Design Considerations for Accessibility

2006

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John Grooms
Working with Disabled People

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Design Considerations for Accessibility

2006

This booklet uses Sri Lankan Standards, where available, and is based on the document "Promotion of Accessibility to the Built Environment for Persons with Disabilities", 1998—from the Ministry of Social Services.

Table of Contents

Design Considerations for Accessibility

This booklet is intended to provide an overview of some of the basic features of accessibility required to ensure as many people can enter and use public buildings as possible—including people with disabilities. The main design considerations for each of the environmental features are identified. Examples of poor and better access, along with common problems are also shown.

When implementing accessible design, try to consider the implications for all people who use the building or space—disabled and non-disabled. Consult disabled people's organisations, occupational therapists, or architects with experience in accessible design for guidance if required.

Implementation of accessible design requires good communication and planning from the conception stage. Attention to detail is necessary. Everyone—from the building owner, to the designer, to the builder—must understand what is trying to be achieved. This is particularly if they have never been involved in accessible design and construction before.

This booklet is intended to be a simple guide to help with basic issues. More details can be found online from sources such as:

http://www.usdoj.gov/crt/ada/stdspdf.htm (Americans with Disabilities Act)

http://www.unescap.org/esid/psis/disability/decade/publications/z15009gl/z1500901.htm (United Nations Economic and Social Commission for Asia and the Pacific)

Where possible, actual photographs of design features have been provided. Notes have been made to the 'good' and 'poor' elements of the designs. These photos, with a few exceptions, come from Sri Lanka. In many cases, only some extra thought and a few minor changes would need to be made to make the design features more accessible. In most cases accessibility was not a concern of the designers. By including the photos in this document we do not intend to criticise anyone—just explain what exists in terms of accessibility.

In Sri Lanka, further advice on accessibility can be provided by contacting:

Access for All - **www.accessforall.lk**

This document was written by Samantha Whybrow for John Grooms. We wish to thank all those involved in the production.

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Further information about accessibility and access design professionals can be obtained in Sri Lanka through the following organisations:

Disability Organisations Joint Front
368 Galle Road, Ratmalana
Ph / Fax: +11 272 1383
E: dojf@sltnet.lk
www.dojf.org

Sri Lanka Institute of Architects
120/7, Vidya Mawatha,
Colombo 07
Sri Lanka
http://www.slia.lk/contactUs.htm

Sri Association of Occupational Therapists
c/o Secretary, Ministry oh Health
YEDD Unit, Deans Road
Colombo 10
Ph: 2674684
Email: ajithkithsiri@yahoo.com

Disabled Car Parking

PRINCIPLE

To ensure disabled passengers and drivers are able to get as close to the building or space they are visiting from the roadside safely and with as little difficulty as possible.

COMMON PROBLEMS

- No disabled car parking spaces provided or provided too far from building entrance.
- Disabled car parking space is not on level ground
- Disabled car parking space does not have appropriate buffer zone around it that allows for wheelchairs to approach or for carers to assist
- Disabled car parking space not signed.

Space required beside the vehicle
Additional space is required beside the vehicle so the person can safely move in and out of the vehicle with their equipment, as shown in this picture.

Space required at the rear of the vehicle
Additional space is required at the rear of the vehicle to be able to remove equipment, such as shown in this picture.

NOTE

Many disabled people must travel by means other than public transport to get places—especially when public transport is not accessible.

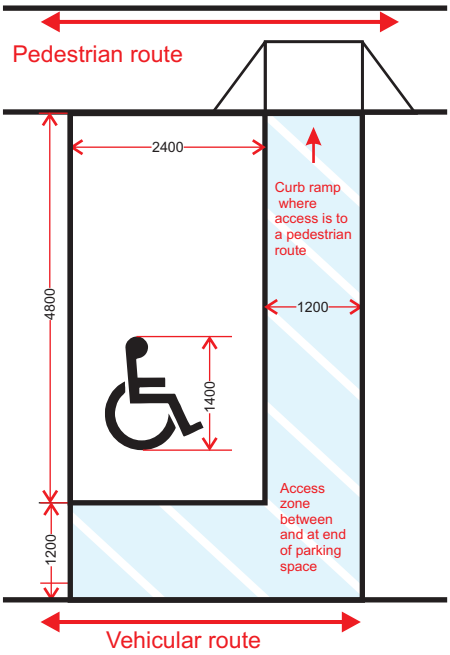
Disabled car parking spaces are essential to help disabled people have a safe and easy passage from their vehicle to the building entrance.

Disabled people can be passengers or drivers.

Disabled car parking spaces are slightly larger than other car parking spaces. This is to allow for space to maneouvre aids and equipment (such as wheelchairs, walking frames), and for carers to help the disabled person if required. The extra space surrounding the vehicle is essential—without it the disabled person may not be able to get in or out of the vehicle.

Disabled Car Parking

DESIGN CONSIDERATIONS



** All measurments in millimetres*

Surface:

level, firm, smooth, well drained, plane surface (fall not greater than 1:40).

Size:

total area 6000mm long x 3600mm wide. This includes a transfer zone of 1200mm wide between spaces and a safety zone of 1200mm long on the vehicular route.

Location:

as close to the main entrance as possible/practicable. Avoid positioning long edge of disabled bay next to a wall where possible. If this is necessary, add 300mm width to the transfer zone.

Signage:

1400mm long, clearly marked in a colour that contrasts with the ground surface.

Proportion of total spaces:

1 disabled space for every 25 car spaces for a car park providing 100 spaces. Car parks providing additional parking should then provide an additional disabled space for every additional 50 spaces.

Accessible route of travel:

disabled parking bays should lead to an accessible route (e.g., an accessible curb ramp, accessible pathway, accessible building entrance etc.).

Curb Ramps

PRINCIPLE

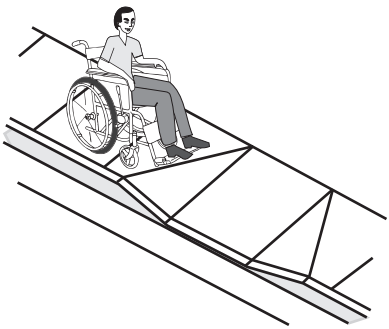
To ensure a safe path of travel when there is a change in level of two surfaces, especially between a road and a pathway.

COMMON PROBLEMS

- No curb ramp provided
- Curb ramps positioned dangerously
- Curb ramps with slopes that are too steep
- Curb ramps without flared sides
- Curb ramps positioned without adequate warning for people with visual impairment

PROBLEM: NO CURB RAMP
Curb ramps should be at either side of a pedestrian crossing.

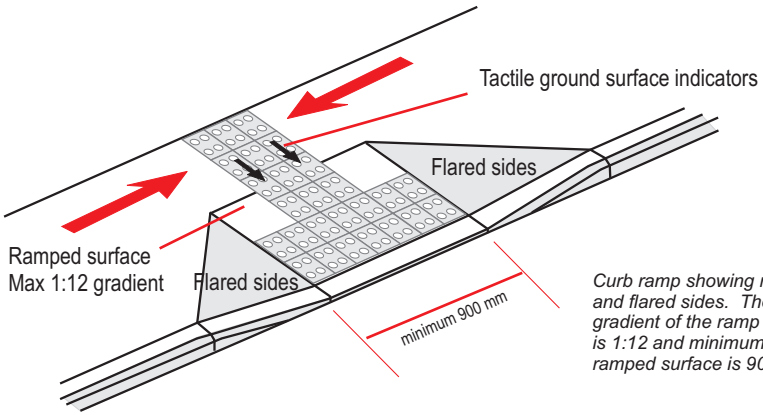
In this picture, the side of the road at the edge of the crossing is lowered for parking. However, there is a step up to the pavement with no curb ramp to get safely to the pathway.



