



G.R. MERCHANT LTD
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**PERCOLATION TEST RESULTS FOR
R K WILSON BUILDERS LTD**

AT

**ADJ, CORNER HOUSE
CHURCHGATE
WHAPLODE
SPALDING
LINCS.
PE12 6TA**

*JOB REF: 3690-20
DATE: DECEMBER 2020*

Rev A 2/12/20
Crate Sizes Amended



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Site Percolation Test Data:

Date of Test: 20th November 2020

Size of Trial Pit: 1400mm x 850mm x 450mm Deep



Trial Pit Discharge Rate

Data Recorded During Test:

Time	Depth From Brink Of Pit
09:45	0
10:00	10mm
10:15	15mm
10:30	15mm
10:45	20mm
11:00	20mm
11:30	20mm
12:00	25mm
12:30	25mm



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CALCULATIONS

1) Volume Of Outflow Between 75% to 25%

$$1.4\text{m} \times 0.85\text{m} \times (0.3375\text{m} - 0.1125\text{m})$$

$$1.4\text{m} \times 0.85\text{m} \times 0.245\text{m}$$

$$0.291\text{m}^3$$

2) Surface Area Of Pit For Which Discharge Occurs

$$(1.40\text{m} \times 0.225\text{m} \times 2) + (0.85\text{m} \times 0.225\text{m} \times 2) + (1.4\text{m} \times 0.85\text{m})$$

$$0.63\text{m}^2 + 0.3825\text{m}^2 + 1.19\text{m}^2$$

$$2.2025\text{m}^2$$

3) Outflow Time Between 75% and 25% - From Discharge Plot

Time From 75% to 25% = **2250 minutes**

4) Soil Infiltration Rate

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

where:

V_{p75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} = the internal surface area of the trial pit up to 50% effective depth and including the base area;

t_{p75-25} = the time for the water level to fall from 75% to 25% effective depth.

$$F = 0.291 / (2.2025 \times 2250 \times 60)$$

$$F = 0.291 / 2973375$$

$$F = 9.8 \times 10^{-8}$$

Attenuation Will Be Required



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ATTENUATION CALCULATION

5) Area Of New Roof To Be Drained

$$(10.84\text{m} \times 3.9\text{m}) \times 2 = 84.55\text{m}^2 = \mathbf{85\text{m}^2}$$
$$(4.715\text{m} \times 3.9\text{m}) \times 2 = 36.78\text{m}^2 = \mathbf{37\text{m}^2}$$

$$85\text{m}^2 + 37\text{m}^2 = \mathbf{122\text{m}^2}$$

6) Discharge From Roof During A 10 year Return – 30 Minute Duration

From BRE Digest 365

M10-30 Rainfall x Location Factor = Total Rainfall

$$16.4\text{mm} \times 1.22 = \mathbf{20.1\text{mm}}$$

7) Discharge From Roof During M10-30

$$20.1\text{mm} \times 122\text{m}^2$$

$$0.021\text{m} \times 122\text{m}^2$$

$$2.56\text{m}^3 = \mathbf{3\text{m}^3} \quad (\mathbf{3000 \text{ Litres}})$$

CONCLUSIONS

- Existing ground conditions do not support drainage straight into soakaway.
- Preferable that surface water drains into AWA drain – if available.
- Provide either 3000 litre rainwater harvesting tank (1500 litre per dwelling) or roof to discharge into 3000 litre rainwater crates. 15 x (1m x 0.5m x 0.4m)
- Rainwater Harvesting Tanks overflow to discharge into rainwater crates 8 x (1m x 0.5m x 0.4m)
- All pavements and driveways to be of permeable material.