G022: An introduction to pit latrines

This item was submitted to Loughborough University's Institutional Repository by the/an author.

**Citation:** REED, B., 2014. G022: An introduction to pit latrines. Loughborough: WEDC, Loughborough University.

**Additional Information:**

- This guide was published by the Water, Engineering and Development Centre (WEDC) at Loughborough University.

**Metadata Record:** [https://dspace.lboro.ac.uk/2134/31133](https://dspace.lboro.ac.uk/2134/31133)

**Version:** Published

**Publisher:** © WEDC, Loughborough University

**Rights:** This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: [https://creativecommons.org/licenses/by-nc-nd/4.0/](https://creativecommons.org/licenses/by-nc-nd/4.0/)

Please cite the published version.
An introduction to pit latrines

Any discussion of on-site sanitation must start with pit latrines. This is because they are one of the oldest forms of formal sanitation in the world and for many they are still the best. This guide introduces the types of pit latrines that are commonly used in low-income communities and the factors that will help determine which type is most suitable for any given circumstance. Detailed information about particular designs is presented in further guides in this series.

Contents

The advantages of a pit latrine .....................................1
So why don’t some people like pit latrines? ..............1
Choosing the correct design........................................1
What if I can’t find a suitable design? ......................1
Design details ............................................................4
Latrine slabs ...............................................................4
Latrines for emergencies ..........................................4
In conclusion ............................................................4

Other related guides in this series:

Guide 23: Latrine pit design
Guide 24: Latrine excavation and linings
Guide 25: Simple pit latrines
Guide 26: Pour flush latrines

Guide 27: Ventilated improved pit latrines
Guide 28: Latrine superstructures
Guide 29: Pit latrines used in special circumstances

PRINT YOUR OWN BOOKLET

wedc.lboro.ac.uk/knowledge
The advantages of a pit latrine

Pit latrines have a number of advantages:

- They are simple to build.
- They are easy and safe to use, operate and maintain.
- Local materials and technologies can be used to build them.
- They are versatile and can be constructed to suit a wide range of physical and human environments.
- Designs are easy to copy.
- They are the cheapest technology for the safe disposal of human excreta and can be improved incrementally over time.

So when selecting a form of on-site sanitation for a low-income community, pit latrines should always be the first option to consider as usually one type or another will be the most appropriate choice for most households.

So why don’t some people like pit latrines?

The widespread use of pit latrines means that inevitably some people will complain about them. Common complaints are that they smell, attract flies, harbour mosquitoes and are unsafe to use.

Nearly always the causes of these problems can be attributed to either poor design, construction, operation or maintenance. Like any building, a pit latrine will only work properly if it is designed to suit a particular situation; is constructed using appropriate materials and to a good standard; and is properly operated and maintained.

This and other guides in this series helps you do just that: to choose the most appropriate pit latrine design, to build it to a high standard using local materials; and to operate the toilet in the right way so that it doesn’t cause you any trouble.

Choosing the correct design

There are many different designs of pit latrine so choosing the right one can be difficult, especially if you have not chosen one before. The diagram overleaf is a guide to the selection of a design that will most likely best suit your situation. It also provides cross references to other guides that give you more information about individual types of design.

What if I can’t find a suitable design?

Sometimes the environment you are working in is so difficult that none of the options suggested in Figure 1 will be appropriate. Try consulting Guide 29 that covers the design of pit latrines for special situations such as when it is difficult to dig a deep pit or in regions where the climate is very cold.

If you still haven’t found a suitable pit latrine option, after consulting Guide 29, it probably means that some other sanitation choice is more appropriate.
A guide to the selection of a pit latrine

START

Method of anal cleansing

Water available and/or use for flushing

Affordability: Capital and maintenance costs (see note)

Demand for re-use of faecal waste?

Mechanical pit emptier available?

Land for new pits available OR ground suitable for extra-large pits?

Permence group

Hard or bulky materials

0 litres

Up to 1 litre

1 to 3 litres

Up to 10 litres

Water or soft paper

Consider using a septic tank, an aqua privy or sewerage.

For a complete guide to sanitation selection including these options, refer to WEDC Poster 21

Note: Not all possibilities are illustrated as it is assumed that water availability is related to affordability.

### Method of Anal Cleansing

#### Required Pit Latrine

- A different option must be chosen

#### Water available and/or use for flushing

- Choice acceptable to people?

