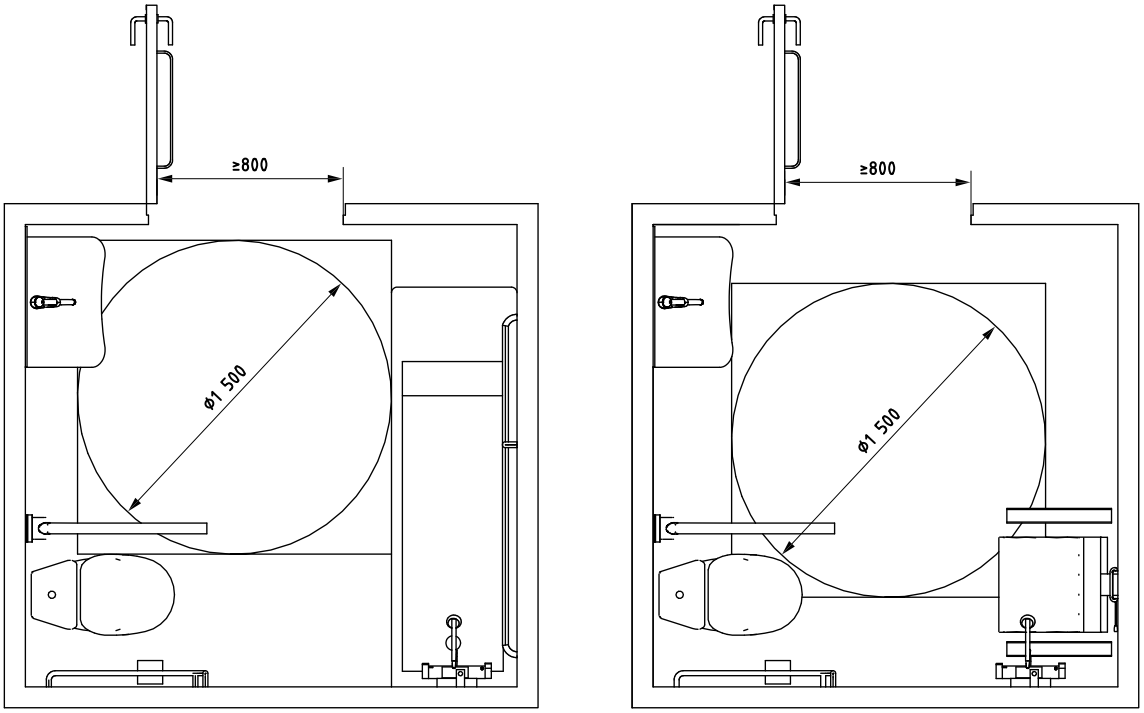
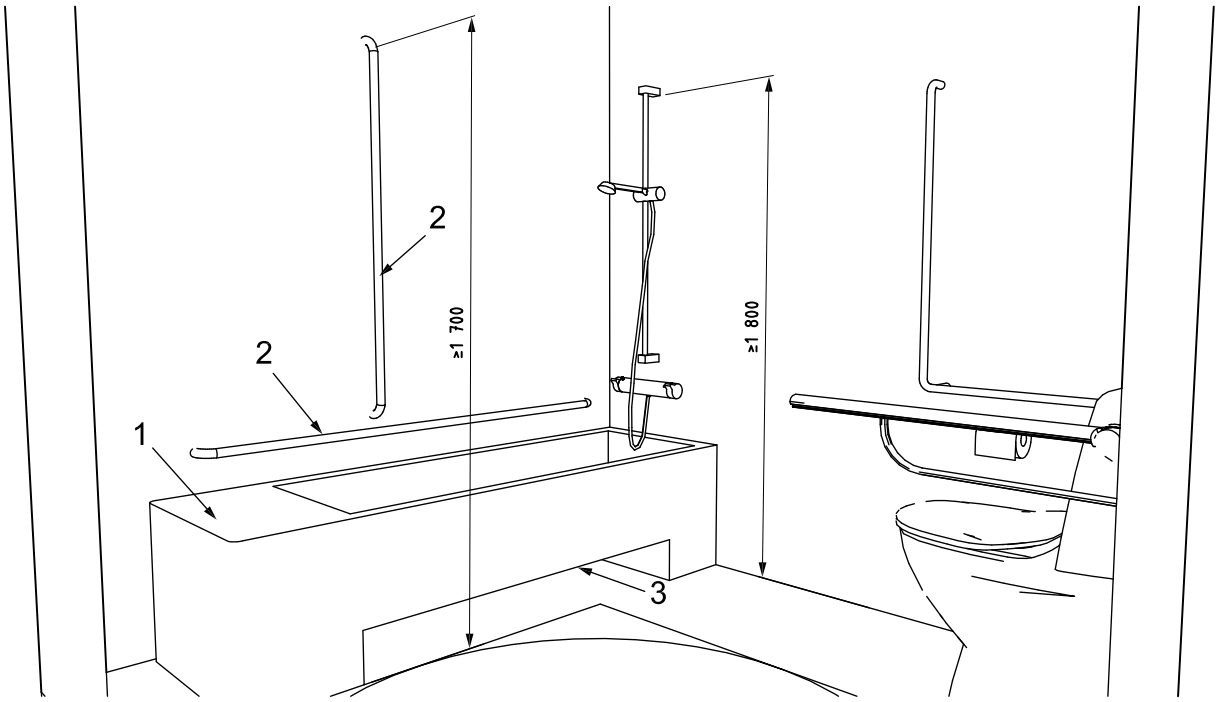


