

सं०: डब्ल्यू-11013/08/2014-एनबीए (पार्ट)

भारत सरकार

पेयजल एवं स्वच्छता मंत्रालय  
स्वच्छ भारत मिशन(ग्रामीण)

12वाँ तल, पर्यावरण भवन,  
सीजीओ काम्प्लैक्स, लोधी रोड,  
नई दिल्ली, 110003  
दिनांक: 14 अक्टूबर, 2014

सेवा में,

प्रधान सचिव/सचिव  
प्रभारी-ग्रामीण स्वच्छता  
सभी राज्य/संघराज्य क्षेत्र

विषय:- "स्वच्छ भारत के अंतर्गत विकलांग अनुकूल घरेलू शौचालयों के लिए तकनीकी विकल्प"  
पर प्रारूप दिशा-निर्देश।

महोदय/महोदया,

जैसा कि आपको विदित है स्वच्छ भारत अभियान के अंतर्गत "स्वच्छ भारत" के लिए वर्ष 2019 तक लक्ष्य निर्धारित किया गया है। सभी को शौचालयों की सुविधाएँ उपलब्ध कराना "स्वच्छ भारत" का मूल लक्ष्य है। इस लक्ष्य को पूरा करने के लिए इस मंत्रालय ने वॉटर एड इन इंडिया, वाटर इंजीनियरिंग एंड डेवलपमेंट सेंटर (डब्ल्यूईसीडी) के सहयोग से घरेलू शौचालय डिजाइन विकल्प का एक सेट विकसित किया है जिसमें शारीरिक रूप से विकलांग का भी ध्यान रखा गया है। इन शौचालयों के डिजाइनों को ग्रामीण जल आपूर्ति एवं स्वच्छता अभियंताओं, विकलांगों के साथ साथ विकलांग संस्थाओं (डीपीओ) से प्राप्त प्रतिक्रिया के आधार पर पायलट किया गया है।

2). "शारीरिक रूप से विकलांग अनुकूल घरेलू शौचालयों के लिए तकनीकी विकल्पों" पर प्रारूप दस्तावेज की प्रति संलग्न है। इस प्रारूप दस्तावेज पर टिप्पणियाँ इस मंत्रालय को 12 सितम्बर, 2014 तक निश्चित रूप से भेज दें। टिप्पणियां निम्नलिखित ई-मेल/फैक्स द्वारा भेज दी जाएँ:-

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फैक्स- 011-24361062/01124364869

भवदीय

(सुजाय मजुमदार)

निदेशक (स्वच्छता)

संलग्न:- उपरोक्तानुसार

प्रतिलिपि:- राज्य समन्वयक, एनबीए, सभी राज्य/संघ राज्य क्षेत्र



# PERSONS WITH DISABILITY- FRIENDLY TOILET DESIGNS

PRACTICAL SOLUTIONS in WaterAid India



# PERSONS WITH DISABILITY- FRIENDLY TOILET DESIGNs



*WaterAidIndia - Additional Liasion  
Office-ALOE,*

## UNCRPD DESCRIBES

“Reasonable accommodation” means necessary and appropriate modifications and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms;

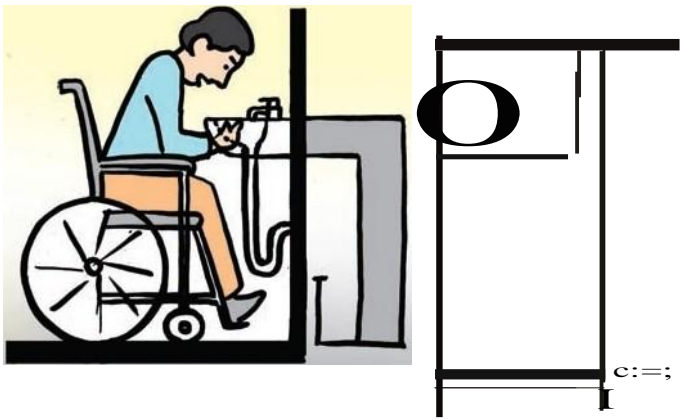
“Universal design” means the design of products, environments, programs and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. “Universal design” shall not exclude assistive devices for particular groups of persons with disabilities where this is needed.

We acknowledge the support of UKAid for demonstration and learning from field through IPAP project.

# QWaterAid

PERSONSwithDISABILITY FRIENDLYWASHInfrastructureDESIGNs

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## Disability Inclusion

Disability involves long term impairment. Physical, Sensory, Mental and Intellectual are the four different types of impairments that Persons with Disability have to endure, besides functional impairments like Physical, Visual, Hearing & Speech and Mental & Intellectual impairments. All these impairments should be taken into account to support their inclusion. Disability Inclusion is not just about involvement or integration, but about upholding rights by recognizing specific needs and the barriers- physical, social, institutional- to inclusion and taking active and appropriate steps to address these issues. It is extremely important to address the needs and rights of persons with disabilities in mainstream development planning and empowering them to participate in community life and have greater independence and enhancing their self-determination.

Persons with disability need to be empowered in related action and access and participate in the required places and positions of the decision making process. This can be done through specific and exclusive training and skill building, provision of assistive devices, rehabilitation and other relevant measures. One such important measure is provision of the accessibility features to the newly constructed infrastructures and the necessary modifications so as to make the infrastructures inclusive on the access front.

Social discrimination and obstacles in the environment are bigger problems for people with disabilities than the impairment itself. People with disabilities often have limited access to water, sanitation and hygiene (WASH) services in normal as well as emergency situations. All those responsible for the environment, including those working to provide WASH services, have a key role in reducing attitudinal, institutional and environmental barriers. This relates closely to articles nine and 19 of the Convention on the Rights of People with Disabilities.

Often, only minor changes are needed to ensure that people with disabilities are included in provision of WASH services. Involving people with disabilities in program design can help ensure that WASH provisions respond to their needs. This can be done, for example, by considering different water and sanitation technology options, using different ways to communicate hygiene messages or providing additional hygiene training to caretakers.

It is important to provide minimum accessibility features in the WASH infrastructures for Persons with disability, considered the most vulnerable among the marginalized and

excluded groups. The most common constructions that we find in our country are individual and community toilets, drinking water sources like open wells, Sanitary Wells and the Handpump etc. Disability inclusive infrastructures reinforce the WASH programs to make them more accessible, inclusive and user friendly-- not only for Persons with disability, but also for other vulnerable members in the family and community like old men, pregnant women, children, sick persons and everybody accessing the facility perfectly. It is much cheaper to ensure designs are disability inclusive at the planning stage than it is to make adaptations later.

Universal design concepts and the related guidelines provide the norms and conditions to adopt different dimensions and designs, up keeping the rights of person with disability so as to make a place accessible most appropriately. However, in the special cases of individually accessible WASH infrastructures, it is important to consider the type of impairment, integrating disability inclusion considering their special needs and barriers and to adopt designs and dimensions accordingly.

## Disabling barriers

Barrier refers to the physical or invisible obstacle that prevents access and free and safe movement of persons with disability. Physical Barriers are those that prevent access to the built and physical environment, whereas Social Barriers include negative behaviour, attitudes and beliefs. Institutional Barriers refer to policies, legislations and institutions that do not adequately address the rights of persons with disability.

Disabling barriers can be categorized as follows:

### Lack of access

Inadequate services force some physically disabled people to crawl on the floor to use a toilet or defecate in the open. This has implications for their health and safety and negatively affects their self-esteem. A lack of accessible information on options and services available for disabled people is common.

## Inadequate policies and standards

Policies and standards are often either not enforced, or do not include the needs of disabled people.

## Negative attitudes

Stigma and discrimination are rife due to a lack of information about the cause of disability.

## Lack of consultation and involvement

Disabled people are often excluded from decision-making processes that can directly affect their lives. Existing information on inclusive WASH options is rarely accessible for disabled people.

# Concept of Accessibility

The concept of accessibility for people with disability is a tool/means to allow participation in social life and development. It seeks to initiate measures to equip a given space so that people with disability can freely access the facilities on their own and with dignity.

Accessibility relating to movement comprises means of transport for moving from one place to another and the use of Aids and Appliances.

Accessibility of Physical Environment is the use of buildings and infrastructures in public and private places with necessary modifications and PwD friendly options.

Accessibility relating to information and communications is proper and adequate use of symbols, signages and contrast colour options.

The standard designs and considerations for People with disability concentrate mostly on the accessibility features for the people with Physical Impairment and Sensory Impairment, i.e., People with problem in walking, sitting and movement and also people having low vision and blindness. However, people with Hearing and Speech Impairments



can access the infrastructure facilities without much problem. The only requirement may be proper signage, symbols and sound signals. In this document, we will mostly consider different features of physical accessibility meant for people with locomotor (Physical Impairment) and visual disability.

## WaterAid Principles

- Sanitation refers to the safe management of human excreta from the point of defecation to its disposal, treatment or re-use. (Also sanitation includes solid waste, greywater & surface drainage)
- If there is no safe & clean access to toilet, people become exposed to disease, lack of privacy & indignity
- Improved Sanitation leads to quality life & poverty reduction

WaterAid have the following four guiding principles in their sanitation work:

### Inclusive

All sanitation interventions should be designed to serve all members of communities. Hardware should be appropriately designed to provide access to women, men, children, elderly and disabled users. Sanitation interventions should ensure that some form of improved sanitation can be afforded by all.

### Relevant

At a local level, approaches need to be designed according to the specific situation, taking account of social, cultural and traditional aspects, geographical context, natural environment and institutional and financing arrangements. (No single approach or a set of technology may be prescribed)

### Effective

Numerous public sector, private sector and civil society organizations may need to play their part. Service delivery and advocacy need to be seen as equal and complementary parts of a single strategy.

## Sustainable

Improved sanitation should be designed to ensure that beneficial changes are maintainable and permanent. Interventions should aim to improve human health and be affordable for the users, environmentally sustainable and institutionally appropriate.

When adequate accessibility features are provided and the building/ structure exhibits the optimum facilities for People with Disability, not only does it enhance the free movement of people with disability, it also allows free, independent, safe and easy movement to other vulnerable groups like old men, pregnant women, persons carrying heavy weight and even people without any disability.

## Design aspects of accessibility

Let us discuss some of the important physical design aspects of accessibility. These features are as follows:

1. Space Consideration
2. Ramp
3. Steps & Staircase
4. Accessible Door & Entrance
5. Hand Rails
6. Accessible Toilet
7. Accessible Hand Pump
8. Accessible Sanitary Well
9. Accessible Hand WASH Unit

## Space Consideration

Persons with Disability using different types of assistive devices may require different space considerations for their safe and free movement. Persons with disability will require space of different dimensions when moving straight and also when turning around using different types of assistive devices.

People using tricycles may need a space with a minimum width of 920mm to move straight and 3000mm when turning around. The minimum length the vehicle requires to stand/park is 2000mm. But it may not be realistic to move within all indoor areas with the support of a tricycle.

People using Wheelchair may need a space with a minimum width of 800mm to move straight and 1500mm to turn around. The minimum length the vehicle requires to stand/park is 1200mm.

Similarly, the minimum width of a pathway, a ramp or a veranda should be 550mm for a healthy man, 750mm for an old man or a man with a walking stick and 900mm for a man using crutches.

