

# Making Schools Accessible to Children with Disabilities



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# Making Schools Accessible to Children with Disabilities



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# Notes

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- The information in this guidebook is based on Indian national codes and building regulations such as the Guidelines for Pedestrian Facilities (Indian Roads Congress – IRC 103:2012); Model Building Bye-Laws (2011); and the revised and updated National Building Code (Bureau of Indian Standards, 2016). In addition, the Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons (2016), were also referred to in developing this guidebook.
- Universal design principles are reflected in providing solutions for children with disabilities. Experience from research, access audits, and training workshop and user group inputs are the foundation of this guidebook.

In using the guidebook please note that:

- The photos and figures have green and red borders. Those that have a red border depict/outline the challenges and barriers that children with disabilities may face in accessing school facilities and infrastructure. The photos and figures that have a green border depict accessible facilities and infrastructure.
- Unless otherwise specified, all dimensions are in millimeters (mm).





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## Foreword

Every child in India has the fundamental right to elementary education, including children with disabilities. India was one of the first countries to ratify the United Nations Convention on the Rights of Persons with Disabilities (CRPD), showing its strong commitment to upholding the rights of persons with disabilities and to ensuring that children with disabilities have access to inclusive, quality education. Making schools accessible by eliminating barriers children face is a critical factor in this regard.

In pursuance of this commitment, the Government of India launched the Accessible India Campaign (Sugamya Bharat Abhiyan) in 2015 to achieve universal accessibility for persons with disabilities. An important pillar of the Campaign relates to built environment accessibility, calling for making public buildings, including schools, accessible and removing existing infrastructural and physical barriers.

The guidebook, *Making Schools Accessible to Children with Disabilities*, has been developed in alignment with this pillar of the Campaign, as part of the endeavour to make schools accessible to children with disabilities. Aimed at school administrators, School Management Committees and parents, the guidebook offers simple guidance on addressing the barriers children with disabilities may face within schools. A checklist is included, which can be used as a tool to assess the accessibility of schools and to point out which areas need improvement. Clear standards and specifications are provided, with photos and illustrations, which can be used with civil works personnel, towards making necessary changes or during construction.

I hope that this guidebook will be a useful resource towards creating inclusive, barrier-free school environments in which children with disabilities can learn and thrive alongside their peers.

I would like to acknowledge the efforts of UNICEF and Samarthyam in developing this guidebook.

(Shri Thaawarchand Gehlot)

Minister of Social Justice and Empowerment



A young girl with dark hair in pigtails, wearing a tan school uniform and a pink backpack, is walking on a brick path. She is looking down at the ground. Other children in similar uniforms are visible in the background, also walking on the path. The scene is outdoors with grass on the sides.

# 1. Introduction



# 1. Introduction

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The current mandate of free and compulsory education for all children aged 6-14 years in India is based on the principle of inclusive education. Behind this constructive move is the recognition of education as a fundamental right under Article 21A of the Indian Constitution, the Right of Children to Free and Compulsory Education Act, 2009 (RTE) and the 'no rejection policy' of Sarva Shiksha Abhiyan (SSA). This has opened the doors of mainstream schools to all children with disabilities, commonly known in India as children with special needs (CWSN), irrespective of the type and degree of disability and calls on schools to ensure inclusion of all children.

Yet, inclusion remains a distant reality for most children with disabilities. Various types of barriers continue to impede their participation in education. Inaccessible transportation to school, as well as inaccessible facilities in schools such as drinking water units, mid-day meal areas, and toilets, inappropriate classroom furniture, slippery flooring, and inadequate illumination and ventilation can pose barriers to the education of children with disabilities. Furthermore, teaching and learning practices and materials that do not cater to the

needs of children with disabilities, and the prevalence of negative attitudes among parents, communities and teachers, adds to the challenge not just of access, but also of retention and learning of children with disabilities.

Compared with boys with disabilities, girls with disabilities may be less likely to attend school and complete their education. In rural settings, this can be an even more critical issue, especially due to lack of adequate water sanitation and hygiene (WASH) facilities, including for menstrual hygiene management. Boys are also often given priority in obtaining assistive devices and other rehabilitation services needed to get to and participate in school. Gender bias in this respect can hinder the education of girls in some cases.<sup>1</sup>

These barriers need to be actively addressed and removed by all stakeholders to ensure an inclusive school environment. This requires the cooperation, involvement and participation of various stakeholders, including the government, school management and families of children.

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<sup>1</sup> Rousso, CSW, Disabilities Unlimited, Education for All : A gender and disability perspective, Report prepared for the World Bank.

## What is the purpose of this guidebook?

Barrier-free access refers to universal access for all children to inclusive schools. While there are many barriers that need to be addressed — the curriculum, and teaching-learning practices and materials, among others — to make a school inclusive, this guidebook specifically focuses on infrastructural barriers and provides practical, cost-effective and technical solutions for making the physical environment of a school safe, accessible and friendly for children with disabilities.<sup>2</sup>

During accessibility audits conducted in 500 schools across 16 states in India in 2012-2014, it was found that due to lack of expertise and understanding of access standards amongst construction personnel and school administration, school infrastructure was often barrier-filled and unsafe for children with disabilities. This hampered their access to and use of classrooms, playgrounds, libraries, drinking water units, toilets, mid-day meal areas, and other areas.<sup>3</sup>

This guidebook has been prepared to:

- i. Provide guidance on making the school infrastructure accessible for children with disabilities.
- ii. Assess school facilities and infrastructure and provide design solutions based on national accessibility standards.

The Sarva Shiksha Abhiyan Framework for Implementation clearly calls for monitoring of various aspects of inclusion of children with disabilities, including the removal of architectural barriers. Also, the Accessible India Campaign launched by the Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, has a provision for auditing public buildings, including schools, to assess accessibility of the physical environment.

This guidebook is a resource towards this endeavor in ensuring equitable access to schools by children with disabilities. Ensuring access for all, based on the principles of universal design, not only benefits children with disabilities, but all children.

<sup>2</sup> For those looking for guidance in making school curricula and teaching and learning practice more inclusive of children with disabilities, a useful resource is *Including Children with Special Needs*, National Council of Educational Research and Training (NCERT).

<sup>3</sup> These audits were conducted by Samarthyam with support from DfID.





A photograph of two young boys walking barefoot in a school hallway. The boy on the left is wearing a white shirt and dark pants, while the boy on the right is wearing a blue shirt and dark pants. Both are wearing sunglasses. They are holding a white stick together. The hallway has green walls and a yellow wall on the right with red text in Hindi. A person in a white robe is visible in the background.

## 2. Who should use this guidebook?

## 2. Who should use this guidebook?

---

The responsibility to ensure that children with disabilities receive proper and quality education rests on many people. The guidebook is meant to be used by key stakeholders who play an important role in ensuring physical accessibility to schools and school facilities. The following stakeholders have been identified:

- Parents
- School administrators
- School Management Committees (SMCs)
- Civil works personnel

The role that each one must play in guaranteeing physical and infrastructural accessibility is outlined in the subsequent sections.

### 2.1 Parents

Parents of children with disabilities play a pivotal role in ensuring the right to education of their children. As the primary caregivers and advocates of their children, they are important in ensuring that the school infrastructure is barrier-free with reference to the needs and requirements of their child by using the guidebook and the checklist in Section 3.4. Parents who are members of SMCs, can also refer to Section 2.3.

Here are some of the steps parents can take to ensure the accessibility of schools for their child:

- Take their child to school and try out the access to the school building, classrooms, the library, toilets, the playground, the drinking water and mid-day meal areas, and other school facilities.
- Use the checklist and assess if the school is free of barriers and is accessible. For example, entrance to the school building should have gentle ramps with handrails and non-slip surface, toilets should be spacious, with western commode (WC) for a child using a wheelchair or crutches, and the steps and the ramp leading to the toilet itself should have handrails. In case of non-compliance, parents can bring this to the notice of the school administration and SMCs.
- Meet with school administrators (headmaster/headmistress and block resource teachers) and discuss any barriers faced by the child with respect to accessibility. Initiate a constructive dialogue on the child's specific needs to help the school administration and staff to understand what can be done to improve the learning, independence, safety and dignity of the child with disabilities.
- Meet with other stakeholders such as non-governmental organisations (NGOs), State Commissioner for Persons with



Disabilities and local governance bodies, if necessary, for further support.

- Constantly review and monitor with the child his/her access needs. Convey any new requirements to the school administration/authorities.
- Keep in close contact with the school administration to ensure maintenance, upgrading and re-modification of infrastructure for continuous accessibility of the child.

## 2.2 School administrators

Everyone, including non-teaching staff, is responsible for ensuring that the school is accessible to all children. All persons in the school can use the checklist provided in this guidebook and inform the SMCs, panchayat and civil works personnel (senior/juniors) about the barriers faced by children with disabilities. The following people should be aware of the guidebook and its usage:

- Headmaster/Headmistress
- Teachers and Block Resource Teachers
- SSA coordinators

Here is what they can do:

- Assign at least one or two staff members in the school as contact people for children with disabilities and their parents.

- Engage with children with disabilities and their parents and families on a regular basis to understand the children's particular access needs.
- Use the checklist to assess the access barriers in the school.
- Apprise civil works personnel and the technical support group (TSG) involved in construction (retrofitting and new construction) regarding the design and access standards noted in this guidebook.
- Assign at least two people in the school to monitor and follow up with the construction team to ensure that necessary information about standards and specifications is provided and that these are followed.
- In cases of non-compliance with these standards, immediately contact the person in charge for the civil works and keep the panchayat and SMCs informed. It is important to intervene before work is complete, as it is best if any changes are made during and not after construction.
- Oversee implementation and maintenance of access facilities in the school.

## 2.3 School Management Committees

As per the RTE Act, one of the roles of SMC members is to monitor the identification and enrolment of children with special needs towards ensuring their participation in and completion of

elementary education.<sup>4</sup> SMCs are also tasked with preparing School Development Plans, which cover school infrastructure, including additional facilities and construction.

SMC members can:

- Conduct access audits using the checklist provided in this guidebook.
- Monitor construction and maintenance work in schools to ensure compliance with the standards in this guidebook and the checklist.
- Ensure payment terms to contractors/implementing agencies carry a mandatory compliance clause with respect to the specifications in this guidebook.
- Link with local non-governmental organisations (NGOs) to organise training for SMC members and school personnel on basic access needs of children with disabilities, if required.
- Build alliances with teachers towards working to make schools more accessible for children with disabilities.

## 2.4 Civil works personnel

Civil works personnel undertake construction work as per pre-approved drawings received from concerned agencies/authorities. They are involved in civil works related to school buildings, including

classrooms, drinking water and toilet facilities, boundary walls, Block Resource Centre (BRC) buildings, and Cluster Resource Centre (CRC) buildings. It is important that they are made aware of specifications for making schools accessible for children with disabilities.

- Arrange orientation/refresher training for existing and new staff to better understand the diverse access needs of students, including children with disabilities.
- Brief contractors and labourers about access features and their function (for example, tactile pavers to guide children and persons with visual impairments, or raised commode seats for wheelchair users).
- Ensure all planning, implementation and monitoring aims at making school buildings and facilities barrier-free (refer to checklist and this guidebook in this regard).
- Review plans and drawings at specified time intervals to ensure adequate fund allocations for the access features.
- Review with the school administrators, teachers, and, if required, parents of children with disabilities, the usability of access features installed/built. For example, a child with a severe disability might require some modifications with regard to the installation of toilets according to specific individual needs. Retrofitting with some accessories can help to provide the needed support for that child. Section 3.4 should be referred to in conjunction with individual reviews, if any.

<sup>4</sup> <http://righttoeducation.in/right-children-free-compulsory-education-act-2009-part-2>



A photograph of three young girls in school uniforms. One girl is seated in a manual wheelchair, looking off to the side with a serious expression. Two other girls are assisting her: one is bent over the front of the wheelchair, possibly adjusting the footrest, while the other stands behind it, holding the handlebars. They are outdoors on a dirt path with a white wall and a brick wall in the background. A semi-transparent white banner with blue text is overlaid across the middle of the image.

### 3. How accessible is your school?

## 3. How accessible is your school?

---

### 3.1 What is the School Accessibility Checklist?

The School Accessibility Checklist presented here is a tool to assess the level of accessibility of a school (of entry/exit points and of the school building and facilities within it). The checklist outlines access requirements to comply with the diverse needs of all children, including children with disabilities. Use the checklist in this guidebook to find out how accessible your school is. This is not simply an exercise in checking and counting boxes in the checklist. After identifying areas for improvement through the checklist, use the guidebook to find out how you can make your school more accessible.

### 3.2 How to use the checklist

The checklist will help to identify barriers in accessing the school premises as well as the existing facilities. The checklist covers the internal environment of the school asking questions, which need to be answered with 'yes' and 'no'.

'Yes' means that the design element assessed is accessible.

'No' means that the design element needs modification/refurbishment to make it accessible.

The 'Remarks' column is for observations/recommendations as required.

The 'Reference' column refers you to the section in the guidebook in which you can find guidance on making that design element accessible.

### 3.3 When to use the checklist

The best time to use the checklist is during planning, designing and implementation of school related construction, renovation and maintenance, for greater cost-effectiveness. If used during the planning stage, the cost of making the school accessible can be minimized. Research indicates that if modifications/changes are made in the planning phase of construction/renovation, the costs are less than one per cent of the total capital development costs, compared with 20 per cent of the original costs when adaptations are made later to completed buildings.<sup>5</sup>

Further, the checklist can be used for self-assessment, monitoring and maintenance purposes. It is important to ensure that all retrofitting work and new construction complies with essential access standards. In addition, the checklist can be used for audits by third parties on school accessibility. It can also be used for advocacy and for raising awareness on making schools accessible and barrier-free for all children, including children with disabilities.

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<sup>5</sup> UNICEF. 2013. The State of the World's Children 2013. Executive Summary: Children with Disabilities. New York, UNICEF.

### 3.4 School Accessibility Checklist

Name of the school: ..... Date: ...../...../.....

Focal person with contact details.....

Total number of students: Boys  Girls

Total number of children with disabilities: Boys  Girls

Total number of staff members: Teaching/ non-teaching

Special educators, if any

Teaching/ non-teaching staff with disabilities, if any: .....

