

## Rational Method Roof Drain System Calculations

Project: Multifamily Residential Development      By: MCB      Date: 5/5/21  
 Location: Cheshire, CT      Checked: VEH      Date: 5/11/21

### Total Roof Runoff to Proposed Storm Drainage System (In Hydraflow Model)

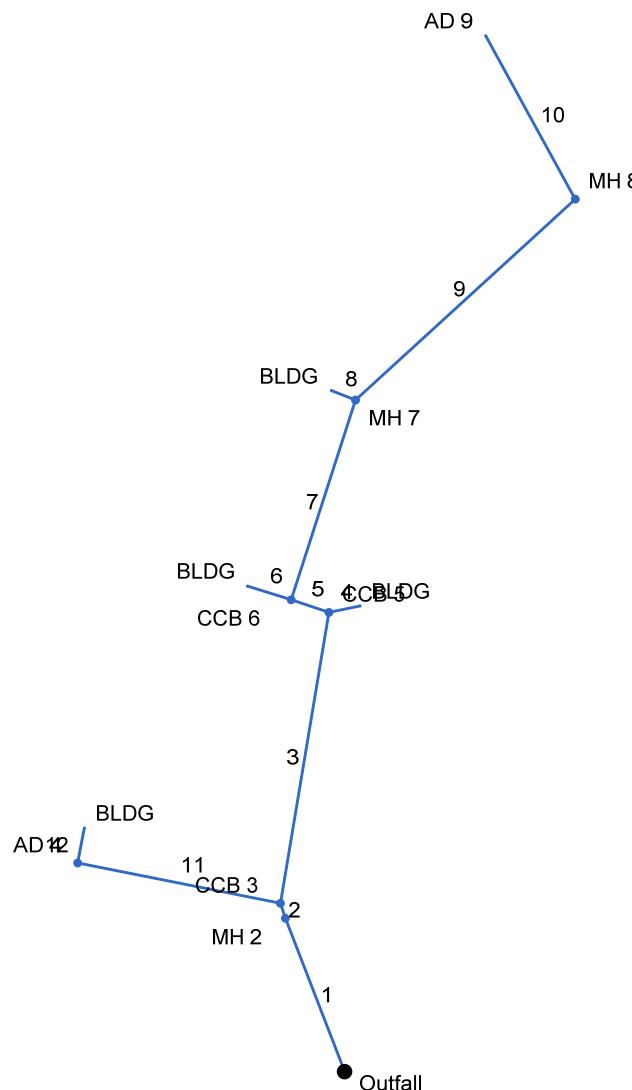
#### **10 YR STORM**

	BLDG TO AD 4	BLDG TO CCB 5	BLDG TO CCB 6	BLDG TO MH 7	BLDG TO CCB 14	BLDG TO MH 16	BLDG TO CCB 17
C	0.90	0.90	0.90	0.90	0.90	0.90	0.90
I	7.50	7.50	7.50	7.50	7.50	7.50	7.50
A	0.08	0.07	0.08	0.16	0.48	0.35	0.16
Q	0.54	0.47	0.54	1.08	3.24	2.36	1.08
	BLDG TO CLCB 19	BLDG TO CCB 20	BLDG TO CCB 23	BLDG TO CCB 24	BLDG TO CCB 30	BLDG TO CCB 33	BLDG TO CCB 34
C	0.90	0.90	0.90	0.90	0.90	0.90	0.90
I	7.50	7.50	7.50	7.50	7.50	7.50	7.50
A	0.08	0.09	0.24	0.15	0.35	0.27	0.08
Q	0.54	0.61	1.62	1.01	2.36	1.82	0.54
	BLDG TO CCB 36	BLDG TO CCB 37	BLDG TO CCB 38	BLDG TO CCB 39	BLDG TO CCB 5	BLDG TO CCB 6	BLDG TO MH 7
C	0.90	0.90	0.90	0.90	0.90	0.90	0.90
I	7.50	7.50	7.50	7.50	11.50	11.50	11.50
A	0.08	0.15	0.28	0.11	0.07	0.08	0.16
Q	0.54	1.01	1.89	0.74	0.72	0.83	1.66

#### **100 YR STORM**

	WS 1 - 100	WS 2 - 100	WS 3 - 100	WS 4 - 100	WS 5 - 100	WS 3 - 10	WS 4 - 10
C	0.54	0.71	0.55	0.63	0.72	0.55	0.63
I	11.50	11.50	11.50	11.50	11.50	7.50	7.50
A	3.26	3.65	3.41	2.51	3.00	3.41	2.51
Q	20.24	29.80	21.57	18.18	24.84	14.07	11.86
	BLDG TO CCB 17	BLDG TO CCB 19	BLDG TO CCB 20	BLDG TO CCB 23	BLDG TO CCB 24	BLDG TO AD 4	BLDG TO CCB 5
C	3.00	0.90	0.90	0.90	0.90	0.90	0.90
I	11.50	11.50	11.50	11.50	11.50	11.50	11.50
A	0.16	0.08	0.09	0.24	0.15	0.08	0.07
Q	5.52	0.83	0.93	2.48	1.55	0.83	0.72
	BLDG TO CCB 6	BLDG TO MH 7	BLDG TO MH 11 - E	BLDG TO MH 11 - W	BLDG TO MH 27 - E	BLDG TO MH 27 - W	BLDG TO CCB 14
C	0.90	0.90	0.90	0.90	0.90	0.90	0.90
I	11.50	11.50	7.50	7.50	7.50	7.50	11.50
A	0.08	0.16	0.09	0.22	0.31	0.17	0.48
Q	0.83	1.66	0.61	1.49	2.09	1.15	4.97
	BLDG TO MH 11 - E	BLDG TO MH 11 - W	BLDG TO CCB 30	BLDG TO MH 27 - E	BLDG TO MH 27 - W	BLDG TO CCB 33	BLDG TO CCB 34
C	0.90	0.90	0.90	0.90	0.90	0.90	0.90
I	11.50	11.50	11.50	11.50	11.50	11.50	11.50
A	0.09	0.22	0.35	0.31	0.17	0.27	0.08
Q	0.93	2.28	3.62	3.21	1.76	2.79	0.83
	BLDG TO CCB 36	BLDG TO CCB 37	BLDG TO CCB 38	BLDG TO CCB 39			
C	0.90	0.90	0.90	0.90			
I	11.50	11.50	11.50	11.50			
A	0.08	0.15	0.28	0.11			
Q	0.83	1.55	2.90	1.14			

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	83.000	-111.024	MH	0.00	0.00	0.00	0.0	133.00	2.17	134.80	24	Cir	0.012	0.15	140.30	FES 1 - MH 2
2	1	8.000	3.065	Comb	0.00	0.79	0.58	5.0	134.80	2.50	135.00	24	Cir	0.012	1.34	140.50	MH 2 - CCB 3
3	2	149.000	27.354	Comb	0.00	0.13	0.69	5.0	135.00	1.34	137.00	24	Cir	0.012	1.48	143.50	CCB 3 - CCB 5
4	3	16.000	68.888	None	0.47	0.00	0.00	0.0	137.00	0.63	137.10	12	Cir	0.012	1.00	144.60	CCB 5 - BLDG
5	3	20.000	-80.834	Comb	0.00	0.24	0.54	5.0	137.00	1.50	137.30	24	Cir	0.012	1.50	143.60	CCB 5 - CCB 6
6	5	23.000	-0.981	None	0.54	0.00	0.00	0.0	137.30	0.87	137.50	12	Cir	0.012	1.00	144.40	CCB 6 - BLDG
7	5	106.000	89.203	MH	0.00	0.00	0.00	0.0	137.30	1.13	138.50	24	Cir	0.012	1.00	146.90	CCB 6 - MH 7
8	7	13.000	-86.269	None	1.08	0.00	0.00	0.0	138.50	0.77	138.60	12	Cir	0.012	1.00	147.10	MH 7 - BLDG
9	7	150.000	29.669	DrGrt	0.00	0.09	0.52	5.0	138.50	1.33	140.50	24	Cir	0.012	1.46	146.10	MH 7 - MH 8
10	9	94.000	-76.029	None	14.07	0.00	0.00	0.0	140.50	1.06	141.50	24	Cir	0.012	1.00	145.50	MH 8 - AD 9
11	2	104.000	-60.766	DrGrt	0.00	0.31	0.32	5.0	137.50	2.12	139.70	15	Cir	0.012	1.50	142.70	CCB 3 - AD 4
12	11	18.000	89.570	None	0.54	0.00	0.00	0.0	139.70	0.56	139.80	12	Cir	0.012	1.00	143.30	AD 4 - BLDG

Project File: System 100 - 10YR.stm

Number of lines: 12

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ft)	Total (ac)		(C)	Incr	Total	Inlet (min)	Syst (min)				(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)
1	End	83.000	0.00	1.56	0.00	0.00	0.82	0.0	6.1	6.9	22.36	36.08	10.00	24	2.17	133.00	134.80	134.14	136.49	135.00	140.30	FES 1 - MH 2
2	1	8.000	0.79	1.56	0.58	0.46	0.82	5.0	6.1	6.9	22.37	38.74	7.92	24	2.50	134.80	135.00	136.49	136.69	140.30	140.50	MH 2 - CCB 3
3	2	149.000	0.13	0.46	0.69	0.09	0.27	5.0	5.7	7.1	18.04	28.39	6.69	24	1.34	135.00	137.00	136.69	138.53	140.50	143.50	CCB 3 - CCB 5
4	3	16.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.47	3.05	0.60	12	0.63	137.00	137.10	138.53	138.53	143.50	144.60	CCB 5 - BLDG
5	3	20.000	0.24	0.33	0.54	0.13	0.18	5.0	5.7	7.1	16.94	30.01	6.68	24	1.50	137.00	137.30	138.53	138.78	143.50	143.60	CCB 5 - CCB 6
6	5	23.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.54	3.60	0.69	12	0.87	137.30	137.50	138.78	138.79	143.60	144.40	CCB 6 - BLDG
7	5	106.000	0.00	0.09	0.00	0.00	0.05	0.0	5.4	7.3	15.49	26.07	6.35	24	1.13	137.30	138.50	138.78	139.92	143.60	146.90	CCB 6 - MH 7
8	7	13.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.08	3.38	1.38	12	0.77	138.50	138.60	139.92	139.93	146.90	147.10	MH 7 - BLDG
9	7	150.000	0.09	0.09	0.52	0.05	0.05	5.0	5.0	7.5	14.42	28.29	6.18	24	1.33	138.50	140.50	139.92	141.87	146.90	146.10	MH 7 - MH 8
10	9	94.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	14.07	25.27	6.19	24	1.06	140.50	141.50	141.87	142.85	146.10	145.50	MH 8 - AD 9
11	2	104.000	0.31	0.31	0.32	0.10	0.10	5.0	5.0	7.5	1.28	10.17	4.46	15	2.12	137.50	139.70	137.80	140.15	140.50	142.70	CCB 3 - AD 4
12	11	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.54	2.88	2.13	12	0.56	139.70	139.80	140.15	140.10	142.70	143.30	AD 4 - BLDG
Project File: System 100 - 10YR.stm														Number of lines: 12				Run Date: 6/28/2021				
NOTES:Intensity = 35.55 / (Inlet time + 3.70) ^ 0.72; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CCB 3	3.44	0.78	4.22	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.022	0.022	0.000	0.43	19.63	0.43	19.63	0.0	Off
3	CCB 5	0.67	0.00	0.48	0.20	Comb	4.0	2.73	0.00	2.31	1.35	0.025	2.53	0.031	0.031	0.013	0.11	3.68	0.07	2.33	0.0	2
4	BLDG	0.47*	0.33	0.00	0.80	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	CCB 6	0.97	0.00	0.64	0.33	Comb	4.0	2.73	0.00	2.31	1.35	0.025	2.53	0.031	0.031	0.013	0.13	4.23	0.09	2.83	0.0	4
6	BLDG	0.54*	0.00	0.00	0.54	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	MH 7	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	BLDG	1.08*	0.25	0.00	1.33	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	MH 8	0.35	0.00	0.10	0.25	DrGrt	0.0	0.00	0.00	1.00	1.00	0.051	2.00	0.023	0.023	0.013	0.04	5.57	0.04	5.57	0.0	8
10	AD 9	14.07*	0.00	0.00	14.07	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	AD 4	0.74	0.00	0.16	0.58	DrGrt	0.0	0.00	0.00	0.83	0.63	0.031	2.00	0.081	0.081	0.013	0.08	4.00	0.08	4.00	0.0	2
12	BLDG	0.54*	0.00	0.00	0.54	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Project File: System 100 - 10YR.stm												Number of lines: 12				Run Date: 6/28/2021						
NOTES: Inlet N-Values = 0.016; Intensity = 35.55 / (Inlet time + 3.70) ^ 0.72; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.																						

