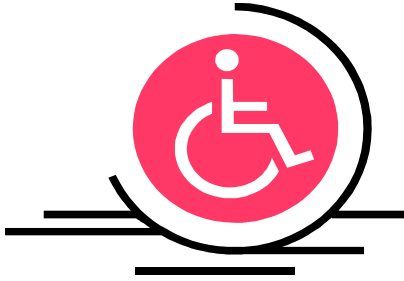


Toilets in Emergency & Disaster Toilet for Persons with Disability

GROUP - I

Group Members	Mr Sukumaran	Mr Purna
	Mr Anthony Raj	Mr Pramod
	Mr N D Suresh	Mr Anand
	Mr Oyya	Ms Aarti
	Mr Vijay Anand	Mr Shahshidhara n
	Mr Subbayan	Mr Yugandhar

Design features in a PwD friendly Toilet

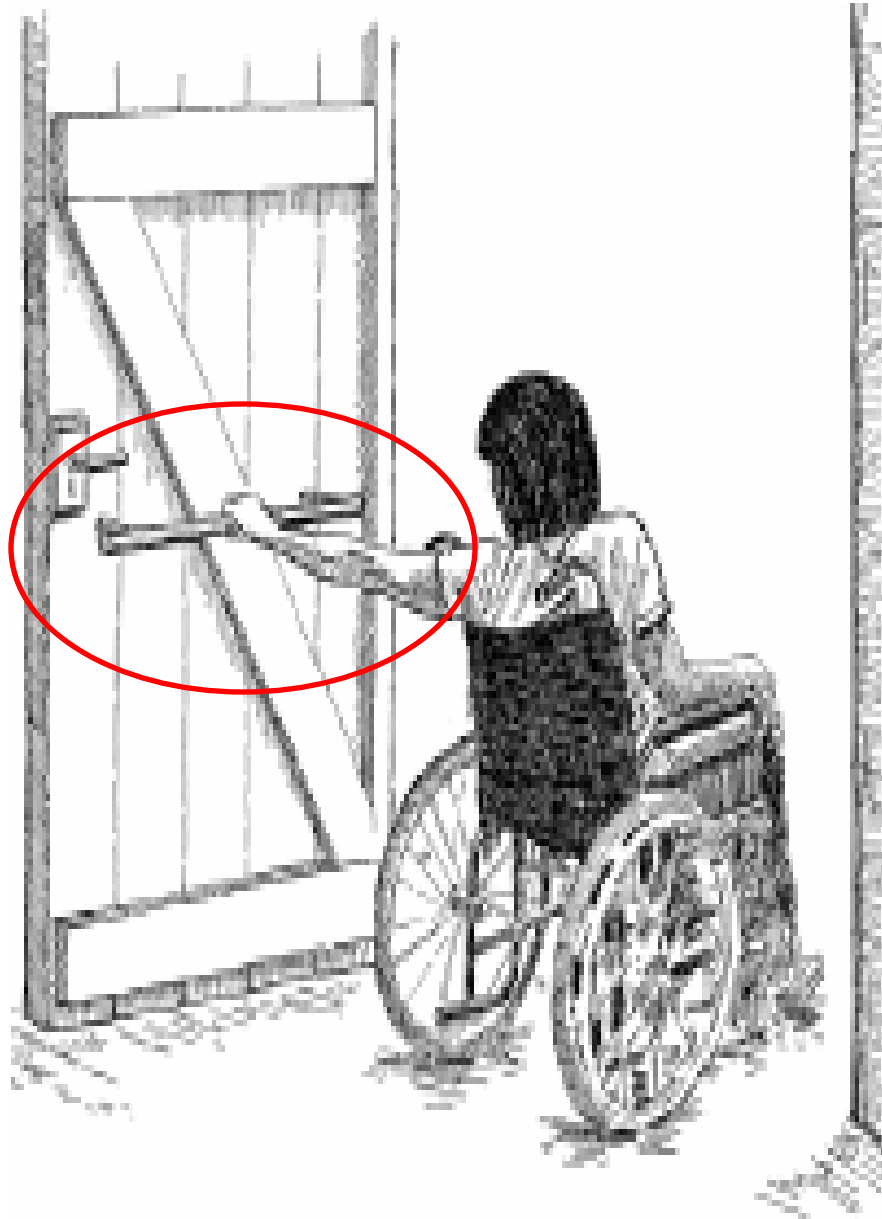


Accessibility





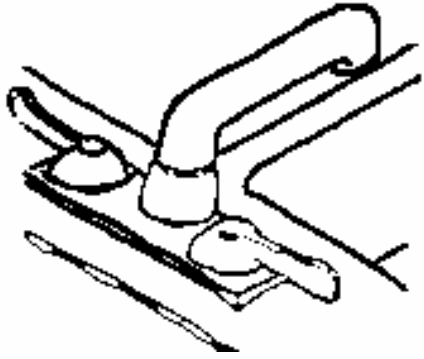
Accessible entrance, door handle (example):



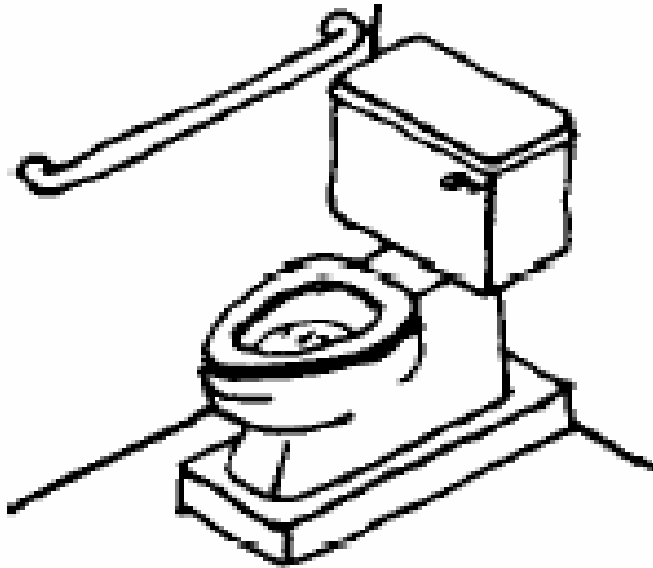
ACCESSIBLE TOILET



Accessible Toilets (example):



