WEDC Developing knowledge and capacity in water and sanitation

GUIDE 28

Latrine superstructures

A latrine superstructure is a shelter which provides privacy and protection for the user of the latrine. Superstructures can be built from a variety of materials ranging from bricks, blocks and stone to corrugated metal sheets, wattle and daub and, in emergencies, even plastic or sackcloth. This guide highlights some of the important factors to be considered when designing and building a latrine superstructure.

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For detailed information, refer to *A Guide to the Development of On-site Sanitation.* The reference is given on page 8.

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Privacy, protection, health

Whilst the superstructure of a latrine is required to give privacy and protection, from a health point of view it is less important than other features such as the pit and the slab. However, together with the defecation hole, it is considered by many users to be the most critical component. It is essential, therefore, that the superstructure meets their requirements. For most users, issues of security, dignity and prestige take precedence.

The involvement of users

The involvement of users in the design and look of a latrine superstructure is essential if they are to adopt the practice of defecation in a new and safe environment.

The superstructure can, to some extent, be of any size and shape that users desire. It is their opportunity to make individual and personal decisions on the structures which should be encouraged. Users who have pride in their latrines are more likely to use them and look after them. Nevertheless, a properly built latrine should conform to structural guidelines, the most important of which are outlined below.

Size

There are a number of factors which determine the right size for the superstructure. If the floor area is much larger than the pit slab, people in public latrines may be tempted to defecate on the floor, particularly if the squat hole has been fouled by previous users. Conversely, for structures designed to accommodate disabled users, particularly wheelchair users, then the doorway and the floor area have to be large enough to allow entry and turning. The same goes for superstructures with washing facilities designed to help women and girls manage menstruation.

The height of the superstructure should accommodate a person standing upright and be high enough to prevent the space from feeling oppressive. However, if people are used to stooping on entry to buildings, a low entrance may be acceptable or even preferred. There is no accepted minimum size for a superstructure floor but it would normally be greater than 0.8m wide by 1.2m long, provided the access door opens outwards. If the door opens inwards then the length must be increased by at least 0.5m.

Shape (plan view)

For superstructures not attached to buildings, there are two basic shapes: a simple round or rectangular space with or without a privacy wall, a barrier in front of the entrance door to give privacy to those entering or leaving the toilet and a spiral which may also be round or rectangular (see Figure 1).

Although a spiral design uses more wall materials, it has the advantage of keeping

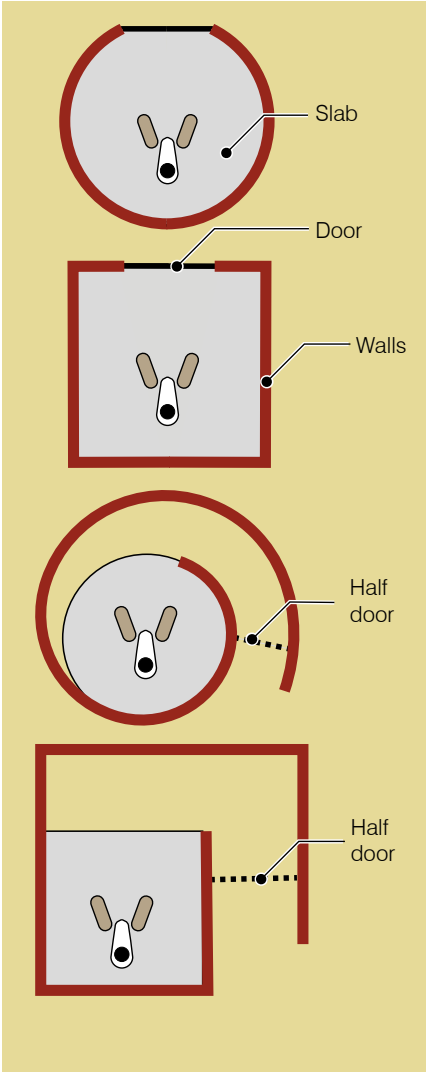

Figure 1. Basic pit shapes (plan views) (Refer to other guides in this series for further details)

the inside of the latrine dark which is a requirement of ventilated improved pit latrines (VIPs). See Guide 27 for more information about VIP latrines.