Figure 46 — Examples of a bathroom with bathtub and shower for independent use with a corner WC

Dimensions in millimetres

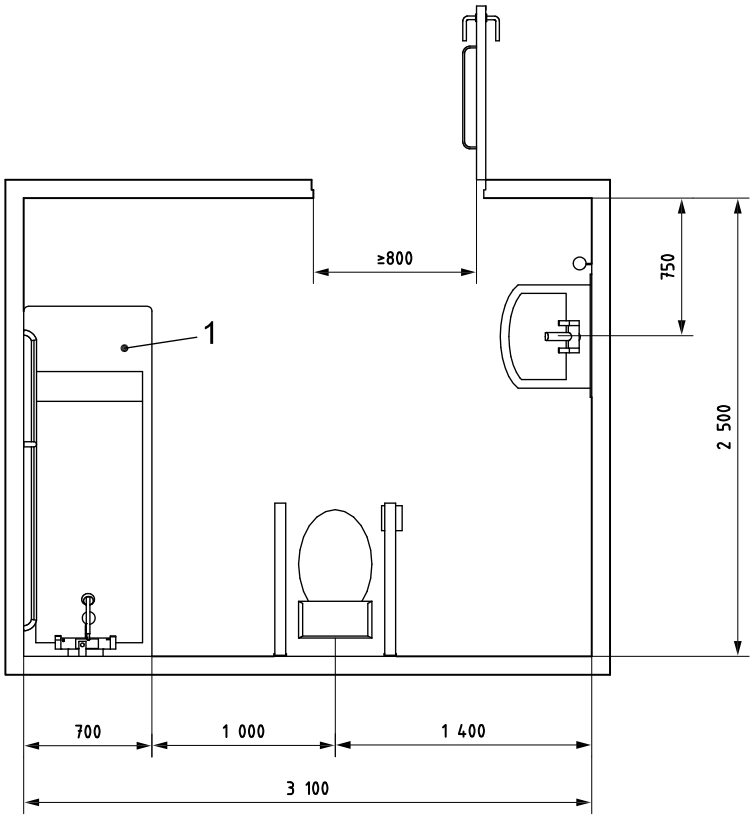


Key

1 transfer area
2 grab rail
3 opening for hoist

Figure 47 — Example of grab rails and transfer facilities surrounding the bathtub