Name	Designation	Type of Disability

#### Children with Disabilities

Name	Sex	Class	Type of Disability



School Accessibility Checklist				
Entry/exit	Yes	No	Remarks	Reference
Are kerb ramps (see Photo 3 and Figure 1) provided at all level differences, between the road surface and footpath level:				4.1
a) Pedestrian crossings in and around the school?				4.1
b) Parking spaces in and around the school?				4.1
c) Building entrances?				4.1
Is it ensured that there are no obstructions (for example parked vehicles, manholes, potted plants) allowed outside the gate blocking the gate/ entrance/exit to the school?				4.1
Is the approach to the school well maintained with a level surface?				4.1
Ramps	Yes	No	Remarks	Reference
Is there a ramp next to the stairs?				4.2 4.5
Is the location of the ramp clearly identifiable with a sign?				4.2
Is the ramp gradient no steeper than 1:12?				4.2
Is the width of the ramp a minimum of 1200mm?				4.2
Are there continuous handrails, on both sides, at a height of 760mm-900mm from the floor?				4.2 4.3
Is there a landing of 1500mm x 1500mm at the turning of the ramp?				4.2
Is the surface of the ramp anti-slip/matte finish?				4.2
Is there an edge protection on both sides of the ramp to prevent wheelchairs from falling off?				4.2

Stairs	Yes	No	Remarks	Reference
Is the location of the stairs easily identifiable with a sign?				4.3 4.5
Is the width of the stairs a minimum of 1200mm?				4.3
Are there continuous handrails, on both sides, at a height of 760mm-900mm from the floor?				4.3
Are handrails easy to grip with a diameter of 38mm-45mm?				4.3
Are the handrails painted in colours contrasting with the wall colour to be easily identifiable by children with low vision?				4.3
Is it ensured that stairs do not have a nosing (extension of step edges for beautification)?				4.3
Are the step edges of a different colour or texture to be easily identifiable by children with visual impairments?				4.3
Is the location of emergency (fire escape) stairs clearly identifiable with a sign?				4.3 4.5 5
Is it ensured that there are no open gaps in between the step risers?				4.3
Is the step riser 150mm or less?				4.3
If there is an open space under the staircase, is it blocked off?				4.3
Corridors	Yes	No	Remarks	Reference
Is the minimum unobstructed width of corridors at least 1200mm?				4.4
Is it ensured that there are no objects protruding more than 100mm from the walls in the corridors?				4.4

Are all over hanging obstructions mounted above a minimum height of 2200mm from the floor, giving head clearance?				4.4 4.5
Signage	Yes	No	Remarks	Reference
Is there signage indicating the floor level on each floor?				4.5
Is there signage indicating the locations of classrooms and other school facilities?				4.5
Are all signs in Braille, text and using pictograms?				4.5
Are signs hung at a height of 1000mm-1600mm from the floor?				4.5
Are there signs for girls' and boys' general toilets?				4.5
Are there signs for girls' and boys' accessible toilets?				4.5
Doors	Yes	No	Remarks	Reference
Can the doors be easily opened and closed by children?				4.6
Are glazed doors marked with a colour band at the eye level for children with visual impairments?				4.6
For double leaf doors, is the width of one of the leaves at least 900mm to allow wheelchair users to enter/exit without opening the other leaf?				4.6
Are manual door accessories/hardware (handles, locks, pulls, etc.) located at a height of 800mm-1000mm from the floor?				4.6
Are doormats flushed/embedded in the flooring and edges secured to the floor?				4.6
Is the threshold (door sill), no more than 10mm high and bevelled (merged with gentle slope)?				4.6 4.4



<b>Boards</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Do the classrooms have green boards?				4.8
Is it ensured that the lower edges of green/black boards are not above 500mm from the floor so that children using wheelchairs can access them?				4.8
<b>Windows</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Do the windows open into classrooms and other rooms and not out to corridors/hallways?				4.11
Is the height of windows between 600mm (bottom edge) and 1450mm (top edge), enabling children to see outside while seated?				4.11
Are there grills/wire meshes on the windows to safeguard children from falling outside?				4.11
<b>Flooring</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Is the flooring of the school skid-proof/ anti-skid?				4.12
Is the toilet flooring skid-proof?				4.12 4.14
Is there a drain in the floor in the toilet for all excess water, so that it can be kept dry?				4.12 4.14
<b>Drinking water units</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Is the area for drinking water well maintained with a level surface (i.e. there are no steps)?				4.13
Is there an accessible drinking water unit available with one tap at a height of 400mm from the level surface?				4.13

Do the taps have lever type handles?				4.13
Is the water drainage maintained with no water clogging around the drinking water unit?				4.13
Is there a basin provided so that tap water does not spill over on children's mobility aids?				4.13
<b>Toilets</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Is there a ramp provided to the accessible toilet cubicles?				4.14 4.2
Are there separate toilet cubicles (one each in boys' and girls' toilets) for children with disabilities?				4.14
Is the size of the accessible toilet cubicle a minimum of 2000mm x 2200mm?				4.14
Is there sufficient wheelchair manoeuvring space of 1500mm x 1500mm around the toilet and washbasins?				4.14
Is the washbasin mounted at a height of 700mm-800mm from the floor (top edge)?				4.14
Is the lower edge of the mirror positioned at a height of 1000mm from the floor?				4.14
Are there transfer grab bars (L-shape on the wall side and U shape on the open side of the toilet) installed near the toilet?				4.14
Are all the grab bars at a height of 700mm-800mm from the floor?				4.14
Is the toilet equipped with an emergency alarm system?				4.14 5

Can the doors be locked from the inside and unlocked from outside in emergency situations?				4.14
Is the toilet flush easy to operate?				4.14
Does the toilet door have a clear width of 900mm or more?				4.14
Does the toilet door open outwards?				4.14
Is the WC (western commode seat) at a height of 450mm-480mm from the floor?				4.14
<b>Playgrounds</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Is the playground level?				4.15
Is the playground covered with grass?				4.15
Does the playground have a paved pathway with a minimum width of 1800mm, which can be used as a track by wheelchair/crutch/walker users?				4.15
<b>Emergency preparedness</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>	<b>Reference</b>
Are emergency exits clearly marked with directional arrow signs?				5 4.5
Are there both audio and visual emergency alarms in all areas?				5







## 4. How can you make your school more accessible?



## 4. How can you make your school more accessible?

Physical barriers are found both in external and internal environments. Children with disabilities and their parents can face challenges in getting from home to school and within schools. While it is critical to address barriers in the external environment — such as accessible transportation, safe and accessible roads, crossings, footpaths from home to school — this guidebook will focus on the internal environment of schools.

It is critical to make sure that all school facilities are accessible to children with disabilities to ensure their participation in education. This section of the guidebook looks at the various facets of making the internal environment of schools more accessible for all children, including children with disabilities.

### 4.1 Entry/exit

- The entry to/exit from schools can be uneven and unmaintained. In rural areas, there are often cow catchers (cattle traps; see Photo 4) at the main gate to schools posing a barrier to children with disabilities using mobility aids. Children with visual impairments also face difficulties and may get disoriented on uneven and unmaintained approaches to schools, as unanticipated obstructions may hinder their processing of information, particularly when they rely on the numbers of footsteps to access facilities.
- There are often also collapsible gate channels in the approach to school buildings, which can be a trip hazard, especially for children with impaired mobility.



**Photo 1:** Unmaintained entry/exit



**Photo 2:** Collapsible channels can be a trip hazard

### Possible solutions

#### Ensure that:

- There is a well-maintained, firm and level surface in the entry to/exit from the school.
- There are tactile warning pavers/warning textures before the beginning of steps/kerbs etc. so that children with visual impairments do not accidentally fall.
- Where pathways change direction, there is a gradual change in the direction of the tactile warning strips along the pathways.

- There is paved flooring for comfortable, safe access and movement by all, including children using wheelchairs and with impaired mobility.
- The surfaces have a finish which is slip-resistant in all weather conditions.
- All footpaths (kerbs) in the route have an appropriate drop kerb (see Figure 1) to allow access for wheelchairs.

## Main gates

### Ensure that:

- Main gates have specific opening and closing timings that are informed to children, so that they know which gate to use at which time, which is particularly important to children with visual impairments, who have set paths for entry/exit.
- In schools where vehicles are permitted on school grounds, there are two gates at the main entrance — one which allows vehicles, and another for pedestrian entry only. Vehicles should be allowed inside the premises on a limited basis. For example, school authorities can give a sticker for entry of certain vehicles, viz. teachers/children with disabilities. For parents/ care-givers bringing children with disabilities in vehicles, parking spaces accessible for wheelchair users should be provided.
- Side/back gates, if any, are opened only for events/functions and these are manned.



Photo 3: Drop kerb

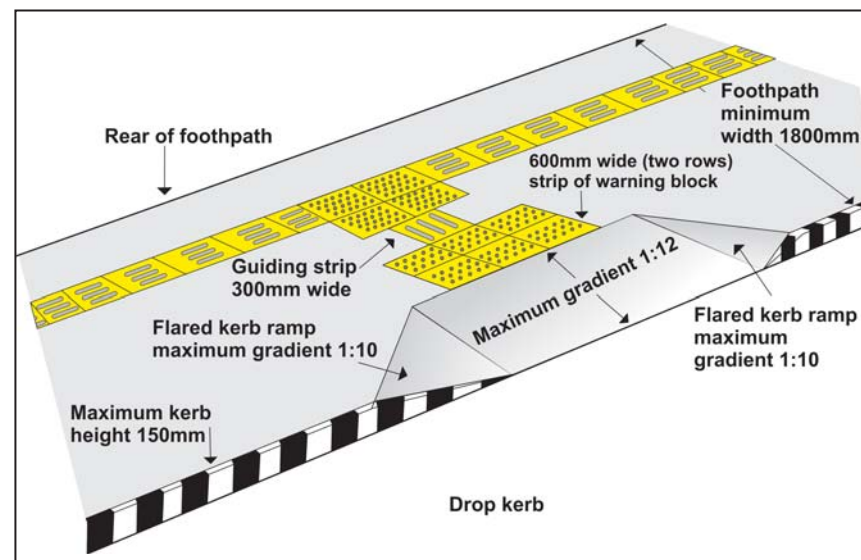
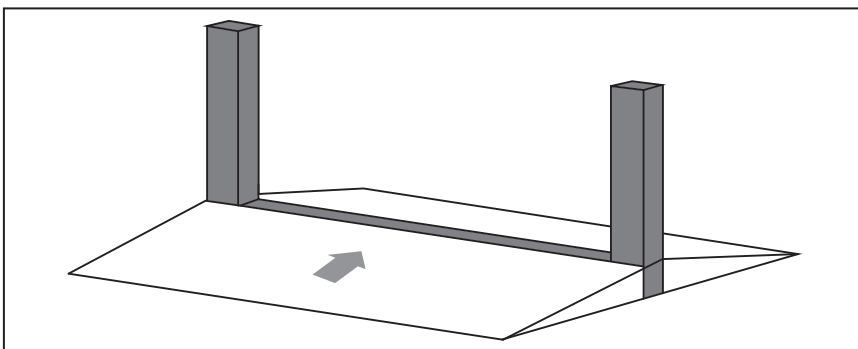


Figure 1: Drop kerb



**Photo 4:** Strip/bridge plate on a cattle trap

- A 1000mm wide strip/ bridge plate is used on cattle traps to facilitate access of children with disabilities.
- Channels for collapsible and other types of gates are embedded in the ground or bevelled (with slopes on both sides of the threshold to allow easier passage of wheelchairs or other mobility aids) as shown in Figure 2.



**Figure 2:** Bevelled threshold

## 4.2 Ramps

While schools may have a ramp, they usually do not have enough of them to allow access to all classrooms and school facilities, including the library, labs, toilets, the principal's room, and the staff room.

Those that exist are sometimes blocked and unmaintained.



**Photo 5:** Ramp entry blocked by an iron grill

Slippery tiles or grooves on ramps, if too deep, are not safe to be used by children using mobility aids such as wheelchairs, crutches, and walkers. While it is important to have handrails on both sides, sometimes there are handrails only on one side, or the handrail is at the centre, which reduces the effective walking space. Furthermore, broken and uneven surfaces, and loose handrails can be hazardous to children and others using the ramps.

Sometimes ramps have a steep slope, which cannot be used by children with disabilities and are dangerous for other children, who can fall and get hurt. Ramps in sand/muddy areas are also extremely difficult to access for wheelchair and crutch users.



## Possible solutions

### Ensure that:

- Ramps are not obstructed by vehicles and ramp entries are accessible and not locked.

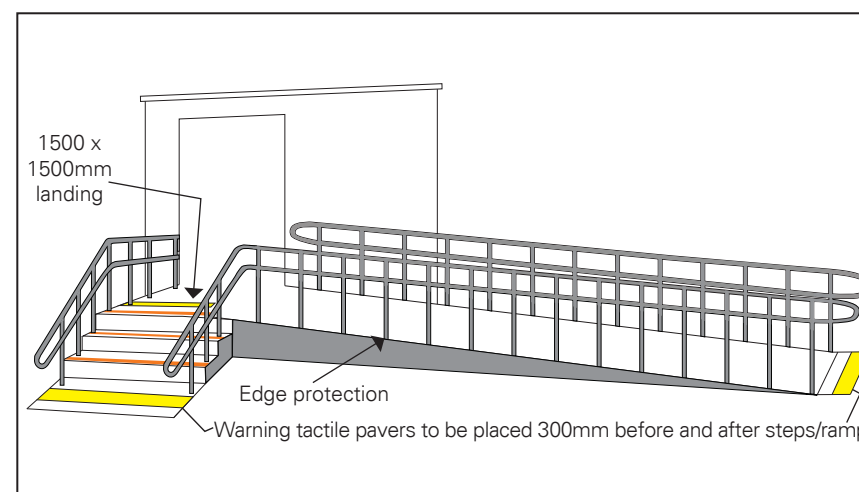


**Photo 6:** Steep ramp

- Ramps are used as the main means of access and entry, which would benefit everyone, including persons with disabilities, the elderly, and those with reduced mobility.
- Surfaces of ramps and landings are slip-resistant. Cement, concrete, matte finish/anti-skid tiles are good to use for ramps. If there are grooves on the ramp surface, the depth of each groove should not exceed 5mm.

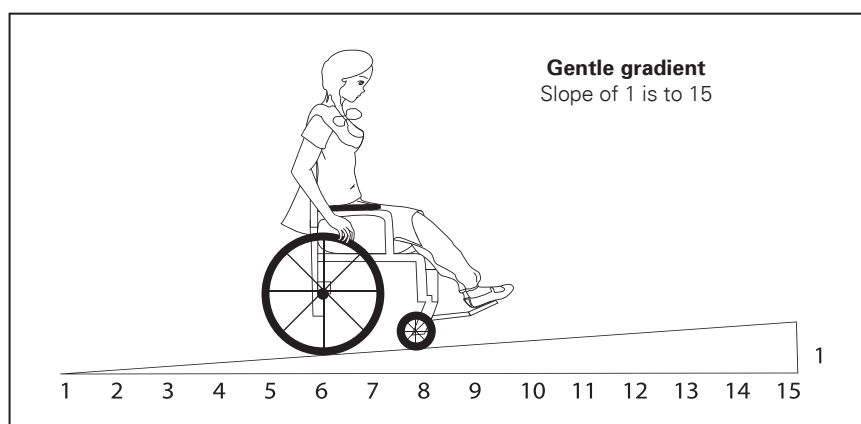


**Photo 7:** Unmaintained ramp is hazardous for children



**Figure 3:** Ramp with extended handrails

- Ramp edges are flush with the flooring and the pathways leading to the ramps are firm and level.
- Warning tactile pavers are placed 300mm before the beginning and after the ending of the ramps (see Figure 8).
- Ramps are on one side of the steps and not in the centre for efficient space utilization.
- There are L-shaped ramps (turning platform) and dog-leg (switch back) ramps if the plinth height is more than 700mm (see Figure 5-7).
- There are handrails on both sides of the ramp (for solutions to handrails refer to Section 4.3).
- Wherever possible, ramps are covered overhead to protect children in bad weather conditions.



**Figure 4:** Gentle gradient

- Ramps, like all other facilities in the school, are regularly maintained.
- Indigenous materials can be used for ramps — for example, a ramp may be made of mud or wood, while handrails can be made of bamboo or wood.