#### Affordability:
- Capital and maintenance costs (see note)

#### Demand for re-use of faecal waste?

#### Mechanical pit emptier available?

#### Land for new pits available OR ground suitable for extra-large pits?

#### Permeable ground?

#### Ground of limited permeability?

#### Ground impermeable?

#### Ground water or hard rock less than 2m below surface?

---

Use extra large pit or consider composting

---

Lavatory may be used as a bathing area

---

Use of latrine for bathing must be limited unless drainage field installed

---

Pits may be raised above ground level to suit conditions

---

If unacceptable, a different option must be selected

---

Pour flush twin pit

- Guide 26

---

Pour flush single pit offset

- Guide 26

---

Pour flush single pit direct

- Guide 26

---

Twin pit ventilated

- Guide 27

---

Single pit sealed lid

- Guide 25

---

Single pit ventilated

- Guide 27

---

*(As it is assumed that water availability is related to affordability)*

---

The WHO publication *A Guide to the Development of On-site Sanitation* provides more ideas for non-pit latrine options.

**Design details**

Having chosen the latrine that best fits your needs you will need to consider the details. Some features are common to all designs, such as nature of the superstructure (the building which houses the toilet). Other features are particular to individual designs. Note that the WEDC series does not present you with a step-by-step approach to construction, but it does provide you with guidance which will help you build a viable and sustainable latrine.

**Latrine slabs**

Providing sanitation for all is a major global challenge involving many complex issues. The user of a latrine however, will have more local concerns such as the condition of the latrine slab.

*Guide 5: Latrine slabs* highlights the design, manufacture and maintenance features that help to improve the safety and comfort of users.

**Latrines for emergencies**

There are special considerations to take account of when providing latrines in emergency and disaster situations. For a comprehensive guide, refer to the WEDC publication *Excreta Disposal in Emergencies*.

**In conclusion**

Pit latrines, in their many forms, are still the most likely sanitary solution for low-income families in both rural and urban areas. Their simplicity and low-cost, and the possibility of improving them incrementally over time makes them an ideal choice.

Design, build and maintain a pit latrine well and it can provide many years of trouble-free service.
Learn with WEDC

Learn with one of the top, award-winning universities of excellence in the UK and partake in a quality learning experience.

Gain a recognised, respected, independent and validated qualification.

WEDC offers you a wide variety of learning opportunities in all aspects of water and environmental management, water and waste engineering and infrastructure in emergencies.

You can learn in different ways and at different levels. Come to WEDC or study at home or at your place of work.

Choose from one of our postgraduate programmes and study towards a Postgraduate Certificate, Diploma or Master of Science (MSc). Study by research towards a PhD.

Alternatively, tailor-make a programme from our wide range of stand-alone modules to suit your particular professional development requirements.

Or you may prefer to invite us to collaborate with you to devise a programme especially for your staff.

Go straight to details about one of our learning opportunities.

Postgraduate programmes

- Infrastructure in Emergencies
- Water and Environmental Management
- Water and Waste Engineering

Other courses and programmes

- Special courses for groups
- Professional development
- PhDs
- Online courses
About WEDC

The Water, Engineering and Development Centre is one of the world’s leading education and research institutes for developing knowledge and capacity in water and sanitation for sustainable development and emergency relief.

We are committed to the provision of effective, evidence-based and appropriate solutions for the improvement of basic infrastructure and essential services for people living in low- and middle-income countries. With over 45 years of experience, we offer expert advice and quality learning opportunities for sector professionals.

Founded in 1971, WEDC is based in the School of Civil and Building Engineering at Loughborough University, one of the top UK universities. Being a part of a leading university gives us a recognised platform of independence and quality.

What makes us stand out from the crowd is our outreach to practitioners. We use our knowledge base and our applied research work to develop the capacity of individuals and organizations throughout the world, promoting the integration of social, technical, economic, institutional and environmental activities as foundations for sustainable development.

Visit our website to find out more about our postgraduate and professional development programmes (MSc, Diplomas and postgraduate certificates available at the University or by distance learning); our research; our advisory services; our international conferences; and our extensive range of information resources which are free to download from our knowledge base.

http://wedc.lboro.ac.uk

---

Water, Engineering and Development Centre
School of Civil and Building Engineering
Loughborough University
Leicestershire LE11 3TU UK

T: +44 (0) 1509 222885  LinkedIn: WEDC UK
E: wedc@lboro.ac.uk  Twitter: wedcuk
W: wedc.lboro.ac.uk  YouTube: wedc.lboro