

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.000
CV	0.750	Preferred Cover Depth (m)	0.450
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	550.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.007	5.00	52.300	100	387473.048	394223.159	0.550
2	0.006	5.00	52.300	100	387473.048	394208.730	0.550
3	0.009	5.00	52.300	450	387473.048	394215.839	0.940
4	0.003	5.00	52.600	450	387501.327	394201.963	0.750
5	0.004	5.00	52.630	450	387493.989	394201.963	1.125
6	0.005	5.00	52.300	450	387479.088	394201.252	0.700
7	0.013	5.00	52.425	1500	387488.831	394201.527	1.735
8	0.006	5.00	52.450	450	387501.367	394215.085	0.850
9	0.005	5.00	52.520	450	387493.954	394215.087	1.033
10	0.013	5.00	52.275	1200	387488.831	394215.834	1.435
11	0.005	5.00	52.300	450	387479.307	394230.216	0.700
12	0.013	5.00	52.140	1200	387488.831	394229.246	1.255
13	0.006	5.00	52.335	450	387497.658	394229.906	0.878
14	0.012	5.00	52.450	100	387507.985	394200.930	0.550
15			52.450	450	387507.985	394229.906	0.840
C1			52.150	450	387486.822	394193.330	1.520

Links (Input)

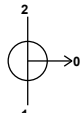
Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	1	3	7.320	0.600	51.750	51.360	0.390	18.8	100	5.07	51.7
4.000	2	3	7.109	0.600	51.750	51.360	0.390	18.2	100	5.07	51.7
3.001	3	10	15.783	0.600	51.360	51.040	0.320	49.3	100	5.31	50.8
6.000	4	5	7.338	0.600	51.850	51.505	0.345	21.3	100	5.07	51.7
6.001	5	7	5.176	0.600	51.505	50.990	0.515	10.1	100	5.11	51.6
7.000	6	7	9.747	0.600	51.600	50.990	0.610	16.0	100	5.08	51.7
1.005	7	C1	8.440	0.600	50.690	50.630	0.060	140.7	300	6.53	46.3
5.000	8	9	7.413	0.600	51.600	51.487	0.113	65.6	100	5.13	51.5
5.001	9	10	5.177	0.600	51.487	51.040	0.447	11.6	100	5.17	51.3
1.004	10	7	14.307	0.600	50.840	50.790	0.050	286.1	300	6.42	46.7
2.000	11	12	9.573	0.600	51.600	51.085	0.515	18.6	100	5.09	51.6
1.003	12	10	13.412	0.600	50.885	50.840	0.045	300.0	300	6.17	47.6
1.002	13	12	8.852	0.600	51.457	51.035	0.422	21.0	150	5.92	48.4
1.000	14	15	28.976	0.600	51.900	51.610	0.290	99.9	100	5.63	49.6
1.001	15	13	10.327	0.600	51.610	51.507	0.103	100.0	100	5.85	48.7

Pipeline Schedule

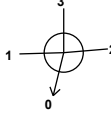
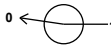
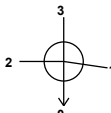
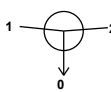
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
3.000	7.320	18.8	100	Circular	52.300	51.750	0.450	52.300	51.360	0.840
4.000	7.109	18.2	100	Circular	52.300	51.750	0.450	52.300	51.360	0.840
3.001	15.783	49.3	100	Circular	52.300	51.360	0.840	52.275	51.040	1.135
6.000	7.338	21.3	100	Circular	52.600	51.850	0.650	52.630	51.505	1.025
6.001	5.176	10.1	100	Circular	52.630	51.505	1.025	52.425	50.990	1.335
7.000	9.747	16.0	100	Circular	52.300	51.600	0.600	52.425	50.990	1.335
1.005	8.440	140.7	300	Circular	52.425	50.690	1.435	52.150	50.630	1.220
5.000	7.413	65.6	100	Circular	52.450	51.600	0.750	52.520	51.487	0.933
5.001	5.177	11.6	100	Circular	52.520	51.487	0.933	52.275	51.040	1.135
1.004	14.307	286.1	300	Circular	52.275	50.840	1.135	52.425	50.790	1.335
2.000	9.573	18.6	100	Circular	52.300	51.600	0.600	52.140	51.085	0.955
1.003	13.412	300.0	300	Circular	52.140	50.885	0.955	52.275	50.840	1.135
1.002	8.852	21.0	150	Circular	52.335	51.457	0.728	52.140	51.035	0.955
1.000	28.976	99.9	100	Circular	52.450	51.900	0.450	52.450	51.610	0.740
1.001	10.327	100.0	100	Circular	52.450	51.610	0.740	52.335	51.507	0.728