This curb ramp is not constructed to allow safe wheelchair access. The pathway should be wider so the wheelchair can approach from the top. Here the wheelchair has to go down a slope and try to turn at the same time—which is dangerous.

Curb Ramps

DESIGN CONSIDERATIONS



Curb ramp showing ramped surface and flared sides. The maximum gradient of the ramp and flared sides is 1:12 and minimum width of the ramped surface is 900mm

Location—should be situated at each quadrant of a street intersection, at either side of every pedestrian crossing, at 'drop-off' zones near building entrances or between accessible parking areas and the nearest pathway.

Structure—a central ramp with flared sides

Width—of ramped surface should be minimum 900mm (excluding flared sides)

Slope—of ramp and flared sides should be no steeper than 1:12

Tactile Ground surface indicators—should be positioned around the edges of the flared sides and ramped surface on the pathway to provide a tactile cue of a change in level

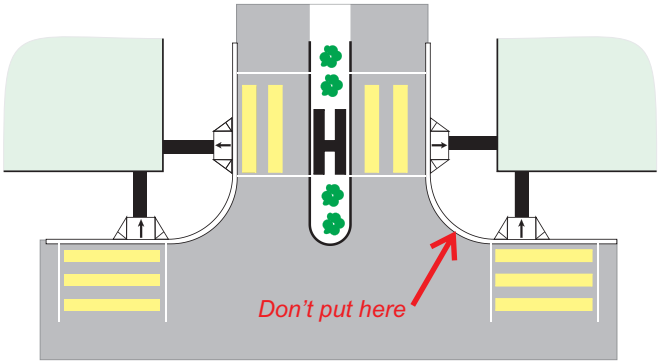
Surface—of ramp and flared sides should be roughened or be textured or patterned to make them detectable and non-slip

Colour contrast—colour of ramp and flared sides should contrast with the surrounding path and road way to make them more visible

Drainage—curb ramps should have adequate drainage and should not be located where water pools or accumulates on a road/path surface especially at the bottom of the ramp surface

Positioning—curb ramps should not obstruct the minimum width of the pathway

Curb Ramps



Curb ramps should be at each quadrant of an intersection and always on both sides of a pedestrian crossing.

NEVER put the curb ramp on the actual corner or the person will travel into the middle of the intersection!

Pathways

PRINCIPLE

To provide a pathway that is level, free of obstructions and hazards, and that is wide enough for users of all abilities to move along.

Tree roots often eventually cause a pathway to crack and become uneven so careful planning should be given with regards to pathway maintenance.

People often cause obstructions to pathways by placing chairs, boxes, or rubbish on the middle of a pathway. Communication with store-owners and residents with regards to acceptable & unacceptable use of public pathways should be conveyed

COMMON PROBLEMS

- Pathways that are too narrow
- Pathways that are uneven
- Pathways that are not flat
- Pathways that have holes, are broken, or are uneven
- Pathways that are not surfaced properly
- Pathways that have obstacles or obstructions interrupting free movement
- No pathway!
- Pathways that have open drains across them.

The path to this road has an open drain across it. The townspeople have made an attempt to reduce the danger using a concrete slab but it is not accessible, because there are steps.

Pathways

DESIGN CONSIDERATIONS

Width—should be minimum 900mm unobstructed clear space, or 1500mm for heavily used pathways

Gradient/slope—should be less than 1:20

Cross slope—should be less than 1:50

Surface—should be smooth, level, non-slip

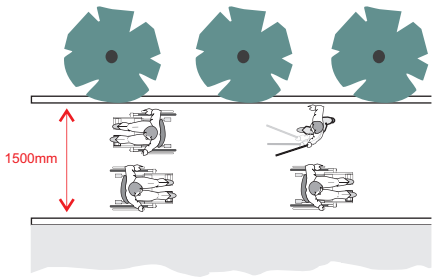
Obstruction-free—obstructions should not be present in the path of travel, ie, not within the width of the pathway and not present below a height of 2000mm.(Watch out for low branches or signs)

Passing spaces—should be made available at regular intervals (e.g., every 10000mm) for pathways less than 1500mm wide.

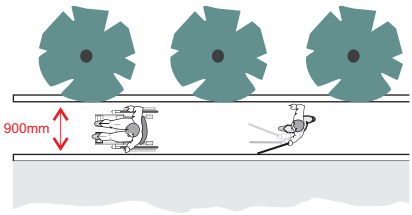
Dropped kerbs/curb ramps—should be present at road junctions where there is a change in level.

Tactile ground surface indicators—an area of 900mm x 900mm of tactile indicators should be placed at pedestrian crossings, kerbs, at junctions of other intersecting pathways.

Drainage—water should not pool on pathways



This pathway is 1500mm wide. This is better for high use areas. Two people, including two people in wheelchairs, can pass each other on such a path.



This pathway is 900mm wide. This is suitable for low use pathways. People will find it difficult to pass each other on this pathway.

Pathways

Drains Across pathways

A drain lies across this path of travel from road to gate. Grating allows safer passage as well as to allow water through.

GOOD:

- grating lies flush with the surrounding ground
- the grates lie perpendicular to the path of travel

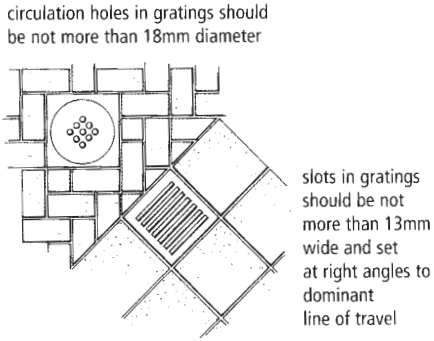
POOR:

- gaps are too wide and heels or mobility devices could easily fall through.

This pathway has a concrete bridge to cover a drain in the foreground—however it is only half covered! Next, there is a broken slab causing a trip hazard. Finally, there is grating with narrow gaps (good) to cover a drain. A mix of 'good' and 'poor' access

This drainage system is used in Thailand at the bottom of steps and ramps, and on the landings of ramps. It lies flat with the ground and the wholes are not too big to catch mobility devices.

Drainage channels



From - CAE (2004)
Two example of Drainage slots.

Ramps

PRINCIPLE

To provide ramps (where possible) wherever stairs prevent people with disabilities from entering a building or moving from place to place.

COMMON PROBLEMS

The entrance to the building only has step

Ramps that are:

- too steep,
- too narrow,
- too long,

Ramps

- that pool water,
- that do not have landings,
- that have no railings,
- are otherwise poorly designed.