Dimensions in millimetres

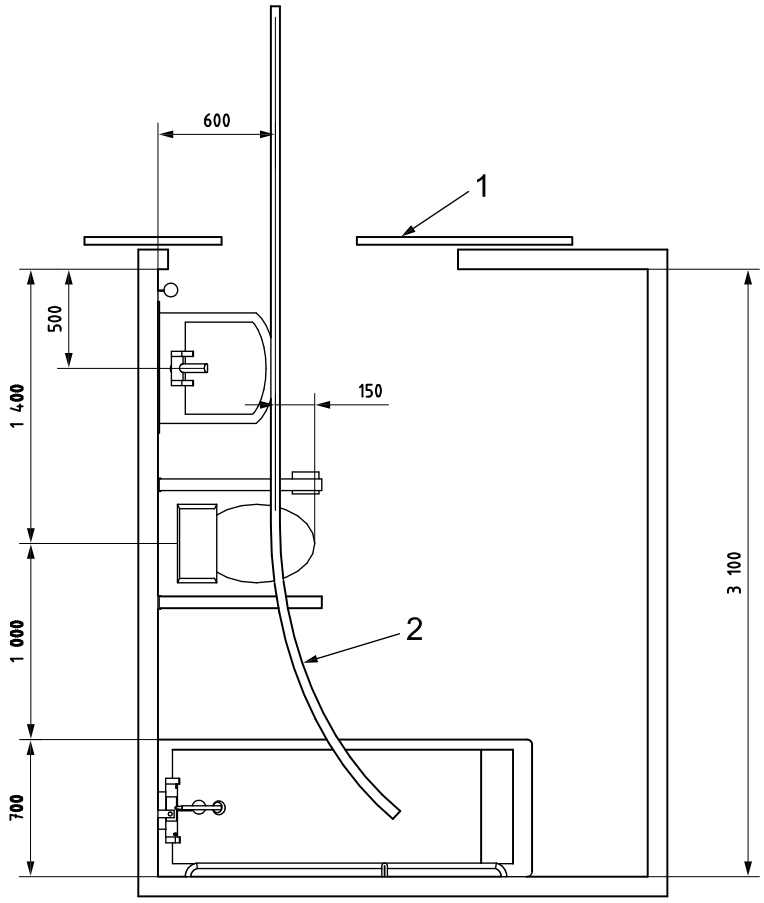


Key

1 transfer area

Figure 48 — Example of a bathroom for assisted use of bathtub and peninsular WC

Dimensions in millimetres



Key

1 unequal sliding doors

2 ceiling mounted track hoist

Figure 49 — Example of a bathroom with a ceiling mounted tracked hoist for independent or assisted use

27 Accessible bedrooms in non-domestic buildings

The access to accessible bedrooms in non-domestic buildings (i.e. hotels, guesthouses, etc.) shall comply with the requirements outlined in this International Standard, in particular with Clauses 4 and 5. The minimum number of accessible bedrooms in non-domestic buildings may be subject to national requirements or regulations. At least one accessible bedroom should be provided for every twenty standard bedrooms or fraction.

Rooms accessible for wheelchair users shall be designed for two beds. If a single bedroom accessible for wheelchair users is provided, a queensize bed is preferred, 1 500 mm width × 2 000 mm length.

Free space on at least one of the long sides of the bed shall be provided. This space should be 1 500 mm, and shall not be less than 1 200 mm. At the foot of the bed, at least 1 200 mm is required (see Figures 50 and 51).

An open space of at least 300 mm between the floor and the mattress should be provided to facilitate the use of a hoist.

Sufficient clear manoeuvring space is needed to gain access to facilities, including the shower.

There should be a bench for luggage at a height between 450 mm to 650 mm.

The minimum height of a bed shall be between 450 mm to 500 mm, when it is compressed under a 90 kg weight.

For communication for people with hearing, vision and cognitive limitations, see Clause 32 and Annex B.

Visual and audible alarm systems shall be accessible to warn people with visual and hearing impairments; consider Clause 34 for fire emergency warnings.

