

BRIGHT YOUNG CONSULTING

GARDEN HOUSE CLOSE

MONK BRETTON

BARNSELY

HYDRAULICS REPORT – Report Number 4019/HYD001

Date 25/01/2023

1. This report provides the hydraulic design calculations for the surface water system on this proposed development.
2. The surface water system is to be offered for adoption through a Section 104 agreement with Yorkshire Water.
3. The calculations have been prepared in Microdrainage. The MDX file will be supplied as part of the Section 104 application.
4. The design standard is no flooding in the 1 in 30 year storm condition. The system also works satisfactorily in the 1 in 2 year storm conditions with no surcharging, except at the flow control device.
5. The design has also been tested to the LPA's requirement of 1 in 100 year plus climate change and works satisfactory.
6. Design has used the FEH rainfall data for this site.
7. The maximum discharge rate from the site is 11.9l/s in all storm conditions.
8. The design shows that the critical storm for the 1 in 2 year storm and the 1 in 30 year storm is the 180 minute storm.
9. The Microdrainage details are appended plus the 180 minute 1 in 2 year and 1 in 30 year summaries.

APPENDED

MICRODRAINAGE CALCULATIONS

Scheme details

1 on 2 year summary – 120, 180 and 240 minute durations.

1 in 30 year summary – 120, 180 and 240 minute durations.

FLOW CONTROL DEVICE DETAILS

DISC VALVE DETAILS (DRTAW DOWN DEVICE)

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File MONK BRETTON SW_Rev B.MDX

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Network 2020.1

STORM SEWER DESIGN by the Modified Rational MethodNetwork Design Table for MONK BRETTON SW REV B.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	13.664	1.360	10.0	0.029	5.00	0.0	0.600	o	225	Pipe/Conduit
2.000	10.919	0.650	16.8	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit
1.001	21.875	0.650	33.7	0.037	0.00	0.0	0.600	o	225	Pipe/Conduit
1.002	4.989	0.500	10.0	0.068	0.00	0.0	0.600	o	225	Pipe/Conduit
1.003	53.637	1.675	32.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
3.000	11.809	0.225	52.5	0.089	5.00	0.0	0.600	o	225	Pipe/Conduit
1.004	5.904	0.200	29.5	0.030	0.00	0.0	0.600	o	300	Pipe/Conduit
1.005	12.765	0.200	63.8	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit
1.006	23.934	0.175	136.8	0.089	0.00	0.0	0.600	o	375	Pipe/Conduit
1.007	45.110	0.850	53.1	0.064	0.00	0.0	0.600	o	375	Pipe/Conduit
1.008	29.545	1.850	16.0	0.075	0.00	0.0	0.600	o	375	Pipe/Conduit
1.009	22.746	2.250	10.1	0.016	0.00	0.0	0.600	o	375	Pipe/Conduit
1.010	12.674	1.250	10.1	0.133	0.00	0.0	0.600	o	375	Pipe/Conduit
4.000	24.259	1.125	21.6	0.084	5.00	0.0	0.600	o	225	Pipe/Conduit
4.001	24.033	1.400	17.2	0.109	0.00	0.0	0.600	o	300	Pipe/Conduit
4.002	8.662	0.200	43.3	0.078	0.00	0.0	0.600	o	300	Pipe/Conduit