GOOD:

- Non slip surface

POOR:

- Too steep—people walking and wheelchairs would find it difficult
- Handrail wrong height—it cannot be used effectively
- Surface uneven—potential to trip and be unbalanced
- Door opens onto landing—need to stand on sloped surface to open the door, which could be difficult
- No accessible path at the bottom landing—how do you get to the ramp?
- No curbs on unprotected dge—could fall off

NOTE

A ramp that is not designed properly can sometimes be as unhelpful as no ramp at all.

Ramps

DESIGN CONSIDERATIONS

Slope—a gentle slope of 1:15 outdoors and 1:12 indoors

Width—at least 1200mm wide

Handrails—that are continuous on both sides ~900mm high and that continue onto the top and bottom landings for 300mm before finishing

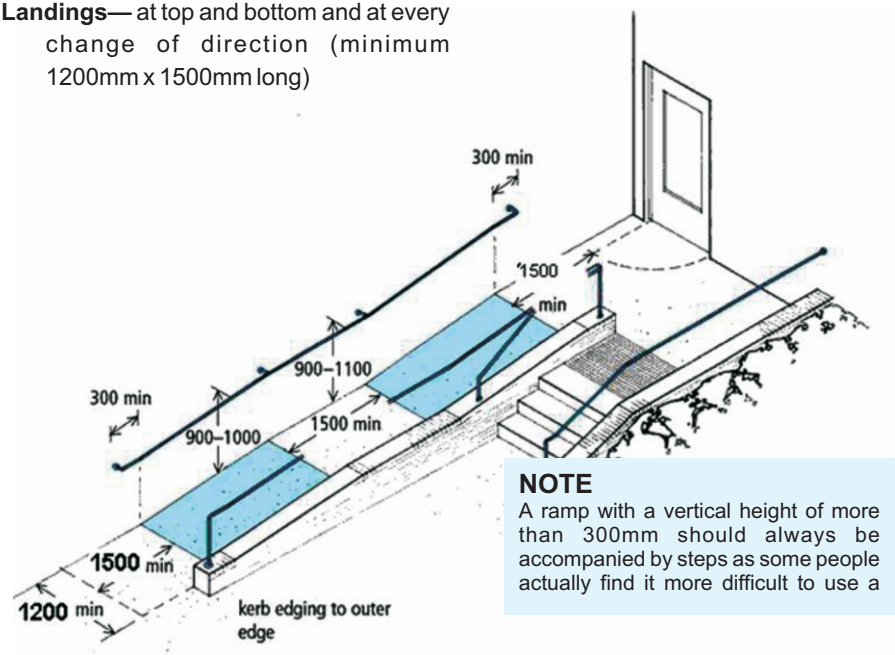
Landings— at top and bottom and at every change of direction (minimum 1200mm x 1500mm long)

Surface—that is non-slip and well drained

Ground indicators— at top and bottom landings for people with difficulty seeing

Curbs— on exposed edges (50mm high)

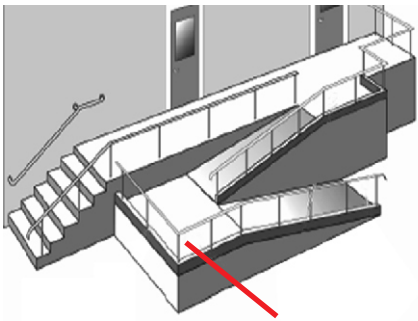
Covering— if they are outdoors



NOTE
A ramp with a vertical height of more than 300mm should always be accompanied by steps as some people actually find it more difficult to use a

Ramp with gentle 1:15 slope. Note landings at top, bottom and mid-way. Observe that the top landing is measured from the top of the ramped surface to the edge of the door opening circle. Note also railings on both sides as well as curb on exposed edge of ramp (inset). Curbs help prevent people and mobility aids from falling off the ramp. Step access is also shown.

Ramps



180 degree switchback ramp configuration. This ramp configuration requires the switchback landing to be at least 1500mm to accommodate a wheelchair turn.

Ramp surface

This picture shows an adjustment that was made to a ramp because the surface was too slippery. Ramp surfaces that are too slippery are very dangerous for people with and without disabilities and can cause serious falls. There is good colour contrast on the edge of this ramp but there are no handrails.

COMMENT:
Calculating the appropriate horizontal length of a ramp

- calculate the total height to overcome (e.g., if you have two steps each 150mm high then the total height to overcome is 300mm).
- decide your desired gradient, e.g., 1:15
- multiply the height to overcome by the desired gradient (e.g, for a gradient of 1:15 and height to overcome of 300mm then, 300 x 15 = 4500).
- the product is your horizontal length—in this case 4500mm. This would mean your ramp has to have a horizontal length of 4500mm to have a gradient of 1:15.

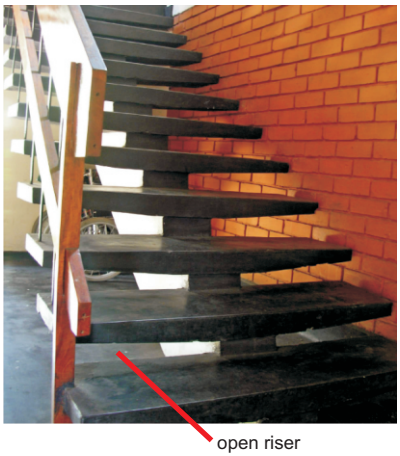
COMMENT:
Configuration of ramps

- Sometimes, after you calculate your gradient, you will find that the ramp is going to have to be very long. Perhaps you cannot make the ramp go straight out from the building in this case as the ramp might lead out onto a road.
- You may be able to overcome this problem by changing the configuration of a ramp. There are three general configurations:
  - straight run
  - 90 degree turn
  - 'switch back' or 180 degree turn
- Whatever the configuration decided upon, your ramp must have a landing at every change in direction

Stairways

PRINCIPLE

To provide safe stairways for the comfort of all people to use, especially those with mobility problems.



GOOD:

- Steps are long enough and a good height

POOR

- Open risers that are a trip hazard
- Handrails on one side only, which make it difficult for those with mobility impairments to go down the steps.
- Handrails not appropriate shape.
- No colour contrast strip on the nosing to indicate the edge.

COMMON PROBLEMS

- Steps that are too high
- Stairways without suitable railing on both sides
- Stairways that have open risers or edges where feet can get caught
- Steps without a colour contrast strip along the nosing
- Stairways that are too narrow

Colour contrast

Colour contrast has been used on the nosing of these stairs. You have to look closely to see it in this picture—which means it is not contrasted enough! This strip should be much brighter.

NOTE

Stairways are a major barrier for wheelchair users. Provision of ramps or lift access must always be considered to enable wheelchair users access to other levels of a building

DESIGN CONSIDERATIONS

Width—at least 1200mm wide between the handrails

Steps—that are 150mm high and 300 mm deep

Steps—that have CLOSED RISERS. An open riser is shown on the previous page. It is where there is a gap between one step and the next.

Colour contrast strips on the edge of the step

Handrails—that are continuous on both sides 900 mm high and circular in section and extend 300 mm beyond the top and bottom steps.