Consider Figures 46 to 49 for details of an accessible bathroom. Manoeuvring space of a minimum 1 500 mm × 1 500 mm allows front facing or 45° oblique transfers by wheelchair users.

Dimensions in millimetres

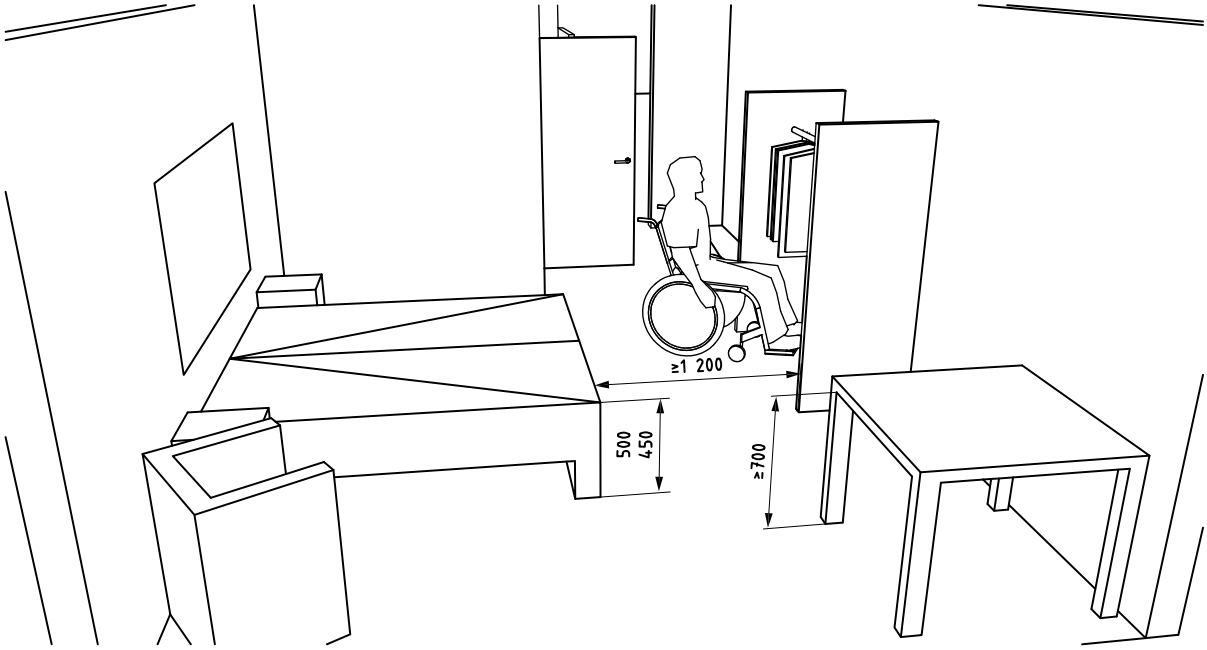
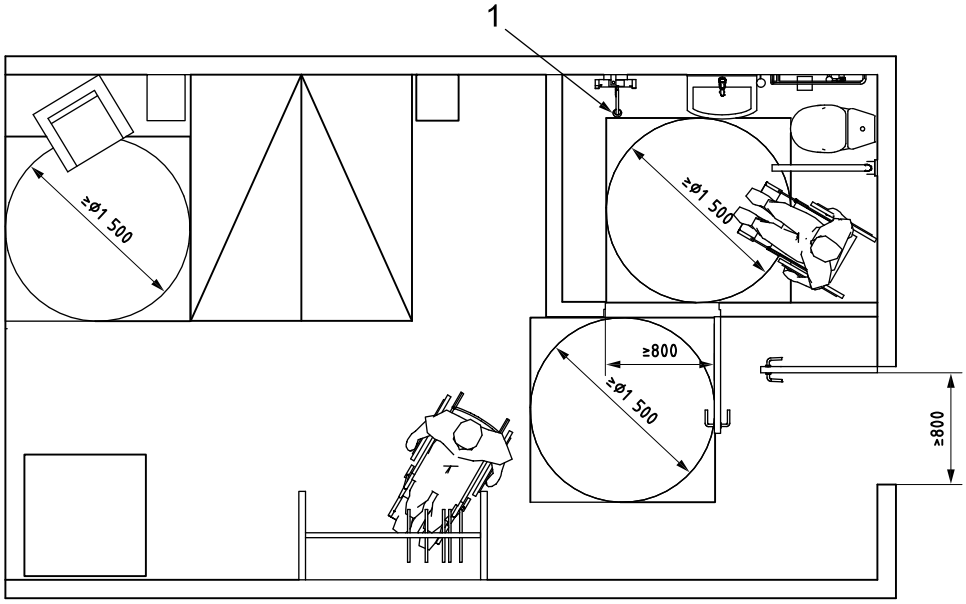