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	10.00	5.05	104.460	0.029	0.0	0.0	0.0	4.15	165.1	0.8
2.000	10.00	5.06	103.750	0.060	0.0	0.0	0.0	3.21	127.6	1.6
1.001	10.00	5.22	103.100	0.126	0.0	0.0	0.0	2.26	90.0	3.4
1.002	10.00	5.24	102.450	0.194	0.0	0.0	0.0	4.17	165.7	5.3
1.003	10.00	5.62	101.950	0.194	0.0	0.0	0.0	2.32	92.3	5.3
3.000	10.00	5.11	100.500	0.089	0.0	0.0	0.0	1.81	71.9	2.4
1.004	10.00	5.66	100.200	0.313	0.0	0.0	0.0	2.90	205.3	8.5
1.005	10.00	5.76	100.000	0.339	0.0	0.0	0.0	1.97	139.3	9.2
1.006	10.00	6.02	99.725	0.428	0.0	0.0	0.0	1.55	170.9	11.6
1.007	10.00	6.32	99.550	0.492	0.0	0.0	0.0	2.49	275.2	13.3
1.008	10.00	6.43	98.700	0.567	0.0	0.0	0.0	4.55	502.9	15.4
1.009	10.00	6.50	96.850	0.583	0.0	0.0	0.0	5.73	632.5	15.8
1.010	10.00	6.54	94.600	0.716	0.0	0.0	0.0	5.72	631.5	19.4
4.000	10.00	5.14	97.300	0.084	0.0	0.0	0.0	2.83	112.5	2.3
4.001	10.00	5.25	96.100	0.193	0.0	0.0	0.0	3.81	269.5	5.2
4.002	10.00	5.31	94.700	0.271	0.0	0.0	0.0	2.40	169.3	7.3

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for MONK BRETTON SW REV B.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
4.003	16.835	0.130	129.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit
4.004	21.531	0.150	143.5	0.054	0.00	0.0	0.600	o	375	Pipe/Conduit
1.011	23.430	1.100	21.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.012	45.179	0.300	150.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.003	10.00	5.48	93.630	0.271	0.0	0.0	0.0	1.59	175.7	7.3
4.004	10.00	5.72	93.500	0.325	0.0	0.0	0.0	1.51	166.8	8.8
1.011	10.00	6.67	93.300	1.041	0.0	0.0	0.0	2.85	113.2	28.2
1.012	10.00	7.38	92.200	1.041	0.0	0.0	0.0	1.06	42.3	28.2

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PIPELINE SCHEDULES for MONK BRETTON SW REV B.SWSUpstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	o	225	1	106.472	104.460	1.787	Open Manhole		1200
2.000	o	225	15	105.419	103.750	1.444	Open Manhole		1350
1.001	o	225	2	105.813	103.100	2.488	Open Manhole		1350
1.002	o	225	3	104.750	102.450	2.075	Open Manhole		1350
1.003	o	225	4	104.450	101.950	2.275	Open Manhole		1350
3.000	o	225	16	102.576	100.500	1.851	Open Manhole		1350
1.004	o	300	5	102.657	100.200	2.157	Open Manhole		1350
1.005	o	300	6	102.719	100.000	2.419	Open Manhole		1350
1.006	o	375	7	102.802	99.725	2.702	Open Manhole		1500
1.007	o	375	8	103.450	99.550	3.525	Open Manhole		1500
1.008	o	375	9	100.970	98.700	1.895	Open Manhole		1500
1.009	o	375	10	99.066	96.850	1.841	Open Manhole		1350
1.010	o	375	11	97.200	94.600	2.225	Open Manhole		1500
4.000	o	225	17	99.522	97.300	1.997	Open Manhole		1200
4.001	o	300	18	98.380	96.100	1.980	Open Manhole		1350
4.002	o	300	19	97.500	94.700	2.500	Open Manhole		1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	13.664	10.0	2	105.813	103.100	2.488	Open Manhole		1350
2.000	10.919	16.8	2	105.813	103.100	2.488	Open Manhole		1350
1.001	21.875	33.7	3	104.750	102.450	2.075	Open Manhole		1350
1.002	4.989	10.0	4	104.450	101.950	2.275	Open Manhole		1350
1.003	53.637	32.0	5	102.657	100.275	2.157	Open Manhole		1350
3.000	11.809	52.5	5	102.657	100.275	2.157	Open Manhole		1350
1.004	5.904	29.5	6	102.719	100.000	2.419	Open Manhole		1350
1.005	12.765	63.8	7	102.802	99.800	2.702	Open Manhole		1500
1.006	23.934	136.8	8	103.450	99.550	3.525	Open Manhole		1500
1.007	45.110	53.1	9	100.970	98.700	1.895	Open Manhole		1500
1.008	29.545	16.0	10	99.066	96.850	1.841	Open Manhole		1350
1.009	22.746	10.1	11	97.200	94.600	2.225	Open Manhole		1500
1.010	12.674	10.1	12	96.990	93.350	3.265	Open Manhole		1800
4.000	24.259	21.6	18	98.380	96.175	1.980	Open Manhole		1350
4.001	24.033	17.2	19	97.500	94.700	2.500	Open Manhole		1350
4.002	8.662	43.3	20	97.250	94.500	2.450	Open Manhole		1350