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	24	22.36	133.00	134.14	1.14	1.85	12.09	0.97	135.11	0.000	83.000	134.80	136.49	1.69**	2.83	7.91	0.97	137.46	0.000	0.000	n/a	0.15	n/a
2	24	22.37	134.80	136.49	1.69*	2.83	7.92	0.97	137.46	0.000	8.000	135.00	136.69	1.69**	2.83	7.92	0.97	137.66	0.000	0.000	n/a	1.34	n/a
3	24	18.04	135.00	136.69	1.69	2.58	6.39	0.76	137.45	0.000	149.000	137.00	138.53 j	1.53**	2.58	7.00	0.76	139.29	0.000	0.000	n/a	1.48	1.13
4	12	0.47	137.00	138.53	1.00	0.79	0.60	0.01	138.53	0.015	16.000	137.10	138.53	1.00	0.79	0.60	0.01	138.54	0.015	0.015	0.002	1.00	0.01
5	24	16.94	137.00	138.53	1.53	2.50	6.58	0.72	139.24	0.000	20.000	137.30	138.78 j	1.48**	2.50	6.78	0.72	139.50	0.000	0.000	n/a	1.50	n/a
6	12	0.54	137.30	138.78	1.00	0.79	0.69	0.01	138.79	0.020	23.000	137.50	138.79	1.00	0.79	0.69	0.01	138.79	0.020	0.020	0.005	1.00	0.01
7	24	15.49	137.30	138.78	1.48	2.38	6.20	0.66	139.44	0.000	106.000	138.50	139.92 j	1.42**	2.38	6.51	0.66	140.58	0.000	0.000	n/a	1.00	0.66
8	12	1.08	138.50	139.92	1.00	0.79	1.38	0.03	139.95	0.078	13.000	138.60	139.93	1.00	0.79	1.38	0.03	139.96	0.078	0.078	0.010	1.00	0.03
9	24	14.42	138.50	139.92	1.42	2.29	6.06	0.62	140.54	0.000	150.000	140.50	141.87 j	1.37**	2.29	6.30	0.62	142.48	0.000	0.000	n/a	1.46	0.90
10	24	14.07	140.50	141.87	1.37	2.26	6.15	0.60	142.47	0.000	94.000	141.50	142.85 j	1.35**	2.26	6.24	0.60	143.45	0.000	0.000	n/a	1.00	0.60
11	15	1.28	137.50	137.80	0.30*	0.23	5.67	0.16	137.97	0.000	104.000	139.70	140.15	0.45**	0.39	3.26	0.16	140.31	0.000	0.000	n/a	1.50	0.25
12	12	0.54	139.70	140.15	0.45	0.20	1.59	0.11	140.26	0.000	18.000	139.80	140.10	0.30**	0.20	2.66	0.11	140.22	0.000	0.000	n/a	1.00	0.11

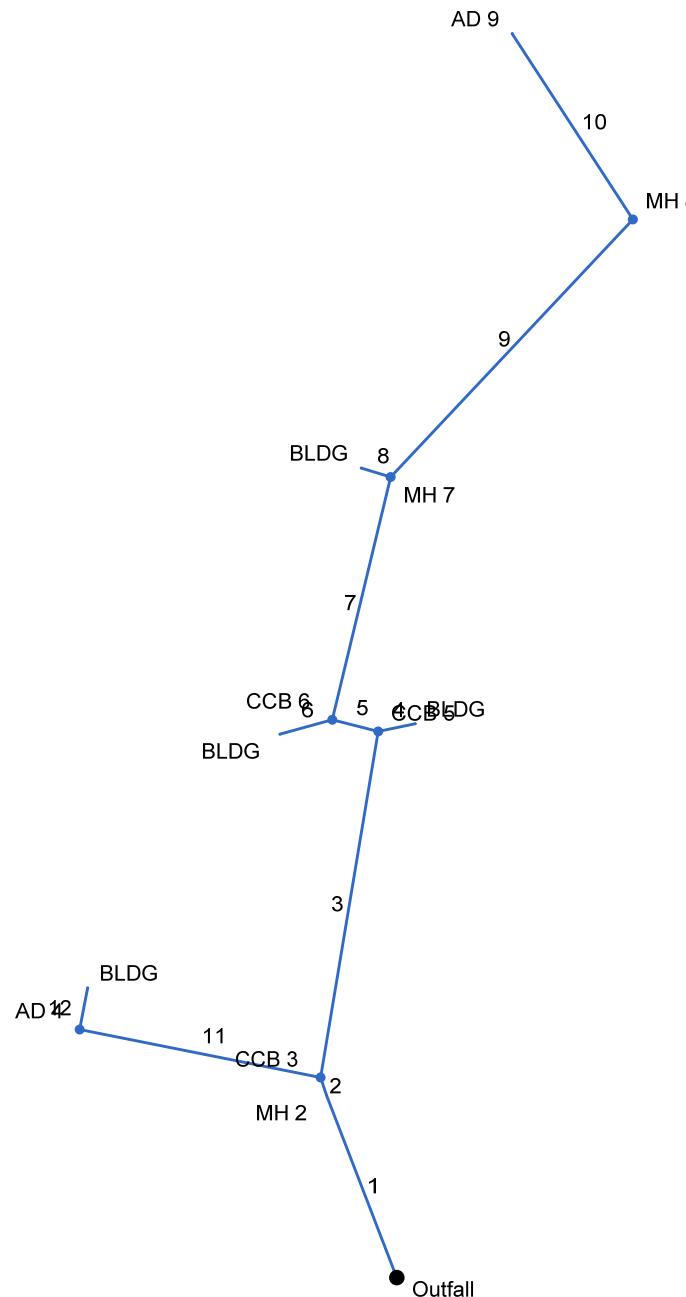
Project File: System 100 - 10YR.stm

Number of lines: 12

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 100 - 100YR.stm

Number of lines: 12

Date: 6/28/2021

# Storm Sewer Inventory Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	83.000	-111.024	None	0.00	0.00	0.00	0.0	133.00	2.17	134.80	24	Cir	0.012	0.15	140.30	FES 1 - MH 2
2	1	8.000	3.065	Comb	0.00	0.79	0.58	5.0	134.80	2.50	135.00	24	Cir	0.012	1.34	140.50	MH 2 - CCB 3
3	2	149.000	27.354	Comb	0.00	0.13	0.69	5.0	135.00	1.34	137.00	24	Cir	0.012	1.50	143.50	CCB 3 - CCB 5
4	3	16.000	68.888	None	0.72	0.00	0.00	0.0	137.00	0.63	137.10	12	Cir	0.012	1.00	144.60	CCB 5 - BLDG
5	3	20.000	-85.149	Comb	0.00	0.24	0.54	5.0	137.00	1.50	137.30	24	Cir	0.012	1.50	143.60	CCB 5 - CCB 6
6	5	23.000	-29.640	None	0.83	0.00	0.00	0.0	137.30	0.87	137.50	12	Cir	0.012	1.00	144.40	CCB 6 - BLDG
7	5	106.000	89.203	MH	0.00	0.00	0.00	0.0	137.30	1.13	138.50	24	Cir	0.012	1.00	146.90	CCB 6 - MH 7
8	7	13.000	-86.269	None	1.66	0.00	0.00	0.0	138.50	0.77	138.60	12	Cir	0.012	1.00	147.10	MH 7 - BLDG
9	7	150.000	29.669	MH	0.00	0.09	0.52	5.0	138.50	1.33	140.50	24	Cir	0.012	0.98	146.10	MH 7 - MH 8
10	9	94.000	-76.029	None	21.57	0.00	0.00	0.0	140.50	1.06	141.50	24	Cir	0.012	1.00	145.50	MH 8 - AD 9
11	2	104.000	-60.766	DrGrt	0.00	0.31	0.32	5.0	137.50	2.12	139.70	15	Cir	0.012	1.50	142.70	CCB 3 - AD 4
12	11	18.000	89.570	None	0.83	0.00	0.00	0.0	139.70	0.56	139.80	12	Cir	0.012	1.00	143.30	AD 4 - BLDG

Project File: System 100 - 100YR.stm

Number of lines: 12

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ft)	Total (ac)		(C)	Incr	Total	Inlet (min)	Syst (min)				(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)
1	End	83.000	0.00	1.56	0.00	0.00	0.82	0.0	5.9	10.7	34.46	36.08	11.14	24	2.17	133.00	134.80	134.91	136.72	135.00	140.30	FES 1 - MH 2
2	1	8.000	0.79	1.56	0.58	0.46	0.82	5.0	5.9	10.8	34.47	38.74	11.13	24	2.50	134.80	135.00	136.72	136.92	140.30	140.50	MH 2 - CCB 3
3	2	149.000	0.13	0.46	0.69	0.09	0.27	5.0	5.6	11.0	27.70	28.39	9.09	24	1.34	135.00	137.00	136.92	138.82	140.50	143.50	CCB 3 - CCB 5
4	3	16.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.72	3.05	0.92	12	0.63	137.00	137.10	138.82	138.83	143.50	144.60	CCB 5 - BLDG	
5	3	20.000	0.24	0.33	0.54	0.13	0.18	5.0	5.5	11.0	26.00	30.01	8.72	24	1.50	137.00	137.30	138.82	139.08	143.50	143.60	CCB 5 - CCB 6
6	5	23.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.83	3.60	1.06	12	0.87	137.30	137.50	139.08	139.10	143.60	144.40	CCB 6 - BLDG	
7	5	106.000	0.00	0.09	0.00	0.00	0.05	0.0	5.3	11.2	23.75	26.07	8.13	24	1.13	137.30	138.50	139.08	140.23	143.60	146.90	CCB 6 - MH 7
8	7	13.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	1.66	3.38	2.11	12	0.77	138.50	138.60	140.23	140.25	146.90	147.10	MH 7 - BLDG	
9	7	150.000	0.09	0.09	0.52	0.05	0.05	5.0	5.0	11.5	22.11	28.29	7.76	24	1.33	138.50	140.50	140.23	142.18	146.90	146.10	MH 7 - MH 8
10	9	94.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	21.57	25.27	7.70	24	1.06	140.50	141.50	142.18	143.16	146.10	145.50	MH 8 - AD 9	
11	2	104.000	0.31	0.31	0.32	0.10	0.10	5.0	5.0	11.5	1.97	10.17	5.06	15	2.12	137.50	139.70	137.87	140.26	140.50	142.70	CCB 3 - AD 4
12	11	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.83	2.88	2.43	12	0.56	139.70	139.80	140.26	140.18	142.70	143.30	AD 4 - BLDG	
Project File: System 100 - 100YR.stm														Number of lines: 12				Run Date: 6/28/2021				
NOTES: Intensity = $55.51 / (\text{Inlet time} + 3.80)^{0.72}$ ; Return period = Yrs. 100 ; c = cir e = ellip b = box																						

# Inlet Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 2	0.00	0.00	0.00	0.00	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CCB 3	5.27	1.28	6.55	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.022	0.022	0.000	0.57	26.10	0.57	26.10	0.0	Off
3	CCB 5	1.03	0.00	0.67	0.36	Comb	4.0	2.73	0.00	2.31	1.35	0.025	2.53	0.031	0.031	0.013	0.13	4.32	0.09	2.93	0.0	2
4	BLDG	0.72*	0.60	0.00	1.32	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	CCB 6	1.49	0.00	0.89	0.60	Comb	4.0	2.73	0.00	2.31	1.35	0.025	2.53	0.031	0.031	0.013	0.15	4.96	0.11	3.54	0.0	4
6	BLDG	0.83*	0.00	0.00	0.83	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	MH 7	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	BLDG	1.66*	0.00	0.00	1.66	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	MH 8	0.54	0.00	0.00	0.54	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	AD 9	21.57*	0.00	0.00	21.57	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	AD 4	1.14	0.00	0.23	0.92	DrGrt	0.0	0.00	0.00	0.83	0.63	0.031	2.00	0.081	0.081	0.013	0.10	4.49	0.10	4.49	0.0	2
12	BLDG	0.83*	0.00	0.00	0.83	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 100 - 100YR.stm

Number of lines: 12

Run Date: 6/28/2021

NOTES: Inlet N-Values = 0.016; Intensity =  $55.51 / (\text{Inlet time} + 3.80)^{0.72}$ ; Return period = 100 Yrs.; \* Indicates Known Q added. All curb inlets are throat.