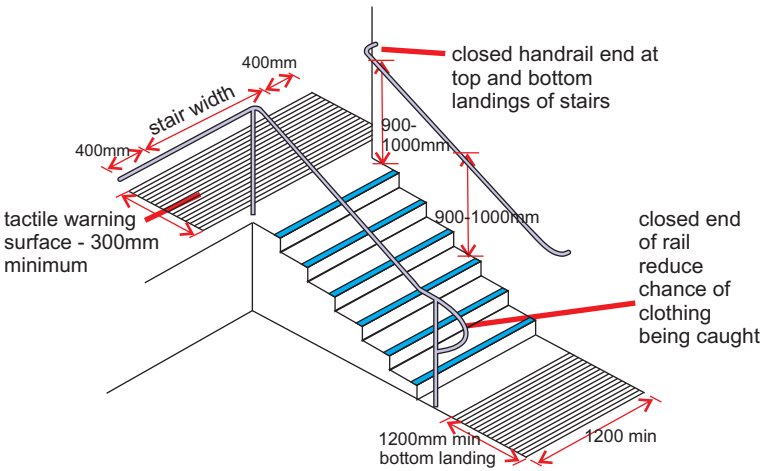
Landings— after approximately every 12 steps (ie, every 1800mm vertical rise)

Landings—size of at least width of stairway x 1200mm

Tactile Ground surface indicators— at the top and bottom landing Lighting at every landing

Ground covering—that is non slip and well drained.

Covered—from the elements if exposed or to a main entrance.



Handrails

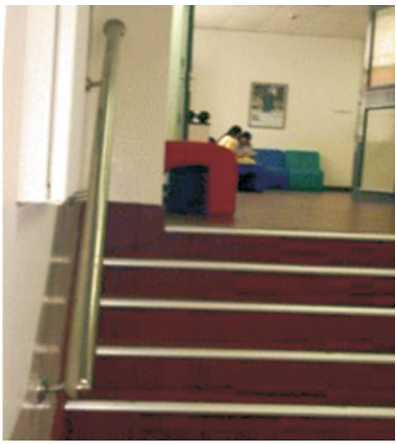
Principle

To provide support for people with difficulty walking or guidance for people with difficulty seeing, especially when walking up/down steps or ramps.

No good gripping surfaces
There are no 'real' handrails here. There is a banister but the surface is not easily gripped with the hand. This banister is on one side only. It also ends before the bottom step, which is dangerous as the end of the handrail is an important signal to a blind person that the steps have ended and s/he can continue walking on level ground.

Common problems:

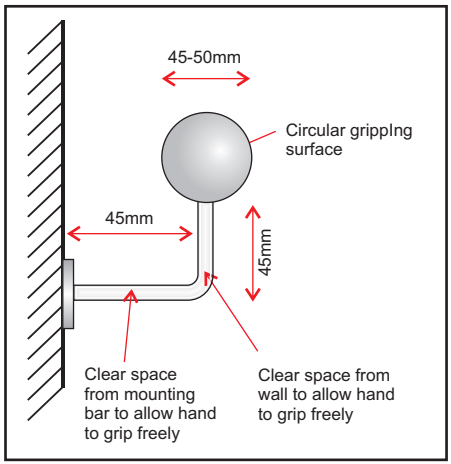
- Gripping surface
  - Too small
  - Too large
  - Too close to the wall
  - Obstructions so you have to remove hands
- Not provided
- Provided on one side only
- Finish before the top or bottom landing
- Are not continuous
- Too high/low



GOOD:
Can grasp this rail easily - good size shape.

POOR:
Rail ends in a wall that protrudes into stairway. A person who is visually impaired could walk into the wall. A person who needs the rail for support cannot walk up the final steps.

DESIGN CONSIDERATIONS



Location— both sides so people can use them going up and down (especially important for people who are weak on one side)

Height—800-900mm high for effective grasping

Continuous—the handrail should continue for the full length of ramps and steps. It should not stop and start. It should continue around the landings on both the inner and outer sides. If it is not continuous then a person who relies on them will not be able to finish going up or down the steps or ramp.

Shape—circular in section and of a diameter of 40-45mm as this will allow for a better grip.

Positioning—gripping part must be at least 45mm from the edge of any obstruction (e.g., a wall) so that the person can wrap their fingers comfortably around the rail.

Obstruction free—the person must be able to move their fingers/hands continuously along the rail so there should be no obstructions from rail supports that would mean a person has to remove their hand from the rail.

Start and finish position—extend at least 300mm beyond the top and bottom of the ramp/steps in the direction of the ramp/steps, and must turn down at the end to give a signal to a person that the ramp/steps has come to an end.

Colour contrast—colour of handrails must contrast with the background to make them easier to see/locate

Handrails

Notes

The most common place where handrails should be placed is along steps or ramps. They should always be on both sides of a ramp or stairway.

Handrails are an important support for people who have difficulty walking. Many people get tired or off-balance easily and need to hold onto handrails for support—this is especially if going up or down steps or ramps.

Handrails are very important for people who cannot see well because they help the person know where the steps or ramps begin and end.

Handrails can also be placed along long corridors or other places but this is generally in places like hospitals, residential homes, rehabilitation facilities.

Handrails are not the same as grab rails. A handrail helps a person move and walk. A grab rail is usually much shorter and helps a person transfer—for example to transfer on/off the toilet. Grab rail design is another special consideration. They are discussed in the section on toilets. The basic dimensions are the same as for handrails but the positioning on the wall will be different.

Handrails and grabrails must be able to take the full body weight of a person so they should always be securely fixed to the wall. If in doubt do not put a rail as you may cause greater damage to the person if the rail breaks off the wall. Try re-inforcing the fixing point on the wall if necessary in order to make the fixing secure enough.

GOOD:

- Circular in section—approximately 45mm diameter
- Whole hand can wrap around the rail—there are no obstructions

POOR:

- Rail should turn down at the end so people's clothes do not catch or people do not knock themselves on it.

Doors and Doorways

PRINCIPLE

To ensure a safe and independent path through an entrance/exit point

COMMON PROBLEMS

- Doorways that are too narrow to pass through
- Doorways that have steps at the threshold
- Door that have handles that are difficult to grasp and use or are in a position that is difficult to reach
- Doors that do not have enough space in front of them for a wheelchair user to position themselves
- Doors that have locks that are difficult to use

Three doors are shown. None are wide enough for wheelchair access. There are no proper handles that are easy to grasp. The pathway in front of the doors is too narrow to allow easy turning into the doors. There is also a step up to each of the doors.