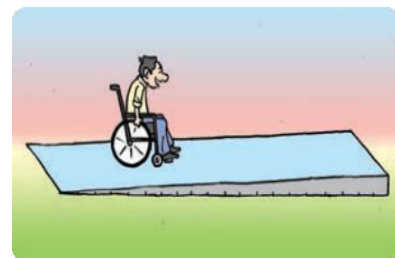
## Ramp

A Ramp is necessary to provide smooth and easy access to any entrance, veranda, building or structure which has a raised base/floor above the ground. When there is a level of difference between two subsequent floors in an infrastructure, a ramp provides easy and smooth access to go up and also to come down. It is an inclined surface joining the two floors that are at different heights (level difference).

Depending up on the space available, a ramp may be designed as a “Straight Ramp” or “Switchback Ramp”. The following should be the features/ dimensions of a ramp as per the Universal design concept.

- A Ramp should be smooth, non-slippery, firm and stable and made of a material that is not likely to wear away quickly.
- The ideal slope or gradient of a ramp should be 1:12 maximum. (That is for every 12 horizontal units, the ramp rise will be up to one unit.) If the gradient is 1:20, it becomes much easier to access. However a 1:15 gradient makes for a moderate ramp.
- A landing may be provided for resting at every vertical rise of 750mm and also between two flights of a ramp for easy movement. Besides the rest area, it is also required in places where the ramp changes direction.

- If a 1:20 ramp is straight and long, a landing (horizontal levelled platform) for resting may be required every 10m. If the ramp is of 1:15 gradient, a landing (resting point) may be required every 5 m.
- The minimum clear width of the ramp should be 1200mm or more depending on the traffic. The landing should be a clear, square space of minimum 1200mm X 1200mm. For a tricycle, the minimum width should be 950mm and the landing should be of 3000mm X 3000mm size.
- A ramp should have Hand Rail on both sides and at two levels. The lower one should be fixed at 700 to 750mm height and the upper rail at 850 to 900mm height from the finished floor. Both ends should be rounded and grouted and extend up to 300mm beyond the top and bottom of ramp.

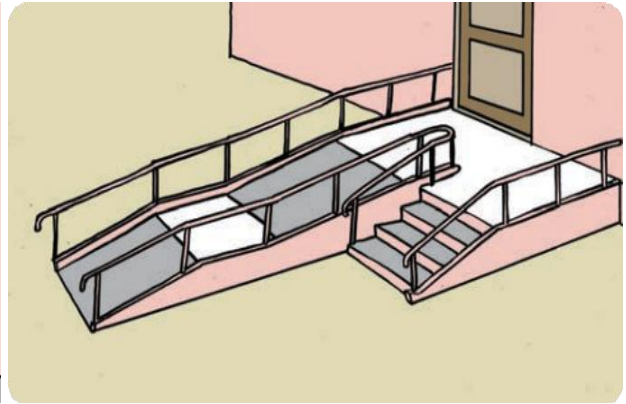
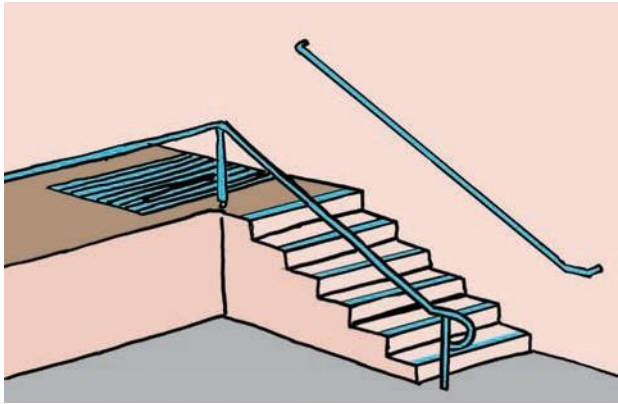


## Steps & Stairs

A staircase provides access to move up from one floor to another and also to come down from one floor to another. It consists of one or more flights that are connected with landings placed in between for rest and for any change in the direction of movement. The flight consists of steps having its horizontal surface as "Tread" and vertical surface as "Riser".

- The stair/ flight should have steps of uniform Riser of a maximum height of 150mm and uniform Tread of minimum width of 300mm.
- The maximum height of a flight between landings may be 1200mm
- The steps and the stair should have an unobstructed width of at least 1200mm
- A staircase should have continuous Hand Rail on either side of it, including the wall (if any) and at two levels. The lower one should be fixed at a height of 700 to 750mm and the upper rail at 850 to 900mm from the finished floor. Both ends should be rounded and grouted and extend up to 300mm beyond the top and bottom of the stair.

- Landing should be of a minimum size of 1200mm X 1200mm, clear of any obstacles or door swing.
- The edges of each step in stair (both horizontal and vertical sides) should have bright 50 mm-wide bands of contrasting colour on both sides.
- Warning strips may be placed (tactile or contrast colour) at the beginning and end of all stairs.
- Nosing in any step should be avoided.



### Hand Rails

Hand rails provide support to the person with disability to hold and move forward along a ramp or stair and even along a straight pathway. The following are the specifications of hand rails:

- Hand rails should be circular in section with a diameter of 40 to 45mm.
- There should be a clearance of at least 45mm from the adjacent wall/ surface to which it is fixed.
- Hand rails should be fixed at two levels: one at 700mm-750mm and another at 850mm-900mm from the finished floor.
- It should be extended by at least 300mm beyond the head and foot of the flight and ramp.

## Accessible Door & Entrance

- The doorway should have a clear width of 900mm for a person using wheelchair or those using assistants to get through.
- Door should generally open outside. Sliding Doors are the most preferable.
- A distance of 450mm to 600mm beside and beyond the leading edge of the door and a safe landing space of 1200mm X 1200mm in front for a wheelchair user to manoeuvre.
- Door Handles should be fixed between 650 to 1100mm above the floor level. It should be preferably Lever shaped or D type handle.
- Walls should be painted with colours that are in contrast to the colours of the floor and door to support persons with visual impairment to access.
- The threshold of the door should be at same level without any steps, door seal or other trip hazard.
- Proper signage should be fixed.

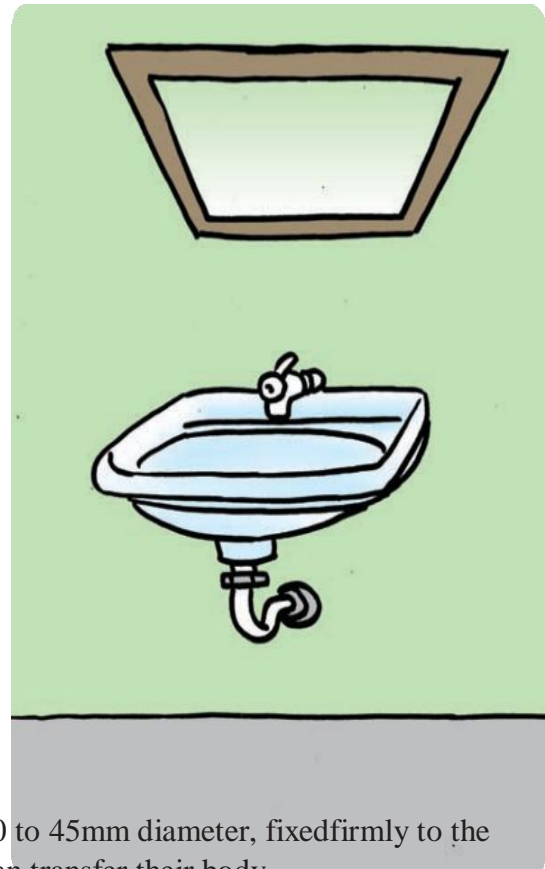


## Wash Basins

At least one Wash Basin should have the following disability friendly features:

- Wash Basin should have dimensions of between 410mm to 520mm.
- It should be mounted in such a way that its top edge is between 700-800mm from the finished floor.
- There should be clear knee space for wheel chair users to access the wash basin. Knee space should be at least 750mm wide, 200mm deep and 650-680mm high (clear dimension)
- Lever type handles for water taps are most suitable. (easier for persons with reduced strength)
- Mirror may be fixed with its bottom edge at 1000mm from the floor and top may be extended to 1500mm and more. It may be fixed to the wall at an angle.

Grab Bars or support bars may be of G.I or steel pipes of 40 to 45mm diameter, fixed firmly to the adjacent walls and floors, so that persons with disability can transfer their body weight for movement.



## Urinals

At least one of the urinals should have the following disability friendly features:

- Urinal should have Grab Bars installed on each side and in front to support persons with disability, who are bilateral crutch users.
- The front bar is to provide chest support and the side bars are for the users to hold on to while standing.

- Urinals should be stall type or wall hung type with an elongated rim at a maximum height of 430mm from floor finish.
- A clear floor space of 750mm width and 1200mm in front of urinal should be provided for approach.
- Urinal shield may be provided with 750mm clearance between them.

## Accessible Toilet

Accessible toilet provides adequate disability friendly features for easy use of the facilities exclusively by persons with disability. Disability Inclusive toilet creates a space for adaptation of accessibility features so that people with disability and other members can have easy access to the facility. In case of block of more than one toilet in a common place, at least one toilet compartment should have enough floor space for a wheelchair user to enter and exit.

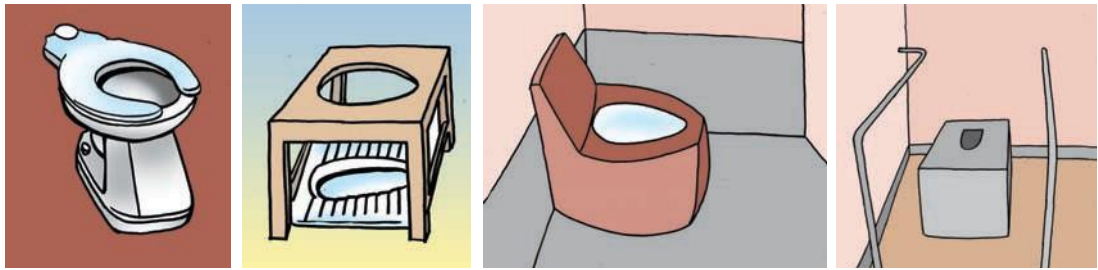
### 1. Space:

- a. Minimum clear floor space of 2.00m x 1.80 m (inner dimension) is required for a toilet having water closet and wash basin facility. This space dimension will also be adequate for the wheelchair user.
- b. In case of a Wheelchair User, if the room does not have a wash basin inside, then the inner dimension of the room may be considered to be 1.80m x 1.50m.
- c. In case of persons who are using crutches or those who cannot walk comfortably, the dimension may be considered to be 1.5 m x 1.2 m. (inner dimension). In this case, the wash basin option in the toilet may be avoided. However, the water taps and the cistern can be easily fixed.



## 2. Water Closet:

- a. A toilet which is most comfortable to sit on is always the appropriate option. If water and plumbing is available for flushing, then western type toilet can be used. Where flushing is not possible, the Indian type squatting pan with certain modification/adaptation can be useful.
- b. However, it is always preferable to have Western type toilets (Commode) option for people with disability.
- c. In case of a Wheel Chair User, the Water Closet (WC) should be placed not in the middle space in the room. On one side, an unobstructed space of 900mm from the edge of WC to the side wall should be provided and on the other side, the distance from the centre of the WC to the next adjacent wall should be 480mm. There should be a clear space of 1200mm in front of WC.



