

## 6. Choosing a water-seal latrine

In parts of the world where people clean themselves with water after excreting, a latrine with a water seal pan can be used. The advantage of this over a latrine without a water seal is that the user is not in such direct contact with the latrine pit's contents. But construction is more costly and complex than a simple latrine, and a reliable source of water is needed to flush it.

This Technical Brief is designed to help you select the best type of water seal latrine for your local conditions. The right type of latrine has to be judged for each specific site: there can be no standard design for a whole country or even an area of a country. There are three types of water seal latrine, and in two of them the pit is offset from the latrine hut:

### Direct

The pan is directly above the pit.

**Advantage:** The cheapest type of water seal latrine, needing the least amount of water for flushing.

**Disadvantage:** When the pit is full, the user has to build a new latrine or dig out the pit while the excreta at the top is still fresh. However, digging out the latrine is not too difficult if the above-ground structure is light-weight. People fear falling into the pit if the latrine is directly above it.

### Offset

The pan is not directly above the pit.

**Advantages:** When the pit is full, a new one can be dug next to it. The pan does not have to be removed, and can be plumbed into the new pit.

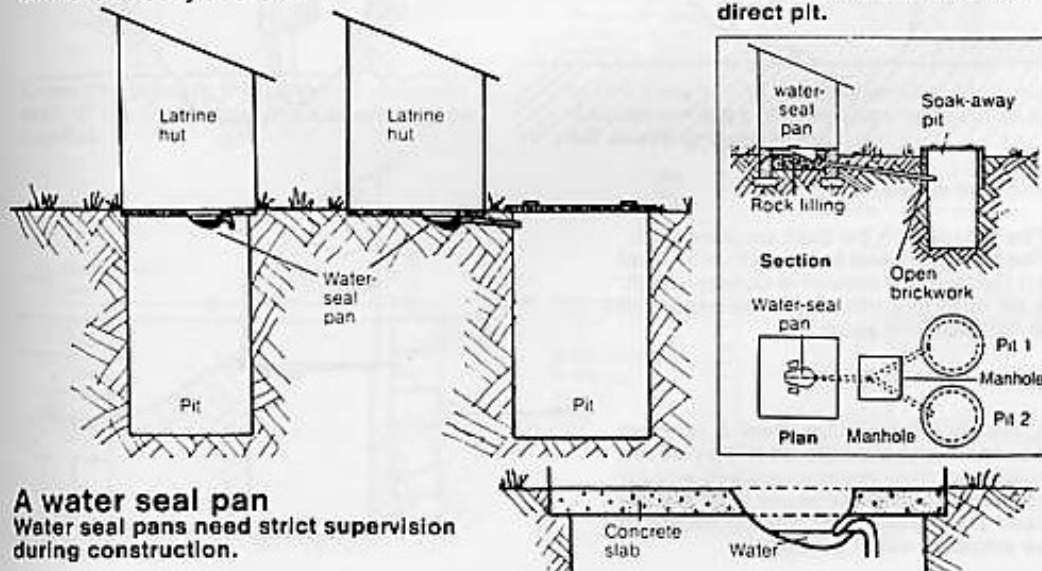
**Disadvantage:** It is more expensive than a direct pit and takes more water to flush solids down the sewer pipe.

### Double

There are two offset pits connected to the pan by a manhole.

**Advantage:** when one shallow pit is full, the other is used.

**Disadvantage:** It is the most expensive and complicated to construct and needs strict supervision during construction. It is also much more complicated from the point of view of user education, because the user has to understand fully how the latrine works. It uses more water than the direct pit.

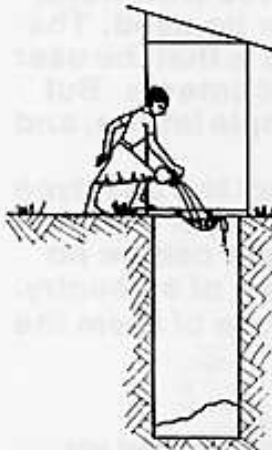


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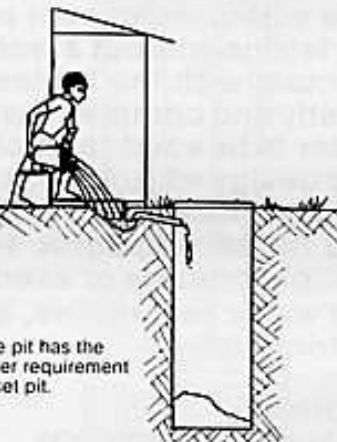
### Selecting the type of water seal

The key factor in selecting the best type of water seal latrine for each particular situation is the amount of water available to flush it.