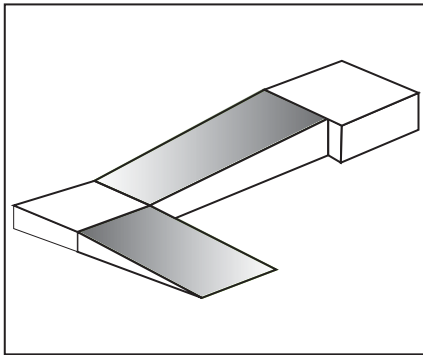
## Standards and specifications

### ● Gradient

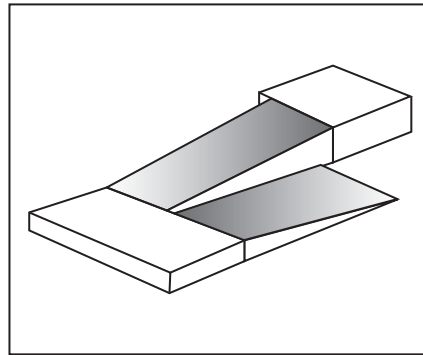
- ▶ **Indoor:** A gentle ramp of 1:15 gradient is preferred as it is easier to manoeuvre wheelchairs on a gentle slope. A slope of 1:12 (that is, for every rise of 1 unit height, the length of the ramp is 12 units) is also acceptable.
- ▶ **Outdoor:** For the first floor and above, 1:15 or 1:20 gradient ramps are advised depending upon the availability of space.
- The width of a ramp should not be less than 1200mm. The preferred width is 1800mm to allow two wheelchair users to access a ramp at the same time.
- Landings with clear space of 1500mm x 1500mm minimum should be provided: 1) at the beginning and the end of a ramp; 2) at turnings; 3) for every 750mm of vertical rise; 4) at intervals of every 5 metres (of the length of the ramp) for a gradient of 1:12 and every 9 metres (of the length of the ramp) for a gradient of 1:15 or 1:20 (see Figure 7).

## Design options for ramps

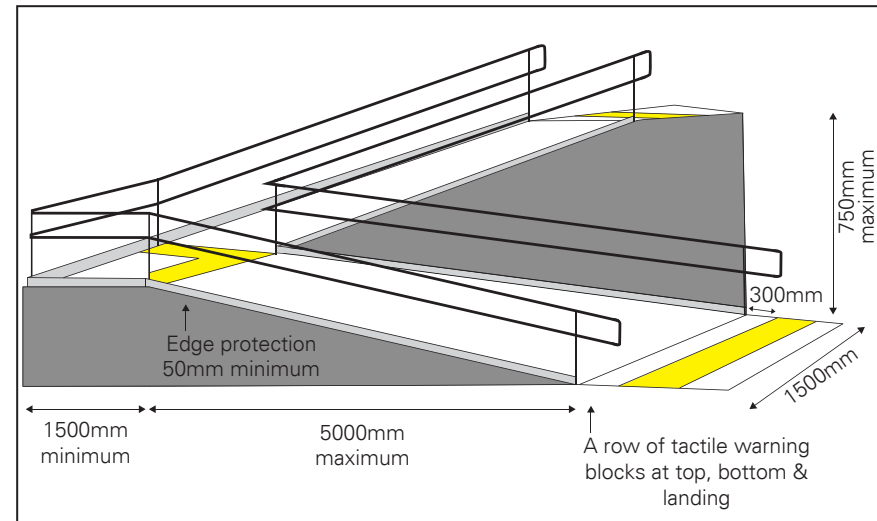
Sometimes ramps need to provide access to classrooms or facilities that are situated much higher than the ground. In such situations, where the plinth height is more than 700mm and there is not enough space to build a straight ramp that meets the above requirements of a gentle slope (1:12 or 1:15), an L-shape, dog-leg (Z-shape) or split ramp can be built. The L-shape is recommended when there is enough space to maintain a good gradient (1:15) for the ramp. The dog-leg design can be used in cases where there is less space. The Z-shape allows for the 1:15 gradient to be maintained in a more confined space.



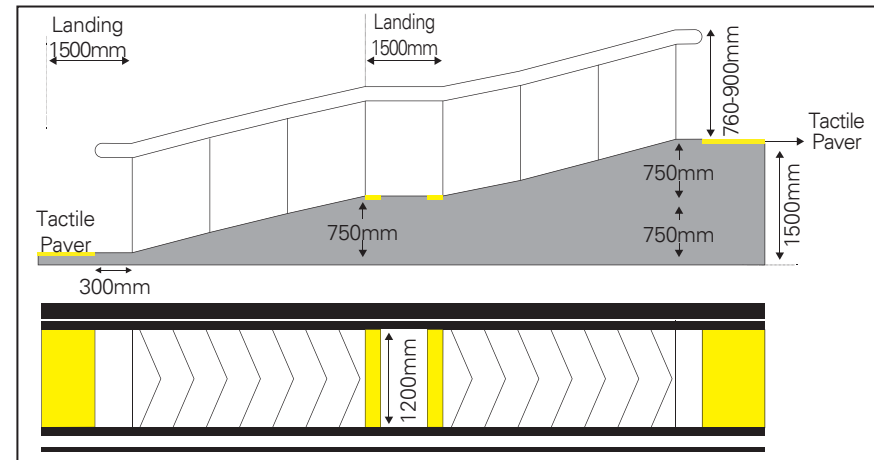
**Figure 5:** L-shape ramp



**Figure 6:** Dogleg shape (Z-shape) ramp



**Figure 7:** L-shaped ramp with handrails on both sides



**Figure 8:** Specifications for placement of tactile pavers at the top and bottom of a ramp

### 4.3 Stairs

Stairs in schools often do not have handrails. In most cases, there is a parapet wall on the open side with no handrail on wall side.



**Photo 8:** In absence of handrails, a girl is struggling to go down the steps

#### Possible solutions

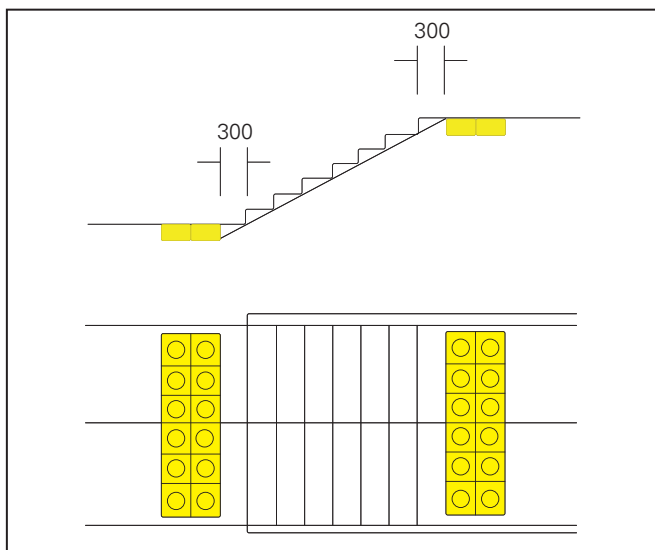
##### Ensure that:

- Stairs are clearly visible with adequate illumination.
- Step edges are in a contrasting colour so that children with low vision are able to detect the height and width of the steps.
- Spiral stairs and stairs with tapered treads are not used, as they are much more likely to cause tripping.
- Nosing (the projecting edge of a step usually built for beautification) is avoided as it could be a trip hazard.
- Open area underside of the stairs (soffit) is blocked off.
- There are continuous handrails on both sides of the stairs, including the walls (if any) and also on landings, as some children might have strength in one of their arms, right or left. Handrails on both sides are not only important for children with disabilities to go up and down the stairs, but also for teachers and non-teaching staff with disabilities and reduced mobility, as well as pregnant staff and elderly people.
- Handrails are painted in a contrasting colour to the background wall. The ends of the handrails are either grouted into the ground or are rounded off.
- There are tactile features on the handrails to indicate the end of the rails and floor levels for the benefit of children with visual impairments. For example, the floor level can be indicated on the handrail with tactile dots, where one dot indicates the first floor, two dots indicate the second floor, and so on.

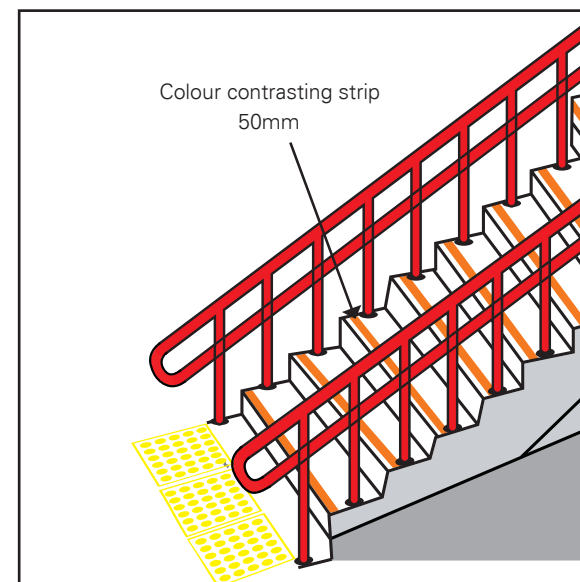
#### Standards and specifications

- The steps should have an unobstructed width of at least 1200mm.
- The landing should be 1200mm deep, and clear of any obstruction.

- Step risers should be uniform and not be more than 150mm in height.
- Tread (step depth) should be uniform and less than 300mm.
- Step edges should have contrast colour strips that are minimum 50mm wide, extending the full width of the steps.
- There should be tactile warning pavers 300mm before the beginning and at the end of all stairs and at landings (see Figure 9 and 10).
- Stairs should be adequately and uniformly lit, at the level of illumination of 100-150 lux.



**Figure 9:** Warning pavers for steps



**Figure 10:** Contrast in colours of each access feature- tactile warning pavers, step edges and handrails

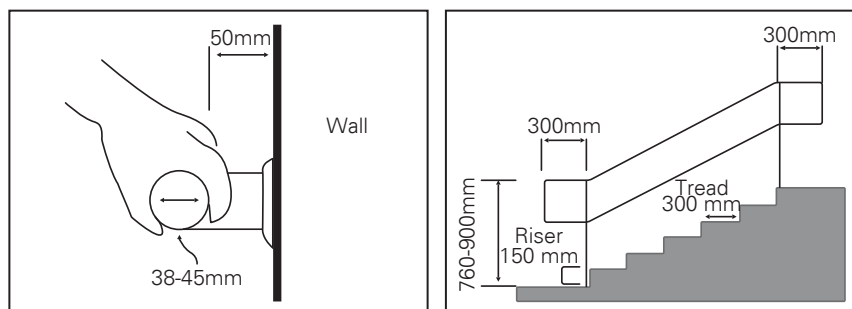
### Standards and specifications for handrails

- Handrails should be at a height of 760mm-900mm and should extend 300mm before and after the first/last step respectively, and in case of a ramp, beyond the top and the bottom of the ramp.
- Handrails should be tubular with a diameter of 38-45mm (see Photo 9 and Figure 11).
- There should be at least 50mm clear knuckle space between the wall and the handrails (Figure 11).





**Photo 9:** Handrails with circular ends



**Figure 11:** Standards for handrails along staircases

## 4.4 Corridors

Unused furniture, plants, closets, and other items placed in corridors can hamper the movement and passage of students and teachers, impacting children and persons with disabilities — especially those using mobility aids — in particular. Furthermore, thresholds (doorsills) if not bevelled, pipes, cables and level differences pose trip hazards and can cause injury.

Notice boards, coolers and decorative fixtures which are not mounted, and windows which open into corridors are accident hazards to children with visual impairments as these are not detected by white canes.



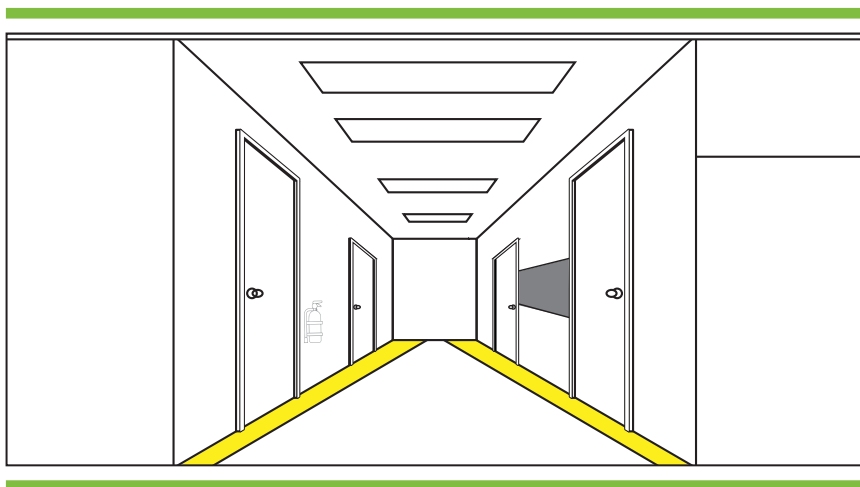
**Photo 10:** Items placed in a corridor can be potential hazards

## Possible solutions

### Ensure that:

- Corridors have an unobstructed width of 1200-1800mm, and are well-lit throughout. There should be a thick strip of florescent/ bright colour, preferably yellow (orange/red are also acceptable) on both sides of the corridors to help children with low vision in particular navigate their way around (Figure 12).

- Doorsills/thresholds and level differences of more than 10mm are bevelled.
- Objects (such as furniture, closets/cupboards, benches and decorative fixtures) do not protrude more than 100mm from the wall in corridors.



**Figure 12:** Unobstructed corridor with thick strips

## 4.5 Signage

Signs are important to everyone, but are critical in particular in enabling children with visual, speech and hearing impairments and children with intellectual and learning impairments to move around their school environment as independently as possible. For these students, lack of appropriate signage can contribute to confusion and disorientation.

### Possible solutions

#### Ensure that:

- External signage is mounted at 2200mm above the floor for proper head clearance.
- There is clear signage related to all school facilities (such as classrooms, mid-day meal areas, and libraries). It is preferable that these are provided in both written and pictorial forms. For children with Autism Spectrum Disorder (ASD), for example, it is easier to process pictorial signs rather than written ones, especially when they are anxious or stressed.
- Pictograms use images that are easy to recognise and understand, such as a tap with a tumbler for the drinking water area, or a book and pen for a study area.
- Contrasting colours are used for these signs for easier visibility. In multi-storey buildings, the floor plans are placed near the main entrance/reception area, in the lift and on each floor by the stairs, so people can easily locate where they need to go. Different floors can be indicated in different colours for ease of reference.
- There is signage indicating the floor level on each floor.
- There is adequate illumination (or light) for signs to be seen, particularly for the benefit of children with low vision.
- Braille plates with information of facilities on each floor are provided on the handrails of stairs.

- The International Symbol of Accessibility is displayed in relation to all the accessible services and facilities available in the school.

G	Ground
1	1 <sup>st</sup> Floor
2	2 <sup>st</sup> Floor
3	3 <sup>st</sup> Floor
4	4 <sup>st</sup> Floor

Figure 13: Example of colour coding for floor levels

## Standards and specifications

- The surface of sign should be non-reflective.
- Illuminated signs should not use red text on a dark background.
- Signs should use large print, with sans serif fonts such as Arial, Helvetica, Lucida Sans, Verdana.
- There should be good colour contrast between text/ symbols and their background.
- Signage should be mounted at a height of 1000mm from the floor for children aged 6-14 years and at a height of 1400mm-1600mm for children above 14 years of age. Braille signage should be provided on the latch side of the doors (Figure 14).
- Signs should both be in text and use pictograms, using slightly raised numbers, letters and symbols (at least 1-2 mm from the background) alongside Braille letters so that they can be read by touch, as not all children with visual impairments can read Braille.
- For toilets, signage should follow all the specifications noted above. Refer to Figure 15 and 16 for pictograms to be used for boys' and girls' toilets (male pictogram in triangle and female pictogram in circle). For Indian squatting toilets, refer to Figure 17.