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.000	1	100	Manhole	Adoptable	3	450	Manhole	Adoptable
4.000	2	100	Manhole	Adoptable	3	450	Manhole	Adoptable
3.001	3	450	Manhole	Adoptable	10	1200	Manhole	Adoptable
6.000	4	450	Manhole	Adoptable	5	450	Manhole	Adoptable
6.001	5	450	Manhole	Adoptable	7	1500	Manhole	Adoptable
7.000	6	450	Manhole	Adoptable	7	1500	Manhole	Adoptable
1.005	7	1500	Manhole	Adoptable	C1	450	Manhole	Adoptable
5.000	8	450	Manhole	Adoptable	9	450	Manhole	Adoptable
5.001	9	450	Manhole	Adoptable	10	1200	Manhole	Adoptable
1.004	10	1200	Manhole	Adoptable	7	1500	Manhole	Adoptable
2.000	11	450	Manhole	Adoptable	12	1200	Manhole	Adoptable
1.003	12	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
1.002	13	450	Manhole	Adoptable	12	1200	Manhole	Adoptable
1.000	14	100	Manhole	Adoptable	15	450	Manhole	Adoptable
1.001	15	450	Manhole	Adoptable	13	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	387473.048	394223.159	52.300	0.550	100		0	3.000	51.750	100
2	387473.048	394208.730	52.300	0.550	100		0	4.000	51.750	100
3	387473.048	394215.839	52.300	0.940	450		1 2 0	4.000 3.000 3.001	51.360 51.360 51.360	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
4	387501.327	394201.963	52.600	0.750	450	 0	0	6.000	51.850	100
5	387493.989	394201.963	52.630	1.125	450	 01	1	6.000	51.505	100
						0	0	6.001	51.505	100
6	387479.088	394201.252	52.300	0.700	450	 0	0	7.000	51.600	100
7	387488.831	394201.527	52.425	1.735	1500	 1230	1	7.000	50.990	100
						2	2	6.001	50.990	100
						3	3	1.004	50.790	300
						0	0	1.005	50.690	300
8	387501.367	394215.085	52.450	0.850	450	 0	0	5.000	51.600	100
9	387493.954	394215.087	52.520	1.033	450	 01	1	5.000	51.487	100
						0	0	5.001	51.487	100
10	387488.831	394215.834	52.275	1.435	1200	 2130	1	5.001	51.040	100
						2	2	3.001	51.040	100
						3	3	1.003	50.840	300
						0	0	1.004	50.840	300
11	387479.307	394230.216	52.300	0.700	450	 0	0	2.000	51.600	100
12	387488.831	394229.246	52.140	1.255	1200	 120	1	2.000	51.085	100
						2	2	1.002	51.035	150
						0	0	1.003	50.885	300
13	387497.658	394229.906	52.335	0.878	450	 01	1	1.001	51.507	100
						0	0	1.002	51.457	150
14	387507.985	394200.930	52.450	0.550	100	 0	0	1.000	51.900	100
15	387507.985	394229.906	52.450	0.840	450	 01	1	1.000	51.610	100
						0	0	1.001	51.610	100
C1	387486.822	394193.330	52.150	1.520	450	 1	1	1.005	50.630	300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m ³ /ha)	20.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	0	0

Node 7 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	50.690	Product Number	CTL-SHE-0075-2700-1250-2700
Design Depth (m)	1.250	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.7	Min Node Diameter (mm)	1200

Node 10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	50.850
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	206

