

Dixon Hurst Kemp		Page 1
Victoria Court 22 St Pancras West Sussex PO19 7GD	34 Hurst Road, Hassocks Surface Water Drainage Design Simulation Rev03	
Date Nov 25	Designed by JS	
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	45
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.343	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	0.000
Foul Sewage (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.76
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500
PIMP (%)	100		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.381

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	16.200	1.906	8.5	0.004	5.00	0.0	0.600	o	110
1.001	5.000	0.050	100.0	0.004	0.00	0.0	0.600	o	110
2.000	3.600	0.379	9.5	0.004	5.00	0.0	0.600	o	110
2.001	9.200	1.533	6.0	0.004	0.00	0.0	0.600	o	110
1.002	3.600	0.045	80.0	0.000	0.00	0.0	0.600	o	110
1.003	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	110
1.004	1.500	0.015	100.0	0.000	0.00	0.0	0.600	o	110

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	50.00	5.10	65.400	0.004	0.0	0.0	0.3	2.84	27.0	1.0
1.001	50.00	5.20	63.494	0.008	0.0	0.0	0.6	0.82	7.8	2.1
2.000	50.00	5.02	65.400	0.004	0.0	0.0	0.3	2.69	25.5	1.0
2.001	50.00	5.07	65.000	0.008	0.0	0.0	0.6	3.38	32.2	2.1
1.002	50.00	5.26	63.444	0.016	0.0	0.0	1.3	0.92	8.7	4.2
1.003	50.00	5.28	63.250	0.016	0.0	0.0	1.3	0.82	7.8	4.2
1.004	50.00	5.31	63.100	0.016	0.0	0.0	1.3	0.82	7.8	4.2

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backd (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110				
S1	64.100	0.606	Open Manhole	600	1.001	63.494	110	1.000	63.494	110	
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110				
S2	65.650	0.650	Open Manhole	600	2.001	65.000	110	2.000	65.021	110	
S3	64.100	0.656	Open Manhole	600	1.002	63.444	110	1.001	63.444	110	
								2.001	63.467	110	
S4	64.000	0.750	Open Manhole	600	1.003	63.250	110	1.002	63.399	110	
RAIN GARDEN	63.700	0.600	Open Manhole	600	1.004	63.100	110	1.003	63.240	110	
Dummy	63.800	0.715	Open Manhole	600		OUTFALL		1.004	63.085	110	

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PIPELINE SCHEDULES for Storm

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)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	64.100	63.494	0.496	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S2	65.650	65.000	0.540	Open Manhole	600
1.002	o	110	S3	64.100	63.444	0.546	Open Manhole	600
1.003	o	110	S4	64.000	63.250	0.640	Open Manhole	600
1.004	o	110	RAIN GARDEN	63.700	63.100	0.490	Open Manhole	600

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)
1.000	16.200	8.5	S1	64.100	63.494	0.496	Open Manhole	600
1.001	5.000	100.0	S3	64.100	63.444	0.546	Open Manhole	600
2.000	3.600	9.5	S2	65.650	65.021	0.519	Open Manhole	600
2.001	9.200	6.0	S3	64.100	63.467	0.523	Open Manhole	600
1.002	3.600	80.0	S4	64.000	63.399	0.491	Open Manhole	600
1.003	1.000	100.0	RAIN GARDEN	63.700	63.240	0.350	Open Manhole	600
1.004	1.500	100.0	Dummy	63.800	63.085	0.605	Open Manhole	600

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.004	Dummy	63.800	63.085	63.100	600	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Run Time (mins)	120
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	2

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Storm Duration (mins)	60
Ratio R	0.343		

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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 0.2

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: RAIN GARDEN, DS/PN: 1.004, Volume (m³): 0.2

Invert Level (m) 63.100

Depth (m) Flow (l/s)

0.700 0.0400

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Storage Structures for Storm

cellular Storage Manhole: S4, DS/PN: 1.003

Invert Level (m) 63.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	30.0	30.0	0.500	0.0	43.6
0.400	30.0	43.6			

Infiltration Blanket Manhole: RAIN GARDEN, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461 Diameter/Width (m) 1.2
Safety Factor 2.0 Length (m) 7.7
Porosity 0.30 Cap Volume Depth (m) 0.000
Invert Level (m) 63.100

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
2.000	RE2	0.500
2.001	S2	0.500
1.002	S3	0.500
1.003	S4	0.500
1.004	RAIN GARDEN	0.500

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Summary of Results for 60 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

