Water for the World

Constructing Bucket Latrines

Technical Note No. SAN.1.C.5

A bucket latrine consists of a shelter and a platform which supports a slab and encloses a bucket. Constructing a bucket latrine involves assembling all necessary labor, materials, and tools; building a base and platform from concrete or brick and mortar and installing a sitting or squatting slab and a fly-proof door.

With careful maintenance, a properly constructed bucket latrine can last 10-20 years. This technical note describes each step in constructing a bucket latrine. Read the entire technical note before beginning construction.

Materials Needed

The project designer must provide three papers before construction can begin:

1. Location map similar to Figure 1.

2. Design drawings similar to Figure 2.

3. Construction materials list similar to Table 1 showing all necessary labor, supplies and tools.

Construction Steps

Depending on local conditions, availability of materials, and skills of workers, some construction steps will require only a few hours, while others may take a day or more. Read the construction steps and make a rough estimate of the time required for each step. You will then have an idea of when specific workers, materials, and tools must be available during the construction process. Draw up a work plan similar to Table 2 showing construction steps.

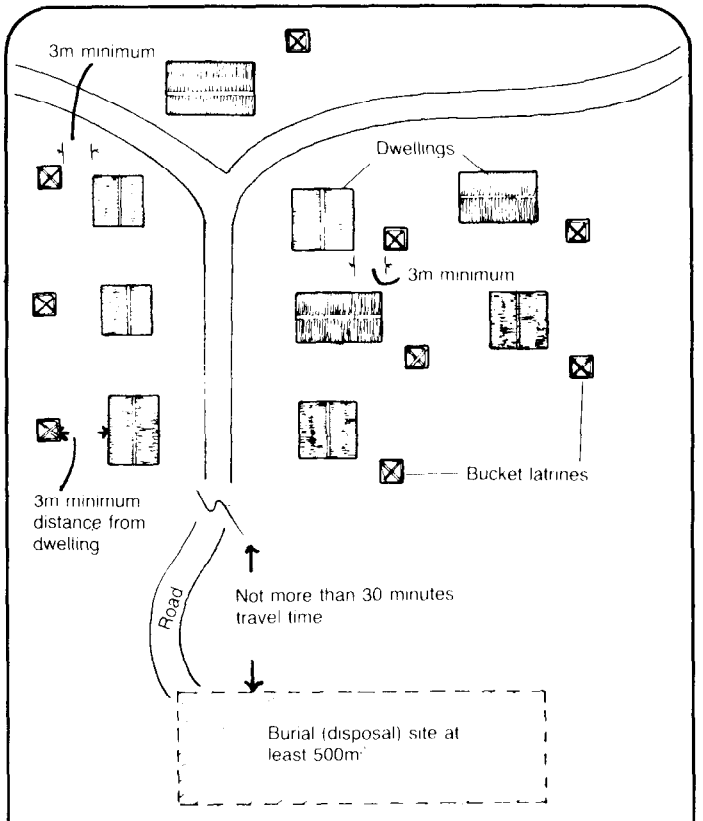

Figure 1. Location Map

For a concrete bucket latrine:

1. Assemble all laborers, materials, tools, and drawings needed to begin construction. Study all drawings carefully.

2. Prepare the site shown on the location map by removing vegetation and rocks and raking the ground smooth. Build forms for the base.

