

Soil Infiltration Test for Design of Soakaway

At

Lucan Co. Dublin

Prepared by

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Report on Soil Infiltration Test

Introduction

To manage the surface water from the development it is proposed to construct Soakaways in accordance with BRE Digest365. As part of this, the infiltration capacity of the soil was assessed. Dr. Eugene Bolton of Trinity Green Environmental Consultants was commissioned to carry out soil Infiltration Tests in accordance with BRE Digest365 to establish the suitability of the site for disposal of water.

1.0 Visual assessment of Site

The site is located in an Urban setting where the landscape is mature and on the day of the tests there was no surface water present. There is no vegetation on the site or in adjoining area that would indicate poor soakage..

2.0 Sub-soil profile

A test pit was excavated to 1.2mbgl. There is a layer of black clayey topsoil to 300mm bgl. The subsoil is a dark brown CLAY with a low level of gravel that is not compacted. There was no evidence of a watertable.

4.0 Infiltration Tests

The Infiltration rate, generally expressed as metres per second, is the volume of water that enters the soil over a unit area and unit time. In order to obtain this measurement a pit is excavated and filled with water. The fall in the level of the water is recorded over time. The test pit had dimensions

Length 1.2m
Width 0.3m
Depth 1.2m

The base of the pit was filled with water to a depth of 900mm and the drop in the water level was followed over time

5.0 Results

The time required for the level to fall from 75% full to 25% full (ie 50% drop) – from a water depth of 0.675m to a water depth of 0.225m is estimated to be 196min.

Table 1 – Time taken for water level to fall

Elapsed Time (Mins)	Depth of Water (mm)
0	900
7	780
21	650
28	590
37	470
47	410
60	370
64	310
89	210

Infiltration rate (f) = Volume of water used/unit exposed area /unit time

$$\begin{aligned} \text{Volume} &= \text{pit length (m)} \times \text{Width (m)} \times \text{Drop in water level (m)} \\ &= 1.2 \times 0.3 \times 0.45 \\ &= 0.162\text{m}^3 \end{aligned}$$

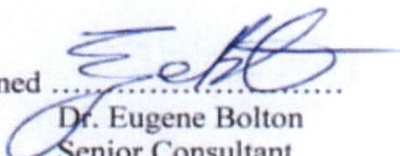
$$\begin{aligned} \text{Exposed area} &= (\text{Length} \times \text{Half the effective height} \times 2) + (\text{Width} \times \text{Half the effective height} \times 2) + \text{Base area} \\ &= (1.2 \times 0.45 \times 2) + (0.3 \times 0.45 \times 2) + (1.2 \times 0.3) \\ &= 1.71\text{m}^2 \end{aligned}$$

Time = 196min

$$\begin{aligned} \text{Infiltration rate (f)} &= 0.162/1.71/196 \\ &= 4.8\text{E-}04 \text{ m/min} \\ \mathbf{f} &= \mathbf{8.0\text{E-}06 \text{ m/sec}} \end{aligned}$$

6.0 Conclusions

From the above observation it is concluded that the soakage is good

Signed 
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Photo

Test Pit before water added – Depth 0.8m



Pit during test