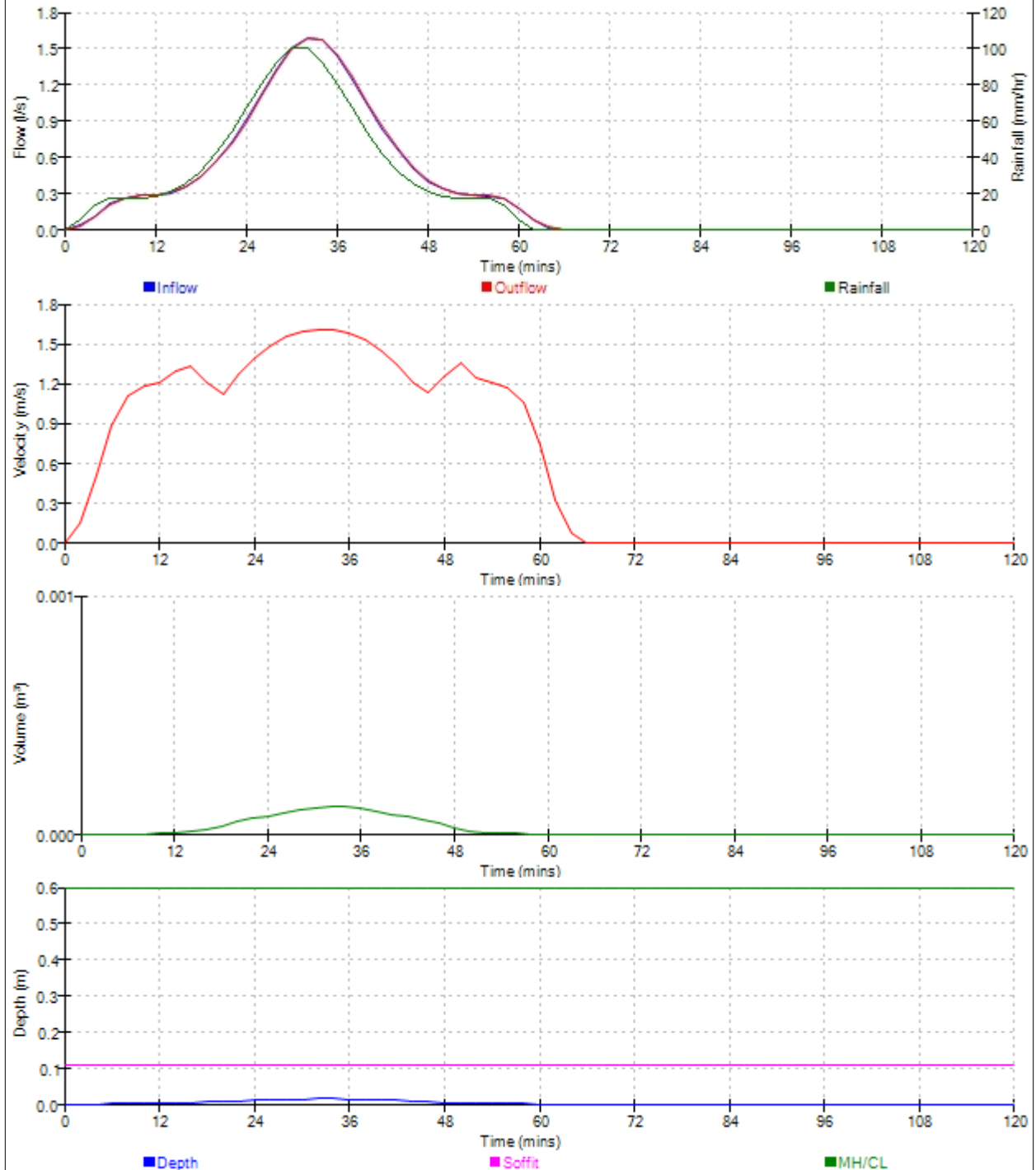
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.418	-0.092	0.000	0.06	0.0	1.6	OK
1.001	S1	63.551	-0.053	0.000	0.47	0.0	3.2	OK
2.000	RE2	65.420	-0.090	0.000	0.08	0.0	1.6	OK
2.001	S2	65.024	-0.086	0.000	0.11	0.0	3.2	OK
1.002	S3	63.550	-0.004	0.000	0.89	0.0	6.3	OK
1.003	S4	63.548	0.188	0.000	0.06	0.0	0.3	SURCHARGED
1.004	RAIN GARDEN	63.437	0.227	0.000	0.00	0.0	0.0	SURCHARGED

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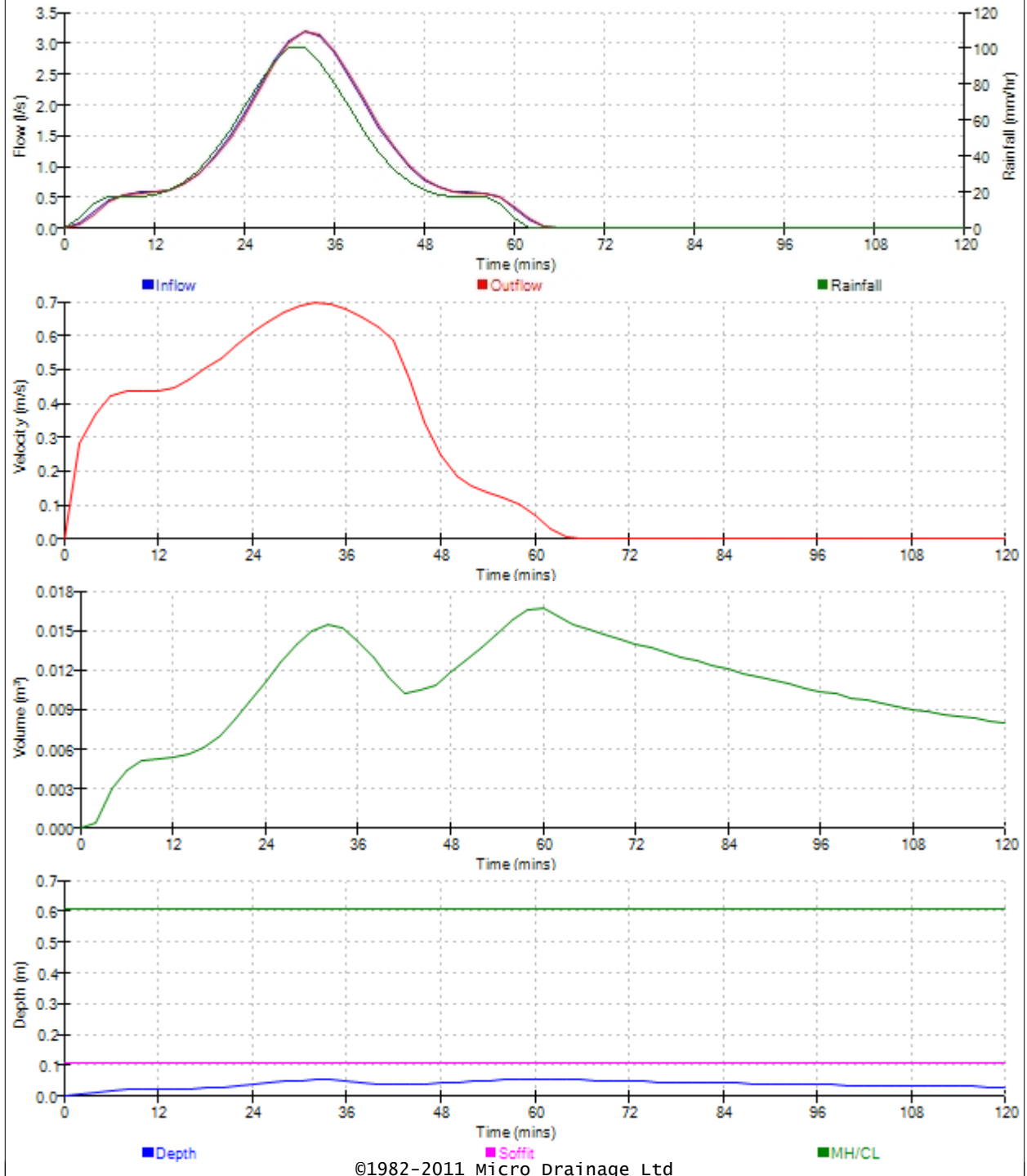
Rainfall Hyetograph for 60 minute 100 year Winter (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
2	5.580	14	20.926	26	80.712	38	67.259	50	18.625
4	13.709	16	25.481	28	92.265	40	54.275	52	18.035
6	17.170	18	32.587	30	100.463	42	42.530	54	18.028
8	18.028	20	42.530	32	100.463	44	32.587	56	17.170
10	18.035	22	54.275	34	92.265	46	25.481	58	13.709
12	18.625	24	67.259	36	80.712	48	20.926	60	5.580