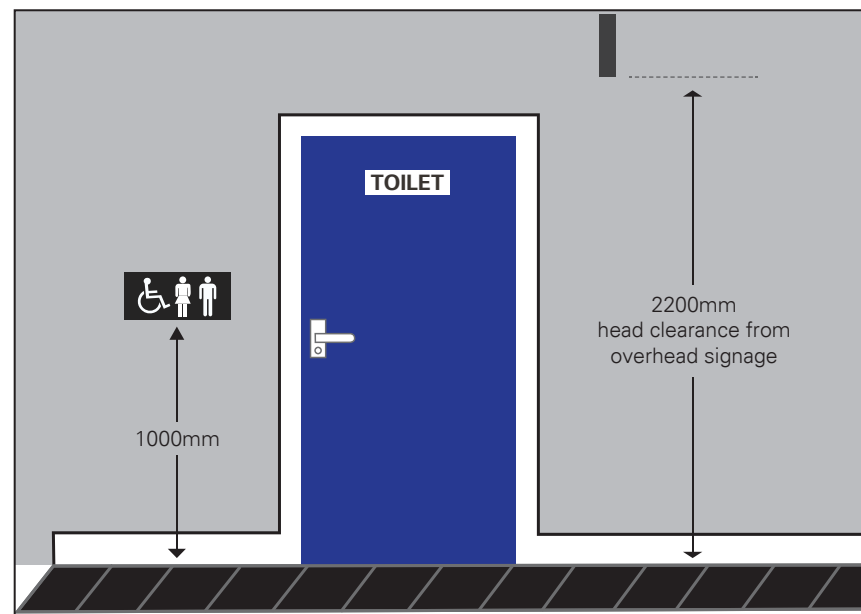
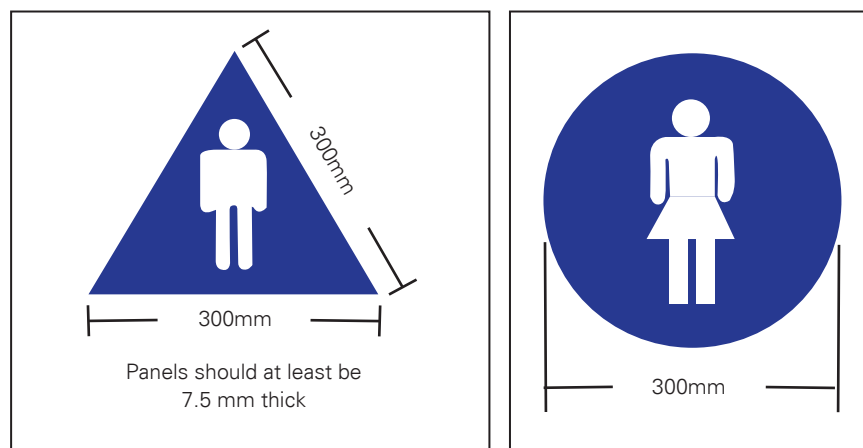


Figure14: Placement of signage

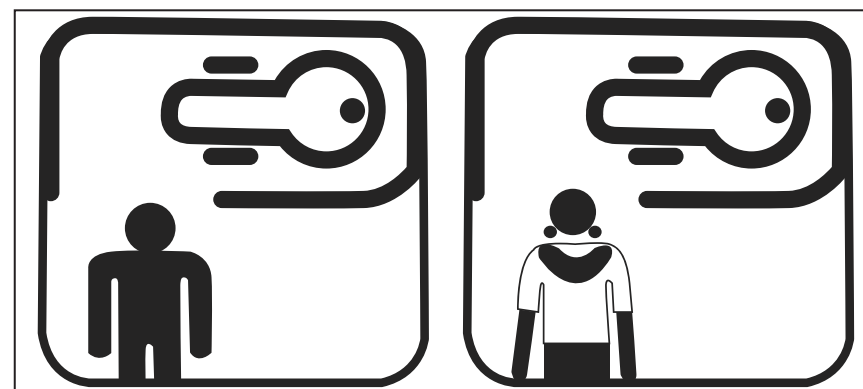




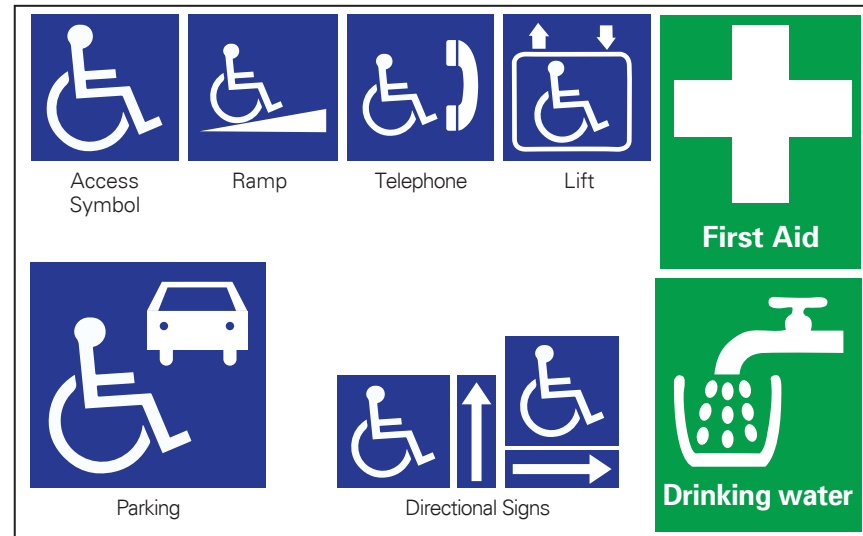
**Figure 15:** Sign for toilets



**Figure 16:** Pictograms for boys' and girls' toilets



**Figure 17:** Pictograms for Indian squatting toilets



**Figure 18:** Access symbols and pictograms for amenities

## 4.6 Doors

Doors of classrooms, activity rooms, other school rooms and facilities can be narrow and restrict movement and access of mobility



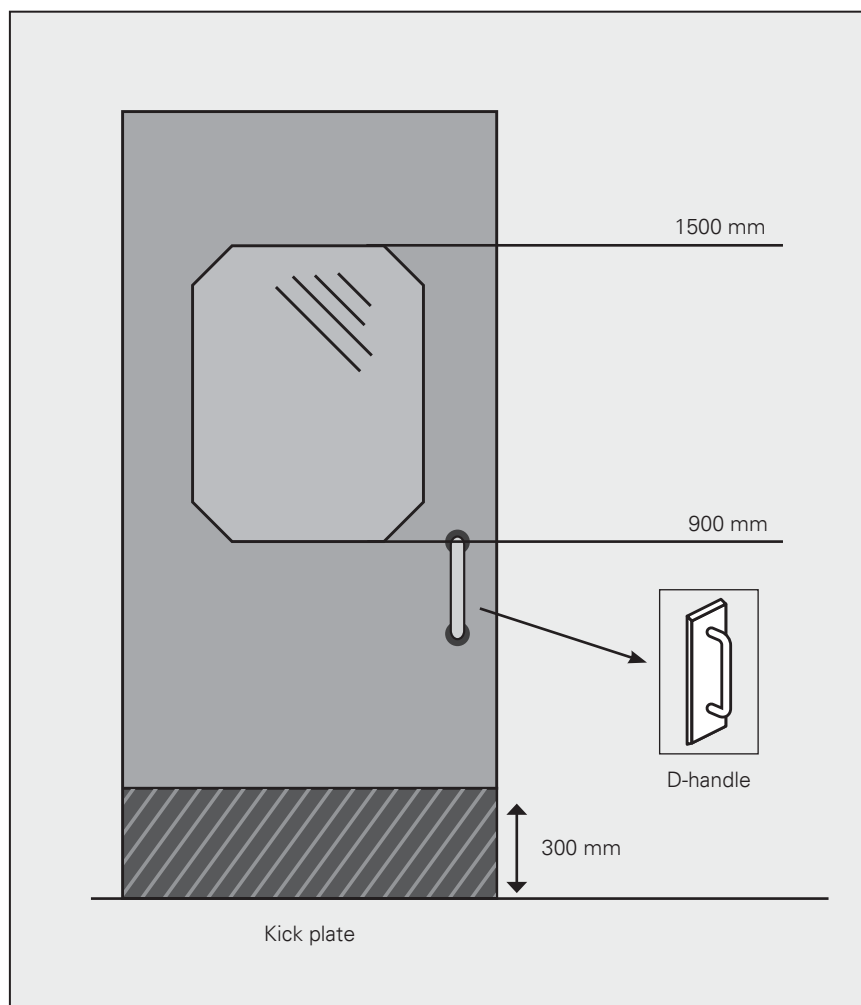
**Photo 11:** Narrow doors restrict movement of mobility aid users

aid users such as those using wheelchairs, walkers, and crutches. Also, door handles and other hardware may not be installed at a height comfortable enough for children using wheelchairs to use.

### Possible solutions

#### Ensure that:

- All doors — to classrooms, halls, canteens, toilets, the pantry, practical labs, and other areas — provide a minimum clear opening of 900mm.
- Doors are fitted with lever action locks and tubular D-handles, at a height of 850mm-1100mm from the floor (Figure 19).
- Doors are colour contrasted with the surrounding walls and do not require more than 22N force to open.
- Kick plates (metal plates fixed at the base of doors to protect them against damage and wear, for example from footrests and wheels of wheelchairs hitting against them) are placed with the top edge at a height of 300mm from the bottom of the door (Figure 19).
- Wherever required, doors are fitted with vision panels at a height of at least 900mm (bottom edge) and 1500mm (top edge) from the floor.



**Figure 19:** Kick plate at the bottom of a door

## 4.7 Classrooms

Due to a shortage of classrooms, multiple classes are sometimes held in one hall/room. In these situations, children with disabilities may suffer due to noise pollution, distraction because of activities in adjoining classes and less attention from their teachers. Also, some of them may find it difficult to navigate around the classrooms.



**Photo 12:** Multi-grade classroom

## Possible solutions

### Ensure that:

- There is a partition, where feasible, to bifurcate classrooms and prevent noise pollution and disturbances caused by adjoining classes. Wooden partitions/mud walls with cow dung are local solutions which help in acoustics management and reducing echo and noise pollution.
- Timetables, notice boards, etc., are available in both written and pictorial presentations, which are particularly helpful to children with Autism Spectrum Disorder (ASD) and children with learning disabilities.
- A rod/rail (could be made of thin bamboo) is fixed at a height of 750mm in the classroom and other areas for children with visual impairments to use for support in navigating their way around.
- In multi-storey schools, all classes and teaching facilities for children with locomotor impairments/those using mobility aids are located on the ground floor, or access to upper floors is provided by appropriate ramps or lifts.

## 4.8 Green boards

If mounted too high, blackboards or green boards in classrooms are difficult for children using wheelchairs or children of short stature to see/use. In some cases it may also be difficult for teachers to reach or properly use these boards (see Photo 13).



**Photo 13:** A primary school teacher standing on a chair to write on a green board while taking a class

Cluttering around the blackboard can also deviate attention, which may make it difficult, particularly for children with intellectual or learning disabilities to focus and concentrate on what is being written or taught.

## Possible solutions

### Ensure that:

- Green boards are used rather than blackboards, as green is easier on the eyes of students, particularly those with low vision, because of a lower contrast than in the case of a blackboard.



- The height of the green board is lowered to a child-friendly height of 500mm (lower edge from the floor). This will be easily accessible for teachers of short stature as well.



**Photo 14:** Accessible green board

## 4.9 Desks and benches/chairs

Some classrooms have desks and benches that are attached to each other and cannot be moved independently from one another. This is inconvenient for students wearing calipers, using crutches, or those who are tall, and cannot be used by wheelchair users. Desks and benches may also be overcrowded with more than 4-5 children seated on one bench. Desks are also sometimes too high for children to use, which makes participation and learning in class difficult for children with disabilities as well as other children.



**Photo 15:** Four students seated per bench



## Possible solutions

### Ensure that:

- One desk is used by a maximum of 2-3 children and there is adequate space for children using assistive devices.
- There is a clear space for knees and footrests for wheelchair access to tables/workbenches.
- Matte finish light colours are used for table surfaces to avoid glare.
- Some desks and benches/chairs are detached so that children using mobility aids can move to and from desks with ease (Figure 20).
- Desks are modified to include a shelf or storage space underneath, for children to store their bags for ease of access, especially for children with locomotor disabilities, and for effective utilisation of benches/chairs for seating purposes only.
- The heights of at least some seats and desks are adjustable as per children's size and height.

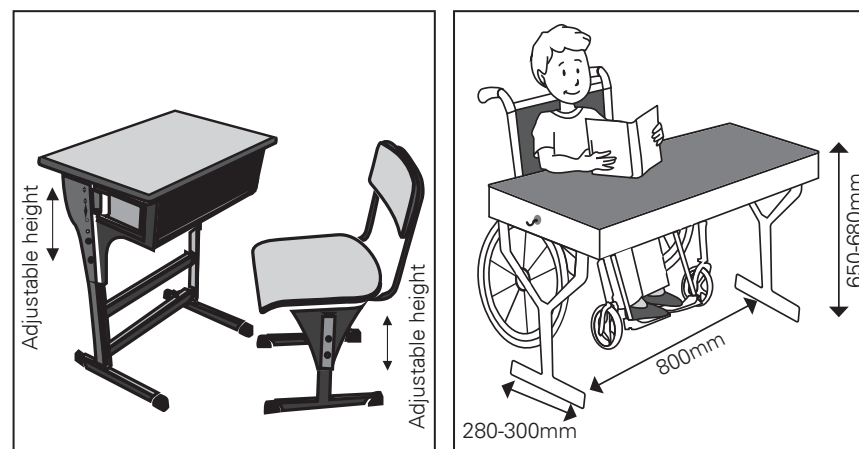
## Standards and specifications

- Tables and desks should not be higher than 800mm, with a minimum knee clearance of 650-680mm (in height) and 280-300mm (depth) to accommodate wheelchair users (Figure 21).

- The space around tables and desks should be approximately 1200mm x 800mm to facilitate wheelchair maneuvering.
- In case of attached seats, the space between a bench and a desk should be at least 450mm.
- The height of a seat should not be more than 450mm from the floor for primary school children.

