INCLUSIVE DESIGN GUIDANCE

2024

Gwasanaethau Campws
Campus Services

INTRODUCTION

This draft Inclusive Design Guidance, produced in association with the University of Liverpool, has been developed as a guide for use by those responsible for the built environment, including Bangor University staff and others appointed to work on the built environment e.g. architects, designers, contractors, consultants. The aim of the Design Guidance is to ensure refurbishments to existing facilities and new 'builds' are accessible and usable by all people and seek to ensure all persons are treated fairly and equally, reducing the need for subsequent adaptations.

The Guidance is a useful resource to direct the briefing, planning, design and implementation process as well as provide a clearer understanding about the characteristics to be considered when providing usable and inclusive environments for all.

The guidance incorporates the principles of Inclusive Design, reflects minimum dimensional criteria required and intends to encompass the intent of the Equality and Human Rights Commission and relevant legislation.

The document should be read in conjunction with other Bangor University guidance, policies and procedures, which include:

- Equality Policy Statement
- Strategic Equality Plan

Acknowledgements

Appreciation is extended to the University of Liverpool - Facilities, Residential and Commercial Services Department for commissioning the production of this guidance and authorizing its adaption and use at Bangor University.

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BACKGROUND

A truly inclusive society demands an environment in which a diverse population can exist harmoniously and where everyone, regardless of age, disability, ethnicity, gender, gender identity, caring and parental responsibilities, sexuality, religious belief, or other circumstances, can participate equally and independently, with choice and dignity. The design and management of the whole range of buildings, spaces, and places are a fundamental part of this.

When considering inclusivity in Higher Education building design, consideration should be given to the various environmental and cultural barriers that can be encountered. Barriers can include inaccessible or inappropriate main campus buildings, circulation areas,accommodation, social spaces, access to support services and amenities, and teaching and learning environments. Inclusive building design aims to remove barriers so far as reasonable to enable the environment to be used by everyone without the need for individual customization and adjustments.

The Equality Act 2010 (the Act) imposes obligations on universities, which consolidates and replaces the previous equality legislation such as Disability Discrimination Act 1995 and 2005. The Act covers discrimination because of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation, all known in the Act as it's nine 'protected characteristics'.

The Human Rights Act, a UK law passed in 1998, compels public organisations to treat everyone equally with fairness, dignity and respect.

In addition, the Public Sector Equality Duty 2012, (PSED) requires the University when exercising its functions to have "due regard" to:

- eliminate unlawful discrimination, harassment and victimization;
- promote equality of opportunity for under-represented groups, and
- foster good relations between members of different groups.

The PSED effectively requires Public Bodies in Wales, including the University, to fully consider and adoptbest practice principles. This is an important principle when considering the culture, policies, procedures which underpin the management of thebuilt environment and the procurement of refurbishment and new build projects when developing the estate. In effect, the PSED places a statutory obligation on the University to champion inclusivity and adopt best practice design principals.

The PSED is underpinned by Specific Duties requiring University to:

- have specific and measurable equality objectives;
- demonstrate "due regard" in implementing policies, procedures and new practices, and
- regularly publish information on the diversity of the organisation.

The Act explains having "due regard" for advancing equality involves:

- To eliminate discrimination, harassment, victimisation, including a failure to make individual and anticipatory disability related reasonable adjustment.
- To advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it by;

- Removing or minimising disadvantages experienced by people due to their protected characteristics.
- Taking steps to meet the needs of people from protected groups where these are different from the needs of other people.
- Encouraging people from protected groups to participatein public life or in other activities where their participationis disproportionately low.
- To foster good relations between people from a protected group and those who are not from that group by tackling prejudice and promoting understanding.

The Act requires the University as an employer and Higher Education provider to make reasonable adjustments to policies, service practices and buildings where a physical feature or arrangement causes a substantial disadvantage to a disabled person.

The duty to make **reasonable adjustments** is both anticipatory and in response to individual students / staff / members of the public. Inclusive practices can help towards fulfilling these anticipatory duties and can go some way to meeting an individual's needs. It is important however to be aware that the duties under the Equality Act 2010 (EA) require adjustments to all University provision including for example assessment, management of services and timetabling design, and that approaches need to go beyond making reactive changes when individuals encounter barriers.

When considering new build construction, reasonable adjustments will be considered in the context of tailoring the brief and design so that retrospective adjustments are unlikely; however, alterations may be required retrospectively to meet specific needs of future staff/students with specific impairments. There is an expectation that the design of a new building provides a fully inclusive and accessible environment by adopting best practice standards with full consideration for the potential needs of disabled students, staff and visitors.

Equally, it is important to recognise that compliance with the Equality Act 2010 cannot be achieved by following a simple checklist, since what constitutes a reasonable adjustment is determined by all the circumstances of the case. A failure to make a reasonable adjustment would be unlawful and only a court of law can decide on the concept of reasonableness.

Inclusive Design Principle derives from the social model of disability and focuses on the design of the environment as opposed to an individual's impairment.

The principles of inclusive design also apply to how the estate supportschildren and older people, parents and carers, religious observance, and gender non-binary and transgendered individuals, and general wellbeing.

Providing buildings and environments that are convenient and enjoyable to use for everyone – involves considering for example roads, car parking, footpaths, building entrances, signage, lighting, visual contrast, material selection an auxiliary support aid.

An inclusive environment cannot always meet every need, however, designs that consider peoples diversity will remove unnecessary barriers and exclusion, often achieving superior solutions which enhance the urban environment.

Key Guidance and Statutory Documents

The Building Regulations 2010: Approved Document M and subsequent amendments, 'Access to and use of buildings' aims to make it reasonably safe and convenient for people to gain access to and use buildings. It includes all new developments, alterations to existing buildings and certain changes of use.

The Building Regulations sets out the minimum standards to be achieved

The key role of inclusive design thinking is to ensure professionals actively look for opportunities to improve accessibility and consider the needs of disabled people right from the briefing stage. Inclusive Design principles are deemed vital towards achieving this objective, as follows:

- **Placing people at the heart of the design process** – through extensive stakeholder consultation right at the start of the thinking process.
- **Acknowledging diversity and difference** – good design can only be achieved if the environment created meets as many people's needs as possible.
- **Offering choice** – where a single design solution cannot accommodate all users.
- **Providing flexibility in use** – places need to be designed so theycan adapt to changing uses and demands.

and unlike most of the other approved Documents, ADM is a guidance document. It is recognised that there are likely to be better andmore inclusive design options to achieve the goals of the guidance.

It must be noted; such guidance will be familiar to most Design Teams and can be useful in providing minimum specifications for common facilities and features. It is broadly recognised that complying with ADMwill not ensure that a building is designed to be inclusive or ensure the University complies with its statutory obligations under the Equality Act 2010 and the Public Sector Equality Duty 2012.

BS8300:2018: Design of an accessible and inclusive built environment is an advisory Code of Practice, published in two parts, External Environment and Buildings, which explains how buildings, their approaches and immediate surroundings can be designed, built and managed to achieve an inclusive environment.

The aim of the document is to give built environment professionals the information they need to consider at the outset of a project to achieve an accessible and inclusive environment and to anticipate

and overcome any restrictions and barriers that prevent any user making a full and independent use of the built environment.

As a code of practice, the British Standard 8300:2018 takes the form of guidance and recommendations. Fire safety arrangements, including means of escape, should be in accordance with BS 9999.

Historic Buildings Context

Whilst inclusive design is a primary objective of any development, it is appreciated there are other policies and drivers associated with theconservation of specific buildings and their setting, and the preservation and enhancement of wider locations through Conservation Area designations, etc.

Under the terms of the Planning (Listed Buildings and Conservation Areas) Act (1990), consent (through CADW and / or Cyngor Gwynedd) is required for any works of alteration or extension that will affect the character of a listed building, including any associated structures and fittings within its curtilage. Listed building legislation applies to both internal and external changes.

The University recognises the importance of dignified access to and within historic buildings, to which the Equality Act 2010 applies, and promotes a pragmatic approach to plan suitable access for disabled people or others with protected characteristics, without compromising the building's special characteristics.

In arriving at an appropriate balance between historic building conservation and accessibility, it would be appropriate to consider the advice of the Cyngor Gwynedd Conservation and Access Officers, and the views of the University's Inclusive Access Working Group (IAWG), to make the building as accessible as possible.

The IAWG is responsible for and provides advice on strategic issues relating to the development of an inclusive campus to fulfil the University's responsibilities / obligation under the Equality Act 2010, whilst supporting relevant University strategies.

The Equality Act does not override other legislation such as listed building or planning legislation, and the need to obtain appropriate approvals still applies in the case of changes made to improve access.

Scope of the document

This document sets out series of principles and introduces technical guidance that need to be considered and implemented in all developments with the key objective of proactively and progressively increasing the accessibility within the University Campus. The emphasis throughout this document is to encourage designers to look creatively at schemes from the offset to ensure proposals are inclusive and do not create physical barriers to equality and inclusion.

Accessibility guidance contained in this document recognises the concept of equivalent facilitation to encourage new and innovative design ideas and solutions, and therefore, departures from a particular technical and scoping requirement of this guidance through other designs and technologies are encouraged when the alternatives will provide substantially equivalent or greater access to the usability of the element and/or facility. Departure from this guidance in some instances is deemed acceptable subject to changes endorsed by an Equality Impact Assessment and if supported by IAWG. Departure from the guidance will need specific approval from the Director of Estates & Campus Services.

The dimensions and manoeuvring characteristics of wheelchairs, scooters and other mobility assistive devices are as varied as their user. Traditionally, accessibility standards have taken a conservative approach to wheelchair manoeuvrability, reflecting the needs of a physically strong individual using a manual wheelchair. Such an approach excludes the many users without such a degree of strength or those using a larger mobility assistive device. This guidance more accurately reflects the vast array of assistive devices in use as well as the diverse range of user ability. This guidance incorporates more generous space requirements, particularly related to the dynamic movement of people using wheelchairs, scooters or other assistive devices.

The University, through IAWG, shall review and/ or update this guidance every 3-5 years, to reflect technological advancement and new design practices, as well as changes to the barrier-free design requirements of various design guidance documents such as BS8300:2018 or Approved Document M of the Building Regulations, as well as statute frameworks including the Equality Act 2010.

Where conflicts exist between scoping and/or dimensional requirements of this guidance and statutory legislation or relevant codes of practices, IAWG shall decide on the most accommodating requirements to apply.

Compliance with the guidance provided in this document cannot confer immunity from legal obligations under, Equality Act 2010, Building Regulations 2010 and subsequent amendments Regulatory Reform (Fire Safety) Order 2005.

SECTION A

CAR PARKING

Design Consideration

The need for providing accessible parking spaces for blue badge holders applies to all buildings within the campus. The level of provision and location of accessible parking bays will vary, but in general terms shall meet the demand by disabled staff and students considering travelling distances to the main entrances of individual buildings. Public accessible buildings, such as Pontio, are assessed under different criteria.

It is noted that when designing new parking areas, BS8300 recommendation for designated accessible parking spaces requires a minimum, 5% of total parking spaces with equal number (5%) enlarged spaces 3600mm wide x 6000mm long that could be adapted to be designated accessible parking space when required. These spaces should be in addition to spaces required for all known staff and students with blue badges and University Permits who require accessible parking spaces within the campus. It is important to remember that the provision of accessible parking needs to consider the needs of staff and students to regularly move around campus for teaching purposes.

In instances where demand for accessible parking space exceeds suggested numbers, consideration should be given to increasing numbers to reflect the need.

Accessible on-site car parking where provided within the campus need to be as close as feasible to accessible building entrances and sited where road gradients and cambers are reasonably level. The routes to and from designated parking locations and building entrances need to be designed to the requirements listed in this section.

Bays should be large enough to allow easy side and rear transfer on / off a wheelchair. The spaces need to be well lit and clearly marked, for easy identification.

The ground surface needs to be as level as possible to enable safe andeasy manoeuvring to and from the bay. Access to the adjacent pedestrian routes needs to be logical, step free and easily identified e.g. using colour contrasting materials.

The use of designated accessible parking spaces needs to be monitored regularly to limit misuse by non-disabled motorists and to confirm that the number of designated spaces remains appropriate for the number of disabled motorists using the building or location.

Requirements

A.1. Car Parking

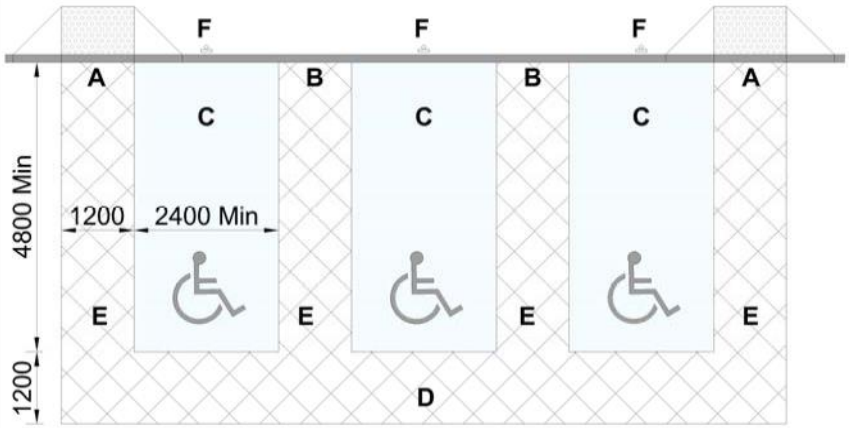
Accessible on-site car parking (see Figure 1)

1. Locate accessible bays with safe and logical step free access to pedestrian access routes.
2. Position bays on level ground with a maximum gradient of 1:60 along line of travel; and a cross fall of 1:50.
3. Locate bays as close to the accessible entrance as possible, and no more than 50 metres away.
4. The surface of the parking space is to be even and stable with surface variations not exceeding 3mm.
5. Vehicle and pedestrian routes to and from the accessible spaces should be clearly signed and well-lit. This is to include signage to the accessible bays from the main approaches / boundaries and signage to the accessible bays from accessible building entrances.

6. Bay dimensions should be 4800mm long x 2400mm wide, with an additional minimum 1200mm ‘safety transfer zone’ around the bay to maintain access to both the sides and the rear of the vehicle.
7. Locate bays side by side and incorporate shared ‘safety transfer zone’ of 1200mm between the two bays.
8. Designated parking bays shall be accessible from an accessible pedestrian route and segregated from vehicle routes.
9. Footpaths leading from the parking bays to accessible building entrances to be level (gradient not to exceed 1:21), at least 1800mm wide, free of obstructions, paved (or similar smooth and stable surface) and clearly identified using colour-contrasting materials.
10. Where parking bays are flush with the footpath (recommended), the tonally contrasting tactile paving should extend the full length of the parking bays. Where bays are not flush with the footpath, dropped kerbs should be provided and associated tonally contrasting tactile surfaces (buff or grey in colour) for convenient and safe access from the bay onto the pavement.
11. Spaces need to be well lit.
12. Entry systems (where installed) needs to be accessible and within easy reach of the driver when remaining in their vehicle, easy to operate and incorporate audio communication systems. See BS8300:2018 Part 1 section 7.11.4 for detailed recommendations.
13. Pay equipment (where installed) needs to be accessible and within easy reach for the user. See BS8300:2018 Part 1 section 7.12 for detailed recommendations.
14. Bays to be clearly marked with the Wheelchair Symbol on the ground and a blue badge sign on a pole at the head of the parking bay to reconfirm the status of the parking bay and prevent vehicles from overshooting and obstructing access routes to the bays, stating “Blue Badge holders only”.

Accessible on-street car parking (see Figure 2)

15. Parallel accessible parking bays should be 7000mm long (6600mm minimum long) x 3600mm wide (minimum 2700mm wide).
16. Angled designated parking bays to be 4800mm long x 3600mm wide with 1200mm wide safety transfer zone to the side.
17. Bays to be clearly marked on the ground and installed with a pole signed “Blue Badge holders only”.
18. Provide a dropped kerb and associated tonally contrasting tactile surfaces (buff or grey in colour) for convenient and safe access from the bay onto the pavement.

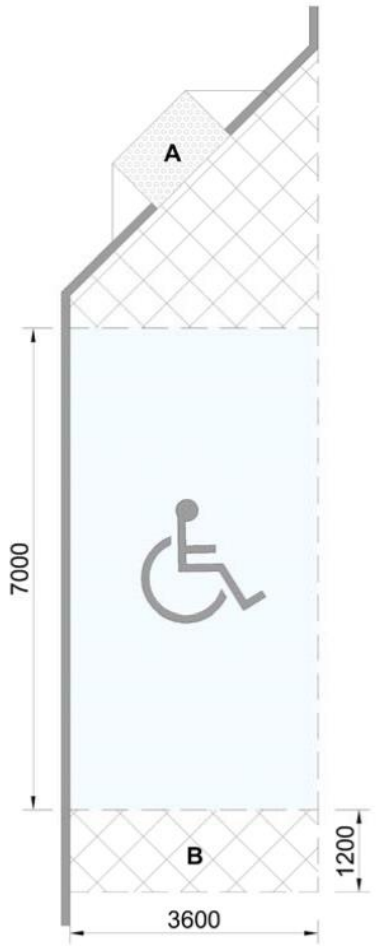


Key

A. Level access required (dropped kerb as a minimum)
B. Desirable level access/dropped kerb
C. Standard 2400 (min) x 4800 (min) designated accessible parking space
D. 1200mm wide safety zone for boot access and cars with rear hoists outside the traffic zone
E. 1200mm wide marked access zone between designated parking spaces
F. Sign "Blue badge holders only" located with lower edge at 1000mm high

Figure 1

Note: All dimensions in millimetres



Key

A. Dropped kerb (with blister tactile paving)
B. 1200mm safety zone

Figure 2

Note: All dimensions in millimetres

SECTION B

EXTERNAL CIRCULATION

Design Consideration

Creating an accessible and logical external environment for the effective movement of people across such a large estate is potentially the most challenging task facing designers, due to constraints posed by the natural landscape and spatial limitations of the existing built environment.

For new and significant change developments, this involves strategic thinking during the earliest design stages to ensure pedestrian access, routes and building entrances are positioned to provide logical and convenient access with minimal changes in level.

Circulation routes need to be designed so that they are safe and easy to be used by everyone. The thoughtful use of pavement materials and effectively positioned lighting will benefit everyone, especially people who are blind or partially sighted.

All access routes to and around buildings need to be wide enough to enable wheelchair users, people with assistance dogs and others to pass each other in both directions.

Routes need to be as level as possible with minimal cross-fall. Surfaces with a significant cross fall can unbalance anyone with reduced mobility, for example, people using wheelchairs and white cane users.

Irregularities in the surface level created by poorly laid pavements can cause similar difficulties.

Using open drainage channels / gullies can create a hazard and should never be used. Instead covered gullies are required, preferably set off the main footpath and with the grating detailed so sticks and wheels do not become trapped.

Routes should be kept clear of any obstructions such as street furniture, as these can create hazards for anyone with mobility or sensory impairments. Where possible, street furniture should be set back off main circulation routes.

Street furniture such as bollards, bins, seating, cycle storage etc. need to be clearly identified with tonal contrast for visibility.

Windows and doors should not open into an access route. If unavoidable, hazard protection may be required.

Lighting needs to be carefully designed and located so it does not create areas of glare or shadow which can be problematic for anyone with limited vision. Lighting must also consider security and personal safety.

Good placement and coordination of street furniture and bollards will result in a tidy and easy to follow footpath strategy. Elements should be placed in straight lines, for instance, where lighting columns define the main zone of street furniture, other objects such as bollards, signs and bins can follow this line.

Seating can be essential for people in terms of providing somewhere to stop and rest but can also be a valuable tool in creating a place or space which is welcoming and inviting in which people will choose to spend time.

A choice of seating options should be provided suitable for a variety of users. Appropriate accessible space adjacent seating should be provided, for wheelchair users to be integrated within the general seating provision.

Shared Spaces aims to slow down traffic, reduce accidents and make an urban space more flexible and attractive for everyone. However, for blind and partially sighted people, shared space design often means the removal of detectable kerbs, tactile pavement markings and signal-controlled crossings, which are important for navigation, accessibility, inclusion and safety.

The Royal National Institute of Blind People (RNIB) representing partially sighted and blind people are concerned that shared space schemes don't make streets safer and more accessible for blind and partially sighted people. The Department for Transport (DfT) paper published on 18th October 2018 – *The Inclusive Transport Strategy: achieving equal access for disabled people*, recognises issues around shared spaces and advises public bodies to pause shared space schemes (if at the design stage) incorporating and considering a level surface. NOTE: The DfT's Local Transport Note1/11 is withdrawn to allow for further research / updates.

Assistance dog toilets/spending areas should be provided where necessary to allow people who use assistance dogs to toilet their dogs in a safe and clean manner. When the opportunity arises for the University to provide the facility, designated areas should be located and accessed from access routes, where possible within easy reach from buildings. Further guidance on location and design can be found in the Guide Dogs for the Blind Association publication - *Guidance on the provision of spending facilities for guide dogs and other assistance dogs*.

Highways authorities – for larger new build developments, it is likely that the approach and access strategy for pedestrians will require the integration of adjustments to adopted highways and the public transport system. For example, additional controlled pedestrian crossings may be required in high trafficked routes or bus stops may need to be improved / provided. The access and external circulation strategy should be considered as a cohesive strategy and the design development process allow for liaison with the appropriate agencies.

Requirements

B.1 External Circulation

Paths / Approaches (see Figure 3)

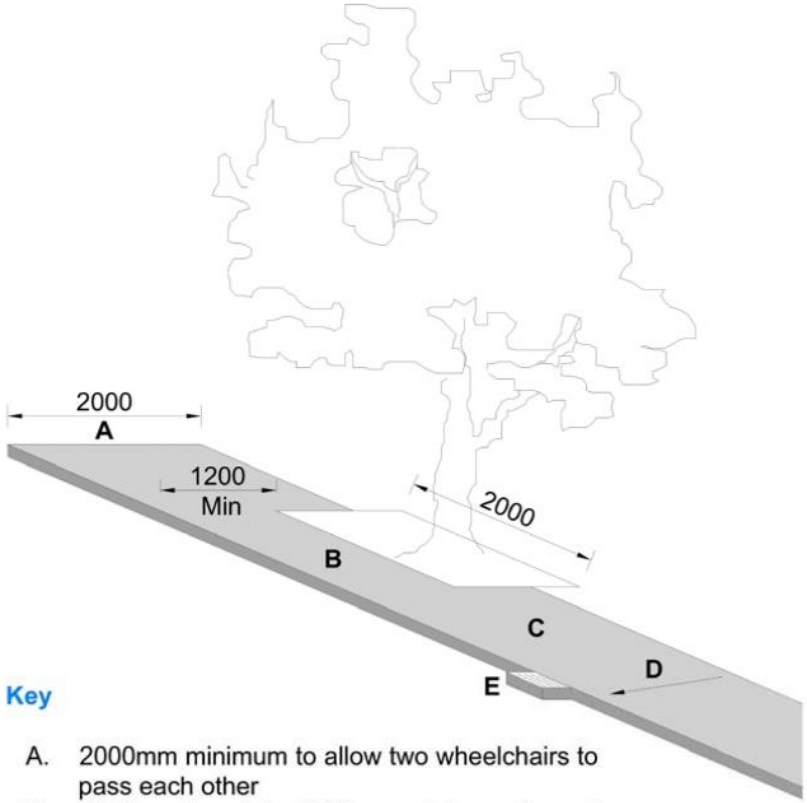
1. Footpaths should have minimum unobstructed width of 2000mm or 1200mm over a short distance to pass an obstruction, for example, a tree.
2. Where the surface width of an access route is less than 2000mm, passing places should be provided to allow two wheelchair users to pass each other. Passing places should be 2000mm wide x 1800mm long and provided at junctions (e.g. corners) along an access route (max. distance 25m).
3. Footpath surfaces should be firm, smooth and non-slip.
4. Footpath gradient should be as shallow as possible. Gradient of 1in 20 (5%) or steeper to be designed as a ramp (see section C for ramp and step guidance).
5. Footpath cross fall gradient should not exceed 1:50 (2%) except where there is a dropped kerb.
6. Footpath paving slabs / flags should have flush joints.
7. Avoid open drainage channels. Covers to drainage channels and inspection chambers to be flush with surrounding surfaces and set beyond the boundaries of the access route.
8. Drainage grating bars to run at right angles to line of travel.
9. Drainage slots to be not more than 13mm wide.
10. Kerb edges and upstands of 100mm high should have colour / tonal contrast.
11. Paving undulations not to exceed 5mm under a 3000mm straight edge.
12. Paving designs should not cause confusion to the visually impaired. Bold changes in colour which may appear to represent steps to the visually impaired should be avoided, as should continually changing patterns in both mass and

tonal shade.

13. Pedestrian crossing points across vehicular access routes require dropped kerbs with blister tactile paving. Tactile paving should be buff or grey in colour unless the crossing point is controlled, in which case the tactile paving should be red in colour.
14. All paths and routes leading towards building entrances should be well lit and carefully designed. See BS8300:2018 Part 1.
15. Where pathways interact with vehicular traffic design priority should, where possible, be given to pedestrians.

Obstructions (see Figures 4 and 5)

16. Routes to be kept clear of obstacles such as trees, seats, bollards and columns. Where traffic bollards are placed to prevent unauthorized vehicle access, these must have colour and tonal contrast and in line with RNIB expectations (Ref 22-29).
17. Trees should be located out of the line of pedestrian circulation routes. If they are planted within pedestrian circulation routes, tree grilles should be avoided. Smooth or paved permeable surfaces should be used wherever practicable.
18. Guardrails or barriers should be 1200mm high and should visually contrast with the surrounding surfaces so that they are readily identifiable by all pedestrians. When guardrails do not provide balustrading, a mid-rail, 450mm above finish floor level should be provided, to prevent a guide dog from walking underneath the guard rail, leading a visually impaired person onto a hazard.
19. A minimum headroom of 2500mm should be provided above finished floor level to underside of any projection that extends over a circulation route, for example from walls, buildings, canopies, signs, and tree branches.
20. Cycle stands should be positioned out of the line of pedestrian circulation routes, such that when in use, they do not reduce the access route width. Cycle stands should have tonal contrast.
21. Objects protruding into an access route may or may not require hazard protection - see Figures 4 and 5 for example details.