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PIPELINE SCHEDULES for MONK BRETTON SW REV B.SWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	o	375	20	97.250	93.630	3.245	Open Manhole	1350
4.004	o	375	21	97.050	93.500	3.175	Open Manhole	1350
1.011	o	225	12	96.990	93.300	3.465	Open Manhole	1800
1.012	o	225	13	95.230	92.200	2.805	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	16.835	129.5	21	97.050	93.500	3.175	Open Manhole	1350
4.004	21.531	143.5	12	96.990	93.350	3.265	Open Manhole	1800
1.011	23.430	21.3	13	95.230	92.200	2.805	Open Manhole	1200
1.012	45.179	150.6	14	93.500	91.900	1.375	Open Manhole	1200

Simulation Criteria for MONK BRETTON SW REV B.SWS

Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start Level (mm)	0	Run Time (mins)	480
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	4

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 436326 408055 SE 36326 08055
Data Type	Point
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	240

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Online Controls for MONK BRETTON SW REV B.SWS

Hydro-Brake® Optimum Manhole: 12, DS/PN: 1.011, Volume (m³): 12.8

Unit Reference	MD-SHE-0136-1190-2500-1190
Design Head (m)	2.500
Design Flow (l/s)	11.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	136
Invert Level (m)	93.300
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	11.9
Flush-Flo™	0.588	10.7
Kick-Flo®	1.209	8.4
Mean Flow over Head Range	-	9.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.9	1.200	8.6	3.000	13.0	7.000	19.4
0.200	8.9	1.400	9.0	3.500	14.0	7.500	20.1
0.300	9.9	1.600	9.6	4.000	14.9	8.000	20.7
0.400	10.4	1.800	10.2	4.500	15.7	8.500	21.3
0.500	10.7	2.000	10.7	5.000	16.5	9.000	21.9
0.600	10.7	2.200	11.2	5.500	17.3	9.500	22.5
0.800	10.5	2.400	11.7	6.000	18.1		
1.000	9.9	2.600	12.1	6.500	18.8		

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Storage Structures for MONK BRETTON SW REV B.SWS

Tank or Pond Manhole: 21, DS/PN: 4.004

Invert Level (m) 93.500

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	304.5	2.100	304.5	2.101	0.0

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Summary of Results for 120 minute 2 year Winter (MONK BRETTON SW REV B.SWS)

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

PN	US/MH Name	Water	Surcharged	Flooded	Half Drain		Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	
1.000	1	104.471	-0.214	0.000	0.01		1.5	OK
2.000	15	103.775	-0.200	0.000	0.03		3.1	OK
1.001	2	103.142	-0.183	0.000	0.08		6.4	OK
1.002	3	102.497	-0.178	0.000	0.10		9.9	OK
1.003	4	102.000	-0.175	0.000	0.11		9.8	OK
3.000	16	100.540	-0.185	0.000	0.07		4.5	OK
1.004	5	100.275	-0.225	0.000	0.14		15.9	OK
1.005	6	100.078	-0.222	0.000	0.15		17.2	OK
1.006	7	99.821	-0.279	0.000	0.15		21.7	OK
1.007	8	99.629	-0.296	0.000	0.10		24.9	OK
1.008	9	98.762	-0.313	0.000	0.06		28.7	OK
1.009	10	96.906	-0.319	0.000	0.05		29.4	OK
1.010	11	94.672	-0.303	0.000	0.08		36.2	OK
4.000	17	97.329	-0.196	0.000	0.04		4.3	OK
4.001	18	96.139	-0.261	0.000	0.04		9.8	OK
4.002	19	94.770	-0.230	0.000	0.12		13.8	OK
4.003	20	93.790	-0.215	0.000	0.10		13.7	OK
4.004	21	93.789	-0.086	0.000	0.07		9.5	OK
1.011	12	93.874	0.349	0.000	0.10		10.0	SURCHARGED
1.012	13	92.276	-0.149	0.000	0.25		10.0	OK