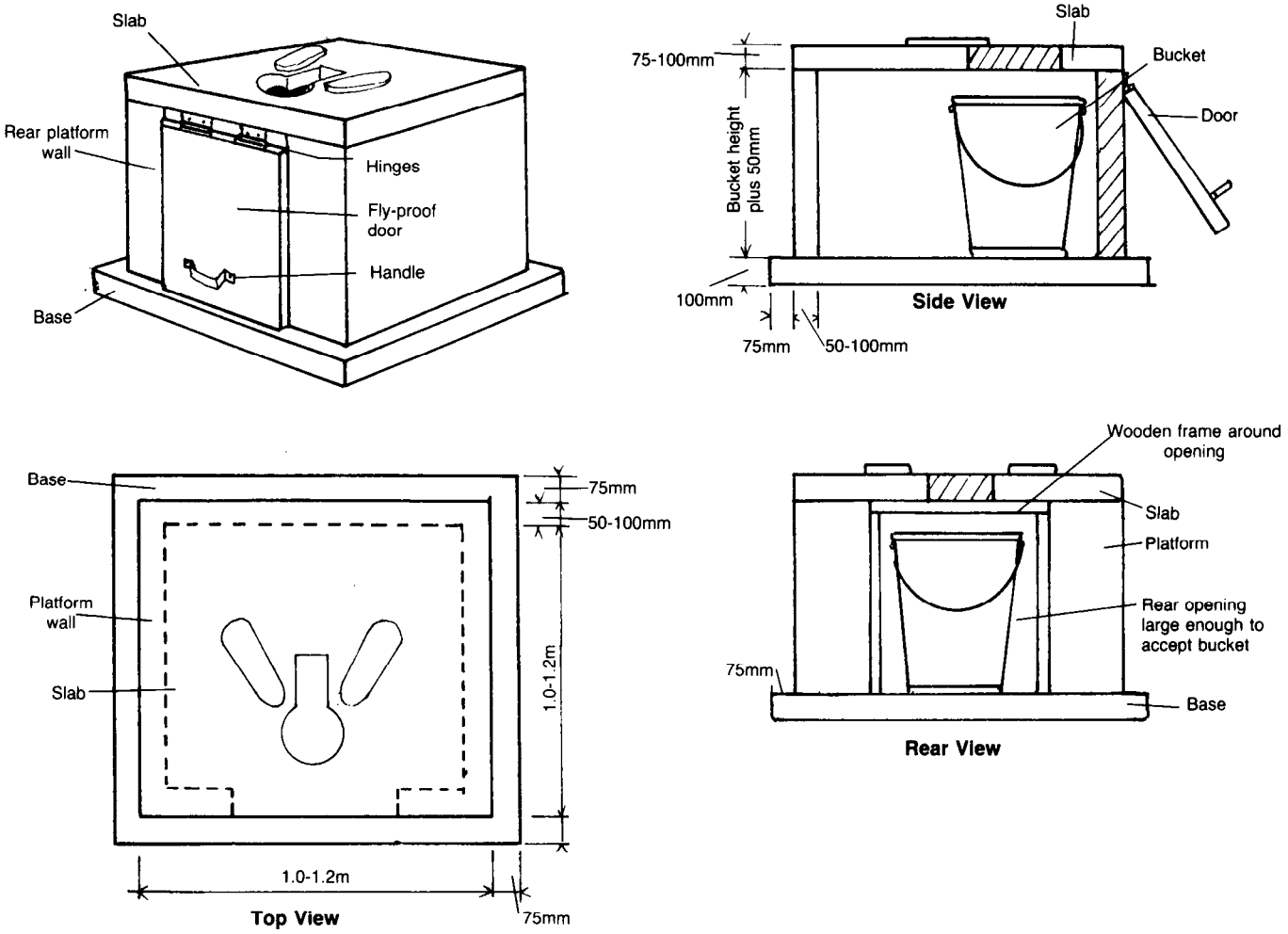

Figure 2. Bucket Latrine

3. Mix concrete to the correct proportions. A common mix by volume is one part cement to two parts sand to three parts gravel and enough water to make a fairly stiff mix. Mix until the sand and gravel are evenly coated with cement and water.

4. Pour in concrete until the base form is about half full, lay in reinforcing material such as steel rods, wire mesh, or bamboo strips, and pour in concrete until the form is full. Smooth the surface with a trowel as shown in Figure 3.

5. Cover the fresh concrete with wet straw, burlap bags, or equivalent and keep moist for three to seven days.

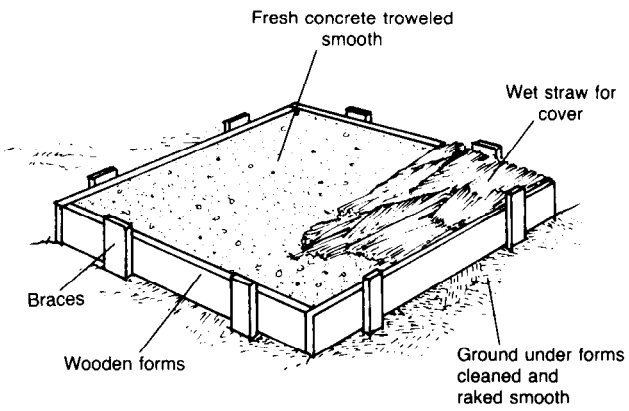

Figure 3. Concrete Base

6. Remove the cover material and forms from the base. Build forms for the platform walls. Make an opening in the rear wall for access to the bucket. Secure the reinforcing material in the forms. Brace the forms as shown in Figure 4 to be certain that they hold together when the concrete is poured.

7. Pour the concrete into the forms. It must completely fill the forms. Use a steel rod or stout stick to work concrete between the reinforcing material and the forms. Smooth the tops of the platform walls with a trowel.

