

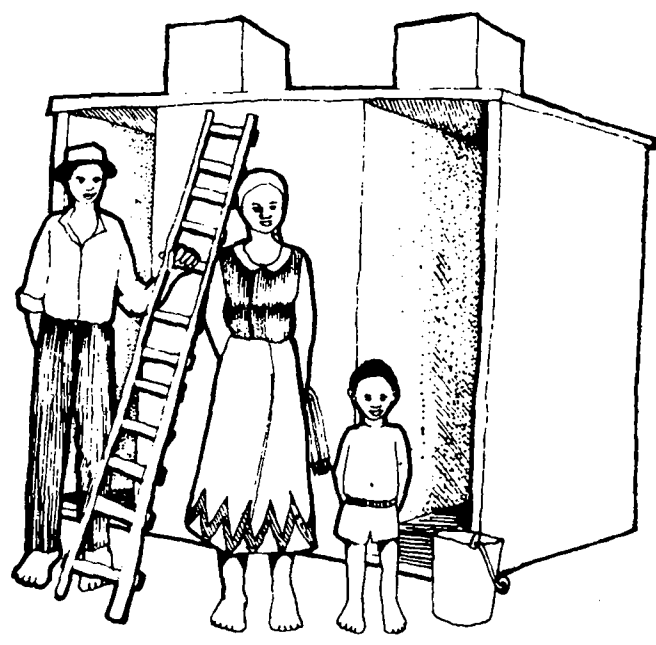
2662

3 2 1 . 4
8 8 D O

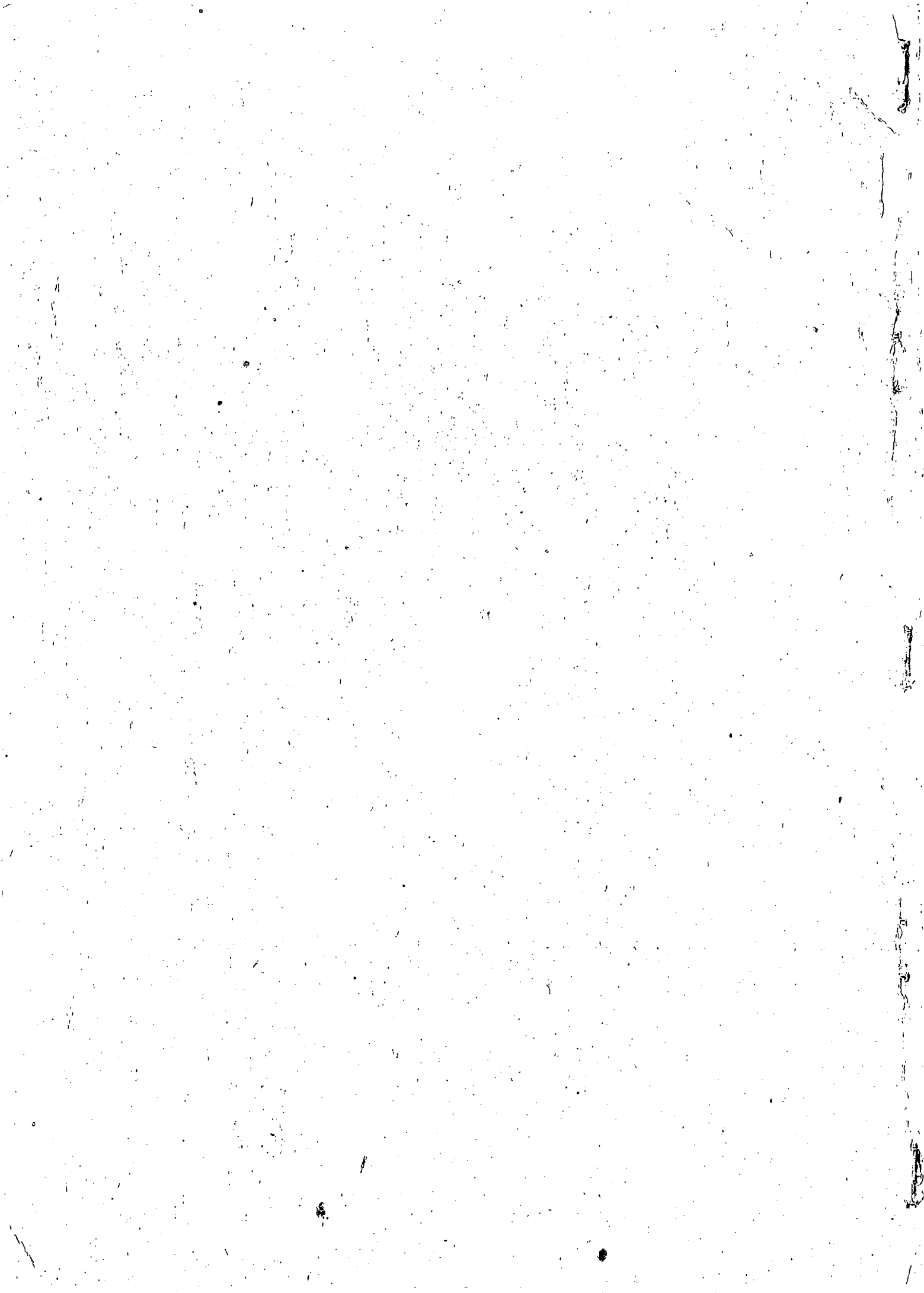


Ministry of Health
REPUBLIC OF ZIMBABWE

*THE DOUBLE
COMPARTMENT BLAIR
LATRINE BUILDER'S
INSTRUCTION MANUAL*



321.4-8800-2662



Acknowledgements

This manual describes how to build Double Compartment Blair Latrines. It is intended for use by Health Assistants and latrine builders.

The book was originally developed by Sue Laver of the Department of Community Medicine, University of Zimbabwe under contract to Interconsult A/S. Interconsult were commissioned by MEWRD to develop the materials to support an integrated water, sanitation and health education programme in Manicaland with the financial assistance of NORAD (the Norwegian Agency for International Development).

Many people were consulted in the course of developing the manual. Particular acknowledgement must be made to Dr Peter Morgan and his team at the Blair Research Laboratory for the development of the technology and for their detailed comments and guidance in developing the present text. The Public Health Inspectorate of the Ministry of Health are responsible for the promotion of rural sanitation in Zimbabwe and have contributed greatly to the development of the manual. In particular the manual has benefitted from the long experience in construction of Double Blair Latrines acquired by the Health Inspectorate staff in Manicaland Province. The manual has also benefitted from technical assistance from the UNDP/World Bank project assisting the Ministry of Health.

Illustrated by Kors de Waard.

2nd edition amended and prepared by the Ministry of Health

December 1988

15N 2662
321.4 8800

Printed by Direct Mail.

The people of Zimbabwe are building latrines. Join them!

Good sanitation is now possible for many families in rural Zimbabwe.

This is because the people are co-operating in latrine building projects. The Blair ventilated pit latrine is very popular because:

- * it does not smell
- * it does not attract flies
- * it is safe to use
- * it is very private
- * it costs little to build
- * it can be used as a private bathing place
- * it is easy to maintain and lasts for many years.

It is the wish of the Government that each family in the community should have its own Blair ventilated pit latrine.

Join other Zimbabweans! Build a Blair Latrine!



Measurements

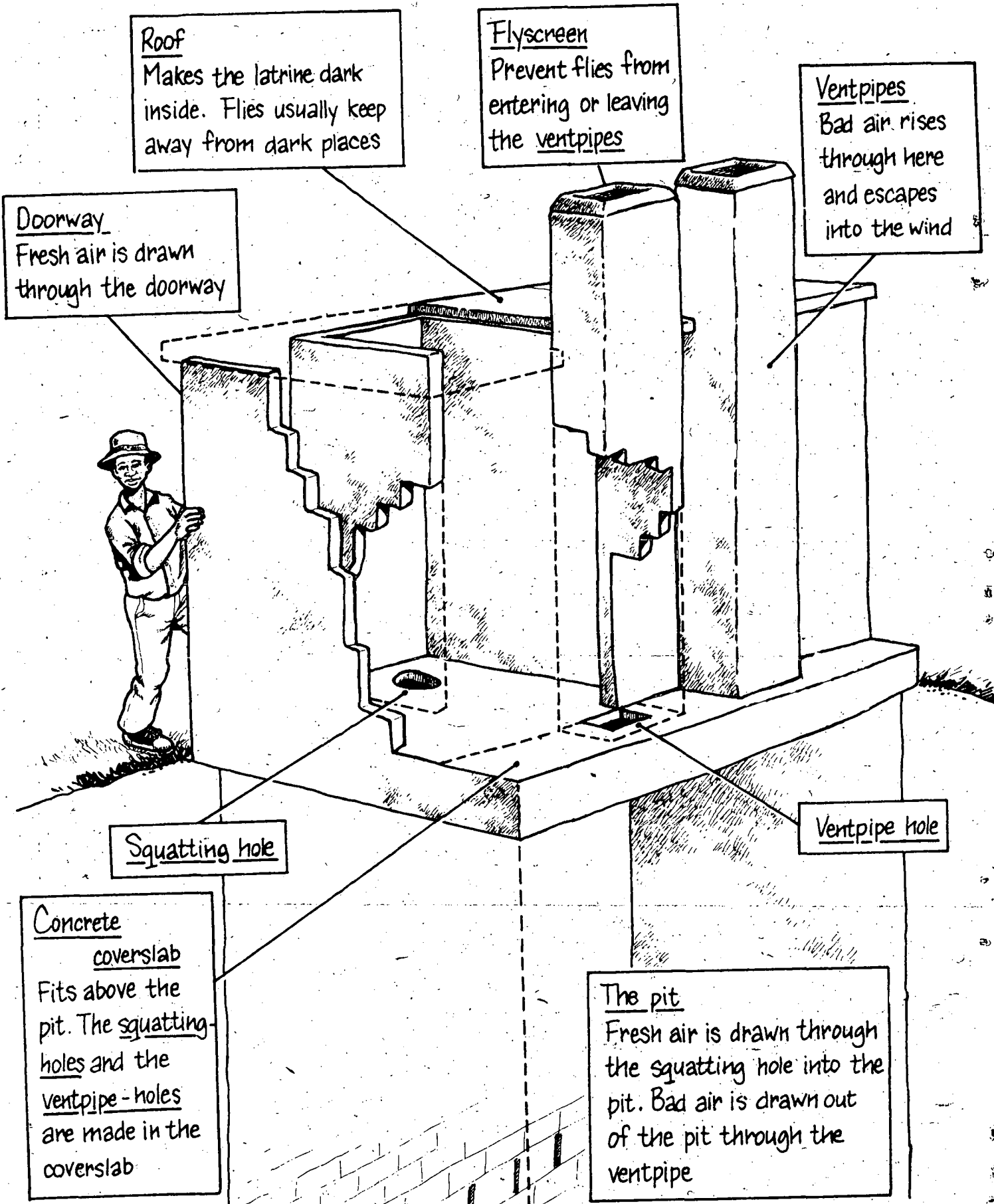
100 cm = 1,00 metre (m)

1" = 2,5 cm

1 foot = 30 cm

3'3" = 1,00 m

A double compartment Blair Latrine



Find out about building a latrine

There are people in each area of the Province who can share information about latrine building.



