



TOWARDS BETTER HEALTH



WATERSEAL LATRINE (Technical Details)

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unicef 
United Nations Children's Fund

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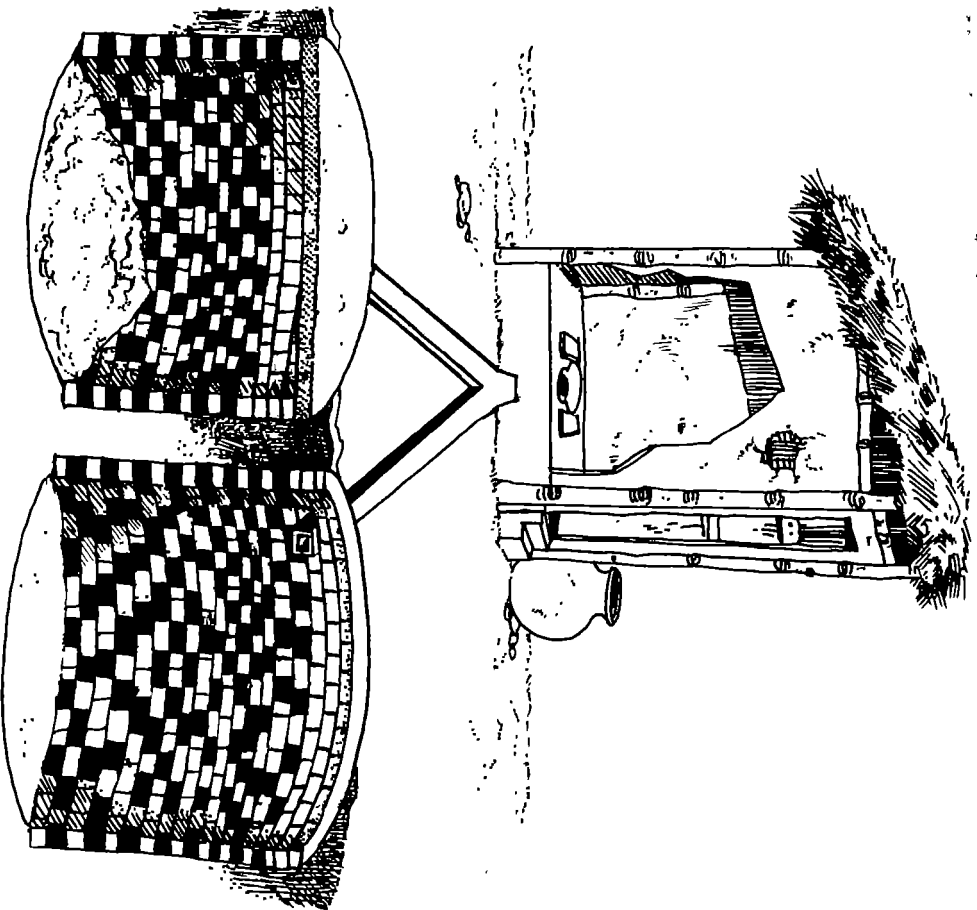


Fig 1

LOW COST LATRINE FOR RURAL HOMES

1. Introduction

This booklet complements the pamphlet entitled "Towards Better Health—Waterseal latrine," which is written for the potential latrine owner. It is intended for the engineer at the Block level promoting the programme and deals with the salient features in the construction of a rural pour-flush waterseal latrine.

The Block Development Officer (BDO) and the Block Engineer (BE) can and should play a vital role in promoting the use of sanitary latrines. This is a major step towards the creation of a sanitary and healthy environment and better health for the community.

2. Design of Waterseal Latrine.

The latrine as depicted in Figure 1 consists of the pan and waterseal unit connected to two leach pits. The two pits are used alternately and one pit is kept out of operation by blocking the inlet of the drain leading to it. A detailed drawing is given in Figure 2.

For a family consisting of 5 to 6 members, a pit of 1.0 meter diameter and depth will fill up to the drain outlet level in about three years. When the filled pit is left for about two years, the contents become rich organic humus and can be handled safely.