- d. The top of WC may be fixed at 475 to 490 mm from the floor. In case of commode bought from the market, it is designed so.
- e. However, there are also modified/ adapted WC constructed with Indian type squatting pan for Persons with disability option. These modified option may be as following:
  - i. Plastic/ wooden furniture (Chair, stool etc.) to be used in toilet for easy access. (Please see Picture)
  - ii. Modifying the seat to a commode type through masonry work or iron etc. (Please see Picture)
  - iii. Sometimes, the Indian type toilet may be considered appropriate with its pan fixed to a suitable platform (comparatively higher than the ground) to sit on.

3. **Door:**

- i. A 900 mm clear opening should be provided for the door with the door opening outwards or being of folding or sliding type to pull the door closed.
- ii. A horizontal handle on the inside of the door makes it easier to open and close. It should be 600mm long & at a height of 700 to 950mm. A 150mm long handle may be fixed on the outside.
- iii. Any threshold to the toilet should be levelled and there should be no steps.

4. **Grab Bars:**

Grab Bars are supportive bars which may be of G.I or steel pipes of 40 to 45mm diameter, fixed firmly to the adjacent walls and floors, so that persons with disability can transfer their body weight for movement.

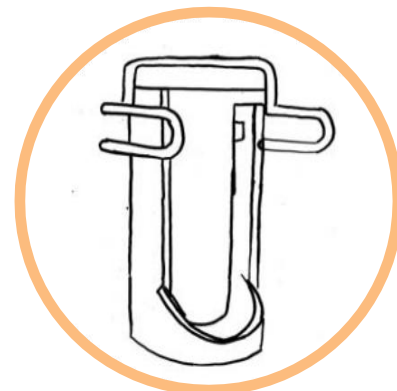
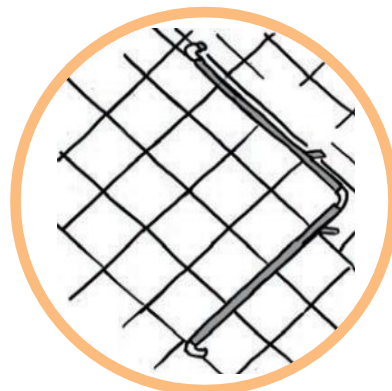
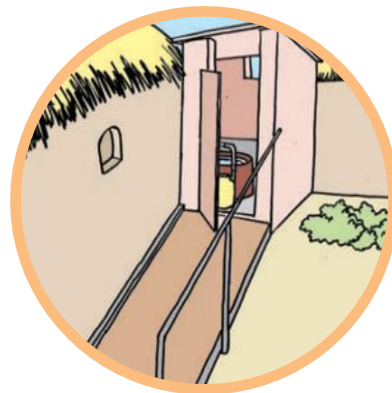
- i. For Wheel Chair User – the movable grab bars (U type) are to be provided on transfer side at a height of 480mm from ground (i.e. at the same height as the commode). The L type bar should be fixed on the wall side to get adequate support during transferring the body weight.
  - ii. For others – it depends on the condition of disability and preference. Ideally, the bars should be provided on both sides on the wall and may be fixed to the floor on the transfer side. This may be of G.I. pipe and fixed, not movable. The grab bars may be fixed at a height between 450mm to 750mm as suitable to access and use.
  - iii. Sometimes, the grab bars are also fixed to the two adjacent walls close to WC at a height of between 450mm to 950mm.
5. The inside of the room should have slip resistance flooring and facility to drain water safely.
6. The approach pathway joining the house and the toilet (if it is outside the house) should be a 1200mm clear wide, concrete or masonry pavement without any obstructions in between.
7. There should be hand rails fixed at a height of between 750mm to 900mm from the floor on either side.

8. If there is any level difference between two consecutive floor levels, then either a ramp or steps should be provided as appropriate to the design considerations.
9. Wash Basin & mirror may be provided as per the specifications already made in the booklet.
10. There should be contrast colour combination between the floor to the wall and the sanitary fittings in a toilet room. The door edge should be provided with contrast colour border outside. The inside of the room should have also contrast colour band at a height of 750mm & 1950mm.

General considerations	Consideration using local materials
<p><b>Ramp:</b> The ramp may be prepared with cement concrete (1:2:4) with brick masonry at the side wall. The gradient of the ramp may be kept between 1:12 to 1:20. The surface should be rough.</p>	<p><b>Ramp:</b> If the soil is clay soil, side walls in brick masonry may be constructed. The inside material may be clay earth, rammed to powder and compacted to provide a walking surface. It may require maintaining the gradient (between 1:12 to 1:20) in proper slope and the surface accordingly.  Otherwise, cement mortar may be provided to the earth filled gradient surface to access.</p>
<p><b>Hand Rails:</b> The Hand Rails may be of Steel pipes or G.I. pipes of 40 to 45 mm diameter and fixed with support bars of the same size. The surface of the bar may be painted with contrasting colours.</p>	<p><b>Hand Rails:</b> The Hand Rail may be provided with good quality bamboo or wooden poles fixed with support poles of 40 to 50 mm diameter size. The surface should be painted with contrasting colours.</p>
<p><b>Commode:</b> It should be the western type Pan available in the market. Its height may be up to 480 mm with an inbuilt Sor P trap and facility to attach the cistern to it.</p>	<p><b>Commode:</b> It may be a raised base and Indian squatting pan fixed by masonry work. P trap may be connected and extended till it reaches the pit or septic tank.</p>

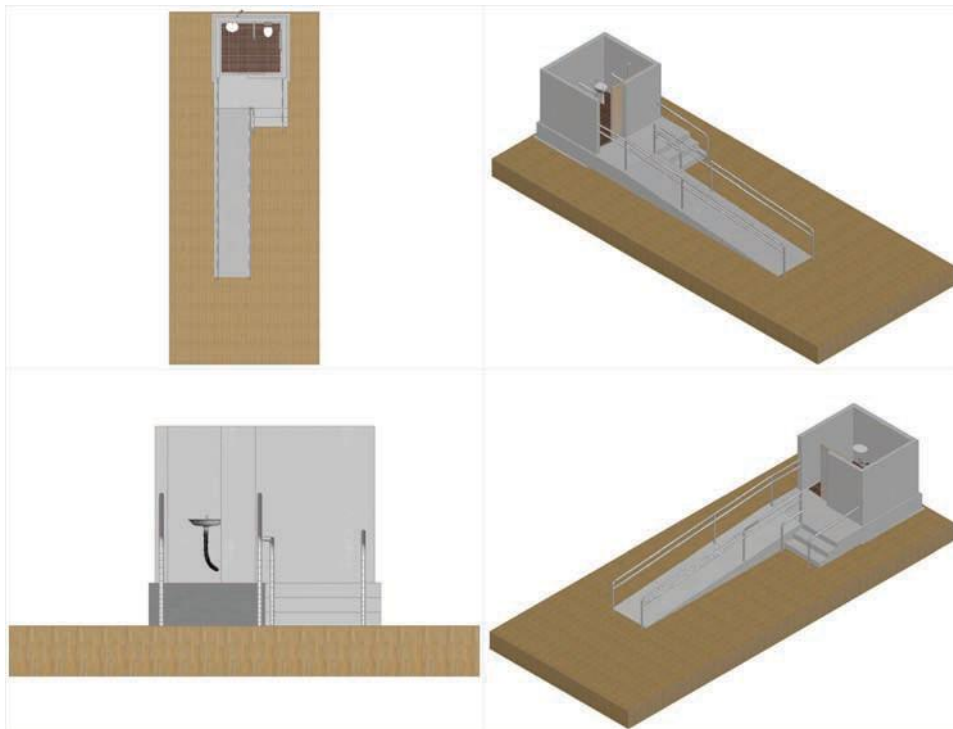
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<p><b>GrabBars:</b> These are specially designed steel bars of 40 to 45 mm diameter fixed to the walls (maybe L or U shaped)</p>	<p><b>GrabBars:</b> These may be G.I. bars of 35 mm to 45 mm size shaped to L type or U type using fittings like elbow, socket, short piece etc., and fixed to the masonry wall or floor as appropriate.</p>
<p><b>Approach Pavement:</b> There should be a clear and complete 1200 mm wide concrete or masonry pavement without any obstructions in between and hand rails fixed on both sides at a height of between 750 mm &amp; 900 mm.</p>	<p><b>Approach Pavement:</b> The pavement surface should be clean, dressed, rammed earth and earthen polished to mark as pavement with hand rails fixed on both sides as appropriate (between 750 mm &amp; 900 mm).</p>



## Accessible features in a building with attached Bathroom and Water Closet

- The accessible signage should be painted at the entry of the toilet 1.5 meters above the floor level. The signage should also have Braille facility.
- The Pathway (access) to the toilet should have a clear and smooth floor having tactile tile fixing as per proper specifications.
- It may be proposed that the inner space should be 2.00X2.00m for W.C. and bath facility.
- The entry door to the toilet should have clear width of 0.9 meters with door frame & shutters of contrasting colours. No door seal should be provided within the passage to the toilet.
- The doors of water closet should open outside for convenience. The handle should be 'D' shaped handle of circular section and fitted 850 to 1000mm from the floor level.
- The level difference should not be more than 6-12 mm between the toilet & W.C. area.



- The wash basin should be mounted between 0.7-0.8 meters (top edge) above the floor level with clear knee space of at least 760mm in width, 200mm in depth and 650mm-680mm in height.
- The colour of the wash basin should be in contrast to the wall colour. All the Taps should be lever type handles and preferably fixed 0.7 to 0.8m above the floor level.
- The WC should be of European style (Commode) wall mounted @ 0.48 meters above the floor level & should have an alarm bell.
- Adjacent to the WC, there should be an L-shaped grab bar of 700x700 mm mounted 0.7m above the floor level on the wall side & should have U shaped grab bars mounted 480mm from the floor level on the transfer side.
- Mirror bottom edge is to be placed 900-100 mm from the floor and the mirror may be inclined at an appropriate angle.
- No steps should be provided at urinal space.
- At least one of the urinals should have grab bars installed on each side and in front of the urinal to support ambulant persons with disabilities (for example, crutch users).
- The sewage and water supply lines are to be fixed properly. The water supply line should be connected to the overhead tank and the tank should be well connected to the source and system of water supply. Similarly, the sewage line should be connected with the WC and then with the septic tank.

## Considerations for toilets in rural areas with pour flush offset leach pit

- It is good if the toilet has inner space of 1.2m X 1.5 meters (must for Wheel Chair Users). Otherwise, existing dimensions of IHL (1m X 1.2m) is fine.
- It is better to have two offset (leach) pits connected through a Y-Pipe or chamber in which one pit will be functional and second will be blocked. Once the first pit fills up, it needs to be blocked and the second pit made functional. After a few months, the excreta turned to compost in the first pit is to be cleaned up and kept ready for use in future when the second pit gets filled up.

- However, every Toilet must have at least one offset pit (leach pit) with a chamber/Y- Connection with one end connected to the leach pit and the other kept closed.
- There should be no wash Basin or other fixtures in the toilet as they would take up the inner space.
- One has to carry water and flush or construct storage tank outside adjacent to the structure having a tap on the inner side and a pipe connection from the water storage tank for easy handling of water.
- The Water Closet (WC) must be a commode or modified commode type.
- There must be Grab Bar to support the person with disability to transfer himself/herself into the commode base. These should be G.I. pipe or stainless steel bars of 25mm to 35 mm diameter fixed on both sides of the commode at appropriate height (700mm from ground).
- The toilet should be supported with the superstructure and the roof. The walls of the superstructure should be plastered.
- If the toilet is at a distance from the house, railings made of bamboo should be fixed on both sides of the approach (pathway) from the house to toilet at a height of 0.9m from ground.
- The entrance/pathway of the toilet should have a ramp (with a moderate slope of 1:12), if there is a level difference between toilet base and the ground.

