



LINCS BUILDING
CONSULTANCY

Guidance Note No. 46

Surface Water
Soakaway Design

Introduction

Since April 2002, Building Regulations have required that there be sufficient arrangements so as to ensure surface water soakaways are effective,

Building Regulation H3 states:

'The requirements of H3 will be met if rainwater soaking into the ground is distributed sufficiently so that it does not damage foundations of the proposed building or adjacent structures'.

Guidance on how way to achieve the requirements of regulation H3 is contained in section H3 of Approved Document H – Drainage and Waste Disposal.

This guidance note outlines suitable arrangements for domestic type soakaways only, and it should not be taken as a definitive guide. For more detailed guidance refer to the aforementioned document.

Preamble

Soakaways must be able to store immediate storm-water run off and allow for the water's efficient infiltration into the adjacent soil. The time taken for efficient infiltration is used to determine the size of soakaway required. Traditionally, soakaways are square pits filled with rubble topped with a plastic sheet so as to prevent soil infiltration. This type of construction is still considered suitable in the majority of cases where serving areas less than 100m², subject to the percolation test results and precise storage capacity calculations.

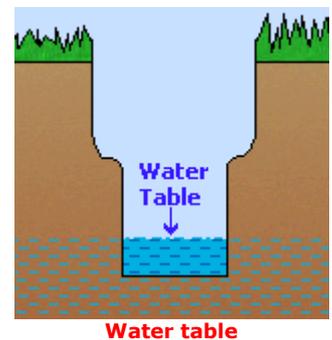
The three determining factors for soakaways are:-

1. Position of the water table.
2. The size of the area to be drained.
3. The percolation rate of the soil/sub-soil (or, in some sites, the depth to the water table).

The Position of the Water Table.

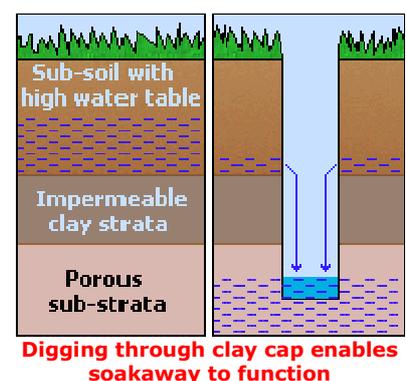
The first consideration when choosing a site for a soakaway is the water table. This is defined as upper level of the groundwater that is naturally held within the soil, sub-soil or bedrock. It is not uncommon for the water table to rise during the wet months of winter and to fall during drier summer months.

In waterlogged sites, it is often found that the water table is exceptionally high (i.e., near the surface). In cases such as this, a soakaway may not function.



However, there are some sites where the water table is high, because there is a layer of impermeable clay overlying a deeper stratum that might be porous. In such cases, digging through the clay cap and into the porous sub-strata will render a soakaway feasible, assuming that the depth to the porous strata is not prohibitive.

So, we can see that it is the underlying geology that determines how effective a soakaway can be, and therefore the first step is to determine whether the proposed site for the soakaway is suitable by undertaking a site investigation.



2. Area to Be Drained (m²)

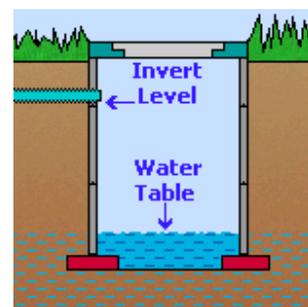
The second stage is to determine the area to be drained into each soakaway, this should be expressed in square metres. The area should include any roof area and impervious ground drainage i.e. from car parking, access paths etc.

3. Percolation Tests

Percolation tests should be undertaken on site to determine the subsoil drainage capabilities. The procedure for undertaking percolation tests can be found in - *Guidance Note 47 – procedure for percolation tests*.

For clay soils where the percolation tests are in the order of 2×10^{-7} (m/s infiltration rate) the following table can be used as the basis of soakaway design.

60 Minute Storm Duration	
Clay Sub-Soil	
Area To Be Drained (m ²)	Size of Soakaway Below Invert (m ³)
10	0.62
20	1.24
30	1.87
40	2.49
50	3.11
60	3.74
70	4.35
80	4.98
90	5.60
100	6.23



Pictorial Representation of Invert levels

4. Positioning of Soakaways

- Soakaways should be located a minimum of 5 mtrs from any building (including buildings located over the boundary).
- Be in a spot lower than the area being drained.

The responsibility for demonstrating compliance with the regulations rests with the applicant. The results of the percolation test and soakaway design should be made available to the Building Control Officer if requested to do so.

References

- British Standard 8301:1995 Building Drainage
- BRE Digest 365, September 1991. Building Research Establishment, Watford.
- Approved Document H – Drainage and Waste Disposal, DETR, London.
- AJ McCormack & Sons - <http://www.tmac.clara.co.uk/paving/drain08.html>



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Please note that these guidance notes are for advice only and may not cover all situations. It is your responsibility to ensure that they are appropriate for use in your particular circumstances.