Where space is a constraint, alternative layouts of the leach pits are given in Figure 4.

The choice of materials depends on local availability and skills. Wherever possible, the use of freely available building materials in the backyard or in the vicinity should be encouraged to reduce the construction cost.

3. Training of the Masons

The construction of a waterseal latrine as outlined in figures 2 to 4 is generally within the capability of a skilled mason. However, in certain cases the assistance of the Block Engineer may be required to interpret the drawings.

The use of locally manufactured mosaic pan and trap will significantly reduce the cost. A pan and trap set can be produced at Rs. 40 (1986, New Delhi prices).

UNICEF can arrange for the training of two masons per block in the manufacture of these units and the construction of the latrine.

4. Selection of Site

The following criteria should be adopted, namely:

- (a) Site in or near to the house for convenience
- (b) Avoidance as far as possible of low lying areas which are likely to be flooded during rains.
- (c) Safe distance from water source. In clay and sand formation, and where the water table is more than 2 meters below the pit bottom, the distance of the pit from the water well should not be less than 10 m. With higher water table, the distance should be increased to 15 m. In rock formation

where the pit bottom is not less than 5 m. above the water table, a separation of 15 m. is recommended. For a higher water table, an alternative design should be considered.

5. Demonstration Unit

A demonstration unit in the Block headquarters compound is worth more than a thousand words. So why not have a unit constructed in a prominent place so that the people calling at the Block headquarters for various matters can see it.

6. Construction

The following procedures are followed:

- (a) Draw the plan of the squatting platform, connecting drain and the pits on the ground as per the selected design shown in Figures 2 to 4.
- (b) Start construction of the squatting platform. A size of 0.8 m. wide by 1 m. long is quite adequate. The depth of foundation will be determined by the soil condition while the top of the platform should be raised in areas prone to flooding.
- (c) Place the waterseal in position and site with the help of a spirit level to ensure it is horizontal.
- (d) Place the pan on the waterseal and test again for proper levelling.
- (e) Pack the empty space between the pan and the platform wall firmly with soil and rubbles ensuring the pan and waterseal remain in position.
- (f) Plaster the sides of the platform with cement mortar to a maximum of 20 mm, and the floor with cement concrete as specified in figure 2.

- (g) Lay the Y-shaped brick drain size 75 mm. wide at a slope of 1 to 10 to ensure ease of discharge of the excreta. A 75 mm. dia pipe can also be used.
- (h) Construct the foot-rests on the platform such that the latrine may be used both by adults and children.
- (i) Dig the leach pits to a depth of one meter. For loose, sandy and black cotton soil, 75 mm. and 110 mm. brick lining (or alternative local materials) should be provided. For stable soil formation, only the top 0.3 m. lining is required.
- (j) The pit cover can be bamboo with a mud cover. A painting with coal-tar is necessary for prevention against termites. Alternatively, a steel reinforced slab 50 mm. thick with reinforcement of 6 mm. dia placed as shown in figure 3 can be used.
- (k) The choice of the superstructure should be left to the house-owner. Different types in use are bamboo reinforced mud walls with thatch roof, bamboo mat side walls with thatch roof, thatch walls and roof, 110 mm. brick walls with roof made of tiles, AC sheets or stone slabs, or 50 mm. reinforced concrete slabs.

However, advise on construction as necessary.

7. Materials Required

Materials required for construction of latrine upto plinth level having RCC pit covers, and honeycomb lining of the pit as shown in figures 2 and 3.

Item	Quantity	Cost/Unit Rs. (*)	Amount Rs.
Bricks	410 units	0.45	184.5
Cement	2 bags	55.00**	110.00

Brick ballast	0.15 M ³	75.00	11.25
Aggregate	0.1 M ³	110.00	11.00
Sand	0.5 M ³	60.00	30.00
Steel (6 mm dia)	6 kg	7.00	42.00
Pan and Trap	1 set	40.00	40.00
Trained mason	2 man days	40.00	80.00
Unskilled labour	2 man days	20.00	40.00
			<hr/>
			548.75
	10% contingencies		54.8
			<hr/>
	TOTAL		603.55
	Say		600.00

Note:

(*) New Delhi prices, 1986

(**) Rate based on government department price

For 110 mm. brick walls superstructure, the following materials are needed for the design shown on the inside back cover .