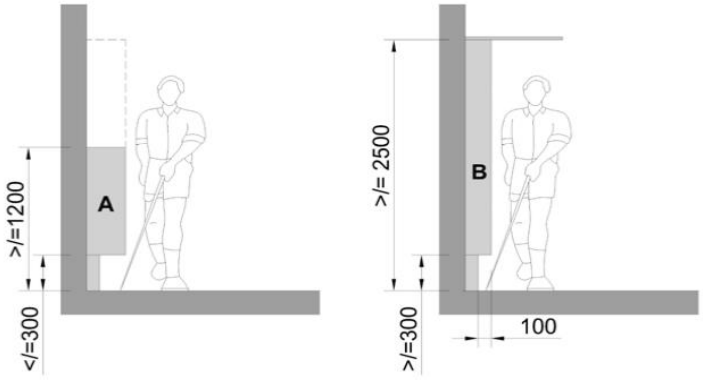


Key

A. 2000mm minimum to allow two wheelchairs to pass each other
B. Width reduced to 1200mm minimum for not more than 2000mm in length around existing obstructions
C. Gradient should either be level along its length or should be gently sloping or incorporate ramp or ramps in accordance with the requirements
D. Crossfall gradient not more than 1:50
E. Drainage gratings offset from access route where possible

Figure 3

Note: All dimensions in millimetres



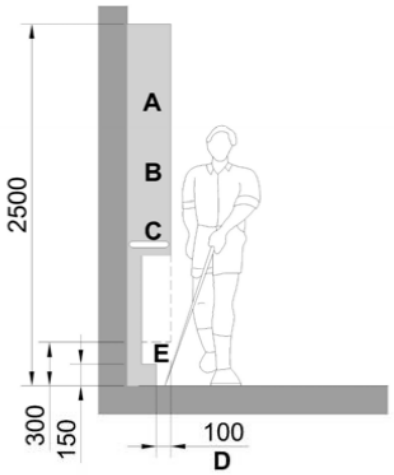
Key

A. Object protruding into access route - No hazard protection required where the lower front edge of a projecting object is less than 300mm, and the upper front edge of the object is at least 1200mm above the ground

B. Object protruding into access route - No hazard protection required where an object projects into an access route between 300mm and 2500mm above the ground by no more than 100mm, or by not more than 100mm in front of its base where the base projects not more than 100mm into the access route

Figure 4

Note: All dimensions in millimetres



Key

A. Hazards such as:
- Open windows
- Building projections
- Telephone booths

B. Cane detection required where an object projects into an access route between 300mm and 2500mm above the ground by more than 100mm, or by more than 100mm in front of its base

C. Guarding each side of the obstruction in addition to cane detection

D. Note more than 100mm between the front face of a projecting object and the tapping rail

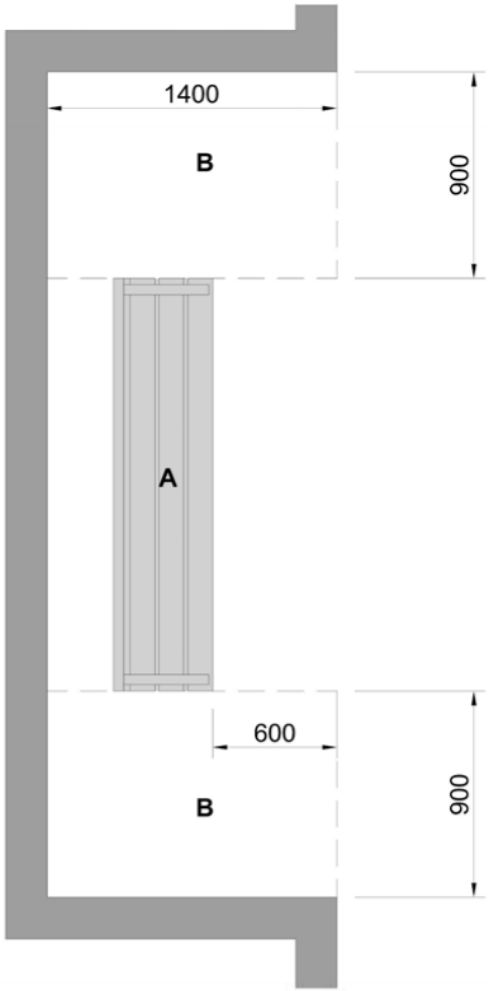
E. Tapping rail with underside no higher than 150mm above the floor to provide cane detection

Figure 5

Note: All dimensions in millimetres

Street Furniture (see Figure 6)

22. Seating should be provided at regular intervals along access routes.
23. Seats should be placed 600mm (to the front of the seat) back from the line of movement so they do not obstruct adjacent access routes with 900mm space to the side (1400mm deep) to enable a wheelchair user to sit alongside.
24. Seats should be at least 450mm high and 500mm wide. Perching seats with a height of 500mm to 750mm are easier for some people to use and may be provided as an alternative in some locations. A heel space at least 100mm deep makes it easier for people to stand up off the seat or perch.
25. Seats with backrests and armrests (200mm above seat level), are useful to lean against, as well as assisting in getting on to and up from the seat.
26. Street furniture such as sign posts and lighting columns need to be designed to visually contrast with background and incorporate tonally contrasting bands 150mm wide, positioned 750mm and 1500mm above ground level.
27. Bollards should visually contrast with background and be 1000mm high with 150mm contrasting band at the top. Bollards should be at least 1200mm apart. Consideration should be given to providing illuminated bollards where appropriate.
28. Bollards should never be linked with ropes or chains as this can present a hazard to people with visual difficulties and cyclists.
29. Waste bins should be located out of the line of pedestrian circulation routes (off set) and have a minimum height of 1000mm from ground level, bin opening set 1000mm from ground level. The external face of bins should extend flush to ground. Bins should be provided with tonal contrast.



Key

A. Seating positioned 600mm back from the line of movement
B. Space for wheelchair, scooter or double buggy

Figure 6

Note: All dimensions in millimetres

SECTION C

APPROACH TO BUILDINGS

Design Consideration

Changes in level frequently pose challenges and in adapting an existing environment it is appropriate to consider the impact on the general vicinities, rather than a piecemeal approach. For instance, it may be possible to adjust ground levels more broadly to eliminate the need for a ramp or steps altogether. A more inclusive approach to the movement of people which eliminates the need for ramps and steps is to be considered. It is again noted that design priority should be for pedestrians and not vehicular access, and access should always be to the Main Entrance and not to a secondary access point (See Section D).

Footpaths and routes should be wide enough to enable people to easily pass each other in both directions. They also need to be level, smooth, firm, stable, free of obstacles, clearly defined and suitably illuminated to the building entrance, with dropped kerbs located where necessary, especially across service roads or car park entrances (See Section B for recommendations).

Where a change in level along the route is unavoidable, the path gradient should be kept as shallow as possible, incorporating level landing areas at regular intervals. Seating is beneficial, especially where it is a long distance to the main entrance.

Routes with gradients of 1:20 or steeper need to be designed as ramps. Ramps can take up considerable space and may not always be the best solution. Some ambulant disabled people find ramps difficult to use and consideration needs to be given to provide an alternative accessible route to building main entrances.

External Ramps - The key features in ramp design are the length of the flight between landings. Ramps steeper than 1:20 can be difficult to useby people in a wheelchair for several reasons. Excessive cross fall gradients also increase the risks of the wheelchair unbalancing when manoeuvring, as do curved / spiralled ramps.

Ramps in busy areas need to be wide enough to enable people in wheelchairs to pass each other in opposite directions.

Level landings are needed at the top, bottom and at intermediate points of the ramped area to provide resting places and to enable people to manoeuvre. Where there is a change in direction, intermediate level landings need to be wide enough to serve as a passing place. The level landings enable anyone using a wheelchair to safely manoeuvre through180 degrees without the risk of straying on to the flight and losing control of the chair.

Where ramps terminate at right angles to the entrance, the level landing needs to be clear of the door swing allowing wheelchair users to manoeuvre and safely open the door without risk of moving back onto the ramp slope.

Where ramps and steps lead to a shared level landing outside the mainentrance the corduroy surfaces (tactile hazard warning strip) associated with the steps needs to be clear of the ramp landing.

A continuous handrail on both sides of the ramp including any intermediate landings is required to assist users.

Ramp surfaces and landing areas should be lit to minimum 100 Lux.

External Steps - Some people find steps safer and easier to use than ramps and where possible steps should be provided in addition to ramps.

Steps, which 'feather' into ramps should be avoided, as changes of level are not easily detected. Level landings with contrasting corduroy tactile surfaces are needed at the top and bottom of each flight of external steps. Where the steps lead up to the entrance the level landing needs to be extended and clear of the door by a minimum 1200mm. This will remove the risk of someone stepping back onto the stair flight.

Steps & Handrails need to comply with Part M and be carefully designed, combining a modest riser and a deep tread will ensure users are less likely to overstep and reduces strain on the knee and hip joints when descending. Treads however should not be too deep; it is important that users of steps are able to negotiate them within a typical stride.

Overhanging treads and stairs with open risers are trip hazards and should be avoided.

Single steps should be avoided as they present a significant trip hazard. Thus, where there is a change in level of two steps or more, it should be treated as a stair and designed to meet the requirements for stairs.

The height of individual flights of steps needs to be shallow enough so that travel distances to intermediate landings is minimised. This is particularly important for users needing to pause and rest at frequent intervals.

A continuous handrail is required on both sides of the stair flights and across landings areas.

Steps need contrasting nosings to identify the individual steps and the full extent of the stair flight. This is particularly important for visually impaired people.

Step surfaces and landing areas should be lit to minimum 100 Lux.

Handrails - Wheelchair users do not usually need to use a handrail on a ramp but may need to steady themselves in poor weather conditions or on a long/steep ramp.

Handrails are therefore essential to both sides of ramps and steps.

Structural guarding may need to be considered where there are unprotected drops to prevent falls.

Balustrading is required when there is a fall from height risk.

Handrails should have tonal colour contrast with surrounding surfaces to assist visually impaired people and assist with the identification of the change in level.

Handrails need to be easy to grip and provide arm support. Adequate spacing from the adjacent wall and positioning of the rail fixing are essential to enable users to have continuous use of the handrail and avoid impact with the support brackets.

Circular and oval rails with a broad horizontal face are easy to grip. The latter provide very good arm support. Square profiles are not recommended.

Handrails should extend beyond the first and last steps; and top and bottom of a ramp flight, providing they do not project into access routes.

Materials need to be carefully chosen so they are warm to touch in most weather conditions and easily seen against the prevailing background. The chosen finish should also be robust for longevity in use.

Requirements

C.1 External Ramps (see Figures 7 and 8)

1. Ramps to have 1800mm minimum width clear of edging with 1:20 maximum gradient.
2. A ramp gradient steeper than 1:20 may be acceptable for existing premises where there are site constraints.
3. Ramp flights between landings should not exceed 10m or a rise of more than 500 mm.
4. Ramp surface materials to be smooth, firm, stable, easy to maintain, slip resistant and should provide tonal contrast with the landings.
5. Ramp inclines should be formed in straight lines where possible.
6. Level changes exceeding 2000mm must provide an alternative means of access for wheelchair users, such as a lifting appliance.
7. Ramp flights and landing areas cross-fall gradient should not exceed 1:50. (1:60 preferred)
8. Ramps should have clear landings at the top and bottom of each flight and at intervals of no more than 10m.
9. Landings should be at least the width of the ramp; 1200mm clear space of any door swing or other obstruction. (1800mm preferred).
10. Intermediate landings with a change in direction need a surface width of 1800 mm.
11. Ramps at right angles to the entrance require a level landing with a minimum clear surface width of 1800mm.
12. 100mm high upstands required to both sides of the ramp.
13. Handrails should be provided to both sides of the ramp and should be continuous to the full length of the flight and around intermediate landings - see Figure 8 and C.3.
14. Good lighting is required, minimum 100 Lux, avoid glare and cross-shadows.

C.2 External Steps (see Figures 9 and 10)

1. Steps to have 1200mm minimum unobstructed surface width and minimum 1000mm between handrails. In high traffic areas steps need to be much wider based on people movement assessment.
2. Tapered risers should not be used as people who are blind or partially sighted require an even height riser when ascending or descending.
3. A rise of less than 300mm should be ramped with permissible gradient.
4. Step risers to be uniform and, unless otherwise agreed with Building Control, between 150mm - 170mm maximum, solid and opaque (no open risers in any circumstances).
5. Step treads (the going) to be uniform and between 280mm – 425mm.
6. Steps should not overlap more than 25mm with one below.
7. Steps nosing to contrast in colour and luminance, depth 50 - 65 mm on tread; 30 - 55 mm on risers.
8. Corduroy tactile warning surface on landings at the top and bottom of the flight, 800mm deep and 400mm away from the first risers with colour and tonal contrast to landing finishes.
9. Continuous handrails are required on both sides of flight and around intermediate landings.
10. Clear landing space 1200mm between fully opened door at the topand bottom of each flight and the first risers.
11. Landing areas need a slight cross fall for drainage - minimum1:50 is required, 1:60 is preferred.
12. Good lighting is required, minimum 100 Lux, avoid glare andcross-shadows.
13. Open areas under stairs less than 2100mm are to be guarded or closed off.
14. No more than 12 risers should be provided to a flight of stairs without a landing.

15. Single steps should be designed out and where possible short flights of steps should also be designed out.

C.3 Handrails (see Figures 7, 8, 9 and 10)

1. Handrails should be provided and continuous to both sides of ramps, steps and intermediate landings.
2. Handrails should have smooth surface, free of sharp edges and comfortable to grip.
3. Use materials that is not subject to extreme temperature.
4. Finished to provide colour and tonal contrast with the surroundings.
5. Specified with robust materials for longevity of surface finish and performance.
6. Fix at a height between 900mm - 1000mm above pitch line to top surface of handrail.
7. On level landings the height fixed at 1100mm high.
8. Where practicable and appropriate, fix a secondary lower height rail at 600mm – 750mm – this is suitable for anyone of reduced stature.
9. An additional low tapping rail at 100mm is useful for cane users.
10. Extend handrail 300mm horizontally beyond the start and finish of the ramp or last nosing of a stair.
11. Handrails to terminate to ground level, or wall with a positive notched or rounded end.
12. Support brackets are to be fixed to the underside of the rail.
13. Handrails are to be fixed between 60mm - 75mm proud of adjacent wall or surface.
14. Circular profile diameter between 32mm – 50mm or oval profile 50mm wide and 39mm deep.
15. Steps wider than 2000mm require an additional intermediate handrail(s).
16. Balustrading is required to prevent a 100mm sphere passing (where there is a falls risk).
17. When guardrails do not provide balustrading, a mid-rail, 450mm above finish floor level may be required, to prevent a guide dog from walking underneath the guard rail.

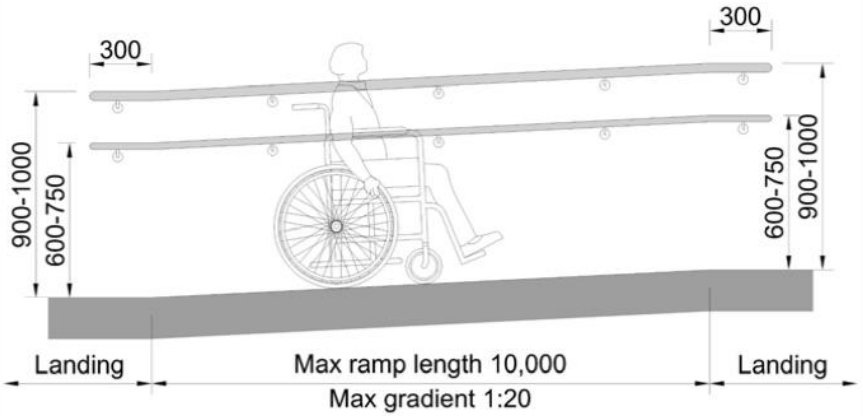
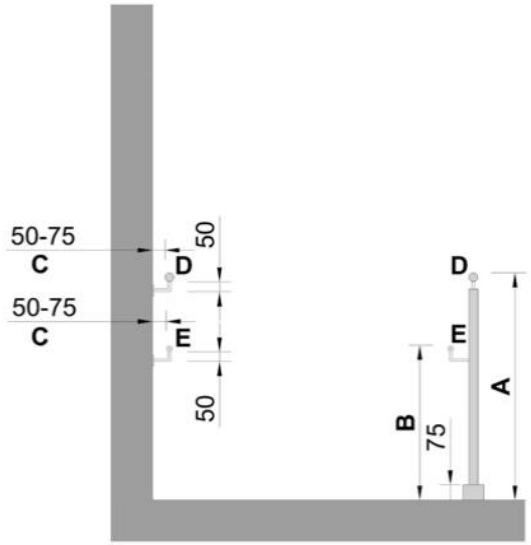


Figure 7

Note: All dimensions in millimetres



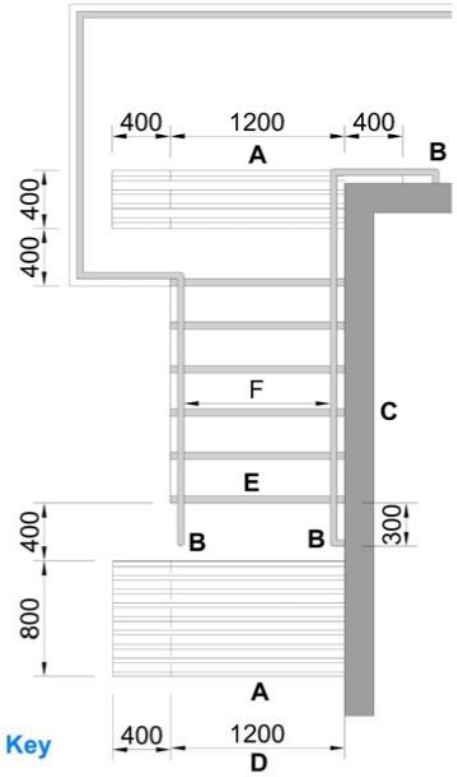
Key

A. 900 - 1000mm above ramp and 900 - 1100mm above landings
B. 600 - 750mm above ramp and landings
C. Handrail clearance to wall may be 50mm where the wall surface is smooth and 75mm where it is rough
D. Upper rail 40 - 50mm Ø
E. Lower rail 25 - 32mm Ø

Note: All dimensions in millimetres

Figure 8

Note: All dimensions in millimetres

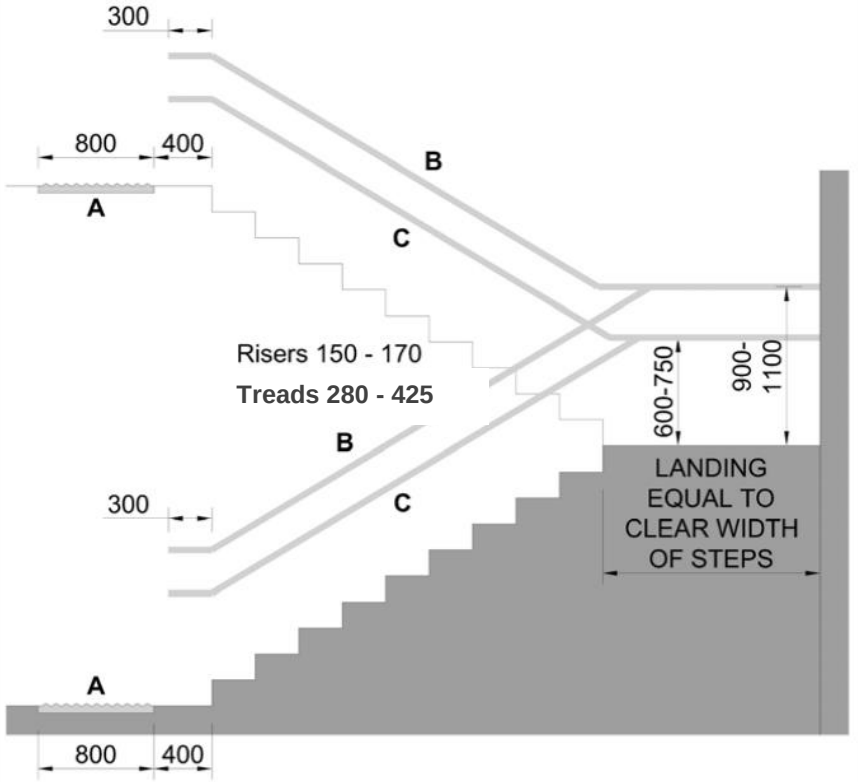


Key

A. Corduroy hazard warning surfaces to top of stairs to extend at least 400mm at each side of stairs and to stop 400mm away from nosing. Corduroy hazard 800mm deep when approached straight on, 400mm when a conscious turn is required on approach to the stair
B. Handrail to terminate with a closed end at top and bottom, terminated to ground or curved back on itself to reduce the risk of clothing being caught
C. Side wall to staircase
D. Minimum surface width of stair to be 1200mm
E. Contrasting and slip resistant nosings to edge of all steps
F. Minimum 1000mm between handrails

Figure 9

Note: All dimensions in millimetres



Key

A. Corduroy hazard warning
B. Handrail fixed between 900 - 1000mm from top of handrail to pitch line
C. Secondary handrail fixed between 600 - 750mm from top of handrail to pitch line

Note: All dimensions in millimetres

SECTION D

MAIN ENTRANCES

Design Consideration

A well-designed principle entrance will enable everyone to enter the building through the same entrance. Wherever possible, the building entrances should be inclusively designed and detailed, so that both able bodied and disabled users access the building via the same entrance. The use of separate entrances for disabled users is not in the spirit of inclusivity and should be avoided.

A well-designed main entrance needs to be easy to identify, signed and contrast visually with the building façade.

The primary entrance doors need to be wide enough to enable mobility impaired and wheelchair users to easily and safely move through the entrance.

Where doors comprise a glazed or other panel that is of a similar material to the adjacent wall, they should be highlighted with a contrasting colour frame, decorative feature or other means so that the presence of the door is clearly apparent within the building façade.

The edges of frameless glass doors should be made apparent so that they are easily identified when open and closed. It is recommended that the lower 400mm of such doors or screens should be of a solid material to avoid possible damage from wheelchair footplates.

Power operated or automatic entrance doors are strongly recommended, as in general terms, they are the only way of achieving a fully accessible and barrier free entrance in all weather conditions.

It must be noted that the force resistance of manual doors is greatly impacted upon by wind conditions and at times it is not possible to maintain a consistent compliant force resistance of an external door, hence manual doors cannot be assured to achieve the minimum requirements of the Building Regulations.

Additionally, doors that have a low force resistance are prone to blowing open in the wind, allowing leaves and litter to enter the building. This often results in building managers adjusting the force resistance post occupation presenting a barrier for entry to wheelchair users and mobility impaired users.

Sliding automatic doors are preferred over swing automatic doors, as they are more reliable. Lobby door arrangements are recommended to reduce draught into the building and to reduce heat loss.

Revolving doors are not considered accessible and present difficulties to wheelchair users, people with ambulant mobility impairments, people who are blind or partially sighted, people with sensory/neurological processing difficulties and people with assistance dogs.

Where revolving doors are unavoidable, an accessible side door shall be provided and left unlocked when the building is in use.

When entrance doors are fitted with an access control system such as intercom, swipe card access or push button controls, an entrance canopy will be required for weather protection. The use of a canopy can also assist with mitigating surface water from being traipsed into the building, mitigating hazards for slips, trips and falls.

Door entry controls or intercom systems should be clear of obstructions and positioned away from any projecting columns and

return walls and easily operated by people with reduced mobility.
Door ironmongery should be carefully selected to ensure contrast for visibility and to be easily operable by all users including disabled people with reduced mobility. (See section H for requirements).

Lobbies can create a barrier to entry and should only be installed where essential. Where lobbies are essential, they need to be large enough to enable a scooter or a wheelchair user with a companion to move clear of one door swing, before pushing open the next door or reversing to pull the door open (refer to the lobby example in Figure 11 showing a minimum manoeuvring space of 1600mm between doors / leading edge of doors).

Where turnstiles are introduced in buildings such as libraries or sports facilities as a means of access control, they should be accompanied by an accessible gate. The gate should be immediately adjacent to the turnstile, or to each row of turnstiles and should always be available for use. The gate should provide a clear width of 1000mm and be easy to operate. The gate should contrast visually with the surrounding surface so that it is easy to identify and marked with the International Symbol for Access (wheelchair symbol).

Requirements

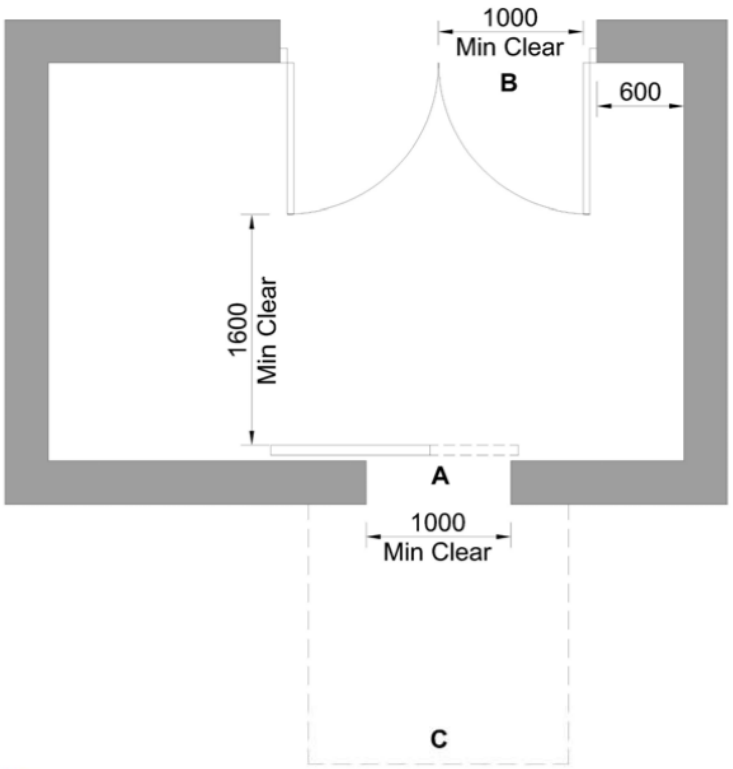
D.1 Main Entrances

1. The main entrance door to contrast with main elevation, be obvious upon approach from a distance, be well-lit and clearly signed.
2. Provide 1800mm space outside all entrance doors to enable wheelchair users to manoeuvre and access any intercom or door access entry system.
3. Primary doors need to be automated, sliding doors preferred, and have a 1000mm minimum clear opening width. Existing buildings may have a door width of 775mm, though 1000mm should be achieved wherever practicable.
4. Glazed entrance doors contained within a glazed curtain wall of similar material, will require measures to ensure the location of the entrance doors are visible with clear tonal contrast from the curtain walling.
5. Glazed entrance doors and adjacent curtain walling (if transoms are not provided) will require tonally contrasting manifestations, 150mm wide, located in two bands, 850mm to 1000mm and 1400mm to 1600mm above floor level (BS8300:2018 Part 2 section 11.5 requires the density of the manifestation to cover at least 10% of each band). (NOTE: the typical opaque / grey manifestation is not acceptable, manifestation needs to contrast against the background. It should also be considered that the tint on glazing will affect the tonal contrast of the manifestation when viewed from the other side of the glass).
6. Door ironmongery and opening force (for manual doors) to comply with the BS8300:2018 Part 2. (Maximum force resistance of 30 Newton's from 0deg to 30deg, and not more than 22.5 Newton's from 30deg to 60deg of the opening cycle).
7. It is preferred that doors opening into pedestrian access routes are recessed or the external landscaping scheme guides pedestrians away from the door swing. Alternatively, tonally contrasting guarding will be required, minimum 1000mm high. Guarding should be solid or provided with a mid-rail 450mm above floor level to prevent a guide dog from walking under.
8. Provide a canopy at least 1200mm deep over the main entrance for weather protection when entry is via a manual door or a door entry system, where practicable.
9. Provide flush thresholds.

10. Powered operated door control panels should be large enough to be operated by an arm only and located between 750mm and 1000mm above finished floor level, have visual contrast with background, located close to the door and clearly sign posted / identified. Controls when required to a swing door that swings towards the person on approach is to be positioned on a pole or on guarding are set back 1400mm from the leading edge of the door when fully open and contrast visually with the background against which they are seen.
11. Automated outward opening doors to be clearly signed re: operation and direction of swing.
12. Automated doors with door fail safe to fail open in an emergency. (This may need to be considered in terms of any lockdown modes and the areas of the building which are to be in occupation during lockdown periods).
13. Powered operated revolving doors are not recommended. If unavoidable, they should be of a size that is wheelchair accessible. As a last resort, an accessible side door 1000mm wide shall be provided and left unlocked when the building is in use.
14. Flush barrier matting is required (minimum 2000mm deep - floor surface, should not be compressible or have deep pile).

D.2 Main Entrance Lobbies (see Figure 11)

15. Lobbies may be required to limit air infiltration, maintain comfort and control draughts, increase security and to provide transitional lighting. Lobbies must be suitably designed to ensure inclusivity.
16. Automated sliding doors or double swing lobby doors with vision panels are preferred.
17. Secondary lobby doors to have a minimum clear opening width of 1000mm minimum.
18. Where double or single doors are used, ensure a 1600mm space between door swings is maintained.
19. The provision of a lobby may make it possible for an external door to have a self-closing device with lower power size rating than may otherwise be the case. A maximum Newton Force criterion of 30N from closed and 22.5N at 30-60^{o} open is noted for manual door opening.
20. Mat wells within entrance lobbies should be designed so that the mat is flush with the surrounding floor surface, should not be compressible or have deep pile, as such surfaces can be particularly problematic for people using crutches or wheelchairs.
21. The lighting in entrance lobbies should be carefully selected and designed to provide a transition zone between the external and internal environment.
22. Where entrance lobbies comprise glazed screens or doors, care should be taken to ensure that they do not create distracting reflections and have manifestation to accord with BS8300:2018 Part 2 section 11.5.

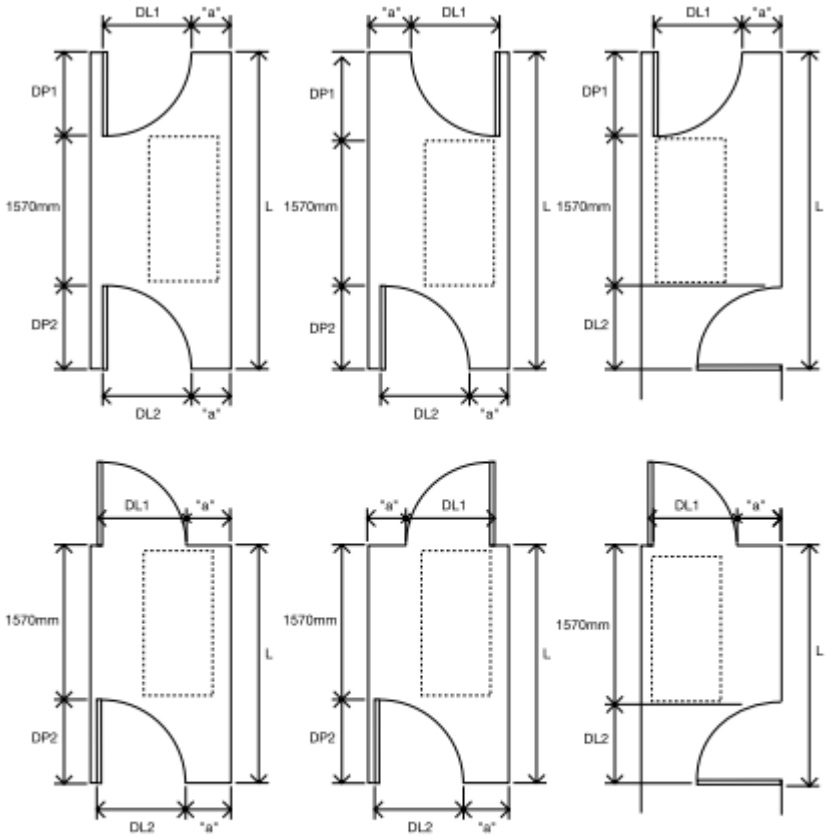


Key

A. Main entrance door to have 1000mm minimum clear opening (sliding door preferred)
B. Inner lobby door to provide 1000mm minimum clear opening width
C. 1800mm x 1800mm clear space in front of door

Figure 11

Note: All dimensions in millimetres



DL1 and DL2 = door leaf dimensions of the doors to the lobby
DP1 and DP2 = door projection into the lobby (normally door leaf size)
L = minimum length of lobby, or length up to door leaf for side entry lobby
"a" = at least 300mm wheelchair access space (can be increased to reduce L)
1570mm = length of occupied wheelchair with a companion pushing (or a large scooter)

NB: For every 100mm increase above 300mm in the dimension "a" (which gives a greater overlap of the wheelchair footprint over the door swing), there can be a corresponding reduction of 100mm in the dimension L, up to a maximum of 600mm reduction.