To find out more talk to

- * members of the VIDCO
- * village health workers
- * health assistants in your area
- * community development workers
- * others who have built a good latrine.

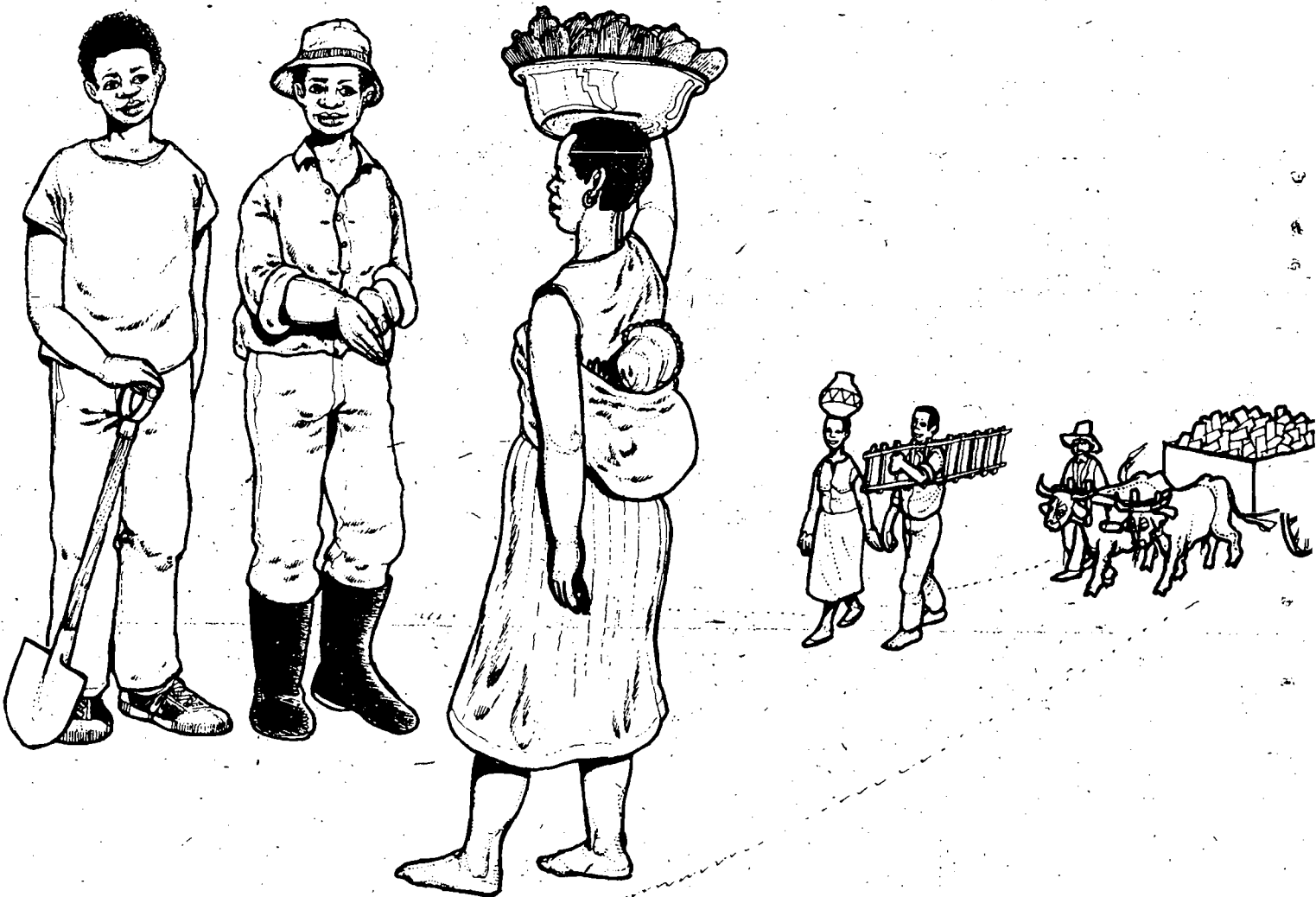
Help each other to build latrines!

Many latrines can be built in one area if people help each other to:

- * dig the hole
- * collect river sand for building
- * collect aggregate (small stones) for the concrete
- * make bricks for construction
- * collect cement and wire from your local centre.

People should also help the builder by:

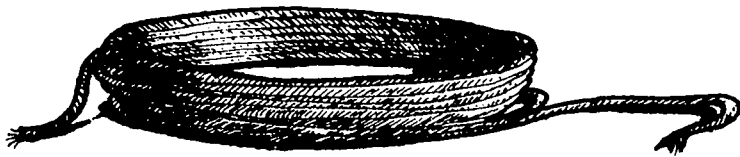
- * providing water for mixing the cement
- * mixing the cement
- * lifting the concrete slabs.



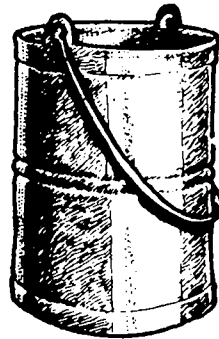
Remember! Group effort means quicker progress!

Different equipment is necessary for building a latrine!

