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Land to South of Sundown

Revision

Job No:

17-1197

Page:

SW-

Section:

Roof Storm Water Soakaway (House & garage)

Prepared By:

PH

Date:

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ALTERNATIVE SOAKAWAY SIZES

	trench soakaways		
width of trench [mm]:	1500	2000	2500
required trench length [m]:	13.65	10.84	8.96
	ring soakaways		
diameter of ring [mm]:	1050	1350	1500
required pit diameter [m]:	3.78	3.78	3.78

* Based on effective depth and number of pits as in Soakaway Data table

SUMMARY OF CALCULATIONS

critical design rainfall duration 't _{crit} ' =	60	min
required storage volume 'V _{req} ' =	12.31	m ³
provided storage volume 'V _{prov} ' =	12.54	m ³
utilisation factor =	0.98	.OK
required time to discharge 50% 't ₅₀ ' =	1.61	hours
utilisation factor =	0.07	.OK

GENERAL DATA

site location:	England and Wales
soakaway type:	geocellular units
impermeable area drained to soakaway 'A' [m ²] =	285
60 min rainfall depth of 5 year return period 'R' [mm] =	20
M5-60 to M5-2d rainfall ratio 'r' =	0.40
allowance for climate change:	40%

SOAKAWAY DATA

soakaway width 'W' [m] =	2.00
soakaway length 'L' [m] =	11.00
total depth from ground level 'D _b ' [m] =	1.30
depth to drain invert level 'D _d ' [m] =	0.70
soakaway effective depth 'D _{eff} ' [m] =	0.60
free volume in infill aggregate [%] =	95

SOIL INFILTRATION DATA

allowance for infiltration through soakaway base:	No
available on-site infiltration test results:	☐ Yes ☒ No
soil infiltration rate 'f' [m/s] =	1.39E-04

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M10-D			M100-D			ignore			outflow from soakaway [m ³]	required storage [m ³]
			Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]		
5	0.37	7.47	1.20	12.59	3.59	1.85	19.33	5.51				0.32	5.19
10	0.52	10.47	1.22	17.90	5.10	1.92	28.10	8.01				0.65	7.36
15	0.63	12.67	1.23	21.82	6.22	1.95	34.63	9.87				0.97	8.90
30	0.80	16.07	1.24	27.89	7.95	2.00	44.95	12.81				1.94	10.87
60	1.00	20.00	1.24	34.72	9.90	2.03	56.84	16.20				3.89	12.31
120	1.21	24.13	1.24	41.90	11.94	2.01	68.03	19.39				7.78	11.61
240	1.45	28.93	1.22	49.59	14.13	1.98	80.14	22.84				15.56	7.28
360	1.60	32.07	1.21	54.49	15.53	1.95	87.70	24.99				23.33	1.66
600	1.79	35.87	1.20	60.38	17.21	1.92	96.56	27.52				38.89	0.00
1440	2.24	44.80	1.18	74.03	21.10	1.85	116.13	33.10				93.34	0.00

* Z2 is growth factor from M5 rainfalls