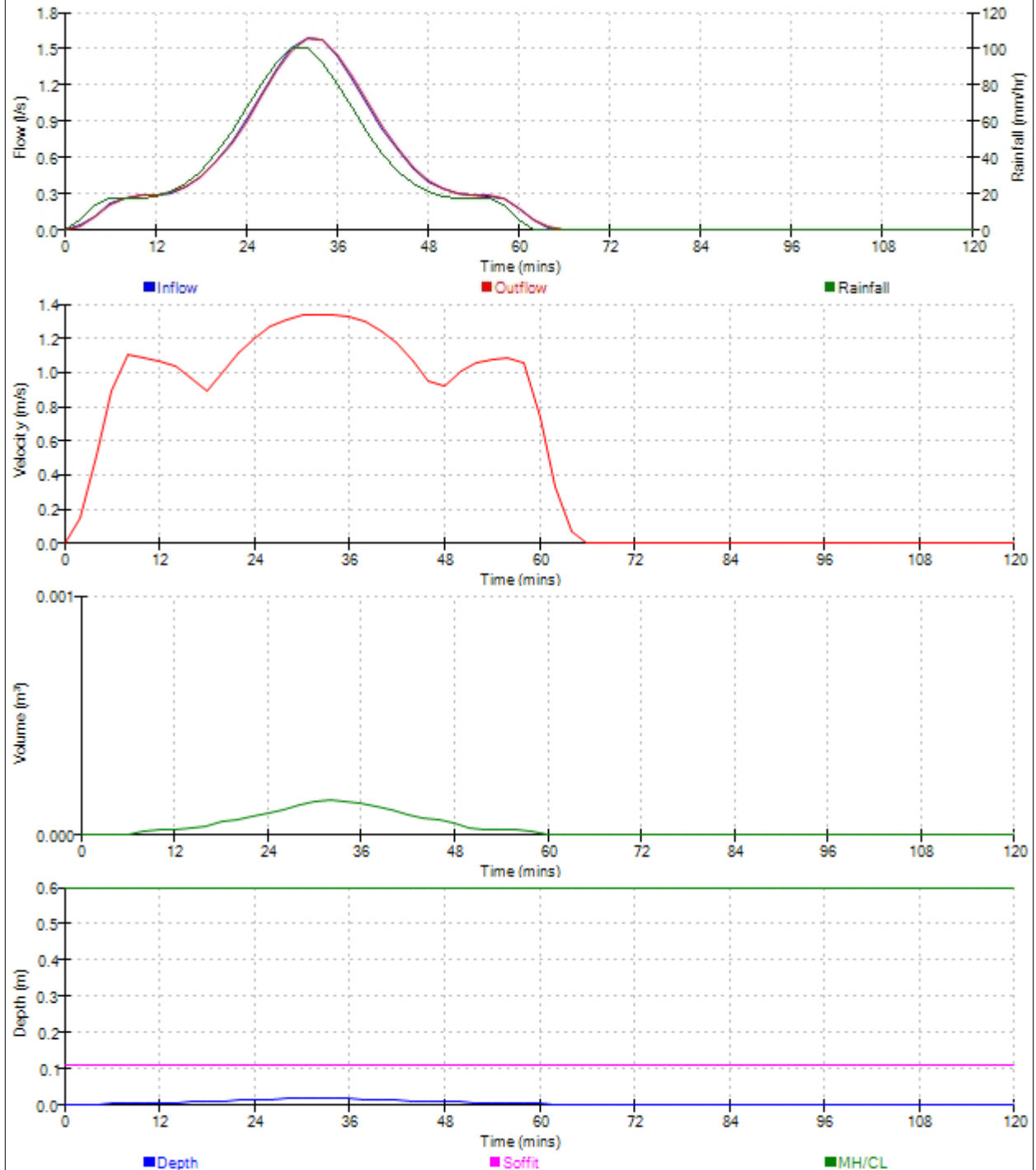
Graphs for Pipe 1.000 US/MH RE1 (Storm)
60 minute 100 year winter
Status: OK



