Low-cost single pit toilet

The following steps can be followed to construct a low-cost single-pit toilet in rural Shishu Ghars (creches).

Model-1: Plastic/Tin Drum Toilet

- The toilet should be constructed on higher ground and not in a low-lying area.
- Dig a pit measuring 2 feet in diameter and 3 feet in depth at the site where the toilet is to be constructed.
- Cut and remove the bottom of the plastic or tin drum so that the excreta and wastewater discharged from the toilet can seep into the ground.
- Cut the pre-made hole on the upper side of the drum according to the size of the waste outlet pipe (4–5 inches in diameter), so that the waste outlet pipe and bend (4–5 inches in diameter) can be properly connected to the hole.
- Make several holes of 2 inch diameter in the wall of the drum on all sides, at a distance of 9–12", from the bottom level of the drum up to a height of 2.5' (0.5' below the top), so that water and gas can be absorbed into the soil.
- Put the prepared drum into the pit made in the ground.
- Place the drum in the pit in such a way that the upper part of the drum remains 3 inches above the ground surface.
- Leave the soil surface around the pit uncovered so that the wastewater discharged from the toilet can absorbed by the soil.
- At a distance of 1 foot from the prepared pit, construct a toilet room of 15 square feet (3' × 5') using brick and cement.
- Inside the toilet room, install the toilet pan at 9–12 inches from the wall. Connect the pan trap to the bend and PVC pipe and then connect the pipe to the drum.
- Cover the drum on all sides in the pit, as well as the connected PVC pipe, with soil.
- To protect the toilet from sunlight and rainwater, make a roof using asbestos sheets or other materials such as straw and plastic sheets.
- The toilet door can be made of bamboo and plastic sheet, tin sheet, metal sheet, etc.

Estimated Cost:

Si. No	Materials	Cost
1	Oil/Mobil Drum	900.00
2	Alkatra Drum	200.00
3	Toilet Seat	600.00
4	PVC Bend, P Trap (Murga) and Pipe	200.00
5	Cement (3 Bags)	1200.00
6	Sand (5 Bags).	250.00

7	Asbestos Sheet	500.00
8	Bricks (500) Local	2000.00
9	Labour Charges	1000.00
10	Mason Charges	1200.00
	Total cost	**8050.00**

Photographs of Toilet Construction

The above cost can be reduced by using a locally available tar drum (alkatra drum) for the toilet pit, cheap/old/unused bricks for the toilet structure, freely available sand, a bamboo and tin-sheet door, a straw and plastic-sheet roof, and by carrying out the construction work oneself.

Model-2: Cement Ring Toilet (Single Pit) Construction Process

Do not choose low-lying land for constructing the toilet; instead, select higher ground.

• At the selected site, dig a pit measuring 3.5 feet in diameter and 4.5 feet in depth.

• Place three cement rings (3 feet in diameter and 1.5 feet in height) one above another in the prepared pit.

• The two cement rings should have several 2-inch diameter holes around their walls, spaced 9–12 inches apart. If perforated rings are not available, make several 2-inch diameter holes at 12-inch intervals so that water and gases can be absorbed into the surrounding soil.

• Keep the cement rings 3–4 inches above the ground surface so that external rainwater or surface water cannot enter the pit.

• Leave the ground surface around the pit open so that the liquid waste discharged from the toilet can be absorbed into the soil.

• At 1 foot from the prepared pit, construct a toilet room of 15 square feet (3 ft × 5 ft) using bricks and cement.

• Inside the toilet room, install the toilet pan at a distance of 9–12 inches from the wall. Connect a separate PVC bend and pipe to the pan trap and then connect the pipe to the cement rings installed in the pit.

• Cover the rings placed in the pit with a cement lid measuring 36 inches in diameter and 3–4 inches in thickness.

• Cover the edges of the rings placed in the pit and the connected PVC pipe with soil.

