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Date 17/09/2021 15:34
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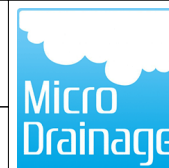
Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out Invert Level (m) Diameter (mm)			Pipes In Invert Level (m) Diameter (mm)			Backdrop (mm)
1	48.200	1.700	Open Manhole	1200	1.000	46.500	150				
2	47.750	1.420	Open Manhole	1200	1.001	46.330	150	1.000	46.330	150	
3	47.750	1.520	Open Manhole	1200	1.002	46.230	150	1.001	46.230	150	
4	47.300	1.700	Open Manhole	1200	1.003	45.600	150	1.002	45.600	150	
5	47.400	1.910	Open Manhole	1200	1.004	45.490	150	1.003	45.490	150	
6	47.000	1.620	Open Manhole	1200	1.005	45.380	150	1.004	45.380	150	
7	47.800	1.260	Open Manhole	600	2.000	46.540	150				
8	47.200	0.840	Open Manhole	600	2.001	46.360	150	2.000	46.360	150	
9	47.200	2.270	Open Manhole	1200	2.002	44.930	225	2.001	46.310	150	
10	47.000	2.220	Open Manhole	1200	2.003	44.780	225	2.002	44.780	225	
TANK	47.000	2.300	Open Manhole	1200	1.006	44.700	225	1.005	44.700	150	
								2.003	44.700	225	
FCC	47.000	2.320	Open Manhole	1200	1.007	44.680	225	1.006	44.680	225	
C1	47.000	2.420	Open Manhole	1200	1.008	44.580	300	1.007	44.580	225	
	46.180	3.025	Open Manhole	0		OUTFALL		1.008	43.155	300	

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Upstream 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	150	1	48.200	46.500	1.550	Open Manhole		1200
1.001	o	150	2	47.750	46.330	1.270	Open Manhole		1200
1.002	o	150	3	47.750	46.230	1.370	Open Manhole		1200
1.003	o	150	4	47.300	45.600	1.550	Open Manhole		1200
1.004	o	150	5	47.400	45.490	1.760	Open Manhole		1200
1.005	o	150	6	47.000	45.380	1.470	Open Manhole		1200
2.000	o	150	7	47.800	46.540	1.110	Open Manhole		600
2.001	o	150	8	47.200	46.360	0.690	Open Manhole		600
2.002	o	225	9	47.200	44.930	2.045	Open Manhole		1200
2.003	o	225	10	47.000	44.780	1.995	Open Manhole		1200
1.006	o	225	TANK	47.000	44.700	2.075	Open Manhole		1200
1.007	o	225	FCC	47.000	44.680	2.095	Open Manhole		1200
1.008	o	300	C1	47.000	44.580	2.120	Open Manhole		1200

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	16.583	97.5	2	47.750	46.330	1.270	Open Manhole		1200
1.001	9.926	99.3	3	47.750	46.230	1.370	Open Manhole		1200
1.002	27.898	44.3	4	47.300	45.600	1.550	Open Manhole		1200
1.003	11.071	100.6	5	47.400	45.490	1.760	Open Manhole		1200
1.004	11.477	104.3	6	47.000	45.380	1.470	Open Manhole		1200
1.005	6.860	10.1	TANK	47.000	44.700	2.150	Open Manhole		1200
2.000	17.703	98.4	8	47.200	46.360	0.690	Open Manhole		600
2.001	4.628	92.6	9	47.200	46.310	0.740	Open Manhole		1200
2.002	14.674	97.8	10	47.000	44.780	1.995	Open Manhole		1200
2.003	12.646	158.1	TANK	47.000	44.700	2.075	Open Manhole		1200
1.006	8.540	427.0	FCC	47.000	44.680	2.095	Open Manhole		1200
1.007	9.224	92.2	C1	47.000	44.580	2.195	Open Manhole		1200
1.008	13.474	9.5		46.180	43.155	2.725	Open Manhole		0

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. . .		
Date 17/09/2021 15:34 File PROPOSED NETWORK 24.09....		
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.038	0.038	0.038
1.001	User	-	100	0.022	0.022	0.022
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	User	-	100	0.021	0.021	0.021
1.005	-	-	100	0.000	0.000	0.000
2.000	User	-	100	0.023	0.023	0.023
2.001	User	-	100	0.022	0.022	0.022
2.002	-	-	100	0.000	0.000	0.000
2.003	User	-	100	0.041	0.041	0.041
1.006	-	-	100	0.000	0.000	0.000
1.007	User	-	100	0.039	0.039	0.039
1.008	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.205	0.205	0.205

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.008		46.180	43.155	0.000	0	0

Datum (m) 43.155 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
60	1.300	300	1.300	540	1.300	780	1.300	1020	1.300	1260	1.300
120	1.300	360	1.300	600	1.300	840	1.300	1080	1.300	1320	1.300
180	1.300	420	1.300	660	1.300	900	1.300	1140	1.300	1380	1.300
240	1.300	480	1.300	720	1.300	960	1.300	1200	1.300	1440	1.300