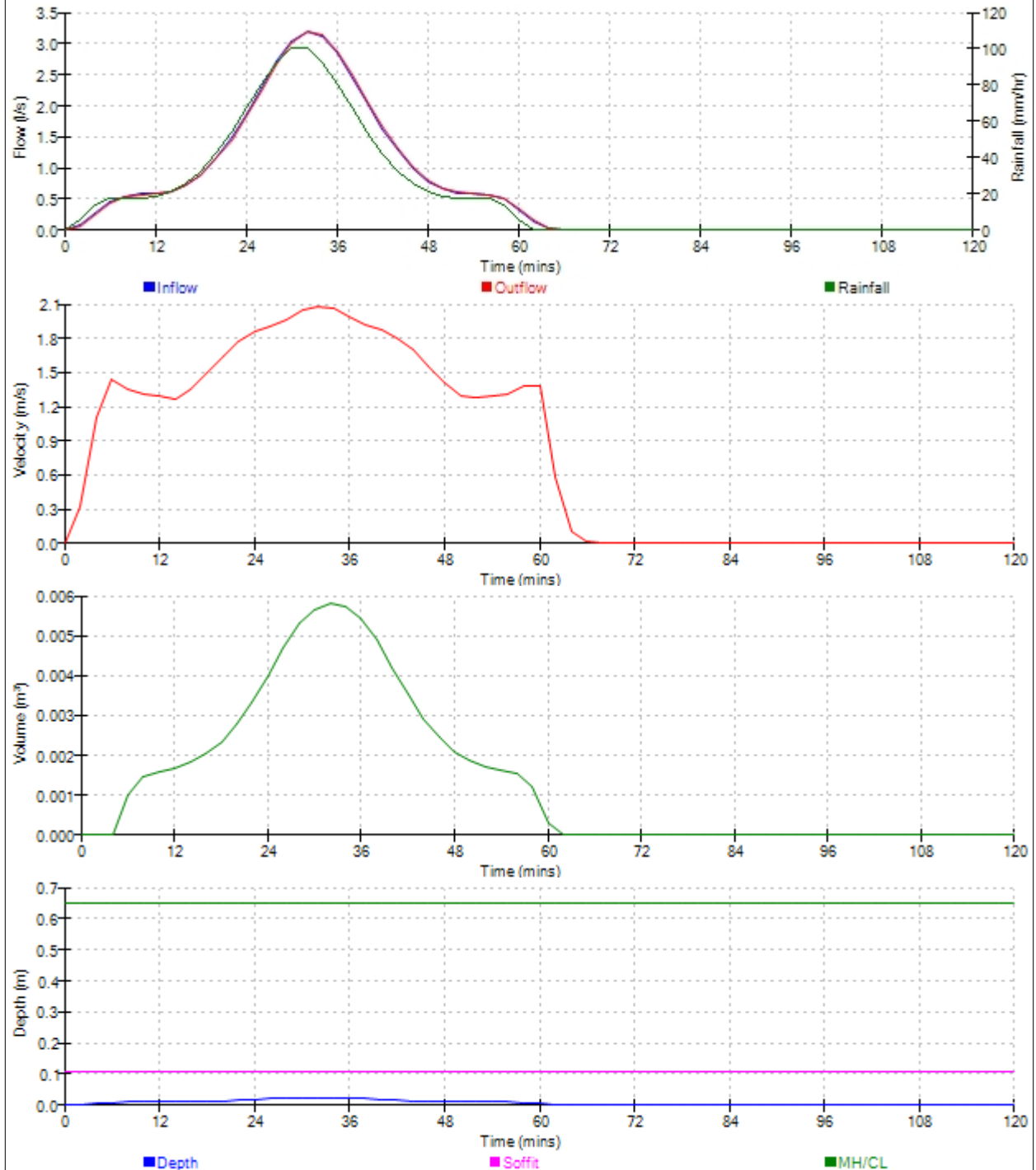
Graphs for Pipe 1.001 US/MH S1 (Storm)
60 minute 100 year winter
Status: OK



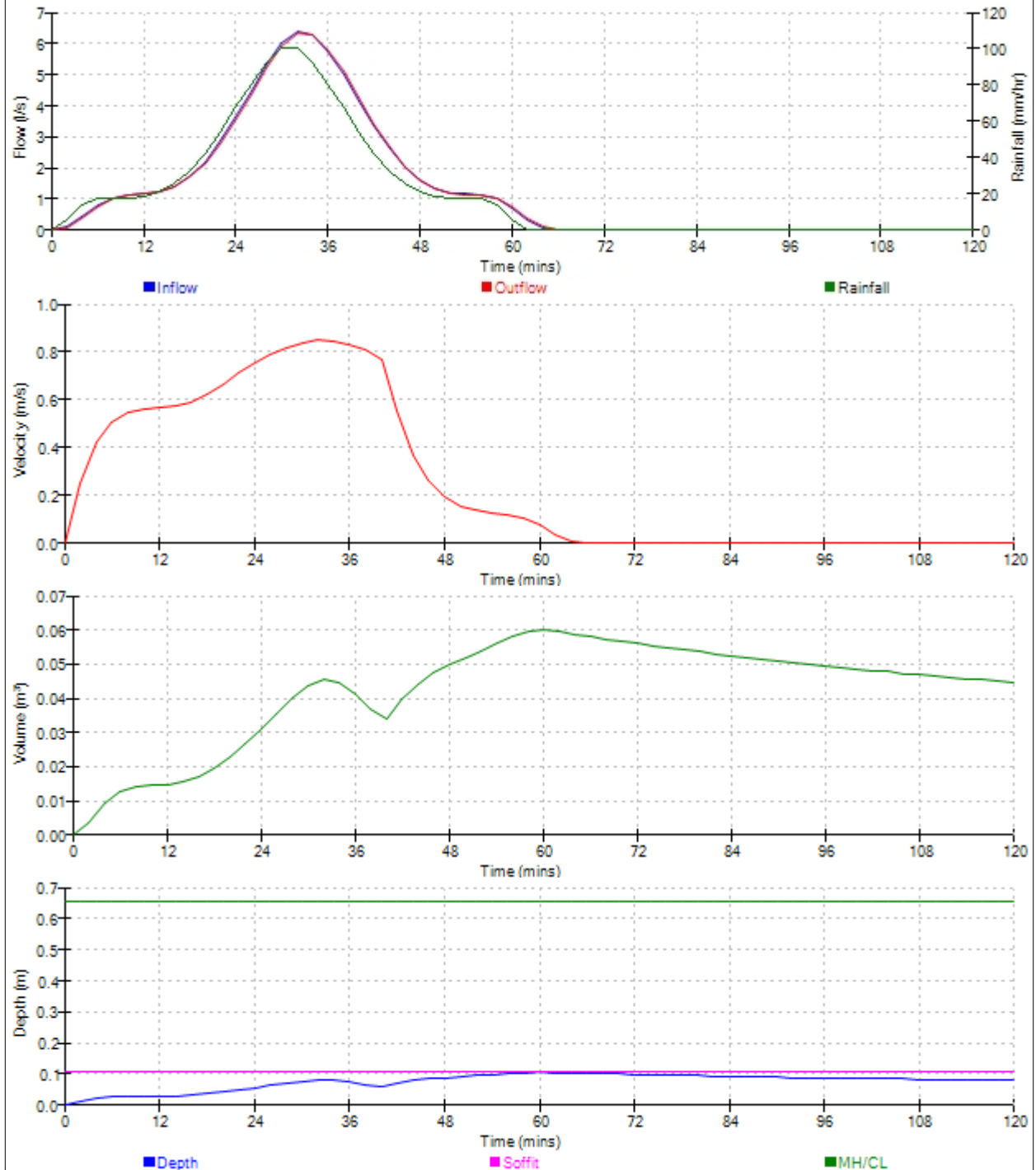
Graphs for Pipe 2.000 US/MH RE2 (Storm)
60 minute 100 year winter
Status: OK



