

①

P2017/0466

THE PADDOCK BRYN CELYN GARTH

P/2017/0466.

SOAKAWAY CALCULATIONS.

IMPERMIABLE SURFACE PER DWELLING 132m^2 .

IT IS PROPOSED THAT TWO SOAKAWAYS PER DWELLING BE USED, I.E. $66\text{m}^2/\text{SOAKAWAY}$.

FILLED WITH GRAVEL, GIVING A FREE VOLUME OF 30%.

TAKING THE SOAKAWAY DIMENSIONS AS.

2.5M LONG X 2.5M DEEP X 1.5M EFFECTIVE DEPTH.

FROM DIGEST 365, FIG 1 A RATIO OF 0.30 ~~1.00~~ TAKEN.

0.30

5YR RAINFALL DEPTH.

<u>MINUTES.</u>	<u>Z1</u>
5.	0.34
10	0.49
15	0.59
30	0.77
60	1.00

10YR. RAINFALL DEPTH.

<u>MINUTES</u>	<u>MSD</u>	<u>Z2.</u>	<u>M10 D.</u>
	AVERAGE.		
~~5~~	~~20~~ RAIN. ~~1.19~~		<u>MM</u>
5	20 x 0.34 (6.8)	1.19	8.00
10	" x 0.49 (9.8)	1.22	~~12.00~~
15	" x 0.59 (11.8)	1.23	14.5
30	" x 0.77 (15.4)	1.24	19.1
60	" x 1.0 (20)	1.24	24.8
120	" x 1.25 (25)	1.24	31.0
240	" x 1.57 (31.4)	1.22	35.3.

(2)

P 2017/0466

I INFLOW O OUTFLOW S STORAGE VOLUME

f SOIL PERCOLATION RATE 1.82×10^{-5}

D STORM DURATION

A IMPERMEABLE AREA 66 m^2

$$I = A \times MIDD.$$

I	A	MIDD	
I_{10}	66	12.0×10^{-3}	$= 0.792$
" 15	"	14.5×10^{-3}	$= 0.957$
" 30	"	19.1×10^{-3}	$= 1.261$
" 60	"	24.8×10^{-3}	$= 1.637$
" 120	"	31×10^{-3}	$= 2.046$
240	"	38.3×10^{-3}	$= 2.528$

CALCULATION EXAMPLE.

$$\text{OUTFLOW} = O = A_{SS} \times f \times D.$$

10 MIN. EXAMPLE.

$$O_{10} = (3.75 + 1.5W) \times 1.82 \times 10^{-5} \times 10 \times 66$$

$$O_{10} = 0.04095 + 0.01638W.$$

$$S = 2.5 \times 1.5 \times W \times 0.3 = 1.125W.$$

$$I - O = S$$

$$0.792 - (0.04095 + 0.01638W) = 1.125W.$$

$$= 0.792 - 0.04095 - 0.01638W = 1.125W$$

$$= 0.75105 - 1.14138W = 0.658$$

∴ SOAKAWAY WIDTH FOR M10 STORM = 0.658 M.

3

P2017/0466

CALCULATIONS FOR
SOAKAWAY WIDTHS FOR DIFFERENT DURATIONS
OF RAINFALL

<u>MINUTES.</u>	<u>WIDTH (M)</u>
10	0.658. (EXAMPLE CASE).
15	0.779
30	0.969
60	1.137
120	1.176
240	1.017

SUGGESTED SOAKAWAY SIZE

$2.5 \times 1.5 \times 1.25 \text{m} / 66 \text{m}^2$ IMPERMIABLE SURFACE.

2017/0466

F.A.O. N. TAUNT. PLANNING REF P 2017 0466

SOW INFILTRATION TESTS FOR

THE Paddock BAYN CELYN GARTH LAROTUY

TEST SOAKAWAY 1.8M LONG, 0.3M WIDE 1.3M DEEP

TESTS DONE CONSECUTIVELY.

TEST 1

HEAVY RAIN THROUGHOUT RAINING DURING TEST.

FILL TIME 5 MINUTES

SOAKAWAY TIME 102 MINUTES (75% - 25% FULL)

USING VP 75-25

AP 50 x CP 75-25

OUTFLOW $1.8 \times 0.3 \times 0.65 = 0.351$

SURFACE AREA 3.27 m^2

$$F = \frac{0.351}{3.27 \times 102 \times 60} = 1.75 \times 10^{-5}$$

TEST 2.

WEATHER: SHOWERY. SOAKAWAY TIME 99 MINS.

$$F = \frac{0.351}{3.27 \times 99 \times 60} = 1.8 \times 10^{-5}$$

TEST 3.

WEATHER DRY SOAKAWAY TIME 93 MINS.

$$F = \frac{0.35}{3.27 \times 93 \times 60} = 1.91 \times 10^{-5}$$

AVERAGE VALUE OVER 3 TESTS. 1.82×10^{-5}