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Summary of Results for 180 minute 2 year Winter (MONK BRETTON SW REV B.SWS)

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

PN	US/MH Name	Water	Surcharged	Flooded	Half Drain		Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	
1.000	1	104.469	-0.216	0.000	0.01		1.2	OK
2.000	15	103.773	-0.202	0.000	0.02		2.4	OK
1.001	2	103.136	-0.189	0.000	0.06		5.0	OK
1.002	3	102.491	-0.184	0.000	0.08		7.7	OK
1.003	4	101.995	-0.180	0.000	0.09		7.7	OK
3.000	16	100.535	-0.190	0.000	0.06		3.6	OK
1.004	5	100.266	-0.234	0.000	0.11		12.5	OK
1.005	6	100.069	-0.231	0.000	0.12		13.5	OK
1.006	7	99.810	-0.290	0.000	0.12		17.0	OK
1.007	8	99.619	-0.306	0.000	0.08		19.6	OK
1.008	9	98.754	-0.321	0.000	0.05		22.5	OK
1.009	10	96.900	-0.325	0.000	0.04		23.2	OK
1.010	11	94.662	-0.313	0.000	0.07		28.5	OK
4.000	17	97.326	-0.199	0.000	0.03		3.4	OK
4.001	18	96.135	-0.265	0.000	0.03		7.7	OK
4.002	19	94.762	-0.238	0.000	0.10		10.8	OK
4.003	20	93.799	-0.206	0.000	0.08		10.8	OK
4.004	21	93.797	-0.078	0.000	0.07		9.4	OK
1.011	12	93.812	0.287	0.000	0.09		9.9	SURCHARGED
1.012	13	92.275	-0.150	0.000	0.24		9.9	OK

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Summary of Results for 240 minute 2 year Winter (MONK BRETTON SW REV B.SWS)

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	1	104.467	-0.218	0.000	0.01		1.0	OK
2.000	15	103.770	-0.205	0.000	0.02		2.0	OK
1.001	2	103.133	-0.192	0.000	0.05		4.2	OK
1.002	3	102.487	-0.188	0.000	0.06		6.4	OK
1.003	4	101.990	-0.185	0.000	0.07		6.4	OK
3.000	16	100.532	-0.193	0.000	0.05		3.0	OK
1.004	5	100.261	-0.239	0.000	0.09		10.4	OK
1.005	6	100.063	-0.237	0.000	0.10		11.3	OK
1.006	7	99.803	-0.297	0.000	0.10		14.2	OK
1.007	8	99.612	-0.313	0.000	0.06		16.3	OK
1.008	9	98.749	-0.326	0.000	0.04		18.8	OK
1.009	10	96.896	-0.329	0.000	0.04		19.3	OK
1.010	11	94.656	-0.319	0.000	0.05		23.8	OK
4.000	17	97.324	-0.201	0.000	0.03		2.8	OK
4.001	18	96.133	-0.267	0.000	0.03		6.4	OK
4.002	19	94.756	-0.244	0.000	0.08		9.0	OK
4.003	20	93.796	-0.209	0.000	0.06		9.0	OK
4.004	21	93.795	-0.080	0.000	0.07		9.4	OK
1.011	12	93.793	0.268	0.000	0.09		9.8	SURCHARGED
1.012	13	92.275	-0.150	0.000	0.24		9.8	OK

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Summary of Results for 120 minute 30 year Winter (MONK BRETTON SW REV B.SWS)