DESIGN CONSIDERATIONS

Clear opening width—of 900mm

Circulation space—a clear space on both sides of the door that allows a wheelchair to approach the door and open it *(see diagrams next page for detail)*

Step at Threshold—No step at threshold or step of less than 20mm

Handle—a 'd'-shape, or lever, circular section handle positioned 900mm from the floor, 50mm (min) from the door frame

Colour contrast—with the surrounding walls

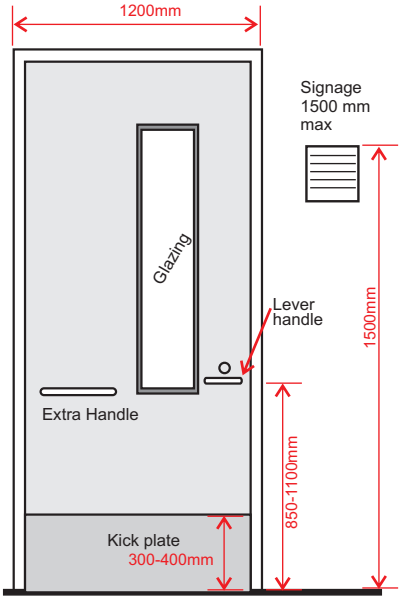
Lightweight—no more than 20N of force to initially open

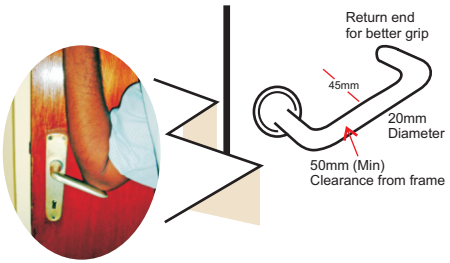
Clearance—have a clear space of approximately 450mm from the opening side of the door to the nearest wall/obstruction

Window—have a vertical window/glazing 200mm wide at a height of 850-1500mm from the floor on the opening side of the door (avoid fully glazed doors)

Doormat—have no doormat or, if required, a door mat that is sunken into the floor to create a level surface and that is fixed firmly with no loose edges

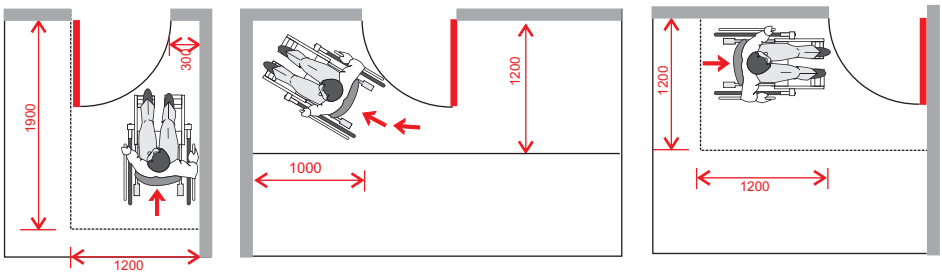
Kick plates—should be provided on the bottom of doors to a height of 300mm
Door locks—that are located 900mm high as far from the opening edge as possible



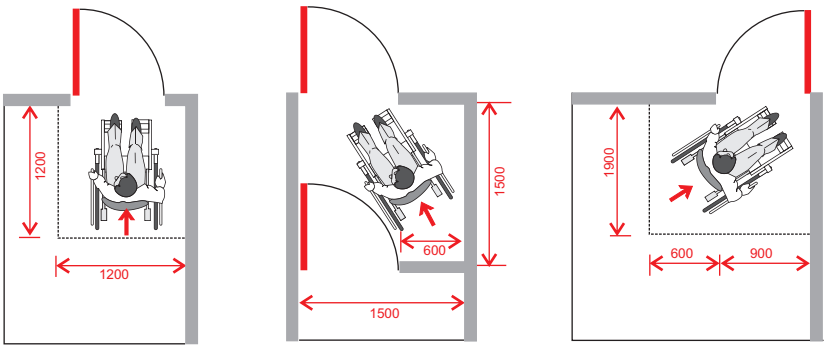


A lever door handle can be opened with an elbow if the fingers and hand cannot grasp.

Circulation space at doors

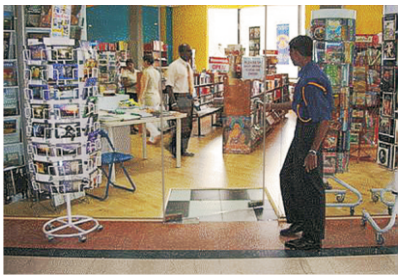


Space requirements for doors opening towards the direction of approach



Space requirements for doors opening away from the direction of approach

Doors and Doorways



Glass Doors

Full glass doors can be a danger for everybody as they are particularly difficult to see. Handles on doors need to be clearly identifiable, which is difficult on a glass door as the handle blends in with the background. Also, doors should be lightweight so that everyone can open them easily. Heavy glass doors and doors with closers are usually difficult too hard to open and close. If you must have a glass door, place a strip across it above 100mm wide at eye level

Threshold Ramps

A small ramp at the threshold helps to overcome a step for a wheelchair user. On a corridor, it is better if the sloped surface is set into the doorframe so that the ramp does not intrude onto the corridor and cause a trip hazard or narrow the corridor (as shown here).

Doormats

The idea here is that the door mat is set into the floor so it does not cause a trip hazard. Careful attention must be paid to ensure the mat is exactly the same size as the floor cut-out, otherwise the mat could be a trip hazard—like the one in this picture

Doors and Doorways

Sliding Doors

Sliding doors are a good solution where there is a small room on one side of the door. They require at least 900mm (or door width) wall space to slide along. The sliding door shown is very heavy wood and difficult to open. The difficulty is even greater when the tracks are not well-maintained. The floor tracks shown in this photo are set so they do not rise more than 5mm above floor level and will not pose a trip hazard. Good maintenance is essential to keep the door sliding smoothly.

The light switches are poorly positioned & covered by the door when it is opened in this photo. The door handle is also too small to grasp effectively. The door should be colour contrasted with the wall.

Some Ideas

Hinge doors so they open inwards from busier areas like foyers and dining rooms to quieter areas like offices and bedrooms.

Try to hinge doors so that they can be either closed or fully opened as close to 180 degrees as possible against a wall. This gives maximum amount of space to pass through

Doors may be of several types, including: sliding, self-closing, revolving, delayed closing. Revolving doors are always best avoided as they are more difficult for almost everybody—regardless of ability—to move through. Sliding and self opening are usually the easiest and preferred options.

Special conditions also exist for bathroom/toilet doors. No matter what type of door is provided, the width of the door and the circulation space provided are some of the most important factors to consider when thinking about accessibility of doorways. Circulation space is a complicated concept and involves careful thought. Refer to the diagrams provided to gain a better understanding of how to design for appropriate circulation space.

Corridors

PRINCIPLE

To provide clear passages through buildings that are free from obstructions, well lit, and wide enough for all people to use and pass one another if necessary.

COMMON PROBLEMS

- Corridors that are too narrow or long to permit passage, passing and rest
- Corridors that are poorly lit
- Obstructions along corridors causing hazards
- Floor surfaces are too slippery or difficult to move across because of thick carpet.

This corridor is wide enough but the passage is made too narrow by the furniture along the wall. Also, doors are routinely left open, further narrowing the corridor. This poses a safety hazard for those who cannot see well and makes it difficult for people with mobility aids to pass through. The black sofa is very difficult to distinguish from the floor surface as the colours are so similar. There is only one light along this corridor, which makes it very dim.

DESIGN CONSIDERATIONS

Width—should be 900mm in a low-use corridor but 1500mm in a public or high-use corridor. Corridors may need to be wider around turns and to accommodate turns into doorways.

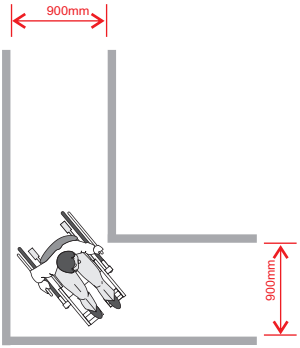
Obstruction-free—overhanging signs and obstacles should not hang below 2000mm from the floor level, while obstacles should also not protrude from the side into the minimum clear width.

Ground surface—should be level, even, and non-slip. If carpets are used they should be securely fastened and short pile to reduce trip hazards and allow easy passage for wheelchairs.