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	24	34.46	133.00	134.91	1.91	3.09	11.15	1.93	136.84	0.000	83.000	134.80	136.72	1.92**	3.10	11.13	1.93	138.64	0.000	0.000	n/a	0.15	0.29
2	24	34.47	134.80	136.72	1.92*	3.10	11.13	1.93	138.64	0.000	8.000	135.00	136.92	1.92**	3.10	11.13	1.93	138.84	0.000	0.000	n/a	1.34	2.58
3	24	27.70	135.00	136.92	1.92	3.00	8.95	1.32	138.24	0.000	149.000	137.00	138.82 j	1.82**	3.00	9.22	1.32	140.14	0.000	0.000	n/a	1.50	1.98
4	12	0.72	137.00	138.82	1.00	0.79	0.92	0.01	138.83	0.035	16.000	137.10	138.83	1.00	0.79	0.92	0.01	138.84	0.035	0.035	0.006	1.00	0.01
5	24	26.00	137.00	138.82	1.82	2.96	8.66	1.20	140.02	0.000	20.000	137.30	139.08 j	1.78**	2.96	8.79	1.20	140.29	0.000	0.000	n/a	1.50	n/a
6	12	0.83	137.30	139.08	1.00	0.79	1.06	0.02	139.10	0.046	23.000	137.50	139.10	1.00	0.79	1.06	0.02	139.11	0.046	0.046	0.011	1.00	0.02
7	24	23.75	137.30	139.08	1.78	2.88	8.03	1.05	140.14	0.000	106.000	138.50	140.23 j	1.73**	2.88	8.24	1.05	141.28	0.000	0.000	n/a	1.00	1.05
8	12	1.66	138.50	140.23	1.00	0.79	2.11	0.07	140.30	0.185	13.000	138.60	140.25	1.00	0.79	2.11	0.07	140.32	0.185	0.185	0.024	1.00	0.07
9	24	22.11	138.50	140.23	1.73	2.81	7.67	0.96	141.19	0.000	150.000	140.50	142.18 j	1.68**	2.81	7.86	0.96	143.14	0.000	0.000	n/a	0.98	n/a
10	24	21.57	140.50	142.18	1.68	2.79	7.67	0.93	143.11	0.000	94.000	141.50	143.16 j	1.66**	2.79	7.74	0.93	144.09	0.000	0.000	n/a	1.00	n/a
11	15	1.97	137.50	137.87	0.37*	0.31	6.41	0.21	138.09	0.000	104.000	139.70	140.26	0.56**	0.53	3.71	0.21	140.47	0.000	0.000	n/a	1.50	0.32
12	12	0.83	139.70	140.26	0.56	0.27	1.84	0.14	140.40	0.000	18.000	139.80	140.18	0.38**	0.27	3.02	0.14	140.32	0.000	0.000	n/a	1.00	n/a

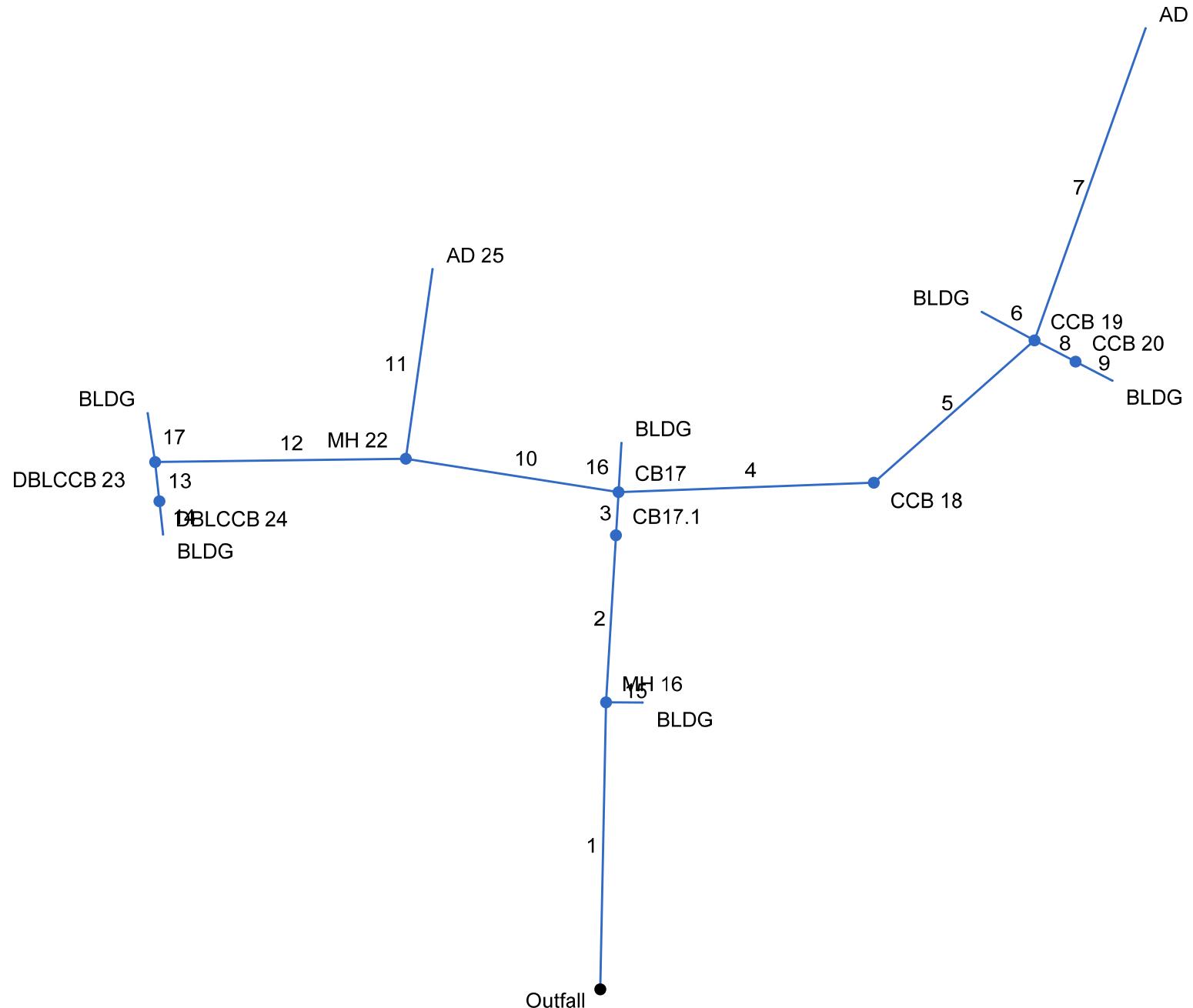
Project File: System 100 - 100YR.stm

Number of lines: 12

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 200 - 10YR.stm

Number of lines: 17

Date: 6/28/2021

# Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	146.000	-89.054	MH	0.00	0.00	0.00	0.0	133.00	1.16	134.70	30	Cir	0.012	1.00	141.50	FES 15 - MH 16
2	1	85.000	1.772	Comb	0.00	0.00	0.00	0.0	134.70	1.18	135.70	30	Cir	0.012	0.50	147.80	MH 16 - CB 17.1
3	2	22.000	0.000	Comb	0.00	0.00	0.00	0.0	135.70	0.91	135.90	30	Cir	0.012	2.23	147.50	CB17.1 - CB17
4	3	105.000	84.679	Comb	0.00	0.02	0.67	5.0	144.60	5.14	150.00	18	Cir	0.012	1.13	155.30	CB17 - CCB 18
5	4	98.000	-45.039	Grate	0.00	0.20	0.57	5.0	150.00	2.04	152.00	15	Cir	0.012	2.22	155.50	CCB 18 - CCB 19
6	5	26.000	-98.723	None	0.54	0.00	0.00	0.0	150.00	0.77	150.20	8	Cir	0.012	1.00	156.30	CCB 19 - BLDG
7	5	165.000	-26.317	None	0.00	0.39	0.70	5.0	152.30	0.73	153.50	15	Cir	0.012	1.00	157.00	CCB 19 - AD 21
8	5	20.000	80.354	Comb	0.00	0.17	0.73	5.0	152.00	1.00	152.20	15	Cir	0.012	0.50	155.50	CCB 19 - CCB 20
9	8	18.000	0.000	None	0.61	0.00	0.00	0.0	152.20	0.56	152.30	8	Cir	0.012	1.00	156.20	CCB 20 - BLDG
10	3	89.000	-81.739	MH	0.00	0.00	0.00	0.0	135.90	0.56	136.40	30	Cir	0.012	1.00	143.60	CB 17 - MH 22
11	10	97.000	85.506	None	11.86	0.00	0.00	0.0	138.00	2.58	140.50	18	Cir	0.012	1.00	145.50	MH 22 - AD 25
12	10	103.000	-11.898	Comb	0.00	0.62	0.65	5.0	136.40	0.87	137.30	18	Cir	0.012	1.50	141.30	MH 22 - DBLCCB 23
13	12	20.000	-94.147	Comb	0.00	0.55	0.68	5.0	137.60	1.00	137.80	15	Cir	0.012	0.50	141.30	DBLCCB 23 - CCB 24
14	13	17.000	0.000	None	1.01	0.00	0.00	0.0	137.80	0.59	137.90	10	Cir	0.012	1.00	142.00	CCB 24 - BLDG
15	1	15.000	89.689	None	2.36	0.00	0.00	0.0	133.90	0.67	134.00	12	Cir	0.012	1.00	142.80	MH 16 - BLDG
16	3	25.000	0.000	None	1.08	0.00	0.00	0.0	140.90	0.80	141.10	10	Cir	0.012	1.00	144.10	MH 17 - BLDG
17	12	25.000	83.869	None	1.62	0.00	0.00	0.0	137.60	0.80	137.80	10	Cir	0.012	1.00	142.00	CCB 23 - BLDG

Project File: System 200 - 10YR.stm

Number of lines: 17

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	146.000	0.00	1.95	0.00	0.00	1.30	0.0	6.5	6.8	27.95	47.94	7.68	30	1.16	133.00	134.70	134.68	136.50	135.15	141.50	FES 15 - MH 16
2	1	85.000	0.00	1.95	0.00	0.00	1.30	0.0	6.3	6.9	25.66	48.19	6.94	30	1.18	134.70	135.70	136.50	137.42	141.50	147.80	MH 16 - CB 17.1
3	2	22.000	0.00	1.95	0.00	0.00	1.30	0.0	6.3	6.9	25.68	42.36	7.11	30	0.91	135.70	135.90	137.42	137.63	147.80	147.50	CB17.1 - CB17
4	3	105.000	0.02	0.78	0.67	0.01	0.52	5.0	6.1	6.9	4.79	25.80	7.92	18	5.14	144.60	150.00	145.04	150.84	147.50	155.30	CB17 - CCB 18
5	4	98.000	0.20	0.76	0.57	0.11	0.51	5.0	5.8	7.0	4.74	9.99	5.26	15	2.04	150.00	152.00	150.84	152.88	155.30	155.50	CCB 18 - CCB 19
6	5	26.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.54	1.15	1.55	8	0.77	150.00	150.20	152.88	152.93	155.50	156.30	CCB 19 - BLDG
7	5	165.000	0.39	0.39	0.70	0.27	0.27	5.0	5.0	7.2	1.98	5.97	3.62	15	0.73	152.30	153.50	152.88	154.06	155.50	157.00	CCB 19 - AD 21
8	5	20.000	0.17	0.17	0.73	0.12	0.12	5.0	5.0	7.2	1.51	7.00	2.52	15	1.00	152.00	152.20	152.88	152.69	155.50	155.50	CCB 19 - CCB 20
9	8	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.61	0.98	2.44	8	0.56	152.20	152.30	152.69	152.72	155.50	156.20	CCB 20 - BLDG
10	3	89.000	0.00	1.17	0.00	0.00	0.78	0.0	5.4	7.1	20.02	33.30	5.98	30	0.56	135.90	136.40	137.63	137.92	147.50	143.60	CB 17 - MH 22
11	10	97.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	11.86	18.26	9.13	18	2.58	138.00	140.50	138.88	141.81	143.60	145.50	MH 22 - AD 25
12	10	103.000	0.62	1.17	0.65	0.40	0.78	5.0	5.1	7.2	8.24	10.63	5.27	18	0.87	136.40	137.30	137.92	138.41	143.60	141.30	MH 22 - DBLCCB
13	12	20.000	0.55	0.55	0.68	0.37	0.37	5.0	5.0	7.2	3.72	7.00	4.52	15	1.00	137.60	137.80	138.41	138.58	141.30	141.30	DBLCCB 23 - CC
14	13	17.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.01	1.82	2.65	10	0.59	137.80	137.90	138.58	138.35	141.30	142.00	CCB 24 - BLDG
15	1	15.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.36	3.15	3.01	12	0.67	133.90	134.00	136.50	136.56	141.50	142.80	MH 16 - BLDG
16	3	25.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.08	2.12	3.69	10	0.80	140.90	141.10	141.32	141.56	147.50	144.10	MH 17 - BLDG
17	12	25.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.62	2.12	3.53	10	0.80	137.60	137.80	138.41	138.37	141.30	142.00	CCB 23 - BLDG

Project File: System 200 - 10YR.stm

Number of lines: 17

Run Date: 6/28/2021

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 16	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CB17.1	0.00	0.00	-nan(ind)	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.00	0.00	0.00	0.00	0.0	13
3	CB17	0.00	0.00	-nan(ind)	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.00	0.00	0.00	0.00	0.0	12
4	CCB 18	0.10	0.00	0.10	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.04	1.43	0.00	0.00	0.0	3
5	CCB 19	0.83	0.00	0.83	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.031	0.031	0.000	0.17	5.33	0.17	5.33	0.0	Off
6	BLDG	0.54*	0.00	0.00	0.54	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	AD 21	1.98	0.00	0.00	1.98	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CCB 20	0.90	0.00	0.90	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.031	0.031	0.000	0.18	5.84	0.18	5.84	0.0	Off
9	BLDG	0.61*	0.00	0.00	0.61	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	MH 22	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	AD 25	11.86*	0.00	0.00	11.86	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	DBLCCB 23	2.92	-nan(ind)	0.00	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	5.04	162.56	5.04	162.56	0.0	Off
13	DBLCCB 24	2.71	-nan(ind)	0.00	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	5.04	162.56	5.04	162.56	0.0	Off
14	BLDG	1.01*	0.00	0.00	1.01	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	BLDG	2.36*	0.00	0.00	2.36	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	BLDG	1.08*	0.00	0.00	1.08	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	BLDG	1.62*	0.00	0.00	1.62	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 200 - 10YR.stm

Number of lines: 17

Run Date: 6/28/2021

NOTES: Inlet N-Values = 0.016; Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period = 10 Yrs. ; \* Indicates Known Q added. All curb inlets are throat.