#### Direct



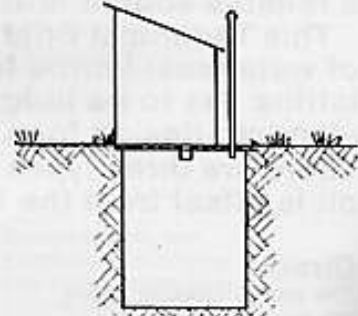
#### Offset\*



\*A double pit has the same water requirement as an offset pit.

#### VIP

If 2-4 pints of water are not available for each flush, a water seal pan cannot be used. The alternative is a Ventilated Improved Pit Latrine (VIP) which has no water seal.



### Selecting the type of pit

The deeper the pit, the longer it will last. It should ideally be at least 3m deep and 1-1.2m in diameter. Such a pit could be used by one family for 20 years. You may not be able to dig as deep as 3m because

There is hard rock near the ground surface.

OR

The water table is too close to the ground surface.

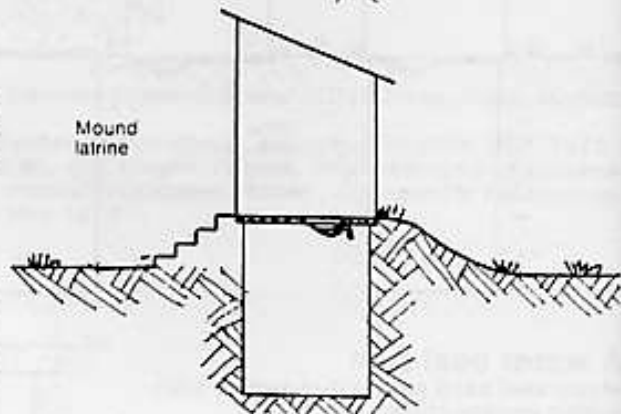


In these cases,

The latrine can be built on a mound. The pit walls need to be built up at least 4ft (before the mound is constructed). A pit built like this might be expected to last about 8 years.

OR

A double pit could be used. It matters less than with a single pit if the pits are shallower than recommended, and fill up more quickly, because they can be used alternately. But one pit needs to be emptied every two years.

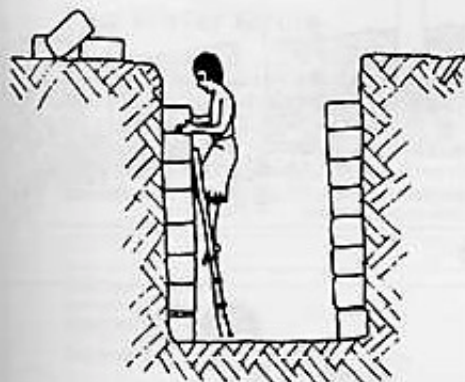


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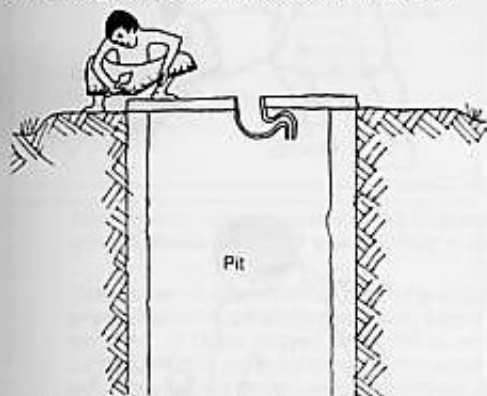
### Construction

Dig the pit in the dry season when the water table is lowest.

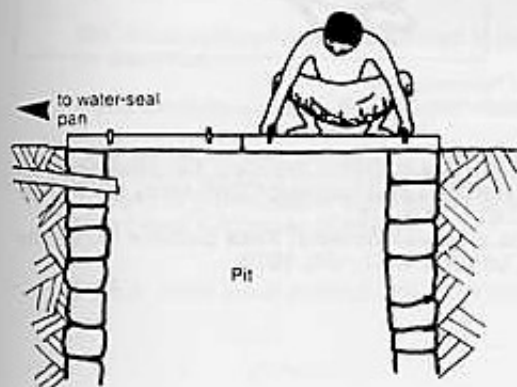
If the soil is loose, all of the pit should be lined.



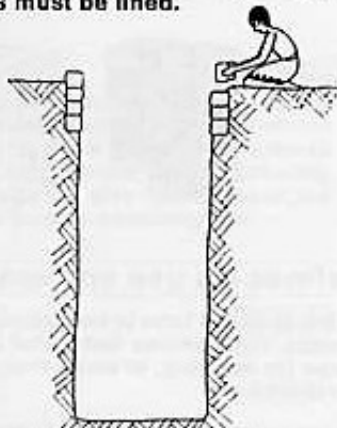
For the direct pit latrine, the slab and water seal pan should be securely fixed to the lining of the pit with cement mortar.