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

PN	US/MH Name	Water	Surcharged	Flooded	Half Drain Pipe		Status	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)		Pipe Flow (l/s)
1.000	1	104.483	-0.202	0.000	0.02		3.2	OK
2.000	15	103.786	-0.189	0.000	0.06		6.7	OK
1.001	2	103.162	-0.163	0.000	0.17		14.1	OK
1.002	3	102.521	-0.154	0.000	0.22		21.7	OK
1.003	4	102.025	-0.150	0.000	0.24		21.7	OK
3.000	16	100.560	-0.165	0.000	0.16		10.0	OK
1.004	5	100.315	-0.185	0.000	0.31		35.0	OK
1.005	6	100.120	-0.180	0.000	0.34		37.9	OK
1.006	7	99.872	-0.228	0.000	0.33		47.8	OK
1.007	8	99.668	-0.257	0.000	0.22		54.9	OK
1.008	9	98.794	-0.281	0.000	0.14		63.3	OK
1.009	10	96.936	-0.289	0.000	0.12		65.1	OK
1.010	11	94.708	-0.267	0.000	0.18		80.0	OK
4.000	17	97.345	-0.180	0.000	0.09		9.4	OK
4.001	18	96.160	-0.240	0.000	0.09		21.6	OK
4.002	19	94.806	-0.194	0.000	0.27		30.3	OK
4.003	20	94.356	0.351	0.000	0.21		29.8	SURCHARGED
4.004	21	94.354	0.479	0.000	0.07		10.4	SURCHARGED
1.011	12	94.356	0.831	0.000	0.10		10.5	SURCHARGED
1.012	13	92.278	-0.147	0.000	0.26		10.5	OK

GARDEN HOUSE CLOSE
MONK BRETTON

Date 25/01/2023

Designed by HM

File MONK BRETTON SW_Rev B.MDX

Checked by

Micro Drainage

Network 2020.1

Summary of Results for 180 minute 30 year Winter (MONK BRETTON SW REV
B.SWS)

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	1	104.478	-0.207	0.000	0.02		2.4	OK
2.000	15	103.781	-0.194	0.000	0.05		5.0	OK
1.001	2	103.153	-0.172	0.000	0.13		10.6	OK
1.002	3	102.511	-0.164	0.000	0.16		16.3	OK
1.003	4	102.015	-0.160	0.000	0.18		16.2	OK
3.000	16	100.552	-0.173	0.000	0.12		7.5	OK
1.004	5	100.298	-0.202	0.000	0.23		26.2	OK
1.005	6	100.102	-0.198	0.000	0.25		28.4	OK
1.006	7	99.850	-0.250	0.000	0.24		35.8	OK
1.007	8	99.651	-0.274	0.000	0.16		41.1	OK
1.008	9	98.781	-0.294	0.000	0.11		47.4	OK
1.009	10	96.926	-0.299	0.000	0.09		48.7	OK
1.010	11	94.692	-0.283	0.000	0.14		59.8	OK
4.000	17	97.338	-0.187	0.000	0.07		7.0	OK
4.001	18	96.151	-0.249	0.000	0.07		16.2	OK
4.002	19	94.791	-0.209	0.000	0.20		22.7	OK
4.003	20	94.372	0.367	0.000	0.16		22.4	SURCHARGED
4.004	21	94.371	0.496	0.000	0.07		10.5	SURCHARGED
1.011	12	94.370	0.845	0.000	0.10		10.6	SURCHARGED
1.012	13	92.278	-0.147	0.000	0.26		10.6	OK

GARDEN HOUSE CLOSE
MONK BRETTON



Date 25/01/2023

Designed by HM

File MONK BRETTON SW_Rev B.MDX

Checked by

Micro Drainage

Network 2020.1

Summary of Results for 240 minute 30 year Winter (MONK BRETTON SW REV
B.SWS)