SECTION E

RECEPTION AREAS, COUNTERS & INFORMATION POINTS

Design Consideration

The reception area is the first point of contact for students and visitors to a building. Consequently, the building needs to be carefully designed to ensure the reception area is in sight of the main entrance and easy to recognise by anyone with a visual impairment or who is unfamiliar with the building. The reception point / desk needs to be designed so it is accessible on both staff and student / visitor sides.

Distracting backgrounds or surfaces are to be avoided, for example mirrors, glazed screens and active wall patterns, as these make it difficult for anyone needing to lip read or with impaired vision.

The principles of reception design are also applicable to other help desks or information points that may be present within a building, with each facility requiring consideration on its merits.

Counters / Desks- Counters and desks need to be suitable for both seated and standing users with high and low sections. Clear space in front of the desk allows easy manoeuvring for everyone especially people using a mobility aid and wheelchair users. The counter surface needs to have rounded edges and be large enough for people to write or sign documents.

People who are deaf and have hearing loss benefit from an induction loop system in the reception area. Hearing Loop or Portable Induction Loop systems (T-position) should be placed at all Public and Student Reception areas. If a fixed screen is also required (i.e. one that doesn't slide open to facilitate communication), a speech transfer system will be necessary in addition to the induction loop, due to the decibel drop that occurs through the screen, which makes it very difficult to anyone who has hearing loss but does not require the use of a hearing aid to hear. This is the case even when speech grills / speechholes are integrated into the screen.

Screens at the reception desks should only be used where essential forsecurity. Glazed screens need to have a matt finish to assist lip reading and the lighting needs to position to prevent glare, reflections and to ensure the face of the receptionist is illuminated to facilitate lip reading.

Where queuing systems are introduced, spacing between barriers needs to be wide enough to allow wheelchair users and people to manoeuvre towards the reception / service desk and turn to leave. The space also needs to be large enough to enable others to pass behind. Permanent barriers need to be robust enough to be used for support.

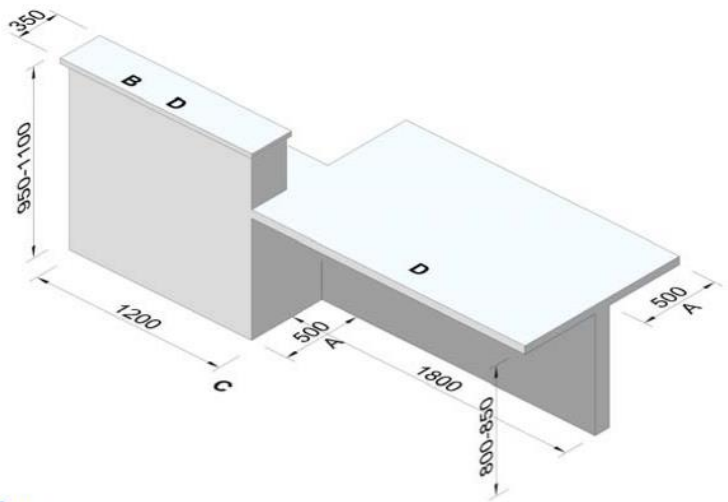
Seating - All reception areas need seating at a range of heights and styles. Seating with armrests enable people to rise out of the seat more easily.

Avoid fixed seating as this may causes problems for larger people / people using mobility aids and wheelchair users. Seating areas need to be clearly identifiable by blind and partially sighted people. Layouts need to ensure there is adequate space between rows of seats to enable people using crutches or with an assistance dog to move unimpeded.

Requirements

E.1 Reception Areas, Counters and Information Points (see Figures12 and 13)

1. Reception areas should be visually obvious upon entry into a building or clearly sign posted from entrance.
2. Low glare materials should be used for the reception counter itself.
3. Clear signage should be provided over the reception confirming what the provision is, such as ‘reception’ or ‘customer services’.
4. Dual height counters are to be provided for seated and standing users. The desk design needs to be accessible from both sides, set at a height of between 950mm - 1100mm for people standing and between 800mm – 860mm for people sitting down or using a wheelchair.
5. Both the upper and lower sections should provide a 350mm deep writing area (minimum). This should also be provided where security screens are fitted.
6. Reception counters need to be 1800mm wide at the lower part and 1200mm wide at the higher part.
7. The counter should have rounded edges with knee recess; 500mm on serving side; and 500mm on staff side.
8. Clear manoeuvring space in front of a counter 1800mm x 1800mm clear of circulation routes and queuing barriers (1500mm x 1500mm minimum).
9. An induction loop is required at each reception point with clear signage to assure presence of the equipment.
10. The induction loop should be fitted to a fixed fuse spur to prevent it from being unplugged by the receptionist.
11. The location and robustness of the microphone for the induction loop is important, as they are often discarded by receptionists. An ‘outreach’ microphone is recommended.
12. Induction loops should be designed, installed, commissioned and certified by a specialist.
13. Security screens if essential should have a matt finish. If the security screens are fixed, a speech transfer system will be required in addition to the induction loop.
14. Acoustics are important at reception areas. In large volume spaces, it is recommended a lowered ceiling is provided over the reception area complete with an acoustic finish.
15. A range of seating options should be provided with heights ranging between 450mm - 475mm and 500mm wide, fitted with firmly padded cushions. Seating should also be provided with back rests and arm rests and include a minimum 100mm deep heel space to allow a person to rise from the seat.
16. Seats should be of a colour that contrasts with the surrounding area.
17. The seating area should include clear spaces for wheelchair users to sit with a companion - see Figure 13 for layout example.
18. Lighting positioned as such to avoid glare, whether natural or artificial, should not be sited behind a receptionist. This causes silhouetting, which can make visual communication and lip reading very difficult. This is particularly important when a security screen is provided with a solid bulkhead over, as any lighting positioned on the customer side of the reception counter is unlikely to sufficient illuminate the receptionists face. Lighting should achieve 350 Lux.
19. Where queuing systems are provided, the space between the barrier and the reception counter needs to be a minimum 1800mm.
20. Queuing barriers should colour contrast against background surfaces and will need to be of a stable construction with rigid rails top and bottom including tapping rail and provision to prevent a guide dog from walking under.

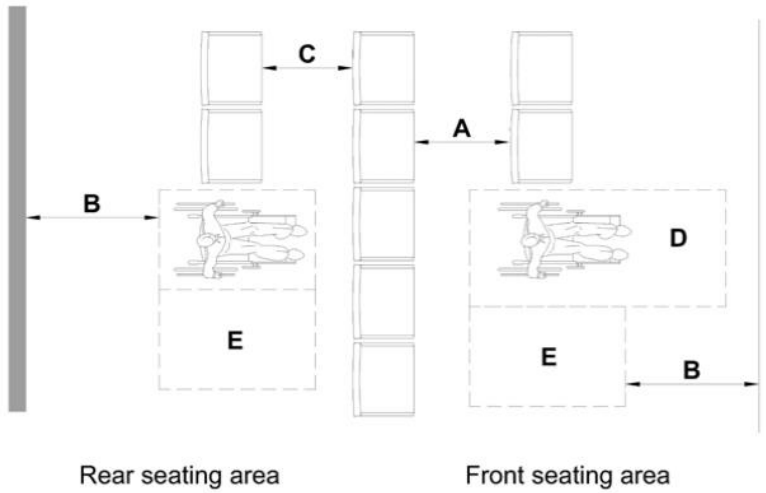


Key

A. 500mm knee space
B. 350mm wide high level writing surface
C. 1800mm x 1800mm clear approach space to both sides of desk
D. Counter tops to have chamfered or curved corners and edges

Figure 12

Note: All dimensions in millimetres



Key

A. Greater leg room space to allow alignment of wheelchair used with adjacent seat
B. Unobstructed access minimum 900mm, 1200mm preferred
C. Leg room to allow space for assistance dog when seat folded up
D. 2300mm x 1050mm wheelchair space where a wheelchair user needs to pass in front of other wheelchair users or seated people
E. 900mm wide x 1400mm deep space for wheelchair user

Figure 13

Note: All dimensions in millimetres

SECTION F

HORIZONTAL CIRCULATION

Design Consideration

Horizontal circulation in a building may comprise of access routes through open-plan areas, walkways, corridors and lobbies. The overall arrangement of access routes should be logical, understandable, useable, and as direct as possible in terms of providing access to key facilities.

Travel distances should be minimised, although this of course will depend on the nature and size of the building. A well-designed building layout, with clear circulation routes that are easy to follow will benefit everybody.

Changes of level within a storey should be avoided if at all possible. Where this is not possible in an existing building, the installation of a ramp, (with accompanying steps) passenger lift or platform lift (as a last resort) may need to be considered and designed to be accessible.

All circulation routes should be of adequate width, well maintained, free of obstacles and have adequate headroom. Doors should not open into circulation routes in a manner that would cause obstruction or reduce corridor width.

Open-plan areas in buildings such as offices and entrance foyers are beneficial because they reduce the need for internal doors or other divisions, which often impede access. However, circulation routes should still be clearly defined, for example with the use of contrasting colour floor surfaces, a change in texture of floor coverings or the careful placement of furniture.

Corridors and passageways – Circulation corridors need to be designed so that they are easy to move around and provide a sense of direction and location. The careful use of materials and colour to provide visual contrast is essential for blind and visually impaired people and also aids wayfinding for all building users.

Corridors and passageways need to be wide enough to enable anyone using a wheelchair or using crutches to access rooms and if necessary, turn through 360 degrees.

Isolated obstructions projecting into the corridor are to be avoided wherever possible, as they can be a hazard and reduce manoeuvring space for anyone with a sight impairment.

Where some items are essential, for example fire extinguishers or radiators, these should either be recessed or guarded, or placed at the widest point where they cause the least obstruction.

Corridor widths needs to be wide enough and ideally (depending on the width of the corridor) have splayed corridor junctions to enable people to pass one another in opposite directions. This also makes it much easier for anyone using a wheelchair to negotiate the change in direction. Where there are permanent projections into the corridor, over a short distance, the width can be reduced at that point.

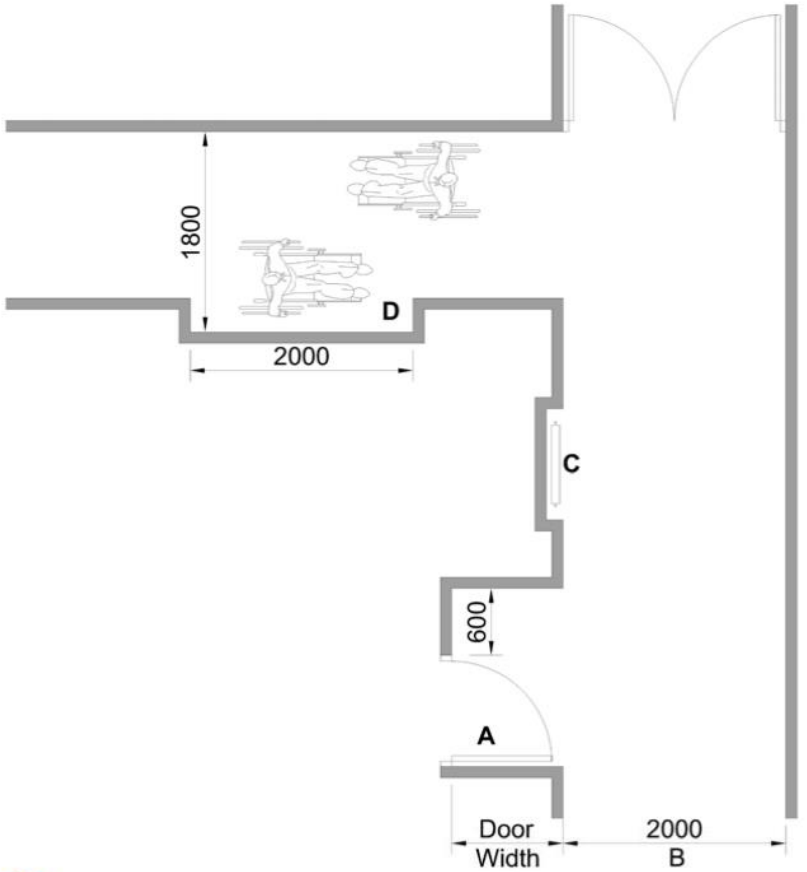
Secure lines – Access control is often required along corridor routes. Careful consideration of the location of secure lines will be necessary to ensure they do not hinder or remove access to accessible features, suchas access to accessible toilets.

Requirements

F.1 Horizontal Circulation – Corridors and Passageways (see Figure 14)

1. Corridors should ideally be 2000mm wide (1800mm minimum).
2. Where a corridor is predominantly less than 1800mm wide, passing places should be provided. Passing places should be at least 1800mm long (2000mm preferred) and 1800mm wide, and positioned within sight of another, or at intervals not exceeding 20m, whichever is the closer.
3. Where there is a reduction in the width of a corridor, due to a projecting column or duct for example, the resulting clear width should not be less than 1200mm and the projection should be clearly highlighted with tonal contrast.
4. Unobstructed turning space of minimum 1500mm (preferably 1800 mm) is required for manoeuvring when approaching and opening doors.
5. Floors to be level throughout unless unavoidable.
6. Where ramps and stepped access within circulations routes are required, all sloped and step routes are to be identified in colour contrasting flooring materials. Sloped routes of 1:20 or steeper should be designed as a ramp. (See section I).
7. Where lobbies are required, they should enable users to pass through in the opposite direction and provide sufficient space for manoeuvre. (see main entrance lobby requirements in section D).
8. The location of secure lines will require careful consideration to ensure access to accessible facilities is not hindered or obstructed.
9. Except for the likes of service risers, doors should not open out into circulation routes. Doors that are required to open out, such as accessible WC doors, should be recessed. (Whilst not recommended, if absolutely necessary, doors to accessible WC's may open out on to a circulation route if it is not a principal means of escape, provided the circulation route is at least 1800mm wide).
10. Cross corridor doors to circulation routes will require careful consideration. Refer to Doors section.
11. Circulation routes with exposed edges will require balustrading and a minimum 50mm upstand.
12. Balustrading should be a minimum 1100mm high. For particularly exposed edges with a multi-story fall to the outside edge, it is recommended consideration is given to providing 1300mm high balustrading to offer comfort to users who suffer from vertigo.
13. Consideration should be given to providing a solid balustrade or opaque glazing to assist people who suffer from vertigo and maintain the privacy of users from occupants looking up from below.
14. Balustrading should be provided with a handrail for support.
15. All balustrading should prevent a 100mm sphere from passing through at all locations.
16. When lockers are to be located within circulation routes, a minimum width of 2400mm should be provided. (Fire Safety Engineer to review proposals, where applicable).
17. Ensure contrast, in colour and luminance, between walls and ceilings, and between walls and floors.
18. Surface finishes should be of a matt and low glare finish. This should include floor finishes which are required to remain matt and low glare once the approved cleaning regime is implemented.
19. Bold patterns or complex patterns to floors should be avoided, to prevent a visually / mentally impaired person from becoming distressed when negotiating the building / believing there are steps, changes in level and hazards etc. along travel routes.

20. Where thresholds of differing adjoining floor finishes meet at flights and landings of stairs for example, they should be of a similar frictional resistance to mitigate trip hazards.
21. Acoustics is an important element for the visually impaired when negotiating circulation routes. A significant proportion of reverberation can be controlled by careful specification of ceiling and floor finishes.
22. Floor sockets or similar floor recessed items should not be provided in circulation areas / open plan areas as they are trip hazards.
23. All carpet finishes provide a shallow pile (i.e. they are a standard carpet tile type carpet).



Key

A. Outward opening doors such as doors to accessible toilets to be recessed. Door recess to equal the width of the door
B. Corridors to be 2000mm wide
C. Radiators and other wall mounted items to be recessed
D. Passing places to be provided to corridors less than 1800mm wide and to be minimum 2000mm long by total 1800mm wide, at intervals not exceeding 20 metres

Figure 14

Note: All dimensions in millimetres

SECTION G
DOORS

Design Consideration

The design, specification and maintenance of doors and associated ironmongery can substantially affect the accessibility of a building. As a starting point, consideration should be given to whether doors are necessary and, wherever possible, plan the building to minimise the need for doors. See Section D for Main Entrances.

Where doors are provided, they should be easy to identify, wide enough for people to pass through comfortably and easy to operate. In order to approach and open a door or to operate controls and ironmongery, sufficient space is required on both sides for a person to manoeuvre and for the door to swing or slide. Greater space is required on the pull-side of swing-doors to enable a person to pull the door open and to manoeuvre clear of the door swing.

Vision panels should be provided in all entrance doors, entrance lobby doors and corridor doors. This is to enable people to see whether another person is approaching the door on the other side and also to gauge the size and type of space they are about to enter. If privacy is required, opaque glazing should be provided to vision panels.

Doors should visually contrast with adjacent surfaces so that they are easy to identify. Where doors comprise a glazed or other panel that is of a similar material to the adjacent wall, they should be highlighted with a contrasting colour frame, decorative feature or other means so that the presence ofthe door is clearly apparent to visually impaired people.

External doors - All external doors are to be designed to give a 1000mm clear opening width. Where there are double doors, the primary leaf is to provide a minimum of 1000mm clear opening width. This clear width is essential as it accommodates the majority of building users, for example anyone using a wheelchair or scooter as well as people with assistance dogs. Doors opening outward may need to be guarded where they open onto an access route. (Refer to Main Entrances in section D).

Internal doors - Doors can create barriers to ease of movement around a building. It is preferable to keep the number of doors to a minimum on circulation routes unless essential.

All doors are to be consistently hung to the same side; and opening in the same direction in communal and circulation areas, unless there is a conflict with fire egress requirements. Suitable push and pull signs or push pads and pull handles should be provided. Consideration should be given to ‘fire alarm hold-back’ devices for corridor fire doors in high traffic areas.

As a general rule, doors should always open into rooms and away from circulation routes such as corridors and lobbies.

When double doors are being specified and detailed, it should be appreciated that a mobility impaired person or wheelchair user will not be able to open both doors at the same time, as such, at least one leaf will need to be accessible and complaint with the minimum clear opening width in isolation to the second leaf. This remains the case even if doorhold open devices are provided, as independent passageway will still be required in the event of an emergency and the doors have fail safe closed.

Where double doors or leaf & half-doors are used to access rooms, at least one door should comprise of a 926mm door leaf to provide a clear opening width of minimum 825mm and the primary door leaf should be clearly identified.

Double swing doors will require very careful consideration. They are pivot hinged which reduces the clear opening width of the door leaf, requiring wider doors to be fitted to maintain clear opening widths.

The use of hold open devices to cross corridor doors is recommended, in order to maximise barrier free access around the building. Hold open devices also mitigate wear and tear to doors prolonging their operational life and maintaining the integrity of any fire certification. For this reason, it is also recommended that doors servicing disabled emergency refuges utilise door hold open devices.

Mechanical smoke extraction if required to atriums or firefighting cores can significantly increase the force resistance of fire doors, which in turn can impede or prevent a mobility impaired person or wheelchair user from independently passing a fire door, to reach for example a disabled refuge. It may be necessary to consider the needs for power assisted doors in certain locations should a mechanical smoke extract system be part of the fire strategy.

Providing adequate clear space on the hinge side as well as the leading edge will enable the door to open to its full width.

Wherever practical, internal doors should incorporate vision panels. They are essential for any doors on general circulation and escape routes such as doors dividing corridors and doors leading into lobbies and stairways. There should be a clear view for wheelchair users and people of all heights when approaching a door. Where privacy is required, opaque glazing should be provided to vision panels.

Fully glazed doors are not recommended. When used, they require clear markings with permanent tonally contrasting manifestations, 150mm wide, located in two bands, 850mm to 1000mm and 1400mm to 1600mm above floor level, in accordance with BS8300:2018 Part 2 section 11.5.

When glazed doors are located within glazed walls, the location of the door within the wall itself will require clearly highlighting.

Consideration should be given to the position of doors which form part of a secure line in the building (refer to Section F for details) to ensure access to accessible facilities is not hindered or obstructed.

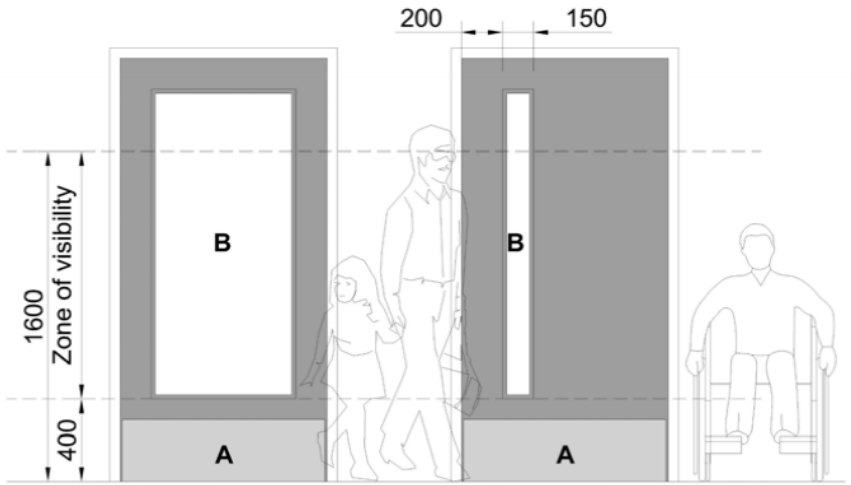
Requirements

G.1 Doors (see Figures 15 and 16)

1. External doors should provide an 850mm clear opening width (with exception of the main entrances requiring 1000mm clear opening width).
2. Internal circulation doors require a clear opening width of 850mm.Where there are cross corridor double doors or leaf & half doors, the primary leaf should also provide an 850mm effective clear width.
3. Internal doors to access rooms should have 825mm minimum clear opening width (except accessible sanitary facilities).
4. Doors to accessible toilets and baby changing facilities should have a minimum 900mm clear opening width. Changing Places required doors with 1000mm clear opening width.
5. Circulation and access doors should consistently open in the same direction throughout the building (unless fire egress requirements state otherwise).

6. Recessing cross corridor doors is encouraged so that the doors open onto corridor walls and not into circulation space.
7. Doors to accessible toilets should be recessed to prevent them from opening out into a circulation route or means of escape.
8. All doors are to be designed and located so that they can swing to at least 90 degrees.
9. A minimum 300mm side clearance space (600mm preferred) is required between leading edge of the door and adjacent wall on the pull side and the same clearance on the push side is encouraged.
10. When doors are fitted within deep internal walls, it is recommended leaf and a half door are fitted to ensure the minimum 300mm side clearance is maintained to the pull edge of the door.
11. Provide 100mm minimum clearance on the hinge side to ensure the door can open 90 degrees. Where large door furniture is used this clearance needs to be increased.
12. Provide push and pull signs or push plates and pull handles on doors as appropriate.
13. 300mm (400mm preferred) high kick plates should be fitted to the push side all doors (unless the doors are service doors).
14. It is recommended door closers are fitted only where absolutely necessary (for fire purposes or similar purpose).
15. CAM type door closers (or similar mechanically assisted technology closers) are recommended to all front of house doors which require closers.
16. The opening force on manually operated doors, when measured at the leading edge of the door, is to be not more than 30N from 0° (the door in the closed position) to 30° open, and not more than 22.5N from 30° to 60° of the opening cycle.
17. Cross corridor doors should be fitted with door hold open devices, and where appropriate, it is also recommended that doors servicing disabled emergency refuges utilise door hold open devices.
18. Internal stiles to all double circulation doors are to be flush, negating the need to control which door closes first for fire integrity.
19. All doors on circulation routes should have vision panels located between 400mm – 1600mm above finished floor level, minimum 150mm width, maximum 350mm vertical space between panels (this is regardless of whether they are held open, as the vision panel will still be used in the event of an emergency when the door is in the closed position).
20. Opaque glazing to be provided in vision panels where privacy is required.
21. Vision panels are recommended irrespective of whether the doors are contained within a glazed wall or a glazed side light is provided to the frame.
22. Glass doors should have a matt finish, clearly marked with manifestations in two zones between 850mm – 1000mm and 1400mm – 1600mm from the floor, manifestations to contrast with background through the glass, edge of door to be visible when door open.
23. All doors and frames should contrast visually with the wall surfaces, (minimum. 30 points difference in Light Reflectance Value).
24. The leading edge of any door that is not self-closing, or is likely to be held open, should contrast visually with the door surfaces and its surroundings (unless its recessed).
25. The edges of frameless glass doors should be made apparent so that they are easily identified when open and closed. This can be achieved using a visually contrasting strip at least 25mm wide on all sides of the door.

26. Where a fixed panel is mostly glazed or comprises a single pane of glass, it should incorporate permanent manifestation at two levels, 850mm to 1000mm and 1400mm to 1600mm above floor level so that its presence is clearly apparent to people at a range of eye levels. The manifestation should contrast visually with the background surfaces viewed through the panel in both directions and in all lighting conditions.
27. In sports and leisure facilities wider doors may be required to accommodate people using sports wheelchairs. (See Sports England Guidance document (or Welsh equivalent) for details).
28. When mechanical smoke extraction is required to atriums or firefighting cores fire doors leading to final exits or disabled refuges are to be fitted with power assisted openers if the mechanical smoke extract system compromised the force resistance of the fire doors impeding or preventing a mobility impaired person or wheelchair user from independently passing a fire door.
29. Bi-fold and manual sliding doors are not to be used.
30. Duel swing doors are not recommended to accessible WC's, accessible showers or Changing Places / Hygiene Rooms, as they are unable to be fitted with a rebate to the door frame compromising privacy. Where necessary due to site constraints, the positioning of the facilities within will require careful consideration.

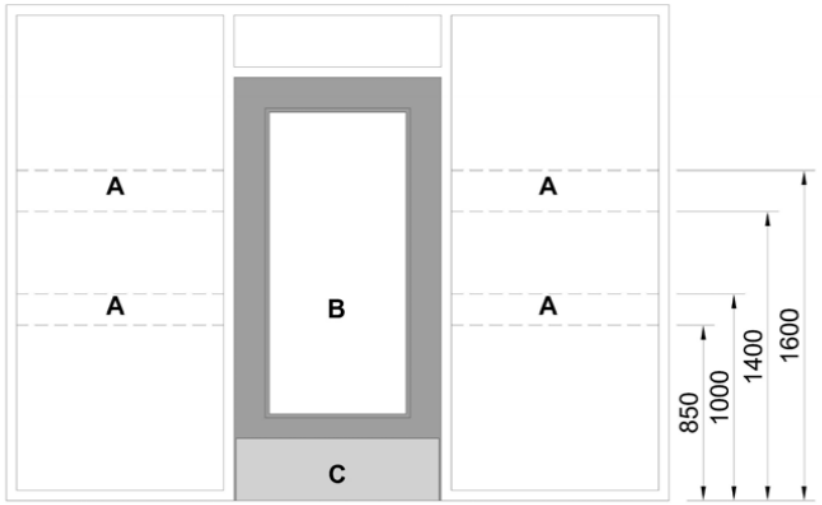


Key

A. Kickplate
B. Clear glazing

Figure 15

Note: All dimensions in millimetres



Key

A. Frosted glass manifestation as safety and visibility strip
B. Glazed door to be clearly highlighted in relation to adjacent screen. Door to have solid protection to lower level and a contrasting lipping to all edges
C. Kickplate

Figure 16

Note: All dimensions in millimetres

SECTION H

DOOR FITTINGS AND FURNITURE

Design Consideration

The correct type of ironmongery is critical to a door's ease of use. In specifying products, a balance is needed between easy release catches and latches and security from intrusion.