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	30	27.95	133.00	134.68	1.68	3.51	7.97	0.85	135.53	0.000	146.000	134.70	136.50	1.80**	3.79	7.38	0.85	137.35	0.000	0.000	n/a	1.00	0.85
2	30	25.66	134.70	136.50	1.80	3.61	6.78	0.78	137.29	0.000	85.000	135.70	137.42 j	1.72**	3.61	7.10	0.78	138.21	0.000	0.000	n/a	0.50	0.39
3	30	25.68	135.70	137.42	1.72	3.61	7.11	0.78	138.21	0.000	22.000	135.90	137.63	1.73**	3.61	7.11	0.78	138.41	0.000	0.000	n/a	2.23	1.75
4	18	4.79	144.60	145.04	0.44*	0.43	11.15	0.34	145.38	0.000	105.000	150.00	150.84	0.84**	1.02	4.70	0.34	151.18	0.000	0.000	n/a	1.13	0.39
5	15	4.74	150.00	150.84	0.84	0.88	5.40	0.41	151.25	0.000	98.000	152.00	152.88	0.88**	0.93	5.12	0.41	153.29	0.000	0.000	n/a	2.22	n/a
6	8	0.54	150.00	152.88	0.67	0.35	1.55	0.04	152.92	0.170	26.000	150.20	152.93	0.67	0.35	1.55	0.04	152.96	0.170	0.170	0.044	1.00	0.04
7	15	1.98	152.30	152.88	0.58	0.53	3.53	0.21	153.10	0.000	165.000	153.50	154.06 j	0.56**	0.53	3.72	0.21	154.27	0.000	0.000	n/a	1.00	n/a
8	15	1.51	152.00	152.88	0.88	0.44	1.63	0.18	153.06	0.000	20.000	152.20	152.69	0.49**	0.44	3.42	0.18	152.87	0.000	0.000	n/a	0.50	n/a
9	8	0.61	152.20	152.69	0.49	0.27	2.24	0.08	152.76	0.280	18.000	152.30	152.72	0.42	0.23	2.65	0.11	152.83	0.422	0.351	0.063	1.00	0.11
10	30	20.02	135.90	137.63	1.73	3.12	5.54	0.64	138.27	0.000	89.000	136.40	137.92 j	1.52**	3.12	6.42	0.64	138.56	0.000	0.000	n/a	1.00	0.64
11	18	11.86	138.00	138.88	0.88*	1.08	11.00	0.82	139.70	0.000	97.000	140.50	141.81	1.31**	1.63	7.26	0.82	142.63	0.000	0.000	n/a	1.00	0.82
12	18	8.24	136.40	137.92	1.50	1.40	4.66	0.34	138.26	0.525	103.000	137.30	138.41 j	1.11**	1.40	5.87	0.54	138.95	0.650	0.587	n/a	1.50	0.80
13	15	3.72	137.60	138.41	0.81	0.80	4.41	0.33	138.74	0.000	20.000	137.80	138.58 j	0.78**	0.80	4.63	0.33	138.91	0.000	0.000	n/a	0.50	0.17
14	10	1.01	137.80	138.58	0.78	0.30	1.91	0.18	138.76	0.000	17.000	137.90	138.35	0.45**	0.30	3.40	0.18	138.53	0.000	0.000	n/a	1.00	0.18
15	12	2.36	133.90	136.50	1.00	0.79	3.01	0.14	136.64	0.374	15.000	134.00	136.56	1.00	0.79	3.00	0.14	136.70	0.374	0.374	0.056	1.00	0.14
16	10	1.08	140.90	141.32	0.42*	0.28	3.91	0.19	141.51	0.000	25.000	141.10	141.56	0.46**	0.31	3.48	0.19	141.75	0.000	0.000	n/a	1.00	0.19
17	10	1.62	137.60	138.41	0.81	0.40	2.99	0.26	138.67	0.000	25.000	137.80	138.37	0.57**	0.40	4.07	0.26	138.63	0.000	0.000	n/a	1.00	0.26

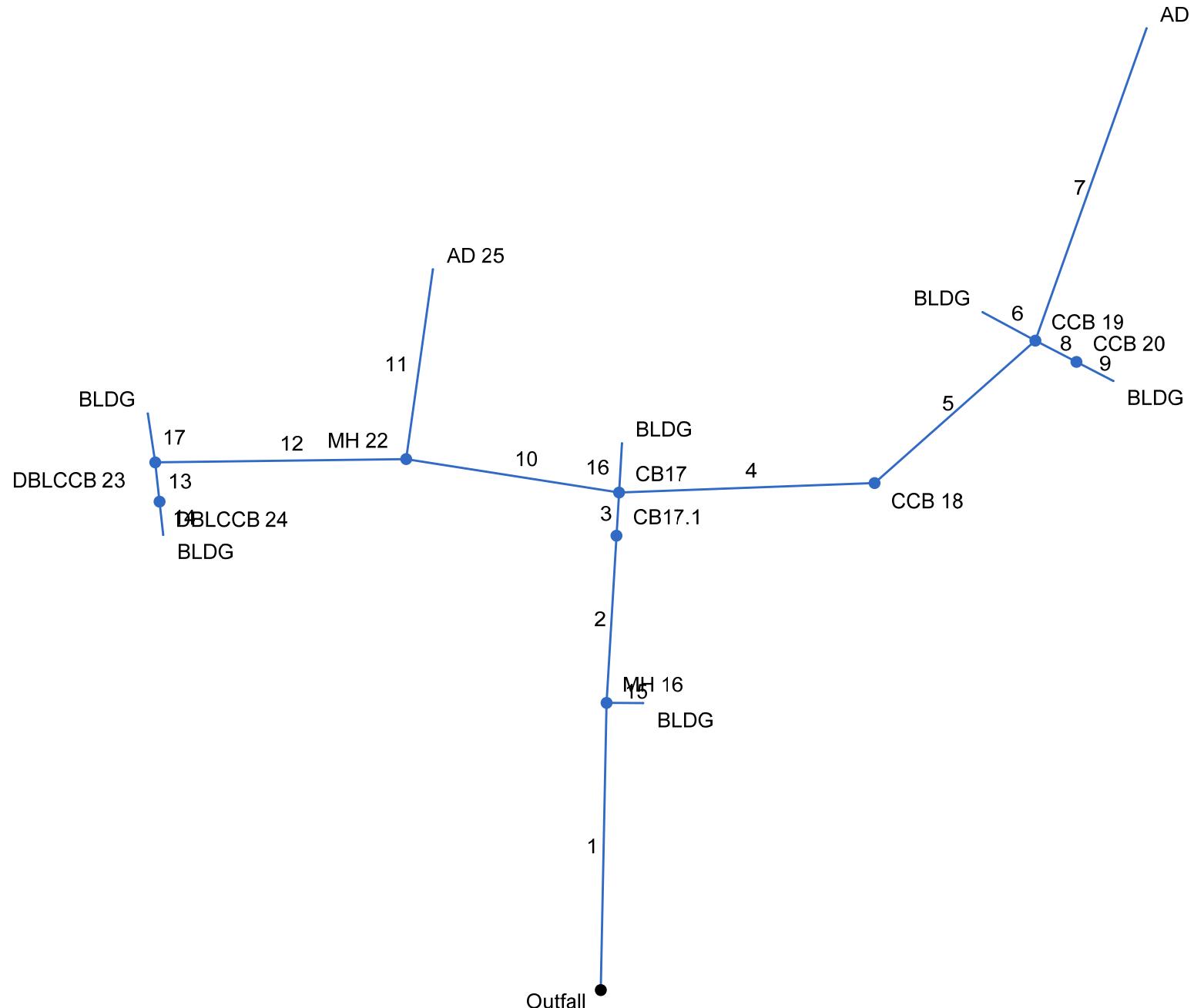
Project File: System 200 - 10YR.stm

Number of lines: 17

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	146.000	-89.054	MH	0.00	0.00	0.00	0.0	133.00	1.16	134.70	30	Cir	0.012	1.00	141.50	FES 15 - MH 16
2	1	85.000	1.772	Comb	0.00	0.00	0.00	0.0	134.70	1.18	135.70	30	Cir	0.012	0.50	147.80	MH 16 - CB 17.1
3	2	22.000	0.000	Comb	0.00	0.00	0.00	0.0	135.70	0.91	135.90	30	Cir	0.012	2.23	147.50	CB17.1 - CB17
4	3	105.000	84.679	Comb	0.00	0.02	0.67	5.0	144.60	5.14	150.00	18	Cir	0.012	1.13	155.30	CB17 - CCB 18
5	4	98.000	-45.039	Grate	0.00	0.20	0.57	5.0	150.00	2.04	152.00	15	Cir	0.012	2.22	155.50	CCB 18 - CCB 19
6	5	26.000	-98.723	None	0.83	0.00	0.00	0.0	150.00	0.77	150.20	8	Cir	0.012	1.00	156.30	CCB 19 - BLDG
7	5	165.000	-26.317	None	0.00	0.39	0.70	5.0	152.30	0.73	153.50	15	Cir	0.012	1.00	157.00	CCB 19 - AD 21
8	5	20.000	80.354	Comb	0.00	0.17	0.73	5.0	152.00	1.00	152.20	15	Cir	0.012	0.50	155.50	CCB 19 - CCB 20
9	8	18.000	0.000	None	0.93	0.00	0.00	0.0	152.20	0.56	152.30	8	Cir	0.012	1.00	156.20	CCB 20 - BLDG
10	3	89.000	-81.739	MH	0.00	0.00	0.00	0.0	135.90	0.56	136.40	30	Cir	0.012	1.00	143.60	CB 17 - MH 22
11	10	97.000	85.506	None	18.18	0.00	0.00	0.0	138.00	2.58	140.50	18	Cir	0.012	1.00	145.50	MH 22 - AD 25
12	10	103.000	-11.898	Comb	0.00	0.62	0.65	5.0	136.40	0.87	137.30	18	Cir	0.012	1.50	141.30	MH 22 - DBLCCB 23
13	12	20.000	-94.147	Comb	0.00	0.55	0.68	5.0	137.60	1.00	137.80	15	Cir	0.012	0.50	141.30	DBLCCB 23 - CCB 24
14	13	17.000	0.000	None	1.55	0.00	0.00	0.0	137.80	0.59	137.90	10	Cir	0.012	1.00	142.00	CCB 24 - BLDG
15	1	15.000	89.689	None	3.62	0.00	0.00	0.0	133.90	0.67	134.00	12	Cir	0.012	1.00	142.80	MH 16 - BLDG
16	3	25.000	0.000	None	1.66	0.00	0.00	0.0	140.90	0.80	141.10	10	Cir	0.012	1.00	144.10	MH 17 - BLDG
17	12	25.000	83.869	None	2.48	0.00	0.00	0.0	137.60	0.80	137.80	10	Cir	0.012	1.00	142.00	CCB 23 - BLDG