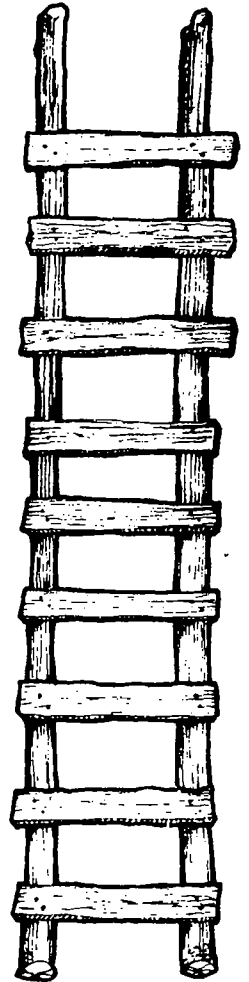
Equipment provided by the household



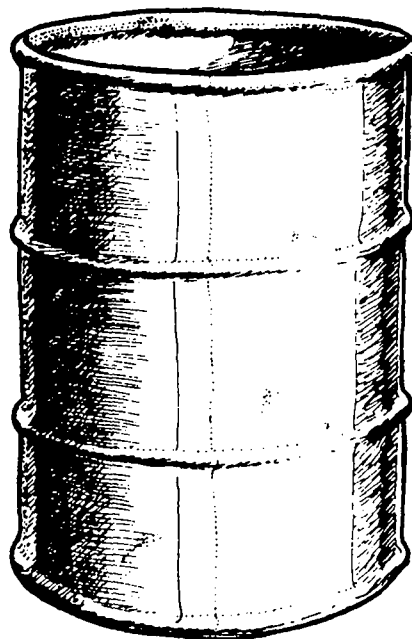
rope



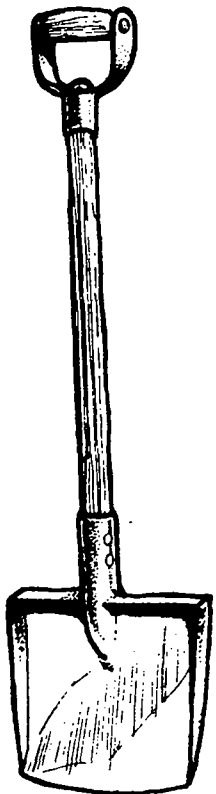
bucket



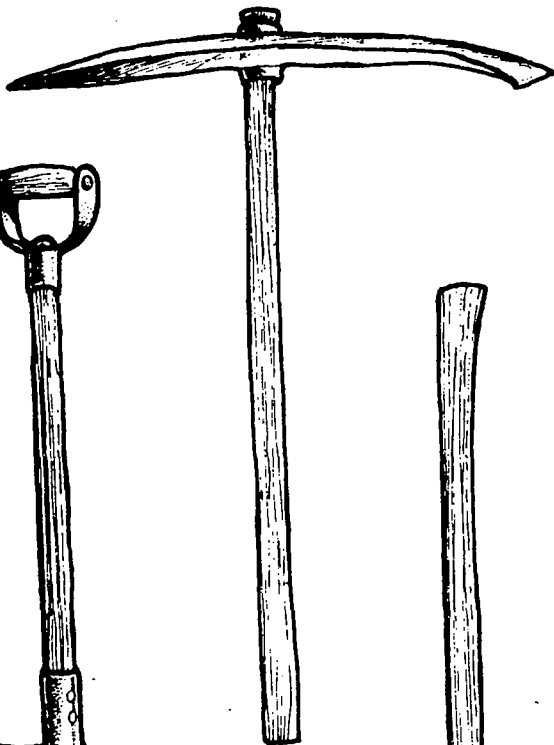
ladder



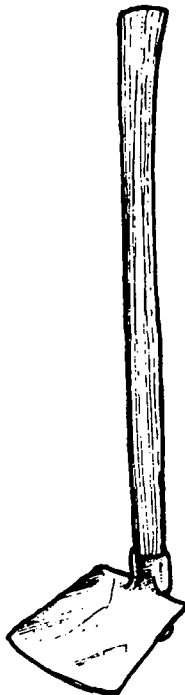
44 gall. drum



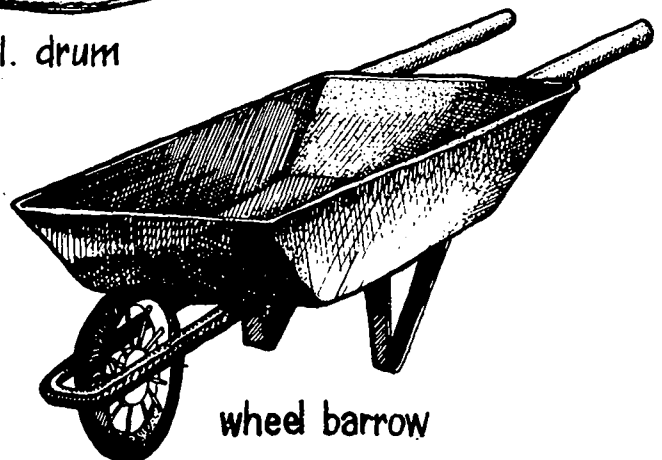
shovel



pick



hoe

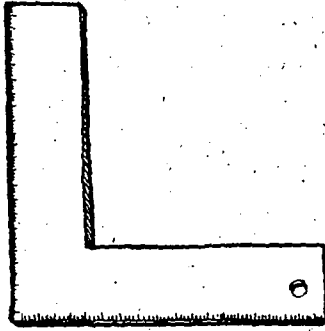


wheel barrow

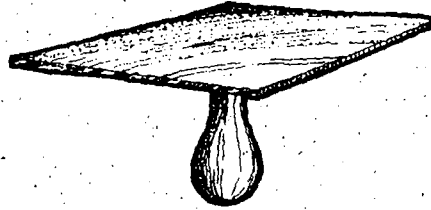
Equipment required by the builder



straight edge



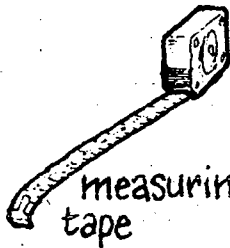
square



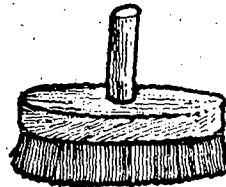
mortar hook



iron float



measuring
tape



brush



wooden float



trowel



pliers



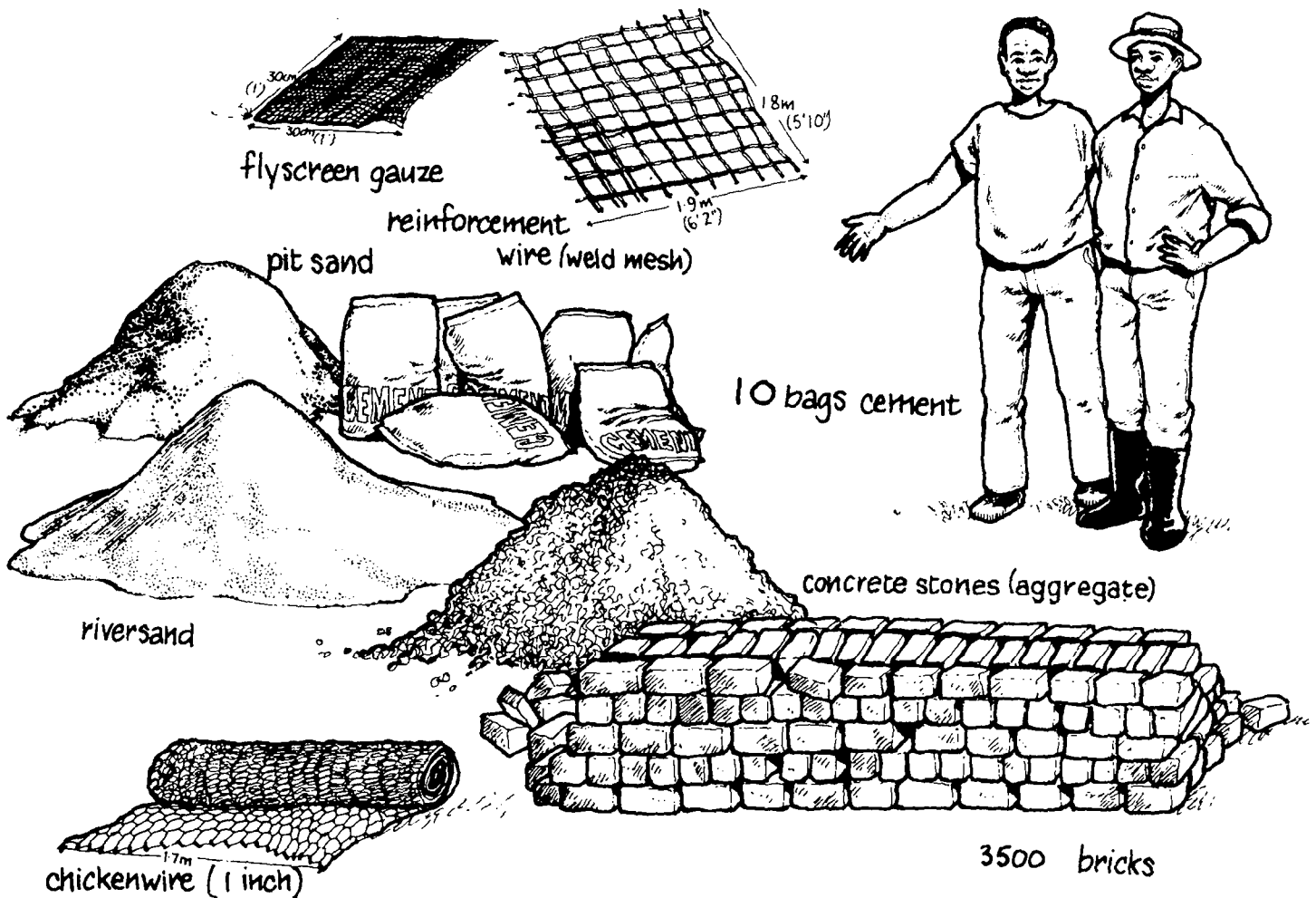
string



spirit level

Have this equipment ready at the site before the project starts!

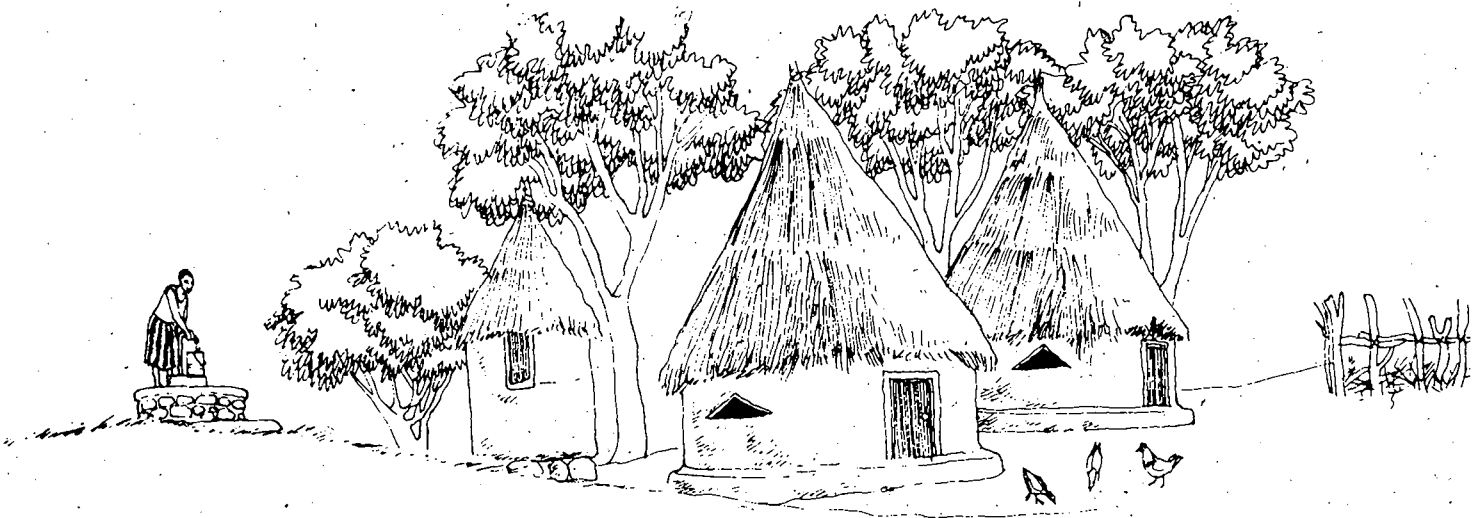
A builder needs different materials for building a latrine!



To build one double compartment latrine, a builder will need

- * 3 500 bricks (stones are sometimes used)
- * 10 bags cement
- * 6 wheelbarrows of clean river sand
- * 6 scotch-carts of pit sand (white sand)
- * gravel chips or small concrete stones
- * weld-mesh reinforcing wire (or 8 gauge wire)
- * flyscreen gauze for the ventpipe (aluminium or stainless steel)
- * bricks are used for shaping the squatholes and ventpipes.