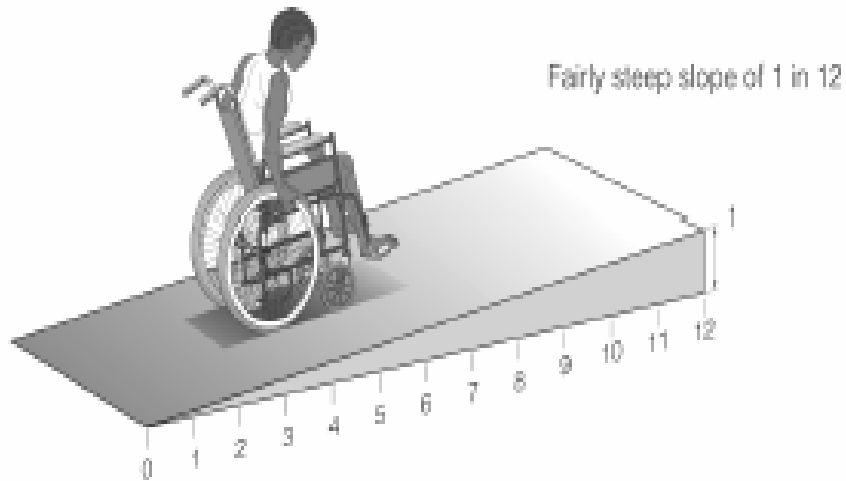
Platform Base



Additional Components

- Ramp in Approach road (1:12)
- Hand Rails along ramp at a appropriate height
- Door to open outside
- Door handle easy to operate
- Only for Wheel Chair User
 - Dimension – 1.8mt X 2 mt.
 - Approach road should be 4'-0" wide
 - Door -clear opening should be 3'-0" wide
 - Hand Rails and Grab bars with GI Pipe or Bamboo

Approach Road – Ramp of 1:12 Slope with Hand Rail by Bamboo or local materials



Cost of Ramp if any : - Rs 1000 by cement brick mortar & Even minimum for earth fill.