8. Cover the fresh concrete with wet straw, burlap bags, or equivalent and keep moist for three to seven days.

9. Remove the cover and forms from the walls. The form inside the rear wall opening can be left in place and serve as the frame for the fly-proof door. Seal the bottom edges of the walls, inside and outside, with cement mortar made with one part cement to three parts sand and enough water to make a workable mix. See Figure 5.

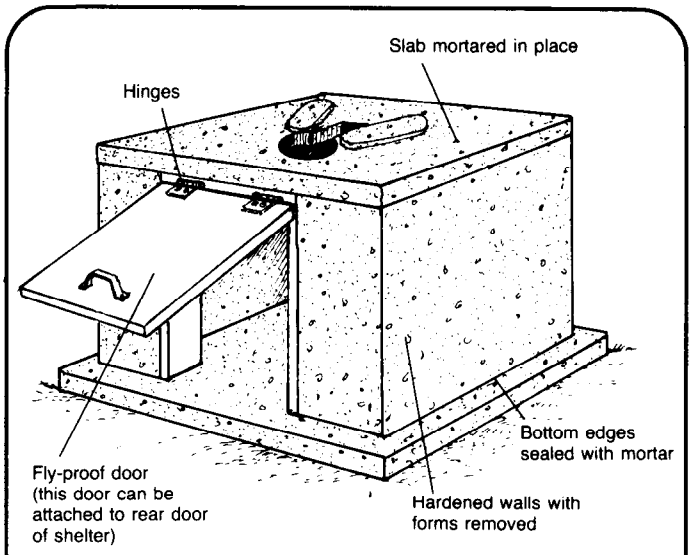

Figure 5. Platform with Slab and Door in Place

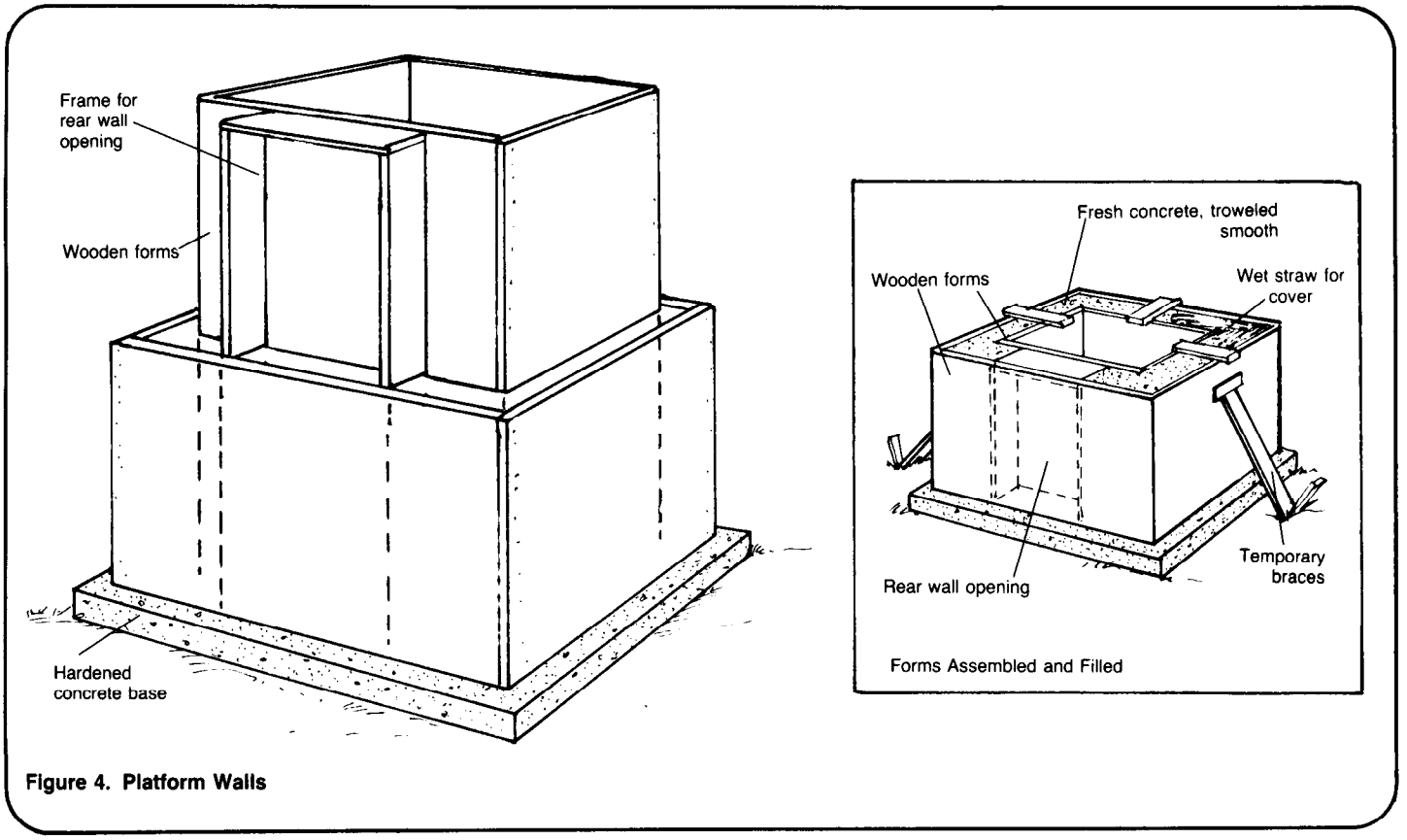

Figure 4. Platform Walls

10. Make forms and cast the slab as described in "Constructing Slabs for Privies," SAN.1.C.1. Mortar the slab in place.

11. Build a fly-proof door from wood or metal and attach it over the rear wall opening with a pair of hinges. The door must fit tightly around all edges, and it should have a handle.

12. Build steps leading up to the latrine. Use bamboo, wood, bricks, or other local material. Be certain each step is no higher than 200mm.

13. Build a shelter as shown in Figure 6. See "Constructing Privy Shelters," SAN.1.C.3.

14. Set a lid over the squatting hole, place a bucket under the slab, and close the fly-proof door.