Figure 50 — Example of space allowances for accessible bedroom

Dimensions in millimetres



Key

1 shower area

Figure 51 — Example of space allowances for accessible bedroom and bathroom

28 Kitchen areas

Kitchen areas shall take into account general design considerations in Clause 4, manoeuvring space (see B.6.1 and B.6.2), slip resistant walking surface and accessible height of controls and devices (see 36.2).

Essential kitchen appliances (oven, refrigerator, etc.) should be usable by persons both standing and sitting in a wheelchair, and a worktop should be located beside all appliances.

A section of the shelves should be within reaching distance for a wheelchair user, between 500 mm and 1 100 mm above floor surface.

The sink taps should be reachable and easy to operate with one hand. The sink should be reachable for a wheelchair user and it is recommended to provide adequate space under the sink according to the user's needs or to provide adequate space beside the sink. If a knee recess is provided under a sink, its underside should be insulated.

29 Storage areas

The minimum manoeuvring space (see B.6.1) and reachability for wheelchair users (see B.6.3) should be taken into consideration when designing and constructing a storage area.

Part of the shelves should be within reaching distance for a wheelchair user, between 500 mm and 1 100 mm above the floor.

If a door is provided, it should open outwards.

30 Facilities for guide dogs and other assistance dogs

30.1 General

In theatre and spectator facilities (this also applies to waiting rooms/other seating areas) it is recommended that some seats should be located so that a guide or assistance dog can accompany its owner and rest in front of, or under the seat.

30.2 Relief facilities for guide dogs and assistance dogs

The need for relief facilities for guide and assistance dogs should be decided at a national level.

A relief facility for guide and assistance dogs should be provided near large buildings, such as shopping centres, leisure or entertainment complexes and transport or other facilities, and any building where a guide or assistance dog owner is employed.

A secure area should be provided close to the building for use as a dog relief facility. The dog relief area should be at least 3 m × 4 m with a 1 200 mm high secure fence. The entrance gate to the enclosed area should have an easy to operate and secure catch. The surface area should be concrete with a smooth finish to assist in cleaning and a slight fall, of 3,5 %, to assist in drainage. It would be good practice to provide a waste bin and a supply of plastic bags, close to the entrance. An accessible sign saying “For assistance dogs only” should be displayed. The area should be cleaned regularly and well maintained.

31 Floor and wall surfaces

Floor coverings shall be firm and slip-resistant in both dry and wet conditions.

Floor and wall surfaces should be anti-glare. Confusing reflections caused by the inappropriate use of floor and wall finishes and the location of mirrors and glazing should be avoided.

For visual contrast see Clause 35.

The surfaces should contribute to an acoustic environment that helps in orientation; see also Clauses 32 and 33.

32 Acoustic environment

32.1 General

The acoustic environment in a building should be suitable for its intended function for all building users. This includes all hearing people especially the hard of hearing. For deaf and hard of hearing people, good lighting is essential to understand the sign language interpreter and/or optical information devices.

Many people with some degree of hearing loss have assistive devices to amplify sound, such as hearing aids or cochlear implants.