• To protect the toilet from sunlight and rainwater, provide a roof using asbestos sheets or other locally available materials such as straw and plastic sheets.

• The toilet door may be made of bamboo and plastic sheet, tin sheet, metal sheet, or similar materials.

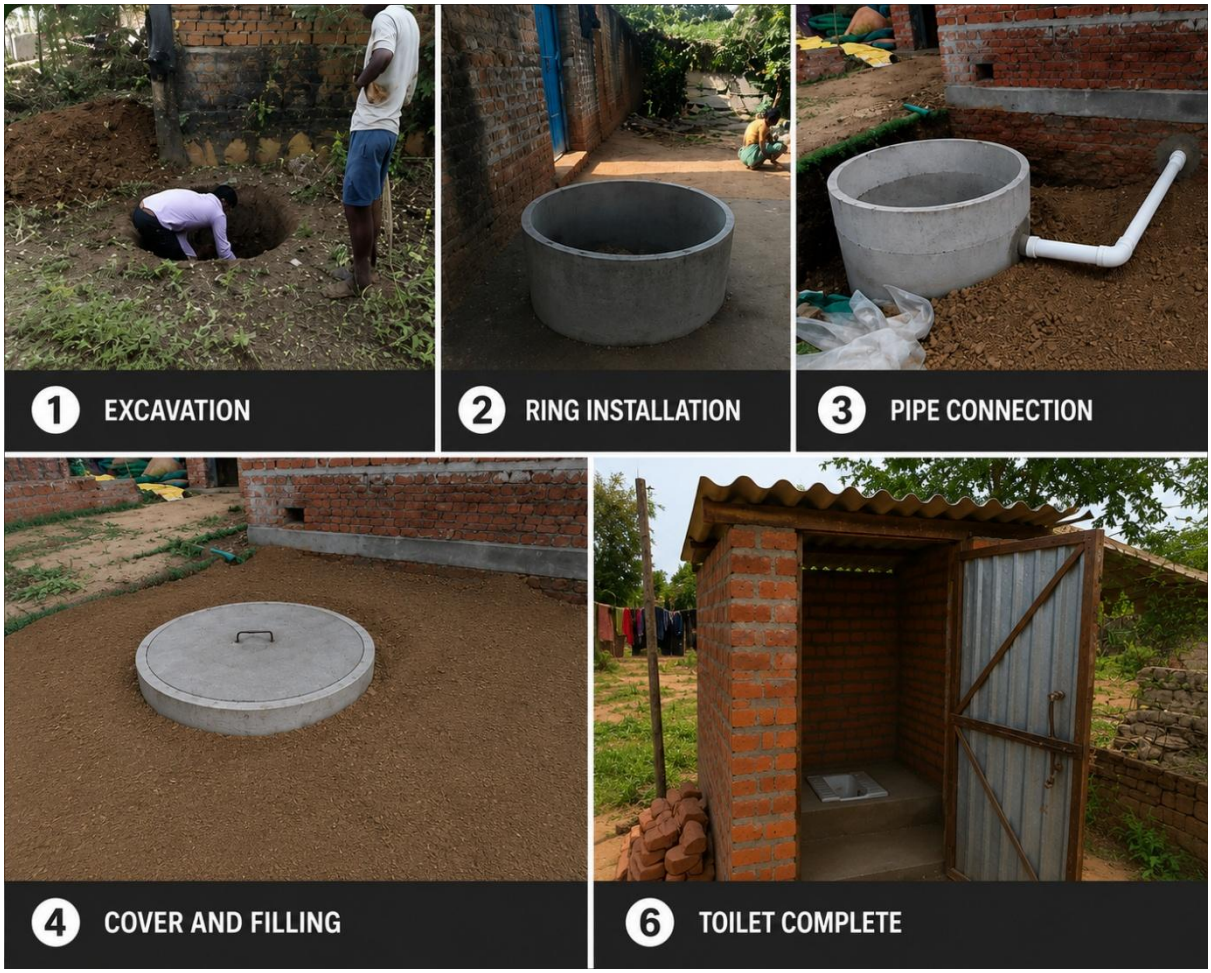
Estimated Cost:

S. No.	Material & Description	Amount (₹)
1	Cement Rings (3 pieces)	2,400.00
2	Cement Lid/Cover	500.00
3	Toilet Pan	600.00
4	PVC Bend, P Trap (Murga) and Pipe	200.00
5	Cement (3 bags)	1,200.00
6	Sand (5 bags)	250.00
7	Asbestos Sheet	500.00

8	Bricks (500 locally available)	2,000.00
9	Labor Charges	1,000.00
10	Mason Charges	1,200.00
	Total Cost	**9,850.00**

The above estimated cost can be reduced by using locally available low-cost, old, or discarded bricks; free or locally sourced sand; constructing the toilet superstructure with locally available materials; using bamboo and tin sheets for the door; and using straw and plastic sheets for the roof. Costs can also be minimized by preparing the pit and carrying out other related construction work through self-labour (self-help/community labour).

Photographs of Toilet Construction



Model-3: *Brick-Lined Single Pit Toilet Construction Process*

- Do not select low-lying land for the toilet; choose a location on higher ground.
- At the selected site, dig a pit 4 feet deep and 3 feet in diameter.
- Construct a circular brick wall inside the pit using bricks, cement, and sand mortar.
- Leave the ground surface around the pit open so that wastewater discharged from the toilet can seep into the soil.
- In the brick wall of the pit, leave several 2-inch diameter holes on all sides at intervals of 9-12 inches, starting about 1 foot below the top edge, so that gases and liquid can be absorbed into the surrounding soil.
- Construct the brick wall in the pit so that it extends 6–9 inches above the ground surface to prevent outside water from entering the pit.
- Construct a toilet superstructure measuring 3 ft × 5 ft (15 square feet) using bricks and cement, at a distance of 1 foot from the prepared pit..
- Inside the toilet structure, install the toilet pan at a distance of 9–12 inches from the wall. Connect a separate PVC bend and pipe to the pan trap and pass the pipe through the opening provided in the brick wall of the pit.
- Cover the brick-lined pit with a cement lid (approximately 3.5 feet in diameter and 3-4 inches thick).
- Cover the outer edges of the brick lining and the connected PVC pipe with soil.
- To protect the toilet from sunlight and rain, provide a roof using asbestos sheets or locally available materials such as straw and plastic sheets.
- The toilet door may be made of bamboo and plastic sheet, tin sheet, metal sheet, or other similar materials.

S.N	***Materia***	***Amount***
1	Cement Lid/Cover	500.00
2	Toilet Pan	600.00
3	PVC Bend, P Trap (Murga) and Pipe	200.00
4	Cement (4 bags)	1,600.00
5	Sand (5 bags)	250.00
6	Asbestos Sheet	500.00
7	Bricks (1,000 , locally available	4,000.00
8	Labor Charges	1,000.00
9	Mason Charges	1,200.00
	Total cost	***9,850.00***

The above cost can be reduced by using locally available cheap, old, or discarded bricks for the toilet structure, freely available sand, a door made of bamboo and tin sheets, a roof made of straw and plastic sheets, and by preparing the pit and carrying out other relate

Precautions:

- There should not be any kind of water stagnation around the toilet pit.
- The distance between the toilet pit and drinking water sources such as wells and hand pumps should be at least **30–50 feet**.
- Rainwater should not enter the pit.
- Since multiple holes are made in the drum, rings, or brick lining of the pit, there is a possibility that rats may enter through these openings and fill the pit with soil. To prevent this, a wire mesh can be installed over the holes.
- The PVC pipe extending from the toilet pan should have a proper slope towards the pit so that the wastewater and excreta can flow smoothly into the pit.