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	Calcs for	Start page no./Revision
	Entrance Building - Soakaway Design	1 0

Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
RIG	09/02/2021	RIG	05/04/21	RIG	05/04/21

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	$A = \textbf{68.0}$ m^2
Return period	Period = **30** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	$r = \textbf{0.300}$
5-year return period rainfall of 60 minutes duration	$M5\_60min = \textbf{14.5}$ mm
Increase of rainfall intensity due to global warming	$p_{climate} = \textbf{20}$ %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	$d = \textbf{1000}$ mm
Width of pit	$w = \textbf{1750}$ mm
Length of pit	$l = \textbf{3656}$ mm
Percentage free volume	$V_{free} = \textbf{30}$ %
Soil infiltration rate	$f = \textbf{10.0} \times \textbf{10}^{-6}$ m/s
Wetted area of pit 50% full	$a_{s50} = l \times d + w \times d = \textbf{5405871}$ mm^2

Table equations

Inflow (cl.3.3.1)	$I = M30 \times A$
Outflow (cl.3.3.2)	$O = a_{s50} \times f \times D$
Storage (cl.3.3.3)	$S = I - O$

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	30 year rainfall, M30 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.34;	5.9;	1.45;	8.6;	0.58;	0.02;	0.57
10	0.49;	8.5;	1.48;	12.6;	0.86;	0.03;	0.82
15	0.59;	10.3;	1.49;	15.3;	1.04;	0.05;	0.99
30	0.77;	13.4;	1.49;	20.0;	1.36;	0.10;	1.26
60	1.00;	17.4;	1.48;	25.8;	1.76;	0.19;	1.56
120	1.25;	21.8;	1.47;	31.9;	2.17;	0.39;	1.78
240	1.57;	27.3;	1.45;	39.7;	2.70;	0.78;	1.92
360	1.78;	31.0;	1.44;	44.6;	3.03;	1.17;	1.87
600	2.12;	36.9;	1.42;	52.5;	3.57;	1.95;	1.62
1440	2.84;	49.4;	1.38;	68.0;	4.62;	4.67;	0.00

Required storage volume	$S_{req} = \textbf{1.92}$ m^3
Soakaway storage volume	$S_{act} = l \times d \times w \times V_{free} = \textbf{1.92}$ m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume	$t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f)$ = 4hr 55min 59s

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