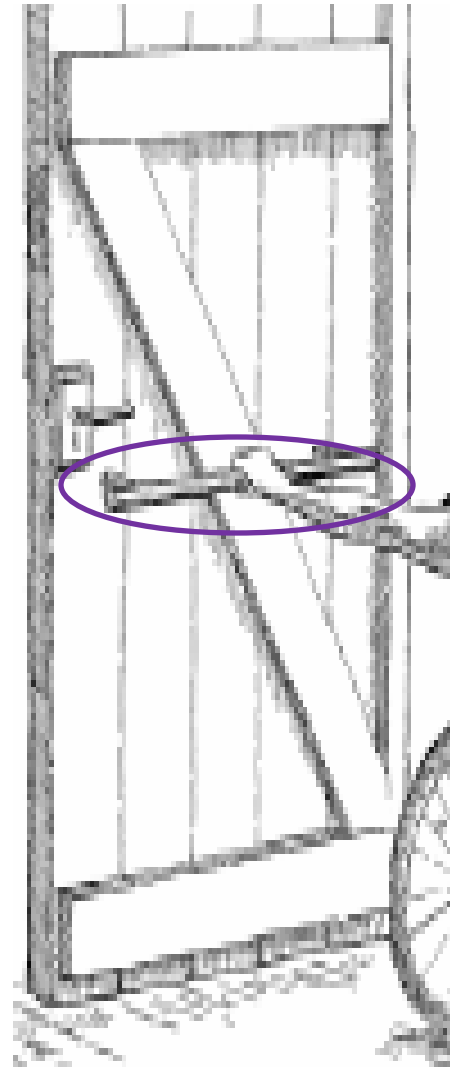
Cost of Hand Rail: One Bamboo –Rs 100/-



Commode or modified WC



Hand Rails

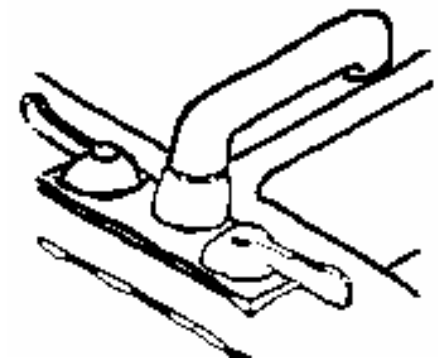


Cost

In GI Pipes: 10 Rft – Rs
300

In Bamboo – Rs 100/-

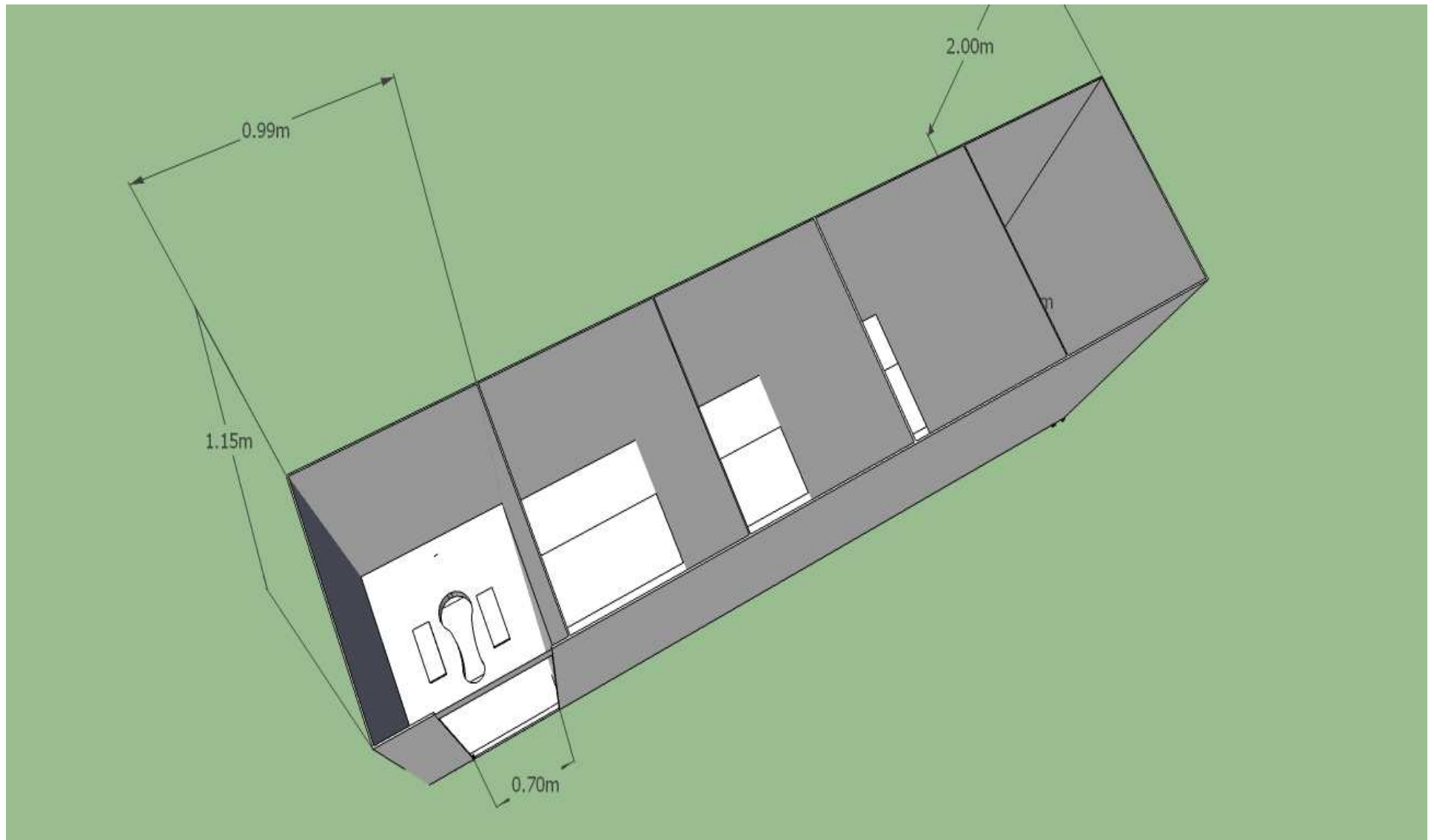
Handle: Rs 50/-



Additional Cost

Content	Approximate Cost
Ramp in Approach Road by masonry work	1000/-
Ramp in approach road with earth fill	200/-
Commode	750/-
Modified Commode	400/-
Grab Bars in GI Pipe:	250/-
Grab Bars in Bamboo	100/-
Total:	Rs 2000/- more in Maximum

Trench Type with Squatting Plate



INPUTS

Dimensions

Toilet Component	Data Collected	Partner Inputs
Type	Is the toilet double or single pit?	Single Pit
Foundation	What is the Foundation Height in Feet (Hf)?	0
Toilet Dimension	What is the Length of the toilet in Feet (Lt)?	0
Toilet Dimension	What is the Width of the toilet in Feet (Wt)	0
Wall Dimensions	What is the Height of the walls in Feet (Hw)?	0
Brick Dimensions	What is the Length of the brick in Inches (Lb)?	9
Brick Dimensions	What is the Width of the brick in Inches (Wb)?	4.5
Brick Dimensions	What is the Height of the brick in Inches (Hb)?	3
Roof	What material is being used for the roof?	No Roof
Door	What material is being used for the door?	No Door
Pan	What is the type of pan? (see examples in comment)	Ceramic pan with water seal (rural pan)
Pit	What is the Height of the pit in Feet (Hp)?	3
Pit	What is the Radius of the pit in Feet (Rp)?	2.5

Costing

Material	What is the cost of sand per cubic feet?	
Material	What is the cost of 1 cement bag (50kg) in `?	
Material	What is the cost of 1 brick in `?	0
Labor	What is the cost of 1 Manual Person per day in `?	150
Labor	What is the cost of 1 Mason per day in `?	
Labor	In addition to the shramdaan by the beneficiary, how many days will paid manual labor require?	2
Labor	How many days will a paid mason take to construct the toilet?	