Bricks	250 Units
Cement	1 bag
Sand	0.3 M ³
Roof/Door	Stone Slab/Metal Sheet/Cloth etc.
Mason and unskilled labourer	1 man-day each

Note : 75 mm. thick wall of high quality bricks have been found adequate.

8. Promotion

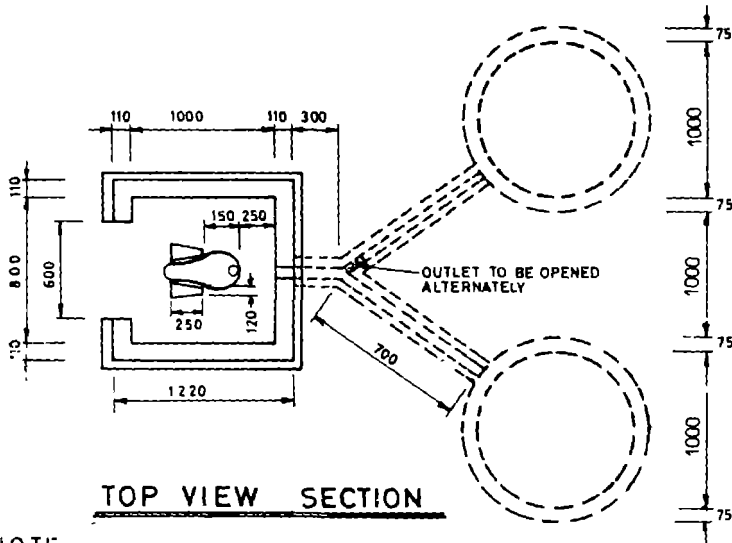
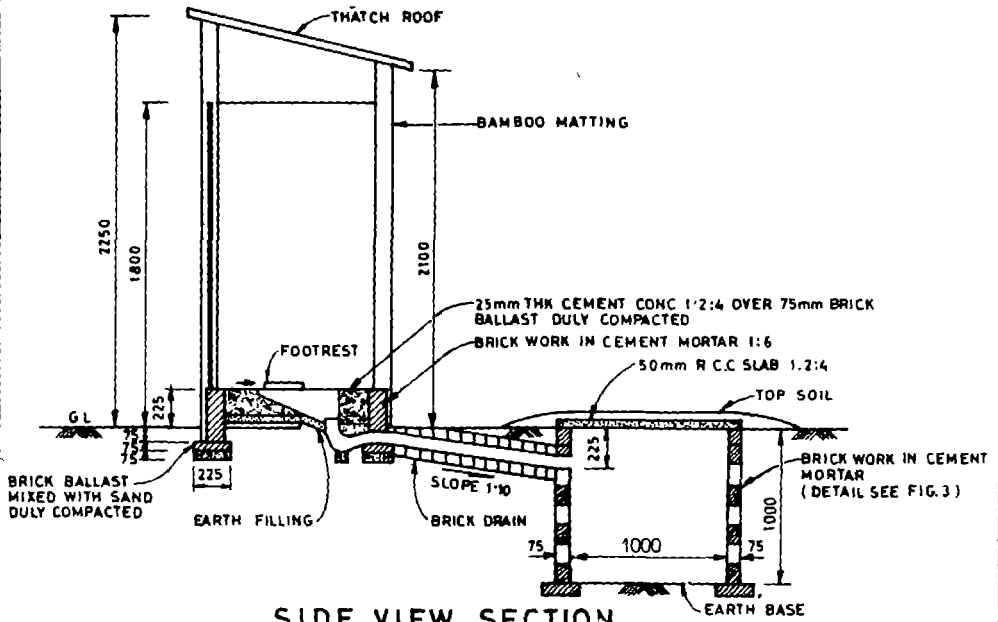
UNICEF believes that environmental sanitation is very important for the healthy growth of children, and also for reducing infant mortality rate. Because of this, UNICEF would like to encourage and assist people who want to build waterseal latrines to improve the sanitation in their environment. UNICEF is therefore willing to assist financially the potential owners of such latrines. The BDO in the area can be approached for help in getting cement at reasonable rates.