Location

If a latrine has direct access from the house there is a greater likelihood that it will be properly maintained. However, greater care has to be taken when digging and lining the pit because of its proximity to the foundations of the house (see Guide 24).

The location of free-standing latrines is discussed in Guide 29.

In some countries, there may be cultural or religious restrictions on facing the defecation position in the latrine in particular directions. A traditional rule, for example, is that Muslims should not defecate facing towards or with their backs to Mecca.

Ventilation

All latrines require ventilation. It is desirable to provide openings in the wall of the superstructure or door to ensure the latrine is ventilated.

An inlet of fresh air is most effective when the opening faces the prevailing wind. It should be at a different height from the outlet, to improve efficiency of air exchange (see Figure 3). See G027 for more information about the ventilation of VIP latrines.

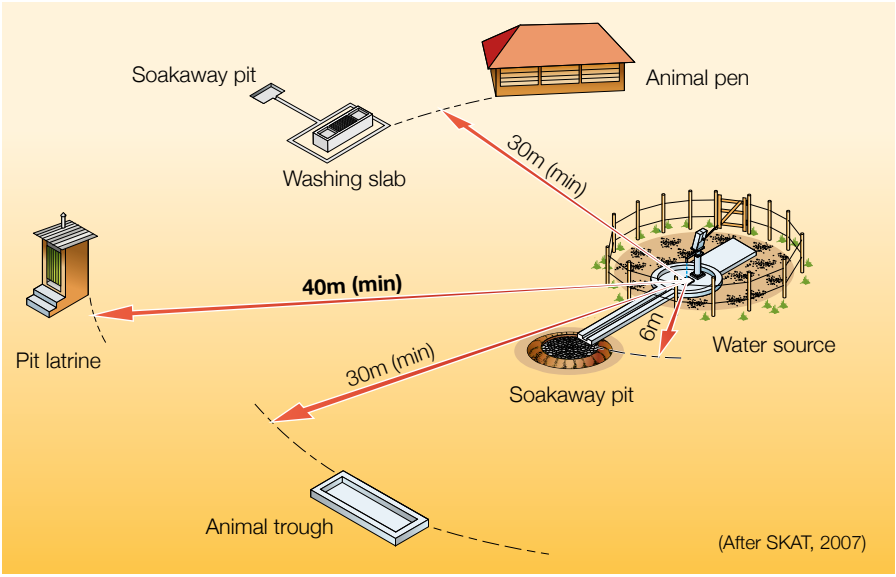

Figure 2. The safe distance of a latrine from a water point

Lighting

In general a latrine that is light and bright is more attractive to users. However, VIP latrines require the superstructure to be dark inside so that flies are attracted to the light at the top of the vent pipe and not the light inside the latrine. Nevertheless, the internal walls of the latrine could be whitewashed and some light allowed in through ventilation openings.

Access

Contrary to normal building practice, the latrine door is usually designed to open outwards, to increase the usable space inside the structure and to avoid collisions with the footrests or pedestal inside. This may not always be possible, however, for grass-roofed structures with low eaves for example, or in densely populated areas.

Cleanliness

A superstructure that is left dirty and in a constant state of disrepair will soon be unused as a latrine and abandoned. It is therefore important that the building can be cleaned and maintained easily.