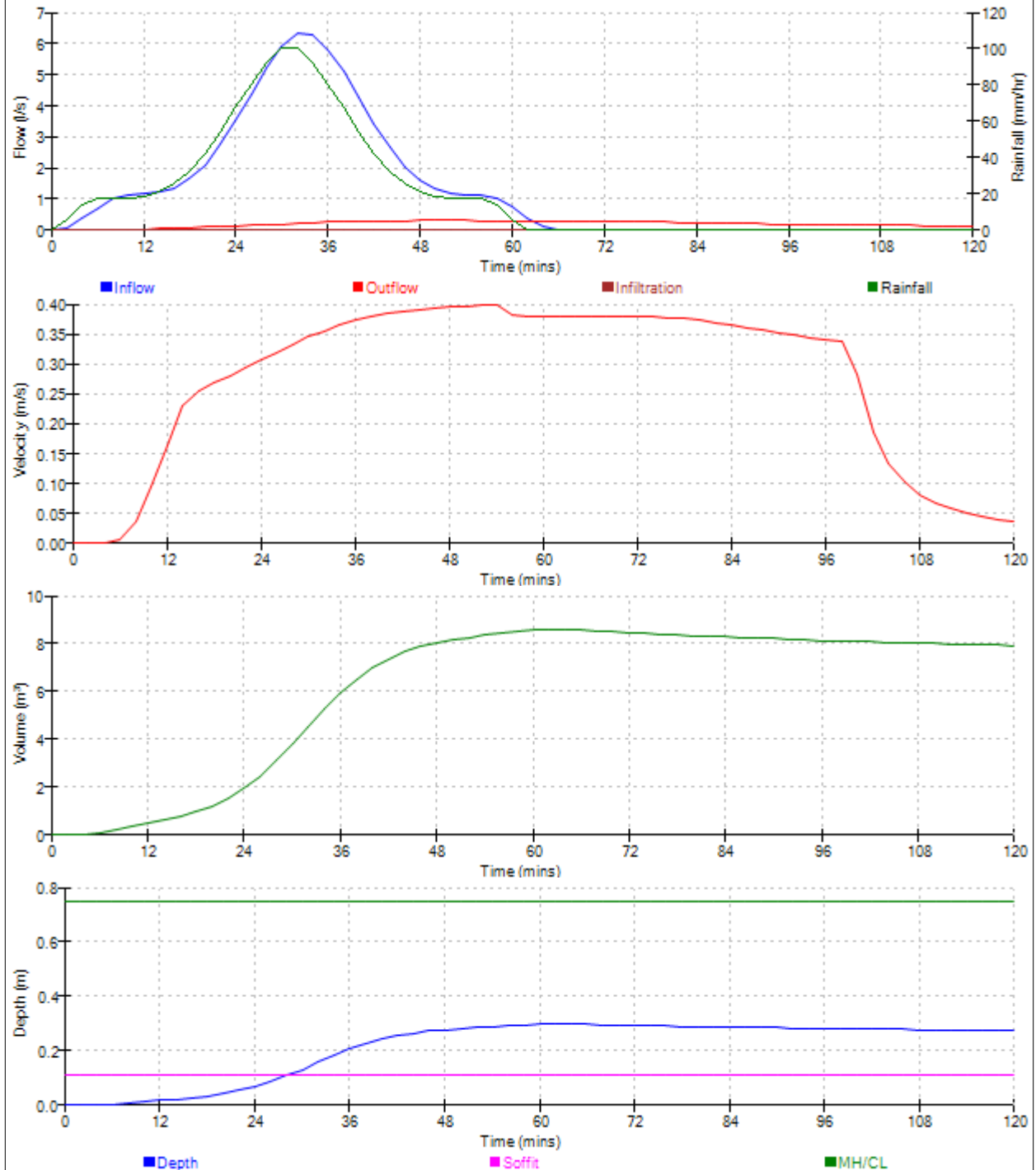
Graphs for Pipe 2.001 US/MH S2 (Storm)
60 minute 100 year winter
Status: OK