Changes in level—any change in surface level more than 13mm should be ramped.

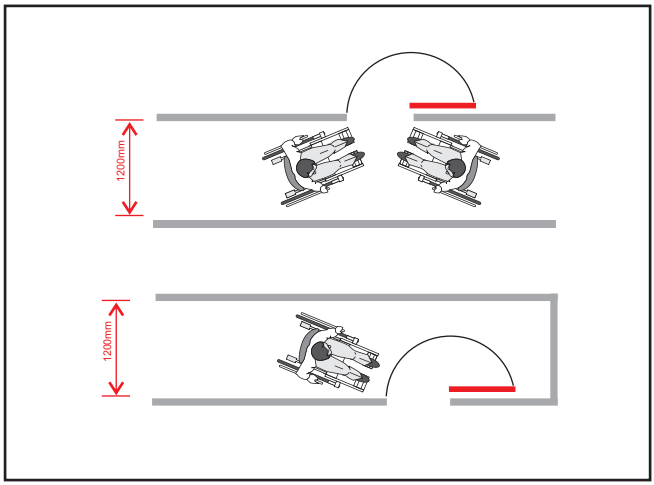
Passing spaces—corridors less than 1500mm wide should have passing spaces at appropriate intervals (a space of 1500mm width and 2400mm length), e.g., every 8000mmm.

Lighting—lighting should be provided along the length of the corridor so there are no spaces of darkness or shadows cast

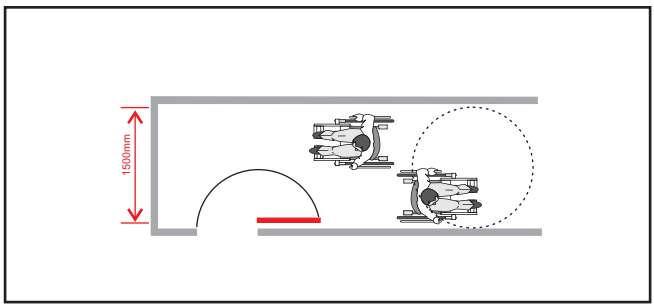


A corridor should be 900mm wide to allow a wheelchair to perform a 90 degree turn

Corridors



A corridor needs to be 1200mm wide to allow a wheelchair to make a 90 degree turn into a door when the door is 800mm wide



A corridor needs to be 1500mm wide to allow wheelchairs to pass each other and to allow a 360 degree turn.

Toilets

PRINCIPLE

To provide a rest room with sufficient space that will accommodate the needs of people with various needs, ensuring facilities and fixtures are within easy reach.

COMMON PROBLEMS

- Doorway too narrow or step at doorway
- Door that opens into the bathroom, reducing space available inside the room
- Not enough space inside the toilet to turn around or approach the toilet, especially in a wheelchair
- Toilet height too low to transfer on/off
- Water/handwashing facilities difficult to access or not present
- Inadequate drainage causing pooling of water and slip hazards
- Taps that are difficult to grip
- Lack of supports available to assist people to transfer (e.g., grabrails)

This toilet was designed to be wheelchair accessible, however, things went wrong at the construction site and it no longer conforms to accessibility standards.

The toilet pan should be situated near to a wall (as the architects had intended) to allow a wheelchair to approach the toilet from the side, diagonally, and from the front. The grabrails are too far from the toilet to provide assistance for a transfer (either from a wheelchair or for a person who has difficulty standing). The bidet hose is too far away to reach. The flushing mechanism is also broken so cannot be operated easily.

Toilets

DESIGN CONSIDERATIONS

Doorway—with 900mm clear width, is outward opening or sliding, that possesses the features of an accessible doorway, and that has a horizontal pull bar on the inside surface of the door 750mm high and 600mm long.

Threshold—no step at threshold.

Locks—door locks should be able to be opened from the outside in case of emergency. Large and easy to grip

Clear turning area—inside the cubicle of 1500mm in diameter that is free of obstructions.

Room dimensions—a minimum of 2100mm x 1500mm (length x width) is recommended.

Toilet pan—that is (a) 450-500mm high; (b) with the centre of the pan 500mm from the side wall; (c) with 800mm clear space in front of the pan; (d) with 750mm clear space to the non-wall side of the pan.

Wash hand basin—that is (a) wall mounted;(b) is located in a position that does not interfere with transfers;(c) has lever taps, (d) is fixed so that the bottom of the basin is 650mm from the floor and the top of the basin is approximately 750mm from the floor.

Toilet paper/water—toilet paper and/or water hose/tap facilities located in easy reach of a person seated on the toilet at a height of approximately 800mm from the floor and approximately 100mm back from the front of the toilet pan.

Horizontal grabrails—on at least one side of the toilet pan fixed firmly to walls at a height of approximately 700mm and projecting 100mm over the front edge of the toilet pan.

Mirror—positioned over the wash hand basin with the bottom edge of the mirror no higher than 800mm from the floor.

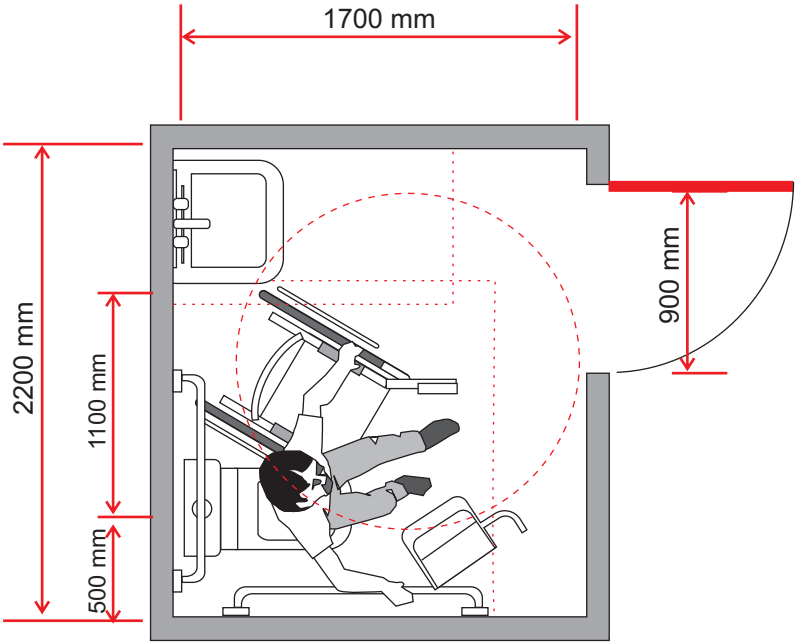
Floor surface—that is non-slip when wet

Drainage—adequate drainage and grading of the floor to prevent water pooling.

Color Contrast— tiles on floor and wall tiles should contrast in color. Commode should contrast in colour from floor. Wash basin should contrast in colour from wall.