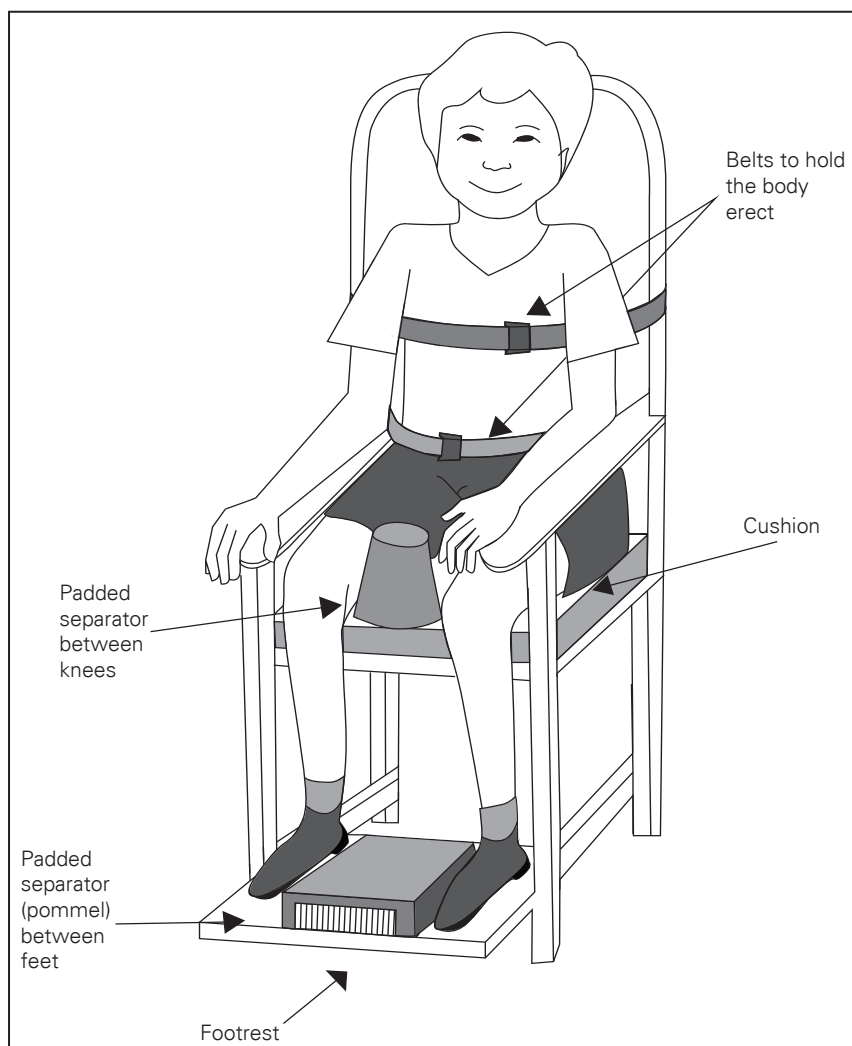
## Design guide for desks and benches/chairs

Here are some designs of desks and chairs with adjustable heights to suit various heights of children. The chairs/benches and tables are not connected so as to allow adequate access for crutch/other mobility aid users. There is a space/shelf to keep bags under the table and a hook to hang water bottles and other items.



**Figure 20:** Detached desk and chair with height adjustable function

**Figure 21:** Dimensions of accessible furniture



**Figure 22:** Adapted chair for children with cerebral palsy

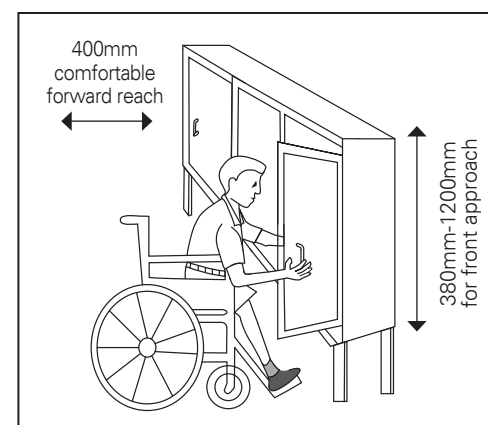
## 4.10 Storage

Storage space in rooms/activity areas is often located either too high or too low for children using wheelchairs, walkers, or other mobility aids to access. The space around storage areas is usually not adequate for wheelchair users to manoeuvre and reach the storage. Closets and drawers may have small handles without enough finger space for children to properly grasp and use them.

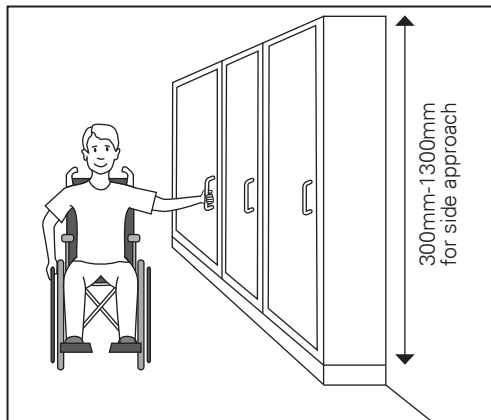
### Possible solutions

#### Ensure that:

- In the rooms/activity areas, storage space of various kinds (shelves, cupboards and drawers) is 380mm-1200mm from the floor, allowing front approach and 300mm-1300mm from the floor for side approach for wheelchair users (Figure 23a and 23b).



**Figure 23a:** Standards for storage lockers/closet for front approach



**Figure 23b:** Standards for storage lockers/closet for side approach

- Closets and drawers have lever handles in D-shape, which can be easily grasped by children with limited gripping or pulling strength.
- There is sufficient floor space (900mm x 1200mm) around the storage for wheelchair users to manoeuvre and open doors of cupboards/closets.

## 4.11 Windows

Glare from shining objects and windows makes it difficult for children with low vision to read boards, books and other materials. In addition, some children with Autism Spectrum Disorder (ASD) may be inveterate climbers (that is, they love to climb stairs) and some tend

to wander off. If windows do not have grills and shutters, they can be a potential danger.



**Photo 16:** Glare from windows makes it difficult for children with low vision to read boards

## Possible solutions

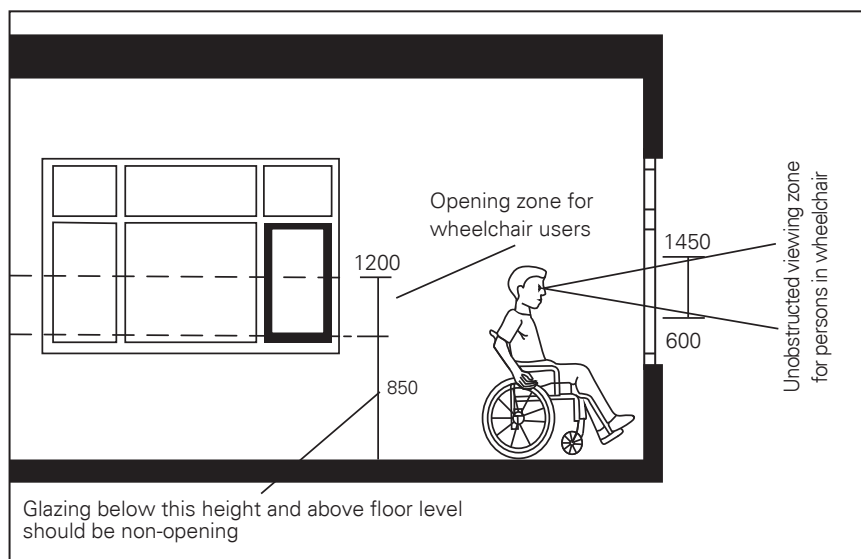
### Ensure that:

- Windows open into the classrooms or other rooms and not out to the corridors, so as not to obstruct movement in corridors and hallways.
- Glare from shining objects and windows is minimized through the use of blinds or curtains, which can utilise locally available materials including bamboos and khus.

- Windows have wire mesh/grills along with mosquito nets to keep insects away and for the safety of all children, including children with disabilities.

### Standards and specifications

- The height of windows should be of between 600 (bottom edge) and 1450mm (top edge) from the floor, enabling children to see outside while seated.
- Lever or push handles should be used and fixed (along with any pulls, latches and locks) at a height of between 900-1000mm. They should be usable by one hand, not requiring fine finger control, tight grasping, pinching or twisting.



**Figure 24:** Windows view zone

### 4.12 Flooring

Floors with a glossy finish or that are damaged, uneven or wet (such as wet floors in toilets) can be dangerous for children, especially those with visual or locomotor impairments. Glazed tiles are slippery and can cause accidental falls. Glazed tiles/marble also produce glare from natural light and can cause discomfort to students with low vision. Patterned tiles with geometric designs and mosaic flooring can confuse children with autism, and learning and intellectual disabilities and may disorient them.



**Photo 17:** Unmaintained floor in a classroom



**Photo 18:** Wet floor in a toilet

### Possible solutions

#### Ensure that:

- Glazed tiles/marble are avoided for flooring.
- Tiles of one colour are used for the flooring.
- Anti-skid flooring is used throughout the school. Matte-finish tiles/polyvinyl chloride (PVC) strips/any other anti-skid materials are used to prevent children, particularly those using mobility aids, from falling/slipping.

## 4.13 Drinking water units

Drinking water taps that are too high cannot be easily accessed by small children and wheelchair users. For children using other mobility aids such as crutches, calipers, and walkers, it is also very difficult, and at times impossible, to reach these taps. In some cases, there are taps but no sinks/basins, making it inconvenient for children with disabilities to drink water. Where there is no proper drainage, there can be water clogging and slippery floors, making it dangerous for children.



**Photo 19:** Drinking water facility without a basin



## Possible solutions

### Ensure that:

- The drinking water facility and approach to it are on a level surface and well-maintained. The surroundings should be paved/ concrete and level.
- There are lever-type handles for the taps.
- There is a lowered washbasin for children using mobility aids such as wheelchairs, crutches, and walkers.
- There are clear signs for the drinking water areas.

## Standards and specifications

- The drinking water unit should have a washbasin and be accessible with one tap at a height of 400mm and another at 800mm.
- The dimensions of the washbasin should be 520mm x 410mm. When mounted, the top edge should be at a height of 700mm-800mm from the floor, and there should be knee space of at least 760mm width x 200mm depth x 650mm-680mm height (Figure 26). This will allow both front and parallel access to taps for students using mobility aids such as wheelchairs, crutches, and walkers.
- There should be adequate drainage with cover/grating (not wider than 10mm).

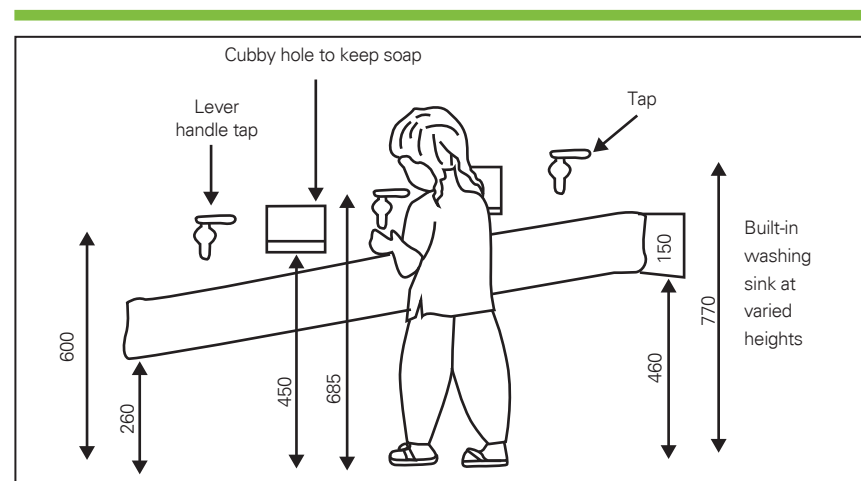


Figure 25: Drinking water at multiple levels (option-1)

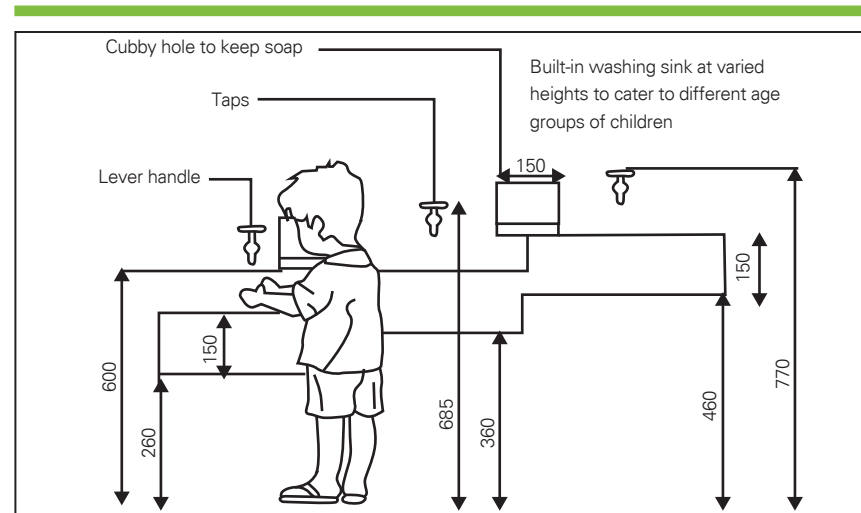


Figure 26: Drinking water at multiple levels (option-2)

## 4.14 Toilets

Small toilet cubicles, narrow doors, and the absence of western commodes make toilets inaccessible for children with locomotor disabilities. Accessible toilets should have a western commode seat and grab bars in a spacious cubicle with adequate wheelchair turning space. Toilets in schools are often not wheelchair-friendly, with insufficient space and without grab bars or handles, or towel rods used in place of grab bars, which are risky to be used by children with disabilities.



**Photo 20:** Unmaintained toilet

Furthermore, the approach to toilets is often not maintained and does not have adequate illumination posing a danger to children.



**Photo 21:** Toilet without signage



**Photo 22:** Toilet without roof, doors and water taps

For girls, incinerators are not always available for disposal of menstrual hygiene waste and when available may not be accessible. Toilets also may not have running water, which can pose a particular barrier for girls with locomotor disabilities, as it may be difficult for them to access water from storage tanks.

For boys of short stature or with locomotor and visual impairments, high urinal rims can be difficult to reach. Urinals also often have a step and no grab bars, which make them difficult to use, particularly by boys wearing calipers or using crutches.

## Possible solutions

### Ensure that:

- Options of both western commodes and Indian style floor toilets are available. While western commodes following given guidelines are considered the standard for accessible toilets, some children in India prefer Indian squatting pans as they are used to using this kind of toilet. Also, due to the varied ways that individuals process sensory information, some children with autism are more comfortable with these Indian style toilets. However, there is a need to provide accessories to help children with disabilities use these toilets (see Figure 36 and Photo 25).
- Accessible toilet cubicles are near the general toilets for easy usage and for regular maintenance alongside the other toilets. Otherwise, if accessible toilets are in a separate area, they may be locked and not maintained due to less usage.
- There are tactile warning pavers 300mm before the toilet entrance and at urinals and washbasins for children with visual impairments.
- The colour of toilet seats/WCs contrast with the colour of walls/tiles so that children with low vision can easily identify and see the toilets.
- There are equal numbers of boys', girls', male and female staff toilets with accessible cubicles so that all children's and staff's needs can be met with respect, dignity, privacy and safety.
- Signs clearly indicate girls' and boys' toilets. For solutions to signage refer to Section 4.5.
- Urinals can be accessed without having to walk up a step and there is a chest-support grab bar (see Photo 23).
- There are wall-hung stall urinals (see Photo 23), with an elongated rim at a maximum of 430mm above the floor. These would be usable by all children, including those of short stature and wheelchair users.
- Sanitary materials and disposal mechanisms, such as incinerators, are accessible to girls with disabilities, alongside other girls (refer to standards and specifications for incinerators later in this section). There should also be running water in the girls' toilets for effective menstrual hygiene management.
- All toilets have alarm switches next to the commode — one at a height of 300mm and the other at 900mm from the floor — which can be activated in an emergency.