However, if the acoustic environment is not supportive of these devices, they do not work effectively. In addition, many people who have a mild or temporary hearing loss and do not have assistive devices may not be able to access information or communicate effectively.

Most people with hearing loss and people without hearing loss rely on sight to lip read or interpret facial expressions; therefore where the acoustic environment is regarded as important, suitable lighting, colour and visual contrast should be considered to benefit all building users.

Information normally conveyed in visual form may not be accessible to people who are blind or partially sighted. This information should also be conveyed audibly; the clarity (speech transmission index) of this information is affected by the acoustic environment.

The following design considerations should be taken into account to maximize the functionality of the acoustic environment, and to support the use of assistive devices.

32.2 Acoustic requirements

People with hearing impairments have particular difficulty in making out sounds and words in noisy environments. Adequate sound insulation should minimize noise from both outside and inside the building. Noise can often be “mitigated”, for example, by introducing a buffer zone between a meeting area and extraneous noise, or partitioning a restaurant.

The acoustics in a room are essentially connected with its location in the building and with the acoustic insulation of the building elements. The distribution of noise within the room itself and from exterior sources depends on the sound absorption of the surrounding surfaces and furnishing of the room. The calculation of acoustic absorption is significant in rooms where acoustic quality is important and also where noise reduction is required.

Good acoustics shall be achieved by optimizing the reverberation time, by considering the use/purpose of the room and by ensuring a low background noise level. The optimum reverberation time of a room should be determined having regard to the volume and the intended purpose of the room.

The geometry and shape of the room, as well as the distribution of sound absorbing and reflecting surfaces, are important. Surfaces that absorb sound should be carefully selected, as well as surfaces that reflect it. To develop an effective acoustic environment, sound absorbent surfaces can be used on floors and ceilings.

The optimum reverberation times for communication, speech only or music performance are different and depend on the size and shape of the room.

NOTE Requirements for reverberation time are given in some National Standards, such as DIN 18041.

32.3 Hearing enhancement systems

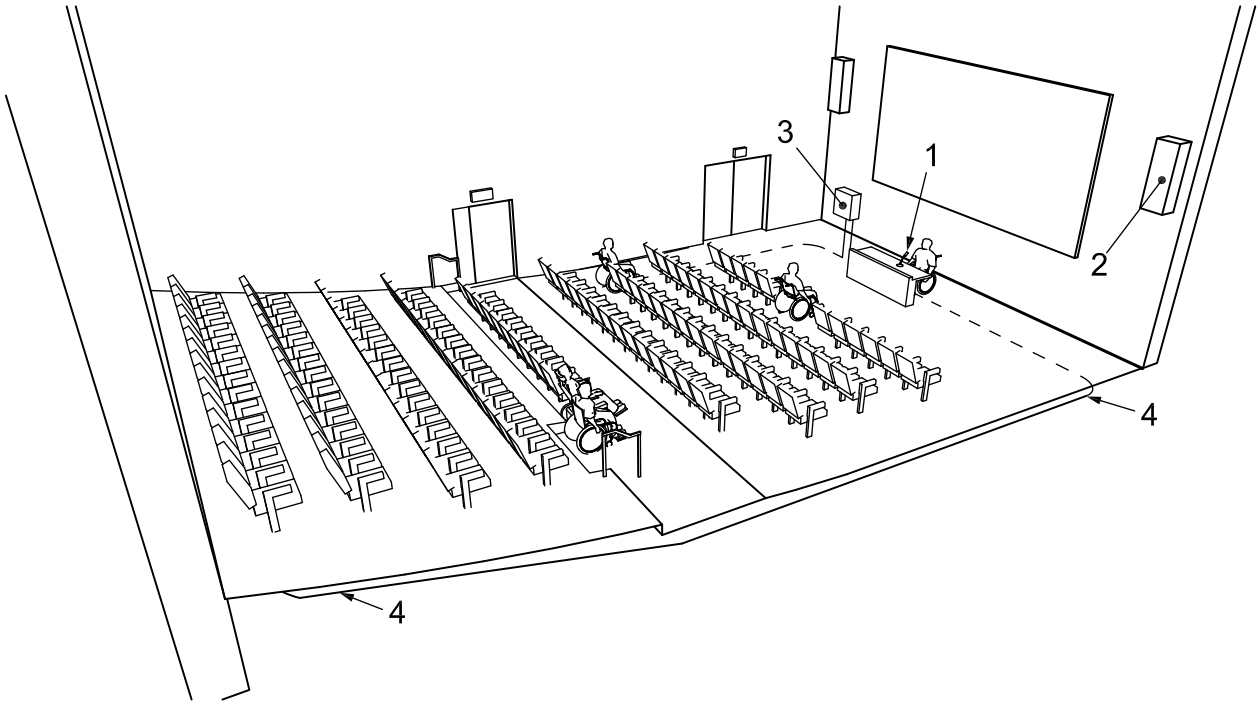
A hearing enhancement system fitted at an information point can significantly assist communication for a person with a hearing impairment who uses a personal hearing aid, or has a cochlear implant. Hearing aids or cochlear implants may have a Telecoil (T-switch) which allows the listener to receive the sound signal directly.

