

"L'Apache" Westergate Street, Woodgate, CHICHESTER PO20 3SQ -- Planning Reference AL/50/21/PL

The Design Parameters for the Proposed Permeable Paving (Storage) Soakaway Structure (Perm-1) located as the Access and Turning are as follows :-

The Soil Infiltration Rate for the Sides is 6.515E-6 metres / second.

The Soil Infiltration Rate for the Base is 6.515E-6 metres / second.

The Permeable Pavement Installation is 15.75 metres Long by 8.00 metres Wide and 0.33 metres in Depth.

With a Cover Depth of 0.13 metres.

Percentage Void Space of 30%.

Impermeable Area specified as 205 square metres.

Using a Safety Factor of 3.0

The Side Areas are NOT Included in the Calculations with only a Factored Soil Infiltration Rate for the Base of 2.172E-6 metres / second.

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 110mm above the Installation Base.

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

The Highest Recorded Groundwater at the Location of the Proposed Permeable Structure is 8.898 metres at a depth of 0.792 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Permeable Structure is 9.690 metres.

The Soffit Level of the Proposed Permeable Structure is 9.560 metres.

The Invert Level of the Lowest Incoming Pipe on the Proposed Permeable Structure is 9.340 metres

The Foundation (Base) Level of the Proposed Permeable Structure is 9.230 metres

The Base of the Permeable Structure is 0.332 metres above the Highest Recorded Groundwater at it's the location. This meets Building Regulations.

The Design Summary for the Proposed Permeable Paving (Storage) Soakaway Structure (Perm-1) located as the Access and Turning are as follows :-

For a 10 Year Return Storm with No Increase for Climate Change.

The Design requires storage of 3.90 cubic metres out of 4.16 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 1.98 hours.

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

The Design requires storage of 12.19 cubic metres out of 12.47 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 5 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 6.19 hours.

10 Year Return Storm with No 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	8.10	1.669	0.082	42	1.587	-OK-
10 minutes	0.510	9.70	1.220	11.80	2.423	0.164	60	2.259	-OK-
15 minutes	0.620	11.80	1.220	14.40	2.946	0.246	71	2.700	-OK-
30 minutes	0.790	15.00	1.240	18.60	3.816	0.493	88	3.323	-OK-
1 hour	1.000	19.00	1.250	23.80	4.869	0.985	103	3.884	-OK-
2 hours	1.216	23.10	1.240	28.60	5.873	1.970	103	3.903	-OK-
3 hours	1.364	25.90	1.240	32.10	6.588	2.955	96	3.633	-OK-
4 hours	1.495	28.40	1.220	34.70	7.104	3.940	84	3.164	-OK-
5 hours	1.593	30.30	1.220	36.90	7.570	4.925	70	2.644	-OK-
6 hours	1.670	31.70	1.220	38.70	7.936	5.910	54	2.025	-OK-
7 hours	1.745	33.20	1.203	39.90	8.177	6.895	34	1.281	-OK-
8 hours	1.805	34.30	1.203	41.30	8.458	7.881	15	0.577	-OK-
9 hours	1.863	35.40	1.203	42.60	8.729	8.866	empty	none	-OK-
10 hours	1.915	36.40	1.203	43.80	8.973	9.851	empty	none	-OK-
11 hours	1.960	37.20	1.203	44.80	9.184	10.836	empty	none	-OK-
12 hours	2.005	38.10	1.190	45.30	9.293	11.821	empty	none	-OK-
14 hours	2.085	39.60	1.190	47.10	9.664	13.791	empty	none	-OK-
16 hours	2.155	40.90	1.190	48.70	9.989	15.761	empty	none	-OK-
18 hours	2.225	42.30	1.190	50.30	10.313	17.731	empty	none	-OK-
20 hours	2.295	43.60	1.180	51.50	10.548	19.701	empty	none	-OK-
22 hours	2.360	44.80	1.180	52.90	10.847	21.671	empty	none	-OK-
24 hours	2.430	46.20	1.180	54.50	11.169	23.642	empty	none	-OK-

Effective Volume of the Permeable Paving Structure Soakaway Installation for an M10 Return Period is 4.16 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 126 square metres.

Maximum Allowable Pre-Flood Water Level for 10 Year Return (Lowest Pipe Invert Level for Building Control) is 110mm.

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

With a Maximum Internal Structure Critical Water Level of 103mm.

Requiring a Maximum (Critical) Storage Capacity of 3.90 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 126 square metres.

Half Drain Time for a 10 Year Return Critical Storm is 1.98 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	3.514	0.082	91	3.432	-OK-
10 minutes	0.510	9.70	1.910	25.90	5.312	0.164	136	5.148	-OK-
15 minutes	0.620	11.80	1.910	31.50	6.457	0.246	164	6.211	-OK-
30 minutes	0.790	15.00	1.990	41.80	8.573	0.493	214	8.080	-OK-
1 hour	1.000	19.00	2.030	54.00	11.070	0.985	267	10.085	-OK-
2 hours	1.216	23.10	2.010	65.00	13.328	1.970	300	11.358	-OK-
3 hours	1.364	25.90	2.010	72.90	14.950	2.955	317	11.995	-OK-
4 hours	1.495	28.40	1.970	78.30	16.060	3.940	321	12.120	-OK-
5 hours	1.593	30.30	1.970	83.50	17.113	4.925	322	12.187	-OK-
6 hours	1.670	31.70	1.970	87.50	17.940	5.910	318	12.029	-OK-
7 hours	1.745	33.20	1.930	89.60	18.365	6.895	303	11.469	-OK-
8 hours	1.805	34.30	1.930	92.70	18.996	7.881	294	11.116	-OK-
9 hours	1.863	35.40	1.930	95.60	19.607	8.866	284	10.741	-OK-
10 hours	1.915	36.40	1.930	98.30	20.154	9.851	273	10.303	-OK-
11 hours	1.960	37.20	1.930	100.60	20.628	10.836	259	9.792	-OK-
12 hours	2.005	38.10	1.890	100.80	20.664	11.821	234	8.843	-OK-
14 hours	2.085	39.60	1.890	104.80	21.488	13.791	204	7.697	-OK-
16 hours	2.155	40.90	1.890	108.30	22.210	15.761	171	6.449	-OK-
18 hours	2.225	42.30	1.890	111.90	22.931	17.731	138	5.200	-OK-
20 hours	2.295	43.60	1.855	113.20	23.215	19.701	93	3.513	-OK-
22 hours	2.360	44.80	1.855	116.40	23.872	21.671	58	2.201	-OK-
24 hours	2.430	46.20	1.855	119.90	24.580	23.642	25	0.939	-OK-

Effective Volume of the Permeable Paving Structure Soakaway Installation for an M100 Return Period is 12.47 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 126 square metres.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Structure Height) is 330mm.

For a 100 Year Return Period the Critical Storm occurs at 5 hours.

With a Maximum Internal Structure Critical Water Level of 322mm.

Requiring a Maximum (Critical) Storage Capacity of 12.19 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 126 square metres.

Half Drain Time for a 100 Year Return Critical Storm is 6.19 hours.

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