Everyone should be able to operate door-opening furniture, with a single hand or fist without needing to turn or grasp it. Fire door and security fittings also need to be easy to use by everyone.

Lever action designed furniture is easier to use. Knobs and thumb turns are difficult to use for a wide range of people especially anyone with arthritis or reduced grip or dexterity.

There needs to be adequate space between handles and the keyhole of any locks to enable easy use especially for anyone with reduced dexterity.

It is essential that handles are clearly identifiable, contrast visually with the door and within reach and easy to use. Where lever handles are provided on the outside face of external doors, they should be of a material that is not cold to touch, such as timber or plastic-coated steel.

The force required to open and close a manual door has restrictions on the maximum permitted force resistance at various positions of the doors opening cycle ranging between 22.5 -30 Newton's (See BS 8300 2018 for more advice).

Doors fitted with conventional mechanical self-closing devices can present a significant barrier to many people due to the force required to push or pull the door open. Unless essential, door closers should not be used. However, the efficiency and force resistance of the closer will depend on a range of factors, to include the resistances from edge seals, hinge friction, latch resistance, door width (wider doors provide greater leverage reducing force resistance), the specification and adjustment within the door closer itself, the use of 'CAM action technology' door closers, differential air pressure between compartments and the use of door hold open devices which help preserve doors and door ironmongery in a good working order.

Rising butt hinges can be useful when doors do not have mechanical self-closing devices, benefit from returning to the closed position after use so as not to cause an obstruction.

Electro - magnetic hold open devices, linked to the fire alarm, are recommended for doors forming part of building's fire protection and / or located within circulation areas.

Automatic or power-operated door systems make buildings easy to access and useable for everybody. They are particularly useful where a high force would otherwise be required to open the door, such as for external doors and entrance lobby doors that are susceptible to external wind pressures.

Automatic door systems can be used in conjunction with either sliding, swing or balanced doors and may be fully automatic or comprise a manually activated control device.

All automatic doors should be set to provide sufficient time for a person to move slowly through the doorway. For automatic swing doors, the recommended period is a minimum of five seconds.

Entry devices (e.g. SALTO) need to be clearly identified and positioned so that anyone including wheelchair users can easily access them. As appropriate, devices which incorporate an LED display make it easier for people who are deaf or have hearing loss to use them.

Door entry systems should be located adjacent to the handle side of the door, no further than 200mm from the door frame and a minimum 300mm away from any internal corner, (600mm preferred), and between1000mm and 1200mm above floor or ground level. For automatic swingdoors, the door entry control should also be located in front of the door,at least 300mm (600mm preferred) clear of the door swing, to prevent a collision.

Intercoms (entry phones / intercom) should be positioned to suit people at a range of heights. Any controls such as buttons should be large and easy to operate and be in the range of 1000mm to 1200mm above floor or ground level. For units that have control and buttons spread apart more than the 200mm zone allocated, the unit controls should be centrally positioned at 1100mm above the floor or ground and care is required to ensure the buttons / controls are as close to the 200mm zone as possible for the unit to be considered accessible. The microphone should be capable of picking up speech from people of different heights and the unit should include an inductive coupler.

As well as enabling people to communicate orally with a receptionist or resident, intercoms should incorporate a visual text display so that people with hearing difficulties are aware that the intercom has been answered.

Card entry systems should be proximity device controlled and positioned in accordance with the same principals as entry devices.

Keypad or swipe card devices are not considered accessible and should be avoided.

The device should contrast visually with the wall surface and orientated vertically.

Requirements

H.1 Door Fittings and Furniture (see Figure 17)

1. Door furniture should be fitted at consistent height.
2. Door opening furniture needs to be capable of use with a single hand or fist without needing to turn or grasp it.
3. Door handles and locking devices need to have a level action, generous rounded proportions and returned at the end, positioned between 1000mm – 1200mm above finished floor level. (1050mm preferred)
4. Horizontal grab rails (to the likes of an accessible WC) are to be positioned between 800mm – 1050mm above finished floor level (900mm is preferred).
5. A vertical pull handle is helpful if there is no door-latch requirement, positioned so the bottom edge is between 700mm –1000mm maximum above finished floor level. The top edge should be 1400mm above floor level and no lower than 1300mm. (Full length pull handles are preferred).
6. Lock-key holes need to be a minimum of 70mm from handles.
7. All doors to have kick plate 300mm high to both sides of the door.
8. All door furniture is to visually contrast with the door surface.
9. Where doors are likely to be left open, the leading edge of the door should ideally be recessed out of the line of travel or made visible using good tonal contrast.
10. Doors should provide a maximum force resistance of 30 Newton's from 0deg to 30deg, and not more than 22.5 Newton's from 30deg to 60deg of the opening cycle., to enable opening and closing with minimum effort.
11. Door closers are to be avoided unless essential. Consider use of ‘CAM action’ high efficiency closers and rising butt hinges as an option to door closers.

12. Future proof the door design for high traffic doors by incorporating details to allow for powered control at a later date.
13. Use door hold open devices linked into fire alarm system for doors on circulation routes. Any exposed leading edge should be recessed or highlighted as noted above.
14. Automatic doors – the activation system of automatic doors should ensure that the door starts to open when a person is no closer than 1400mm from the door in the open position, but open quick enough so that a person walking at a normal speed doesn't have to break stride to pass the door.
15. Push to open control pad to semi-automatic doors should contrast visually with the surrounding surfaces and incorporate the International Symbol for Access, positioned no further than 200mm from the door frame and a minimum 300mm away from any internal corner, (600mm preferred), and between 1000mm and 1200mm above floor or ground level. For automatic swing doors, the door entry control should also be located in front of the door, at least 300mm (600mm preferred) clear of the door swing, to prevent a collision.
16. Where entry devices are fitted, following should be considered:

Door Entry System

- Systems should use proximity devices and avoid the use of swipe cards and keypads.
- Fit device in the accessible zone of 1000mm – 1200mm.
- Activation pad located on latch edge within 200mm of door frame /aperture.
- Located a minimum 300mm away from any internal corner, (600mm preferred).
- For automatic swing doors, located in front of the door, at least 300mm (600mm preferred) clear of the door swing.
- LED displays should identify a proximity device has been activated.
- System to contrast visually with background.
- Fail safe where required in the event of an emergency.
- Release the door lock for sufficient time to allow a person (mobility impaired / wheelchair user) to readjust their position and pass through the door before the door lock is reengaged.
- Be located so a person (mobility impaired / wheelchair user) does not have to adjust their position / come back on themselves to pass the doors.

Intercom

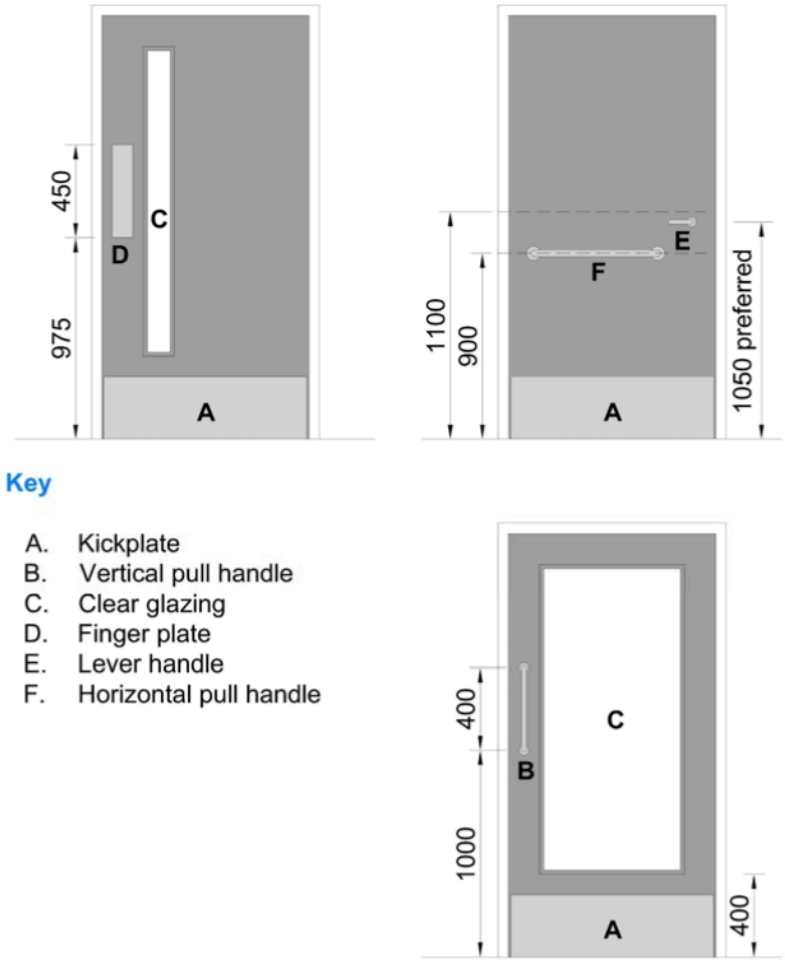
Provide clear instructions on use of entry devices, minimum14-point font.

- Fit device in the accessible zone of 900mm – 1400mm (1000mm to 1200mm preferred).
- Activation pad located on latch edge within 200mm of door frame /aperture.
- Located a minimum 300mm away from any internal corner, (600mm preferred).
  - For automatic swing doors, the door entry control should be located in front of the door, at least 300mm (600mm preferred) clear of the door swing, to prevent a collision.
  - Video and audio intercom systems are preferred.
  - Use audio – visual indicator showing call received and lock released.
  - An inductive coupler should be fitted and signed.
  - System to contrast visually with background.
  - If fitted to automatic doors, the doors should automatically open when unlocked via reception.
  - Fail safe where required in the event of an emergency.

= Release the door lock for sufficient time to allow a person (mobility impaired / wheelchair user) to readjust their position and pass through the door before the door lock is reengaged.

= Be located so a person (mobility impaired / wheelchair user) does not have to adjust their position / come back on themselves to pass the doors.

Figure 17



Key

A. Kickplate
B. Vertical pull handle
C. Clear glazing
D. Finger plate
E. Lever handle
F. Horizontal pull handle

Note: All dimensions in millimetres

SECTION I

VERTICAL CIRCULATION

Design Consideration

Vertical circulation in a building comprises distinct components including stairs, ramps, lifts and platform lifts.

People should be able to freely and easily move around a building. Horizontal and vertical circulation are integral and well-designed circulation routes contribute to the creation of a logical building layout that is easy for everyone to understand, move around confidently and gain access to the facilities within.

Each component provides a viable means of access between different levels within a storey or between floors in a multi-storey building, but a mix is required in order to meet the needs of all building users and to take account of different ages, sizes, abilities or disabilities.

The aim is to ensure individuals can use facilities independently. There is no ‘one size fits all’ and there will always be a need to provide alternatives to meet the needs and preferences of all building users, and to safeguard occupants in an emergency.

Internal stairs should be safe and easy for everyone to use. They should be clearly visible and easy to identify. Spiral stairs and stairs with tapered treads should not be used, as they are much more likely to present a tripping hazard and can be unnerving or hazardous for people with varying disabilities to negotiate.

Helical staircases are not recommended, however, in the event a feature helical staircase is desired, the stair should comply with the dimensions of BS5395-2 and BS8300.

Steps can present a hazard to people with visual impairments, particularly when located in the direct line of travel. In new buildings and in buildings undergoing internal reorganisation, the location and configuration of stairs should be carefully considered.

Stairs that are not enclosed should not be positioned directly in line with a corridor, principal circulation route or open atrium/foyer. Unenclosed stairs should always require a conscious change in direction to use them. This will reduce the likelihood of a person inadvertently stepping onto stairs.

Where stairs contain two or more successive flights, the number of steps in each flight should be the same where possible. Single steps should be avoided as they are less readily apparent than a longer flight and may present a trip hazard.

Landings should be provided at the top and bottom of each flight of stairs. The landing length should be equivalent to the clear width of the stairs, subject to a minimum of 1200mm, and should be unobstructed by any door swings.

The dimensions of each step should be consistent throughout a stair flight. The rise of internal steps should be in the range 150mm to 180mm.The going (depth) should be in the range 300mm to 450mm.

Steps without projecting nosings are preferred, but if a projection is required, the riser face should be chamfered to an angle of at least 60 degrees and the overlap limited to 25mm. The leading edge of each step may be bevelled with a radius not exceeding 10mm.

Projecting nosings that have an underside perpendicular to the riser face should not be used as these present a trip hazard, particularly to people who ascend steps by sliding their feet up the surface of the riser.

All step risers should be closed, open risers are trip hazards for people with mobility impairments, can be a source of visual confusion and are disconcerting for many people to use.

Each step edge should have a non-slip applied nosing or contrasting strip to visually highlight the step edge. The nosing or strip should extend the full width of the step and be 50mm to 70mm deep, measured from the leading edge of the step. The contrasting nosing should extend to the tread and rise, so a user can assess the length of the flight from either the top or bottom of the stairs.

The total rise of a flight of steps between landings should not contain more than 12 steps.

Handrails should be positioned with the upper surface 900mm to 1000mm above the pitch line of the stair flight and 900mm to 1100mm above landings on both sides. All handrails should be continuous onto landings.

The top and bottom of handrails should extend beyond the first / last riser and curtain in such a way that prevent clothing / bags from becoming caught.

Balustrading should prevent a 100mm sphere from passing through (where there is a falls risk for a young child).

Clear headroom of 2100mm minimum should be maintained throughout the full length of the stair flight and any landings.

The underside of all flights of stairs should be protected or obstructed to maintain a clear headroom of 2100mm minimum when the string of the stair passes through / over a circulation area.

Flooring should be slip resistant and have a low reflective finish.

Internal stairs should be illuminated so that they can be used safely at all times. The recommended minimum level of illumination at tread level is 100 lux.

Internal ramps are usually only acceptable to overcome changes in level within a floor. Where these are unavoidable, they need to be designed to the same standards as external ramps. Ramps used to overcome a change in level in excess of 300mm must be accompanied by steps. Any change in level in excess of 2m needs to be overcome using a lift. It is however recommended that serious consideration is given to providing a lift to any changes in level of more than 500mm, as this will result in a ramp in excess of 10m long. (unless the change in level occurs gradually along a corridor where there is no requirement to travers back on oneself).

The clear width of a ramp should be determined by the expected level of use and whether people are likely to be using the ramp in both directions simultaneously. In any case, the clear width should not be less than 1500mm. Where a large number of people are expected to use the ramp at any one time, and in both directions, a clear width of 1800mm or more may be appropriate.

Handrails should be provided to both sides of the ramp and should be continuous to the full length of the ramp slope, as well as around intermediate landings.

The top and bottom of handrails should extend beyond the first / last riserand curtain in such a way that prevent clothing / bags from becoming caught.

Balustrading should prevent a 100mm sphere passing.

The surface of the ramp should be non-slip. The ramp slope should contrast visually with landing surfaces to highlight the change in plane to people with visual impairments.

Ramps should be illuminated so that they can be used safely at all times. The recommended illuminance at the ramp surface is 100 lux.

Passenger Lifts provide suitable access for disabled users between levels. Disabled people need sufficient space and time to enter and leave a passenger lift. Lift sizes and quantities should be selected based on the size of the building and the planned level of use at full capacity and the requirements of disabled people.

Passenger lifts should be located adjacent or near to stairs in order to offer an alternative means of access. This is to meet the needs of people who may be anxious about using a lift and prefer to use stairs in order to access other floors. Where multiple passenger lifts are required, the designation of lifts within the same bank / core which access different / specific floors is not recommended, as this causes confusion.

For large buildings, it may be appropriate to provide passenger/evacuation lift cores in different locations across the footprint of the building, aiding circulation and reducing travel distances.

Lifts installed must comply with the requirements of the relevant British Standards. The design needs to ensure that the lift is easy to find and use by everyone. This means attention to the use of visual contrasting materials, tactile control buttons and audio-visual systems.

The provision of a passenger/evacuation lift (or lifts) to all floors in a building will provide the most convenient and safe means of access and egress for building users. Passenger/evacuation lifts should be sufficiently sized, have adequate circulation space on landings and provide controls that are easy to use.

As a result of the increasing numbers of people in society with restricted movement and use of mobility scooters, along with the increasing size of power operated wheelchairs that has been the case over recent years,the internal dimensions of the lift car will often need to exceed minimum car size required by the Building Regulations to accommodate the required manoeuvrability.

Platform lifts are rarely ideal, because they are not an inclusive solution, are slow to operate, often require constant pressure on the control buttons and are frequently vandalised left inoperable. There are circumstances where they are permissible, for example, in existing buildings where space is restricted and access is only between two levels, such as a mezzanine floor.

Platform lifts can be enclosed or open. Where the vertical travel distance exceeds 2m then an enclosure is required.

In some existing buildings, it may not be possible to install a passenger lift due to spatial or structural constraints. In such situations, the provision of a vertical platform lift may be beneficial in that it provides an alternative means of access to stairs.

Platform lifts need to be large enough to enable anyone in a to be accompanied by a companion. Lifting platforms need clear instructions on use and fitted with an emergency alarm connected to assistance.

Some existing buildings may have a lift that is smaller than current best practice and it may not be feasible to install a new one or to increase the size of the existing structural shaft. In these circumstances, the potential to improve the lift controls, signalling system, safety and communication devices, and surface finishes should be considered, as these will improve accessibility for building users.

Requirements

I.1 Internal Stairs / Steps

1. The standards used for the design of internal steps and stairs, nosing detail; handrails; flight rise, stair width and the identification of nosings, need to be the same as external stairs. (See Section C – Approach to Buildings for steps requirements).
2. Corduroy surfaces are not currently recommended for internal steps as differing slip resistance characteristics between corduroy and adjacent surfaces flooring creates a trip hazard.

I.2 Internal Ramps

1. The standards used for the design of internal ramps, gradients, handrails and width, need to be the same as external ramps. (SeeSection C – Approach to Buildings for ramps requirements).

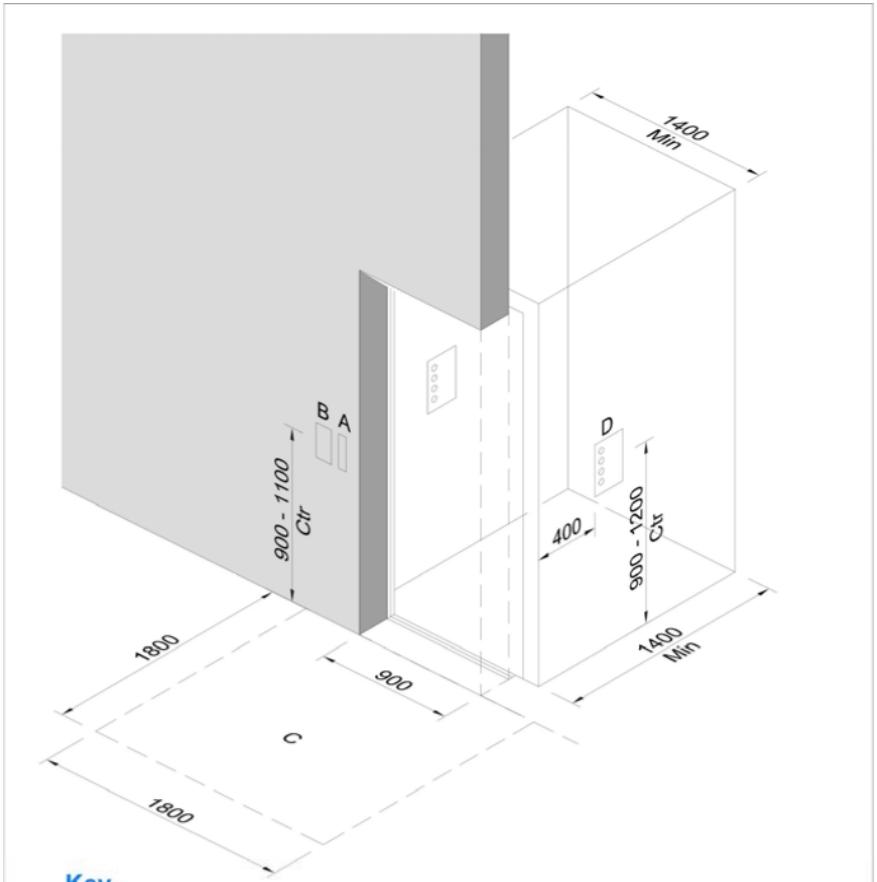
I.3 Passenger Lifts (see Figure 18)

1. Designs to comply with BS -EN 81-20:2014 and be designed with an alternative power supply (per emergency lift standard).
2. The number of lifts within any single vertical circulation core along with the number of vertical circulation cores which contain lifts require detailed review at the design concept stage based on a pedestrian circulation assessment, travel distances and the location of any secure lines within the building which may impact on people movement.
3. Clearly visible from the main entrance or reception area or the location logical with the directions to the lift clearly sign posted from entrances / reception.
4. A minimum manoeuvring space of 1800mm x 1800mm outside (1500mm x 1500mm minimum).
5. Provision for seating by the lift is beneficial.
6. Designed to and used as fire evacuation lift with dual power supply.
7. Size to match anticipated use. The minimum car dimensions of 1100mm x 1400mm are not considered reasonable. A larger car 2000mm wide and 1400mm deep is recommended as this will accommodate mobility scooters and the larger power wheelchairs used today.
8. Call buttons located between 900mm -1200mm above finished floor level and within 400 mm of return wall.
9. All controls need to be embossed, incorporate braille, and providetonal contrast with the face plate.
10. Face plate to contrast with the internal car and external lobby wall.
11. Provide audio-visual system inside the car. Visual system to shown direction of lift travel (up or down) and the floor level reached. Synthesiser announcements, in Welsh and English, to detail the floor level (ground, first, second…), direction (up and down), and if the doors are opening / closing. The synthesiser is not be too highly pitched (high frequency noise is the pitch where sensitivity is lost).
12. Each landing should also be provided with an audio-visual system.Visual system to indicate the location of the lift and its direction of travel. Announcements to include a ‘dong’ when the lift has arrived. In lift cores with multiple lifts, a visual indicator should be provided for each lift and a visual indicator to confirm which lift has arrived should be included in addition to the ‘dong’.
13. Red LED displays for the visual system should be avoided as this is the spectrum of light most lost by the visually impaired.
14. Signage identifying the floor level should be provided opposite liff car doors.
15. Lift doors - Doors need to be minimum 900mm effective open width and contrast with the surrounding lobby wall. Often door width will be wider.

16. Door to include a full height presence sensor, a minimum 6 second dwell time to enable adequate time to enter and leave the car. A door override button is required internally.
17. Handrails on two sides located 900mm above finished floor level with a reinforced fixing so they can be used as a perching seat. Handrails to tonally contrast.
18. Where the minimum sized car (1100mm x 1400 mm) is used a mirror is to be installed on opposite wall to door. This enables wheelchair users to see if anyone is behind them and also to see the floor indicator when reversing out.
19. For larger lifts, and lifts with two entry / exit points, provide two sets of control buttons inside the car with horizontal control panel set at 900mm high centred above floor level and standard vertical panel for standing height users.
20. An emergency alarm and two-way communication system, linked to a monitored location, should be provided inside the car. The alarm system should incorporate both visible and audible signals to provide reassurance that an alarm call has been answered, fitted with inductive couplers and have instructions in both tactile and visual form. Emergency alarms and communications need to be fail-safe.
21. Emergency systems call panel need to be located 900mm maximum above finished floor level and activated by pressing a single button.
22. Flooring should avoid dark colours (to provide comfort to the visually impaired that the lift shaft is not open). Flooring should have similar slip resistance characteristics to the lobby floor.
23. Ceiling and wall finishes should be opaque and non-reflective.
24. The internal lift car should use low reflective materials to avoid glare.
25. Lighting inside the car should not cause glare, reflection, confusing shadows or pool of light and dark and be minimum 100 Lux at floor level. Downlighters / spot lights should be avoided.
26. If use of the lift is to be controlled / limited, lift activation should be by way of a proximity device and not a key.

I.4 Vertical Lifting Platforms

1. Use only in existing buildings if no other realistic option is available or in isolated low traffic situations where a passenger lift is not practical,such as providing access to a small library mezzanine.
2. Manoeuvring circle as recommended for the passenger lifts.
3. Minimum size 1100mm x 1400mm to enable both a wheelchair user and companion to use the lift. The control panel should not obstruct the minimum width.
4. Door width 900mm minimum.
5. Automatic doors are preferred. If manual, the door should achieve a maximum force resistance of 30 Newton's from 0deg to 30deg, and not more than 22.5 Newton's from 30deg to 60deg of the opening cycle.
6. Provide clear signage on operation.
7. Control buttons located the same as passenger lift.
8. Controls should not require constant pressure as many disabled people have reduced dexterity or lack the physical strength to maintain pressure.
9. An emergency communication system is required connected to a permanently staffed facility, along with an inductive coupler. The system should provide both visual and audible indication of the alarm being answered.
10. The floor colour within the car should be light in colour with similarslip resistance characteristics to the lobby flooring.
11. Manifestation is required to any glazed doors.
12. **Platform Stair Lifts** are not recommended.



Key

A. Landing call buttons with tactile identification
B. Storey indicator sign with tactile identification
C. Unobstructed wheelchair turning space
D. Lift car controls with tactile identification

Figure 18

Note: All dimensions in millimetres

SECTION J

SANITARY ACCOMMODATION

Design Consideration

Sanitary facilities should be designed to meet the needs of all building users regardless of age, size, ability or disability – whether they are staff, residents, frequent or first-time visitors. Sanitary facilities should be designed to accommodate children and adults of all ages, all sizes and all abilities who may be independent, accompanied, or assisted. When designing a facility, consideration should be given to the diverse ways in which people interact with their surrounding environment.

The scale of provision of sanitary facilities in a building will be dictated by the nature and size of the building, the overall building occupancy, gender ratio, and particular patterns of use. These factors should be considered alongside the diversity of building user needs to establish the range, location, and type of facilities that will provide access for all.

Level of provision – a unisex accessible toilet should be provided at each floor level in a building/floor that is accessible and should be clearly identified. If this cannot be achieved, such a toilet should be no more than one floor away, with access to that floor via an accessible lift (as appropriate). In existing buildings that have no lift to their upper floors, accessible toilet facilities should be located at entrance level.

Travel distances to accessible sanitary facilities should be as short as possible and ideally no more than 40m. If the routes to accessible sanitary facilities do not require the use of a lift and is free from obstructions, such as having all cross-corridor doors on hold open devices, the travel distance to accessible sanitary facilities can be increased to 60m.

Where there is limited space within the building to provide more than one accessible sanitary provision, at least one unisex accessible toilet design for right hand side transfer needs to be provided.

Where more than one unisex accessible facility is provided, a choice of transfer layouts is to be provided. A common practice is for the layout to be handed (right hand and left hand transfer layouts) on alternating floor levels in multi-storey buildings, in the same position on each level. When a building has multiple cores of sanitary provision, the handing should alter across floors both horizontally and vertically maximising choice.

Travel distances should also consider the location of secure lines, as WC's located behind doors which have access control requirements to manage authorised personnel only entering a specific area will not be accessible to unauthorised persons.

It is important to provide sufficient cleaners cupboard provision through the building to ensure accessible WC's are not used as unofficial cleaner's storage.

Accessible toilets, shower rooms and changing rooms all have common features, as do some aspects of "Changing Places" accommodation, such as:

Service ducts / soil stacks - all accessible sanitary accommodation needs to be carefully designed to ensure that soil stacks, "pop ups" and other service ducts are not located with the facility. If unavoidable, these need to be located so that they do not reduce the minimum compartment size and do not obstruct the easy use of the facility or the manoeuvring and transfer spaces.

Wash hand basins - wash hand basins are to be wall mounted not on a pedestal as this obstructs easy access to the basin. Waste pipes and mixer valves need to be located so that they do not impinge on access to the basin. Any panelling used to conceal pipework should be kept to a minimum, so the room size is not reduced below minimum requirements. Wash-hand basins in accessible toilets are to be accessible for the user whilst sat on the WC.

Taps and shower controls – all controls need to be thermostatically controlled and lever operated to enable easy operation using the palm of the hand or wrist (sensor operation is preferred). In accessible toilet compartments, WHB mixer taps should be located on the basin side closest to the WC to allow easy reach. Pressure regulators should be fitted and balanced to ensure the user can receive hot water without over-spilling.

Pipework - exposed hot water piping can be a hazard. If it is to be concealed behind panelling or boxed in, the minimum room dimensions should not be reduced.

WC pan and cistern - the top surface of the WC seat needs to be set at a height for easy transfer from a wheelchair or hoist onto the WC. The flush mechanism needs to be positioned on the transfer side, so it is easy to access and use. It is recommended a WC is provided with an exposed cistern, as this provides both a back rest and a shelf for the likes of a colostomy bag. If an IPS system is to be used, a separate backrest and shelf will be required.

Grab and support rails - walls are to be constructed so they are robust enough to resist the load exerted by a user bearing down on a rail. All rails need to be fixed at a height within easy reach of anyone seated on the WC or in a wheelchair. Rails need to be wide enough to easily hold and provide a good grip when moist. They should be fitted so there is an adequate clearance between the rail and the wall. Drop down bars need to be securely fixed and easy to release. Support strut fittings can restrict wheelchair access so should be avoided.