Project File: System 200 - 100yr.stm

Number of lines: 17

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up		
			(ft)	(ac)		(ac)	(C)	(min)	(min)					(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	146.000	0.00	1.95	0.00	0.00	1.30	0.0	6.3	10.4	42.78	47.94	10.22	30	1.16	133.00	134.70	134.84	136.88	135.15	141.50	FES 15 - MH 16	
2	1	85.000	0.00	1.95	0.00	0.00	1.30	0.0	6.1	10.5	39.32	48.19	8.77	30	1.18	134.70	135.70	136.88	137.81	141.50	147.80	MH 16 - CB 17.1	
3	2	22.000	0.00	1.95	0.00	0.00	1.30	0.0	6.1	10.6	39.36	42.36	8.89	30	0.91	135.70	135.90	137.81	138.01	147.80	147.50	CB17.1 - CB17	
4	3	105.000	0.02	0.78	0.67	0.01	0.52	5.0	5.9	10.7	7.37	25.80	9.08	18	5.14	144.60	150.00	145.15	151.05	147.50	155.30	CB17 - CCB 18	
5	4	98.000	0.20	0.76	0.57	0.11	0.51	5.0	5.7	10.9	7.33	9.99	6.59	15	2.04	150.00	152.00	151.05	153.08	155.30	155.50	CCB 18 - CCB 19	
6	5	26.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.83	1.15	2.38	8	0.77	150.00	150.20	153.08	153.18	155.50	156.30	CCB 19 - BLDG	
7	5	165.000	0.39	0.39	0.70	0.27	0.27	5.0	5.0	11.5	3.14	5.97	4.12	15	0.73	152.30	153.50	153.08	154.21	155.50	157.00	CCB 19 - AD 21	
8	5	20.000	0.17	0.17	0.73	0.12	0.12	5.0	5.0	11.5	2.36	7.00	3.01	15	1.00	152.00	152.20	153.08	152.81	155.50	155.50	CCB 19 - CCB 20	
9	8	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.93	0.98	2.81	8	0.56	152.20	152.30	152.81	152.89	155.50	156.20	CCB 20 - BLDG	
10	3	89.000	0.00	1.17	0.00	0.00	0.78	0.0	5.3	11.2	30.93	33.30	7.35	30	0.56	135.90	136.40	138.01	138.30	147.50	143.60	CB 17 - MH 22	
11	10	97.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	18.18	18.26	11.06	18	2.58	138.00	140.50	139.23	141.95	143.60	145.50	MH 22 - AD 25	
12	10	103.000	0.62	1.17	0.65	0.40	0.78	5.0	5.1	11.4	12.91	10.63	7.31	18	0.87	136.40	137.30	139.23	140.56	143.60	141.30	MH 22 - DBLCCB	
13	12	20.000	0.55	0.55	0.68	0.37	0.37	5.0	5.0	11.5	5.85	7.00	4.77	15	1.00	137.60	137.80	141.80	141.94	141.30	141.30	DBLCCB 23 - CC	
14	13	17.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.55	1.82	2.84	10	0.59	137.80	137.90	142.12	142.19	141.30	142.00	CCB 24 - BLDG	
15	1	15.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.62	3.15	4.61	12	0.67	133.90	134.00	136.88	137.02	141.50	142.80	MH 16 - BLDG	
16	3	25.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.66	2.12	4.21	10	0.80	140.90	141.10	141.45	141.68	147.50	144.10	MH 17 - BLDG	
17	12	25.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.48	2.12	4.55	10	0.80	137.60	137.80	141.80	142.07	141.30	142.00	CCB 23 - BLDG	

Project File: System 200 - 100yr.stm

Number of lines: 17

Run Date: 6/28/2021

NOTES: Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period = Yrs. 100 ; c = cir, e = ellip, b = box

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp Line No	
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 16	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CB17.1	0.00	0.00	-nan(ind)	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.00	0.00	0.00	0.00	0.0	13
3	CB17	0.00	0.00	-nan(ind)	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.00	0.00	0.00	0.00	0.0	12
4	CCB 18	0.15	0.00	0.15	0.00	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.031	0.031	0.013	0.05	1.70	0.00	0.00	0.0	3
5	CCB 19	1.31	0.00	1.31	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.031	0.031	0.000	0.22	7.01	0.22	7.01	0.0	Off
6	BLDG	0.83*	0.00	0.00	0.83	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	AD 21	3.14	0.00	0.00	3.14	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CCB 20	1.43	0.00	1.43	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.031	0.031	0.000	0.23	7.53	0.23	7.53	0.0	Off
9	BLDG	0.93*	0.00	0.00	0.93	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	MH 22	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	AD 25	18.18*	0.00	0.00	18.18	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	DBLCCB 23	4.63	-nan(ind)	0.00	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	5.04	162.56	5.04	162.56	0.0	Off
13	DBLCCB 24	4.30	-nan(ind)	0.00	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	5.04	162.56	5.04	162.56	0.0	Off
14	BLDG	1.55*	0.00	0.00	1.55	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	BLDG	3.62*	0.00	0.00	3.62	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	BLDG	1.66*	0.00	0.00	1.66	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	BLDG	2.48*	0.00	0.00	2.48	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 200 - 100yr.stm

Number of lines: 17

Run Date: 6/28/2021

NOTES: Inlet N-Values = 0.016; Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period = 100 Yrs. : \* Indicates Known Q added. All curb inlets are throat.

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	30	42.78	133.00	134.84	1.84	3.88	11.04	1.38	136.22	0.000	146.000	134.70	136.88	2.18**	4.55	9.40	1.38	138.26	0.000	0.000	n/a	1.00	1.38
2	30	39.32	134.70	136.88	2.18	4.42	8.64	1.23	138.11	0.000	85.000	135.70	137.81 j	2.11**	4.42	8.89	1.23	139.04	0.000	0.000	n/a	0.50	0.61
3	30	39.36	135.70	137.81	2.11	4.42	8.90	1.23	139.04	0.000	22.000	135.90	138.01	2.11**	4.43	8.89	1.23	139.24	0.000	0.000	n/a	2.23	n/a
4	18	7.37	144.60	145.15	0.55*	0.59	12.59	0.48	145.63	0.000	105.000	150.00	151.05	1.05**	1.32	5.58	0.48	151.53	0.000	0.000	n/a	1.13	0.55
5	15	7.33	150.00	151.05	1.05	1.10	6.66	0.66	151.71	0.000	98.000	152.00	153.08	1.08**	1.13	6.51	0.66	153.74	0.000	0.000	n/a	2.22	1.46
6	8	0.83	150.00	153.08	0.67	0.35	2.38	0.09	153.17	0.403	26.000	150.20	153.18	0.67	0.35	2.38	0.09	153.27	0.402	0.403	0.105	1.00	0.09
7	15	3.14	152.30	153.08	0.78	0.72	3.90	0.29	153.37	0.000	165.000	153.50	154.21 j	0.71**	0.72	4.34	0.29	154.51	0.000	0.000	n/a	1.00	0.29
8	15	2.36	152.00	153.08	1.08	0.60	2.09	0.24	153.32	0.000	20.000	152.20	152.81	0.61**	0.60	3.94	0.24	153.05	0.000	0.000	n/a	0.50	n/a
9	8	0.93	152.20	152.81	0.61	0.34	2.77	0.12	152.93	0.439	18.000	152.30	152.89	0.59	0.32	2.86	0.13	153.01	0.455	0.447	0.080	1.00	0.13
10	30	30.93	135.90	138.01	2.11	4.43	6.99	0.76	138.77	0.460	89.000	136.40	138.30	1.90	4.01	7.71	0.92	139.23	0.563	0.511	0.455	1.00	0.92
11	18	18.18	138.00	139.23	1.23	1.55	11.74	1.68	140.91	0.000	97.000	140.50	141.95	1.45**	1.75	10.39	1.68	143.63	0.000	0.000	n/a	1.00	n/a
12	18	12.91	136.40	139.23	1.50	1.77	7.31	0.83	140.06	1.289	103.000	137.30	140.56	1.50	1.77	7.31	0.83	141.39	1.288	1.289	1.327	1.50	1.25
13	15	5.85	137.60	141.80	1.25	1.23	4.77	0.35	142.15	0.700	20.000	137.80	141.94	1.25	1.23	4.77	0.35	142.29	0.699	0.699	0.140	0.50	0.18
14	10	1.55	137.80	142.12	0.83	0.55	2.84	0.13	142.24	0.427	17.000	137.90	142.19	0.83	0.55	2.84	0.13	142.32	0.427	0.427	0.073	1.00	0.13
15	12	3.62	133.90	136.88	1.00	0.79	4.61	0.33	137.21	0.881	15.000	134.00	137.02	1.00	0.79	4.61	0.33	137.35	0.880	0.881	0.132	1.00	0.33
16	10	1.66	140.90	141.45	0.55*	0.39	4.30	0.26	141.72	0.000	25.000	141.10	141.68	0.58**	0.40	4.12	0.26	141.94	0.000	0.000	n/a	1.00	0.26
17	10	2.48	137.60	141.80	0.83	0.55	4.55	0.32	142.12	1.093	25.000	137.80	142.07	0.83	0.55	4.55	0.32	142.40	1.093	1.093	0.273	1.00	0.32

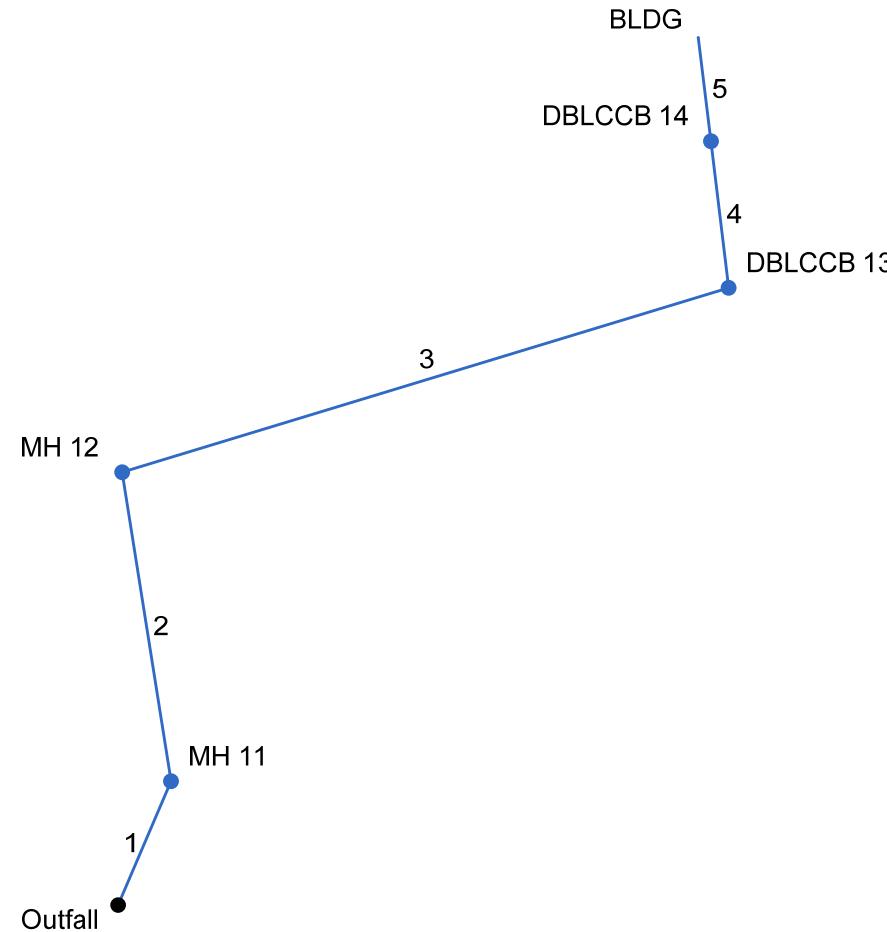
Project File: System 200 - 100yr.stm

Number of lines: 17

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	31.000	-66.817	MH	3.21	0.00	0.00	0.0	143.50	2.58	144.30	15	Cir	0.012	0.59	148.70	FES 10 - MH 11
2	1	72.000	-32.176	MH	0.00	0.00	0.00	0.0	144.30	2.08	145.80	15	Cir	0.012	0.99	156.00	MH 11 - MH 12
3	2	146.000	82.085	Grate	0.00	0.57	0.71	5.0	145.80	1.99	148.70	15	Cir	0.012	1.48	152.50	MH 12 - DBLCCB 13
4	3	34.000	-79.999	Grate	0.00	0.82	0.57	5.0	148.70	0.88	149.00	15	Cir	0.012	0.50	152.50	DBLCCB 13 - DBLCCB
5	4	24.000	0.000	None	4.97	0.00	0.00	0.0	149.00	0.83	149.20	12	Cir	0.012	1.00	153.60	DBLCCB 14 - BLDG