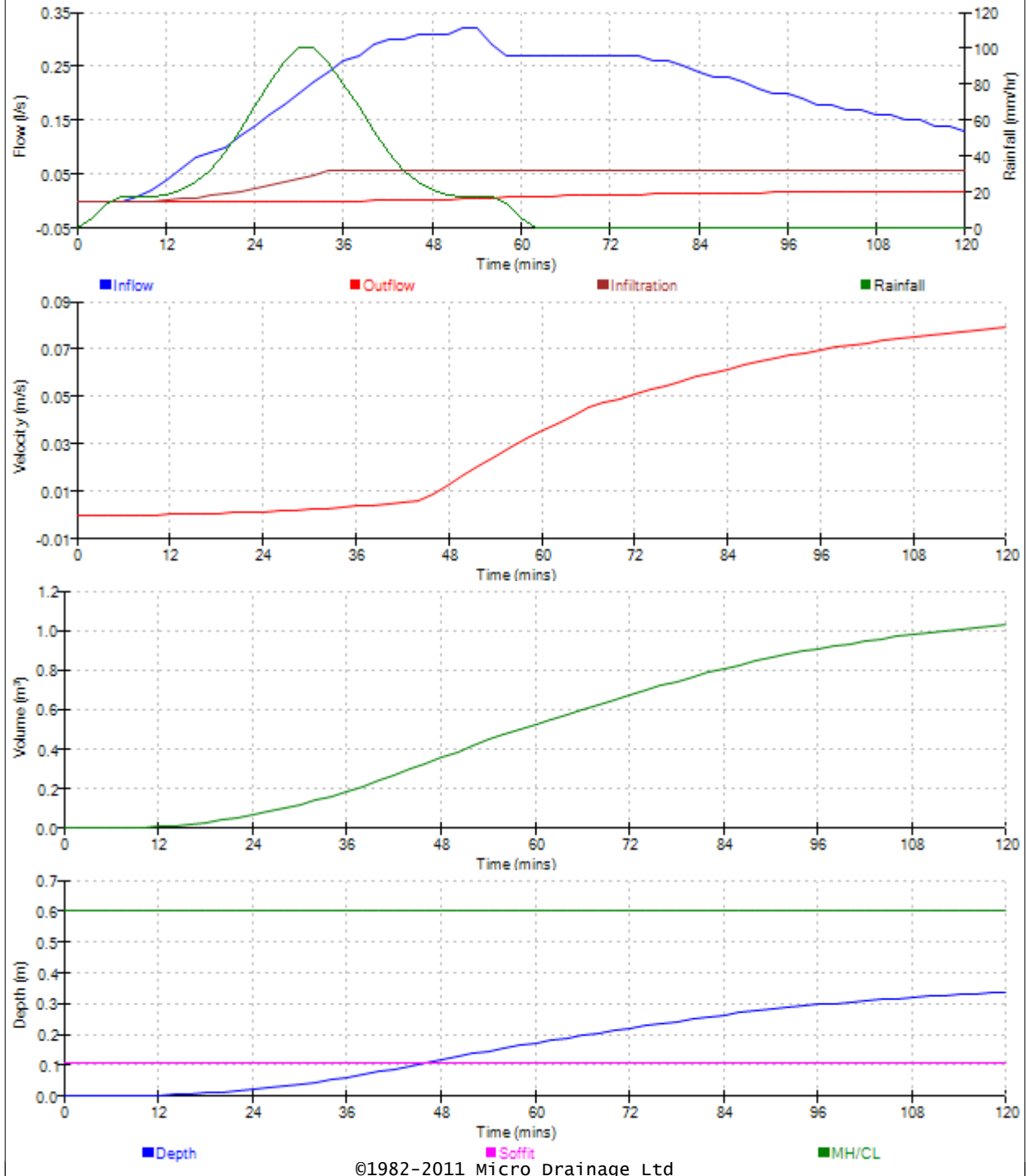
Graphs for Pipe 1.002 US/MH S3 (Storm)
60 minute 100 year winter
Status: OK



Graphs for Pipe 1.003 US/MH S4 (Storm)
60 minute 100 year winter
Status: SURCHARGED



Graphs for Pipe 1.004 US/MH RAIN GARDEN (Storm)
60 minute 100 year winter
Status: SURCHARGED



Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
2	65.401	63.500	-0.109	0.0	0.2	0.0
4	65.403	63.508	-0.107	0.0	0.5	0.1
6	65.404	63.513	-0.106	0.0	0.9	0.2
8	65.406	63.515	-0.104	0.0	1.1	0.3
10	65.406	63.516	-0.104	0.0	1.2	0.3
12	65.406	63.516	-0.104	0.0	1.2	0.3
14	65.406	63.517	-0.104	0.0	1.3	0.3
16	65.407	63.518	-0.103	0.0	1.3	0.4
18	65.409	63.521	-0.101	0.0	1.2	0.4
20	65.411	63.525	-0.099	0.0	1.1	0.6
22	65.412	63.529	-0.098	0.0	1.3	0.7
24	65.413	63.534	-0.097	0.0	1.4	0.9
26	65.415	63.539	-0.095	0.0	1.5	1.1
28	65.416	63.543	-0.094	0.0	1.6	1.3
30	65.417	63.546	-0.093	0.0	1.6	1.5
32	65.418	63.548	-0.092	0.0	1.6	1.6
34	65.418	63.547	-0.092	0.0	1.6	1.6
36	65.417	63.544	-0.093	0.0	1.6	1.5
38	65.416	63.540	-0.094	0.0	1.5	1.3
40	65.414	63.535	-0.096	0.0	1.4	1.1
42	65.413	63.531	-0.097	0.0	1.3	0.9
44	65.412	63.532	-0.098	0.0	1.2	0.7
46	65.410	63.533	-0.100	0.0	1.1	0.5
48	65.408	63.536	-0.102	0.0	1.3	0.4
50	65.407	63.539	-0.103	0.0	1.4	0.3
52	65.406	63.542	-0.104	0.0	1.3	0.3
54	65.406	63.545	-0.104	0.0	1.2	0.3
56	65.406	63.549	-0.104	0.0	1.2	0.3
58	65.405	63.551	-0.105	0.0	1.1	0.3
60	65.404	63.551	-0.106	0.0	0.7	0.2
62	65.402	63.549	-0.108	0.0	0.3	0.1
64	65.400	63.548	-0.110	0.0	0.1	0.0
66	65.400	63.546	-0.110	0.0	0.0	0.0
68	65.400	63.545	-0.110	0.0	0.0	0.0
70	65.400	63.544	-0.110	0.0	0.0	0.0
72	65.400	63.543	-0.110	0.0	0.0	0.0
74	65.400	63.542	-0.110	0.0	0.0	0.0
76	65.400	63.541	-0.110	0.0	0.0	0.0
78	65.400	63.540	-0.110	0.0	0.0	0.0
80	65.400	63.539	-0.110	0.0	0.0	0.0
82	65.400	63.538	-0.110	0.0	0.0	0.0
84	65.400	63.537	-0.110	0.0	0.0	0.0
86	65.400	63.536	-0.110	0.0	0.0	0.0
88	65.400	63.535	-0.110	0.0	0.0	0.0
90	65.400	63.534	-0.110	0.0	0.0	0.0
92	65.400	63.533	-0.110	0.0	0.0	0.0
94	65.400	63.532	-0.110	0.0	0.0	0.0
96	65.400	63.532	-0.110	0.0	0.0	0.0
98	65.400	63.531	-0.110	0.0	0.0	0.0
100	65.400	63.530	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	65.400	63.530	-0.110	0.0	0.0	0.0
104	65.400	63.529	-0.110	0.0	0.0	0.0
106	65.400	63.528	-0.110	0.0	0.0	0.0
108	65.400	63.527	-0.110	0.0	0.0	0.0
110	65.400	63.527	-0.110	0.0	0.0	0.0
112	65.400	63.526	-0.110	0.0	0.0	0.0
114	65.400	63.526	-0.110	0.0	0.0	0.0
116	65.400	63.525	-0.110	0.0	0.0	0.0
118	65.400	63.525	-0.110	0.0	0.0	0.0
120	65.400	63.524	-0.110	0.0	0.0	0.0