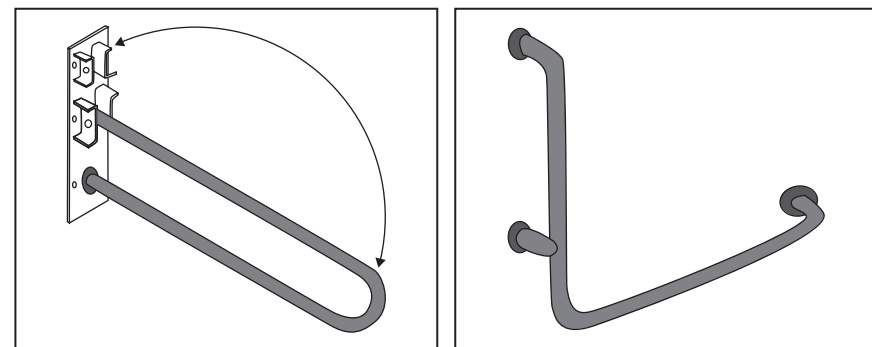


**Photo 23:** Wall-hung urinal with chest-support grab bar

## Western commode

### Standards and specifications

- Wheelchair accessible toilet cubicles with western commode seats should have a minimum of 2000mm x 2200mm clear floor space, doors (900mm wide) opening to the outside, and washbasins provided in the corner at a height of 650-680mm (bottom edge) and 700-800mm (top edge) from the floor.
- Accessible toilet cubicles with western commode seats can be provided by renovating and combining two regular cubicles and creating a space of 2000mm x 2200mm. Appropriate grab bars (U and L-shape — see Figure 27) are required next to the WC for most children with locomotor disabilities to be able to transfer themselves from their wheelchairs to the toilets independently.
- Cubbyholes for soaps should be built or installed at a height of 865 mm.

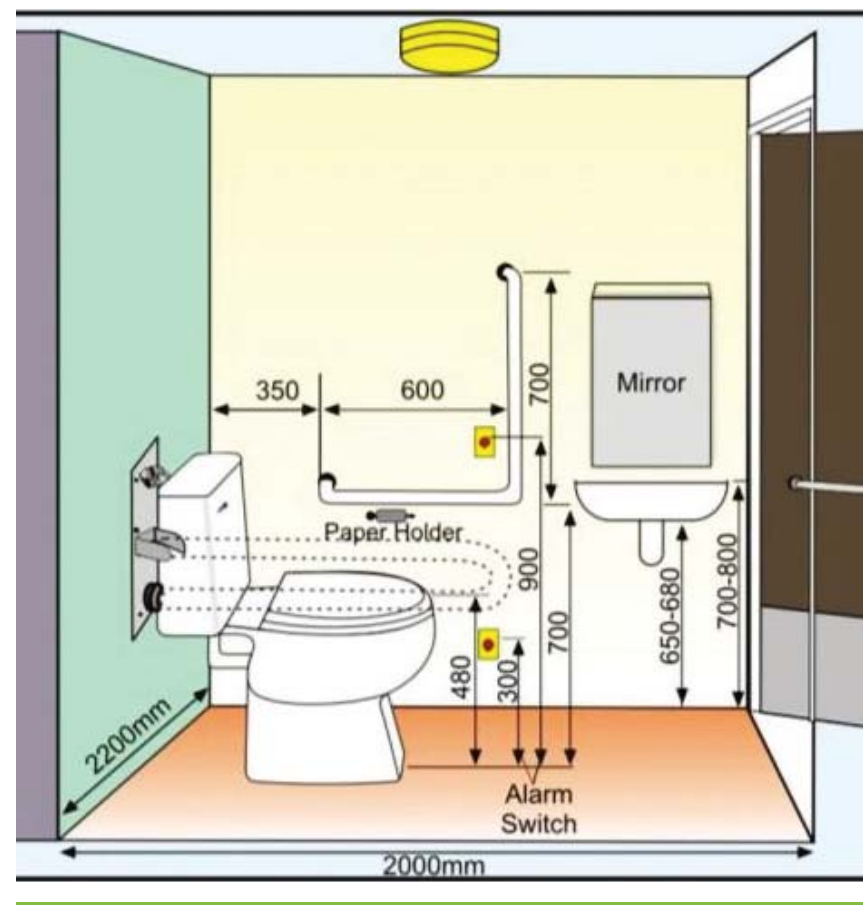


**Figure 27:** Moveable and stationary grab bars





**Photo 24:** Western commode in a small cubicle

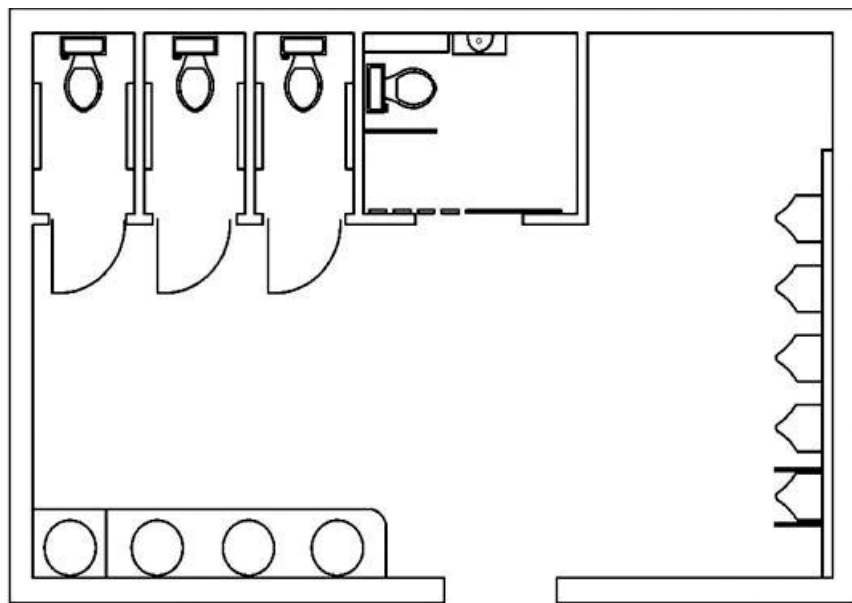


**Figure 28:** Standards and layout of an accessible toilet and toilet fixtures

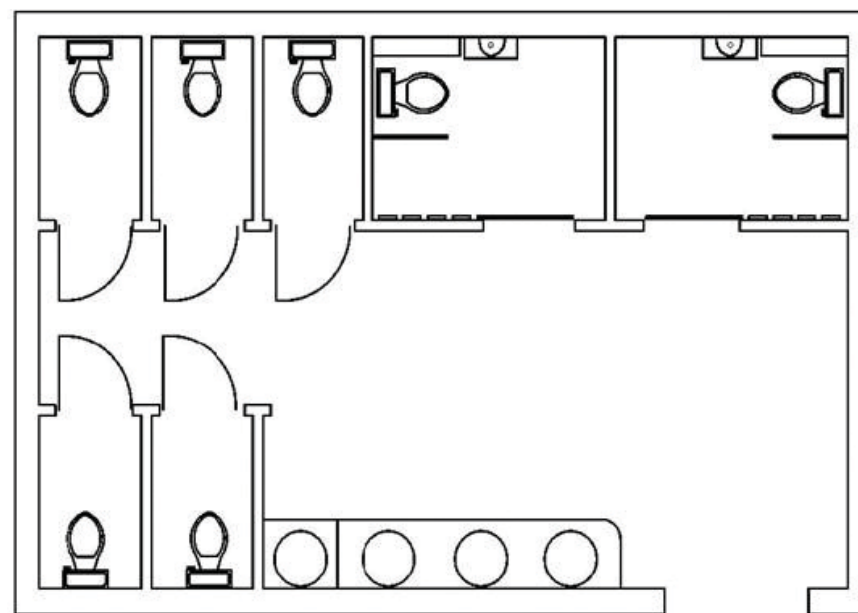


## Design guide for toilets

An overall layout of the toilet block both for boys' and for girls' toilets is shown in the figure below. This is followed by design layouts for cubicles for different types of individual wheelchair transfers.



**Figure 29:** Design layout for boys' toilet blocks with accessible toilet cubicles



**Figure 30:** Design layout for girls' toilet blocks with accessible toilet cubicles

There are typically three types of independent wheelchair transfers, namely front, parallel, and diagonal, which are practiced by wheelchair users. The plans below indicate different design layouts and options for the placement of toilet accessories and doors in relation to these different types of transfers. As shown in the plans, the door in these toilet cubicles should preferably be placed diagonally opposite to the commode seat.

