

"Briarfield", Ancton Lane, Middleton-on-Sea, PO22 6NL -- Planning Reference M/141/21/HH

The Design Parameters for the Proposed Geocellular Structure Soakaway Installation S/A#2, located in the front garden, are as follows :-

The Soil Infiltration Rate for the Sides is 9.375 E-06 metres / second and the Soil Infiltration Rate for the Base is 9.375 E-06 metres / second.

The Installation consists of a GeoCellular Structure of 1.00 metre Long by 0.50 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.40 metres.

Percentage Void Space of 95%.

Impermeable Area specified as 3 square metres.

Using a Safety Factor of 2.0 for the Volumetric Runoff Coefficient $C_v=1.0$

The Design adopts a Factored Soil Infiltration Rate for the Sides of 4.688 E-06 metres / second.

And a Factored Soil Infiltration Rate for the Base of 4.688 E-06 metres / second.

Both the Side Area and the Base Area are Included in the Calculations.

The Rainfall Ratio for the Location is $r=0.36$

Rainfall Base Rate M5-60min the 5 Year Return Period Rainfall of 60 minutes Duration is 19.0mm.

Lowest Incoming Pipe Invert Height is 300mm above the Installation Base.

All Levels are referenced to 'Above Ordinance Datum' (AOD)

The Highest Recorded Groundwater at the Location of the Proposed Soakaway is 3.354 metres at a depth of 1.311 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Soakaway is 4.665 metres.

The Soffit Level of the Proposed Soakaway is 4.265 metres.

The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 4.165 metres

The Base Level of the Proposed Soakaway is 3.865 metres

The Base of the Soakaway Structure is 0.511 metres above the Highest Recorded Groundwater at the location of the Soakaway. This meets Building Regulations.

The Design Summary for the Proposed Geocellular Structure Soakaway Installation S/A #2 is as follows :-

For a 10 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 0.09 cubic metres out of 0.14 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 2 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 3.36 hours.

For a 100 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 0.16 cubic metres out of 0.19 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 3 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 4.76 hours.

10 Year Return Storm Includes a 40% Increase for Climate Change.

Storm Duration	Factor Z1-5	M5 Return Rainfall	Factor Z2-10	M10 Return Rainfall	Inflow Cu Metres	Outflow Cu Metres	Internal Water Level	Required Storage	Soakaway Status
5 minutes	0.360	6.80	1.190	11.40	0.034	0.001	69	0.033	-OK-
10 minutes	0.510	9.70	1.220	16.60	0.050	0.003	99	0.047	-OK-
15 minutes	0.620	11.80	1.220	20.10	0.060	0.004	119	0.056	-OK-
30 minutes	0.790	15.00	1.240	26.10	0.078	0.008	148	0.070	-OK-
1 hour	1.000	19.00	1.250	33.20	0.100	0.016	176	0.084	-OK-
2 hours	1.216	23.10	1.240	40.10	0.120	0.032	186	0.088	-OK-
3 hours	1.364	25.90	1.240	45.00	0.135	0.048	183	0.087	-OK-
4 hours	1.495	28.40	1.220	48.50	0.146	0.064	171	0.081	-OK-
5 hours	1.593	30.30	1.220	51.70	0.155	0.080	158	0.075	-OK-
6 hours	1.670	31.70	1.220	54.20	0.163	0.096	140	0.066	-OK-
7 hours	1.745	33.20	1.203	55.80	0.168	0.112	116	0.055	-OK-
8 hours	1.805	34.30	1.203	57.80	0.173	0.128	95	0.045	-OK-
9 hours	1.863	35.40	1.203	59.60	0.179	0.144	73	0.035	-OK-
10 hours	1.915	36.40	1.203	61.30	0.184	0.160	50	0.024	-OK-
11 hours	1.960	37.20	1.203	62.70	0.188	0.176	25	0.012	-OK-
12 hours	2.005	38.10	1.190	63.50	0.190	0.192	empty	none	-OK-
14 hours	2.085	39.60	1.190	66.00	0.198	0.224	empty	none	-OK-
16 hours	2.155	40.90	1.190	68.20	0.205	0.256	empty	none	-OK-
18 hours	2.225	42.30	1.190	70.40	0.211	0.289	empty	none	-OK-
20 hours	2.295	43.60	1.180	72.00	0.216	0.321	empty	none	-OK-
22 hours	2.360	44.80	1.180	74.10	0.222	0.353	empty	none	-OK-
24 hours	2.430	46.20	1.180	76.30	0.229	0.385	empty	none	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 0.14 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 0.95 square metres referenced to the Invert of the lowest incoming pipe.