NOTE: The proper use of a sanitary latrine is one of the measures necessary to curb the spread of diseases. It needs to be complemented by the practice of personal hygiene, the protection of the domestic water source and the proper disposal of solid and liquid wastes.

WATER AND ENVIRONMENTAL SANITATION SECTION
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FIG. 2

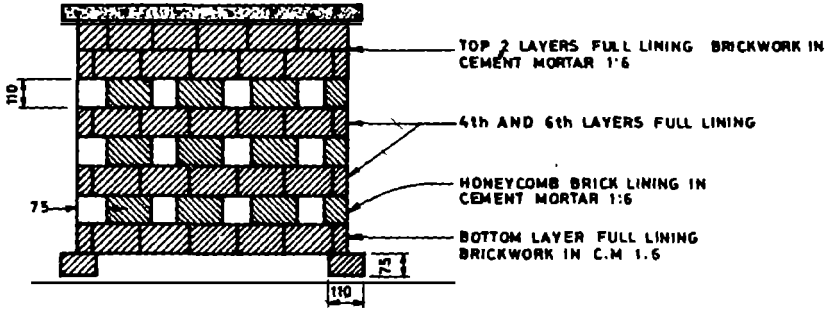
LATRINE FOR RURAL HOUSEHOLD



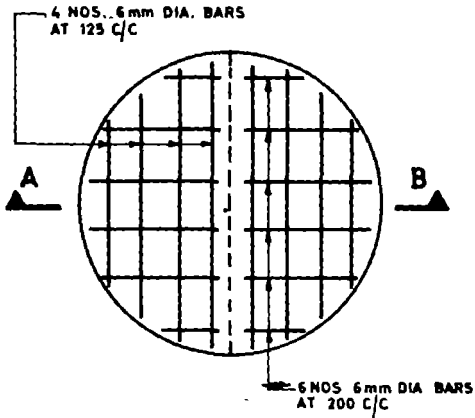
NOTE:-
 ALL DIMENSIONS ARE IN mm

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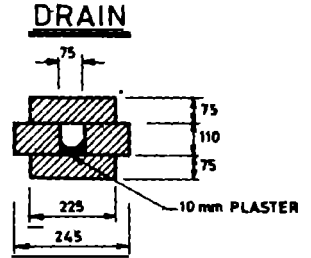
CROSS SECTION - PIT LINING