Choose a good building site



Ask the Village Health Worker or Health Assistant to help you to choose a good site to build your latrine



Choose a site that is

* near the user's home

so everyone can easily reach the latrine, particularly after dark

* downhill from the water supply

so that waste from the latrine does not spoil the water for domestic use

* on firm soil

so that the building will not be in danger of collapsing

* on slightly raised ground

so that rain water can drain away easily

* away from dense vegetation

so that air can move freely.

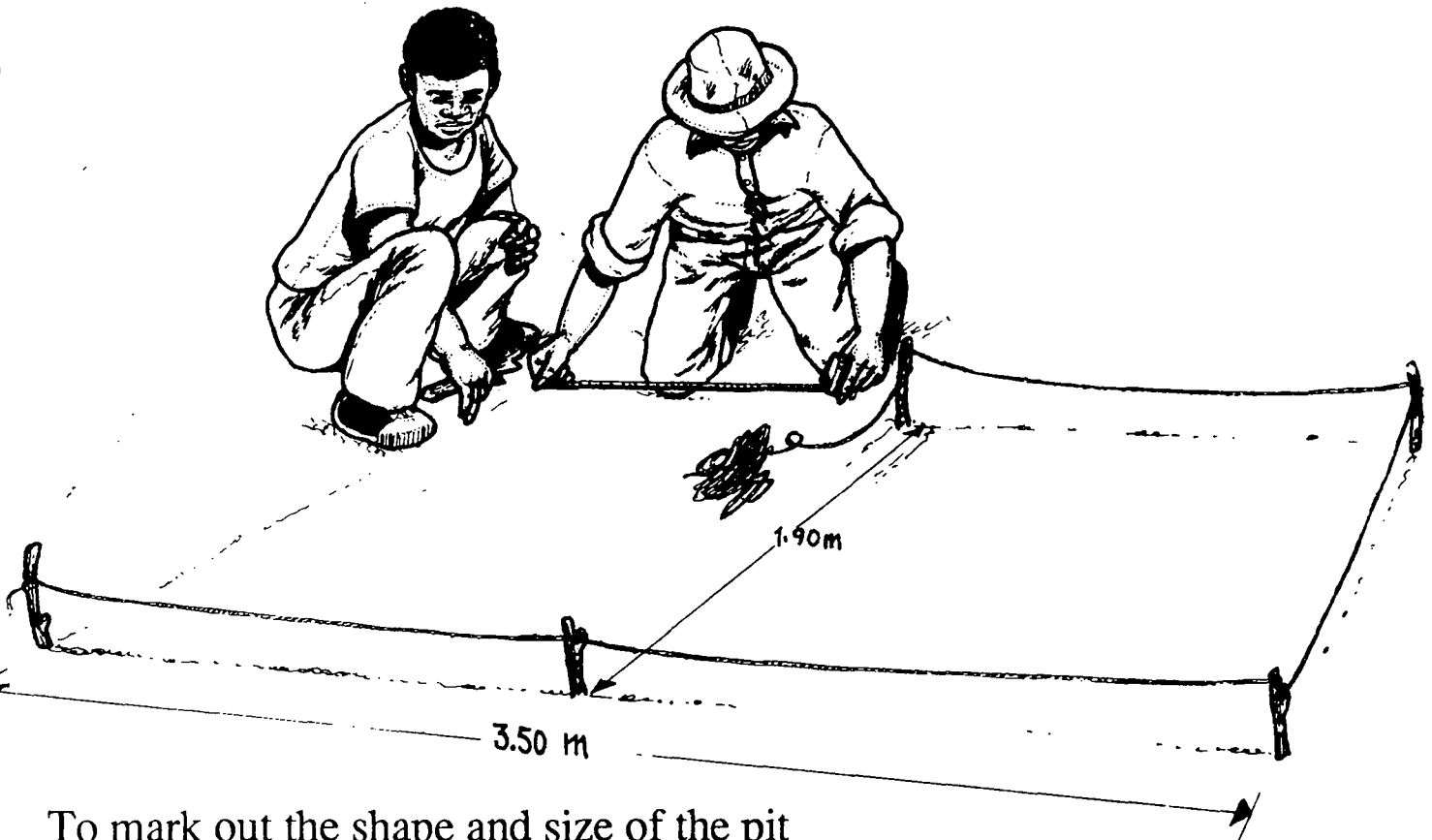
Step 1

Mark out the shape and size of the latrine pit

Before digging, mark out the shape of the latrine pit.

For a double compartment latrine

- * the shape is rectangular
- * the size is 1,9 m (6'2") by 3,5 m (11'6").



To mark out the shape and size of the pit

- * choose the site so that the latrine entrance faces the wind
- * place pegs in the ground
- * tie string to the pegs
- * use string as a guide to mark the exact shape and size of the latrine by drawing in the ground with a stick.

Measure carefully

Check measurements with those in the picture

Build according to instructions

Step 2

Dig the pit latrine

- * Dig the pit at least 3 m (10') deep.
- * Keep the sides of the pit straight.
- * Keep the pit size 1,9 m (6'2") by 3,5 m (11'6") and rectangular in shape from top to bottom.



Remember! Dig only one rectangular pit.

Build according to instructions

Step 3

Line the pit to prevent collapse

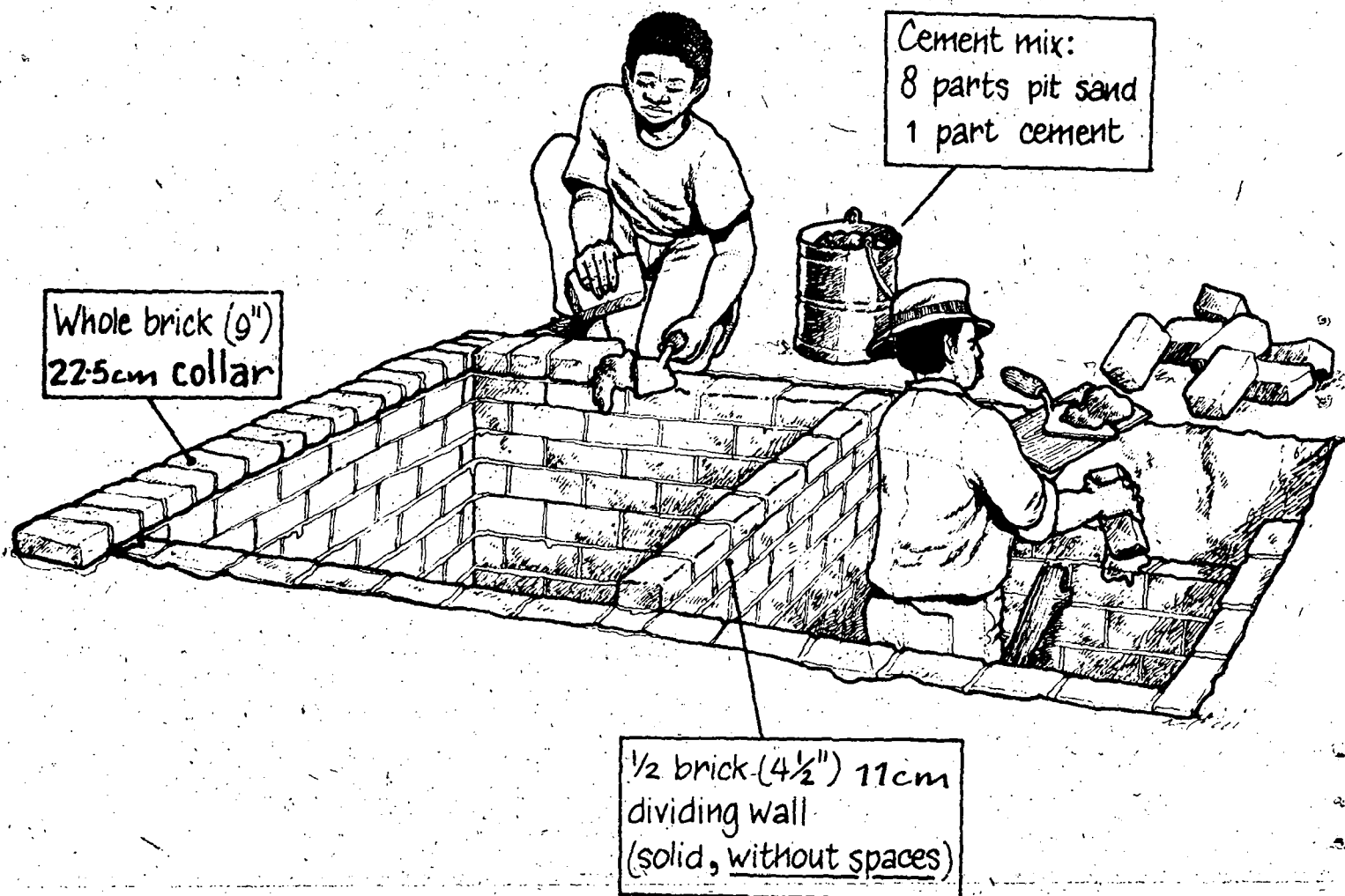
Build a 4,5" dividing wall inside the pit

Build a 9" brick collar around the edge of the pit

- * Line the pit with burnt bricks to prevent collapse.
- * Line from the bottom of the pit upwards, do not line the base of the pit.
- * Fill in spaces between lining and sides of pit.

Build a 4,5" dividing wall inside the pit

- * A 4,5" brick or stone dividing wall is built inside the pit. The dividing wall divides the pit into two separate compartments.
- * The dividing wall is solid. Do not leave spaces between the bricks used to build this wall.
- * Build the dividing wall from the base upwards until it is one course above ground level.
- * Keep the dividing wall straight!



Build a 9" brick collar around the edge of the pit

- * Lay one course of bricks around the edge of the latrine pit. This makes a 9" (22,5 cm) brick collar.