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	32.0	0.0	0.500	32.0	0.0	0.501	0.0	0.0

Node 7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	50.805
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	232

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	34.0	0.0	0.500	34.0	0.0	0.501	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	11	51.767	0.017	0.9	0.0045	0.0000	OK
15 minute summer	2	10	51.766	0.016	0.8	0.0036	0.0000	OK
15 minute winter	3	10	51.400	0.040	2.9	0.0141	0.0000	OK
15 minute winter	4	11	51.862	0.012	0.4	0.0029	0.0000	OK
15 minute winter	5	11	51.520	0.015	0.9	0.0035	0.0000	OK
15 minute winter	6	10	51.615	0.015	0.7	0.0044	0.0000	OK
30 minute winter	7	26	50.899	0.209	8.7	3.4372	0.0000	OK
15 minute summer	8	10	51.623	0.023	0.8	0.0068	0.0000	OK
15 minute winter	9	10	51.507	0.020	1.5	0.0051	0.0000	OK
15 minute winter	10	13	50.909	0.069	10.3	1.9088	0.0000	OK
15 minute winter	11	10	51.615	0.015	0.7	0.0046	0.0000	OK
15 minute winter	12	11	50.940	0.055	4.5	0.0736	0.0000	OK
15 minute winter	13	11	51.482	0.025	2.2	0.0074	0.0000	OK
15 minute winter	14	10	51.935	0.035	1.6	0.0156	0.0000	OK
15 minute winter	15	11	51.645	0.035	1.6	0.0056	0.0000	OK
15 minute summer	C1	1	50.630	0.000	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	3.000	3	0.9	0.504	0.064	0.0140	
15 minute summer	2	4.000	3	0.8	0.445	0.055	0.0129	
15 minute winter	3	3.001	10	2.8	0.968	0.323	0.0454	
15 minute winter	4	6.000	5	0.4	0.630	0.030	0.0047	
15 minute winter	5	6.001	7	0.9	1.231	0.047	0.0038	
15 minute winter	6	7.000	7	0.7	0.964	0.044	0.0068	
30 minute winter	7	Hydro-Brake®	C1	2.4				8.4
15 minute summer	8	5.000	9	0.8	0.646	0.102	0.0088	
15 minute winter	9	5.001	10	1.4	1.333	0.080	0.0055	
15 minute winter	10	1.004	7	7.2	0.621	0.110	0.1981	
15 minute winter	11	2.000	12	0.7	0.913	0.047	0.0070	
15 minute winter	12	1.003	10	4.6	0.547	0.072	0.1321	
15 minute winter	13	1.002	12	2.2	1.180	0.057	0.0168	
15 minute winter	14	1.000	15	1.6	0.650	0.257	0.0708	
15 minute winter	15	1.001	13	1.5	0.632	0.254	0.0251	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	51.778	0.028	2.4	0.0073	0.0000	OK
15 minute winter	2	10	51.775	0.025	2.0	0.0057	0.0000	OK
15 minute winter	3	10	51.434	0.073	7.4	0.0258	0.0000	OK
15 minute winter	4	11	51.869	0.019	1.0	0.0045	0.0000	OK
15 minute winter	5	11	51.529	0.024	2.3	0.0056	0.0000	OK
15 minute winter	6	10	51.623	0.023	1.7	0.0069	0.0000	OK
60 minute winter	7	60	51.091	0.401	13.3	10.0310	0.0000	SURCHARGED
15 minute winter	8	10	51.637	0.037	2.0	0.0111	0.0000	OK
15 minute winter	9	10	51.520	0.033	3.7	0.0083	0.0000	OK
60 minute winter	10	60	51.091	0.251	14.1	7.6786	0.0000	OK
15 minute winter	11	10	51.624	0.024	1.7	0.0072	0.0000	OK
60 minute winter	12	60	51.091	0.206	6.4	0.2760	0.0000	OK
15 minute winter	13	11	51.498	0.041	5.8	0.0121	0.0000	OK