OUTPUTS

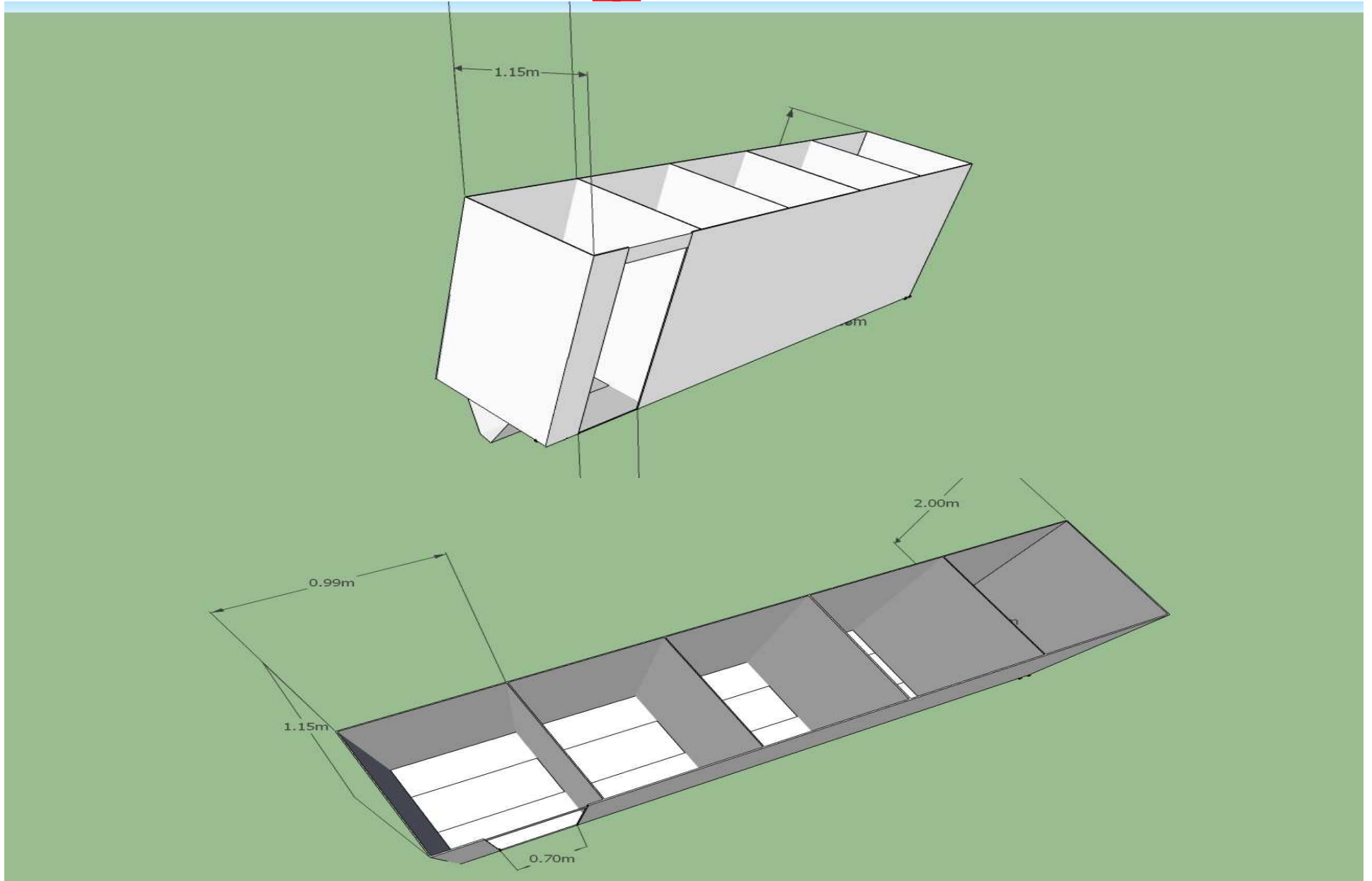
Toilet Component	Quantity/ Dimensions	Cost (₹)
Foundation (ft ³)	0	0
Walls (ft ³)	0	0
Pan	1	180
Roof (ft ²)	0	0
Door (ft ²)	0	0
Pit lining (ft ³)	16	0
Piping (ft)	10	75
Sand Bags	9	0
Cement Bags	2	0
Labor (persons)	2	300
Transportation	std	100
Misc.	10%	25