REINFORCEMENT DETAIL OF PIT COVER

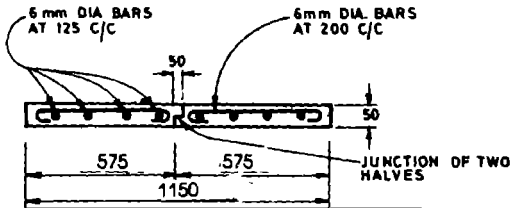


DETAILS OF BRICK DRAIN



NOTES:-

- 1 PROVIDE HANDLES TO PIT COVERS (USING 6mm DIA BARS)
- 2 ALL DIMENSIONS ARE IN mm

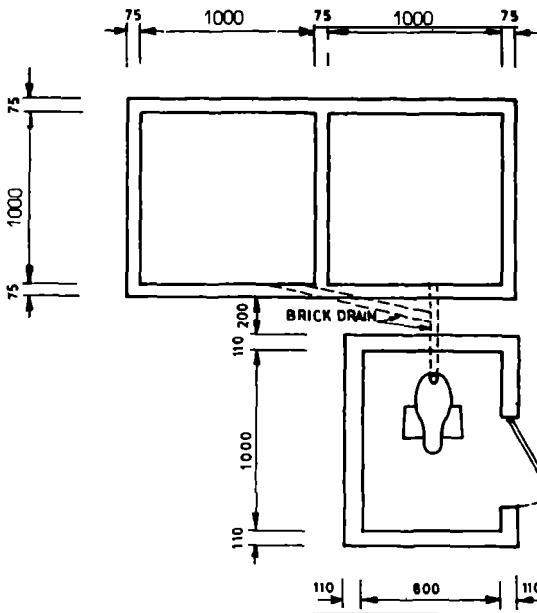
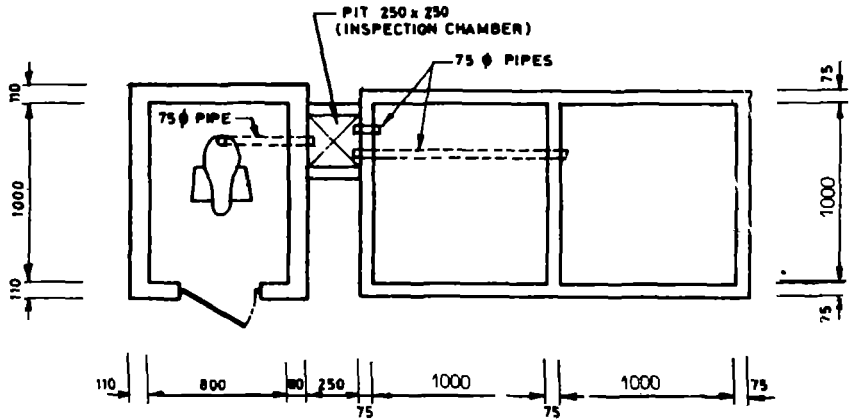


SECTION A-B

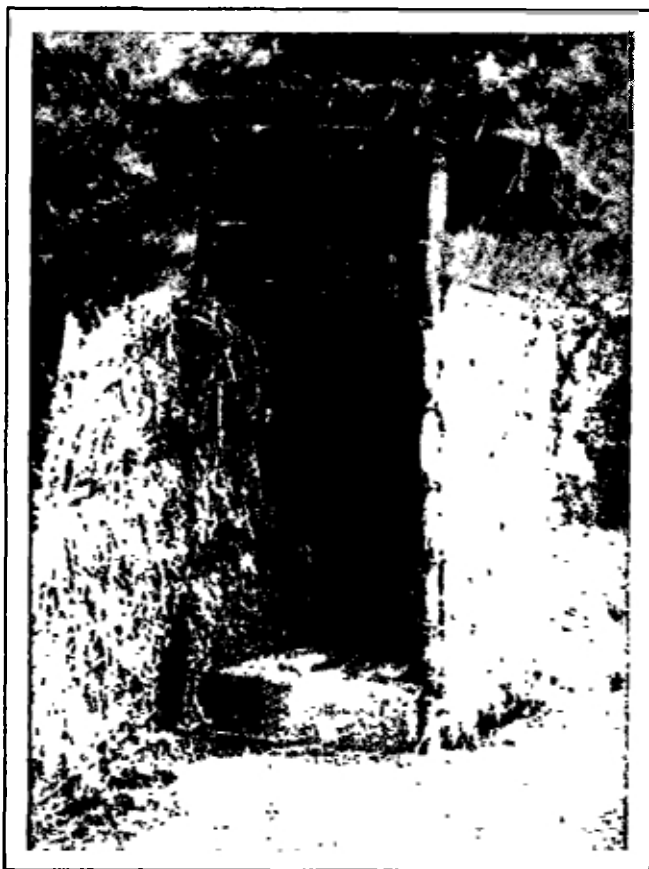
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FIG. 4

ALTERNATIVE LAYOUTS FOR HOUSEHOLDS WITH LIMITED SPACE



NOTE :-
ALL DIMENSIONS ARE IN mm



Thatch Superstructure



Brick Superstructure



Mud Superstructure

Colour coding

Documents are colour coded according to the major issues they address. The four primary colours—red, blue, green and yellow respectively—indicate the following broad categories: survival of children; protection and care; improvement of family and environmental conditions; preparation of children for life.



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