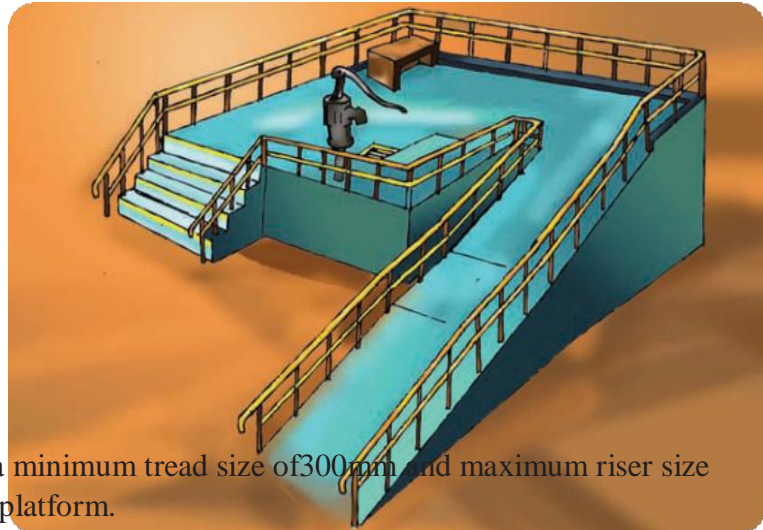
### Accessible Hand Pump

In rural areas, most of the communities use IM-II hand pumps as the drinking water source. These sometimes cannot be easily accessed by persons with disability due to lack of accessibility features. The following are some of the measures needed to make the water point accessible.

- It is generally advisable to raise the platform of the Hand Pump to protect the water source in rural areas where water logging and flooding causing inundation is common.
- If the Hand Pump base is above the ground, then it should be supported with a platform to access and drain the water.

## PERSONS with DISABILITY FRIENDLY WASH Infrastructure DESIGNs

- There should be a platform with a clear space of 1800mm X 1800mm of which 1500mm should be kept on one side of the Hand Pump unit and 300mm on the other.
- The platform should be connected with a ramp of 1200mm clear width and at least 1:12 slope on the wider side (1500mm side).
- There should also be steps with a minimum tread size of 300mm and maximum riser size of 150mm on another side of the platform.
- The ramp and steps should be extended till the adjacent road surface.
- The platform should be provided with hand rail on all four sides fixed at 750mm and 900mm height from the platform floor extending on both sides of the steps and the ramp. The hand rail may be of 40 to 45mm diameter with contrasting colour painted on its surface.
- It should be ensured that there is proper drainage on the platform surface to prevent it from becoming slippery.
- Waste water should be properly drained by constructing an extended drain together with a soak pit and/or connected to the main drain or by allowing the water to run to the adjacent crop land (kitchen garden).
- The Hand Pump should be attached with a long handle to make it easier to use.
- There should be bathing cubicles (made of masonry) adjacent to Hand Pump for the person with disability to sit on and a washing cubicle on one corner of the platform.
- The entrance should be smooth and without a lip or other trip hazard at the junction of the ramp and the platform.





## Accessible Sanitary Well

The Sanitary well should be constructed taking all safety measures. It should be covered completely. The inner staining wall should be plastered up to a depth of one meter. The parapet, the platform and the device to lift water (maybe Hand Pump) etc should be provided with design dimensions. Sanitary risk assessment may be conducted and precautions taken up accordingly. The following accessible features may be considered to convert it into a disability friendly water source.

- A platform may be constructed surrounding the Sanitary Well to help access, lift water and drain it safely.
- There should be a platform constructed with a clear space of 1200mm to 1500mm width on all sides for the wheelchair user to access.
- In another option, a space of 1200mm X 1500mm may be earmarked on one side of the well so that the wheelchair user may access, turn around and come back.
- The platform should be connected with a ramp of 1200mm clear width and at least 1:12 slope.
- There should also be steps with a minimum tread size of 300mm and maximum riser size of 150mm on another side of the platform.
- The ramp and steps should be extended till the adjacent road surface.
- The platform should be provided with hand rail on all four sides fixed at 750mm and 900mm height from the platform floor extending on both sides of the steps and ramp. The hand rail may be of 40 to 45mm diameter with the surface painted in contrasting colours.
- It should be ensured that there is proper drainage on the platform surface to prevent it from becoming slippery
- Waste water should be properly drained by constructing an extended drain together with a soak pit and/or connected to the main drain or by allowing the water to run to the adjacent crop land (kitchen garden).

## Accessible Hand Wash Unit

In the School Wash facilities, there is a hand wash unit which is accessed by the students and the teachers frequently. This is generally a structure constructed with a number of water taps and a basin to drain waste water properly. The system is connected with a running water source. To make it accessible, the following features may be considered.

- There should be a Hand Wash Unit constructed with water taps and basin to access and drain water.
- The taps may be placed at a height of between 650mm to 1000mm from the ground at different positions so that students of different heights may access them along with the teachers.
- The depth of the basin platform constructed should be 200 to 300mm. The basin may be connected with a pipe to drain water properly.
- Waste water should be properly managed by constructing a soak pit or connecting it to the main drain or allowing the water to run to the adjacent crop land (kitchen garden).
- One of the water taps and its basin base may be constructed with universal dimension. There should be clear knee space of at least 750mm in width, 200mm in depth and 650-680mm in height (clear dimension) for wheelchair users to access.
- Lever type handles for water taps are most suitable. (easier for persons with reduced strength)
- There should be a 1200 mm wide pathway/ platform in front of the water taps for wheelchair users and even other members standing in front to access it. There should be a space of 1500mm X 1200mm dimension (at one extension place) so that the wheelchair user may access it, turn around and come back.
- The platform/ Pathways should be connected to a ramp with a clear width of 1200mm and slope of at least 1:12. If required, steps with a minimum tread size of 300 mm and a maximum riser size of 150 mm may be constructed on another side.
- The ramp and steps should be extended till the adjacent road surface.
- The platform should be provided with hand rails along the platform and ramps & steps, fixed at 750mm and 900mm height from the platform floor. The hand rail may be of 40 to 45mm diameter with contrasting colour painted on the surface.

## Some Examples in construction of Individual Household toilets

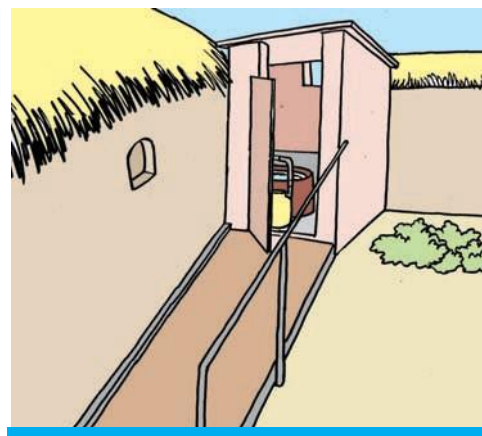
In India, there is an ongoing flagship program on Sanitation. Earlier named Total Sanitation Campaign (TSC), it has now been renamed as Nirmal Bharat Abhiyan (NBA) with a new guideline. As per the guideline, each household in the below poverty line (BPL) category and identified above poverty line (APL) category are eligible to get an incentive of 10000/- INR after construction of individual toilet. The toilets have to be constructed with due consideration of the need to have improved sanitation facilities. The units should generally have a double leach pit option for excreta management and connected to the base, which may be fixed with an Indian squatting pan. The superstructure should be with masonry wall, plastered on both sides and an RCC or tin roof with a door. The inner space should have a minimum area of 3'-6" x 4'-0".

The problem with the above design is that there is no space in it exclusively for persons making it anything but a disability friendly household toilet option. However, WaterAid has tried some changes in the universal design concepts so that individual persons with disability should have better and more comfortable access to the toilet.



## Example-I

Name : Joseph Soren  
Village : Ganpura village in Pakur in Jharkhand  
Disability : Physical Impairment



Disability friendly Options:

(Ramp, Handrail, Grab bar, painting etc.)

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P -trap & foottrace	01	Each	210.00	210.00
02	PVC Pipe	4'	Feet	55.00	55.00
03	Bricks	600	No	3.50	2100.00
04	Cement	7	Bag	350.00	2450.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	17	Cft.	25.00	425.00
07	Painting	LS	LS	300.00	300.00
08	Mason	4.5	Person	250.00	1125.00
09	Labour	10	Person	160.00	1600.00
10	Iron rod	8	k.g.	49.00	392.00
11	Iron Door	1	Each	750.00	750.00
12	Tap	1	Each	68.00	68.00
13	Ramp, Railing Grab bar	LS	Each	750.00	750.00
14	Transportation	LS			150.00
Total					10775.00

## Example-II

Name : Kedar Sethi  
 Place : Tentulidihi in Odisha  
 Type of Disability : Physical Impairment (Polio)



### Disability friendly Options:

(Approach road, Handrail, Grabbar, commode as WC)

The approach is provided with a smooth and wide path with hand rails made of bamboo fixed at a height of 750mm and a commode bought from the market fixed inside. On both sides, GI grab bars are fixed with one side to the wall and other to the floor. Water arrangements are made.

### IHHL of Kedar Sethi (Physical impairment), Tentulidihi

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Brick	no	300 pcs.	5.00	1,500.00
2	Sand	Cumt	50 ft.	20.00	1,000.00
3	Chips	Cumt	5 ft.	40.00	200.00
4	Cement	Bag	5 bags	400.00	2,000.00
5	3ft dia RCC Ring	no	3 pc.	250.00	750.00
6	3ft dia RCC Cover plate	no	1 pc.	250.00	250.00
7	Door with frame and fittings	no	1 pc.		700.00
8	RCC Roof	no	5'6" x 4'6"		900.00
9	Commode	Set	1		900.00

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DESIGNS

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
10	Yconnection & pipe	Set	1		150.00
11	GI 1'-6" dia Grab bars	Set			250.00
12	Bamboo railing	LS			200.00
13	Painting on bamboo	ltr			150.00
14	SkyLight	1pc.	Rs. 40x1		40.00
				Total	8,990.00
15	Skilled Labour		4days	300x4	1,200.00
16	Unskilled labour		4 days	250x4	1,000.00
				Total	2,200.00
GrandTotal					11,190.00



## Example-III

Name : Jitendra Turi  
 Place : Sirsanunthar in Deoghar  
 Type of Disability : Multiple



Disability friendly Options:

(Ramp, Handrail, Grabbar, painting, modified WC)

The boy has mental retardation and also cannot see. So, approach road is prepared with compacted earth fill and bamboo railing put on the side so that he can access to the toilet. Inside the toilet, the height of the WC is raised with brick masonry and squatting pan fixed over it. GI grab bars are fixed to the walls.