Project File: System 300 - 100yr.stm

Number of lines: 5

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ft)	Total (ac)		(C)		Incr	Total					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	31.000	0.00	1.39	0.00	0.00	0.87	0.0	5.4	11.2	17.91	11.24	14.60	15	2.58	143.50	144.30	144.74	146.72	144.75	148.70	FES 10 - MH 11
2	1	72.000	0.00	1.39	0.00	0.00	0.87	0.0	5.3	11.3	14.78	10.10	12.05	15	2.08	144.30	145.80	148.67	151.89	148.70	156.00	MH 11 - MH 12
3	2	146.000	0.57	1.39	0.71	0.40	0.87	5.0	5.1	11.4	14.94	9.86	12.18	15	1.99	145.80	148.70	154.12	160.79	156.00	152.50	MH 12 - DBLCCB
4	3	34.000	0.82	0.82	0.57	0.47	0.47	5.0	5.0	11.5	10.34	6.57	8.43	15	0.88	148.70	149.00	164.20	164.94	152.50	152.50	DBLCCB 13 - DB
5	4	24.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.97	3.52	6.33	12	0.83	149.00	149.20	165.49	165.89	152.50	153.60	DBLCCB 14 - BL
Project File: System 300 - 100yr.stm														Number of lines: 5		Run Date: 6/28/2021						
NOTES:Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period =Yrs. 100 ; c = cir e = ellip b = box																						

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 11	3.21*	0.00	0.00	3.21	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	MH 12	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	DBLCCB 13	4.65	0.00	4.65	0.00	Grate	0.0	0.00	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	0.38	12.13	0.38	12.13	0.0	Off
4	DBLCCB 14	5.37	0.00	5.37	0.00	Grate	0.0	0.00	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	0.41	13.29	0.41	13.29	0.0	Off
5	BLDG	4.97*	0.00	0.00	4.97	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Project File: System 300 - 100yr.stm													Number of lines: 5				Run Date: 6/28/2021					
NOTES: Inlet N-Values = 0.016; Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.																						

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	15	17.91	143.50	144.74	1.24	1.23	14.61	3.32	148.06	6.162	31.000	144.30	146.72	1.25**	1.23	14.60	3.31	150.03	6.558	6.360	1.972	0.59	1.95
2	15	14.78	144.30	148.67	1.25	1.23	12.05	2.26	150.93	4.467	72.000	145.80	151.89	1.25	1.23	12.05	2.26	154.15	4.465	4.466	3.216	0.99	2.23
3	15	14.94	145.80	154.12	1.25	1.23	12.18	2.31	156.43	4.564	146.000	148.70	160.79	1.25	1.23	12.18	2.30	163.09	4.562	4.563	6.662	1.48	3.41
4	15	10.34	148.70	164.20	1.25	1.23	8.43	1.10	165.30	2.187	34.000	149.00	164.94	1.25	1.23	8.43	1.10	166.05	2.186	2.187	0.744	0.50	0.55
5	12	4.97	149.00	165.49	1.00	0.79	6.33	0.62	166.12	1.660	24.000	149.20	165.89	1.00	0.79	6.33	0.62	166.51	1.660	1.660	0.398	1.00	0.62

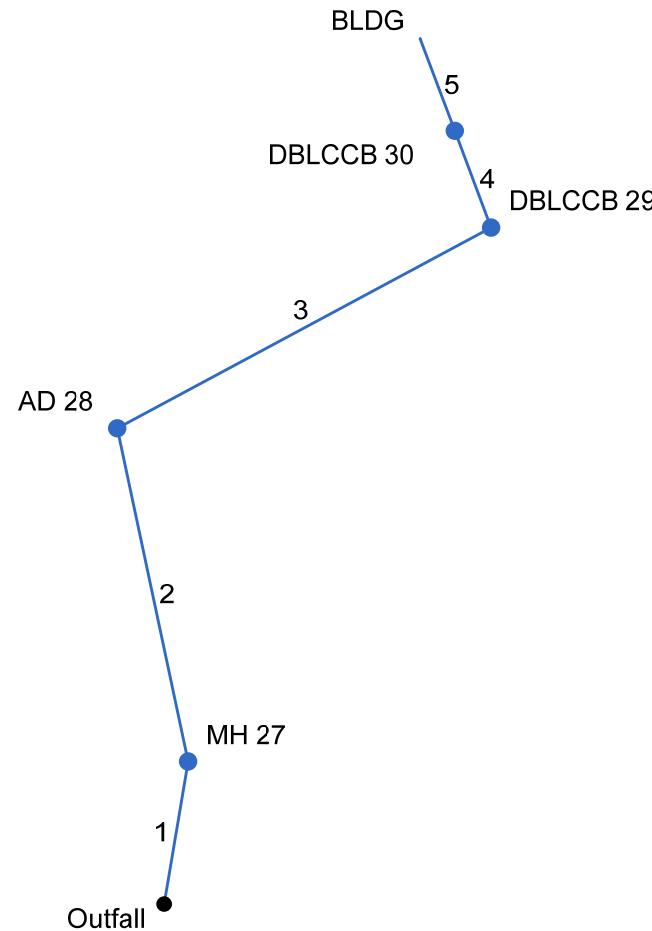
Project File: System 300 - 100yr.stm

Number of lines: 5

Run Date: 6/28/2021

Notes: ; \*\* Critical depth. ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	28.000	-80.576	MH	4.97	0.00	0.00	0.0	144.00	8.93	146.50	15	Cir	0.012	0.42	149.80	FES 26 - MH 27
2	1	66.000	-21.391	DrGrt	0.00	0.01	0.30	5.0	146.50	7.58	151.50	15	Cir	0.012	1.45	157.20	MH 27 - AD 28
3	2	82.000	73.665	Comb	0.00	0.25	0.71	5.0	151.50	1.10	152.40	15	Cir	0.012	1.49	156.00	AD 28 - DBLCCB 29
4	3	20.000	-82.225	Grate	0.00	0.31	0.73	5.0	152.40	1.50	152.70	15	Cir	0.012	0.50	156.00	DBLCCB 29 - DBLCCB
5	4	19.000	0.000	None	3.62	0.00	0.00	0.0	152.70	0.53	152.80	12	Cir	0.012	1.00	156.60	DBLCCB 30 - BLDG

Project File: System 400 - 100yr.stm

Number of lines: 5

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ft)	Total (ac)		(C)		Incr	Total					(in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	28.000	0.00	0.57	0.00	0.00	0.41	0.0	5.4	11.1	13.11	20.90	11.99	15	8.93	144.00	146.50	144.94	147.73	144.25	149.80	FES 26 - MH 27
2	1	66.000	0.01	0.57	0.30	0.00	0.41	5.0	5.3	11.2	8.20	19.25	6.88	15	7.58	146.50	151.50	147.73	152.62	149.80	157.20	MH 27 - AD 28
3	2	82.000	0.25	0.56	0.71	0.18	0.40	5.0	5.1	11.4	8.24	7.33	6.71	15	1.10	151.50	152.40	152.75	153.89	157.20	156.00	AD 28 - DBLCCB
4	3	20.000	0.31	0.31	0.73	0.23	0.23	5.0	5.0	11.5	6.22	8.57	5.07	15	1.50	152.40	152.70	154.93	155.09	156.00	156.00	DBLCCB 29 - DB
5	4	19.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.62	2.80	4.61	12	0.53	152.70	152.80	155.29	155.46	156.00	156.60	DBLCCB 30 - BL
Project File: System 400 - 100yr.stm														Number of lines: 5		Run Date: 6/28/2021						
NOTES:Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period =Yrs. 100 ; c = cir e = ellip b = box																						

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 27	4.97*	0.00	0.00	4.97	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	AD 28	0.03	0.00	0.01	0.02	DrGrt	0.0	0.00	0.00	0.83	0.63	0.019	2.53	0.019	0.019	0.013	0.02	4.74	0.02	4.74	0.0	Off
3	DBLCCB 29	2.04	0.00	2.04	0.00	Comb	4.0	5.46	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	0.23	7.29	0.23	7.29	0.0	Off
4	DBLCCB 30	2.60	0.00	2.60	0.00	Grate	0.0	0.00	6.24	4.62	1.35	Sag	2.53	0.031	0.031	0.000	0.26	8.45	0.26	8.45	0.0	Off
5	BLDG	3.62*	0.00	0.00	3.62	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Project File: System 400 - 100yr.stm													Number of lines: 5				Run Date: 6/28/2021					
NOTES: Inlet N-Values = 0.016; Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.																						

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	15	13.11	144.00	144.94	0.94	0.99	13.24	1.79	146.73	0.000	28.000	146.50	147.73	1.23**	1.22	10.73	1.79	149.52	0.000	0.000	n/a	0.42	0.75
2	15	8.20	146.50	147.73	1.23	1.16	6.71	0.77	148.50	0.000	66.000	151.50	152.62 j	1.12**	1.16	7.05	0.77	153.40	0.000	0.000	n/a	1.45	1.12
3	15	8.24	151.50	152.75	1.25*	1.23	6.71	0.70	153.45	1.387	82.000	152.40	153.89	1.25	1.23	6.71	0.70	154.59	1.387	1.387	1.137	1.49	1.04
4	15	6.22	152.40	154.93	1.25	1.23	5.07	0.40	155.33	0.791	20.000	152.70	155.09	1.25	1.23	5.07	0.40	155.49	0.791	0.791	0.158	0.50	0.20
5	12	3.62	152.70	155.29	1.00	0.79	4.61	0.33	155.62	0.881	19.000	152.80	155.46	1.00	0.79	4.61	0.33	155.79	0.880	0.881	0.167	1.00	0.33