For a brick and mortar bucket latrine:

1. Assemble all laborers, materials, tools, and drawings needed to begin construction. Study all drawings carefully.

2. Prepare the site shown on the location map by removing vegetation and rocks and raking the ground smooth.

3. Build the base from bricks and mortar. A common mortar mix is one part cement to three parts sand and enough water to make a workable mix.

4. Plaster the top of the base with a 12-25mm thick layer of cement mortar. Smooth with a trowel, cover with wet straw, burlap bags or equivalent, and keep moist for one to three days. See Figure 7.

5. Remove the cover material and begin laying up the platform walls. Build and install a frame of wood or bamboo for the rear wall opening.

6. When the platform walls reach their design height, fill in any openings or holes in the top course of bricks with cement mortar. Allow one to three days for the walls to set. See Figure 8.

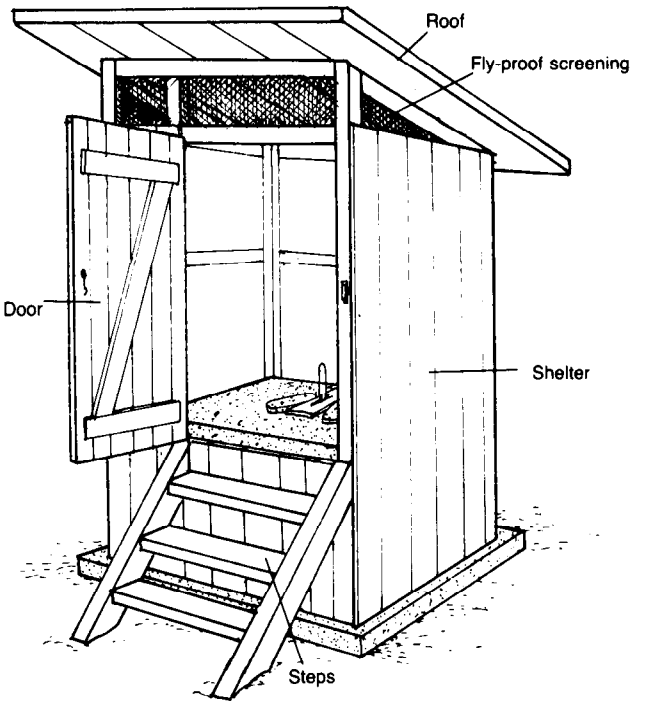

Figure 6. Completed Bucket Latrine

7. Coat the insides of the walls with 12-25mm of cement plaster. Seal the bottom edges of the walls, inside and outside, with cement plaster.