The collar

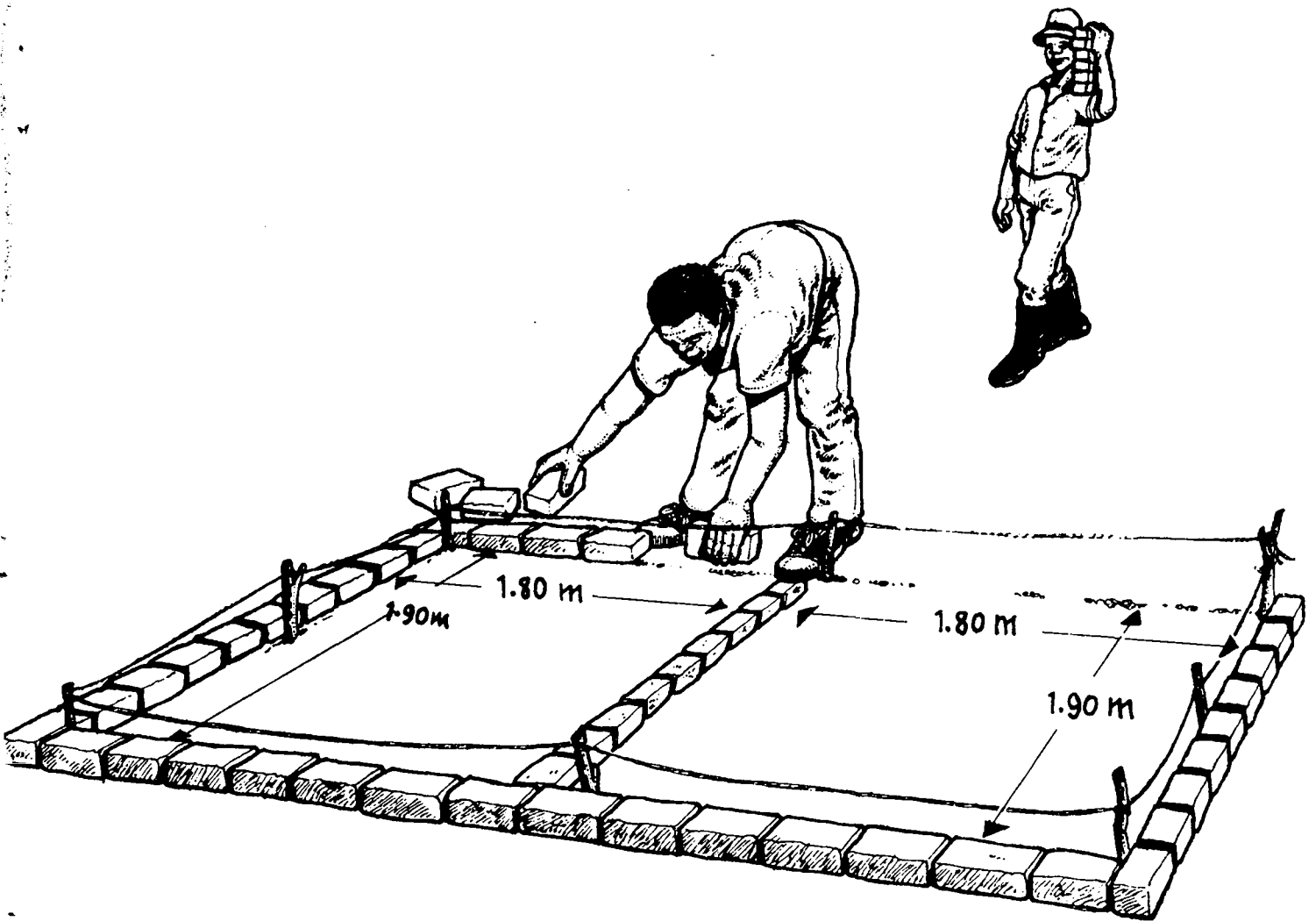
- * provides a strong foundation for the cover slab and superstructure
- * provides a good seal under the slab
- * prevents water from eroding the sides of the pit.

Build according to instructions

Step 4

Mark out the shape for the cover slabs

The cover slabs for the double compartment Blair latrines are made in two pieces.



REMINDER!
Make the cover slab
in two pieces

This is necessary because a **single slab**

- * breaks easily when lifted
- * is very heavy to lift
- * is not as strong as two separate slabs.

In this way each compartment of the pit has its own cover slab.

The cover slabs rest on the brick collar and the wall dividing the pit.

- * Mark out the shape of the cover slabs as for step one.
- * Choose a level, sandy place for this task.
- * Use bricks to mark the edge of the mould.
- * Each slab measures 1,90m (6'2") by 1,80 m (5'10") and is rectangular in shape.

Check measurements carefully!

Remember! Place old plastic bags or sand on the ground before casting the slabs. This prevents sticking and makes the slabs easier to lift.

Build according to instructions

Step 5

Make the cover slab in two pieces

Have cement, aggregate (concrete stones), river sand, weld-mesh reinforcing wire and brick moulds ready for this task.

Concrete mix:

- 4 parts concrete stone
- 2 parts clean river sand
- 1 part cement

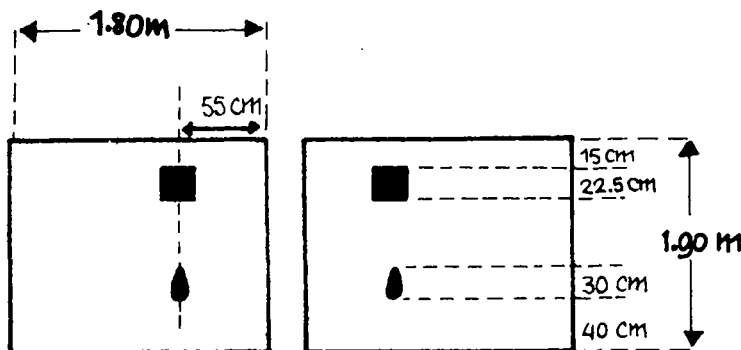
NOTE: If stone is not available, use a mixture of 5 parts washed river sand and 1 part cement



brick moulds

Plastic bags

Make the coverslab in two pieces.
Measure carefully!
Use this picture to assist you.



This is how you make two cover slabs

Inside the moulds

- * mark the positions of the squatting holes and ventpipes with bricks
- * make a concrete mix of:

	Builders buckets
4 parts stone	8
2 parts river sand	4
1 part cement	2

- * place half the concrete mixture around the brick moulds which mark the squatting and ventpipe holes.

Remember!

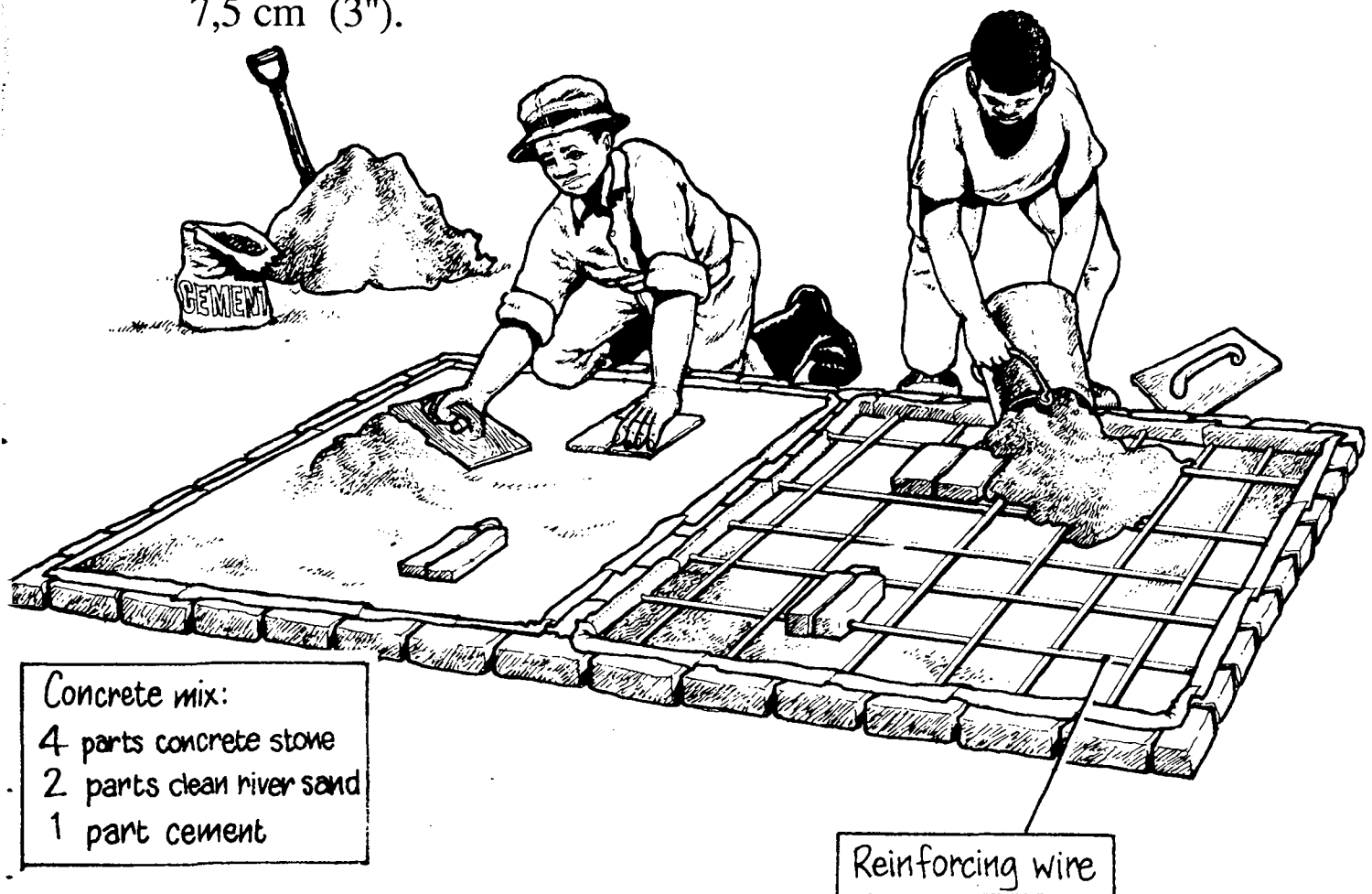
- * The ventpipe holes are on opposite sides to the squatholes.
- * The ventpipe holes measure 22,5 cm(9") by 22,5 cm(9") internally when completed.
- * The squatholes are shaped so that they are a suitable size for adults and children. These should be about 30 cm long and 15 cm wide.