NOTE
An accessible toilet is a necessary feature for all buildings and spaces where toilets are provided. The accessible toilet should have an accessible pathway leading to it (ie, accessible doors and corridors)

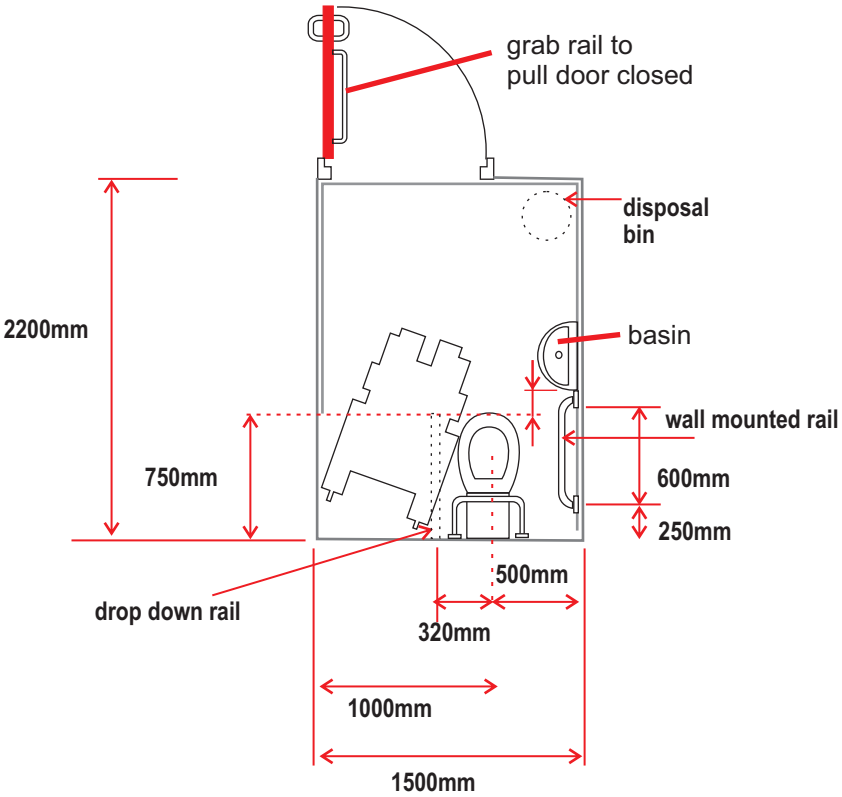
Example



Design layout for a toilet showing a wheelchair user performing a lateral transfer. This bathroom layout does not offer the opportunity for a front transfer. Note the critical space between the exposed edge of the toilet and the wash hand basin, which allows the wheelchair to manoeuvre beside the toilet.

Adapted from
Americans with Disabilities Act
Appendix A to Part 1191 - Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities

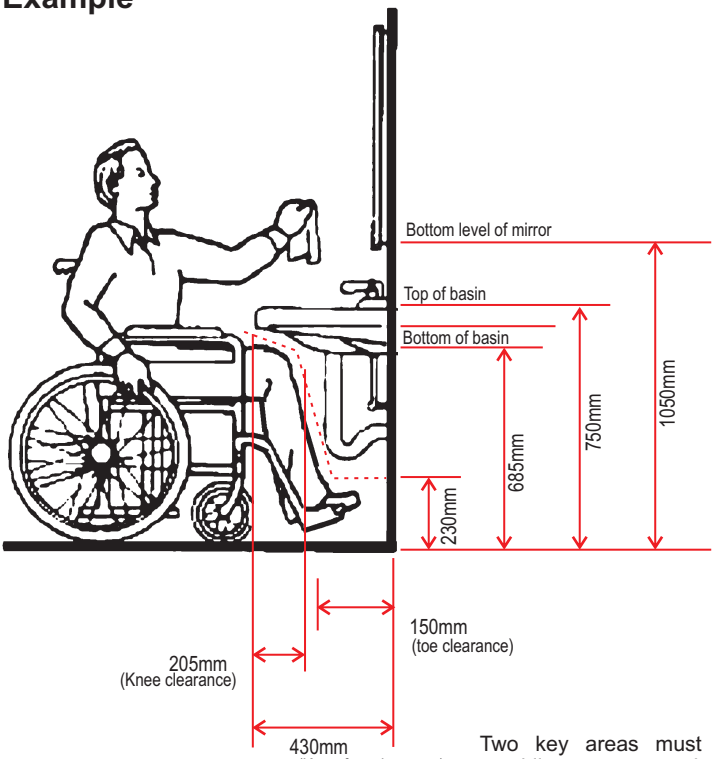
Example



This layout allows a wheelchair user to approach from the front, from the side (lateral transfer) and diagonally, giving more opportunities for people who use the toilet differently.

Adapted from: Department of Office of Prime Minister (UK): Approved Document M, 2000

Example



Adapted from
Americans with Disabilities Act
Appendix A to Part 1191 - Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities

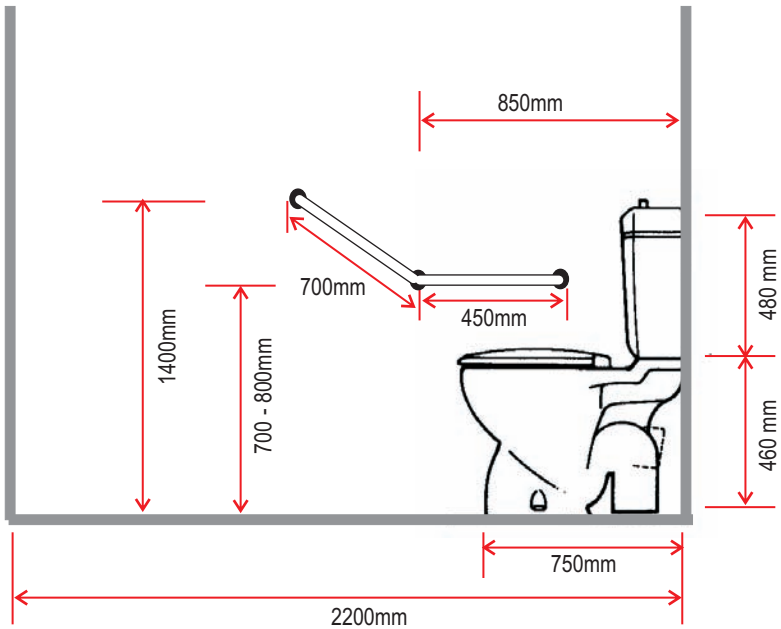
Two key areas must be considered when providing access to the basin to ensure the person can get as close to the basin as possible:

- Footplate clearance—enough space for the feet and footplates to approach. This means no pipes/structures running into the ground.
- Knee clearance—enough space beneath the basin for the knees to get right under the basin so the taps are in easy reach and the face could be washed over the basin if desired.