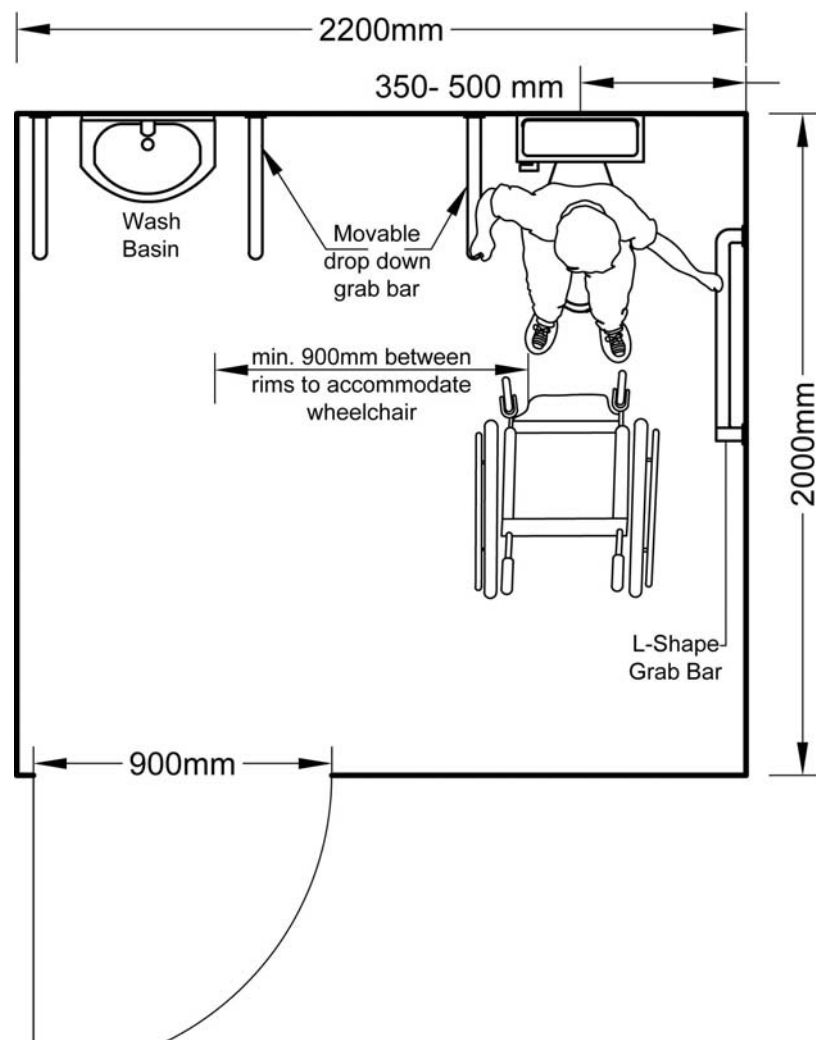


Figure 31: Option I- design layout for front transfer

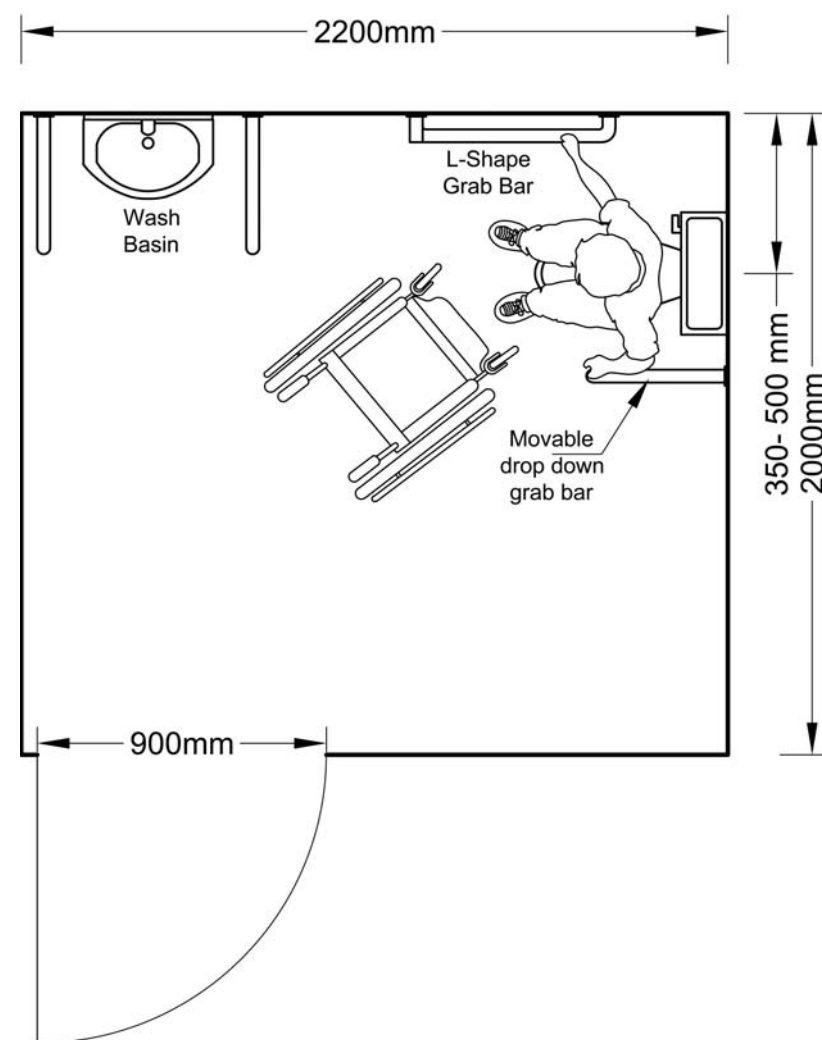


Figure 32: Option II- design layout for diagonal transfer

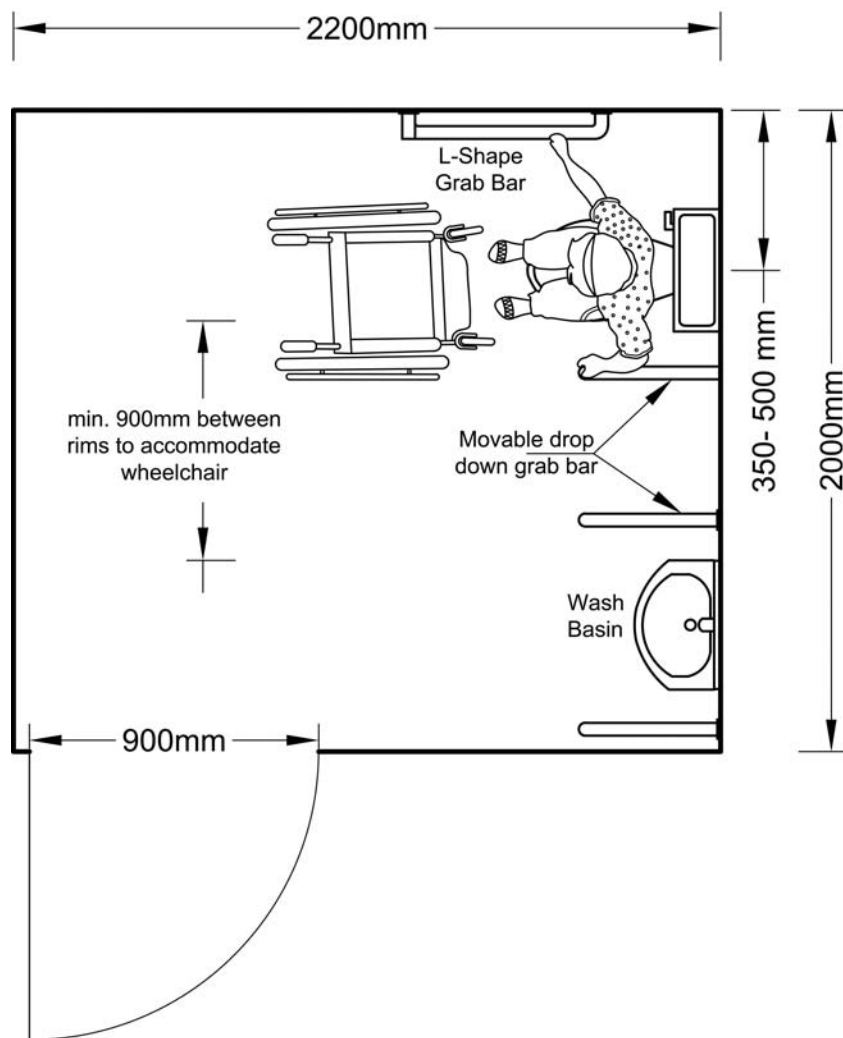


Figure 33: Option III- design layout for front transfer

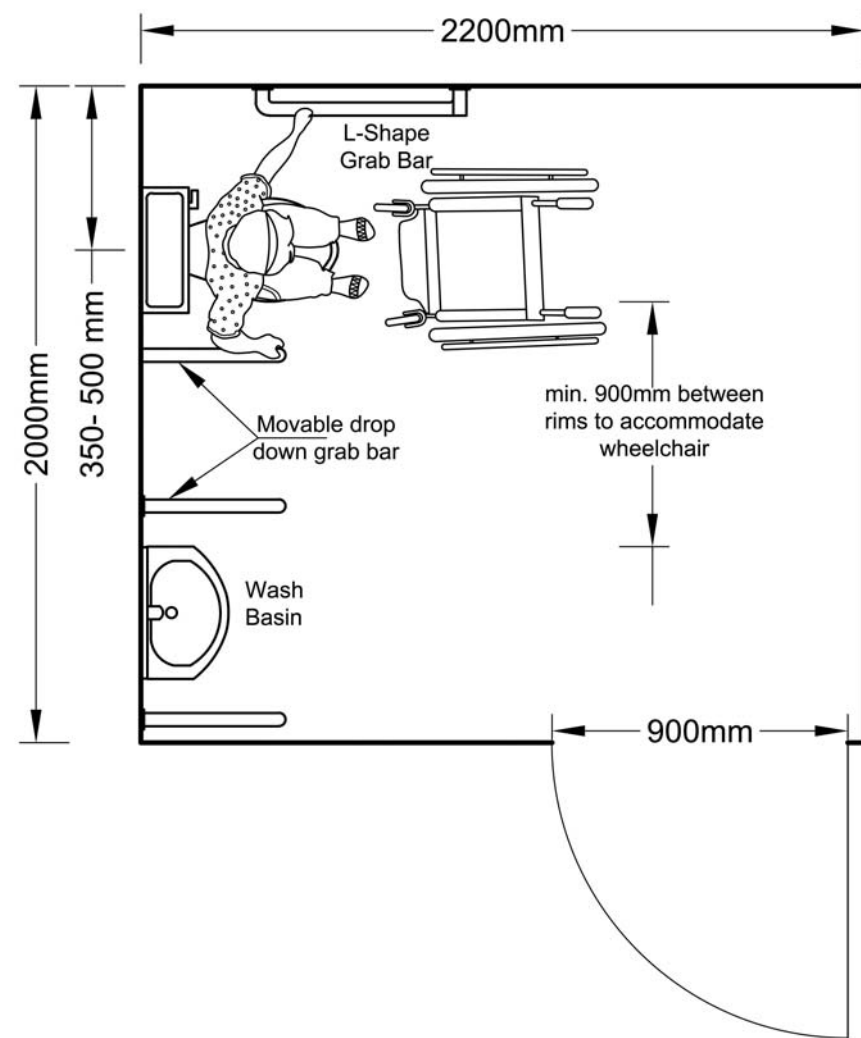


Figure 34: Option IV- design layout for front transfer

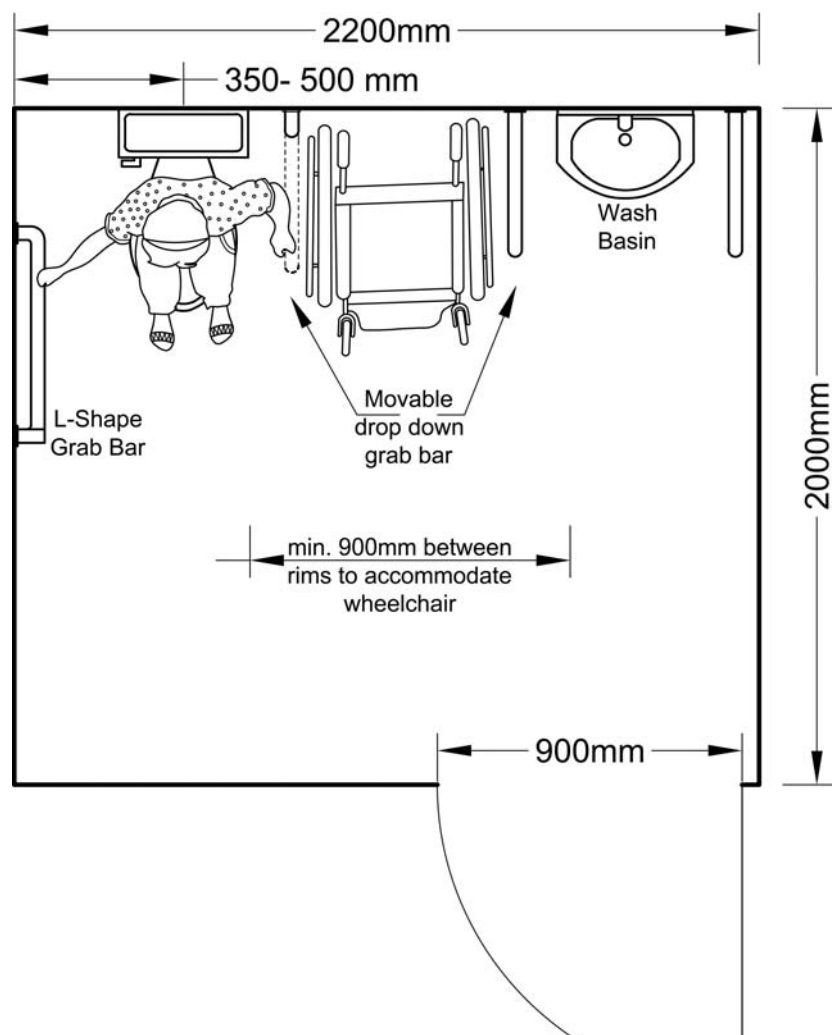


Figure 35: Option V- design layout for parallel transfer

## Indian squatting pans

### Standards and specifications

- The toilet cubicle should be of 1200mm x 1200mm in size (internal size).
- ▶ The cubicle should have wall-mounted grab bars for sitting down and getting up. There should be vertical grab bars to assist children with reduced mobility to lower themselves into a squatting position and then stand back up.

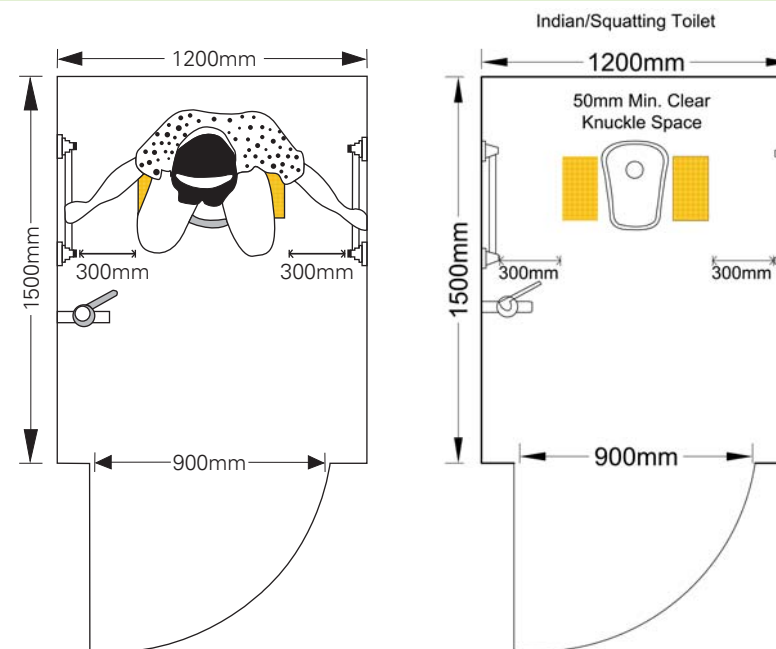
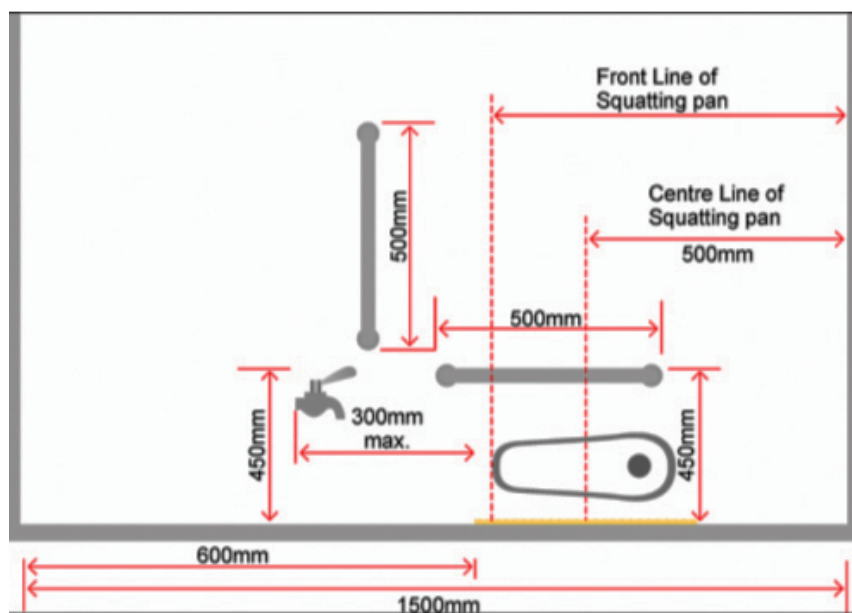


Figure 36: Indian squatting toilet layout plan

- ▶ There should also be horizontal grab bars to help in balancing and stabilizing when the child reaches for water or is cleaning him/herself (Figure 36 and 37) .
- ▶ Health faucets/ hand-held sprays should be provided at a height of 300mm-400mm.
- Door handle, locks and storage (for keeping items such as sanitary napkins) at two levels/ heights — 300mm and 800mm — should be installed for crawlers and standing users.



**Figure 37:** Side view of Indian squatting toilet plan



**Photo 25:** Warning pavers for footrest in a squatting pan cubicle

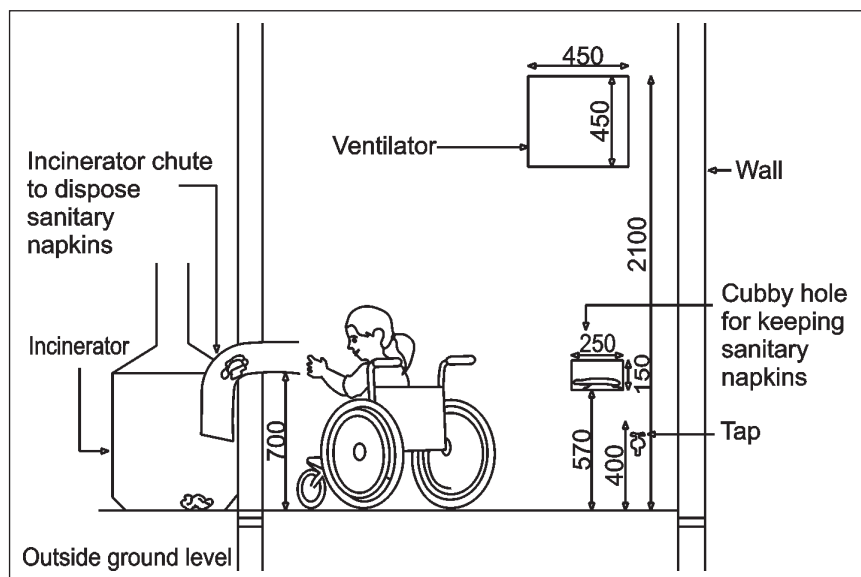
- Clothes hanging hooks (for hanging towels, and dupattas in some cases) should be installed for seated and standing users at 800mm and 1000mm.
- The design layouts suggested in the section above are applicable to the Indian squatting toilets as well.



## Incinerators in accessible toilets

### Standards and specifications

In an accessible toilet, an incinerator should ideally be placed near the toilet at a height of 700mm from the floor, which would allow girls with disabilities to make use of it while sitting on the toilet. The incinerator should be next to the L-shaped grab bar in the toilet to facilitate access. Alternatively, the incinerator can be placed near the washbasin in the accessible toilet.



**Figure 38:** Location of incinerator in accessible toilet

### Non-negotiables for accessible water, sanitation and hygiene (WASH) provisions

Often times only minor changes are required to ensure that children with disabilities can access WASH facilities. The cost of making facilities inclusive is minimal compared to the costs of exclusion.

Research indicates that in new construction, the cost of meeting accessibility standards is as low as one per cent of the total cost.<sup>6</sup>

Some non-negotiables and essential elements to be considered while renovating existing toilets or constructing new toilets are as follows:

- Approaches and paths to toilets are straight, even and clear of debris and other items.
- Doors are wide enough for wheelchairs to enter/exit.
- The cubicle size is adequate for wheelchair maneuvering and transferring, especially in the case of western commodes.
- Toilets are fitted with appropriate grab bars.
- Toilets include access to a water source. Children with sensory impairments and disabilities can take water from storage tanks, which should be provided near the entry door of a toilet cubicle. However, children with locomotor impairments and those using mobility aids, such as wheelchairs/crutches/calipers require running water by means of a tank and pipes with taps.
- Group hand wash facilities or washbasins are installed at different heights (one at a height of 400mm and another at 800mm)

<sup>6</sup> UNICEF. 2013. The State of the World's Children 2013. Executive Summary: Children with Disabilities. New York, UNICEF.

from the floor) so that all children (whether standing or using wheelchairs) can use them.