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status OFF
Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	1	104.475	-0.210	0.000	0.01		2.0	OK
2.000	15	103.778	-0.197	0.000	0.04		4.1	OK
1.001	2	103.148	-0.177	0.000	0.10		8.5	OK
1.002	3	102.504	-0.171	0.000	0.13		13.1	OK
1.003	4	102.007	-0.168	0.000	0.15		13.1	OK
3.000	16	100.547	-0.178	0.000	0.10		6.0	OK
1.004	5	100.288	-0.212	0.000	0.19		21.1	OK
1.005	6	100.092	-0.208	0.000	0.20		22.9	OK
1.006	7	99.837	-0.263	0.000	0.20		28.9	OK
1.007	8	99.640	-0.285	0.000	0.13		33.2	OK
1.008	9	98.774	-0.301	0.000	0.09		38.3	OK
1.009	10	96.916	-0.309	0.000	0.07		39.4	OK
1.010	11	94.683	-0.292	0.000	0.11		48.4	OK
4.000	17	97.334	-0.191	0.000	0.05		5.7	OK
4.001	18	96.145	-0.255	0.000	0.05		13.0	OK
4.002	19	94.781	-0.219	0.000	0.16		18.3	OK
4.003	20	94.362	0.357	0.000	0.13		18.0	SURCHARGED
4.004	21	94.361	0.486	0.000	0.07		10.5	SURCHARGED
1.011	12	94.359	0.834	0.000	0.10		10.6	SURCHARGED
1.012	13	92.278	-0.147	0.000	0.26		10.6	OK

Technical Specification

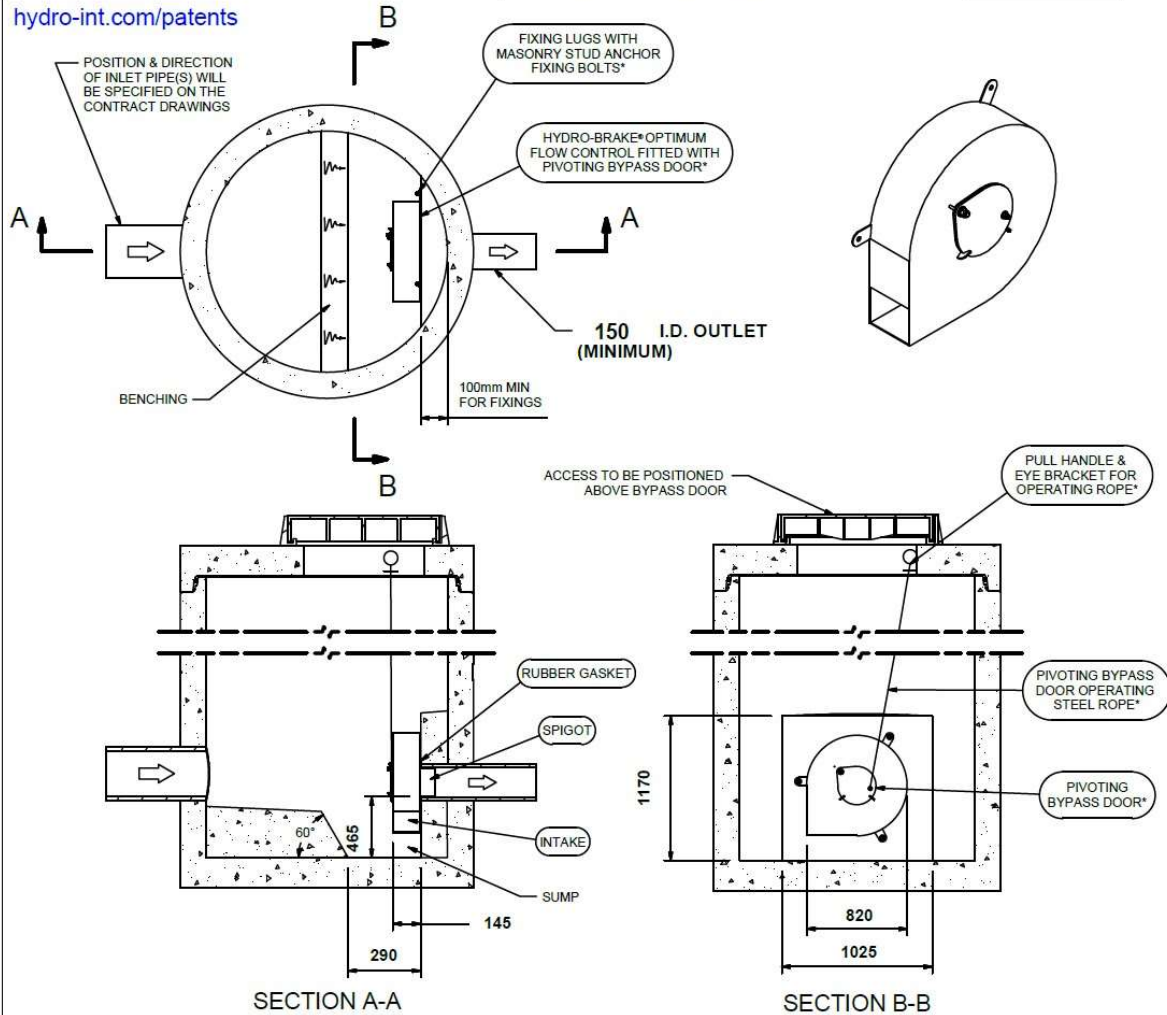
Control Point	Head (m)	Flow (l/s)
Primary Design	2.500	11.900
Flush-Flo™	0.588	10.722
Kick-Flo®	1.209	8.449
Mean Flow		9.783