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & foot trace	01	Each	200.00	200.00
02	PVC Pipe	4'	Feet	55.00	55.00
03	Bricks	600	No	3.50	2100.00
04	Cement	7	Bag	350.00	2450.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	17	Cft.	25.00	425.00
07	Painting	LS	LS	350.00	350.00
08	Mason	5	Person	250.00	1250.00
09	Labour	10	Person	160.00	1600.00
10	Iron rod	8	k.g.	49.00	392.00
11	Iron Door	1	Each	750.00	750.00
12	Tap	1	Each	68.00	68.00
13	Ramp, Railing & Grab Bar	LS	Each	700.00	700.00
14	Transportation	LS			150.00
Total					10900.00

## Example-IV

Name : Rohit Mandal  
Place : Jogia Village in Deoghar  
Type of Disability : Multiple (Physical & Sensory Impairment)



### Disability friendly Options:

(Ramp, Handrail, Grabbar, painting, modified brick masonry WC)

The boy accesses the toilet with a cemented ramp of 1:12 slope with bamboo hand rails fixed at a height of 650 mm. The space inside the toilet is of 4'-6" X 4'-6" size with modified brick masonry commode with space to put legs on either side. The commode is at a height of 400mm and grab bars made of 25mm GI pipe fixed to the walls.

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & foot trace	01	Each	210.00	210.00
02	PVC Pipe	4'	Feet	55.00	55.00
03	Bricks	600	No	3.50	2100.00
04	Cement	7	Bag	350.00	2450.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	17	Cft.	25.00	425.00
07	Painting	LS	LS	350.00	350.00
08	Mason	5	Person	250.00	1250.00
09	Labour	10	Person	160.00	1600.00
10	Iron rod	8	kg.	49.00	392.00
11	Iron Door	1	Each	750.00	750.00
12	Tap	1	Each	68.00	68.00
13	Ramp, Railing & Grab Bar	LS	Each	750.00	750.00
14	Transportation	LS			190.00
<b>Total</b>					<b>11000.00</b>



## Example-V

Name : Munni Hembrum  
 Place : Banderjori in Dumka, Jharkhand  
 Type of Disability : Physical Impairment (Old Age)



### Disability friendly Options:

(Approach road, Handrail, Grab bar, modified WC)

She is accessing the toilet through an approach road constructed and the bamboo hand rail fixed on the sides. The WC is modified with brick masonry work and set at a height of 300mm that makes it easy for her and even her other family members to use the toilet. The GI grab bars and water arrangement with a tank outside and hose pipe connection to inside toilet helps in cleaning.

Sl.No.	Materials	Unit	Amount (Rs.)
01	Cement	4.5 Bag	1620
02	Brick	600 nos	2400
03	Sand	50 cft	160
04	MS Rod	1.5 kg	60
05	Pan, P trap, connection (pipe 4 feet) etc	1 set	300
06	Chips	5 cft	125
07	Handle, Grab bar, fittings	1 no	236
08	Paint	4 kg	109
09	Red Oxide (Cement)	1 Kg	65
10	Roof (tin)	1 ps	326
11	Door	1 ps	1500
12	Labour	4 day	600
13	Mason	4 day	1200
14	Tap & flexible Pipe, fittings	1 set	253
Total			8954

## Example-VI

Name : Rohit Mandal  
 Name : Kalicharan Kisku  
 Village : Bogli in Dumka in Jharkhand  
 Type of Disability : Visual Impairment



### Disability friendly Options:

(Bamboo Handrail, G.I. Grabbar, contrast colours)

The person is visually impaired and faces difficulty in morning and evening. So, the hand support him to the toilet and the contrast colour painting help him access the unit.

Sl.No.	Materials	Unit	Amount (Rs.)
1	Cement	4 Bag	1440
2	Brick	550 no	2200
3	Sand	35 cft	100
4	Rod	1kg (6mm )	60
5	Pan P trap	1 set	200
6	Chips	3 cft	75
7	Handle, GI & Bamboo Railing	1 ps	382
8	Tap & Pipe	1 ps	35
9	Pipe 4"	3 ft	75
10	Socket	1p	18
11	Paint		60
12	Red Cement	1 kg	65
13	Roof	1 ps	300
14	Door	1 ps	1500
15	Labour	4 day	600
16	Mason	4 day	1200
Total			8310

## Example-VII

Name : Pintu Paswan  
 Place : Prandi in Deoghar  
 Type of Disability : Physical disability (Polio)



### Disability friendly Options

The toilet was constructed earlier.

The plastic chair was cut to an appropriate height and a hole made at the centre. After Pintu accessed it, the chair is kept aside for others to use the toilet.

### Bill of quantity

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & footrest	01	Each	200.00	200.00
02	PVC Pipe	4'	Feet	50.00	50.00
03	Bricks	600	No	3.50	2100.00
04	Cement	4	Bag	350.00	1400.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	15	Cft.	25.00	375.00
07	Painting	LS	LS	300.00	300.00
08	Mason	4	Person	250.00	1000.00
09	Labour	8	Person	150.00	1200.00
10	Roof with tin sheet	1	no	500.00	500.00
11	Door (Tin Frame)	1	Each	750.00	750.00
12	Tap	1	Each	50.00	50.00
13	G.I. Railing & Grab Bar	LS	Each	300.00	300.00
14	Modified Plastic Chair	1	no	275.00	275.00
15	Transportation	LS			200.00
Total					9100.00

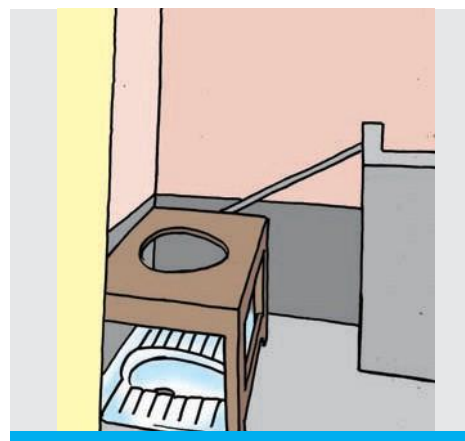
## Example-VIII

Name : Manoj Pandit  
Place : Khodkuan in Deoghar  
Type of Disability : Physical Impairment

### Disability friendly Options:

(G.I Grab Bar, wooden stool)

The toilet was constructed earlier.



The wooden stool of 320mm height was constructed as appropriate to the person with a hole in the middle to be used by Manoj. After his use, the stool is kept outside for other family members to use. The grab bars are fixed to the walls.

### Bill of quantity

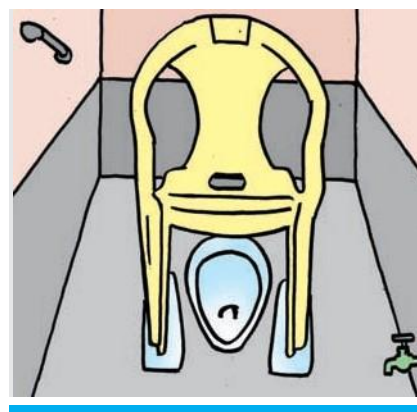
Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & footrest	01	Each	200.00	200.00
02	PVC Pipe	1	no	50.00	50.00
03	Bricks	600	No	3.50	2100.00
04	Cement	4	Bag	350.00	1400.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	15	Cft.	25.00	375.00
07	Painting	LS	LS	300.00	300.00
08	Mason	4	Person	250.00	1000.00
09	Labour	8	Person	150.00	1200.00
10	Roof with tin sheet	1	no	500.00	500.00
11	Door (Tin Frame)	1	Each	750.00	750.00
12	Tap	1	Each	50.00	50.00
13	G.I. Railing & Grab Bar	LS	Each	300.00	300.00
14	Modified Stool (wooden Frame)	1	no	800.00	800.00
15	Transportation	LS			200.00
Total					9425.00

## Example-IX

Name : Sunakar Yadav (Child with disability)

Place : Prandi in Deoghar

Type of Disability : Physical Impairment



Disability friendly Options:

(G.I. Grab Bar, wooden stool)

The toilet was constructed earlier.

The plastic small chair (child size) was put to appropriate position and a hole made at the centre.

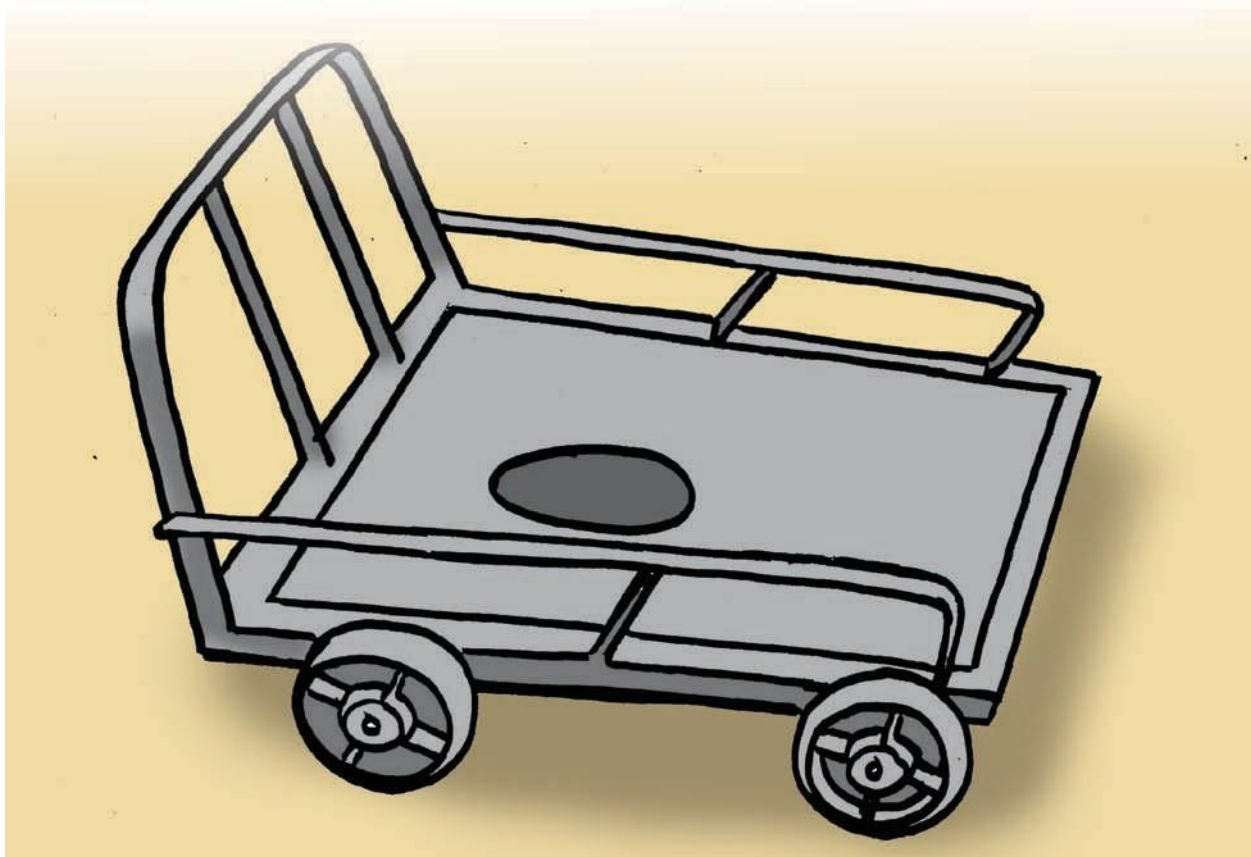
After Sunakar accesses it, the chair is kept away for others to use the toilet.