In some cases, complying with standards of accessibility may require going beyond the basic standard designs approved for WASH provisions. In situations where all units cannot be made accessible, a minimum number of units should comply with the accessibility standards. It should be ensured that there is at least one accessible unisex latrine available in every school. Where prevailing social norms do not support unisex latrines, there should be at least one accessible cubicle in the boys' toilet and in the girls' toilet.

## 4.15 Playgrounds

Playgrounds are often uneven and unmaintained, making them difficult for children with disabilities to access. These areas tend not to have ramps and there are also often no paved pathways allowing easy access to sitting areas/benches.



**Photo 26:** Uneven and unmaintained playground

## Possible solutions

### Ensure that:

- There is a paved pathway minimum 1800mm in width, which can be used by wheelchair/crutch/walker users.
- In case of level differences, there is a ramp that facilitates access and connects to the paved pathway.
- The nearest sitting area to the paved pathway is under a tree or some kind of shade, and has a clear space of at least 800mm x 1200mm for wheelchair users.
- The playground has sufficient grass, as this is safer with less chances of children getting hurt. Sand and mud playgrounds absorb and reflect more heat in adverse weather conditions compared to grassy playgrounds. It is important that the grass is not too dense, nor allowed to grow too tall, so that the movement of children using mobility aids is not obstructed.
- Play equipment is adapted to be safe for use by children with disabilities — for example, by ensuring there are no sharp edges on the play equipment, they are painted in contrasting colours to the ground for the benefit of children with low vision, and there is sand pit underneath the play equipment to minimize injuries.



**Photo 27:** Example of a good playground

## 4.16 Lighting

Poorly lit toilets are not safe for anyone (with/without disabilities), but can be especially dangerous for those with low vision and for girls/ female staff. In classrooms and other areas of the school, insufficient light can also cause discomfort and impede the learning of children with low vision.

### Possible solutions

#### Ensure that:

- All activity/internal areas are well-lit (300-500 lux) to facilitate reading and other activities. This would benefit everyone, including children with low vision and also children with hearing impairments, who practice lip-reading.
- Toilets, staircases and corridors have illumination levels of 100-150 lux.
- Glare from excessively bright lights is avoided, with white light (CFL/LED) rather than yellow light. Ideally naked bulbs should not be used, as these are not friendly to children with autism.

### Switchboards

- Switchboards should be mounted at a height of 450mm-1000mm from the floor to be within the reach of wheelchair users. Light/fan switches should be at a height of 800 mm-1000mm.
- Switchboards can be outlined in contrasting colours for children with low vision to be able to identify them on the walls. Vinyl tape/acrylic paint (yellow/black/red) can be used for this purpose.
- All electric sockets should be with safety shutters, to ensure child safety.
- Switches should have tactile markings, such as raised symbols of fans for fan switches, and bulb symbols for lights.







## 5. Emergency preparedness



## 5. Emergency preparedness

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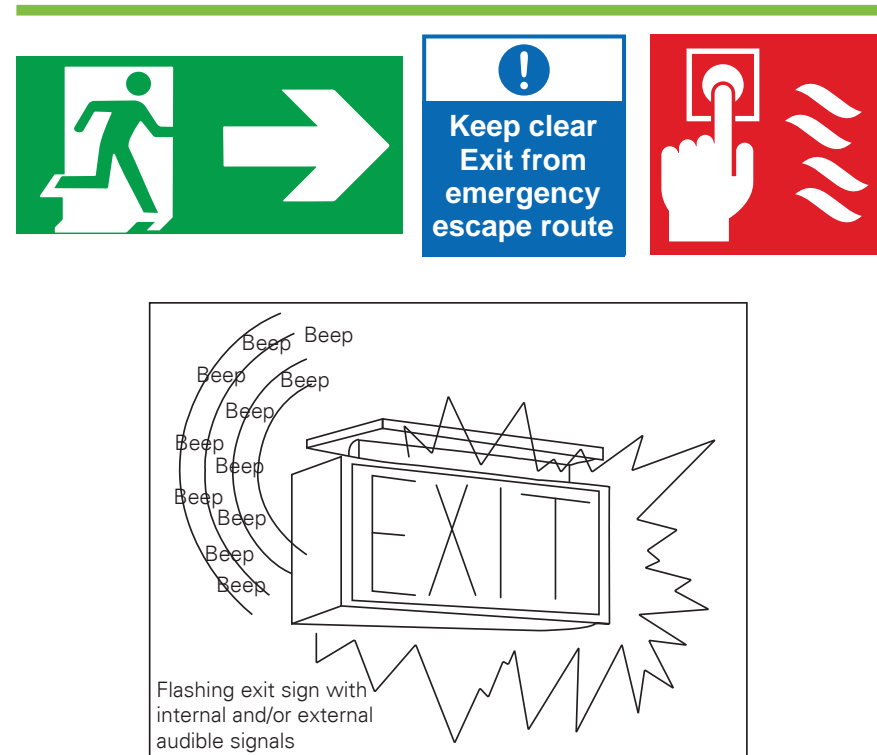
In many schools, measures for emergency preparedness and provisions for emergency evacuation are not yet in place. This can result in severe mishaps and accidents in cases of fire, natural disasters or other emergency situations. Ensuring that schools are prepared for such situations and that preparedness measures take into account the needs and protection of children with disabilities is of paramount importance. Below are some points to take into account in this regard.

### Ensure that:

- There are visual and audio alarms installed at strategic locations in all areas (including classrooms, kitchen and toilet areas) to alert children in emergency situations. Audible alarms with 'voice instructions' that can help guide children with disabilities to the nearest emergency exit can be considered.
- Fire alarm boxes and emergency call buttons are installed at a height of 800mm-1000mm from the floor. These should be in contrasting colours from the background walls and any text should be in embossed lettering and Braille.
- Exits and assembly areas are clearly noted for emergencies and evacuation and these areas are accessible to children with disabilities.
- Evacuation routes are clearly identified and have signage that are strategically placed following the specifications within this guidebook.
- Routes are at least 1200mm wide to ensure that a child using a wheelchair and a non-disabled child are able to pass each other along the paths.
- The routes are free of any level differences and are kept free from obstacles such as furniture, coolers, AC units, flower pots and so on.
- Emergency exit lights in green colour are mounted near the floor, so that they can be seen in cases where there is a lot of smoke (Figure 39).
- Direction signs with arrows are installed at a height of 500mm from the floor along the evacuation route so that all children, including children using wheelchairs, can see them.
- Fire refuge areas which are open to air on at least one side, and are protected with a suitable railing, are identified on the periphery of each floor. The refuge areas should be equipped with flashing bulbs, audio signals and clear signs for children,

especially children with disabilities, to more easily locate the areas. In addition, two-way communication gadgets like walkie-talkies and microphones with speakers should ideally be available, to facilitate emergency evacuation.

- No more than three children are seated at one desk (depending upon the size of the desk) so that children can easily get out from behind the desk when they need to evacuate the room.
- Posters using large prints and Braille highlighting the basic dos and don'ts in emergency situations are placed on walls for the reference of all children, including children with low vision and children with visual impairments.



**Figure 39:** Evacuation signage



A photograph showing a young boy in a wheelchair being pushed by another boy in a school uniform. The boy in the wheelchair is also wearing a school uniform. In the background, a woman in a pink sari is standing, and another boy in a school uniform is sitting on the ground. The scene is outdoors on a paved surface.

## 6. Other features

## 6. Other features

### 6.1 Lifts

Lifts can be an important means for children with disabilities, particularly those with locomotor disabilities, to access multi-storey buildings. It may not always be feasible to install a lift in schools, but standards and specifications are provided below in cases where this may be possible, to ensure the lifts are accessible to children with disabilities.

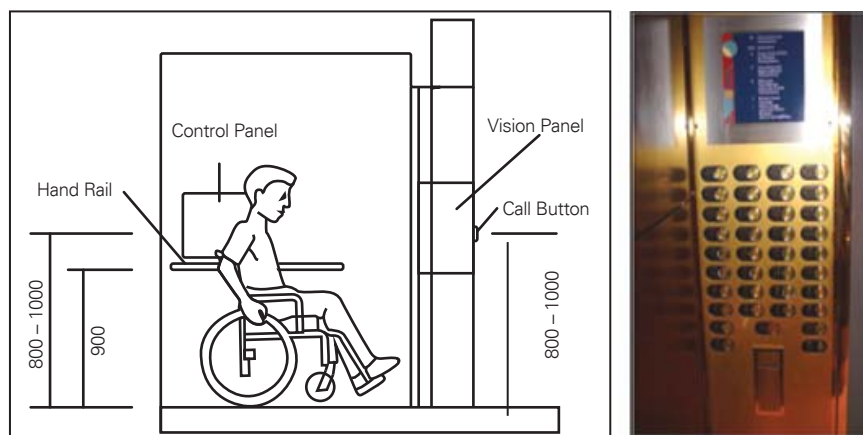
#### Standards and specifications

- **Colour:** Lift door and panel should be in bright colour contrast instead of glazed steel or any other metallic shades that produce glare.
- **Car space:** The internal floor space of the lift should be minimum 1500mm x 1500mm.
- **Doors:** Doors of the lift should be 900mm wide and the closing mechanism should be adjusted so as to give adequate entry time. Alternatively, sensors can be installed.
- **Call button:** The call button in a lift should be at a reach of 800mm-1000mm; it should be at least 450mm from any corners or walls to reach the call button.
- **Control panel:** A control panel should be inside the lift, preferably on both sides, and have buttons with Braille and raised letters, in bright contrast from the backgrounds (Figure 40).
- **Audio announcement:** There should be an audio announcement for opening/closing of the doors and for different floor levels.
- **Key plan:** A key plan of all the floors should be placed inside the lift.
- **Vision panels:** Vision panels should be provided on the lift door at two levels—800mm and 1500mm — for wheelchair and standing users respectively.
- **Level difference:** The gap in levels between the lift doors and the floor surface should not be more than 10mm.



Figure 40: Lift signage





**Figure 41:** Standards for a lift's door and control panel in Braille

- **Floor directory:** Floor directory of the main facilities and services should be available at the lift landings, clearly indicating an accessible emergency exit route and the location of nearest refuge areas for children with disabilities.
- The use of visually and acoustically reflective wall surfaces should be minimized within lift cars as visual reflections can cause discomfort and affect the visual acuity of children with visual impairments.
- The floor of lift cars should be slip-resistant and have frictional qualities similar to the floor of the lift landings to decrease the risk of stumbling.
- The provision of a mirror on the wall of a lift car opposite the lift door is a positive aid for navigation of wheelchair users. It allows

the wheelchair users to see if anyone is behind them and to see the floor indicator panel.

- The mirror should not extend below 900mm from the lift floor in order to avoid confusing children with visual impairments.
- The emergency communication system such as two way communication system and emergency alarm push buttons, preferably with tactile marking, audio buzzers and indication lights, should be installed in the lift.
- The doors of the lift car should be fitted with vision panels at least 800mm-1500mm from the floor.
- The doors of the lift car should be colour contrasted with the surrounding walls and should not require more than 22N force to open.

## 6.2 Tactile pavers

Tactile pavers are important for orientation, direction and warning, in particular for children with visual impairments. While these tiles should ideally be placed throughout a school as a guiding path, when this is not feasible, some can be placed in certain areas, such as at entrances, at urinals/toilets, around manholes/gratings: to signal where these are placed and to avoid accidents.

- **Floor tactile clues:** Guiding and warning tiles should have colours which contrast with the surrounding surface (preferably in bright yellow colour) for orientation, direction and warning.

- **Guiding path** is a straight continuous line of tiles placed on the floor to guide to a facility/utility and indicates the correct path/route to follow.
- **Warning strips** are bubbled/blistered tiles laid to detect building entrances, doors, steps, lifts, raised platforms, low barriers, hazards and so on and to define edges of objects including manholes, gratings, etc. These provide warning signals to screen off obstacles, indicate drop-offs or other hazards; discourage movement in incorrect directions, and warn of upcoming corners or junctions. Warning strips should be placed for 300mm at the beginning and end of ramps, stairs and entrances to any doors.

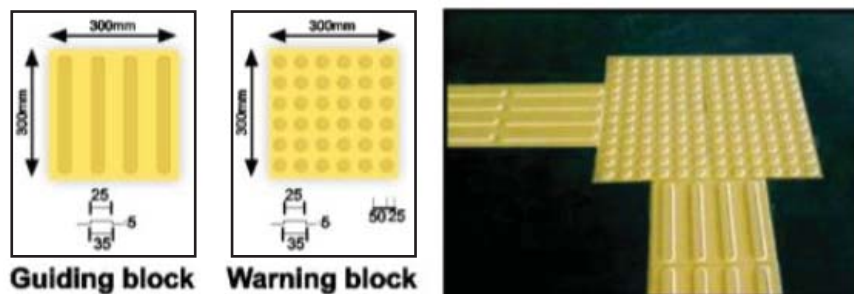


Figure 42: Tactile guiding and warning blocks

### Places to install warning blocks

- In front of areas where traffic is present.
  - In front of entrances/exits.
- At the beginning and after the end of stairs.
  - In open space to orient children with visual impairments.

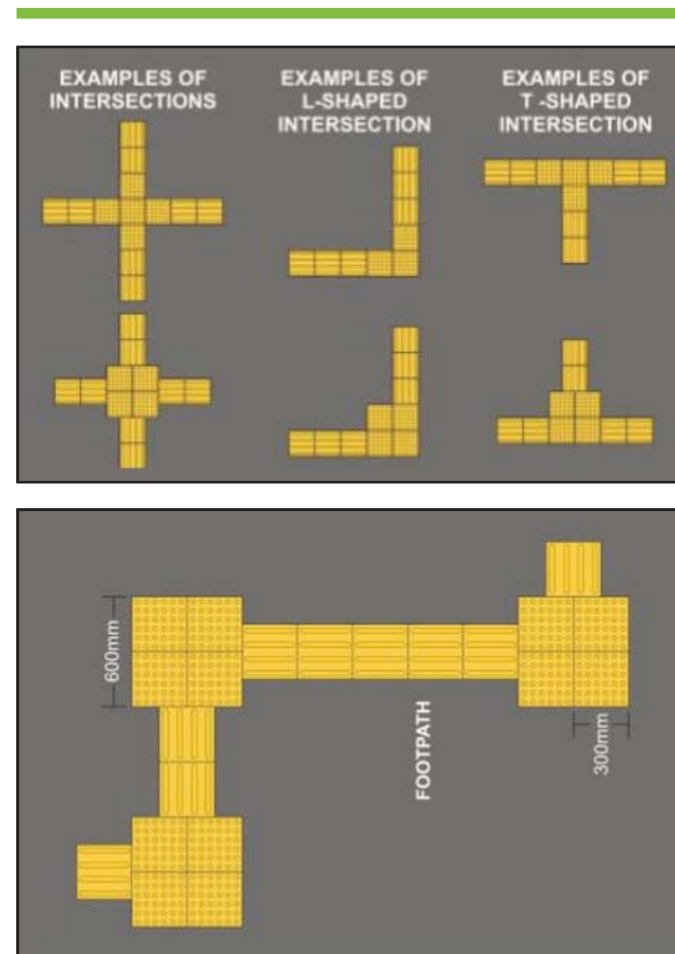


Figure 43: Example of installation of guiding and warning blocks