Hydro-Brake® Optimum Flow Control including:

- 5 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 59 kg



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IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0136-1190-2500-1190 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

Hydro
 International®

DATE 22/01/2023 06:26

SITE Monk Bretton

DESIGNER Hugh Morris

REF 1

SHE-0136-1190-2500-1190

Hydro-Brake® Optimum

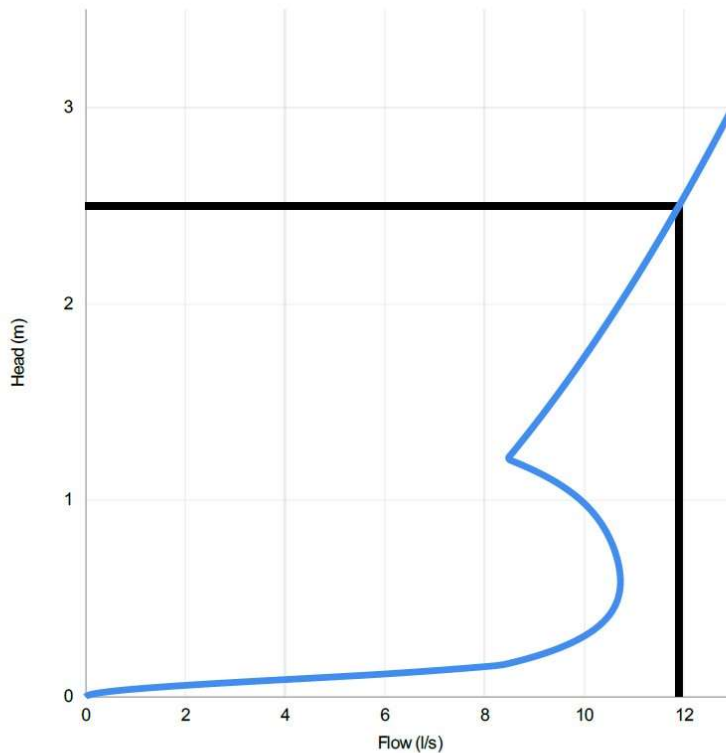
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.500	11.900
Flush-Flo	0.588	10.722
Kick-Flo®	1.209	8.449
Mean Flow		9.783



PT/329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.086	3.885
0.172	8.524
0.259	9.595
0.345	10.209
0.431	10.542
0.517	10.691
0.603	10.721
0.690	10.671
0.776	10.560
0.862	10.388
0.948	10.137
1.034	9.770
1.121	9.239
1.207	8.493
1.293	8.718
1.379	8.986
1.466	9.246
1.552	9.497
1.638	9.742
1.724	9.980
1.810	10.212
1.897	10.439
1.983	10.660
2.069	10.876
2.155	11.088
2.241	11.296
2.328	11.499
2.414	11.699
2.500	11.895