8. Follow steps 10-14 for a concrete bucket latrine.

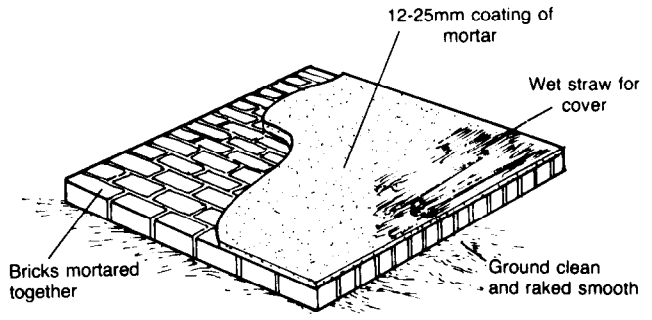

Figure 7. Brick and Mortar Base

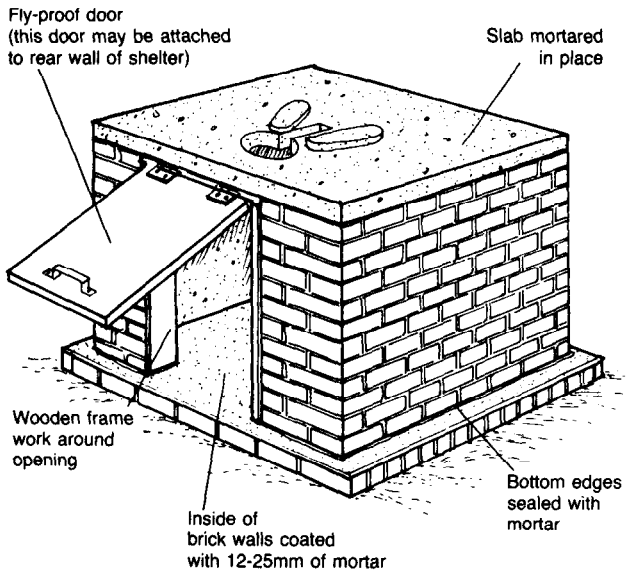

Figure 8. Brick and Mortar Platform

Table 1. Sample Construction Materials List

Item	Description	Quantity	Estimated Cost
Labor	Foreman	1	____
	Laborer (skilled with concrete)	1	
	Laborer (unskilled)	1	____
			____
Supplies	Wood (for forms and fly-proof door)		
	Nails	____	____
	Cement (Portland)	____	____
	Sand (clean, sized fine to 6mm)	____	____
	Gravel (clean, sized 6-25mm)	____	____
	Water (clear)	____	____
	Reinforcing material	____	____
	Squatting slab	____	____
	Tin sheet (for fly-proof door)	____	____
	Hinges (for fly-proof door)	____	____
	Handle (for fly-proof door)	____	____
	Materials for shelter (see SAN.1.D.3)	-----	____
	Buckets	____	____
	Other	____	
Tools	Measuring tape	1	____
	Hammer	1	____
	Saw	1	____
	Shovel	1	____
	Trowel	1	____
	Container for mixing concrete	1	____
	Other	____	

Total Estimated Cost =

Table 2. Sample Work Plan

Time Estimate	Day	Task	Personnel	Materials/Tools
1 hour	1	Prepare site	Foreman; worker	Location map, measuring tape, design drawings, rake
1 hour	1	Build forms for base	Foreman; worker	Wood, nails, hammer, saw
1 hour	1	Mix concrete	Foreman, 2 workers (one skilled with concrete)	Wheelbarrow, 2 shovels, hoe, cement, sand, gravel, water
2 hours	1	Pour concrete into forms; smooth surface; cover	Foreman, 2 workers (one skilled with concrete)	Reinforcing material, trowel, wet straw
----	2-5	Keep moist	----	----
1 hour	6	Remove cover material and forms	Foreman; worker	2 hammers
3 hours	6	Build forms for platform walls	Foreman; 2 workers (one skilled with concrete)	Wood, nails, hammer, saw, 2 sections of vent pipe
1 hour	6	Mix concrete	Foreman; 2 workers (one skilled with concrete)	Wheelbarrow, 2 shovels, hoe, cement, sand, gravel, water
2 hours	6	Pour concrete into forms; smooth surface; cover	Foreman; 2 workers (one skilled with concrete)	Reinforcing material, trowel, wet straw
----	7-10	Keep moist	----	----
1 hour	11	Remove cover material and forms	Foreman; worker	2 hammers
2 hours	11	Seal bottom edges of walls with mortar	Foreman; 2 workers (one skilled with concrete)	Wheelbarrow, 2 shovels, trowel, cement, sand, water
2 hours	11	Mortar slab in place	Foreman; 2 workers (one skilled with concrete)	Wheelbarrow, 2 shovels, trowel, cement, sand, water, 2 squatting slabs
1 hour	11	Build and install fly-proof door	Foreman; worker	Wood, tin sheet, hinges, handle
3 hours	11	Build steps	Foreman; 2 workers	Wood, hammer, saw, nails
----	12-13	Build privy shelter	Foreman; 2 workers	See "Constructing Privy Shelters," SAN.1.C.3 for details