Overhead hoists – may be required at a future date. To futureproof accessible sanitary provision for the insulation of an overhead hoist, it isrecommended the walls are constructed so they are robust enough to support such a provision. Alternatively, support from a robust structural ceiling soffit may suffice, provided M&E ductwork does not preclude access for fixings.

Doors – are required to provide a minimum 900mm clear opening width (1000mm in Changing Places), clear of any support rails fitted to the rear of the door. Doors opening outward with an emergency opening override are preferred as they do not impact on internal turning circles and they can be opened in an emergency should someone have collapsed behind the door requiring assistance. Refer to internal doors Section H for further requirements.

Door ironmongery should use a ‘lift to lock’ door handle complete with escutcheon sign, ensuring the end user is easily able to use the facility.

Consideration of a RADAR lock may be appropriate in buildings which have a high level of general public users or to control misuse.

Inward opening doors - inward opening doors are only to be used in existing buildings where there is no alternative. If unavoidable it is essential that there is adequate space between the door swing and sanitary fittings to enable a wheelchair user to enter the WC, turn around and close the door behind them. This will require a much larger WC compartment than normally recommended. There is a risk that someone could fall against the door and prevent it being opened. Consequently, providing a door that can also open out in an emergency is essential to enable the door to be opened from outside. Such a door however has no rebate to the stile which compromises privacy. The WC will need to be located so it is not

visible should someone peer through the open stile.

Finishes - incorporating visual contrast between sanitary ware, walls, grabrails and floor will assist visually impaired and blind people. For example, grab and support rails need to visually contrast with the wall. All sanitary fittings are to contrast with the background wall. Toilet seats and covers should contrast with the cistern and the WC pan.

Lighting - sensor operated lighting is preferred with a 20 minute over run. Lighting that is individually controlled needs a large push pad or pull cord within easy reach. The push switch or pull cord including the pull cord end should contrast visually with the wall. It should not be red as this colour is used for emergency assistance alarms systems. Emergency lighting should be provided.

Emergency assistance - an emergency assistance system is essential. This should be designed so that it cannot be confused with fire alarm system. It should include a visual and audible indicator signals that the emergency assistance call has been acknowledged and is being acted on.

This system consists of an emergency assistance pull cord within easy reach of the toilet or shower seat and located so it does not obstruct a lateral transfer. Pull positions should be provided at a height accessible whilst sat on the WC and if collapsed on the floor. The reset control should be easily reached from a wheelchair, WC or tip-up shower seat.

The emergency assistance alarm indicator outside the compartment should be positioned so it's easy to see and be heard by people able to give assistance. All alarms are required to report to a staffed location so assistance can be organised. The alarm link to the monitoring station should continue to work during a power outage.

Fire alarms – all accessible compartment such as, toilets, shower roomsand Changing Places should be installed with visible fire alarm (a flashing light) as well as an audible fire alarm device. This is essential for deaf, hearing and visually impaired people. Note that this requirement applies to standard toilet accommodation as well.

When standard WC cubicles are provided full height for safeguarding purposes, each cubicle should be provided with a visual fire alarm.

Clothes hooks, shelves, and mirrors - clothes hooks need to be located at two heights suitable for ambulant disabled people and wheelchair users. A shelf should be provided. A full height mirror shouldbe provided within the compartments set at 600mm above floor level to1600mm high (minimum).

Heating equipment - heating equipment is to be located so it does not reduce the wheelchair manoeuvring space or the space needed to transfer to the shower seat, changing seat or WC pan. Low surface temperature radiators / overhead system is recommended.

Toilet accessories - in general all accessories – toilet paper dispensers, paper towels, hand dryers and soap dispensers need to be easy to use with a single hand; and accessible to someone in a wheelchair or seated on the WC (see diagram). All accessories should tonally contrast.

Hand dryers - Hand-drying facilities should be provided in close association with washbasins. Wherever automatic hot-air dryers are provided, an alternative is to be available, such as paper towel dispensers. Hand dryers should not be excessively loud as this can be disconcerting for a range of disabled people.

Waste and sanitary disposal - General waste bins and sanitary disposable bins should be provided in single-sex toilets, accessible toilets, shower rooms, and changing areas. They should be positioned where they will not obstruct wheelchair turning and

transfer areas. Bins with lids should be easy to operate, and bins should contrast visually with the surrounding surfaces.

Requirements

Common design featuresCompartments

1. A minimum of one accessible toilet is required in existing buildings.
2. Where there is only one accessible toilet, shower or changing provided, this needs to be a unisex facility designed to right hand transfer.
3. If service ducts and stacks are unavoidable in compartments, they should not reduce or obstruct transfer and manoeuvring space or reduce the minimum compartment floor space.

Wash hand basins

4. Basins should be wall mounted and meet height and size requirements as detailed under each room type.
5. Waste pipes and mixer valves should not restrict knee space beneath the WHB.
6. Taps should be TMV3 thermostatically controlled mixer taps with a single lever action. Hot water temperature should not exceed 43 degrees C.
7. WHB mixer tap should be located on the side closest to WC and when in an accessible WC, reachable whilst sat on the WC.
8. Hot water piping needs to be concealed.

WC pan and cistern

9. Flushing device should be accessible and easy to use when seated, located between 800mm and 1000mm above finished floor level.
10. Chain pulls are not to be used. If unavoidable (say in a listed building) then locate this on the transfer side, with a ring pull 800mm - 1000mm above finished floor level.

Fixed grab and support rails

11. All fixed grab rails to have a diameter between 32mm - 35mm with a minimum clearance between 50mm – 60mm from walls.
12. Horizontal rails should be located 680mm above finished floor level.
13. Vertical rails should be 600mm minimum long, with the centre line 1100mm above finished floor level.
14. Rails with a plastic coating and a slight ridged surface will be easy to grip when wet.
15. Walls should be reinforced, robust enough to withstand a load of minimum 171 kg applied by a user vertically and at a 45-degree angle.
16. Drop down rails should be securely fitted to withstand a load bearing weight of 171 kg.

Doors

17. The effective opening width of the doorway needs to be at least 900mm, (1000mm in Changing Places).
18. Fitted with light action “privacy” lock, integrated with lever handle incorporating an emergency release to open from outside. (‘Lift to lock’ leaver handle). Escutcheon sign stating lift to lock comes as standard.
19. Outward doors are easier to use especially when assistance is required and should be provided to all new accessible WC’s.
20. If an inward opening door is the only solution for a cubicle that is accessible to a wheelchair user, a clear minimum space of 800mm × 1400 mm should be provided between the door swing and any fittings (including drop-down rails when in the down position) to enable a wheelchair user to enter and close the door behind them.
21. Outward opening doors should be capable of opening in event of an emergency by using pivot hinges and an emergency release doorstop at the head of the door and lock openable from the outside.

22. Outward opening doors have no rebate to the stile, so the WC must be position out of the line of sight of anyone peering through for privacy of users.
23. Any door that opens towards a frequently used corridor should be located in a recess at least as deep as the width of the door leaf. Refer to internal doors Section H.
24. Door furniture should satisfy requirements in Section H.
25. A horizontal pull rail is required on an outward opening door on the inside door face.

Finishes

26. Floor, wall and door surfaces, sanitary appliances, grab rails and other accessories should be easily cleaned and should all contrast visually to aid identification by people with visual difficulties. Sanitary accommodation needs to incorporate visual contrast between support rails and walls, sanitary fittings and walls, toilet seats and the WC pan. Shiny surfaces should be avoided as they are a potential source of glare and reflection which can cause discomfort and confusion to people with visual difficulties.

Flooring

27. Floor surfaces in all sanitary accommodation should be firm, level and slip-resistant when wet and dry.
28. Floor coverings should have non-slip finish and contrast with walls / skirting.

Signage on Doors

29. Doors to accessible WCs should be labelled with a sign incorporating the International Symbol for Access
30. Raised embossed with pictograms and symbols.
31. Signage to be mounted around 1000m - 1200mm above finished floor level.

Lighting

32. Sensor operated lighting is preferred with a 20-minute runoff. If sensors are not used, a large push switch or pull cord switch should be set between 900mm - 1000mm above the floor, within 150mm of leading edge of door and adjacent wall surface.
33. The pull cord and the pull cord end should contrast visually with the wall but should not be red as this colour is reserved for emergency assistance alarms.
34. A general lighting level of at least 200 lux should be provided in toilet facilities. Changing and shower areas should have a lightinglevel of 200 to 300 lux.
35. Secondary emergency lighting should be provided.

Emergency Assistance

36. A red pull cord is required with two 50mm bangles set between 800mm - 1000mm and 100mm – 150mm above finished floor level.
37. The cord should be located and within easy reach of toilet or shower and located against a wall. The pull cord should not obstruct the transfer zone.
38. A second cord is useful in a larger compartment e.g. a combined shower / WC facility.
39. The alarm reset button must be located within easy reach from a wheelchair and whilst sat on the WC, located between 800mm - 1000mm above finished floor level. The reset button should incorporate tactile information and have visual contrast with the wall.
40. The emergency assistance alarm indicator outside the WC compartment should be easy to see.
41. All alarms are required to report to a staffed location so assistance can be organized, this must continue to operate during a power outage. At the staffed panel the WC location shouldbe easily identifiable.

Fire alarms

42. A visual fire alarm must be provided in all accessible toilets, shower and changing accommodation. Audio fire alarms outside the toilet should be positioned to ensure compliant dB readings are achieved within the cubicle – the risk of excessive dB levels within the facility is noted and must be avoided. It is not however recommended to provide an audio alarm directly within the cubicle itself.

Clothes hooks / Shelves / Towel rails

43. Clothes hooks should be installed at two heights 1050mm and 1400mm above finished floor level.
44. An unheated towel rail can be provided for support so needs to be securely fixed.
45. Heated towel rails should have a surface temperature not exceeding 43°C.
46. Shelves should be provided in accessible sanitary accommodation where the WC cistern does not provide this function.

Heating equipment and radiators

47. Radiators or other heating equipment should not impinge into and reduce manoeuvring and transfer space within compartments.
48. Low surface temperature radiators are preferred.
49. Any radiators with exposed surfaces should be maintained at a temperature below 43°C.

Toilet accessories

50. All equipment, toilet paper dispensers, paper towels, hand dryers and soap dispensers should be located at an accessible height for anyone seated on a wheelchair. Wall-mounted soap dispensers should be positioned directly above the washbasin. Dispensers should be operated by a large pull lever as these are easier to use by people with limited manual dexterity and reduced hand or arm movement.

    Toilet paper dispensers should be positioned within easy reach of the WC and usable by a person in either a seated or standing position. They should be easy to use with a single hand, and by people with limited manual dexterity and reduced hand and arm movement.
51. Hand dryers fitted should not be excessively loud as this can be disconcerting for a range of disabled people.
52. All accessories should tonally contrast with its surroundings.

Mirrors

53. A full-length safety-rated mirror positioned between 600mm and 1600mm (minimum) should be provided in accessible toilets, shower, changing and Changing Place toilets.

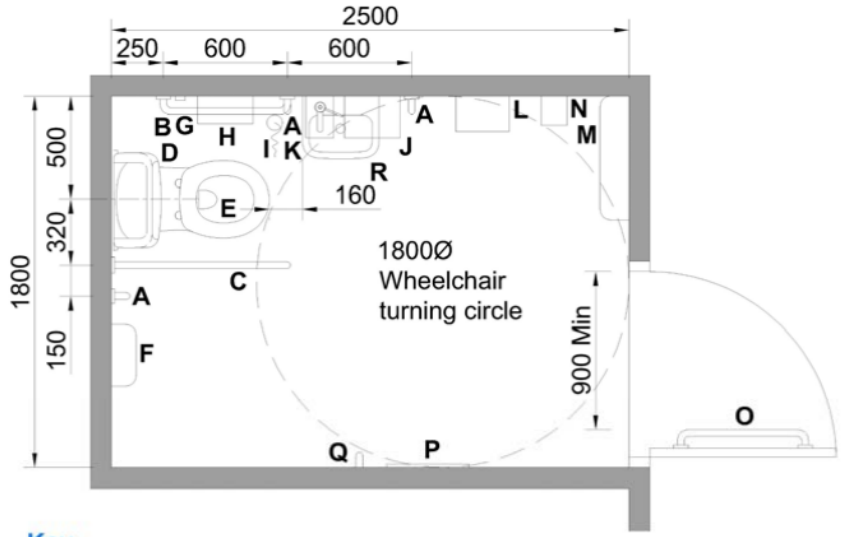
J.1 Unisex Accessible Toilet (see Figures 19 and 20)

Space requirements in accessible toilets needs to be designed to meet the needs of wheelchair users, along with people with other impairments, for example, a blind person with an assistance dog.

Accessible toilet accommodation usually takes one of two forms – a separate unisex toilet or a large cubicle in a single sex toilet. Unisex wheelchair accessible toilets have certain advantages; they are easier to identify, less likely to be regularly used by non-disabled people and enables one or two assistants of either sex to assist a disabled person. They are also more space efficient as a building can be designed with fewer unisex provision when compared with single sex provision.

Requirements

1. A minimum of one unisex accessible WC should be provided where general toilet provision is offered within a building. If there is only one accessible WC in the building the compartment size should be 2000mm x 2500mm.
2. Where there is more than one unisex or single sex accessible WC, layouts should have alternative handed layouts.
3. Unisex accessible WC compartments should have a minimum unobstructed floor area of 1800mm x 2500mm (1700mm x 2200mm minimum).
4. Where a unisex accessible toilet is provided on all floors, the layout should ensure that toilets are handed on alternating floors, in the same location on each floor to assist wayfinding.
5. A WC with an exposed cistern is recommended. The top surface of toilet seat should be set at 480 mm above finished floor level with the front of the WC 750mm off the rear wall, ensuring sufficient space is provided for a lateral transfer.
6. Where WCs with concealed cisterns are used (IPS system), they should be adapted so as not to reduce the 750mm dimension from the front of the WC pan to the rear wall, or the clear transfer space to the side of the WC pan, a padded backrest should always be provided.
7. Flushing device should be spatula shaped, easy to use when seated. On corner layouts a spatula lever needs to be located on transfer side of pan.
8. When an IPS system is used, a shelf should be provided 1000mm above floor level adjacent to the WC, size 200mm x 400mm.
9. All facilities within the compartment should meet the above common design features requirements.

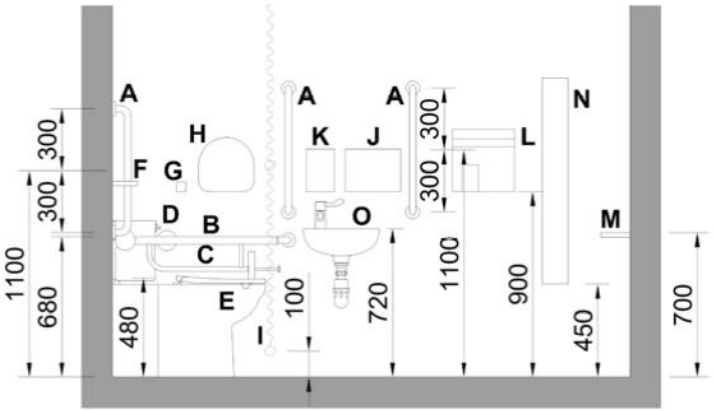


Key

A. Vertical grabrail 35mmØ
B. Horizontal grabrail 35mmØ
C. Drop down rail 35mmØ
D. Back support
E. Raised height WC
F. Colostomy bag shelf 950mm high
G. Alarm reset button
H. Toilet paper dispenser
I. Alarm pull cord
J. Paper towel dispenser
K. Soap dispenser
L. Hand dryer
M. Shelf for personal use
N. Sanitary dispenser - controls between 750 - 1200
O. Horizontal rail to assist door closing
P. Mirror 600 off floor to a minimum height of 1600
Q. Two clothes hooks between 1050 and 1700
R. Wash hand basin

Figure 19

Note: All dimensions in millimetres



Note: All dimensions in millimetres

Key

A. Vertical grabrail 35mmØ
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E. Raised height WC
F. Colostomy bag shelf 950mm high
G. Alarm reset button
H. Toilet paper dispenser
I. Alarm pull cord
J. Paper towel dispenser
K. Soap dispenser
L. Hand dryer
M. Shelf for personal use
N. Sanitary dispenser - controls between 750 - 1200
O. Wash hand basin

Figure 20

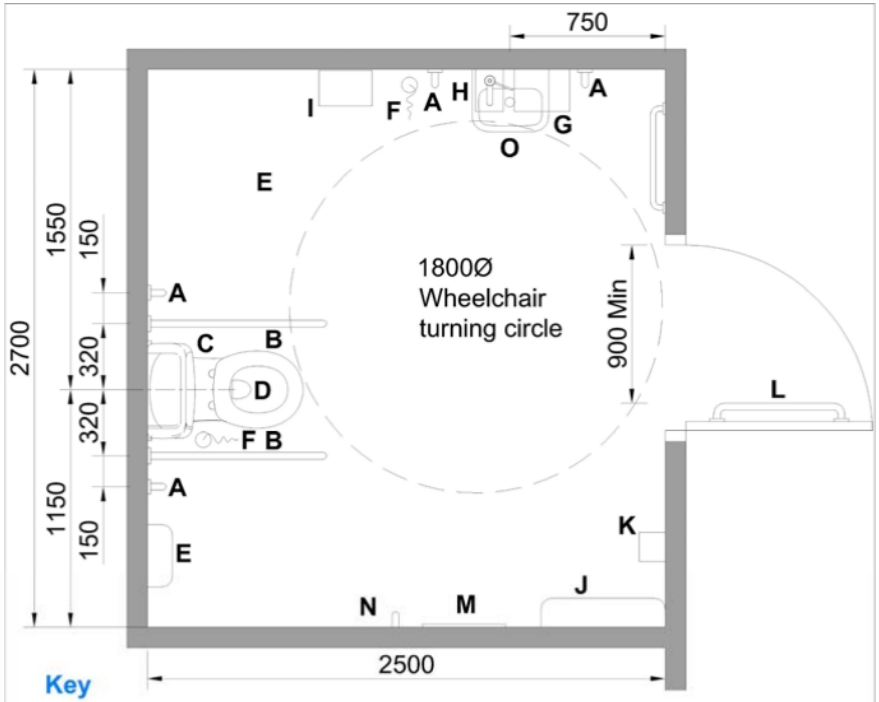
Note: All dimensions in millimetres

J.2 Unisex peninsular WC for assisted use (Figure 21)

Accessible toilets with a peninsular layout are only suitable where assistance is required by the user. This should be an additional facility and should not be used as a substitute for two handed corner layouts. It is however recommended that a Changing Place is provided over a peninsular WC and to avoid confusion, clear signage is required showing the location of accessible toilets suitable for independent use.

Requirements

1. A peninsular layout is an additional facility, not a substitute for two handed corner layout WCs.
2. Unisex peninsular WC compartment should have an unobstructed floor area of 2500mm x 2700mm (2200mm x 2400mm minimum).
3. Two shelves should be provided, one 950mm above floor level adjacent to the WC for people standing who need to change colostomy bags; and the other 700mm above floor level, size 200mm x 400mm, on the opposite side of the washbasin for personal effects.
4. All facilities within the compartment should meet the above common design feature requirements.



Key

A. Vertical grabrail 35mmØ
B. Drop down rail 35mmØ
C. Back support
D. Raised height WC
E. Colostomy bag shelf 950mm high
F. Alarm pull cord
G. Paper towel dispenser
H. Soap dispenser
I. Hand dryer
J. Shelf for personal use
K. Sanitary dispenser - controls between 750 - 1200
L. Horizontal rail to assist door closing
M. Mirror 600 off floor to a minimum height of 1600
N. Two clothes hooks between 1050 and 1700
O. Wash hand basin

Figure 21

Note: All dimensions in millimetres

J.3 WC Cubicle suitable for ambulant disabled people (see Figures 22 and 23)

The needs of ambulant disabled people can sometimes be overlooked in designing inclusive toilet facilities. Where single sex accommodation does not include a wheelchair accessible cubicle, at least one ambulant accessible WC cubicle should be provided.

The cubicle needs to be large enough to be fitted with support rails without compromising manoeuvring space clear of the WC pan. This is essential for people with impaired leg movements, with walking aids or with impaired strength.

Providing an enlarged cubicle is encouraged (see diagram) as it meets a broad range of people needs, e.g. parent with a child. Enlarged cubicles where provided should not be a substitute for cubicles suitable for people with mobility difficulties.

Requirements

1. A minimum of one cubicle with minimum footprint 900mm x 1500mm should be provided for ambulant disabled people in each separate single sex toilets. Providing a minimum 900mm clear space between the front of the WC and the door swing.
2. The cubicle should be fitted with support rails set out in the diagram.
3. At least one enlarged cubicle should be provided where there are four or more cubicles within a single-sex toilet. It is encouraged to provide at least one ambulant cubicle in every single-sex toilet.
4. Enlarged cubicles should be 1200mm wide and provide a 900mm x 900mm circulation space clear of the WC pan and the door swing (see diagram).
5. Ambulant cubicles should be signed.
6. In single-sex toilets, washbasins should provide a choice of heights within the range 680mm to 900mm to suit children and people of different heights. Either automatically operated taps or compression taps with a 20 second flow timer should be provided for ease of use.
7. All cubicles should include for coat hooks 1050mm and 1400mm above floor level.
8. A visual fire alarm should be provided in all toilets. Where full height cubicles are provided, visual fire alarms should be provided in each cubicle.
9. All facilities (where applicable) within the compartment should meet the above common design features requirements.

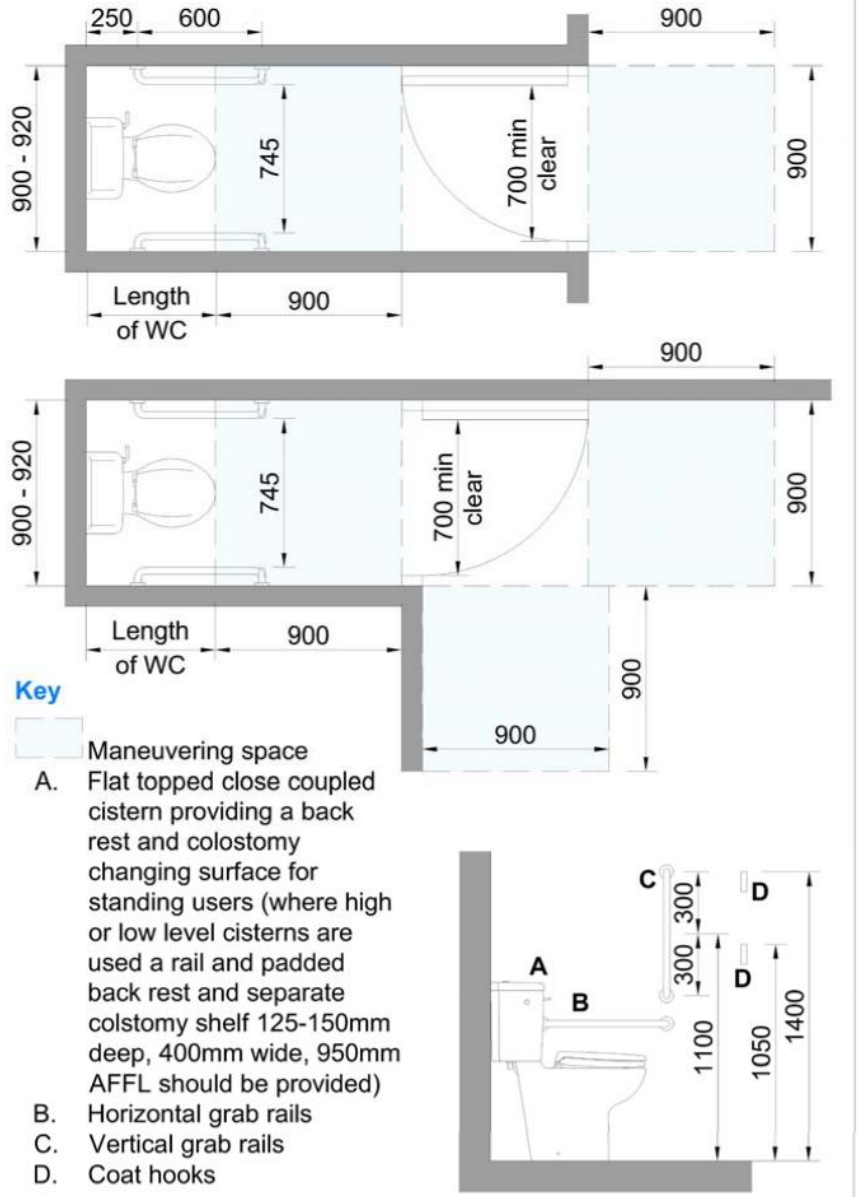


Figure 22

Note: All dimensions in millimetres

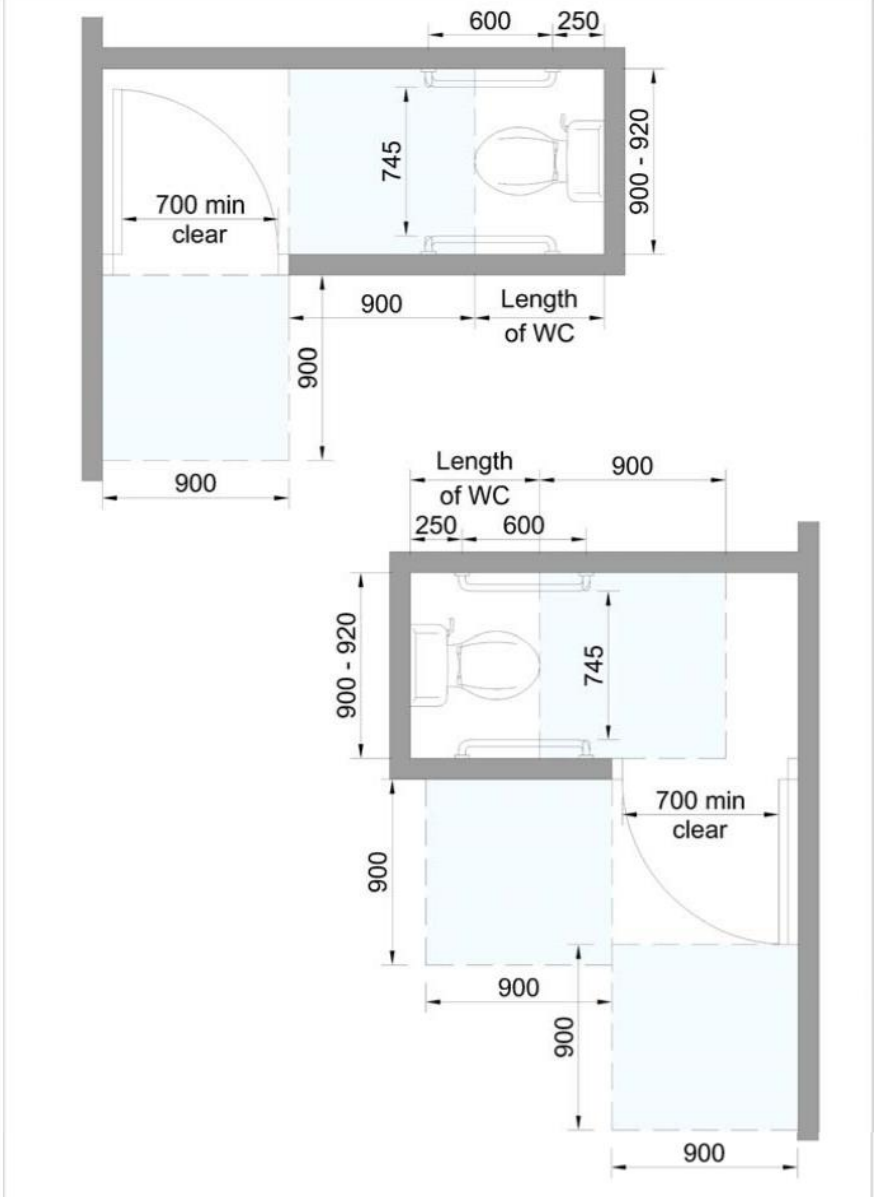


Figure 23

Note: All dimensions in millimetres

J.4 Urinals accessible to wheelchair users (Figure24)

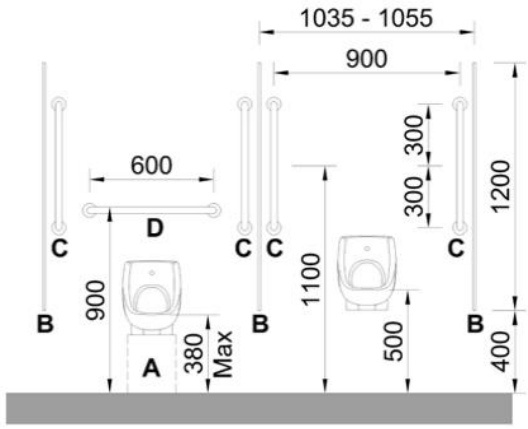
Wheelchair users might be able to pull themselves to a standing position to use a urinal, or they might be able to use a urinal from a seated position. Providing lower urinal position is also beneficial to a person of restricted stature or a child.

