SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area	Brighton
Impermeable area drained to the system	A = **200.0** m^2
Return period	Period = **100** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = **0.350**
5-year return period rainfall of 60 minutes duration	M5_60min = **20.0** mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = **30** %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = **100** mm
Width of pit	w = **4700** mm
Length of pit	l = **14800** mm
Percentage free volume	V_{free} = **30** %
Soil infiltration rate	f = **17.0×10^{-3}** m/s
Wetted area of pit 50% full	a_{s50} = l × d + w × d = **1950000** mm^2

Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a_{s50} × f × D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.36;	9.3;	1.89;	17.6;	3.51;	9.95;	0.00
10	0.51;	13.2;	1.96;	25.8;	5.17;	19.89;	0.00
15	0.62;	16.0;	2.00;	32.0;	6.41;	29.84;	0.00
30	0.79;	20.5;	2.03;	41.5;	8.30;	59.67;	0.00
60	1.00;	26.0;	2.00;	52.1;	10.41;	119.34;	0.00
120	1.22;	31.8;	1.96;	62.2;	12.44;	238.68;	0.00
240	1.50;	38.9;	1.90;	73.9;	14.78;	477.36;	0.00
360	1.69;	43.9;	1.86;	81.7;	16.33;	716.04;	0.00
600	1.95;	50.6;	1.81;	91.4;	18.28;	1193.40;	0.00
1440	2.48;	64.5;	1.71;	110.4;	22.07;	2864.16;	0.00

Required storage volume S_{req} = **0.00** m^3

Soakaway storage volume S_{act} = l × d × w × V_{free} = **2.09** m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 0s

PASS - Soakaway discharge time less than or equal to 24 hours