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs		0 Number of Storage Structures	
Number of Online Controls		1 Number of Time/Area Diagrams	
Number of Offline Controls		0 Number of Real Time Controls	

Synthetic Rainfall Details

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Date 17/09/2021 15:34	Designed by dawson_c																					
File PROPOSED NETWORK 24.09....	Checked by																					
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<u>Synthetic Rainfall Details</u> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Profile Type</td> <td>Summer</td> </tr> <tr> <td>Return Period (years)</td> <td>1</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>18.000</td> <td>Storm Duration (mins)</td> <td>30</td> </tr> <tr> <td>Ratio R</td> <td>0.359</td> <td></td> <td></td> </tr> </table>			Rainfall Model	FSR	Profile Type	Summer	Return Period (years)	1	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	18.000	Storm Duration (mins)	30	Ratio R	0.359		
Rainfall Model	FSR	Profile Type	Summer																			
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M5-60 (mm)	18.000	Storm Duration (mins)	30																			
Ratio R	0.359																					
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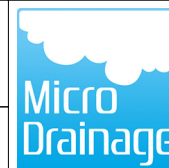
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		Micro Drainage
Date 17/09/2021 15:34	Designed by dawson_c	
File PROPOSED NETWORK 24.09....	Checked by	
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Online Controls for Storm		
Hydro-Brake® Optimum Manhole: FCC, DS/PN: 1.007, Volume (m³): 2.9		
Unit Reference MD-SHE-0126-8900-1800-8900 Design Head (m)1.800 Design Flow (l/s)8.9 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)126 Invert Level (m)44.680 Minimum Outlet Pipe Diameter (mm)150 Suggested Manhole Diameter (mm)1200		
Control Points Head (m)Flow (l/s) Design Point (Calculated)1.8008.9 Flush-Flo™0.5298.9 Kick-Flo®1.0897.0 Mean Flow over Head Range-7.8		
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) 0.1004.51.2007.43.00011.37.00017.0 0.2007.61.4007.93.50012.27.50017.5 0.3008.41.6008.44.00013.08.00018.1 0.4008.81.8008.94.50013.78.50018.6 0.5008.92.0009.35.00014.49.00019.1 0.6008.92.2009.85.50015.19.50019.6 0.8008.62.40010.26.00015.7 1.0007.72.60010.66.50016.4		
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Storage Structures for Storm Cellular Storage Manhole: TANK, DS/PN: 1.006 Invert Level (m) 44.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>60.0</td><td>0.0</td><td>1.001</td><td>0.0</td><td>0.0</td></tr><tr><td>1.000</td><td>60.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	60.0	0.0	1.001	0.0	0.0	1.000	60.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	60.0	0.0	1.001	0.0	0.0															
1.000	60.0	0.0																		
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<u>Simulation Criteria</u>			
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		
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	Number of Real Time Controls	0
<u>Synthetic Rainfall Details</u>			
Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840
Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		
Profile(s)		Summer and Winter	
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440		
Return Period(s) (years)			100
Climate Change (%)			30

									Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.
1.000	1	15 Winter	100	+30%	100/15	Summer			46.952
1.001	2	15 Winter	100	+30%	100/15	Summer			46.802
1.002	3	15 Winter	100	+30%	100/15	Summer			46.600
1.003	4	15 Winter	100	+30%	100/15	Summer			46.113
1.004	5	15 Winter	100	+30%	100/15	Summer			45.909
1.005	6	60 Winter	100	+30%	100/30	Winter			45.604
2.000	7	15 Winter	100	+30%					46.673
2.001	8	15 Winter	100	+30%	100/15	Summer			46.587
2.002	9	60 Winter	100	+30%	100/15	Summer			45.604
2.003	10	60 Winter	100	+30%	100/15	Summer			45.601
1.006	TANK	60 Winter	100	+30%	100/15	Summer			45.595
1.007	FCC	120 Winter	100	+30%	100/15	Summer			45.631
1.008	C1	120 Summer	100	+30%					44.612

PN	US/MH	Surcharged	Flooded			Pipe	Status	Level Exceeded
	Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
1.000	1	0.302	0.000	0.94		15.8	SURCHARGED	
1.001	2	0.322	0.000	1.53		24.3	SURCHARGED	
1.002	3	0.220	0.000	0.88		22.5	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
	Name	Depth (m)	Volume (m³)			Flow (l/s)		
1.003	4	0.363	0.000	1.45		23.1	SURCHARGED	
1.004	5	0.269	0.000	1.84		28.9	SURCHARGED	
1.005	6	0.074	0.000	0.44		20.9	SURCHARGED	
2.000	7	-0.017	0.000	0.68		11.4	OK	
2.001	8	0.077	0.000	1.59		22.3	SURCHARGED	
2.002	9	0.449	0.000	0.24		11.2	SURCHARGED	
2.003	10	0.596	0.000	0.59		20.9	SURCHARGED	
1.006	TANK	0.670	0.000	0.55		9.3	SURCHARGED	
1.007	FCC	0.726	0.000	0.19		8.6	SURCHARGED	
1.008	C1	-0.266	0.000	0.03		8.7	OK	