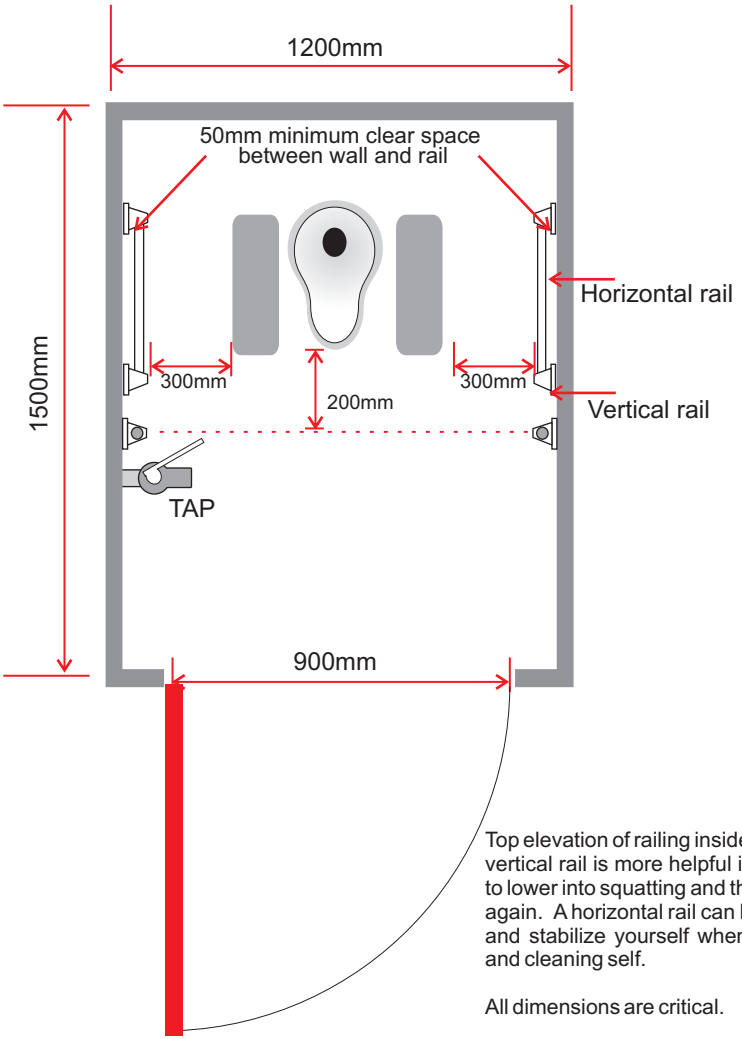
Toilets

Side view of an example accessible toilet. Critical dimensions include the:

- Height of the toilet at 460mm to allow for easy transfers
- Position of front edge of toilet 750mm from rear wall to allow a wheelchair user to position appropriately beside the toilet
- Height of handrails from floor at 700-800 mm for maximum efficiency in pushing up/getting down to/from toilet
- Position of handrails along the wall with the horizontal rail extending to 850mm from rear wall
- Presence of the cistern to act as a back support



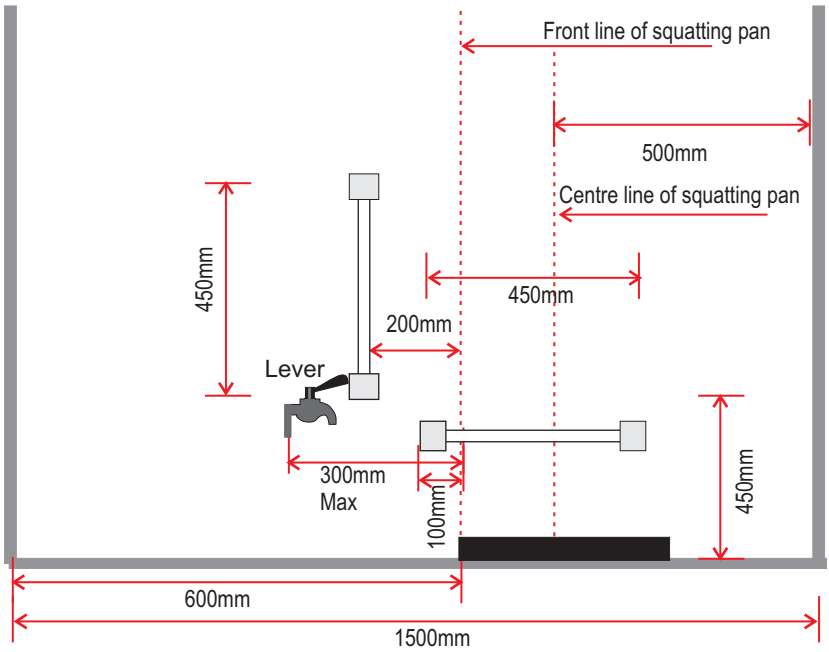
Example of Squatting toilet with fails - top view



Top elevation of railing inside a squatting toilet. A vertical rail is more helpful in assisting a person to lower into squatting and then rise into standing again. A horizontal rail can be helpful to balance and stabilize yourself when reaching for water and cleaning self.

All dimensions are critical.

Example of Squatting toilet with fails - side view



CRITICAL DIMENSIONS

- Vertical rail is positioned 200mm from front line of squatting pan
- Vertical rail is 450mm long (minimum)
- Bottom of vertical rail is 450mm from floor level
- Horizontal rail extends 100mm minimum in front of squatting pan
- Lever tap is positioned in front of the vertical handrail so as not to interfere with holding the handrail.
- Lever tap should not be more than 300m in front of the front line of squatting pan
- 500mm from rear wall to centre line of squatting pan.
- 600mm minimum from front line of squatting pan to door opening

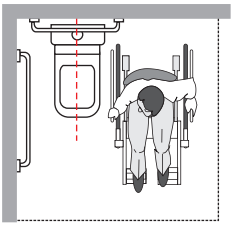
Toilets

Handle and Lock
Example of locking device on a door that can be used by people who cannot grasp well—they can put their whole hand (or stump) behind the loop.

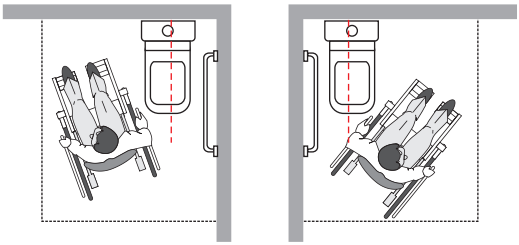
Threshold Ramp
If a 'step' is necessary to keep water from entering in/leaving the toilet area, consider a rounded 'mound' as shown above, which will not cause a person to trip and will allow easier wheelchair access.

Jones, H., & Reed, B. (2005). Water and sanitation for disabled people and other vulnerable groups: Designing services to improve accessibility .WEDC: Loughborough University , UK

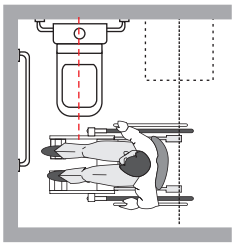
Toilet Transfer Methods



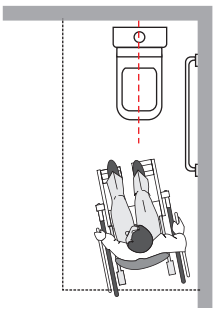
Lateral/parallel
Transfer - easiest



Diagonal Transfer - easy



Perpendicular transfer - difficult



Frontal Transfer - difficult

- Wheelchair users transfer in different ways, depending on preference and need.
- Where space is available, it is best to give as many options as possible. This means positioning the toilet, rails and wash hand basin to allow for a lateral, diagonal, and frontal transfer.

References:

Centre for Accessible Environments. (2004). Designing for Accessibility. Centre for Accessible Environments: London.

Department of Office of Prime Minister (UK): Approved Document M, 2000

Jones, H., & Reed, B. (2005). Water and sanitation for disabled people and other vulnerable groups: Designing services to improve accessibility.WEDC: Loughborough University , UK

Americans with Disabilities Act in the body of the document and

Appendix A to Part 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities
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