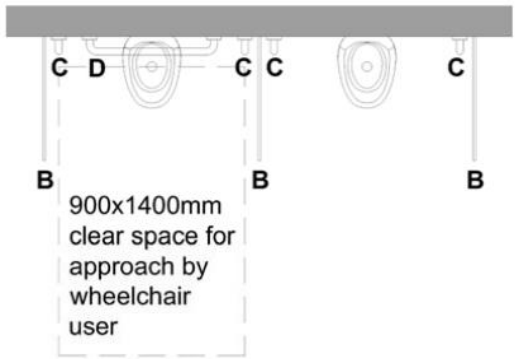
Where the University decides to provide this facility, at least one in six urinals should be positioned at a lower height, with the rim 380mm above floor level for wheelchair users. Grabrails should be provided between pairs of urinals to allow both left and right hand support. A clear space 900mm wide x 1400mm deep should be provided in front of the lower height urinal to suit approach by a person using a wheelchair.

Screens or partitions may be provided between each urinal and between the urinals and adjacent washbasin or cubicle area to improve privacy.

Requirements

1. One in six urinals to be positioned at lower height with space in front provided for approach by wheelchair users.
2. Consider fitting grabrails between urinals (see diagram)
3. Install adequate screening to sides of urinals.
4. All support rails should meet the above common design features requirements.
5. All facilities (where applicable) within the compartment should meet the above common design features requirements.





Key

A. Zone to be kept clear of pipework unless urinal projects more than 360mm
B. Partition to improve privacy
C. Vertical grab rails 35mmØ
D. Horizontal grab rails 35mmØ

Figure 24

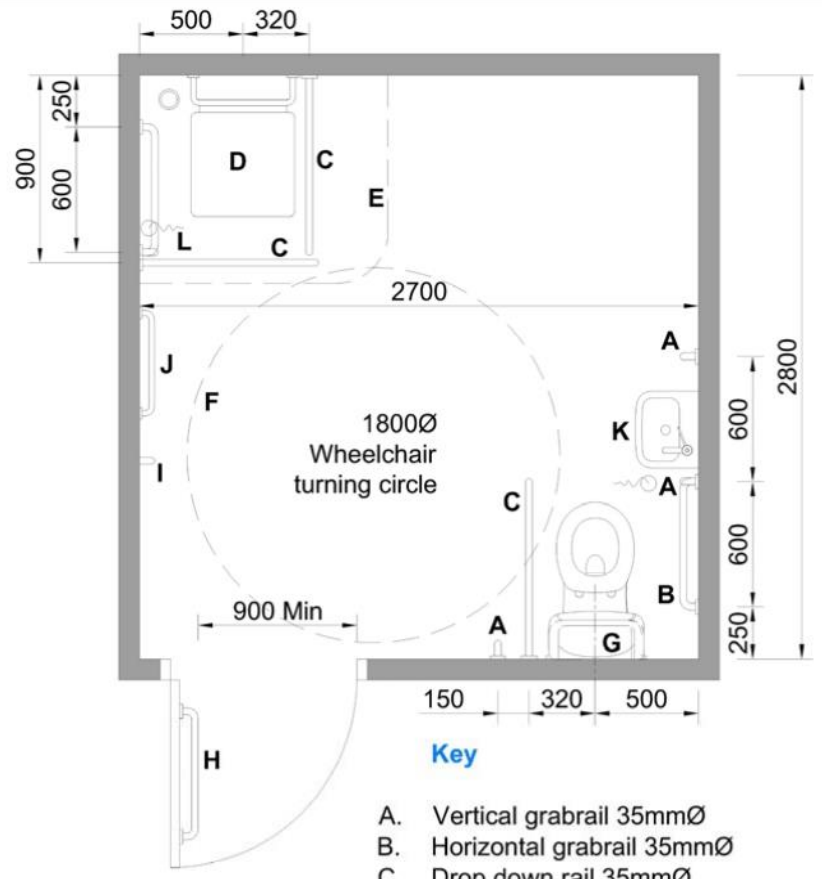
Note: All dimensions in millimetres

J.5 Accessible Unisex Shower and WC (see Figure 25)

Accessible unisex shower and toilet facilities are recommended for sports and leisure facilities and for curriculum courses which may require the need for a shower, such as catering. The recommended dimensions for a combined accessible shower and WC, designed for independent use is 2700mm x 2800mm. The provision of an oversized washbasin which can be varied in height from 750 to 900mm above floor level will assist disabled users who wash from a sink.

Where several accessible showers / changing rooms are provided these should be handed to maximise user choice. It is recommended that an additional fold-up seat is provided in the dry area.

1. Compartment should have an unobstructed floor area2700mm x 2800mm. (2400 mm x 2500 mm minimum)
2. Flooring should be slip resistant with minimum fall 1:50 to floor drain
3. Floor drain needs to be located away from manoeuvring space
4. Both a wall mounted fixed spray outlet and an outlet on an adjustable hose is required.
5. Shower controls need to be embossed and lever operated
6. Water is required to be thermostatically controlled via a TMV3 mixing valve ensuring a maximum water temperature of 43 degrees C
7. For users who wash from a basin and not a shower, an oversized basin should be provided complete with height adjustable provision. The mechanism to adjust the height of the sink should be easily and independently useable.
8. Tip up plastic shower seat (480 mm above finished floor level and 400 mm deep) with arm rests or drop-down grab rails to prevent someone sliding off is required.
9. Shower curtains should be accessible from shower seat, and clear of rails. Where hoists are provided, shower curtains are to be supported on robust wall mounted cantilevered supports that



Key

A. Vertical grabrail 35mmØ
B. Horizontal grabrail 35mmØ
C. Drop down rail 35mmØ
D. Fold down seat
E. Shower curtain
F. Clear space for turning circle
G. Flat topped close coupled cistern with a back rest
H. Horizontal rail to assist door closing
I. Two clothes hooks between 1050 and 1700
J. Towel rail
K. Wash hand basin
L. Alarm pull cord

Note: All dimensions in millimetres

Figure 25

separate from each other (to allow the hoist to travel overhead and across the shower curtain).

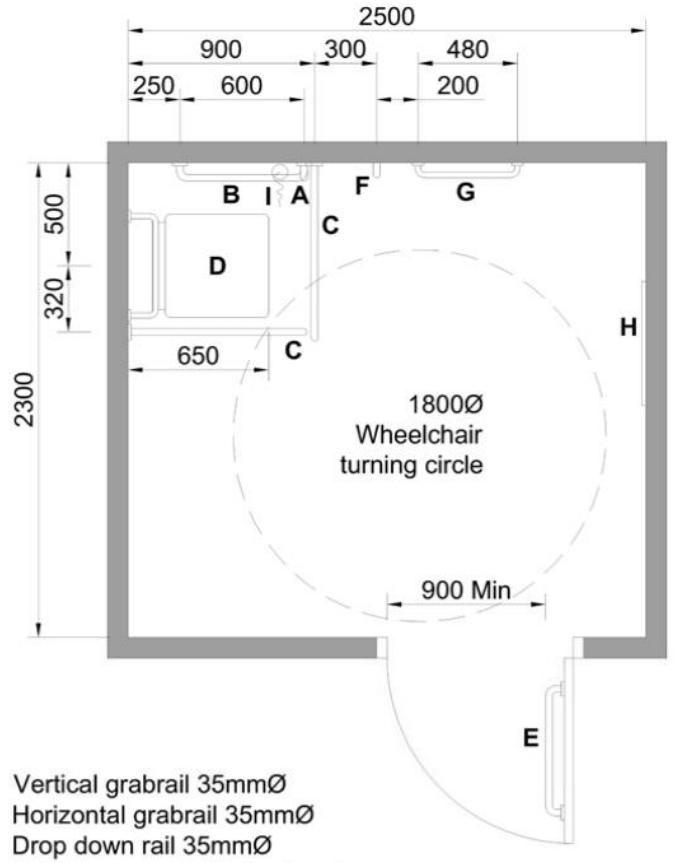
10. An additional tip up seat is recommended in the changing area to prevent a user from having to dry in a wet area or wet their wheelchair, or alternatively, consideration should be given to the provision of a body dryer.
11. A shelf should be provided 1000mm above floor level
12. Panic alarms which meet the above general criteria should be provided to both the shower and WC facilities
13. All facilities within the compartment should meet the above common design features requirements.

J.6 Self-contained unisex accessible changing room (see Figures 26 and 27)

A self-contained accessible changing area should have the recommended dimensions of 2300mm x 2500mm (2200mm x 2000mm), large enough for a companion or assistant of either sex, located close to accessible toilet and shower accommodation.

Requirements

1. Tip up plastic seat (480 mm above finished floor level and 400 mm deep) with arm rests or drop-down grab rails to prevent someone sliding off.
2. All facilities (where applicable) within the compartment should meet the above common design features requirements

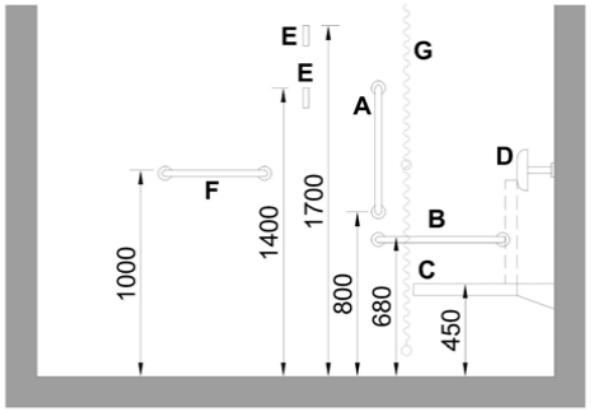


Key

A. Vertical grabrail 35mmØ
B. Horizontal grabrail 35mmØ
C. Drop down rail 35mmØ
D. Fold down seat with back rest
E. Horizontal rail to assist door closing
F. Two clothes hooks between 1050 and 1700
G. Towel rail
H. Mirror 600 off floor to a minimum height of 1600
I. Alarm pull chord

Figure 26

Note: All dimensions in millimetres



Key

A. Vertical grabrail 35mmØ
B. Horizontal grabrail 35mmØ
C. Fold down seat
D. Back rest
E. Two clothes hooks between 1050 and 1700
F. Towel rail
G. Alarm pull chord

Figure 27

Note: All dimensions in millimetres

J.7 Accessible unisex shower room

A self-contained accessible shower area should have the recommended dimensions of 2300mm x 2500mm (2200mm x 2000mm),, large enough for a companion or assistant of either sex, located close to accessible toilet and shower accommodation.

Requirements

1. Flooring should be slip resistant with minimum fall 1:50 to floor drain
2. Floor drain needs to be located away from manoeuvring space
3. Both a wall mounted fixed spray outlet and an outlet on an adjustable hose is required.
4. Shower controls need to be embossed and lever operated
5. Water is required to be thermostatically controlled via a TMV3 mixing valve ensuring a maximum water temperature of 43 degrees C
6. For users who wash from a basin and not a shower, an oversized basin should be provided complete with height adjustable provision. The mechanism to adjust the height of the sink should be easily and independently useable.
7. Tip up plastic shower seat (480 mm above finished floor level and 400 mm deep) with arm rests or drop-down grab rails to prevent someone sliding off is required.
8. Shower curtains should be accessible from shower seat, and clear of rails. Where hoists are provided, shower curtains are to be supported on robust wall mounted cantilevered supports that separate from each other (to allow the hoist to travel overhead and across the shower curtain).
9. An additional tip up seat is recommended in the changing area to prevent a user from having to dry in a wet area or wet their wheelchair, or alternatively, consideration should be given to the provision of a body dryer.
10. A shelf should be provided 1000mm above floor level.
11. Panic alarms which meet the above general criteria should be provided.
12. All facilities (where applicable) within the compartment should meet the above common design features requirements.

J.8 Changing Places (see Figures 28, 29 and 30)

Changing Place toilets are intended for assisted use and provide the most appropriate solution for people who require a high level of assistance. The compartment comprises of a toilet, wash hand basin, shower, fixed ceiling mounted hoist and changing bed and has a clear floor space 3m x 4m.

Like peninsular toilets, Changing Place facilities are an additional facility and not intended for use by independent wheelchair users or for baby changing. You would not provide a peninsular toilet in addition to a Changing Place, unless the building size and occupant profile justifies it.

Requirements

1. At least one Changing Place facility needs to be located in larger buildings, for example sports and leisure facilities or education facilities.
2. The Changing Place toilet and shower should be in addition to, not instead of, the provision of standard and accessible provision already provided.
3. The peninsular WC layout and the accessible shower layout should achieve the above design criteria noted previously for such spaces.
4. A sign should be provided at the entrance to the Changing Place toilet indicating the location of the nearest unisex accessible toilet and any baby changing facilities.
5. The door is to have a 1000mm effective opening width.
6. The facility should provide minimum internal dimensions of 3000mm x 4000mm, with a ceiling height of 2400mm. The room should be rectangular in shape and free from any internal columns / projects, ensuring the overhead hoist has full access to the room.
7. Wall or ceiling mounted overhead hoist to have a full room coverage conforming to BS EN ISO 10535.
8. The walls or the structural ceiling is to be designed (clear of plantin the ceiling void as necessary) to allow for the installation of the hoist.
9. The room should be installed with a mobile height adjustable changing bed and shower that can be easily cleaned in dry and wet conditions, power operated height adjustable oversized washbasin, peninsular WC layout, drop down support rails, a retractable privacy screen and 480mm high WC to accessible WCdesign standards, and a shower area.
10. Consideration should be given to providing a Closomat WC. It is recommended Closomat WC’s are provided in a number of Changing Places across the campus to provide access to such afacility. Consideration should also be given to providing a sluice inselected locations.
11. The illuminance in the room should be maintained at 300Lux at changing bed level.
12. As users will be undressing within the facility, the space should beheated. Any heating should either be overhead or low surface temperature.
13. Panic alarms which meet the above general criteria should be provided to both the shower and WC facilities
14. Clear instruction on use of equipment should be displayed clearlyfor benefit of users.

Further advice on the design and installation of Changing Place toilets, particularly in existing premises, including a suitable logo to identify suchfacilities, can be obtained by contacting the Changing PlacesConsortium.

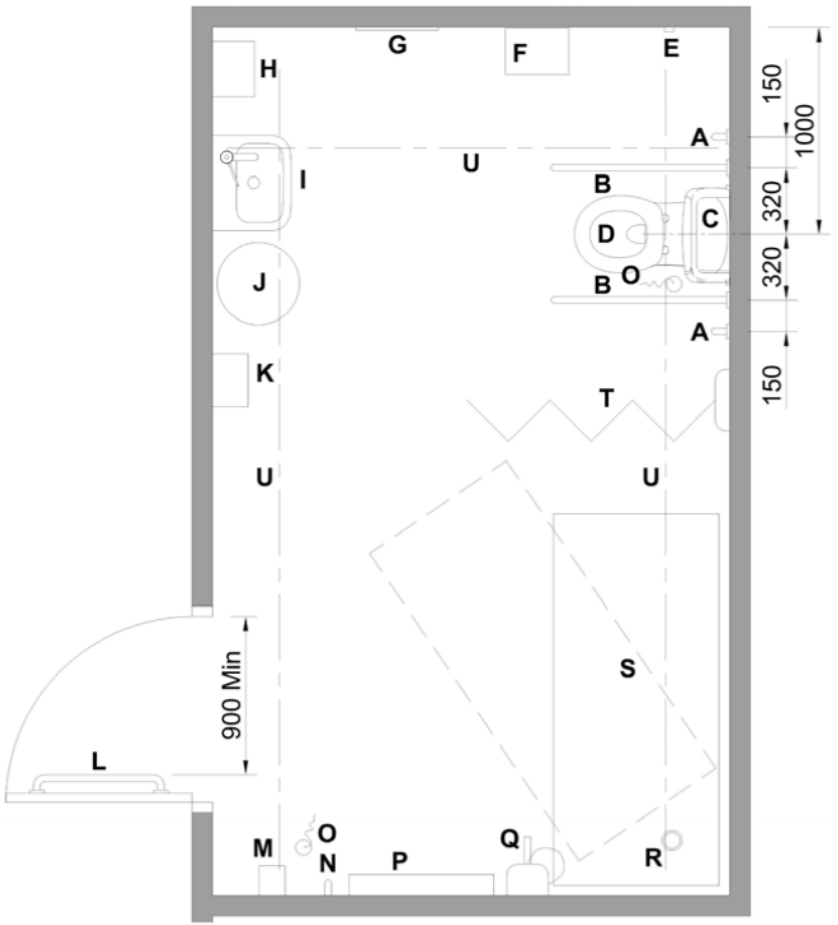


Figure 28

Note: All dimensions in millimetres

Key

A. Vertical grabrail 35mmØ
B. Drop down rail 35mmØ
C. Flat topped close coupled cistern providing a back rest and colostomy changing surface for standing users (where high or low level cisterns are used a rail and padded back rest and separate colstomy shelf 125-150mm deep, 400mm wide, 950mm AFFL should be provided)
D. Peninsula WC
E. Alarm reset button
F. Large sanitary disposal bin
G. Mirror 600 off floor to a minimum height of 1600
H. Paper towel dispenser
I. Large power operated adjustable height wash hand basin
J. Waste disposal bin
K. Hand dryer
L. Horizontal rail to assist door closing
M. Sanitary towel dispenser
N. Two clothes hooks between 1050 and 1700
O. Alarm pull cord
P. Wide paper roll dispenser for use on changing bench
Q. Optional shower unit with hose long enough to reach changing bench for personal hygiene use
R. Floor drain
S. Height adjustable shower/change bench, min 1800mm long
T. Retractable privacy/shower curtain
U. Full room cover tracked hoist

Figure 29

Figure 30

J.9 Gender Neutral Toilet

Toilets that are not separated by gender or sex benefit a range of people with or without special needs, i.e. disabled people, the elderly, and anyone who needs assistance of opposite gender or sex. They are also valuable for parents wishing to accompany one or more of their children needing to use toilet facilities.

Gender neutral toilets can be used by people of any sex, gender or gender identity and people outside of the gender binary.

Where space permits and in buildings where there are multiple cores of toilets on each floor, consideration should be given to designing one of the cores as gender neutral, with a collection of gender-neutral toilets together.

Requirements

1. At least one gender neutral toilet should be provided within buildings where general toilet facilities are offered.
2. The compartment should be signed and have minimum internal floor space 1200mm wide x 1500mm deep with the door opening outward. Where the door opens inside the compartment, the depth should be increased to accommodate door swing.
3. Walls forming the compartment should extend from floor to ceiling providing a fully enclosed WC.
4. A wash basin should be provided within the compartment.
5. Provide a shelf 200mm x 400mm, positioned at 850mm from floor level for personal effects.
6. Provide cloths hooks at 1400mm from floor, a full height mirror 600mm from floor up to 1600mm (minimum) and a hand dryer positioned at standing height.
7. The compartment should be fitted with flashing beacon fire alarm.

J.10 Baby Changing & Breast-Feeding Facilities

Unisex accessible baby changing areas should be separate from the unisex accessible toilets. This ensures the accessible unisex toilets remain available to disabled people. Facilities for baby changing should be provided in buildings used by members of the public and other areas where required by staff or students. The facilities should be unisex and accessible so that they are available to all parents and carers of either sex. Where baby-changing facilities are provided in single-sex toilets, these should be in addition to a unisex facility.

A baby changing room should comprise an adjustable in height changing table, to cater for people of different heights and people in either a seated or standing position. Hand-washing and drying facilities should be provided adjacent to the changing tables, together with nappy disposal bins, and a shelf or table for personal belongings.

The Equality Act 2010 explicitly protects students from less favourable treatment because of breastfeeding. Equality legislation does not stipulate that breastfeeding and rest facilities have to be provided to students and staff who are pregnant or breastfeeding. However, failure to providebreastfeeding facilities could result in students and staff who are breastfeeding receiving less favourable treatment.

Consideration therefore will be given to providing facilities in a central campus location for rest and breastfeeding. For hygiene and comfort reasons, this should be separate from any toilet and baby change facilities. A room for breast-feeding should be accessible and equipped with a range of comfortable chairs of differing heights and space for a large pushchair or pram. Breast feeding facilities should be adjacent to baby-changing facilities for ease of access.

Requirements

1. Baby changing facilities should not normally be incorporated into unisex accessible toilet areas or cubicles and should be in a separate unisex baby changing compartment.
2. Where baby changing facilities are provided, they should be accessible.
3. The room needs to be 2000mm × 2000mm and include:
   - Height adjustable changing table against wall;
   - a washbasin, rim at 720mm to 740mm above floor level;
   - a soap dispenser and an automatic hand dryer, with undersides between 800mm and 1000 mm above finishedfloor level;
   - a full-length mirror, lower edge 600 mm above finished floor level to 1600mm high (minimum);
   - a paper couch roll dispenser
   - a nappy vending machine, the controls between 1000mmto 1200mm above finished floor level;
   - a sanitary disposal bin, preferably recessed;
   - a chair, if a fixed changing table is installed.
4. Any baby feeding area should be provided separate from but witheasy access to baby changing facilities, with private breast- feeding areas. Such a room should have the following as aminimum provision:
   - space to accommodate a large pushchair / pram;
   - a lockable door and lockers;
   - comfortable chairs with footstools;
   - a fridge for storing expressed milk (which should be clearly labelled);
   - a microwave (should the milk require heating for feeding);
   - hand washing facilities and baby change facilities;

J.11 Family Toilet (see Figures 31 and 32)

The needs of children and family groups should be considered when planning all sanitary facilities. Particularly within buildings to be accessed by the general public. This will enable adults to maintain closesupervision of children. Family toilets should comprise a large room withone or more WC (with or without a privacy screen); hand-washing facilities at a height suitable for children and adults; a baby-changing area; and sufficient space for one or more pushchairs.

Where family toilet provision is provided within a building, the compartment should be designed so that is accessible to wheelchair users using the same principles as outlined for unisex accessible toilets and seating provision. All surfaces should be easily reached from seated position with suitable knee space to underside for benefit of wheelchair users.

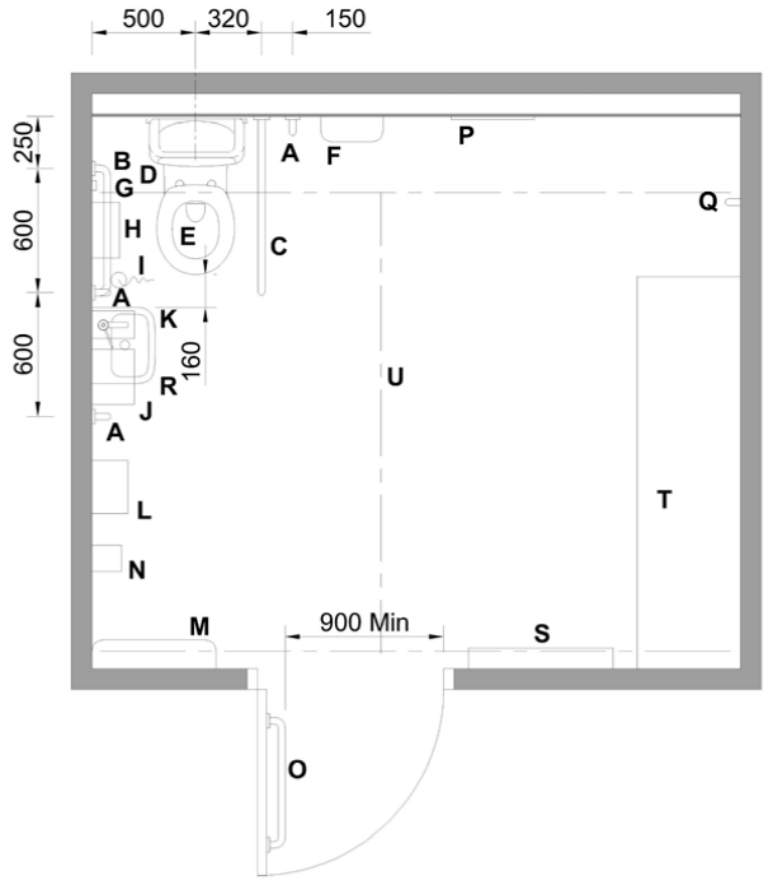


Figure 31

Note: All dimensions in millimetres

Key

A. Vertical grabrail 35mmØ
B. Horizontal grabrail 35mmØ
C. Drop down rail 35mmØ
D. Back support
E. Raised height WC
F. Colostomy bag shelf 950mm high
G. Alarm reset button
H. Toilet paper dispenser
I. Alarm pull cord
J. Paper towel dispenser
K. Soap dispenser
L. Hand dryer
M. Shelf for personal use
N. Sanitary dispenser - controls between 750 - 1200
O. Horizontal rail to assist door closing
P. Mirror 600 off floor to a minimum height of 1600
Q. Two clothes hooks between 1050 and 1700
R. Wash hand basin
S. Wide paper roll dispenser for use on changing bench
T. Height adjustable changing bench, 1900mm long
U. Full room cover tracked hoist

Figure 32

SECTION K

INTERNAL ENVIRONMENT AND FACILITIES

K.1 Surface Finishes

Surface finishes have a significant and wide-ranging impact on the safety, usability, legibility, and comfort of spaces within the built environment, in addition to the obvious issue of defining the building's aesthetic characteristics.

The selection of surfaces finishes should be considered as an integral part of the accessibility provision integrated into the overall building design and should be undertaken in conjunction with the design of lighting, general acoustics, signage, and information.

Floor Finishes in buildings should be selected with regard to a number of criteria including safety, functional performance, durability, visual characteristics, acoustic performance, and environmental issues.

Ease of movement is important for all building users and the provision of suitable floor finishes that are firm, even, securely fixed, and non-directional are considered inclusive. Anyone using a mobility aid, such as a stick or a walking frame, or who has difficulty lifting their feet, will be much more likely to trip on a deep pile carpet than a more solid floor covering. Where carpets are used, consideration should be given to the type of underlay, pile height, and density to ensure the surface is sufficiently firm.

The use of visually contrasting floor finishes and changes in texture can be used creatively to assist with wayfinding and navigation, and to define different areas within a building. Care should be taken to ensure adjacent floor finishes have similar slip resistant characteristics to ensure the selection of adjacent flooring materials does not introduce trip hazards. Floors can be colour coded to identify different floor levelsor a particular department or area of a building.

Expansive floor finishes that are shiny or reflective should be avoided asthey can be visually confusing and are a potential source of glare. Reflections from windows or from the sky through an atrium roof can be particularly disorientating if the floor finish is not specified appropriately.Glare caused by reflections of direct sunlight or other bright light sources is likely to be a source of discomfort and disorientation for some people.

Shiny floor finishes may also be perceived as being wet, which can cause anxiety for many people who will not want to cross the floor surface for fear of slipping.

Floor finishes with a matt or satin finish are preferred in the majority of circumstances.

The design and placement of natural and artificial light sources should be considered alongside the selection of floor finishes to reduce the likelihood of glare and reflection and to ensure the floor surface is adequately and evenly illuminated.

The use of large or bold patterns on floors should be avoided as they can be visually confusing and may make it difficult for people to identifypotential obstacles and changes in level. Similarly, the use of stripes, orstrong contrasting lines in particular can be perceived as the edge of a step and cause a person to trip. Plain surfaces or a small pattern using complementary colours are preferred. The following factors should be considered;

1. Ensure slip resistance is maintained when the floor is wet and dry and when spillages occur.
2. Ensure changes in floor finish occur away from the direct line of travel or in a doorway.
3. Highlight the change in level using floor finishes to provide visual contrast where tactile warning surfaces are not suitable.
4. Install floor finishes that are firm, even, securely fixed, and non-directional.
5. Avoid the use of deep pile carpets and coir matting.
6. Avoid the use of loose-laid mats.
7. Make sure floor finishes are durable and well maintained.
8. Optimise visual contrast between floor and wall finishes and other features, such as obstructions.
9. When selecting materials for use outside, ensure visual contrast is maintained during wet conditions
10. Use changes in the colour, texture and acoustic characteristics of floor finishes to delineate areas and contribute to a system of wayfinding.
11. Ensure where different materials are used the adjacent floor finishes have similar slip resistant characteristics.
12. Avoid shiny and reflective floor finishes.
13. Avoid large and bold patterns.
14. Consider the placement of natural and artificial light sources to provide an even level of illumination.
15. Consider the use of natural floor coverings to avoid the potential for aggravating allergic reactions.

Walls and Ceiling finishes - should be fully considered alongside floor finishes to optimise the visual, acoustic, and aesthetic qualities of an environment. This is of concern for people with hearing difficulties and for those who have cognitive, mental health, or visual difficulties.