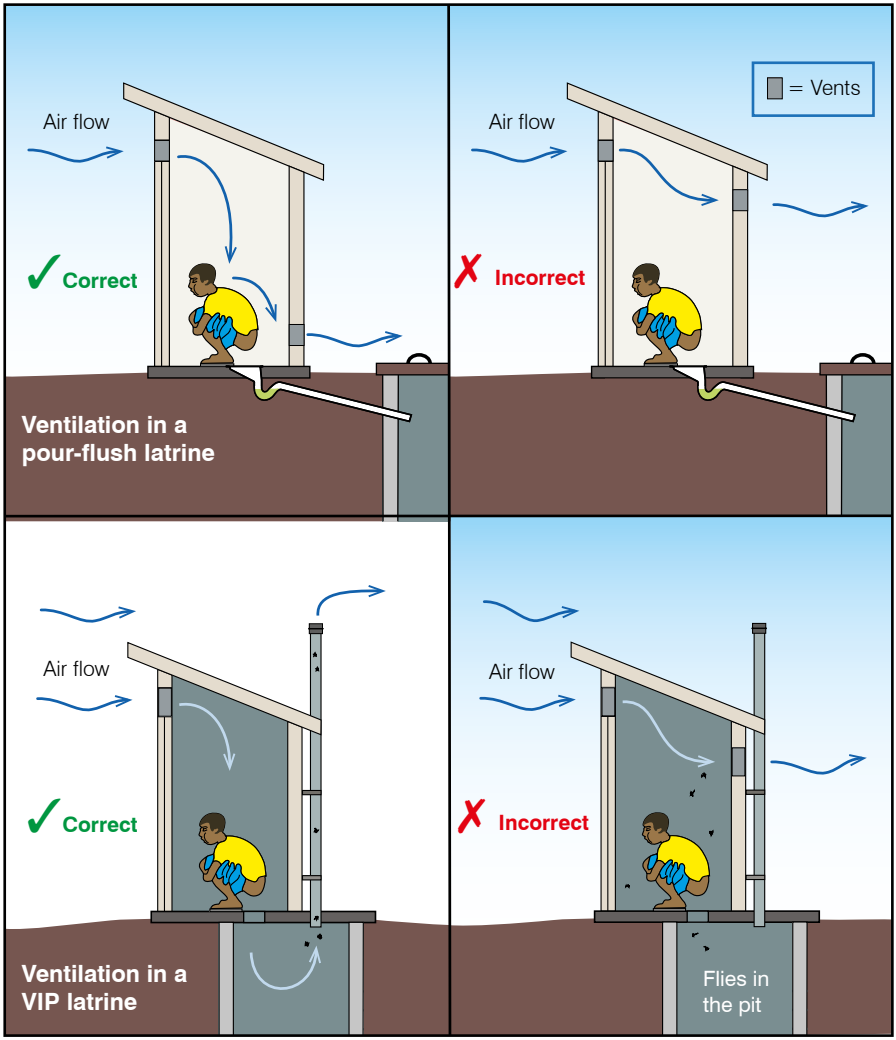

Figure 3. Spot the difference: correct and incorrect ways of ventilating latrines

Figure 4. Latrine with a wide opening and enough space for a wheelchair to turn

The door should be at least 0.8m wide and lockable from the inside. A level area must be left outside the entrance so that less able users can easily open the door. Where possible the floor level inside should be the same as that outside of the door.

Design and materials

The design of the superstructure and the materials employed normally depend upon the style and construction methods of other buildings in the area.

It is usual that people will build their latrine out of the same materials as their dwelling – although perhaps to a slightly lower standard.

For reasons of cost, it is generally better to use designs and materials which local artisans understand how to use and most importantly how to maintain. The use of local labour will also help communities to stay involved with and retain interest in their new sanitation system.

Many different types of materials can be used and the most common of these are described below.

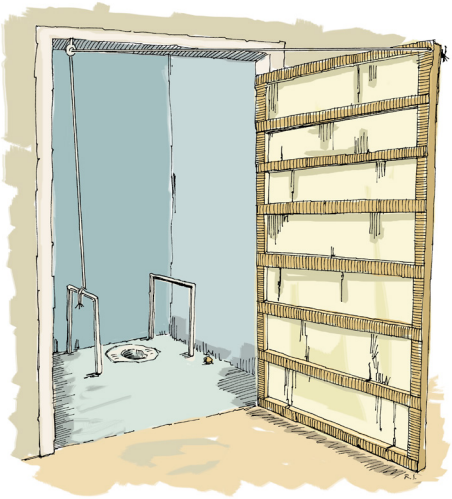

Figure 5. Latrine door closing method for disabled users

Roofs and screens

The superstructure does not necessarily have to have a roof although there are obvious advantages in providing protection from both the rain and the sun.