Follow the measurements given in the picture carefully!

Build according to instructions

Step 6 Complete the cover slabs

- * Place weld-mesh reinforcing wire on top of the first layer of concrete.
- * If 8 gauge (3 mm) wire is used, then cut to size and place 10 cm (4") apart on top of first layer of concrete.
- * Reinforcing wire must not go on top of brick moulds.
- * Pour the remaining concrete over the reinforcing wire.
- * When completed the thickness of each slab is 7,5 cm (3").



Remember!

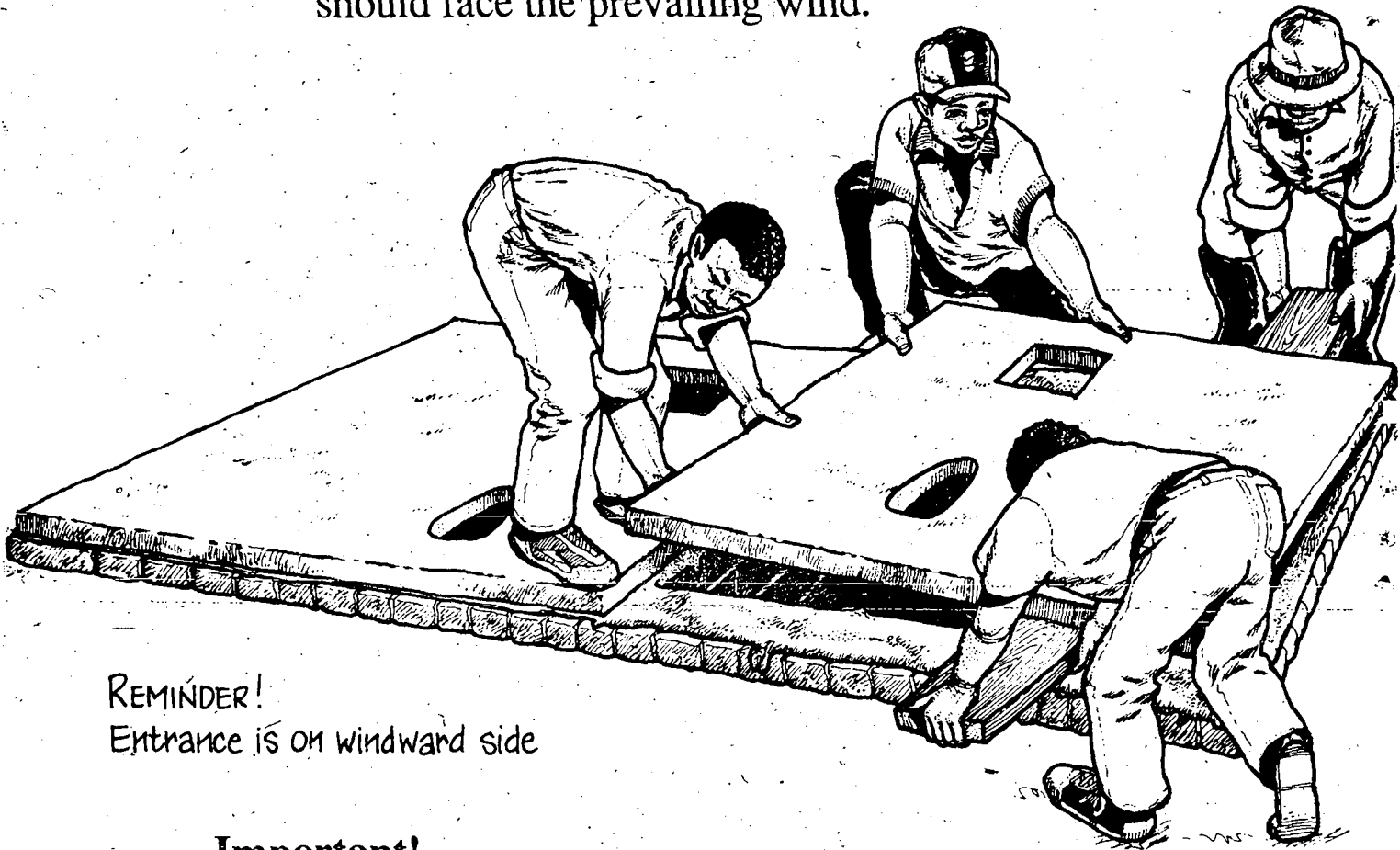
- * Cover the slabs with wet sacks or wet sand. Leave to cure for 7 days, or longer if possible.
- * Loosen the brick moulds used to mark the squatting holes and the ventpipes.

Build according to instructions

Step 7

Position the cover slabs over the pits

- * Place cement mortar onto the brick collar.
- * Position the cover slabs over the brick collar.
- * Position the cover slabs so that the squatholes are on the same side as the entrances. The entrances should face the prevailing wind.



REMIINDER!

Entrance is on windward side

Important!

A good seal between the cover slabs and the collar

- * prevents flies from entering the pits
- * prevents erosion of the pits
- * prevents smell coming from inside the pits.

Use cement mortar for this task.

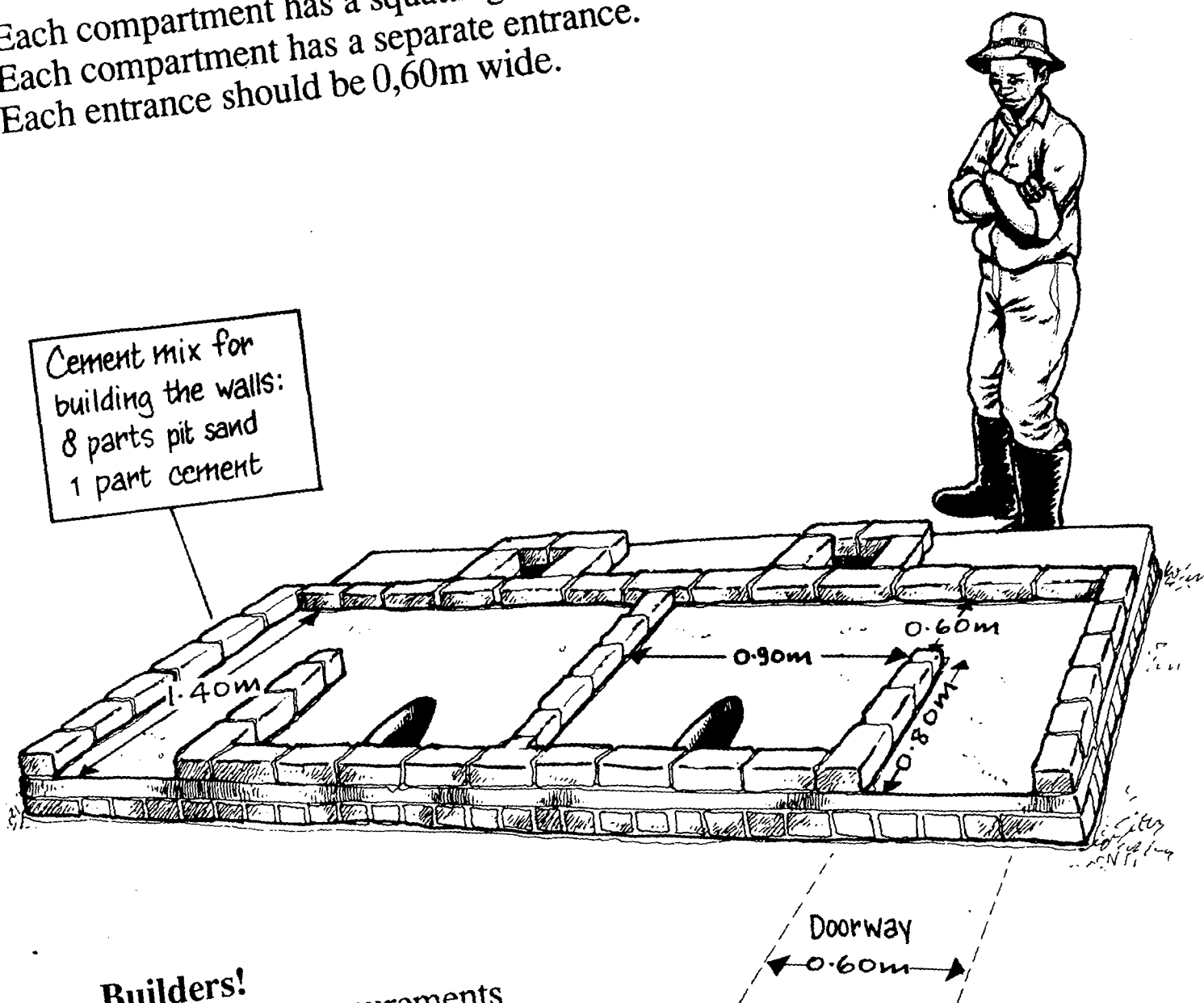
Remember! Position the cover slabs so that the ventpipe holes are above the pits

Build according to instructions

Step 8 Make the foundations for the superstructure

The structure is divided into two compartments:
* one for men * one for women

Each compartment has a squatting hole and a ventpipe hole.
Each compartment has a separate entrance.
Each entrance should be 0,60m wide.