NOTE Hearing enhancement systems amplify audible communication and can be helpful to people who have a hearing impairment. They include a direct wire system, an inductive loop system, an infrared system, or a radio frequency system. All of these systems transmit a signal. Special-purpose receivers are required for infrared and radio frequency systems, while hearing aids equipped with a T-switch are capable of receiving the signal from an induction loop system. Receivers can be equipped to be compatible with hearing aids.

Hearing enhancement systems, for example induction loops and infrared signal transmitting systems, shall be provided in conference and meeting areas.

All seats, including the front scene, should be covered by hearing enhancement systems like induction loops. Portable hearing enhancement systems can be an alternative.

Induction loops should comply with the technical values given in IEC 60118-4 (see Figure 52).



Key

1 microphone
2 loudspeakers
3 induction loop amplifier
4 induction loop

Figure 52 — Example of induction loop system in conference room

33 Lighting

33.1 General

The planning of artificial lighting should be co-ordinated with the planning of natural lighting, the choice of surfaces and colours. Lighting can be used to accentuate interior colour, tone and texture schemes, and to facilitate orientation (also see Clause 39). The lighting should not lead to glare or excessive contrast.

33.2 External lighting

The routes to and around a building shall have sufficient artificial lighting to facilitate awareness of changes of level or gradient. The positioning of lights should not cause glare, reflection or shadows. Ramps, entrances, steps, signage, etc., should be well lit artificially, with an illuminance of at least 100 lux.

33.3 Natural lighting

It should be possible to shade windows from bright light. For the location of windows see 33.4 to 33.9 and 18.3.3.

33.4 Artificial lighting

Lighting should provide visual conditions consistent with the visual task, orientation and safety. Key factors are:

— level of illumination of horizontal and vertical surfaces,

— limitation of glare from a light source or reflections,

— uniformity and luminance distribution,

— direction of lighting and shading,

— colour rendering.

Artificial lighting should give good colour rendering. Light sources with a colour rendering index Ra are recommended.

NOTE 1 For safety colours see ISO 3864-1.

NOTE 2 Good artificial lighting where needed is crucial for everyone, ensuring that vision impaired people are able to use buildings safely and conveniently, and that people with hearing impairments are able to lip read.

33.5 Lighting to facilitate wayfinding

Lighting should facilitate wayfinding: building elements should be marked by increased illumination. The lighting in critical locations such as entrances, corridors, stairs, changes of level and workstations should facilitate their identification (see also 33.3).

Time dependent switch devices shall have a progressive switch off to reach the next switch. An automatic switch on detection system shall cover the complete surface of ramps and stairs. Lighting shall provide sufficient time necessary for users to travel safely along ramps.

Lighting which switches off when people are still on ramps or stairs should be avoided.

NOTE Ramps and stairs are the most hazardous places for falls.