As with floor finishes, bold patterns should be avoided as they may cause visual confusion and mask features, such as a change in directionor a useful wall-mounted fixture.

Patterned wall surfaces can also be distracting for people who lip read or who use sign language and for those who have cognitive, mental, andvisual difficulties. It is particularly important that walls forming a background to staff at reception counters and information desks, or to speakers in a lecture room, provide a plain, even, and non-distracting surface.

Polished and shiny wall finishes that are likely to cause glare and reflection should be avoided as these can be visually confusing and a source of discomfort.

Walls with windows should be pale in colour so as to minimise the glareof the bright window when viewed against the surrounding wall. Generally speaking, ceilings should be bright so that both artificial and natural light sources are reflected and distributed evenly.

Where feature walls are introduced as part of a building interior design,it should enhance and be incorporated into the wayfinding system. Introducing singular colour to signify a floor in multi-storey buildings withrepetitive layout on all levels assists users with space identification andwayfinding around the building.

Features which extend outwards from walls should be avoided as they are a hazard for visually impaired people who use the wall / floor junctionto negotiate. Where proposed, any feature should not extend more than100mm from the vertical plane within the first 2100mm from ground level.

K.2 Acoustics

The acoustic design of spaces within a building should suit their intended function and enable people to hear speech, music, or other intended sounds clearly. Visually impaired people will rely on acoustics to negotiate a building and listen out for hazards, such as a door opening or someone walking towards them. Good acoustic design will enable sound to be heard and accurately placed without interference or distraction from background noise or excessive reverberation.

To provide an accessible acoustic environment:

1. A suitably qualified acoustician should be included within the design team.
2. The extensive use of hard materials that have low absorption coefficients should be avoided.
3. The advantages of absorbent floor finishes must be balanced with any problems that soft surfaces have on wheelchair accessibility.
4. Materials and surfaces that are sound-absorbent should be used to provide an environment that is sufficiently reverberant to provide some acoustic liveliness.
5. The attenuation of loud sound sources should be considered. Building services with moving parts are commonly a source of high sound levels.
6. The frequency range of the general sound in the space should be identified, since high frequency sounds may be quiet but still annoying.
7. The acoustic performance of places used to transfer information, such as reception counters or a canteen servery will require a careful selection of materials to ensure communication is enhanced and hearing enhancement provisions (induction loops or speech transfer systems) can suitably perform.

K.3 Lighting

Good lighting is essential for everyone. It enables people to move safely and independently around a building or external environment. Good lighting aids the perception of space, colour, and texture. It facilitates identification and reading of signs and instructions. It also makes lip-reading and visual communication easier.

Poor or unsuitable lighting may render a building or environment inaccessible to some people. If lighting levels are too low, some people may not be able to differentiate between features in a building or along an external route, and therefore may be unable to navigate independently. If lighting is positioned so that it creates sources of glare and reflection or strong shadows, it may cause physical discomfort and disorientation for some people and may also be visually confusing. The provision of good lighting is of particular concern for people with visual impairments.

Visual contrast between surfaces can be enhanced or minimised by light; the design and selection of surface finishes and lighting should always be considered together.

Internal lighting in buildings includes all sources of natural and artificial light, including windows, roof lights, glazed doors, glazed walls, and light fittings. These should all be considered as contributing to the overall lighting design. However, the artificial lighting installation should be designed to provide an adequate and even level of light on its own so that the building can function as intended during the hours of darkness.

Lighting design that creates strong shadows on walls and floors should be avoided, particularly if there is a change in level or direction. Strong shadows can mask step edges or give the impression that there is a step when in fact there is not.

Light should be distributed evenly throughout rooms and in all circulationareas. In corridors, a suitable distribution of light that is comfortable to the eye can be achieved by fixing light fittings in a line down the centre of the corridor. Light fittings fitted transversely across a corridor are not satisfactory. Careful consideration should be given to the direction of natural and artificial light in workspaces to avoid glare, reflection, and silhouetting. This is particularly important where people use computers as a screen can be rendered unusable by reflections if viewed against astrong light source.

Light fittings should be selected to suit their particular function and location. Downlighters should always have diffusers to avoid the potential for glare and reflection. Uplighters positioned at floor level should not be used as they can cause glare and obscure, rather than enhance, visibility.

Lighting which is positioned to illuminate a person's face at information points such as reception counters or a canteen servery is particularly important to facilitate lip reading. When lighting is only provided behinda person's head, such as when a reception counter may be screened off by a bulkhead at ceiling level, it can silhouette the receptionists face, whilst down lighters / undiffused light overhead can cause facial shadows from the nose covering the mouth. Both limit lip reading.

K.4 Hearing Enhancement Systems

Hearing enhancement systems enable people with hearing loss to receive amplified sound via their hearing aid or other device, without interference from background noise. Areas of buildings where audible communication is an inherent aspect of the space, such as lecture theatres, auditoria, spectator areas, meeting rooms, classrooms, interview rooms, and at reception, service and information counters, appropriate induction loop, infrared or radio transmission should be installed. They are also beneficial in other busy areas where there is background or conflicting noise nearby.

Induction loop systems should be designed such that any spill over from one loop does not affect another loop, or compromise confidentiality. The use of low spill systems where induction loops are provided to larger areas is likely to be necessary (induction loops allow sound to be heardwithin a magnetic field, which extends beyond walls and floors, so for example, a hearing aid user in a lecture theatre will be able to hear the adjoining lecture at the same time if the systems are not appropriately specified, installed and commissioned).

Induction loop systems should be installed in accordance with BS 7594 and should perform in accordance with BS EN 60118-4. The presence of an induction loop system should be clearly signed both at the approach to, and inside the room or space in which the system is fitted.

Infrared systems should be installed where confidentiality is required or areas where local interference is likely to prevent an induction loop system being used. Infrared systems often provide better quality of sound but require management to ensure receivers are charged, distributed, collected and sanitised upon return.

Induction loops fitted to the likes of reception counters should, in appropriate circumstances, be hard wired into a fixed fuse spur to ensure they are not unplugged by the receptionist and include a fixed microphone in an appropriate location. The provision of an ‘outreach plate’ microphone is recommended. Staff must be trained in the use of hearing loops.

Portable induction loops may be suitable in certain situations. The management of booking out and retuning portable induction loops will require consideration.

All entry phones and emergency telephones in passenger lifts should incorporate an inductive coupler with additional volume control to adjust amplification for benefit of people wearing hearing aid.

Hearing loops should be installed in all larger Lecture Rooms and instructions on their use provided to the lecturer. Portable Hearing Loops should be installed in smaller lecture rooms, upon recommendation of Student Services for identified students. The end-goal of the institution is to have fixed hearing loops and systems in all Lecture Rooms.

Hearing loops must be tested regularly to confirm they are working. Records of tests should be kept.

K.5 Signage and Information[1]

In all buildings and, where appropriate, in external environments, signage and information should be provided to enable people clearly understand the layout and function of a space or environment and to find their way around independently. Signage and information should be usable and informative to everyone and be developed so that they include information in visual, tactile and audible formats, where practicable, and be simple and easy for everybody to understand. All text signage must be in Welsh and English.

All signs and information should be clear, consistent and unambiguous. Messages and directions should be concise and use familiar words, symbols and language. Information that is too complicated or that uses unfamiliar language or terminology is likely to be difficult for some people to understand. The over-provision of signage and the use of very complex signs should be avoided as they are likely to cause confusion and will be of minimal benefit.

Clear signage is particularly valuable for people who may have difficulty communicating and for people who prefer not to have to ask for directions. Signs incorporating pictorial symbols are beneficial for people who have learning disabilities, people who have difficulties reading text, and for people who are not familiar with the English/Welsh language.

The four main types of signage are information signs, directional signs, identification signs, and mandatory safety signs.

Signs should be provided at each decision point where a choice of routes is available, for example more than one pathway or corridor, or a series of doors.

A wall-mounted information board should be provided at lift landings, at floor level landings of staircases, and at other major decision points in main circulation routes. Following factors need to be considered when deciding on signs locations;

1. Place signs in a comfortable viewing height between 1200mm - 1700mm for average standing height and between 750mm -1350mm for average seated.
2. Directional signs should be placed only on fixed parts of the building such as walls, posts and floors. Where such signs would not be visible in large crowds, they should be suspended from the ceiling.
3. The headroom of directional signs suspended from ceilings or posts, or projected from walls, should where practicable be not less than and around 2300mm.
4. Signs to rooms should generally not be placed on doors (exception of toilet doors) but on the wall to the leading-edge side of the door,as the sign might not be visible when the door is open.
5. Signs should be positioned to avoid reflections from daylight and artificial lighting.

Text - block capitals are harder to read for the majority, especially many people with dyslexia or visual impairments as there is no shape to the word. Using an initial upper-case letter and then lower-case text is recommended.

1. Use a plain (sans serif) font such as Arial, Helvetica and Calibri (with the exception of Comic Sans which some people with dyslexia find difficult).
2. Avoid small font sizes - a minimum 12 point for documents and emails, 16 point plus for large print information / notices and larger fonts for signs, depending upon viewing distance.

[1] *NOTE: Bangor University branding / signage requirements may also apply*

3. The text height for non-safety visual signs should be chosen to suit the application; consider text height for;
    - long distance (signs on approach to buildings) – 150mmmin.
    - medium distance (directional signs) – 50mm to 100mm
    - short distance (room signs) – 25mm
4. Seek a good colour contrast between the sign lettering and the signboard / background. (70 LRV min)

QR & 2-D Barcodes – use of QR/Barcodes for enhanced and detailed information that can be accessed electronically should be considered. This will reduce signage 'clutter' and enable those who require the information to read using their own electronic readers.

Tactile Signs - tactile information such as Braille and / or embossed text will be helpful to some and is critical on certain signs, such as toilet doors. The most widely used tactile information is an embossed symbol or text.

Some people with visual impairments lose their ability to see colours clearly and it is therefore helpful to combine a colour with a shape, where possible – for example an orange triangle or a blue circle etc.

Directional signs, and signs identifying functions or activities within a building, should incorporate embossed letters in a sans serif typeface with a depth of 1.25mm ± 0.25 mm, a stroke of 1.75mm ± 0.25 mm, andthe edges slightly rounded but not half round in section.

Pictures and Symbols - Signs other than universally recognised signs should include plain bilingual text and pictograms together to assist people who have sensory/neurological processing difficulties.

Use arrows with a proportionately longer stem. As a general guide, the arrow should be on the left of the text if it points left, and on the right if it points right. For straight on, use an upward arrow positioned on the left.

The size of symbols or pictograms used on visual signs should be as large as the location allows, subject to design constraints. Where space permits, symbols should be at least 100 mm in overall height.

Signage Examples[2]:

In Lecture Theatres, the following 'Priority Seating' signs should be provided (250mm high x 400mm wide) to the desk area for accessible seating.

[2] *NOTE: Wording to be bilingual*

Toilet doors should be labelled with their facilities for example if they are left or right-hand transfer, that they have baby changing facilities and that they are gender neutral spaces.

Refuge signs for people with mobility impairments and disabilities should be clearly signed with appropriate British Standard signs. Two-way communication systems should be provided with suitable signage as described above with instructions that are clear and easy to follow. The floor level should also be clear and the location of the nearest evacuation chair should be identified.

K.6 Outlets, Switches and Controls (see Figure 33)

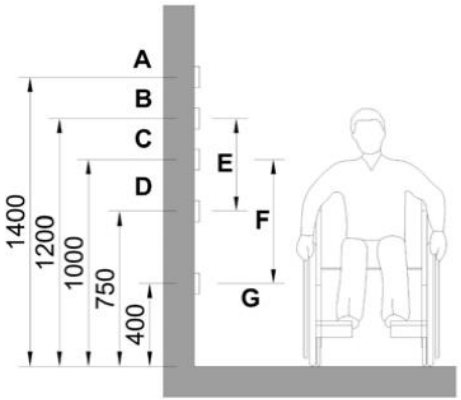
Power outlets, switches and controls should ideally be immediately apparent, easy to reach, simple to operate, and consistent in design. They should visually contrast with their background or surrounding surfaces so that they are easy to identify. When used for similar operations in the same location, control panels and switches should function in the same way or sequence.

All outlets, switches and controls should be positioned in a logical and consistent arrangement throughout a building so that they are easy to locate. Light switches should be positioned at a consistent distance away from door frames, and preferably at the same height as the door handle.

Automatic lights provided in buildings, such as in stairwells and corridors, should be set to ensure that the timings suit the needs of all users.

All outlets, switches, and controls should be positioned a recommended distance of 500mm from any obstructions and the internal corners of a room.

All controls and switches should be capable of being operated using one hand and without the need for gripping or twisting and positioned in accessible height. (see diagram). The force required to operate any switch or control should not exceed 22 Newtons.



Key

A. Upper limit for controls and switches
B. Range for meter indicators
C. Range for light switches
D. Range for controls needing precise hand movements
E. Range for permanently wired switches
F. Range for socket outlets
G. Lower limits for outlets and sockets

Figure 33

Note: All dimensions in millimetres

K.7 Shelves

Wherever practical shelving should be positioned such that it can be reached independently.

Where storage facilities are intended for use by a particular person, e.g. in a place of employment, they should be customised according to the individual's requirements.

Bookshelves or drawer pulls for use by wheelchair users should be not lower than 400 mm from the floor. Shelving for use by people who can stand but have reach difficulties and difficulties bending should be not higher than 1500mm and not lower than 750mm from the floor.

Where a wheelchair user or a seated person is accessing storage from the front, shelving is best positioned not higher than 1000mm and not lower than 650mm. Where a wheelchair user or a seated person is accessing storage from the side, shelving is best positioned not higher than 1060mm and not lower than 665mm.

In facilities such as a library it will not be practical to limit storage in this way. In such situations a management solution will be necessary to ensure people who are unable to see or reach items beyond their reach have access to the material available. This may include for example a computer with all books available linked and searchable under appropriate key search words, with the user being able to book assistance or collection of the book in question.

K.8 Vending machines

All vending machines should be easy to use and clearly visible. Controls should be usable by people with visual difficulties and incorporate effective visual contrast, along with clear and well displayed instructions including information in Braille. Machines should be mounted so that any buttons or coin slots/card readers are positioned between 750mm and 1200mm above floor level.

All coin-and-card operated machines should be located on a level floor,with a clear floor area at least 2400mm x 2400mm in front. This will enable wheelchair or electric scooter users to approach from the front or side.

Free-standing machines should not be mounted on a plinth as this can inhibit close access for some people and may place the controls out of reach. If the use of a plinth cannot be avoided, it should not project beyond the face of the machine and controls should be within the recommended height limits when measured above the surface of the access route.

All controls should be capable of being easily operated with one hand, without the need to grip or twist. Push-button controls, pull handles, levers, and sensors are preferred. Buttons should be at least 20mm diameter and slightly raised above the surrounding surface so as to be identifiable by touch. No control should require a force greater than 20 N to operate.

Controls and instructions to all coin-and-card operated devices should be provided and illuminated to a level of 200 lux.

K.9 Pre-pay facilities

Pre-pay card facilities are to be encouraged where appropriate for the likes of printing and catering services. Various means of pre-paying such as internet or student services should be provided to ensure the service is accessible.

K.10 Kitchen and Refreshment

Where staff/student kitchen facilities and areas for making refreshments are provided in buildings, they should be accessible, useable and understandable to everyone. They should be located on an accessible route and be in close proximity to associated dining or seating areas.

Kitchens should incorporate work surfaces and appliances at different levels to cater for people who work at different heights. Lower work surfaces should also incorporate a clear knee space underneath to enable people to sit whilst using appliances or preparing food.

Wherever possible, work surfaces at two different heights should be provided within a kitchen or refreshment area to cater for a wide range of people.

An alternative arrangement is to provide adjustable height work surfaces. These should be electrically operated so that they are easy to adjust to meet individual needs. The adjustable height work surface should be provided between 700mm – 900mm with unobstructed space underneath, and there should be at least one 900mm section of accessible, height adjustable, worktop

Fixed-height work surfaces for people who are standing should be 900mm high and work surfaces for people who are seated should be 760mm high. For people who are seated, a clear knee space 700mm high x 600mm deep x 800mm wide should be provided directly below hobs, sinks, and task areas, and adjacent to appliances including ovens, washing machines, dishwashers, refrigerators, and freezers. The side on which the knee space is located should relate to the direction of opening of appliance doors and the location of any controls.

Knee spaces should be clear of any support brackets, legs, pipes, and cables. To enable convenient approach to any knee recess and alongside any appliance requiring sideways access, a clear space 1370mm long x 800mm wide should be provided.

Where refreshment areas provide a limited range of facilities for tasks of relatively short duration, for example, equipment for making drinks only or for heating food in a microwave oven, it may be acceptable to provide a single-height work surface for all users, 850mm high, in place of dual-height work surfaces. Consideration should be given to reducing the level of interaction required at such a facility, for example, the provision of an instant hot water system for tea and coffee will reduce the steps necessary to make a hot drink. A work surface of this height should not be provided in kitchens where full meals are prepared as it is likely to be uncomfortable and unsuitable for people undertaking tasks of longer duration.

Kitchens with work surfaces and appliances on three sides should incorporate a turning area 2400mm in diameter, clear of all units.

Features such as the worktop, edging, base/wall units, sockets, switches and handles should all contrast in colour with each other. They should also contrast in colour with the wall and floor surfaces.

Sinks:

- The sink basin should be shallow for optimum approach, rectangular, insulated 150-200 mm bowl. Wastes should be to the rear of the bowl and the underside should be well insulated to protect the wheelchair user when approaching.
- Waste pipes and plumbing underneath can be unsightly so where possible should be covered.
- Taps should be easy to reach and understand and operate single-handedly for example dual flow mixer/mono-bloc with swivel arm and clear temperature markers.

Wall Cupboards:

- Wall cupboards to be fitted approximately 350 mm from the top of worktop to the base of cupboard.
- Edges and corners should be rounded.
- Handles need to be easy to reach, grip and operate and contrast with their background.
- Wall cupboards should have task lighting underneath.

K.11 Study Areas

The extent of the study area will be determined by the number of students expected at any one time using the area. Desks should be positioned with adequate space on each side to enable people to circulate comfortably and sit without obstructing others.

Desks with a fixed work surface should ideally have a height of 750mm and a clearance space of 700mm to the underside. The provision of adjustable-height desks or work surfaces will be beneficial and will facilitate access to the broadest range of people. A strategy to provide height adjustable desks across curriculum and independent study areas will be required. Any teaching rooms with height adjustable provision in place should be identified on the University's systems and timetabled accordingly. Each desk should have easy access to a power socket and be adequately illuminated with background and adjustable task lighting.

Specialist curriculum areas such as laboratories, IT rooms, dark rooms, training kitchens, art rooms, moot rooms etc. along with drop-in facilities such as libraries, learning resource centres and independent study rooms should be designed accordingly with permanent height adjustable provision in place. Where multiple rooms are provided that perform identical functions, it may be appropriate to designate one or a selection of the facilities as accessible and timetable the space accordingly. Care however must be taken to ensure that rooms selected are the most conveniently placed provision with respect to proximity to other rooms necessary to access when completing the particular course in question.

It is essential to provide variety of seat heights: 380mm, 480mm and 580mm from finished floor level and some seats to have back support and arm rests. Seating should contrast visually with the surrounding surfaces.

Where computers are provided, they should be positioned where there is adequate space for people to sit comfortably at the desk and lay out papers or books to either side. There should also be sufficient space for people to rest their hands and arms in front of a keyboard when not typing, and to use a mouse effectively with a straight wrist.

A strategy should be in place to ensure an appropriate spread of computers necessary to meet demand or a particular staff / student need incorporated assistive technology such as screen readers and software to enable the font size to be increased on screen.

Computer screens should be adjustable so that each person can position the screen to suit their individual need. Screens should not be permanently fixed to a wall or stand as this will render them unusable by some people, particularly those who need to view the screen at very close range.

K.12 Specialist Curriculum Facilities

The extent of specialist curriculum facilities (including teaching and research laboratories) within a University Campus is extensive. The accessibility requirements for specialist facilities will require assessment on a case by case basis.

K.13 Lecture Room and Conference Facilities

Facilities for students and other members of an audience, as well as for lecturers and performers should all be accessible to mobility and sensory impaired people. The overall arrangement of associated facilities, such as toilets and back-stage areas, should enable convenient access and full participation for all.

All such facilities should be equipped with an appropriate hearing enhancement system (see hearing enhancement section K.4) to enhance sound quality and audibility for hearing aid users.

Students and audience seating may be arranged on raked or level floors. Whichever arrangement is adopted, sight lines from all seating positions should provide a good view of any speaker, screen, or presentation.

Uninterrupted sight lines are particularly important for people who lip-read and use sign language, and for people viewing speech-to-text screens. The University should carefully consider the provision of facilities such as speech-to-text screens or independent screens for the projection of sign language within Lecture Rooms and Conference Facilities. (It is possible to buy in remote sign language support on a case by case basis, by transmitting the lecture live to an outside agency who signs the lecture live and streams live the signer to the screen within the lecture theatre).

Access to all seating should be unobstructed and clearly identified. Accessible spaces for wheelchair users should be as direct as possible, 900mm x 1500mm. All seats should provide effective visual contrast with floor and wall surfaces to aid identification.

Where seating in lecture rooms / auditoria is fixed, the layout should accommodate permanent accessible spaces. The spaces should be positioned in different parts of the lecture room / auditorium to provide a choice of seating position. They should not be positioned where they will segregate people from the rest of the seating area.

Spaces should accommodate two people using wheelchairs seated side by side and provide sufficient space to manoeuvre. The spaces should have a fixed seat to one side for a companion with height adjustable writing table. At the front of a lecture theatre, it may be necessary to provide the writing table on lockable wheels to maximise flexibility.

All wheelchair positions should have level floor surfaces.

In rooms where seating is not permanently fixed, such as in seminar and meeting rooms, wheelchair users and others should enjoy an equitable degree of choice in seating position. Seats should be arranged to provide convenient access between rows or around the perimeter of a room and to facilitate adequate escape in the event of an emergency.

Space for assistance dogs to rest alongside their companion should be provided adjacent to some seats, away from access aisles and emergency escape routes.

Where raked floors are used, seating positions for people using wheelchairs should incorporate a guard rail to guard any change of level.The seating position should have a level floor.

In large auditoria where there are several seating spaces for wheelchair users in different locations and potentially at different floor levels, each seating space should be signed and have access to unisex accessible toilet facilities within a convenient distance. (40m preferred).

Within auditoria with dimmable lighting, a means of ensuring stair nosings are illuminated will be required. This may be achieved by way of illuminated nosings or low-level down lighters.

K.14 Speakers / Lecturers Facilities

Equipment such as lecterns for speakers or lecturers should be adjustable in height to meet individual need. The lower front edge should range in height between 800mm and 1100mm and the lectern surface should be inclined to an angle of 30 degrees from horizontal. Where lecterns incorporate a table for mounting a laptop or overhead projector, the surface should be no higher than 800mm. Lecterns should incorporate a light to illuminate any reading material.

Where a desk (or desks) are used, they should have a maximum surface height of 760mm and a clearance of 700mm to the underside. There should be sufficient clearance between the desks and any rear wall or podium edge to facilitate safe and convenient access for all.

Where conference or lecture facilities comprise a speaker platform or raised podium, it should be accessible to all. If access to the raised area is via a ramp or steps, it is preferred that they are designed in accordance to the requirements in section C.

However, if the change in level is significant which means that it would be impractical to construct a compliant ramp, a platform lift should be provided. The platform lift should provide convenient access to the raised podium but should be screened so that it can be used discreetly. Alternatively, consideration should be given to remove the raised area to mitigate the need to provide a ramp or platform lift.

K.15 Reflection Room

The University seeks to ensure consideration and provision is made for quiet prayer, contemplation and meditation. A reflection room can be shared by people of different faiths and no faith ensuring the conditions particular to different beliefs are not compromised. The room should be quiet enough to allow concentration on prayers or meditation or just timeout. The room is not intended for long periods of use by individuals. The room should be free of permanent furniture with folding chairs and some storage provision. The reflection rooms will accommodate the following where possible:

- located in close proximity to washing facilities.
- contain simple features such as plain walls and carpet. There should be no permanent features or symbols pertaining to any faith or belief.
- storage space for keeping artefacts, rosary beads, prayer mats,cross and similar symbols.
- provision of a curtain to allow men and women to pray / meditate separately if required.
- shoe rack for those required to remove shoes.
- direction sign to Mecca (which Muslims face when praying).
- open during the day and available to all students and staff

the reflection room should be kept clean. Food or drinks will not be permitted.

K.16 Student Accommodation

The provision of accommodation for use by individual disabled students should be tailored around reasonable adjustments to meet the needs of the individual. There is no standard accommodation layout that will suit all users. General considerations include:

- An adequate number of adapted rooms within each complex for students with physical disabilities. Accommodations should be designed with flexibility in mind to accommodate different needs, and in some instances allow for additional fixtures or fittings if required. Designs for new-build accommodation should ensure that ceilings are strong enough to support hoists.
- In general and where practical, accessible rooms should not all be grouped together, but integrated throughout the complex to prevent marginalisation and isolation of disabled students. This approach will allow students to choose the style of accommodation they prefer, and to live near their friends. Attention needs to be given to safe fire evacuation, and students' safety should not be compromised.
- Kitchens and other shared communal space need to be adequate to comfortably accommodate wheelchair-users and other students (refer to section K.10).
- Full access to equipment in shared facilities is needed, for example, adjustable-height sink and work surfaces in kitchens, accessible cooker controls and laundry facilities.
- Larger rooms and extra power points may be needed for disabled students using additional technology. Some students may need to recharge an electric wheelchair in their room or have charging facilities close to their room.
- Intercom systems between students' and support services or Carers' rooms should be an optional provision.
- Fridges for storage of medication and special diets should be supplied in rooms if required.
- A mixture of walk-in showers and/or baths should be supplied in accessible rooms, as disabled students are likely to have different needs. Equipment such as bath hoists should be supplied in some bathrooms; designs for new-build accommodation should ensure that ceilings are strong enough to support hoists.
- Materials used in rooms, including carpets, curtains, mattresses and certain types of paint, can affect students with asthma and other allergic conditions, so these should be considered during the procurement stages. Even if the whole campus is not toxin- free, it is important for students to have a toxin-free environment where they sleep.
- Automatic doors with vicinity sensors are important, and sensors need to be located at an appropriate distance to open in time before students in wheelchairs reach them. Smart door-opening devices can be used in conjunction with the above to provide security where required.
- Televisions in common rooms should have Teletext to assist students who are deaf or have a hearing impairment.
- Contrasting colours for doors and corridors to assist visually impaired students.
- Provision for guide dogs and hearing dogs needs to be considered, and 'spend pens' or bins close to residences should be provided for hygienic purposes. Some students may object to sharing a residence with a dog due to anxiety, allergy or for religious reasons, and this will need to be negotiated with other students on allocation of accommodation.
- The distance of rooms from the main campus and accessibility of routes to key social spaces need to be considered.

Where adapted bedrooms are provided, consideration should be given to the following;

- Each bedroom should provide sufficient circulation space to suit the individual's needs, for example, some people who use motorised wheelchairs may require 1800mm turning circle circulation space, rather than 1500mm which accommodates smaller manual wheelchairs.
- Single bed complete with bedhead (height adjustable bed may be required).
- Bedside table.
- Desk area at least 1500mm wide x 600mm deep (height adjustable desk may be required).
- Task lighting shall be provided.
- Double wardrobe with two drawers under at least 1000mm wide x 590mm deep with suitable height to facilitate access from seated position.
- Minimum of 1500mm of bookshelves.
- Full length mirror.
- Double coat hook.
- Suitable wet room with en-suite washing, showering and toilet facilities shall be provided (see Section J.5 for Accessible WC and Shower Room for details).
- Access to and full use of kitchen facilities and social areas shall be provided.

Common kitchen / lounge facilities should provide:

- Accessible lockable cupboard space in addition to storage for general cookware etc.
- Height adjustable sinks and cooking facilities to meet the need of all users.
- Surfaces to be heat resistant and with splash backs.
- Table and chairs to enable all students eat together.
- Sufficient space for additional fridge/freezers (if required).
- Sufficient manoeuvring space for wheelchair users within the lounge area.

See Figure 34 for an example of an accommodation layout that includes a bedroom, en-suite bathroom, and kitchen facility.

As noted above, there is no standard accommodation layout that will suit all users, however, the University seeks to provide quality and accessible accommodation for a wide range of students with disabilities through the provision of the following room types and considerations. The provision of such rooms can minimise disruption and provision of accommodation in a timely manner.

Rooms suitable for visually impaired (V) students:

- All furniture should be placed to ensure 1000mm clear space between them.
- All furniture should have rounded edges.
- Furniture should have contrasting colours on surfaces.
- Door and wardrobes handles to have visual contrast.
- Soap dishes, coat hooks and taps to have visual contrast for visibility.

Rooms suitable for hearing impaired (H) students:

- A flashing light connected to the fire alarm system in bedroom,en-suite and kitchen.
- Vibrating pad to place under pillows.