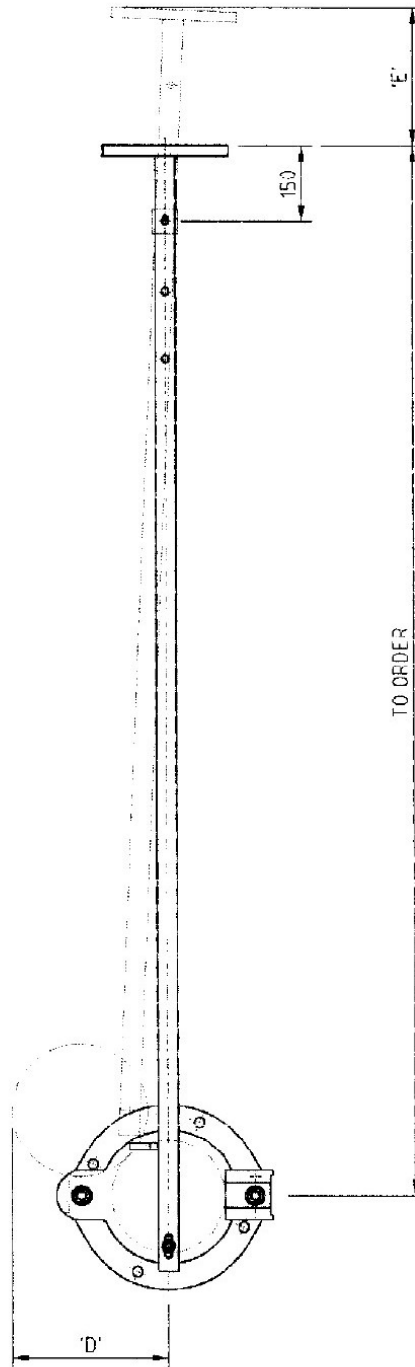
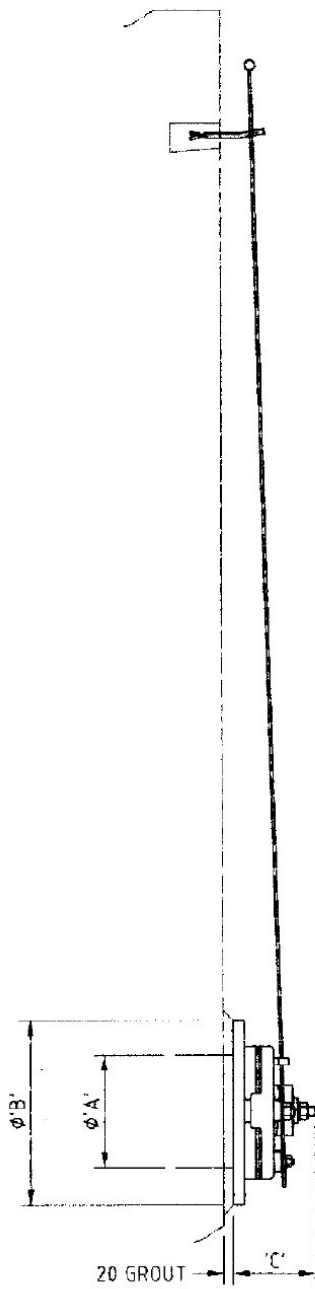
DESIGN ADVICE The head/flow characteristics of this SHE-0136-1190-2500-1190 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

! The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.



DATE	22/01/2023 06:26
Site	Monk Bretton
DESIGNER	Hugh Morris
Ref	1

SHE-0136-1190-2500-1190
Hydro-Brake Optimum®



VALVE DIMENSION TABLE

SIZE	'A'	'B'	'C'	'D'	'E'	WT (Kg)
80	80	200	120	105	80	12
100	100	220	125	150	110	16
150	150	285	160	200	180	20
200	200	370	165	300	240	38
225	225	370	165	300	270	38
300	300	460	180	420	360	52

EXPRESS VALVE SERVICES LIMITED
 UNITS 18/19 THE WALLS IND. ESTATE
 DUDLEY ROAD
 BRIERLEY HILL
 WEST MIDLANDS
 DY5 1HR



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Due to our continuous product development policy we reserve the right to modify designs or dimensions