

#8 Collins Close, Eastergate, Chichester PO20 3JT -- BN/16/21/HH

The Design Parameters for the Proposed Geocellular Structure Soakaway Installation S/A #1 located in the front driveway are as follows :-

The Soil Infiltration Rate for the Sides is 6.570E-6 metres / second.
The Soil Infiltration Rate for the Base is 6.570E-6 metres / second.
The Installation consists of a GeoCellular Structure of 3.50 metres Long by 1.00 metre Wide and 0.80 metres in Depth.
With a Cover Depth of 0.80 metres.
Percentage Void Space of 95%.
Impermeable Area specified as 33 square metres.
Using a Safety Factor of 2.0
The Design adopts a Factored Soil Infiltration Rate for the Sides of 3.285E-6 metres / second.
And a Factored Soil Infiltration Rate for the Base of 3.285E-6 metres / second.
Both the Side Areas 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 600mm above the Installation Base.

All Levels are referenced to 'Above Ordinance Datum' (AOD).
The Groundwater at the Location of the Proposed Soakaway is no higher than 12.823 metres at a depth of 2.000 metres Below Ground Level (BGL) provided by Arun DC.
The Ground Level at the Location of the Proposed Soakaway is 14.823 metres.
The Soffit Level of the Proposed Soakaway is 14.023 metres.
The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 13.823 metres.
The Base Level of the Proposed Soakaway is 13.223 metres.
The Base of the Soakaway Structure is 0.400 metres higher than the adjacent Highest Recorded Groundwater provided by Arun DC. This meets Building Regulations.

The Design Summary for the Proposed Geocellular Structure Soakaway Installation S/A #1 is as follows :-

For a 10 Year Return Storm Includes a 40% Increase for Climate Change.
The Design requires storage of 1.35 cubic metres out of 1.99 cubic metres available.
Therefore Storage is Passed with a Critical Storm occurring at 6 hours.
And the Half Drain Time is OK within the Allowable 24 hours Period at 10.71 hours.

For a 100 Year Return Storm Includes a 40% Increase for Climate Change.
The Design requires storage of 2.40 cubic metres out of 2.66 cubic metres available.
Therefore Storage is Passed with a Critical Storm occurring at 10 hours.
And the Half Drain Time is OK within the Allowable 24 hours Period at 15.05 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	0.376	0.006	111	0.370	-OK-
10 minutes	0.510	9.70	1.220	16.60	0.546	0.012	161	0.534	-OK-
15 minutes	0.620	11.80	1.220	20.10	0.664	0.018	194	0.646	-OK-
30 minutes	0.790	15.00	1.240	26.10	0.860	0.037	248	0.823	-OK-
1 hour	1.000	19.00	1.250	33.20	1.097	0.073	308	1.024	-OK-
2 hours	1.216	23.10	1.240	40.10	1.324	0.147	354	1.177	-OK-
3 hours	1.364	25.90	1.240	45.00	1.485	0.220	380	1.265	-OK-
4 hours	1.495	28.40	1.220	48.50	1.601	0.293	393	1.308	-OK-
5 hours	1.593	30.30	1.220	51.70	1.706	0.367	403	1.339	-OK-
6 hours	1.670	31.70	1.220	54.20	1.788	0.440	406	1.349	-OK-
7 hours	1.745	33.20	1.203	55.80	1.843	0.513	400	1.329	-OK-
8 hours	1.805	34.30	1.203	57.80	1.906	0.587	397	1.319	-OK-
9 hours	1.863	35.40	1.203	59.60	1.967	0.660	393	1.307	-OK-
10 hours	1.915	36.40	1.203	61.30	2.022	0.733	388	1.289	-OK-
11 hours	1.960	37.20	1.203	62.70	2.070	0.807	380	1.263	-OK-
12 hours	2.005	38.10	1.190	63.50	2.094	0.880	365	1.215	-OK-
14 hours	2.085	39.60	1.190	66.00	2.178	1.026	346	1.151	-OK-
16 hours	2.155	40.90	1.190	68.20	2.251	1.173	324	1.078	-OK-
18 hours	2.225	42.30	1.190	70.40	2.324	1.320	302	1.004	-OK-
20 hours	2.295	43.60	1.180	72.00	2.377	1.466	274	0.911	-OK-
22 hours	2.360	44.80	1.180	74.10	2.444	1.613	250	0.831	-OK-
24 hours	2.430	46.20	1.180	76.30	2.517	1.760	228	0.757	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 1.99 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 6.20 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 600mm.

For a 10 Year Return Period the Critical Storm occurs at 6 hours.

With a Maximum Internal Structure Critical Water Level of 406mm.

Requiring a Maximum (Critical) Storage Capacity of 1.35 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 5.33 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 10.71 hours.

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

Storm Duration	Factor Z1-5	M5 Return Rainfall	Factor Z2-100	M100 Return Rainfall	Inflow Cu Metres	Outflow Cu Metres	Internal Water Level	Required Storage	Soakaway Status
5 minutes	0.360	6.80	1.790	17.10	0.566	0.007	168	0.559	-OK-
10 minutes	0.510	9.70	1.910	25.90	0.855	0.014	253	0.841	-OK-
15 minutes	0.620	11.80	1.910	31.50	1.039	0.021	306	1.018	-OK-
30 minutes	0.790	15.00	1.990	41.80	1.380	0.042	402	1.338	-OK-
1 hour	1.000	19.00	2.030	54.00	1.782	0.084	511	1.698	-OK-
2 hours	1.216	23.10	2.010	65.00	2.145	0.168	595	1.978	-OK-
3 hours	1.364	25.90	2.010	72.90	2.407	0.252	648	2.155	-OK-
4 hours	1.495	28.40	1.970	78.30	2.585	0.336	677	2.249	-OK-
5 hours	1.593	30.30	1.970	83.50	2.755	0.420	702	2.335	-OK-
6 hours	1.670	31.70	1.970	87.50	2.888	0.504	717	2.384	-OK-
7 hours	1.745	33.20	1.930	89.60	2.956	0.588	712	2.369	-OK-
8 hours	1.805	34.30	1.930	92.70	3.058	0.672	718	2.386	-OK-
9 hours	1.863	35.40	1.930	95.60	3.156	0.756	722	2.401	-OK-
10 hours	1.915	36.40	1.930	98.30	3.244	0.840	723	2.405	-OK-
11 hours	1.960	37.20	1.930	100.60	3.321	0.924	721	2.397	-OK-
12 hours	2.005	38.10	1.890	100.80	3.326	1.008	697	2.319	-OK-
14 hours	2.085	39.60	1.890	104.80	3.459	1.176	687	2.284	-OK-
16 hours	2.155	40.90	1.890	108.30	3.575	1.343	671	2.232	-OK-
18 hours	2.225	42.30	1.890	111.90	3.691	1.511	656	2.180	-OK-
20 hours	2.295	43.60	1.855	113.20	3.737	1.679	619	2.058	-OK-
22 hours	2.360	44.80	1.855	116.40	3.843	1.847	600	1.996	-OK-
24 hours	2.430	46.20	1.855	119.90	3.957	2.015	584	1.942	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M100 Return Period is 2.66 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 7.10 square metres referenced to the top of the GeoCell Installation.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Soakaway Height) is 800mm.

For a 100 Year Return Period the Critical Storm occurs at 10 hours.

With a Maximum Internal Structure Critical Water Level of 723mm.

Requiring a Maximum (Critical) Storage Capacity of 2.40 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 6.75 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 15.05 hours.

* * * END of REPORT * * *