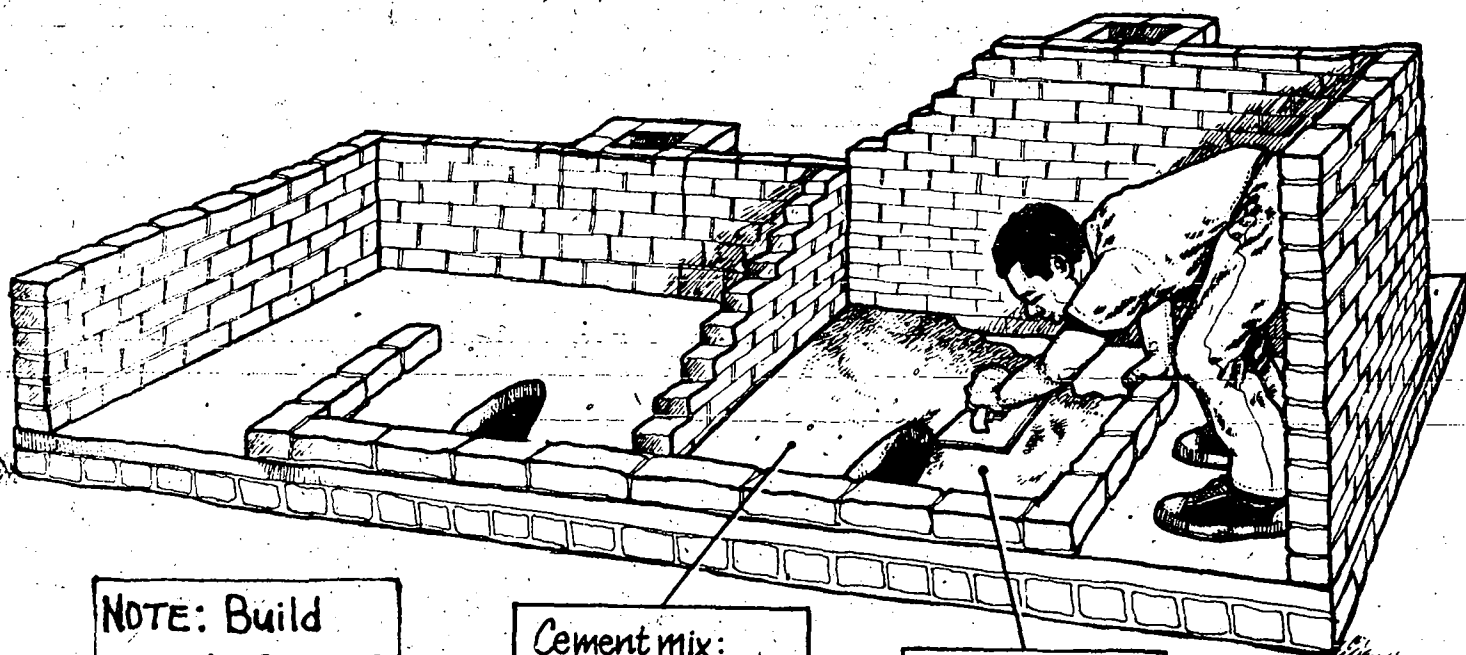


Builders!
Check your measurements carefully with those given in the picture.

Remember to build a dividing wall between the two compartments
Build according to instructions

Step 9 Build up the ventpipes and the superstructure

- * Build the latrine walls to a height of 1,80 m.
- * Build the ventpipes to a total height of 2,70 m.
The ventpipes rise 60 cm above the finished height of the superstructure.
- * Plaster the inside of the latrine compartments.
- * Plaster the floors and make them slope towards the squatholes. This helps waste and water to drain easily.
- * Smooth the plaster on the floors. This makes the floors easier to clean.



NOTE: Build one side first if funds are low (see page 27)

Cement mix:
3 parts riversand
1 part cement

Slope the floor towards the squattting hole

Important!

- * Air needs to move freely through the ventpipes.
- * Do not block the ventpipes with mortar when building.
- * If asbestos is used for the roof, then the superstructure wall can be raised 15 cm (6") higher at the entrance side. This will provide a slope for the roof.

Build according to instructions

Step 10 **Make the roof slabs**

The roof slabs are made in four pieces. In this way they are easier to lift above the superstructure.

- * Prepare the roof slabs as for the cover slabs (step 5) but according to the measurements given in the picture below. Use a cement mixture of 3 parts river sand to 1 part cement for this task.
- * Use one inch chicken wire for reinforcement. Cut to size so that wire lies within brick mould.
- * The roof slabs are 3 cm in thickness when completed. The first layer of cement mix is 1 cm thick. The final layer is 2 cm thick.
- * Leave to cure for 7 days or longer if possible. Keep wet at all times.
- * Lift the slabs carefully to prevent cracking.

Note!

Asbestos can also be used for roofing. It is better to slope the asbestos roof so that water can run off more easily. This is done by raising the entrance side of the superstructure by 15 cm (6").

Build according to instructions

Follow these steps carefully

Height of ventpipes: 2.70 m

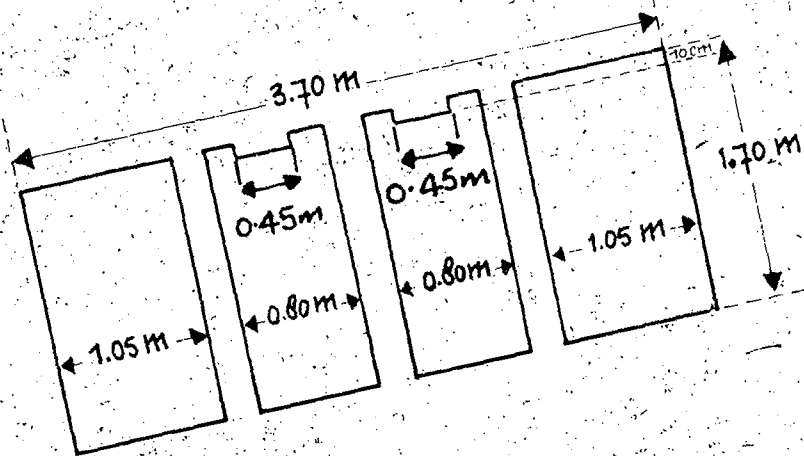
Height of walls: 1.80 m

Cement mix:
3 parts river sand
1 part cement

Chickenwire
reinforcement

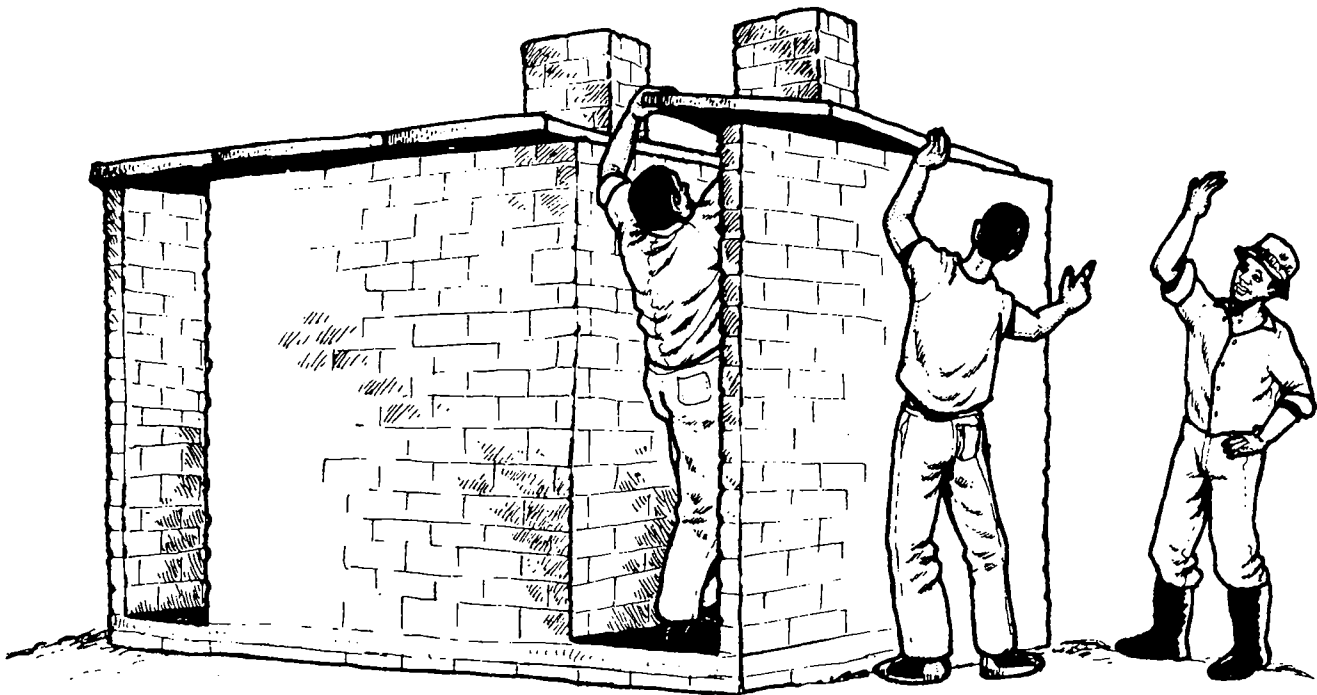
Plastic
bags

Make the roof slab
in 4 pieces



Step II Lift the roof slab onto the superstructure

Lift the roof slabs, one by one, onto the superstructure. Position carefully and mortar between the slabs.



Important!

It is necessary to mortar the roof slabs in position so that no light shines through the roof. This makes the latrine darker inside. Flies are not attracted to darkness.