Total

680

Trench Type with Squatting Plate	Easy to construct	Squatting plate should be made available immediately
	Cost is high compared to direct trench type	
	Can be used for a comparatively longer period	

Direct Trench



INPUTS

Dimensions

Toilet Component	Data Collected	Partner Inputs
Type	Is the toilet double or single pit?	Single Pit
Foundation	What is the Foundation Height in Feet (Hf)?	0
Toilet Dimension	What is the Length of the toilet in Feet (Lt)?	0
Toilet Dimension	What is the Width of the toilet in Feet (Wt)?	0
Wall Dimensions	What is the Height of the walls in Feet (Hw)?	0
Brick Dimensions	What is the Length of the brick in Inches (Lb)?	9
Brick Dimensions	What is the Width of the brick in Inches (Wb)?	4.5
Brick Dimensions	What is the Height of the brick in Inches (Hb)?	3
Roof	What material is being used for the roof?	No Roof
Door	What material is being used for the door?	No Door
Pan	What is the type of pan? (see examples in comment)	
Pit	What is the Height of the pit in Feet (Hp)?	3
Pit	What is the Radius of the pit in Feet (Rp)?	2.5

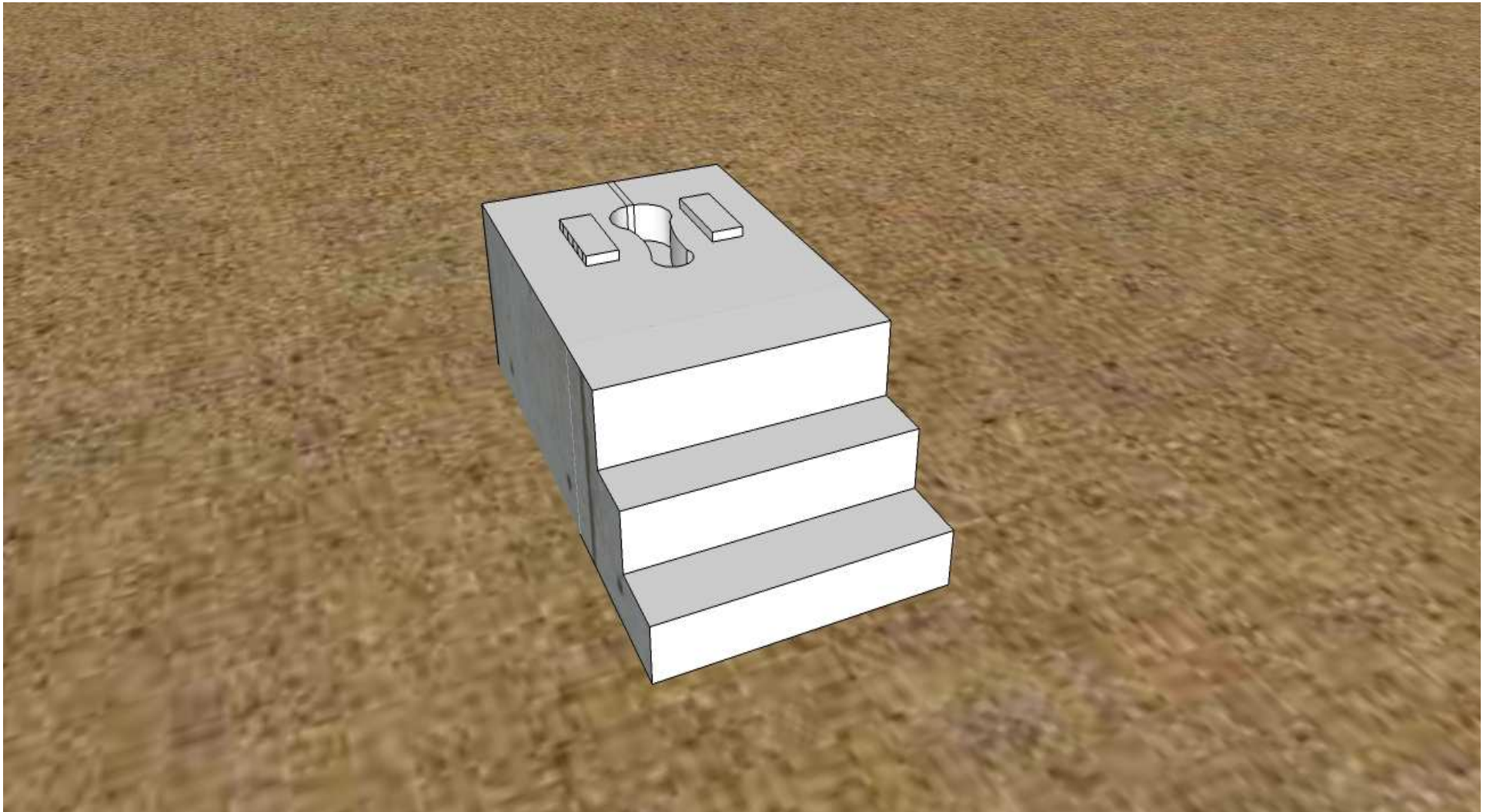
Costing

Material	What is the cost of sand per cubic feet?	
Material	What is the cost of 1 cement bag (50kg) in `?	
Material	What is the cost of 1 brick in `?	0
Labor	What is the cost of 1 Manual Person per day in `?	150
Labor	What is the cost of 1 Mason per day in `?	200
Labor	In addition to the shramdaan by the beneficiary, how many days will paid manual labor require?	
Labor	How many days will a paid mason take to construct the toilet?	1

OUTPUTS		
Toilet Component	Quantity/ Dimensions	Cost ()
Foundation (ft ³)	0	0
Walls (ft ³)	0	0
Pan	1	0
Roof (ft ²)	0	0
Door (ft ²)	0	0
Pit lining (ft ³)	16	0
Piping (ft)	10	75
Sand Bags	9	0
Cement Bags	2	0
Labor (persons)	2	200
Transportation	std	100
Misc.	10%	7
Total		382

Advantages	Disadvantages
Easy to construct and time required for construction is less	Can not be upgraded and short term use
Unskilled local labour can be used	In case of poor use, foul smell is possible
Less material cost	Water use has to be just appropriate
Locally available material can be used	Not suitable for rocky terrain, water logged areas
