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SOAKWELL INFORMATION

This document gives details on the Plastube range of Soakwell products, including the physical characteristics.

It also describes simple design measures for Plastube soakwells and detail on installation.

1 Introduction

Plastube Soakwells are manufactured by spirally winding a strong ribbed profile strip into pipe. The strip is slotted or perforated between the ribs giving a continuous egress surface for the entire depth of the Soakwell.

Soakwells are designed in order to dissipate the runoff from rainfall events into the ground rather than into the domestic stormwater system. In this way they provide an alternative exit point for stormwater and a small 'storage' volume for water.

1.1 Advantages

Lightweight:- Being very light and one-piece, the Rib Loc Soakwell can be easily placed on any site. For example, the standard Soakwell 600 x 600 weighs only 4.4kg.

Chemical Resistance:- Plastube Soakwells, manufactured from PVC, are highly resistant to most acids and soil chemicals therefore outlasting other products.

Superior Egress Holes:- The even distribution of the egress holes allows for even outflow of water, thus reducing the possibility of differential movement of the surrounding soil from uneven moisture content.

Reduced Soil Ingress:- The ribbed configuration combined with the small egress holes prevents large soil particles from entering the Soakwell.

2 Soakwell Configuration

Soakwells are currently supplied in the standard configurations:

SIZE NUMBER & DESCRIPTION	NOMINAL DIAM (mm)	NOMINAL DEPTH (mm)
1. STANDARD	600	600
2. STANDARD	750	750
3. STANDARD	900	900

SIZE NUMBER & DESCRIPTION	NOMINAL DIAM (mm)	NOMINAL DEPTH (mm)
1. SPECIAL	600	1200 0R 1500
2. SPECIAL	750	1200 OR 1500
3. SPECIAL	900	1200 OR 1500

Other configurations can be manufactu red by Rib Loc, depending on the nature of the job.

3 Soakwell Design

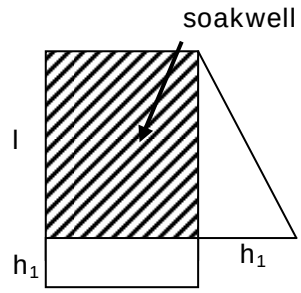
In designing for Plastube Soakwells, it must be remembered that the permeability of the soil is generally the governing factor. The ability of the soil to transport water is the limiting factor in Soakwell design. This is true in all cases unless the Soakwell is placed in materials such as gravels or crushed rock.

3.1 Behaviour of Rib Loc Soakwells

Plastube Soakwells are installed so as to dissipate stormwater runoff. The process of runoff dissipation from the Soakwell is begun as soon as entering the Soakwell. For storms of longer duration the Soakwell may become more full, depending on the magnitude of the rainfall event, the size of the Soakwell and the permeability of the soil. The calculations described below refer to the peak egress condition, when the Soakwell is full – thus giving a limiting situation.

3.2 How to Determine Required Soakwell

Note that generally soakwell dissipation rates are limited by the surrounding soil, therefore k values of the soil should be used in calculation.



k for Plastube 140 profile = 4.3×10^{-3} m/s

$$q = \frac{k \times A \times h_1}{l}$$

$$q = \frac{k \times \pi \times r^2 \times h_1}{l} + \frac{k \times \pi \times D \times l \times 0.5 \times h_1}{l}$$

Note that water egressing through the soakwell base is driven by peak pressure, whilst through the walls the driving pressure varies linearly. For the purposes of calculation, taking the average driving pressure for the walls is a close approximation. The following assumes the base is not concreted.

Thus:

For the base h = l
For the walls h = l / 2

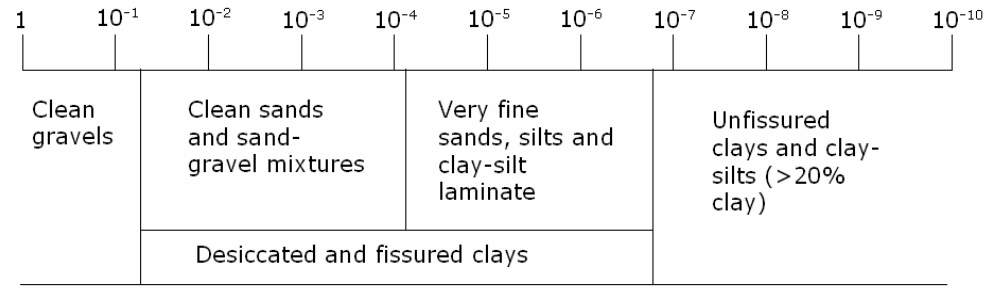
Therefore

$$q = k \times \pi \times r^2 + \frac{k \times \pi \times D \times l}{2}$$

$$q = k\left(\pi \times r^2 + 0.5 \times \pi \times D \times l\right)$$

3.3 Typical Soil Permeability Factors

Coefficient of Permeability (m/s)



Note that the figure above gives typical values. In most applications, due to great variability in soil permeability between locations, it is generally advisable to obtain site specific data.

4 Installation Instructions

1. Clear the area of ground where the soakwell is to be installed. Cut out hole in soakwell for inlet pipe.
2. Dig the soakwell in by removing the soil from inside the well. This ensures that the surrounding soil remains in its original compacted condition, thus reducing the possibility of subsidence around the well. Minimum depth should be: soakwell depth + thickness of a brick + thickness of the lid + 200mm. Ground level installation may also be considered for easy maintenance (dimensions as above less 200mm).
3. Once the desired level has been reached, lift well and place 3 bricks under the edge of the well for support. Place bricks equidistant around the circumference (see diagram).
4. Place broken bricks or rubble on the floor of the well to eliminate erosion of the bottom by the water falling from the inlet pipe.
5. Insert inlet pipe.
6. Fit cover and backfill.

Note: Heavy Concrete covers should generally be placed on a plinth or similar, to avoid placing direct loads on the soakwell.