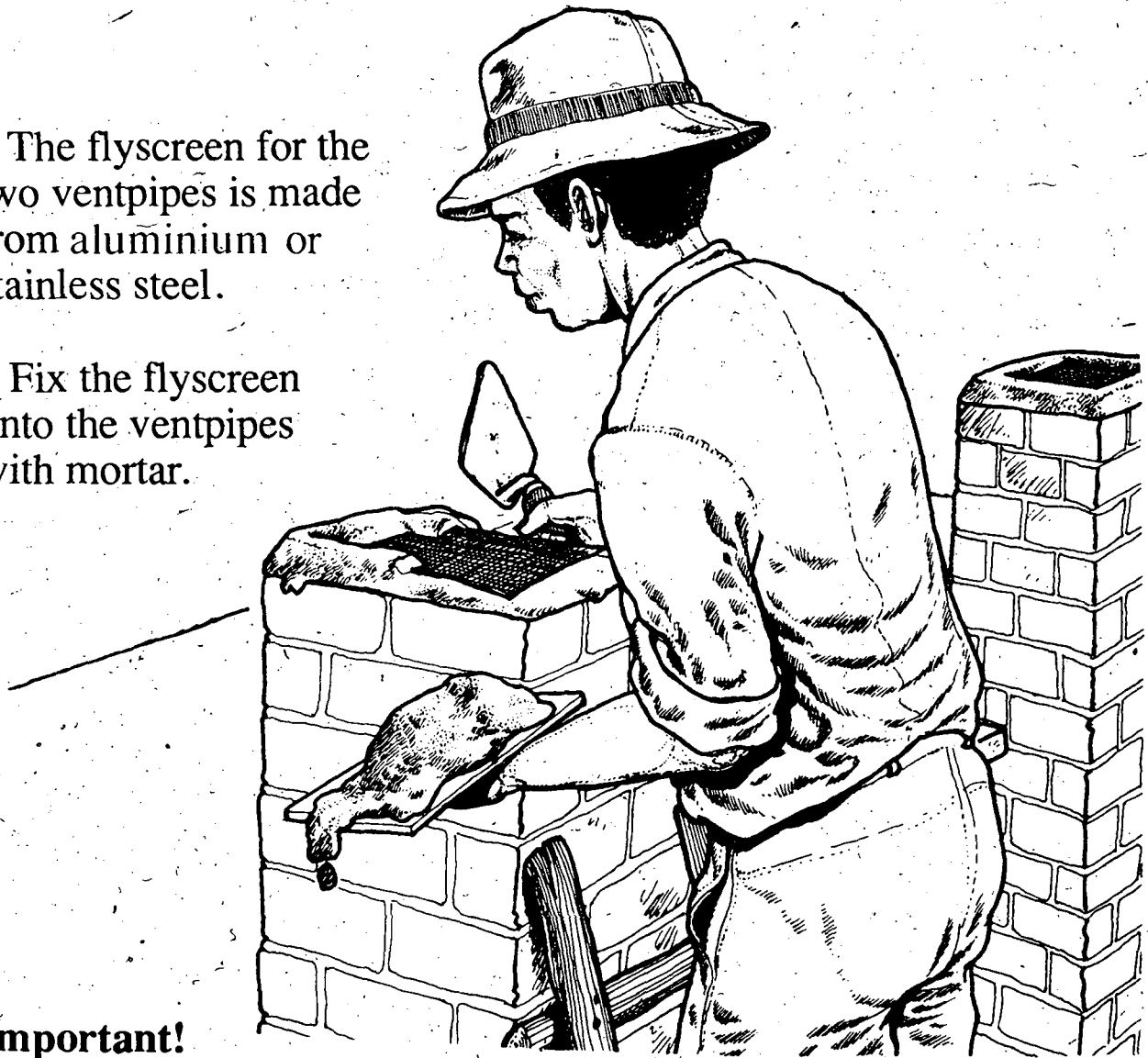
Build according to instructions

Step 12

The double compartment latrine is completed when flyscreens are fitted to the ventpipe.

* The flyscreen for the two ventpipes is made from aluminium or stainless steel.

* Fix the flyscreen onto the ventpipes with mortar.



Important!

When completed the latrine will last longer if:

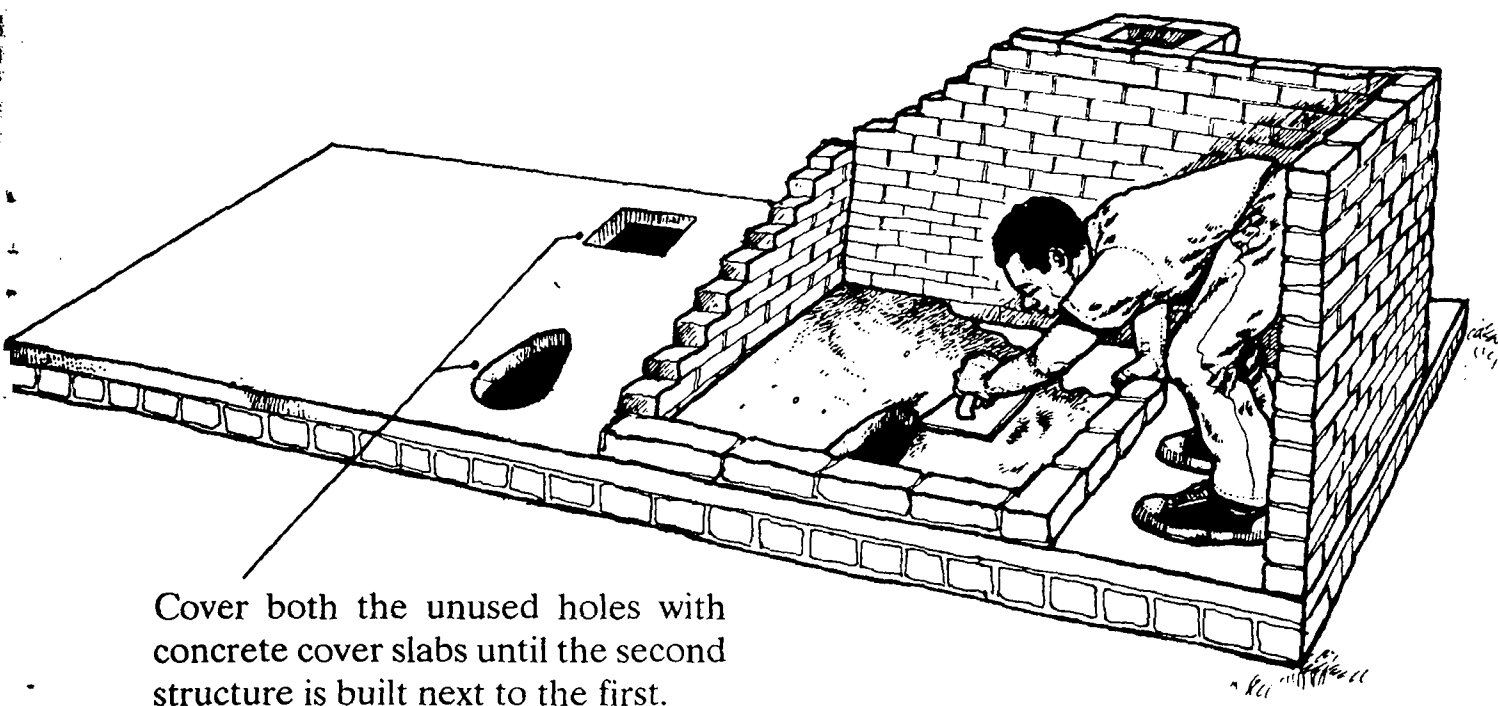
- * the walls are plastered (8 parts pit sand, 1 part cement)
- * the area surrounding the latrine is built up to slab level and sloped for drainage
- * grass is planted around the latrine to prevent erosion
- * the structure is painted (not essential).

Build according to instructions

Build the Superstructure in Stages

The national subsidy for building latrines (5-6 bags cement) is inadequate for building a double compartment unit. If a family wishes to build a double compartment unit, 10 bags of cement are required and the balance should be supplied by the family itself.

Where the family may be unable to build a double unit at one time, it is possible to build two covered pits and build the structure on top of one of them as shown in the diagram.



Cover both the unused holes with concrete cover slabs until the second structure is built next to the first.

Remember !

All Blair Latrines should be built strongly with fired bricks, strong concrete, and cement mortar between bricks. If short cuts are made the latrine may collapse prematurely.

Care for your latrine!

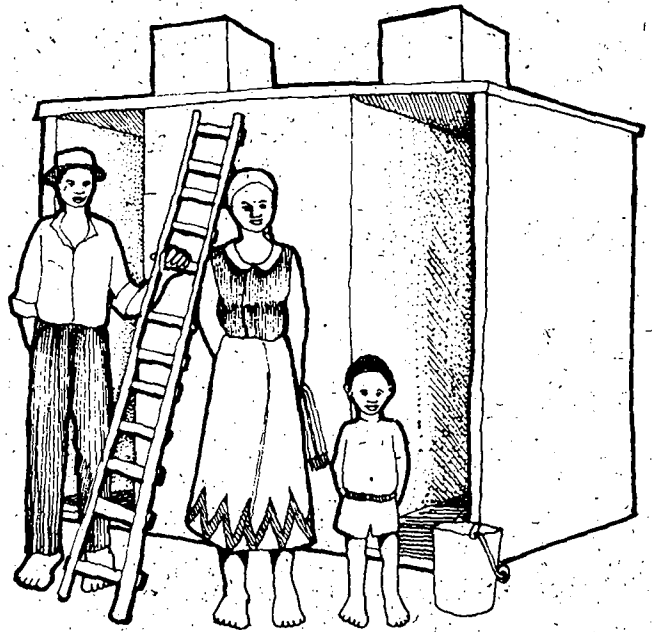
The latrine will last longer if it is properly maintained. These maintenance checks are important!

Check the flyscreen every year.
Replace it if torn.

Pour water through the ventpipe, yearly,
to clear away cobwebs and flies.
This helps air to move freely
through the pipes.

Clean the inside of the latrine
daily with water.

Clean around the squatting hole
daily. Use a special broom
for this purpose.



Help young children to use the latrine.

Encourage people to use the latrine as a washroom.

Encourage people to wash their hands after using the latrine.