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & footrest	01	Each	200.00	200.00
02	PVC Pipe	1	no	50.00	50.00
03	Bricks	600	No	3.50	2100.00
04	Cement	4	Bag	350.00	1400.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	15	Cft.	25.00	375.00
07	Painting	LS	LS	100.00	100.00
08	Mason	4	Person	250.00	1000.00
09	Labour	8	Person	150.00	1200.00
10	Roof with tin sheet	1	no	500.00	500.00
11	Door (Tin Frame)	1	Each	750.00	750.00
12	Tap	1	Each	50.00	50.00
13	G.I. Railing & Grab Bar	LS	Each	300.00	300.00
14	Modified Plastic Chair (small for child)	1	no	200.00	200.00
15	Transportation	LS			150.00
<b>Total</b>					<b>8625.00</b>

## Example-X

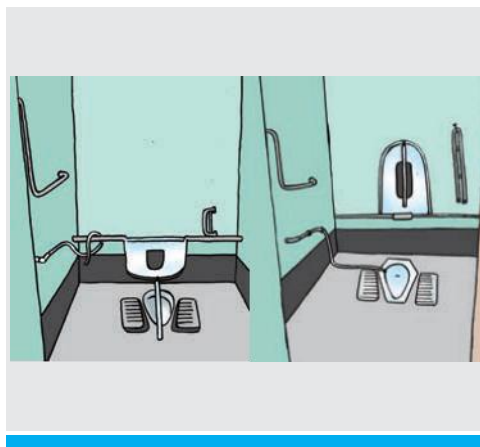
A GI framed structure on a wheel can be easily accessible by the use to access the existing toilet.

ExtraCost : 2000/-INR



## Example-XI

Name : Debu Tatwa  
 Place : Pachrodihi in Dumka  
 Type of Disability : Physical Impairment (Paralysis)



### Disability friendly Options:

(Approach road, handrail, G.I Grab Bar, GI frame stool)

The approach road is constructed with cement mortar and hand rails made of bamboo fixed on both sides. The GI framed WC sheet, which can be used and lifted afterwards, is fixed at 350mm height. The grab bars made of 25 mm GI pipe are used in L shape and U shape.

Sl.No.	Description of Item	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
01	Pan-P trap & footrest	01	Each	200.00	200.00
02	PVC Pipe	1	no	50.00	50.00
03	Bricks	600	No	3.50	2100.00
04	Cement	4	Bag	350.00	1400.00
05	Sand	40	Cft.	10.00	400.00
06	Chips	15	Cft.	25.00	375.00
07	Painting	LS	LS	300.00	300.00
08	Mason	4	Person	250.00	1000.00
09	Labour	8	Person	150.00	1200.00
10	Roof with tin sheet	1	no	500.00	500.00
11	Door (Tin Frame)	1	Each	750.00	750.00
12	Tap	1	Each	50.00	50.00
13	Bamboo Railing & Grab G.I. Bar	LS	Each	600.00	600.00
14	GI framed WC sheet	1	no	1500.00	1500.00
15	Transportation	LS			200.00
<b>Total</b>					<b>11225.00</b>

## Example-XII

Name : RohitMandal  
Name : PakluTudu  
Place : Dhamna in Jarmundi in Dumka  
Type of disability : PhysicalImpairment



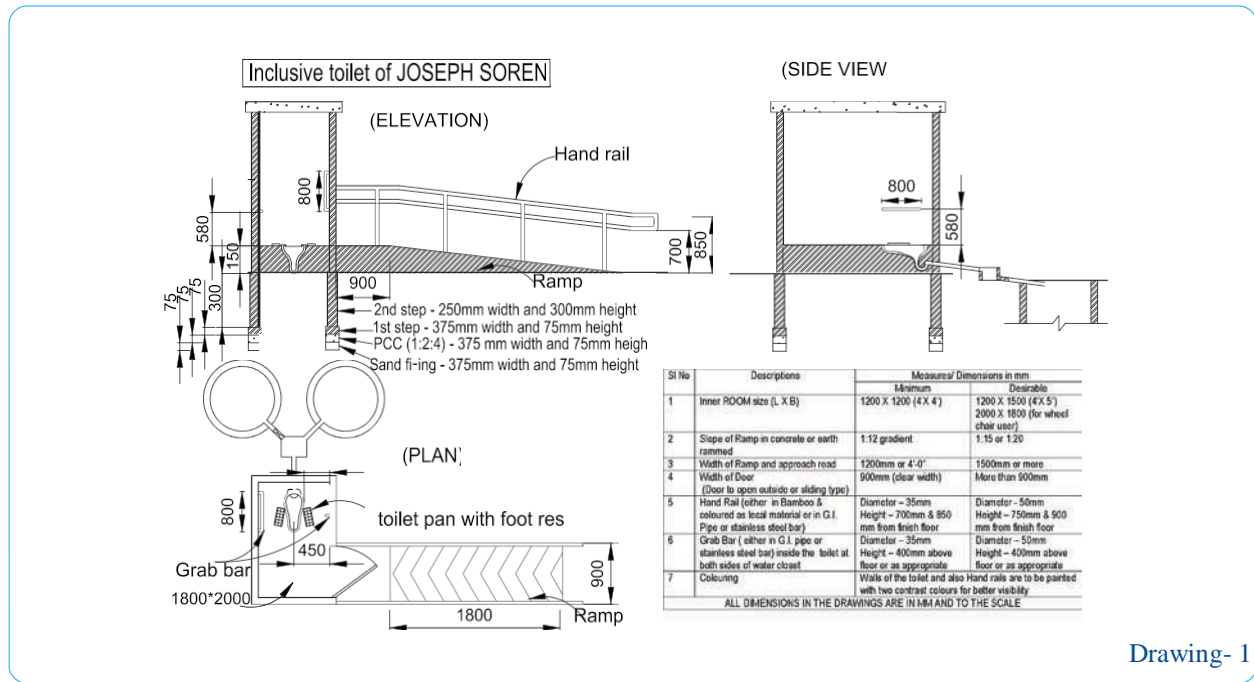
### Disabilityfriendlyoption:

She crawls on the ground. She takes others' help to get lifted and to go to another place. The platform is constructed for her WASH activities with a ramp on each side. She can come easily from her chair to the platform. A water tank is constructed and it is connected to the nearby community Hand Pump unit. The GI pipes are placed to the hand pump and connected to water tank with reduced socket arrangements. This is to ensure that when any community member operates the hand pump, a small quantity of water automatically flows to the tank. She can access the water. A toilet is constructed with a raised base structure of up to 200mm height. An Indian squatting pan is connected over it so that she can sit on it properly.