Most suited for immediate access	Possibility of damage by animals
Controlling OD	Difficult for use by children

On-pit Raised Platform Type



Cost Estimate	
Direct Pit	
1. Earthwork Excavation = $1\text{m} \times \frac{\pi}{4} \times (0.75)^2 = 0.59 \text{ cu.m}$	
2. Squatting Plate with rural pan and water seal (prefabricated) = 1 set	
3. Bricks or stone support for platform (in sandy soils) = 25/ 12 Nos	
4. Labour = 2 Nos	
5. Poles (2m long) for super structure (Bamboo or local material) = 5 nos	
6. Gunny Sacks/ cloth	
	For three walls = $3 \times 1.5 \times 1 \text{ m} = 4.5 \text{ m}^2$
	For door = $1 \times 1 \times 1.5 \text{ m} = 1.5 \text{ m}^2$
TOTAL	= 6 m^2

Advantages	Disadvantages
Avoids ground water contamination throughout the flood period	Additional cost burden
Can be individual family centric	Contamination ??
Access throughout the year - even during the floods	

Advantages & Disadvantages

5.

N.	Type	Advantages	Disadvantages
1	Direct Trench Type	Easy to construct and time required for construction is less	Can not be upgraded and short term use
		Unskilled local labour can be used	In case of poor use, foul smell is possible
		Less material cost	Water use has to be just appropriate
		Locally available material can be used	Not suitable for rocky terrain, water logged areas
		Most suited for immediate access	Possibility of damage by animals
		Controlling OD	Difficult for use by children

2	Trench Type with Squatting Plate	Easy to construct	Squatting plate should be made available immediately
		Cost is high compared to direct trench type	
		Can be used for a comparatively longer period	

3	Circular Type Communi nity Toilet	Less space requirement	immediate availability of squatting blocks may be a problem, this needs to be stored in in warehouse.
		Leach pit type - manure can be extracted	
		Water availability can be ensured	
		Transportable if pre-fabricated	

4	On-pit Raised Platform Type	Avoids ground water contamination throughout the flood period	Additional cost burden
		Can be individual family centric	Contamination ??
		Access throughout the year - even during the floods	