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Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	63.530	63.530	-0.075	0.0	0.0	0.0
104	63.529	63.529	-0.075	0.0	0.0	0.0
106	63.528	63.528	-0.076	0.0	0.0	0.0
108	63.527	63.528	-0.077	0.0	0.0	0.0
110	63.527	63.527	-0.077	0.0	0.0	0.0
112	63.526	63.526	-0.078	0.0	0.0	0.0
114	63.526	63.526	-0.078	0.0	0.0	0.0
116	63.525	63.525	-0.079	0.0	0.0	0.0
118	63.525	63.525	-0.079	0.0	0.0	0.0
120	63.524	63.524	-0.080	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	65.400	65.000	-0.110	0.0	0.0	0.0
104	65.400	65.000	-0.110	0.0	0.0	0.0
106	65.400	65.000	-0.110	0.0	0.0	0.0
108	65.400	65.000	-0.110	0.0	0.0	0.0
110	65.400	65.000	-0.110	0.0	0.0	0.0
112	65.400	65.000	-0.110	0.0	0.0	0.0
114	65.400	65.000	-0.110	0.0	0.0	0.0
116	65.400	65.000	-0.110	0.0	0.0	0.0
118	65.400	65.000	-0.110	0.0	0.0	0.0
120	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S2 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
2	65.001	63.455	-0.109	0.0	0.3	0.1
4	65.005	63.464	-0.105	0.0	1.1	0.2
6	65.008	63.470	-0.102	0.0	1.4	0.4
8	65.010	63.473	-0.100	0.0	1.3	0.5
10	65.010	63.474	-0.100	0.0	1.3	0.6
12	65.010	63.474	-0.100	0.0	1.3	0.6
14	65.011	63.475	-0.099	0.0	1.3	0.6
16	65.012	63.478	-0.098	0.0	1.4	0.7
18	65.013	63.482	-0.097	0.0	1.5	0.9
20	65.014	63.487	-0.096	0.0	1.6	1.1
22	65.016	63.494	-0.094	0.0	1.8	1.4
24	65.018	63.501	-0.092	0.0	1.9	1.8
26	65.020	63.509	-0.090	0.0	1.9	2.2
28	65.022	63.516	-0.088	0.0	2.0	2.7
30	65.024	63.523	-0.086	0.0	2.0	3.0
32	65.024	63.525	-0.086	0.0	2.1	3.2
34	65.024	63.524	-0.086	0.0	2.1	3.1
36	65.023	63.518	-0.087	0.0	2.0	2.9
38	65.021	63.511	-0.089	0.0	1.9	2.5
40	65.019	63.506	-0.091	0.0	1.9	2.1
42	65.017	63.516	-0.093	0.0	1.8	1.7
44	65.015	63.523	-0.095	0.0	1.7	1.3
46	65.013	63.529	-0.097	0.0	1.6	1.0
48	65.012	63.533	-0.098	0.0	1.4	0.8
50	65.011	63.536	-0.099	0.0	1.3	0.7
52	65.011	63.540	-0.099	0.0	1.3	0.6
54	65.010	63.543	-0.100	0.0	1.3	0.6
56	65.010	63.546	-0.100	0.0	1.3	0.6
58	65.009	63.549	-0.101	0.0	1.4	0.5
60	65.006	63.550	-0.104	0.0	1.4	0.4
62	65.002	63.549	-0.108	0.0	0.6	0.2
64	65.000	63.548	-0.110	0.0	0.1	0.0
66	65.000	63.546	-0.110	0.0	0.0	0.0
68	65.000	63.545	-0.110	0.0	0.0	0.0
70	65.000	63.544	-0.110	0.0	0.0	0.0
72	65.000	63.543	-0.110	0.0	0.0	0.0
74	65.000	63.542	-0.110	0.0	0.0	0.0
76	65.000	63.541	-0.110	0.0	0.0	0.0
78	65.000	63.540	-0.110	0.0	0.0	0.0
80	65.000	63.539	-0.110	0.0	0.0	0.0
82	65.000	63.538	-0.110	0.0	0.0	0.0
84	65.000	63.537	-0.110	0.0	0.0	0.0
86	65.000	63.536	-0.110	0.0	0.0	0.0
88	65.000	63.535	-0.110	0.0	0.0	0.0
90	65.000	63.534	-0.110	0.0	0.0	0.0
92	65.000	63.533	-0.110	0.0	0.0	0.0
94	65.000	63.533	-0.110	0.0	0.0	0.0
96	65.000	63.532	-0.110	0.0	0.0	0.0
98	65.000	63.531	-0.110	0.0	0.0	0.0
100	65.000	63.530	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S2 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	0/F Velocity (m/s)	Pipe Flow (l/s)
102	65.000	63.530	-0.110	0.0	0.0	0.0
104	65.000	63.529	-0.110	0.0	0.0	0.0
106	65.000	63.528	-0.110	0.0	0.0	0.0
108	65.000	63.528	-0.110	0.0	0.0	0.0
110	65.000	63.527	-0.110	0.0	0.0	0.0
112	65.000	63.526	-0.110	0.0	0.0	0.0
114	65.000	63.526	-0.110	0.0	0.0	0.0
116	65.000	63.525	-0.110	0.0	0.0	0.0
118	65.000	63.525	-0.110	0.0	0.0	0.0
120	65.000	63.524	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S3 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	63.530	63.530	-0.025	0.0	0.0	0.0
104	63.529	63.529	-0.025	0.0	0.0	0.0
106	63.528	63.528	-0.026	0.0	0.0	0.0
108	63.528	63.528	-0.026	0.0	0.0	0.0
110	63.527	63.527	-0.027	0.0	0.0	0.0
112	63.526	63.527	-0.028	0.0	0.0	0.0
114	63.526	63.526	-0.028	0.0	0.0	0.0
116	63.525	63.525	-0.029	0.0	0.0	0.0
118	63.525	63.525	-0.029	0.0	0.0	0.0
120	63.524	63.524	-0.030	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
2	63.250	63.100	-0.110	0.0	0.0	0.0
4	63.252	63.100	-0.108	0.0	0.0	0.0
6	63.254	63.100	-0.106	0.0	0.0	0.0
8	63.258	63.100	-0.102	0.0	0.0	0.0
10	63.263	63.101	-0.097	0.0	0.1	0.0
12	63.268	63.103	-0.092	0.0	0.2	0.0
14	63.272	63.105	-0.088	0.0	0.2	0.1
16	63.278	63.107	-0.082	0.0	0.3	0.1
18	63.284	63.110	-0.076	0.0	0.3	0.1
20	63.292	63.114	-0.068	0.0	0.3	0.1
22	63.305	63.118	-0.055	0.0	0.3	0.1
24	63.319	63.123	-0.041	0.0	0.3	0.1
26	63.336	63.128	-0.024	0.0	0.3	0.2
28	63.358	63.134	-0.002	0.0	0.3	0.2
30	63.382	63.140	0.022	0.0	0.3	0.2
32	63.408	63.147	0.048	0.0	0.4	0.2
34	63.433	63.154	0.073	0.0	0.4	0.2
36	63.456	63.162	0.096	0.0	0.4	0.3
38	63.476	63.170	0.116	0.0	0.4	0.3
40	63.493	63.179	0.133	0.0	0.4	0.3
42	63.505	63.188	0.145	0.0	0.4	0.3
44	63.515	63.198	0.155	0.0	0.4	0.3
46	63.523	63.208	0.163	0.0	0.4	0.3
48	63.528	63.217	0.168	0.0	0.4	0.3
50	63.532	63.227	0.172	0.0	0.4	0.3
52	63.536	63.237	0.176	0.0	0.4	0.3
54	63.539	63.247	0.179	0.0	0.4	0.3
56	63.543	63.256	0.183	0.0	0.4	0.3
58	63.546	63.264	0.186	0.0	0.4	0.3
60	63.548	63.272	0.188	0.0	0.4	0.3
62	63.548	63.280	0.188	0.0	0.4	0.3
64	63.547	63.288	0.187	0.0	0.4	0.3
66	63.546	63.296	0.186	0.0	0.4	0.3
68	63.545	63.304	0.185	0.0	0.4	0.3
70	63.544	63.312	0.184	0.0	0.4	0.3
72	63.543	63.320	0.183	0.0	0.4	0.3
74	63.542	63.328	0.182	0.0	0.4	0.3
76	63.541	63.335	0.181	0.0	0.4	0.3
78	63.540	63.343	0.180	0.0	0.4	0.3
80	63.539	63.350	0.179	0.0	0.4	0.3
82	63.538	63.357	0.178	0.0	0.4	0.3
84	63.537	63.364	0.177	0.0	0.4	0.2
86	63.536	63.370	0.176	0.0	0.4	0.2
88	63.535	63.376	0.175	0.0	0.4	0.2
90	63.534	63.382	0.174	0.0	0.4	0.2
92	63.533	63.387	0.173	0.0	0.3	0.2
94	63.533	63.392	0.173	0.0	0.3	0.2
96	63.532	63.397	0.172	0.0	0.3	0.2
98	63.531	63.401	0.171	0.0	0.3	0.2
100	63.530	63.405	0.170	0.0	0.3	0.2