15 minute winter	14	10	51.960	0.060	4.0	0.0266	0.0000	OK
15 minute winter	15	11	51.672	0.062	3.9	0.0098	0.0000	OK
15 minute summer	C1	1	50.630	0.000	2.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	3.000	3	2.4	0.596	0.169	0.0291	
15 minute winter	2	4.000	3	2.0	0.527	0.139	0.0274	
15 minute winter	3	3.001	10	7.2	1.199	0.831	0.0945	
15 minute winter	4	6.000	5	1.0	0.808	0.076	0.0091	
15 minute winter	5	6.001	7	2.3	1.603	0.119	0.0074	
15 minute winter	6	7.000	7	1.7	1.257	0.110	0.0130	
60 minute winter	7	Hydro-Brake®	C1	2.5				27.5
15 minute winter	8	5.000	9	2.0	0.818	0.264	0.0179	
15 minute winter	9	5.001	10	3.6	1.720	0.203	0.0110	
60 minute winter	10	1.004	7	9.4	0.566	0.144	0.9543	
15 minute winter	11	2.000	12	1.7	1.190	0.119	0.0135	
60 minute winter	12	1.003	10	5.9	0.427	0.092	0.7689	
15 minute winter	13	1.002	12	5.8	1.541	0.149	0.0334	
15 minute winter	14	1.000	15	3.9	0.804	0.650	0.1427	
15 minute winter	15	1.001	13	3.9	0.796	0.646	0.0507	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	116	51.924	0.174	1.4	0.0456	0.0000	SURCHARGED
120 minute winter	2	116	51.924	0.174	1.2	0.0393	0.0000	SURCHARGED
120 minute winter	3	116	51.924	0.564	4.3	0.1979	0.0000	SURCHARGED
120 minute winter	4	118	51.922	0.072	0.6	0.0173	0.0000	OK
120 minute winter	5	118	51.922	0.417	1.4	0.0960	0.0000	SURCHARGED
120 minute winter	6	118	51.922	0.322	1.0	0.0973	0.0000	SURCHARGED
120 minute winter	7	118	51.922	1.232	11.3	18.5442	0.0000	SURCHARGED
120 minute winter	8	118	51.922	0.322	1.2	0.0966	0.0000	SURCHARGED
120 minute winter	9	118	51.922	0.435	2.2	0.1114	0.0000	SURCHARGED
120 minute winter	10	118	51.922	1.082	14.9	16.6501	0.0000	SURCHARGED
120 minute winter	11	118	51.922	0.322	1.0	0.0973	0.0000	SURCHARGED
120 minute winter	12	118	51.922	1.037	7.0	1.3877	0.0000	FLOOD RISK
120 minute winter	13	118	51.922	0.465	3.5	0.1377	0.0000	SURCHARGED
15 minute winter	14	11	52.085	0.185	7.4	0.0820	0.0000	SURCHARGED
120 minute winter	15	118	51.923	0.313	2.3	0.0497	0.0000	SURCHARGED
15 minute summer	C1	1	50.630	0.000	2.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	3.000	3	1.4	0.559	0.100	0.0573	
120 minute winter	2	4.000	3	1.2	0.496	0.084	0.0556	
120 minute winter	3	3.001	10	4.3	1.065	0.498	0.1235	
120 minute winter	4	6.000	5	0.6	0.714	0.045	0.0509	
120 minute winter	5	6.001	7	1.4	1.294	0.073	0.0405	
120 minute winter	6	7.000	7	1.0	1.011	0.066	0.0763	
120 minute winter	7	Hydro-Brake®	C1	2.7				50.6
120 minute winter	8	5.000	9	1.2	0.739	0.161	0.0580	
120 minute winter	9	5.001	10	2.2	1.460	0.123	0.0405	
120 minute winter	10	1.004	7	6.6	0.481	0.100	1.0075	
120 minute winter	11	2.000	12	1.0	0.996	0.071	0.0749	
120 minute winter	12	1.003	10	6.2	0.380	0.098	0.9445	
120 minute winter	13	1.002	12	3.5	1.310	0.090	0.1558	
15 minute winter	14	1.000	15	6.5	0.867	1.077	0.2267	
120 minute winter	15	1.001	13	2.3	0.702	0.381	0.0808	