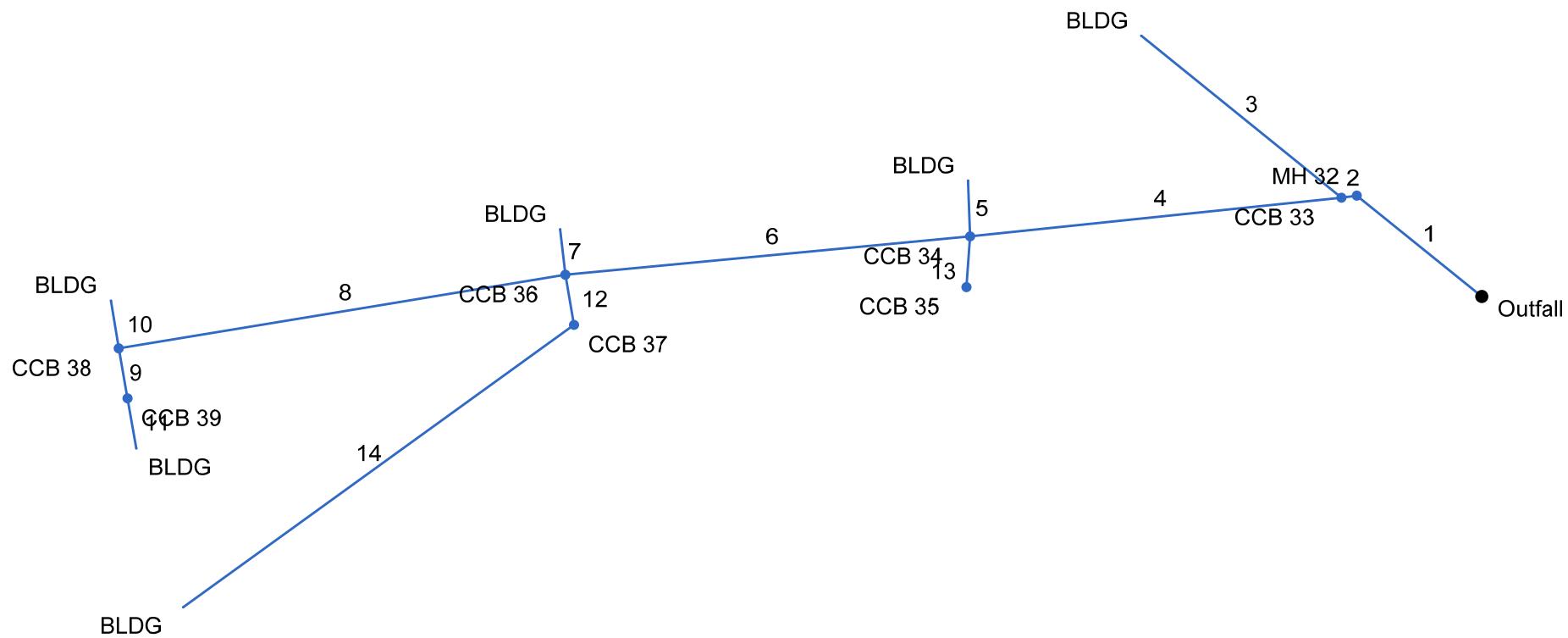
Project File: System 400 - 100yr.stm

Number of lines: 5

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	63.000	-140.879	MH	0.00	0.00	0.00	0.0	126.00	9.05	131.70	15	Cir	0.012	0.77	137.80	FES 31 - MH 32
2	1	6.000	-46.677	Comb	0.00	0.27	0.80	5.0	131.70	3.33	131.90	15	Cir	0.012	1.31	139.50	MH 32 - CCB 33
3	2	101.000	46.745	None	1.82	0.00	0.00	0.0	131.90	0.50	132.40	12	Cir	0.012	1.00	135.70	CCB 33 - BLDG
4	2	146.000	1.547	Comb	0.00	0.26	0.52	5.0	136.20	1.78	138.80	15	Cir	0.012	2.22	142.20	CCB 33 - CCB 34
5	4	22.000	93.847	None	0.54	0.00	0.00	0.0	138.80	0.91	139.00	12	Cir	0.012	1.00	142.00	CCB 34 - BLDG
6	4	159.000	0.559	Comb	0.00	0.16	0.68	5.0	138.80	2.14	142.20	15	Cir	0.012	1.50	145.70	CCB 34 - CCB 36
7	6	18.000	88.865	None	0.54	0.00	0.00	0.0	142.20	0.56	142.30	12	Cir	0.012	1.00	146.30	CCB 36 - BLDG
8	6	177.000	-3.969	Comb	0.00	0.17	0.68	5.0	142.20	4.29	149.80	15	Cir	0.012	2.25	153.30	CCB 36 - CCB 38
9	8	20.000	-90.484	Comb	0.00	0.14	0.70	5.0	150.00	1.50	150.30	15	Cir	0.012	0.50	153.30	CCB 38 - CCB 39
10	8	19.000	90.123	None	1.89	0.00	0.00	0.0	150.00	1.05	150.20	12	Cir	0.012	1.00	154.10	CCB 38 - BLDG
11	9	20.000	0.000	None	0.74	0.00	0.00	0.0	150.30	0.50	150.40	12	Cir	0.012	1.00	154.00	CCB 39 - BLDG
12	6	20.000	-94.233	Comb	0.00	0.14	0.73	5.0	142.50	1.00	142.70	15	Cir	0.012	1.37	145.70	CCB 36 - CCB 37
13	4	20.000	-79.777	Comb	0.00	0.13	0.57	5.0	139.00	1.00	139.20	15	Cir	0.012	1.00	142.20	CCB 34 - CCB 35
14	12	189.000	63.610	None	1.01	0.00	0.00	5.0	142.70	0.53	143.70	12	Cir	0.012	1.00	148.00	CLCB 37 - BLDG

Project File: System 500 - 10yr.stm

Number of lines: 14

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ft)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	63.000	0.00	1.27	0.00	0.00	0.85	0.0	7.0	6.5	12.04	21.04	13.46	15	9.05	126.00	131.70	126.70	132.92	127.50	137.80	FES 31 - MH 32
2	1	6.000	0.27	1.27	0.80	0.22	0.85	5.0	7.0	6.5	12.05	12.77	9.89	15	3.33	131.70	131.90	132.92	133.12	137.80	139.50	MH 32 - CCB 33
3	2	101.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.82	2.71	2.36	12	0.50	131.90	132.40	133.12	133.32	139.50	135.70	CCB 33 - BLDG
4	2	146.000	0.26	1.00	0.52	0.14	0.63	5.0	6.7	6.6	8.91	9.34	8.10	15	1.78	136.20	138.80	137.18	139.95	139.50	142.20	CCB 33 - CCB 34
5	4	22.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.54	3.68	0.69	12	0.91	138.80	139.00	139.95	139.96	142.20	142.00	CCB 34 - BLDG
6	4	159.000	0.16	0.61	0.68	0.11	0.42	5.0	6.2	6.8	7.07	10.23	6.17	15	2.14	138.80	142.20	139.95	143.26	142.20	145.70	CCB 34 - CCB 36
7	6	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.54	2.88	0.69	12	0.56	142.20	142.30	143.26	143.27	145.70	146.30	CCB 36 - BLDG
8	6	177.000	0.17	0.31	0.68	0.12	0.21	5.0	5.1	7.4	4.22	14.50	4.33	15	4.29	142.20	149.80	143.26	150.63	145.70	153.30	CCB 36 - CCB 38
9	8	20.000	0.14	0.14	0.70	0.10	0.10	5.0	5.0	7.5	1.47	8.57	2.89	15	1.50	150.00	150.30	150.63	150.78	153.30	153.30	CCB 38 - CCB 39
10	8	19.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.89	3.96	3.79	12	1.05	150.00	150.20	150.63	150.79	153.30	154.10	CCB 38 - BLDG
11	9	20.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.74	2.73	2.45	12	0.50	150.30	150.40	150.78	150.76	153.30	154.00	CCB 39 - BLDG
12	6	20.000	0.14	0.14	0.73	0.10	0.10	5.0	6.1	6.9	1.71	7.00	2.87	15	1.00	142.50	142.70	143.26	143.22	145.70	145.70	CCB 36 - CCB 37
13	4	20.000	0.13	0.13	0.57	0.07	0.07	5.0	5.0	7.5	0.56	7.00	1.56	15	1.00	139.00	139.20	139.95	139.49	142.20	142.20	CCB 34 - CCB 35
14	12	189.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	1.01	2.81	2.83	12	0.53	142.70	143.70	143.22	144.12	145.70	148.00	CLCB 37 - BLDG
Project File: System 500 - 10yr.stm														Number of lines: 14		Run Date: 6/28/2021						
NOTES:Intensity = 35.55 / (Inlet time + 3.70) ^ 0.72; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH 32	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CCB 33	1.62	0.84	2.46	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.019	0.019	0.000	0.31	16.10	0.31	16.10	0.0	Off
3	BLDG	1.82*	0.00	0.00	1.82	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	CCB 34	1.01	0.36	0.82	0.55	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.031	0.031	0.013	0.18	5.72	0.13	4.06	0.0	2
5	BLDG	0.54*	0.00	0.00	0.54	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CCB 36	0.82	0.27	0.73	0.36	Comb	4.0	2.73	0.00	2.31	1.35	0.060	2.53	0.031	0.031	0.013	0.12	3.75	0.08	2.48	0.0	4
7	BLDG	0.54*	0.00	0.00	0.54	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CCB 38	0.87	0.00	0.59	0.27	Comb	4.0	2.73	0.00	2.31	1.35	0.038	2.53	0.031	0.031	0.013	0.12	3.74	0.08	2.44	0.0	6
9	CCB 39	0.73	0.00	0.52	0.22	Comb	4.0	2.73	0.00	2.31	1.35	0.038	2.53	0.031	0.031	0.013	0.11	3.52	0.07	2.23	0.0	12
10	BLDG	1.89*	0.00	0.00	1.89	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	BLDG	0.74*	0.00	0.00	0.74	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	CCB 37	0.77	0.22	0.67	0.31	Comb	4.0	2.73	0.00	2.31	1.35	0.060	2.53	0.031	0.031	0.013	0.11	3.60	0.07	2.34	0.0	13
13	CCB 35	0.56	0.31	0.58	0.29	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.031	0.031	0.013	0.15	4.81	0.10	3.19	0.0	2
14	BLDG	1.01*	0.00	0.00	1.01	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 500 - 10yr.stm

Number of lines: 14

Run Date: 6/28/2021

NOTES: Inlet N-Values = 0.016; Intensity =  $35.55 / (\text{Inlet time} + 3.70)^{0.72}$ ; Return period = 10 Yrs.; \* Indicates Known Q added. All curb inlets are throat.

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	15	12.04	126.00	126.70	0.70	0.71	17.03	1.52	128.22	0.000	63.000	131.70	132.92	1.22**	1.22	9.88	1.52	134.44	0.000	0.000	n/a	0.77	n/a
2	15	12.05	131.70	132.92	1.22*	1.22	9.89	1.52	134.44	0.000	6.000	131.90	133.12	1.22**	1.22	9.89	1.52	134.64	0.000	0.000	n/a	1.31	n/a
3	12	1.82	131.90	133.12	1.00	0.79	2.32	0.08	133.20	0.223	101.000	132.40	133.32	0.92	0.76	2.41	0.09	133.41	0.193	0.208	0.210	1.00	0.09
4	15	8.91	136.20	137.18	0.98*	1.03	8.66	0.88	138.06	0.000	146.000	138.80	139.95	1.15**	1.18	7.54	0.88	140.84	0.000	0.000	n/a	2.22	n/a
5	12	0.54	138.80	139.95	1.00	0.79	0.69	0.01	139.96	0.020	22.000	139.00	139.96	0.96	0.77	0.70	0.01	139.96	0.017	0.018	0.004	1.00	0.01
6	15	7.07	138.80	139.95	1.15	1.11	5.98	0.63	140.58	0.000	159.000	142.20	143.26 j	1.06**	1.11	6.36	0.63	143.89	0.000	0.000	n/a	1.50	n/a
7	12	0.54	142.20	143.26	1.00	0.79	0.69	0.01	143.27	0.020	18.000	142.30	143.27	0.97	0.78	0.69	0.01	143.27	0.017	0.018	0.003	1.00	0.01
8	15	4.22	142.20	143.26	1.06	0.87	3.79	0.37	143.63	0.000	177.000	149.80	150.63 j	0.83**	0.87	4.87	0.37	151.00	0.000	0.000	n/a	2.25	0.83
9	15	1.47	150.00	150.63	0.63	0.43	2.38	0.18	150.81	0.000	20.000	150.30	150.78 j	0.48**	0.43	3.40	0.18	150.96	0.000	0.000	n/a	0.50	n/a
10	12	1.89	150.00	150.63	0.63	0.48	3.62	0.24	150.87	0.000	19.000	150.20	150.79 j	0.59**	0.48	3.96	0.24	151.03	0.000	0.000	n/a	1.00	0.24
11	12	0.74	150.30	150.78	0.48	0.25	1.98	0.13	150.91	0.000	20.000	150.40	150.76	0.36**	0.25	2.92	0.13	150.89	0.000	0.000	n/a	1.00	n/a
12	15	1.71	142.50	143.26	0.76	0.48	2.18	0.20	143.46	0.000	20.000	142.70	143.22 j	0.52**	0.48	3.55	0.20	143.42	0.000	0.000	n/a	1.37	0.27
13	15	0.56	139.00	139.95	0.95	0.22	0.55	0.10	140.05	0.000	20.000	139.20	139.49	0.29**	0.22	2.57	0.10	139.59	0.000	0.000	n/a	1.00	0.10
14	12	1.01	142.70	143.22	0.52	0.31	2.45	0.16	143.38	0.000	189.000	143.70	144.12 j	0.42**	0.31	3.21	0.16	144.28	0.000	0.000	n/a	1.00	0.16

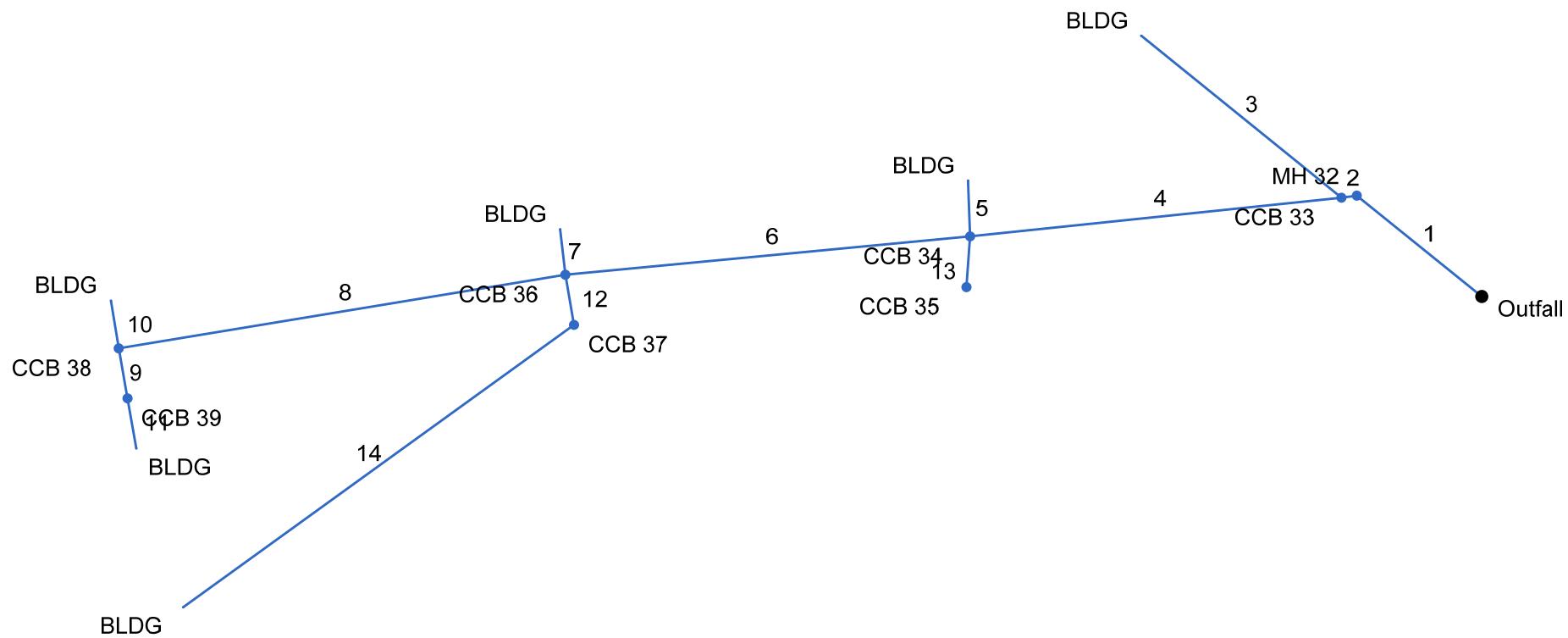
Project File: System 500 - 10yr.stm

Number of lines: 14

Run Date: 6/28/2021

Notes: \* depth assumed; \*\* Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

# Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



# Storm Sewer Inventory Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/Rim El (ft)	
1	End	63.000	-140.879	MH	0.00	0.00	0.00	0.0	126.00	9.05	131.70	15	Cir	0.012	0.77	137.80	FES 31 - MH 32
2	1	6.000	-46.677	Comb	0.00	0.27	0.80	5.0	131.70	3.33	131.90	15	Cir	0.012	1.31	139.50	MH 32 - CCB 33
3	2	101.000	46.745	None	2.79	0.00	0.00	0.0	131.90	0.50	132.40	12	Cir	0.012	1.00	135.70	CCB 33 - BLDG
4	2	146.000	1.547	Comb	0.00	0.26	0.52	5.0	136.20	1.78	138.80	15	Cir	0.012	2.22	142.20	CCB 33 - CCB 34
5	4	22.000	93.847	None	0.83	0.00	0.00	0.0	138.80	0.91	139.00	12	Cir	0.012	1.00	142.00	CCB 34 - BLDG
6	4	159.000	0.559	Comb	0.00	0.16	0.68	5.0	138.80	2.14	142.20	15	Cir	0.012	1.50	145.70	CCB 34 - CCB 36
7	6	18.000	88.865	None	0.83	0.00	0.00	0.0	142.20	0.56	142.30	12	Cir	0.012	1.00	146.30	CCB 36 - BLDG
8	6	177.000	-3.969	Comb	0.00	0.17	0.68	5.0	142.20	4.29	149.80	15	Cir	0.012	2.25	153.30	CCB 36 - CCB 38
9	8	20.000	-90.484	Comb	0.00	0.14	0.70	5.0	150.00	1.50	150.30	15	Cir	0.012	0.50	153.30	CCB 38 - CCB 39
10	8	19.000	90.123	None	2.90	0.00	0.00	0.0	150.00	1.05	150.20	12	Cir	0.012	1.00	154.10	CCB 38 - BLDG
11	9	20.000	0.000	None	1.14	0.00	0.00	0.0	150.30	0.50	150.40	12	Cir	0.012	1.00	154.00	CCB 39 - BLDG
12	6	20.000	-94.233	Comb	0.00	0.14	0.73	5.0	142.50	1.00	142.70	15	Cir	0.012	1.37	145.70	CCB 36 - CCB 37
13	4	20.000	-79.777	Comb	0.00	0.13	0.57	5.0	139.00	1.00	139.20	15	Cir	0.012	1.00	142.20	CCB 34 - CCB 35
14	12	189.000	63.610	None	1.55	0.00	0.00	5.0	142.70	0.53	143.70	12	Cir	0.012	1.00	148.00	CLCB 37 - BLDG

Project File: System 500 - 100yr.stm

Number of lines: 14

Date: 6/28/2021

# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		(C)	Incr	Total	Inlet (min)	Syst (min)				(in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	63.000	0.00	1.27	0.00	0.00	0.85	0.0	7.3	9.7	18.31	21.04	17.12	15	9.05	126.00	131.70	126.90	132.94	127.50	137.80	FES 31 - MH 32
2	1	6.000	0.27	1.27	0.80	0.22	0.85	5.0	7.3	9.7	18.31	12.77	14.92	15	3.33	131.70	131.90	132.95	133.36	137.80	139.50	MH 32 - CCB 33
3	2	101.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.79	2.71	3.55	12	0.50	131.90	132.40	137.90	138.43	139.50	135.70	CCB 33 - BLDG
4	2	146.000	0.26	1.00	0.52	0.14	0.63	5.0	7.1	9.9	13.51	9.34	11.01	15	1.78	136.20	138.80	137.90	143.34	139.50	142.20	CCB 33 - CCB 34
5	4	22.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.83	3.68	1.06	12	0.91	138.80	139.00	147.53	147.54	142.20	142.00	CCB 34 - BLDG
6	4	159.000	0.16	0.61	0.68	0.11	0.42	5.0	6.8	10.1	10.70	10.23	8.72	15	2.14	138.80	142.20	147.53	151.25	142.20	145.70	CCB 34 - CCB 36
7	6	18.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.83	2.88	1.06	12	0.56	142.20	142.30	153.02	153.03	145.70	146.30	CCB 36 - BLDG
8	6	177.000	0.17	0.31	0.68	0.12	0.21	5.0	5.2	11.3	6.46	14.50	5.26	15	4.29	142.20	149.80	153.02	154.53	145.70	153.30	CCB 36 - CCB 38
9	8	20.000	0.14	0.14	0.70	0.10	0.10	5.0	5.0	11.5	2.27	8.57	1.85	15	1.50	150.00	150.30	155.50	155.52	153.30	153.30	CCB 38 - CCB 39
10	8	19.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.90	3.96	3.69	12	1.05	150.00	150.20	155.50	155.61	153.30	154.10	CCB 38 - BLDG
11	9	20.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.14	2.73	1.45	12	0.50	150.30	150.40	155.55	155.56	153.30	154.00	CCB 39 - BLDG
12	6	20.000	0.14	0.14	0.73	0.10	0.10	5.0	6.6	10.2	2.59	7.00	2.11	15	1.00	142.50	142.70	153.02	153.05	145.70	145.70	CCB 36 - CCB 37
13	4	20.000	0.13	0.13	0.57	0.07	0.07	5.0	5.0	11.5	0.85	7.00	0.69	15	1.00	139.00	139.20	147.53	147.53	142.20	142.20	CCB 34 - CCB 35
14	12	189.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	1.55	2.81	1.97	12	0.53	142.70	143.70	153.14	153.45	145.70	148.00	CLCB 37 - BLDG
Project File: System 500 - 100yr.stm														Number of lines: 14		Run Date: 6/28/2021						
NOTES:Intensity = 55.51 / (Inlet time + 3.80) ^ 0.72; Return period =Yrs. 100 ; c = cir e = ellip b = box																						

# Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Byp Line No		
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	
1	MH 32	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
2	CCB 33	2.48	1.66	4.14	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.53	0.019	0.019	0.000	0.42	22.29	0.42	22.29	0.0 Off
3	BLDG	2.79*	0.00	0.00	2.79	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
4	CCB 34	1.55	0.70	1.19	1.06	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.031	0.031	0.013	0.21	6.88	0.16	5.19	0.0 2
5	BLDG	0.83*	0.00	0.00	0.83	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
6	CCB 36	1.25	0.50	1.05	0.70	Comb	4.0	2.73	0.00	2.31	1.35	0.060	2.53	0.031	0.031	0.013	0.14	4.47	0.10	3.17	0.0 4
7	BLDG	0.83*	0.00	0.00	0.83	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
8	CCB 38	1.33	0.00	0.83	0.50	Comb	4.0	2.73	0.00	2.31	1.35	0.038	2.53	0.031	0.031	0.013	0.14	4.39	0.09	3.05	0.0 6
9	CCB 39	1.13	0.00	0.73	0.40	Comb	4.0	2.73	0.00	2.31	1.35	0.038	2.53	0.031	0.031	0.013	0.13	4.13	0.09	2.80	0.0 12
10	BLDG	2.90*	0.00	0.00	2.90	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
11	BLDG	1.14*	0.00	0.00	1.14	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off
12	CCB 37	1.18	0.40	0.97	0.60	Comb	4.0	2.73	0.00	2.31	1.35	0.060	2.53	0.031	0.031	0.013	0.13	4.30	0.09	3.00	0.0 13
13	CCB 35	0.85	0.60	0.86	0.60	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.031	0.031	0.013	0.18	5.84	0.13	4.18	0.0 2
14	BLDG	1.55*	0.00	0.00	1.55	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0 Off

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NOTES: Inlet N-Values = 0.016; Intensity =  $55.51 / (\text{Inlet time} + 3.80)^{0.72}$ ; Return period = 100 Yrs.; \* Indicates Known Q added. All curb inlets are throat.

# Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check		JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)			
1	15	18.31	126.00	126.90	0.90	0.95	19.32	3.46	130.37	0.000	63.000	131.70	132.94	1.24**	1.23	14.93	3.46	136.41	0.000	0.000	n/a	0.77	2.67
2	15	18.31	131.70	132.95	1.25*	1.23	14.92	3.46	136.41	6.854	6.000	131.90	133.36	1.25**	1.23	14.92	3.46	136.82	6.852	6.853	0.411	1.31	4.53
3	12	2.79	131.90	137.90	1.00	0.79	3.55	0.20	138.09	0.523	101.000	132.40	138.43	1.00	0.79	3.55	0.20	138.62	0.523	0.523	0.528	1.00	0.20
4	15	13.51	136.20	137.90	1.25	1.23	11.01	1.88	139.78	3.731	146.000	138.80	143.34	1.25	1.23	11.01	1.88	145.23	3.730	3.730	5.446	2.22	4.18
5	12	0.83	138.80	147.53	1.00	0.79	1.06	0.02	147.54	0.046	22.000	139.00	147.54	1.00	0.79	1.06	0.02	147.55	0.046	0.046	0.010	1.00	0.02
6	15	10.70	138.80	147.53	1.25	1.23	8.72	1.18	148.71	2.340	159.000	142.20	151.25	1.25	1.23	8.72	1.18	152.43	2.340	2.340	3.721	1.50	1.77
7	12	0.83	142.20	153.02	1.00	0.79	1.06	0.02	153.04	0.046	18.000	142.30	153.03	1.00	0.79	1.06	0.02	153.05	0.046	0.046	0.008	1.00	0.02
8	15	6.46	142.20	153.02	1.25	1.23	5.27	0.43	153.45	0.853	177.000	149.80	154.53	1.25	1.23	5.26	0.43	154.96	0.853	0.853	1.510	2.25	0.97
9	15	2.27	150.00	155.50	1.25	1.23	1.85	0.05	155.55	0.105	20.000	150.30	155.52	1.25	1.23	1.85	0.05	155.57	0.105	0.105	0.021	0.50	0.03
10	12	2.90	150.00	155.50	1.00	0.79	3.69	0.21	155.71	0.565	19.000	150.20	155.61	1.00	0.79	3.69	0.21	155.82	0.565	0.565	0.107	1.00	0.21
11	12	1.14	150.30	155.55	1.00	0.79	1.45	0.03	155.58	0.087	20.000	150.40	155.56	1.00	0.79	1.45	0.03	155.60	0.087	0.087	0.017	1.00	0.03
12	15	2.59	142.50	153.02	1.25	1.23	2.11	0.07	153.09	0.137	20.000	142.70	153.05	1.25	1.23	2.11	0.07	153.12	0.137	0.137	0.027	1.37	0.09
13	15	0.85	139.00	147.53	1.25	1.23	0.69	0.01	147.53	0.015	20.000	139.20	147.53	1.25	1.23	0.69	0.01	147.54	0.015	0.015	0.003	1.00	0.01
14	12	1.55	142.70	153.14	1.00	0.79	1.97	0.06	153.20	0.161	189.000	143.70	153.45	1.00	0.79	1.97	0.06	153.51	0.161	0.161	0.305	1.00	0.06

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Notes: \* depth assumed; \*\* Critical depth. ; c = cir e = ellip b = box