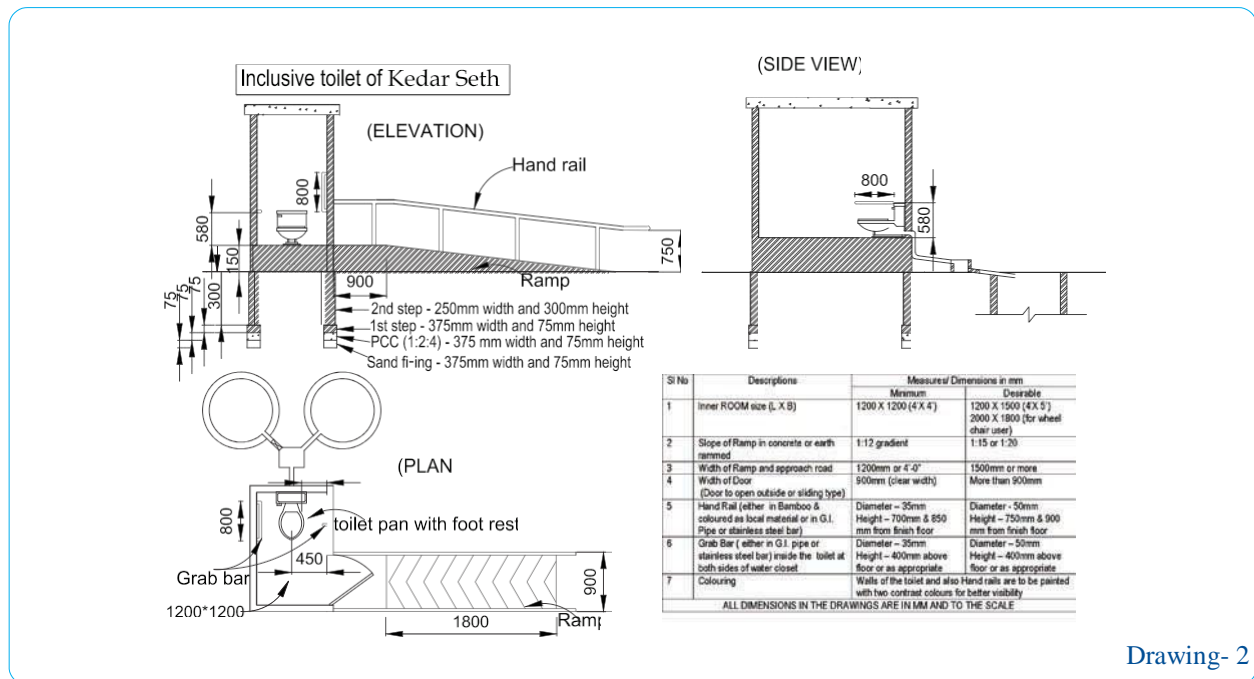




## Annexures: Schematics of designs

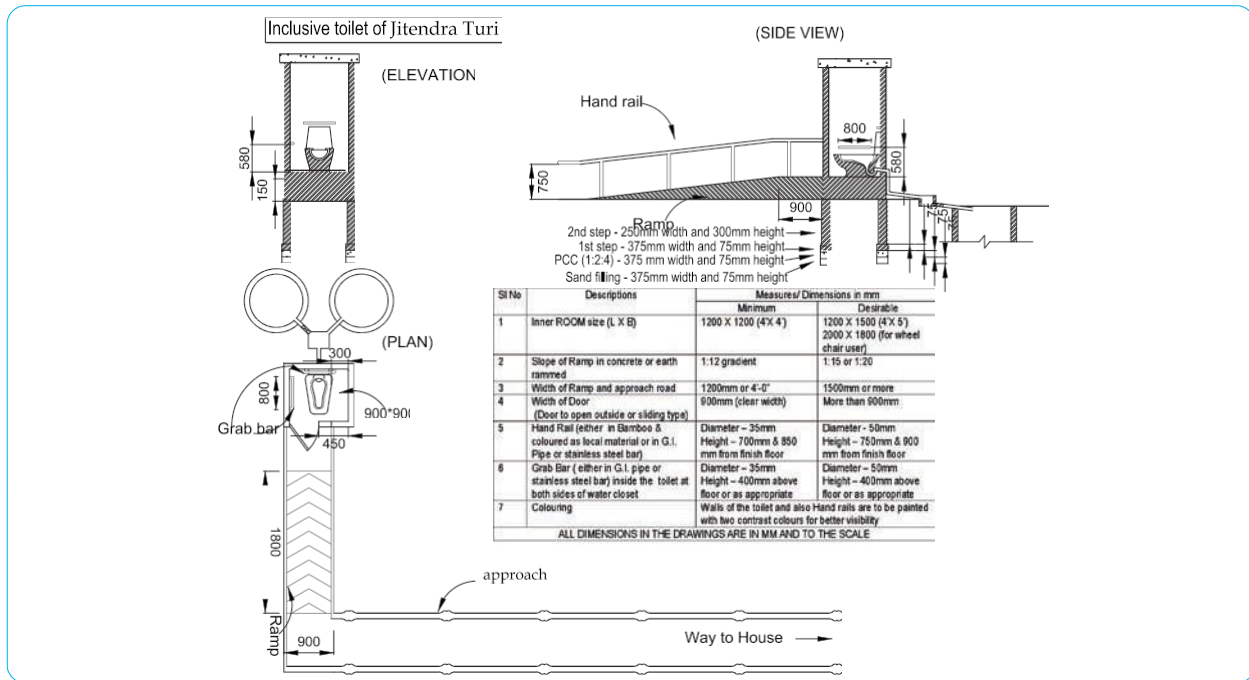


Drawing- 1

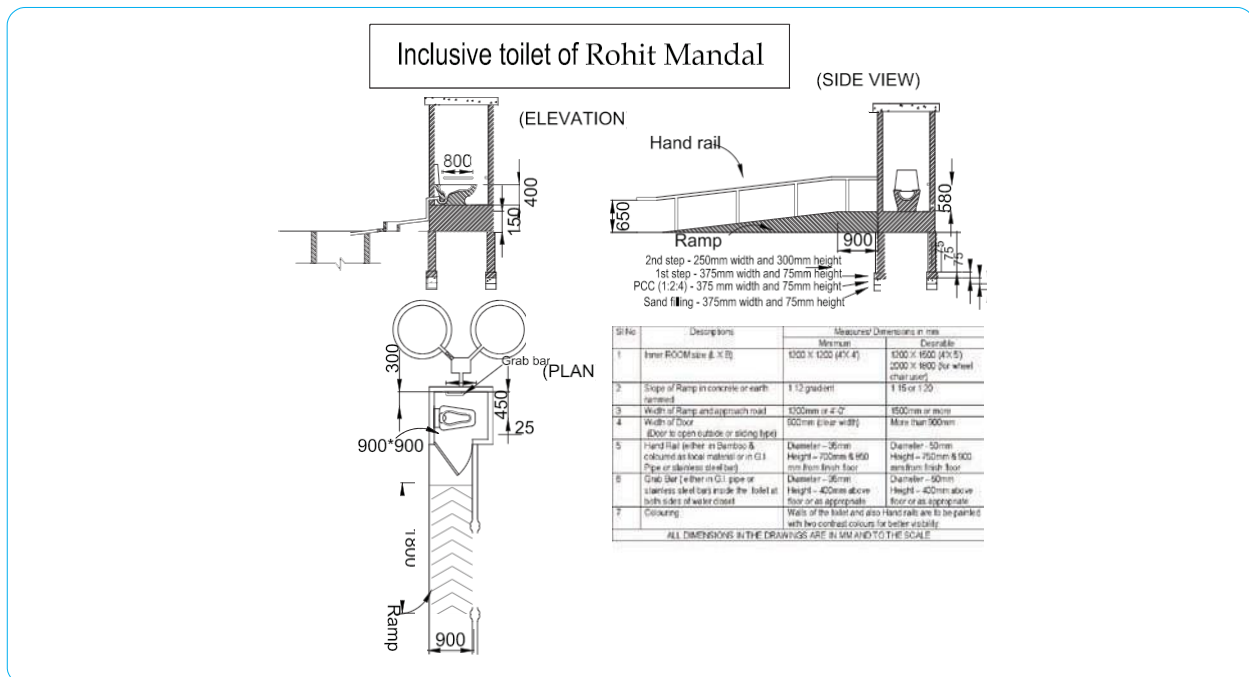


Drawing- 2

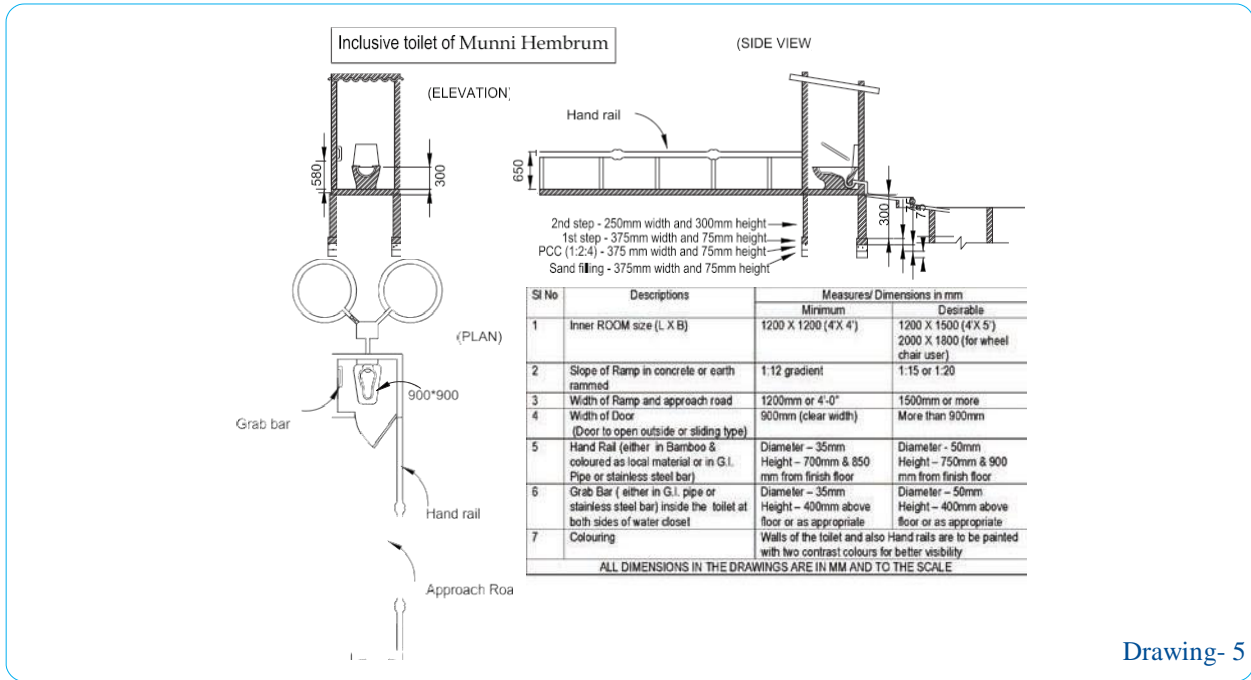
## PERSONS with DISABILITY FRIENDLY WASH Infrastructure DESIGNS