Rooms suitable for mobility impaired (M1) students:

- Firm bed surface not less than 450mm in height (height adjustable bed may be required).
- Unobstructed access to furniture and fittings, i.e. windows.
- Door / drawer handles should be easy to grip and operate without the need for twist operation.
- Emergency alarm cord adjacent to the bed.
- Wash hand basin to have lever action mixer taps.
- Contrasting vertical grab rails to each side of the wash hand basin, 600mm long and fixed at 1100mm mid-point from floor.
- Emergency pull cord reachable from floor.
- Shower tray should be non-slip with maximum height 190mm.
- Provision for shower stool.
- Contrasting support rails in shower area.
- Shower control to have lever action.
- Contrasting shelf reachable in shower from standing and sitting position.
- Showers to have thermostatic mixer delivering water not exceeding 43 degrees.

Rooms suitable for wheelchair users (M2) students:

In addition to the requirement for M1 rooms:

- Wardrobe with low-level shelving and rail height not exceeding1400mm above FFL.
- Height adjustable desk and low-level shelving with clear kneespace.
- Full length mirror positioned between 400mm – 1800mm.
- Electrical plug sockets adjacent to the mirror.
- Teleflex window gear to all openable windows (use of Possum Assistive Technology System preferred).
- Work surfaces between 800mm – 850mm with knee space to underside.
- Hand operated curtain tracks.
- Wet room style shower and toilet en-suite (see Section J.5Accessible WC and Shower Room for details).
- Unobstructed turning circle circulation spaces to accommodate wheelchairs (1800mm preferred, 1500mm minimum).
- Emergency call alarm within the reach from bed and areas around the bed.

Rooms suitable for wheelchair user (AE) students requiring care:

In addition to the requirement for M2 rooms:

- Availability of interconnecting adjacent room for carer.
- Additional sockets adjacent to the bed.
- Emergency call alarm connected to the carers room.
- Main lights control from bed.
- Provision for ceiling hoist assisting transfer from bedroom to en-suite.

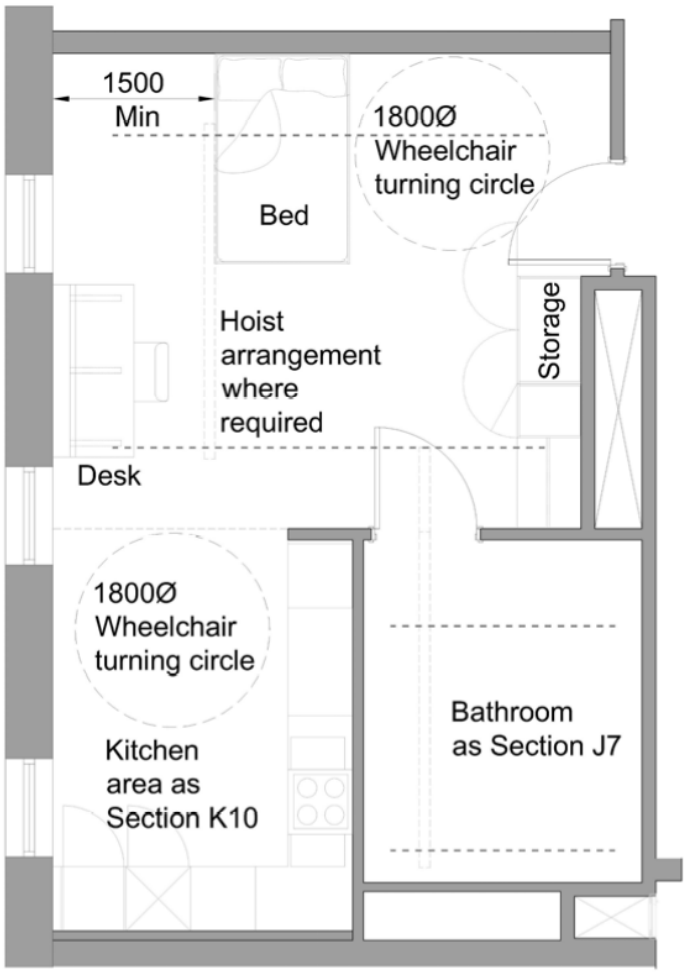


Figure 34

Note: All dimensions in millimetres

SECTION L

MEANS OF ESCAPE

The University has in place policies, procedures and equipment to facilitate the safe evacuation of everyone in an emergency. Inclusive design requires not only convenient access to buildings and services but an environment that facilitates safe, independent, and dignified evacuation for all.

At the early stages of design, it is recommended the University, or its Consultants, complete an initial Fire Risk Assessment to inform the design during the early stages of design development.

Design solutions that facilitate independent evacuation should be fully explored and incorporated into buildings wherever possible. In buildings with more than one floor level, evacuation of people from areas of the building other than the exit level is likely to present a challenge for building managers.

In smaller buildings, such as those with two floor levels, served by a platform lift and stairs, the use of evacuation chairs may be considered as a potential means of assisting people to the exit storey.

In general terms, use of evacuation chairs should not be considered a suitable solution for evacuating disabled users from a building. Many people regard the use of evacuation chairs as undignified and some experience high levels of anxiety whilst using the equipment, both those being transported and those providing the assistance. The use of evacuation chairs should only be considered where all other means of facilitating independent evacuation have been explored and there is a need to physically evacuate the person.

In many situations, particularly in multi-storey buildings, the preferred means of evacuation from floor levels other than the ground is via an evacuation lift.

Evacuation lifts are constructed with some additional protection against fire, have a secondary power source and can facilitate assisted and in some cases unassisted escape in the event of an emergency.

It is essential that evacuation lifts are purposely designed to include a role in emergency evacuation. The lift requires a “protected lobby” with direct access to a stairway and should normally be operated only by specific personal in the event of an emergency. The lobby area could be used as a refuge area and should be fitted with a two-way communication system and ideally CCTV. The two-way communication system will link back, via a secure UPS protected route, to the central University Security Base and to a communication panel at the Main Entrance/Fire Panel.

A passenger lift may be suitable for use in an evacuation if:

- the emergency situation dictates.
- it has a direct exit to a place of safety at the final exit level.
- it has a lobby on the upper or lower floors separating the lift entrance door from the rest of the floor.
- the lobby has a space for a disabled person or persons to wait without obstructing the escape route.
- both the lift and the lobby are contained within fire resisting construction, unless the lift or lobby forms part of a protected shaft, in which case a higher fire resistance may be required.
- the lobby doors have an appropriate fire rating.
- the lift has an independent power supply that will not be interrupted if the power in the building is switched off.
- the lift has a switch at the exit that overrides the landing call buttons and puts the lift under the control of the floor level selector buttons in the car.

= there is a communication system in the car that can be activated from each lobby to inform the car operator about which floor a disabled person needs to be evacuated from.

Evacuation lifts also require additional controls that enable them to be operated only by an authorised person. This includes the provision of a clearly marked switch at the exit storey level, which, when operated, causes the lift to return to the exit level. The lift can then be operated by the designated person in accordance with the evacuation procedure and is isolated from the landing controls.

The availability of an evacuation lift in a building will reduce reliance on the evacuation management and staff availability of staff resources.

In new buildings, the provision of one or more evacuation lift to facilitate safe, independent and dignified evacuation for all should be considered.

Depending on the size and the occupancy, in existing buildings, where a new lift is installed to improve access between floor levels, consideration should be given to install a lift that is suitable for use as part of the fire evacuation plan (dependent upon advice from a qualified Fire Engineer or Building Control Officer).

Refuges are areas within a building that have been designed and designated as protected spaces where disabled people can wait to be assisted to the final exit from the building. They should be positioned so that a disabled person can access them without changing floor levels. Routes to refuges should be short enough to be negotiated quickly, or they should be protected from fire. Travel distances to disabled refuges should be a maximum 50 meters.

Generally, refuges should meet the following requirements:

= be sound proofed to an acoustic specification of **40dB(A)** in accordance with BS:5839-9:2011 para 11.6-K. Sounders should not be installed near to the disabled refuges or management point or to the adjacent spaces that would compromise communication through the outstation or master station. (Advice from the acoustic engineer is recommended).

= have enough space for one or more wheelchair users to wait without encroaching on the escape route. It is often the case that one refuge per stair is provided at each floor level. However, there may be situations where larger refuge areas would be required, for example, where the number of disabled people using the building is high.

= space allocated per wheelchair users should be minimum 1400mm x 900mm.

= area be enclosed in a not less than 30 minutes fire-resisting structure that has a 30-minute, fire-resisting, self-closing fire door fitted with cold-smoke seals.

= installed with two-way communication system linked between the refuge and the management control point, which suits a range of mobility difficulties and is compliant with the recommendations of BS5839-9: 2011. The system should include:

- a master station in a fire safe zone.
- inductive couplers.
- visual indication that the call has been answered.
- tamper alarm.
- located 1200mm above FFL and at least 500mm away from any internal corner.
- located where they impede the means of escape.
- communication cabling fire rated within the building and linked to University central Security, via UPS/Generator protected route.

- have clear signage indicating that the space is designated for refuge.
- have a notice providing guidance on procedures in the event of fire.
- Have access to an evacuation lift or evacuation chair.
- Provide direct access to a final exit that leads to a place of safety externally.

It should be realised that people can become fearful and concerned about being left behind. It is essential that the use of refuges is discussed fully in advance with those who might need to use them. This will need to be discussed with employees as part of the drawing up of Personal Emergency Evacuation Plans (PEEPS). Where people are unfamiliar with the use of refuge spaces or the spaces' locations in a building, the intervention of staff will be necessary to provide direction and reassurance. It may also be necessary for staff to remain with those waiting in refuge areas to assist with the use of communication systems or provide general support.

When dry risers are located within designated disabled refuges. Care should be taken to ensure the disabled refuge communication systems are not obstructed by the dry riser outlets.

University Security, from the central Security Base, will communicate with the person once the safe refuge communication is activated. They will stay in contact throughout, informing the person of what is happening. Security and other trained staff will, upon arrival at the building, assess the fire alarm panel to identify the activation location and cause and will use the safe refuge intercom to advise the person of their presence and to confirm their location. The fire alarm investigation team will then proceed to identify the cause of the fire alarm activation. If a real situation is identified the Fire Service will be called and the team will proceed to safely evacuate the person at the safe refuge point, where suitable.

At all times the person at the refuge point will be kept informed and will be part of any decision to physically evacuate via Evacuation Chair or possibly Fire Lift.

Personal emergency evacuation plans (PEEPs)

In buildings that are used regularly by people who require assistance during evacuation, individual personal emergency evacuation plans (PEEPs) should be developed.

This applies in all cases where it is known (or identified during a process of enquiry) that an individual may require assistance during an emergency evacuation and covers staff, volunteers, contractors and some visitors. It is also applicable in cases where an individual requires assistance on a temporary basis, such as while recovering from a broken leg and using a wheelchair or crutches to aid mobility.

PEEPs should always be prepared in direct consultation with the individual to whom it relates, and it should be tailored to meet the individual's particular capabilities.

The PEEP should be developed within the context of the organisation's emergency management systems and should consider the characteristics of the building and its safety systems.

A PEEP is not a transferable document – a person cannot take their PEEP from a particular place of work and expect it to be applied without modification to another building or another organisation. PEEPs are entirely specific to an individual, to a particular building and within a particular management system.

A PEEP developed in conjunction with a person attending a training course may only be applicable for the duration of the course but is essential in ensuring the safety of the person in that setting.

Scheduled reviews of PEEPs may be incorporated into the evacuation planning process, but there should also be an expectation that change will be required at other times and procedures established to enable this to happen promptly.

Staff and back up staff should be appropriately trained to marshal and provide the necessary evacuation support to safely remove people from buildings in the event an emergency. People will generally not be evacuated unless there is an emergency need to do so. The risks of evacuation during a 'false alarm' or 'malicious' fire alarm activations are considered too great to evacuate immediately upon activation of a fire alarm. The University fire investigation team will first assess the cause of the fire alarm activation and if a fire or emergency is identified evacuation will be facilitated, and the person fully informed throughout of what is happening.

Fire alarm systems should be designed and installed in accordance with BS 5839-1.

A fire alarm should be visible as well as audible to all users; installed in areas where people are likely to be in relative isolation such as accessible toilets, shower rooms, changing rooms and isolated offices. Visual fire alarms should also be provided where the ambient noise levels will be loud or where student may wear headphones, such as performance studios, lecture theatres, library's and learning resource centres. It should be appreciated that in the likes of toilet blocks with full height cubicles, each cubicle will require a visual fire alarm. Consideration should be given to providing visual fire alarms at eye level. In large expansive spaces, multiple visual fire alarms are likely to be required.

Visual fire alarms will be programmed to flash at intervals less likely to induce an epileptic seizure or similar. Audible alarm sounders should not be located in such a way as to compromise the communication systems provided in refuges.

Emergency egress signage should be back illuminated or Photoluminescent. Signage should also be provided showing disabled refuge travel routes where this differs from routes for the able bodied.

Internal doors which are escape doors only should be fitted with push pad door opening mechanisms. The use of thumb turn devices are not accessible.

The use of hold open devices to cross corridor doors is recommended. It should be confirmed that the door closers specified are light enough to open independently for a wheelchair user in the event of an emergency as the units will fail safe closed. Refer to internal doors Section G.

Mechanical smoke extraction systems if required to atriums or firefighting cores can significantly increase the force resistance of fire doors, which in turn can impede or prevent a mobility impaired person or wheelchair user from independently passing a fire door, to reach for example a disabled refuge. It may be necessary to consider the needs for power assisted doors in certain locations should a mechanical smoke extract system be part of the fire strategy.

Final exit escape doors are to be openable by a single easily operated push bar mechanism or similar.

Final exit doors should provide at least one leaf with a clear opening width of 850mm, unless double doors are provided with no door closer /resistance that can be opened simultaneously.

Fire assembly points should be signed and located so they are accessed via step free / barrier / hazard routes.

Glossary of Terms

Access
Approach, entry, exit or internal circulation.

Accessible
Capable of being accessed and used by anyone regardless of disability, age or gender.

Accessible route
Any route that is used to approach a building, or to move between buildings or within a building, and is accessible to disabled people.

Clear Width (for ramps, steps and access routes)
The width between handrails.

Contrast visually
The perception of a difference visually between one surface or element of a building and another by reference to their light reflectance values (LRV). (For further information, please see 'Colour, contrast and perception - Design guidance for internal built environments' - Reading University).

Controlled door closing device
A device that is capable of closing a door from any angle and against any latch fitted to the door. These are not recommended.

Corduroy hazard warning surface
A form of tactile paving whose surface that has raised ribs to warn blind and partially sighted people of a potential hazard ahead. These are used at the top and bottom of external flights of steps

Cross fall
The gradient of slope across the line of travel (at 90 degrees) of an access route or ramp.

Effective clear width / Clear opening width
The unobstructed width through a doorway is measured clear of any projections on the door face to the opposite door stop or leading edge of a secondary door leaf.

Finished Floor Level
The top surface of a floor screed or flooring. The surface from which all levels are taken, usually excluding floor covering.

Fully Automated Door
A door which provides full automation operated via a remote key fob device and does not require a person to use force to open/close it.

Gentle slope
Any route which has a gradient between 1:21 and 1:59.

Going
On a step – the horizontal distance between two consecutive nosings. On a ramp – the horizontal distance between each end of the ramp flight.

Hearing enhancement systems
These enable sound signals to be transmitted to people who are deaf and hard of hearing, without interference from background noise or excessive reverberation. Devices can include induction loops or infra-red systems

Inclusive design
Design that produces buildings, environments and products that are usable by most people and not solely disabled people.

Leading Edge
The approach to the side of a door, also known as the 'nib'.

Level
This means predominantly level surface with a maximum gradient along the direction of travel of 1:60. This definition is applied to the surface of a level approach, access routes and landings (associated with steps, stairs and ramps).

Level Access Shower
A fully accessible shower area that provides level access that has no upstands, edges or lips. This is usually graded to the floor gully to enable surface water to drain away.

Conventional passenger lift
Lift designed to operate at speeds greater than 0.15 metres/second, for any travel distance, and able to transport passengers and goods without the need for instructions in its safe use.

Evacuation lift

Lift used as part of the phased emergency evacuation of people requiring assistance. This can be a conventional passenger lift with appropriate structural, electrical and fire protection.

Stairlift

This is a broad term covering a range of appliances for transporting a person, either seated, standing or in a wheelchair, between two or more landings by means of a guided carriage moving on a rail following the plane of the stair flight. These are not recommended.

Chair stairlift

This is a stairlift with a seat, which can be fixed or folding. These are not recommended.

Wheelchair stairlift (platform stair lift)

This is a stairlift with a horizontal platform which accommodates a wheelchair user.

Vertical lifting platform (or vertical platform lift)

This device serves fixed landings and consists of a horizontal platform designed to accommodate a person using a wheelchair user or with limited mobility. These can be enclosed or non-enclosed depending on the vertical travel distance. See through floor lift.

Light reflectance value (LRV)

This is the measure of the total quantity of visible light reflected by a surface at all wavelengths and directions when illuminated by a light source. Surfaces that differ sufficiently in LRV can be distinguished from one another by blind and partially sighted people (see BS 8300 2009 Annex B).

Manifestation

Permanent markings or features within areas of full-height transparent glazing, glazed walls or screens, fully glazed doors or glass doors. Manifestations can help which help to prevent collisions by making the glazing more visible to building users.

Newtons - Opening and Closing Force

Newtons are a measure of the force required to open and close a door.

Power Assisted Door

A door which is semi-automated when pushed to lessen the force required to open it.

Ramp

Length of inclined surface that provides access between two levels.

Rise

Vertical distance between the horizontal upper surfaces of two consecutive treads, or between a tread and a floor or a tread and a landing; vertical distance between each end of a ramp flight.

Riser

Vertical component of a step between one tread and another or a landing above or below it.

Shared surface

Used by footway users and vehicles. The level area shared by ramp and step users.

Safety protection zone:

The shared level landing area at the top of a ramp and adjacent stairs. This should be clear of any corduroy hazard warning surface, and large enough for a wheelchair user to safely manoeuvre without risk of approaching the top riser.

Stair riser

Vertical part of a step between tread or landing above or below it.

Stair tread

Horizontal part of a step. This is also known as the going.

Stair width

Surface width of a stair on plan perpendicular to the walking line of a stair.

Spillover

Interference within one induction loop from a signal from another induction loop nearby.

Tactile paving

Profiled paving surface providing guidance or warning to blind and partially sighted people.

Threshold

A horizontal strip across the foot of a doorway. This should always be flush with the finished surface.

Transoms

A horizontal bar across a door or window.

Unisex

Sanitary accommodation designed for use by either sex with or without assistance by people of the same or opposite sex.

Upstand

A concrete kerb or wall on the edge of a ramp surface.

Visual contrast (or contrast visually)

Perception of a difference visually between one surface or element of abuilding and another by reference to their light reflectance values (LRV).

Wet floor shower

A fully accessible, level access shower area with specialist waterproof, slip resistant floor and a gully for drainage. Sometimes referred to as a wet room/area.

Wheelchair Turning Circle

The space required for a person in a wheelchair to turn a full 360 degrees. This has historically been 1500mm. Recent research and BSi Anthropometric testing has shown it to be much greater than this and needs to be at least 1800 mm.

Signposting

The Equality Act 2010

https://www.equalityhumanrights.com/en/equality-act/equality-act-2010

The Equality Act 2010 is a new act bringing together and extending all the previous equality laws. It replaces older discrimination and equality impacts, such as the Disability Discrimination Act, Race Relations Act, and Sex Discrimination Act and consolidates these provisions – alongside new one – in the new Act. Some provisions came into force on the 1st October 2010, with more in operation from April 2011.

Although the Acts cover may form of discrimination, Section 15 specifically covers discrimination arising from disability – which means that disabled people have specific rights to not be treated unfavourably. As most issues of poor design of the public realm have a greater effect on people with physical impairment, this is why Inclusive Design focuses on this group.

Section 13 of the Act also states that in relation to disability that it is not discrimination to treat a disabled person more favourably than a person who is not disabled.

The Disability Discrimination Act (1995/2005) (now repealed by the Equality Act as of 1/10/10)

The DDA contained duties to make reasonable adjustments to physical features of premises in certain circumstances.

The Disability Equality Duty (2006) (now repealed by the Equality Act as of 1/10/10).

The Disability Equality Duty (DED) represents an opportunity for the public sector to address the inequalities that disabled people face in their day-to-day lives and their chances for the future. This has been rolled forward into the Equality Act via Section 149.

Public bodies had a statutory duty to produce a Disability Equality Scheme (DES) which is a framework that assists Higher Education Providers (HED) to plan, deliver, and report on activities which they undertake to ensure that they comply with the DED. HEP still have a duty to ensure that they have clear audit trails and to act conscientiously within the Equality Act.

Part M of the Building Regulations (2004): Access to and Use of Buildings

https://www.gov.uk/government/publications/access-to-and-use-of-buildings-approved-document-m

This Approved Document deals with the requirements of Part M of Schedule 1 to the Building Regulations 2000 (as amended). The most relevant Section is entitled ‘Access to and Use of Buildings Other Than Dwellings’. Approved documents are intended to provide guidance for some of the more common building situations. The guidance, technical details and diagrams that follow in Part M cover the areas of approach paths, car parking, access steps, handrails and entranceways.

British Standard BS8300:2009 - Design of buildings and their approaches to meet the needs of disabled users (2018)

BS8300:2018 explains how the built environment can be designed to anticipate, and overcome, restrictions that prevent disabled people making full use of premises and their surroundings. It makes recommendations for car-parking provision, setting-down points and garaging, access to and around all buildings, and entrances to and interiors of new buildings.

Inclusion by Design - Equality, Diversity and Built Environment (2008)

https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/inclusion-by-design.pdf

Inclusion by Design addresses the wider issues of design and social inclusion, beyond the more traditional definitions of "access".

English Heritage: Easy Access to Historic Landscapes

https://historicengland.org.uk/images-books/publications/easy-access-historic-landscapes/

English Heritage: Easy Access to Historic Buildings (2004)

https://historicengland.org.uk/images-books/publications/easy-access-to-historic-buildings/

Easy Access to Historic Buildings offers advice on how to develop a framework in which the requirements of each property, and the needs of its users, can be assessed and an access strategy agreed. The guidelines are intended for those who own, manage or occupy historic buildings in England, and who, under the service provider, employer and education provisions of the DDA, have responsibilities towards disabled people. The guidelines also extend to those who will be professionally involved in planning alterations to historic buildings or in advising on alternative forms of service provision.

Easy Access to Listed Buildings in Wales - https://gov.wales/sites/default/files/consultations/2019-10/easy-access-to-listed-buildings-in-wales-summary-of-response.pdf

Guide Dogs - Inclusive Streets: Design Principles for blind and partially sighted people

https://www.visionuk.org.uk/inclusive-streets-design-principles-for-blind-and-partially-sighted-people-pdf-format/

This document sets out the key design principles for the provision of inclusive accessible street environments whether in traditional streets orin a shared space design.

RNIB and Sign Design Society Publication – Sign Design Guide – AGuide to Inclusive Signage

The Sign Design Guide is published jointly by the Sign Design Society and the Royal National Institute of Blind People (RNIB). It focuses on making environments accessible to everyone and addresses the concept of inclusive signage. It provides clear guidance on producing signs and other wayfinding information.

Sport England: Accessible Sports Facilities

Accessible facilities | Sport England

The guidance note addresses the requirement to provide disabled people with full access to all sports facilities. It indicates what reasonable provision in a modern sport facility is and provides checklists for use in conjunction with access audits and an audit methodology.

Manual for Streets 2 (2010)

Manual for Streets 2 - Wider Application of the Principles is the result of collaborative working between the Department for Transport and the transportation industry. Since streets and roads make up around three-quarters of all public space – their design, appearance, and the way they function have a huge impact on the quality of people's lives.

DfT Guidance on the use of Tactile Paving Surfaces

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1046126/guidance-on-the-use-of-tactile-paving-surfaces.pdf

For blind and partially sighted people. The document covers key design principals for information surfaces, guidance paths, warning surfaces, pedestrian crossings etc. This document also uses diagrams and measurements to make the content more understandable.

DfT Inclusive Mobility – A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure (2003)

https://www.gov.uk/government/publications/inclusive-mobility-making-transport-accessible-for-passengers-and-pedestrians

Inclusive Mobility provides guidance on established best practice in a general sense, which relevant organisations can apply to their situations. The document includes information and diagrams on best practice for footways, footpaths, pedestrian areas, tactile paving surfaces, car parking, transport related access guidance, i.e. Taxi stops, bus stops, transport related buildings etc. The DfT's Manual for Streets references this document in a section entitled Street Users' Needs.

Reference Documents

The following British Standards documents are relevant in parts to provision of providing an inclusive environment and should be observed along recommendations and requirements outlined in this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- **BS 3621**, Lock assemblies operated by key from both the inside and outside of the door
- **BS 4787-1**, Internal and external wood door sets, door leaves and frames — Part 1: Specification for dimensional requirements
- **BS 5499-4**, Safety signs — Part 4: Code of practice for escape route signing
- **BS 5839-1**, Fire detection and fire alarm systems for buildings
  - Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises
- **BS 6180:2011**, Barriers in and about buildings — Code of practice
- **BS 6259**, Code of practice for the design, planning, installation,testing and maintenance of sound systems
- **BS 6262**, Glazing for buildings
- **BS 6262-4**, Glazing for buildings — Part 4: Code of practice for safety related to human impact
- **BS 6440**, Powered vertical lifting platforms having non-enclosed or partially enclosed lift ways intended for use by persons with impaired mobility — Specification
- **BS 7036-0,** Power operated pedestrian door sets — Safety in use — Part 0: Code of practice for risk assessment and risk reduction
- **BS 7594**, Code of practice for audio-frequency induction-loop systems (AFILS)
- **BS 7953**, Entrance flooring systems — Selection, installation and maintenance
- **BS 8213-1**, Windows doors and roof lights — Part 1: Design for safety in use and during cleaning of windows, including door-height windows and roof windows — Code of practice
- **BS 8233**, Guidance on sound insulation and noise reduction for buildings

= **BS 8300-1**, Design of an accessible and inclusive built environment — Part 1: External environment — Code of practice

= **BS 8300-2**, Design of an accessible and inclusive built environment — Part 2: Buildings — Code of practice

= **BS 8621**, Lock assemblies operated by key from the outside of the door and by handle or thumb turn from the inside of the door

= **BS 9999**, Fire safety in the design, management and use of buildings — Code of practice

= **BS 10621**, Lock assemblies in which the operating mode can be switched between the normal BS 8621 operating mode and a secure mode in which no egress is possible

= **BS EN 81-20**, Safety rules for the construction and installation of lifts — Lifts for the transport of persons and goods — Part 20: Passenger and goods passenger lifts

= **BS EN 81-28**, Safety rules for the construction and installation of lifts — Lifts for the transport of persons and goods — Part 28: Remote alarm on passenger and goods passenger lifts

= **BS EN 81-40**, Safety rules for the construction and installation of lifts — Special lifts for the transport of persons and goods — Part 40: Stairlifts and inclined lifting platforms intended for persons with impaired mobility

= **BS EN 81-41**, Safety rules for the construction and installation of lifts — Special lifts for the transport of persons and goods — Part 41: Vertical lifting platforms intended for use by persons with impaired mobility

= **BS EN 81-70**, Safety rules for the construction and installation of lifts — Particular applications for passenger and goods passenger lifts — Part 70: Accessibility to lifts for persons including persons with disability

= **BS EN 81-72**, Safety rules for the construction and installation of lifts — Particular applications for passenger and goods passenger lifts — Part 72: Firefighters lifts

= **BS EN 179**, Building hardware — Emergency exit devices operated by a lever handle or push pad, for use on escape routes – Requirements and test methods

= **BS EN 1125**, Building hardware — Panic exit devices operated by a horizontal bar, for use on escape routes — Requirements and test methods

= **BS EN 1154:1997**, Building hardware — Controlled door closing devices — Requirements and test methods

= **BS EN 1155**, Building hardware — Electrically powered hold-open devices for swing doors — Requirements and test methods

= **BS EN 1303**, Building hardware — Cylinders for locks — Requirements and test methods

= **BS EN 1935**, Building hardware — Single-axis hinges — Requirements and test methods

= **BS EN 1991-1-1**, Eurocode 1 – Actions on structures — Part 1-1: General actions — Densities, self-weight, imposed loads for buildings

= **BS EN 12051**, Building hardware — Door and window bolts — Requirements and test methods

= **BS EN 16005:2012**, Power operated pedestrian door sets — Safety in use — Requirements and test methods

= **BS EN 12209**, Building hardware — Mechanically operated locks and locking plates — Requirements and test methods

= **BS EN ISO 7010**, Graphical symbols — Safety colours and safety signs — Registered safety signs

= **BS EN ISO 10535**, Hoists for the transfer of disabled persons — Requirements and test method