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	63.530	63.409	0.170	0.0	0.2	0.2
104	63.529	63.413	0.169	0.0	0.1	0.2
106	63.528	63.417	0.168	0.0	0.1	0.2
108	63.528	63.420	0.168	0.0	0.1	0.2
110	63.527	63.423	0.167	0.0	0.1	0.2
112	63.527	63.426	0.167	0.0	0.1	0.2
114	63.526	63.429	0.166	0.0	0.1	0.1
116	63.525	63.432	0.165	0.0	0.0	0.1
118	63.525	63.434	0.165	0.0	0.0	0.1
120	63.524	63.437	0.164	0.0	0.0	0.1

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Flows and Levels for Pipe 1.004 US/MH RAIN GARDEN (Storm)
60 minute 100 year winter
Average Rainfall Intensity 40.510 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
102	63.409	63.096	0.199	0.0	0.1	0.0
104	63.413	63.096	0.203	0.0	0.1	0.0
106	63.417	63.096	0.207	0.0	0.1	0.0
108	63.420	63.096	0.210	0.0	0.1	0.0
110	63.423	63.096	0.213	0.0	0.1	0.0
112	63.426	63.096	0.216	0.0	0.1	0.0
114	63.429	63.096	0.219	0.0	0.1	0.0
116	63.432	63.096	0.222	0.0	0.1	0.0
118	63.434	63.096	0.224	0.0	0.1	0.0
120	63.437	63.096	0.227	0.0	0.1	0.0