Maximum Allowable Pre-Flood Water Level for 10 Year Return (Lowest Pipe Invert Level for Building Control) is 300mm.

For a 10 Year Return Period the Critical Storm occurs at 2 hours.

With a Maximum Internal Structure Critical Water Level of 186mm.

Requiring a Maximum (Critical) Storage Capacity of 0.09 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 0.78 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 3.36 hours.

100 Year Return Storm Includes a 40% Increase for Climate Change.

Storm	Factor	M5 Return	Factor	M100 Return	Inflow	Outflow	Internal	Required	Soakaway
Duration	Z1-5	Rainfall	Z2-100	Rainfall	Cu Metres	Cu Metres	Water Level	Storage	Status
5 minutes	0.360	6.80	1.790	17.10	0.051	0.002	105	0.050	-OK-
10 minutes	0.510	9.70	1.910	25.90	0.078	0.003	157	0.075	-OK-
15 minutes	0.620	11.80	1.910	31.50	0.094	0.005	189	0.090	-OK-
30 minutes	0.790	15.00	1.990	41.80	0.125	0.009	245	0.116	-OK-
1 hour	1.000	19.00	2.030	54.00	0.162	0.019	302	0.143	-OK-
2 hours	1.216	23.10	2.010	65.00	0.195	0.037	332	0.158	-OK-
3 hours	1.364	25.90	2.010	72.90	0.219	0.056	343	0.163	-OK-
4 hours	1.495	28.40	1.970	78.30	0.235	0.074	338	0.161	-OK-
5 hours	1.593	30.30	1.970	83.50	0.250	0.093	332	0.158	-OK-
6 hours	1.670	31.70	1.970	87.50	0.263	0.111	318	0.151	-OK-
7 hours	1.745	33.20	1.930	89.60	0.269	0.130	292	0.139	-OK-
8 hours	1.805	34.30	1.930	92.70	0.278	0.148	273	0.129	-OK-
9 hours	1.863	35.40	1.930	95.60	0.287	0.167	252	0.120	-OK-
10 hours	1.915	36.40	1.930	98.30	0.295	0.186	230	0.109	-OK-
11 hours	1.960	37.20	1.930	100.60	0.302	0.204	206	0.098	-OK-
12 hours	2.005	38.10	1.890	100.80	0.302	0.223	168	0.080	-OK-
14 hours	2.085	39.60	1.890	104.80	0.314	0.260	115	0.055	-OK-
16 hours	2.155	40.90	1.890	108.30	0.325	0.297	59	0.028	-OK-
18 hours	2.225	42.30	1.890	111.90	0.336	0.334	3	0.001	-OK-
20 hours	2.295	43.60	1.855	113.20	0.340	0.371	empty	none	-OK-
22 hours	2.360	44.80	1.855	116.40	0.349	0.408	empty	none	-OK-
24 hours	2.430	46.20	1.855	119.90	0.360	0.446	empty	none	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M100 Return Period is 0.19 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 1.10 square metres referenced to the top of the GeoCell Installation.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Soakaway Height) is 400mm.

For a 100 Year Return Period the Critical Storm occurs at 3 hours.

With a Maximum Internal Structure Critical Water Level of 343mm.

Requiring a Maximum (Critical) Storage Capacity of 0.16 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 1.02 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 4.76 hours.

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