However, in some cultures people have become used to defecating in the open and find it objectionable to have to go into a small building. If funds are limited, the overall cost of the latrine will be considerably reduced by erecting a simple fence made out of the cheapest locally available materials. It should be noted, of course, that ventilated improved pit latrines need to have a roof so that the superstructure can be kept dark.

Materials such as thatch, palm leaves, clay tiles, fibre-cement tiles, wood shingles, corrugated iron, corrugated aluminium, ferrocement and precast concrete can all be used for roofing the latrine superstructure. An important point to note is that the roof must be secured tightly into the wall structure and the walls must be strong enough to resist the uplift of high winds. Some materials, for example galvanised corrugated iron, can greatly increase temperatures inside the latrine, which may make it less pleasant to use.

Mud and wattle

In many parts of the world housing is made of a lattice of wooden strips (wattle) onto which mud is pressed which produces a simple but effective wall. Mud and wattle may be improved by nailing bamboo strips to straight upright poles and filling the gaps with small stones before plastering. Care must be taken to ensure that these walls are strong enough to carry the weight of the roof.

Bamboo

Shelters can be made from larger diameter bamboo poles forming the main frame with smaller bamboos nailed or strapped to them to form the walls.

Alternatively palm leaves or bamboo matting can be used to fill in the walls of the bamboo frame. These materials, however, have a short life so must be regularly replaced.

Sawn timber

Sawn timber may be an expensive and rare commodity in low-income areas, but if offcuts are available from a sawmill, these can be used to clad a simple timber-framed structure.

Important

Care must be taken to ensure that walls of a superstructure made of brick or blocks are not too heavy if the superstructure is built directly above a pit. Heavy walls can place undue pressure on the foundations, causing the pit to collapse.

Fired and sun-dried bricks

Fired bricks make an excellent material for latrine construction.

As an alternative, sun-dried bricks can be made from a mixture of well-puddled and tempered clay. Moulded in simple wooden frames they are allowed to dry slowly, out of direct sunlight (Figure 7).

Machine-pressed blocks

A portable steel press is used to compact prepared soils to produce blocks of a regular size.

Concrete blocks

Concrete blocks can either be made by hand on site, or purchased from a local manufacturer. Blocks are usually 150mm thick but to reduce costs narrower blocks can be used. Greater skills are required to build with narrow blocks, however.

Stone

It is possible to construct latrines using stones, but this traditional building technique should be avoided where the superstructure sits directly over the pit as the weight of the walls requires a strong pit lining for support. For off-set pits, stone superstructures are quite acceptable.

Ferrocement

A strong cement mortar pressed into layers of wire mesh forms a strong, reasonably stiff membrane known as ferrocement. This material has been used successfully for spiral superstructures.

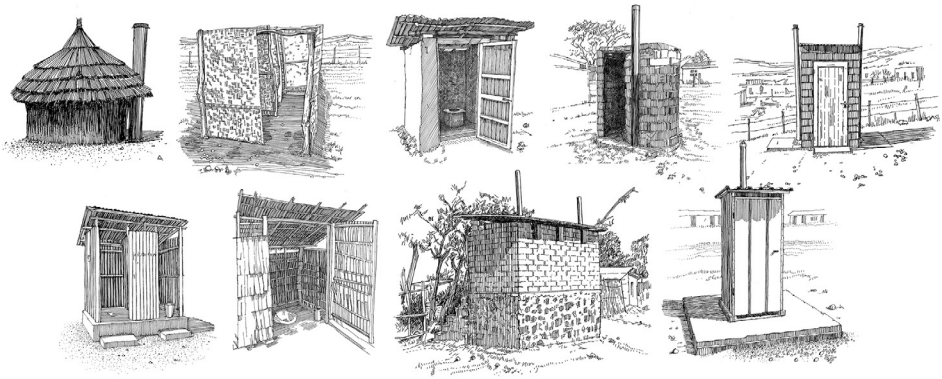

Figure 6. Latrine superstructures made from different materials

Figure 7. Local production of sun-dried blocks

Doors

A door is not necessarily required. However, for various reasons, users often prefer a solid door. Doors can be made from beaten tins or corrugated iron on a wooden frame, bamboo strips or anything else that is available.

If solid materials are scarce or costly, simple curtains can be adequate.

References

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