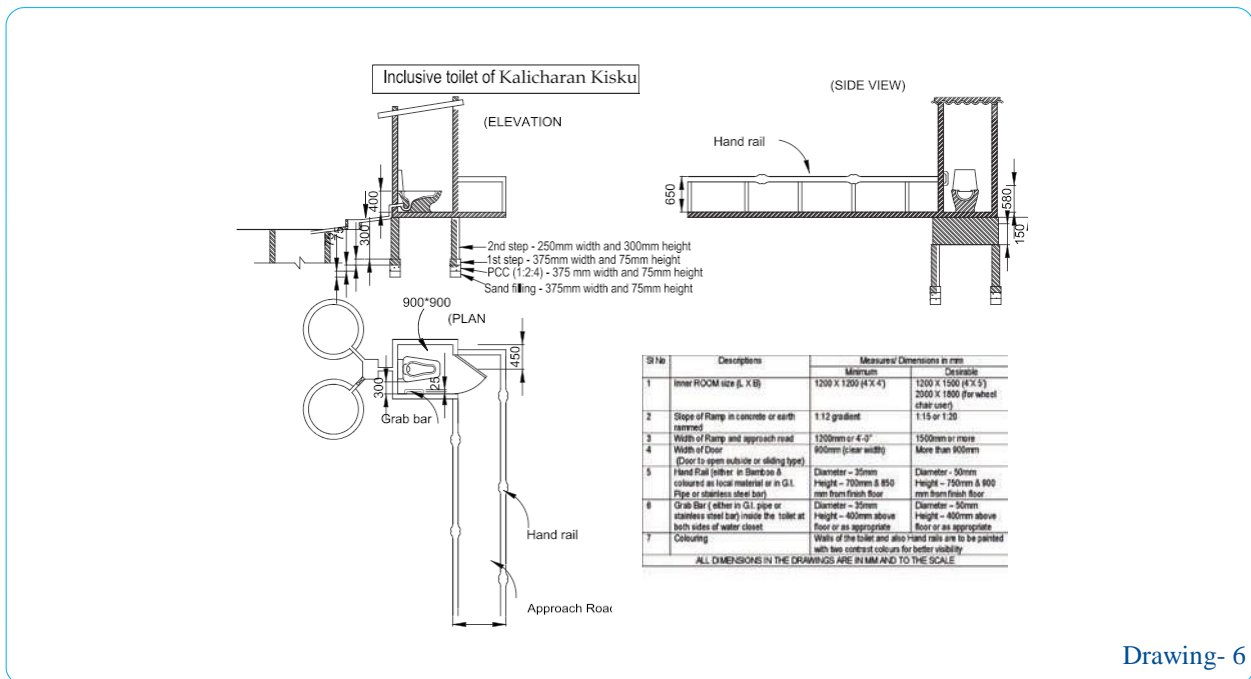
Drawing - 3



Drawing - 4

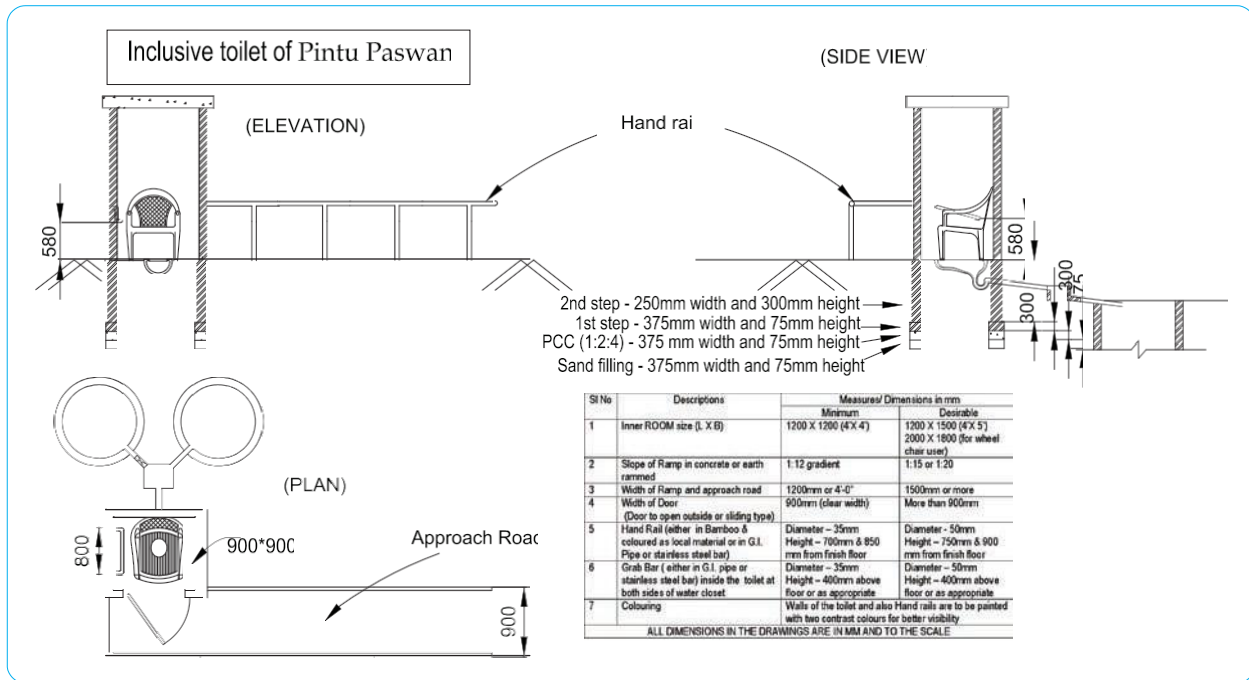


Drawing- 5

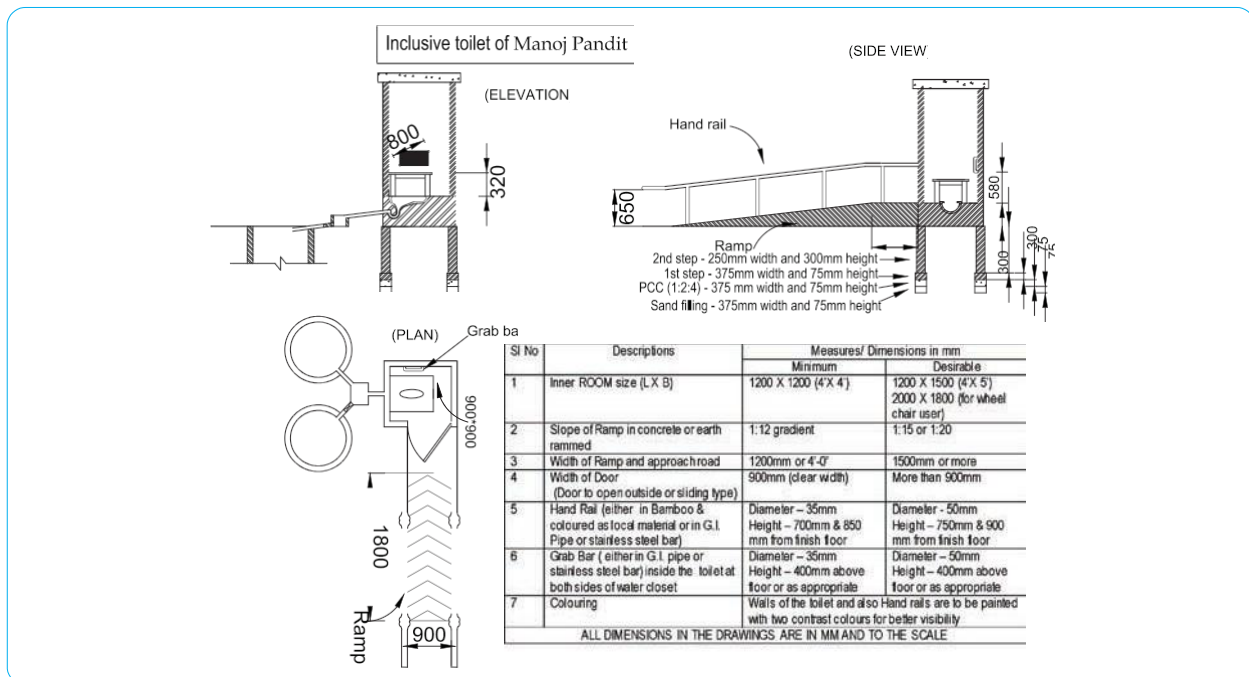


Drawing- 6

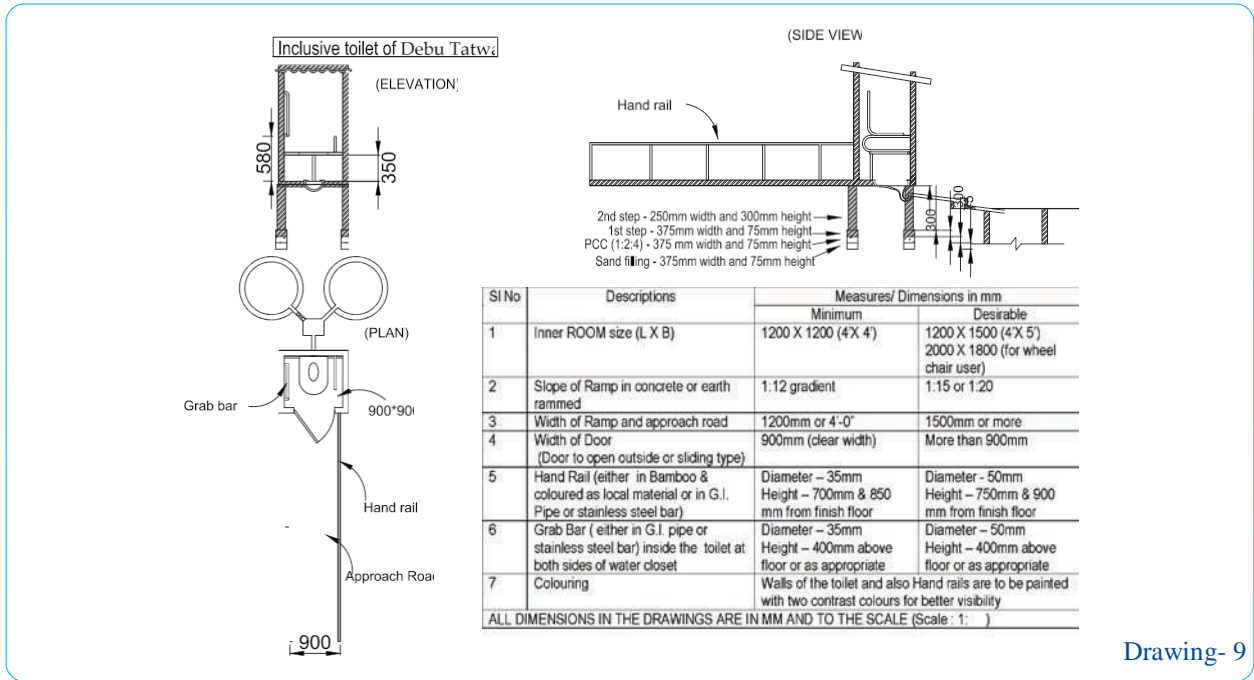
## PERSONS with DISABILITY FRIENDLY WASH Infrastructure DESIGNS



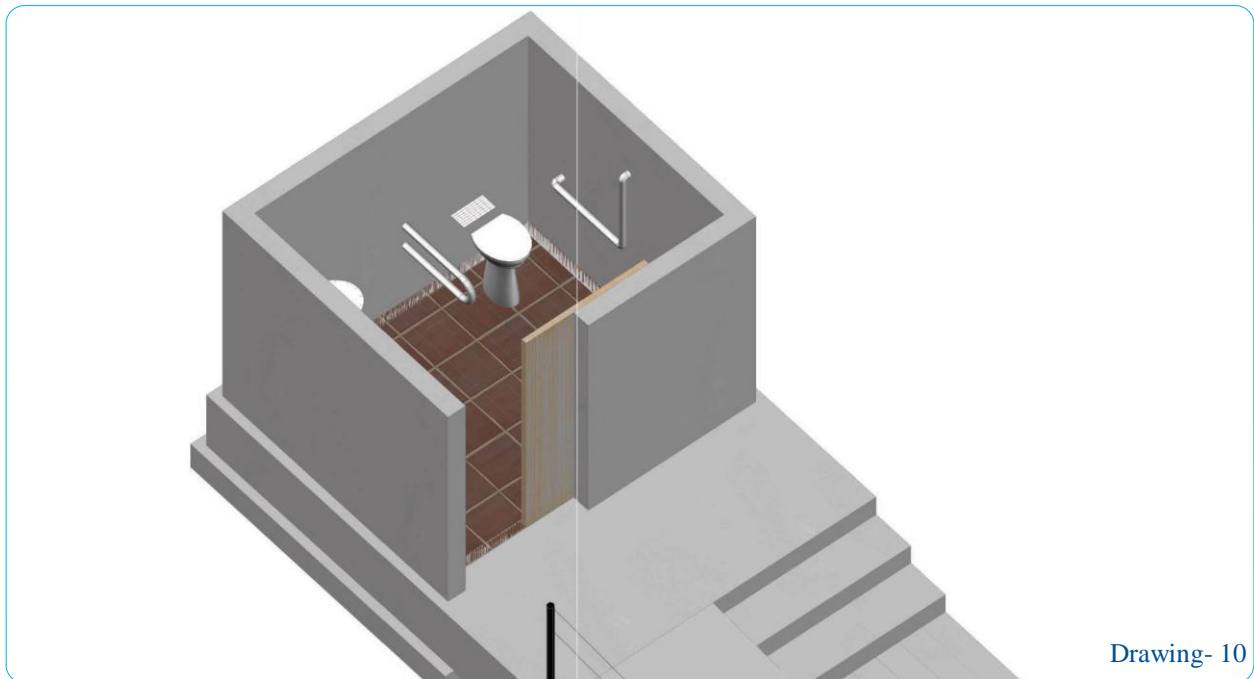
Drawing - 7



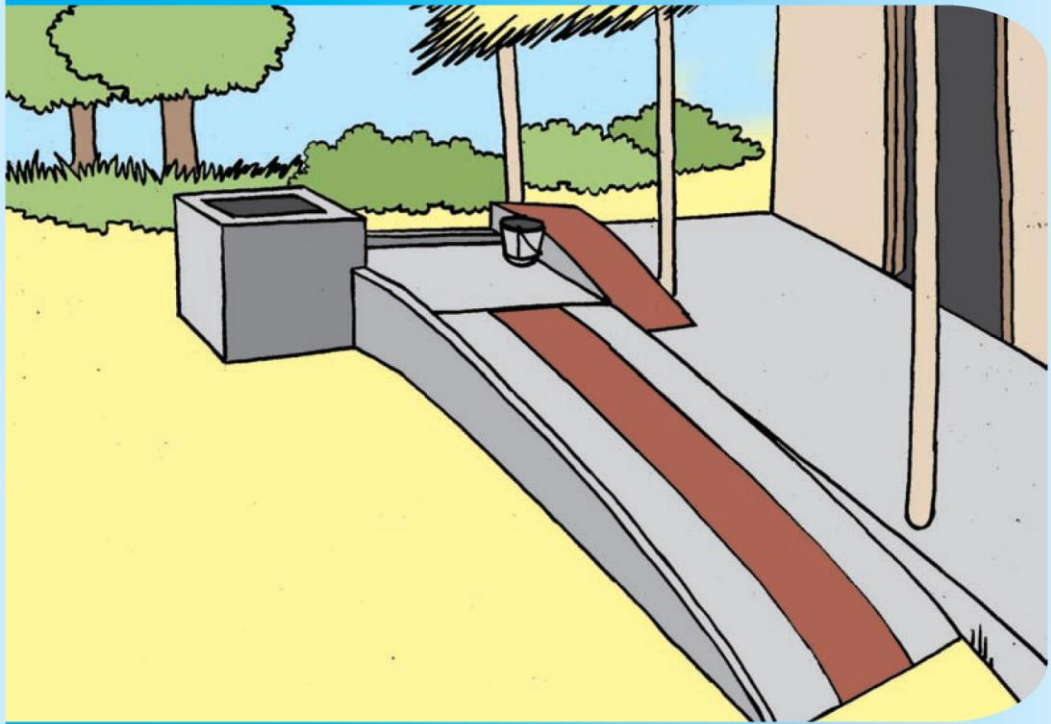
Drawing - 8



Drawing- 9



Drawing- 10





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