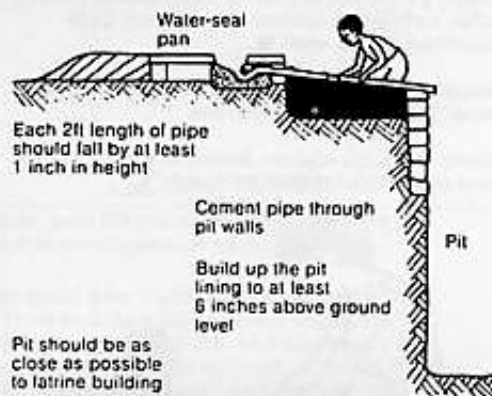
Cover the pit with a reinforced concrete slab. If the pit is large, two slabs may be needed.



Even if the soil is very firm, the top 18 inches must be lined.



For the offset latrines, lay the pipe connecting the water seal pan to the pit.



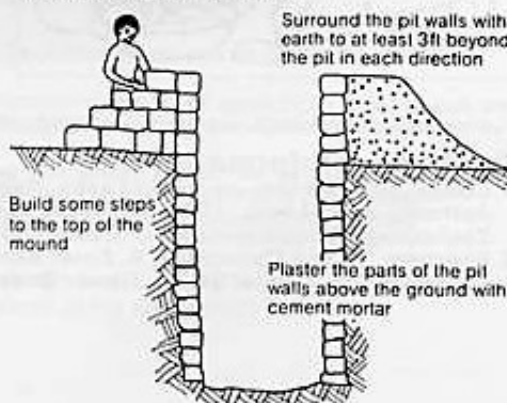
Each 2ft length of pipe should fall by at least 1 inch in height

Cement pipe through pit walls

Build up the pit lining to at least 6 inches above ground level

Pit should be as close as possible to latrine building

In the case of the mound latrine, first line the sides of the pit and build the lining up to 4ft above ground level.



Surround the pit walls with earth to at least 3ft beyond the pit in each direction

Build some steps to the top of the mound

Plaster the parts of the pit walls above the ground with cement mortar

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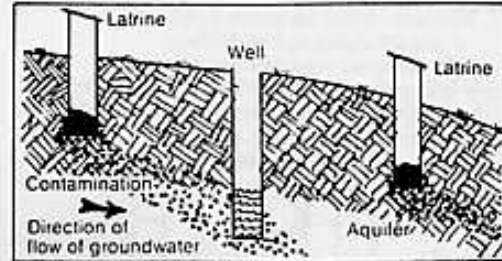
### Latrine hut

The latrine hut is the least difficult part of the latrine to make. Construct it to local preference.



### Caution!

It is very important to build latrines as far as possible from wells, as they can contaminate them.



### Guidelines on use and maintenance

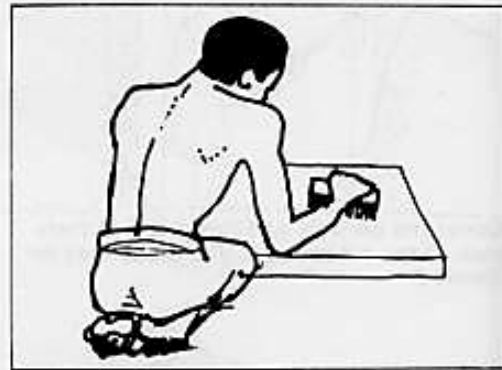
The latrine does not have to be flushed with clean water. You can use water that has been used for washing, or water that is too salty for drinking.

To flush the bowl successfully, *hurl* the water down

Wash your hands (using soap and a brush) after using the latrine, and make sure children do as well

Avoid putting any solids at all down the bowl (eg paper and leaves)

Keep the slab clean. Scrub it with a brush and use disinfectant or soap.



Text: Andrew Cotton, WEDC Group, Loughborough University of Technology, UK.  
Illustrations: Susan Ball, WEDC Group, Loughborough University of Technology, UK.

### For further information

1. Cotton, A. P. *Pit latrines for Sri Lanka*, Report for the National Housing Development Authority of Sri Lanka, 1985. Available from WEDC, Loughborough University of Technology, Loughborough, Leicestershire LE11 3TU, UK.
2. Feachem, R. and Cairncross, S. *Small excreta disposal systems*, Ross Bulletin No 8, The Ross Institute, Keppel Street, Gower Street, London WC1, UK, 1978.