South 15 Year-20 Minute Storm Calculations

LineNo.	LineID	Pipe Length (ft)	Pipe Size (in)	Invert Down (ft)	Invert Up (ft)	Slope (%)	n Value	Top El Down (ft)	Top El Up (ft)	HGL (Down) (ft)	HGL (Up) (ft)	Juntion Loss	Velocity Average (ft/s)	Deflec. Angle (Deg)	Energy Loss (ft)	Known Q (cfs)	Total Q (cfs)	Minor Loss (ft)	Capacity (Full) (cfs)	Free-board (ft)
1	FE1 AI 2	80	36	623.00	623.80	1.01	0.013	626.00	635.20	626.00	626.21	0.00	8.17	146.50	0.52	0.34	53.40	0.00	66.90	8.99
2	AI 2 AI 3	43	36	623.80	624.23	1.00	0.013	635.20	635.95	626.21	626.55	0.23	8.88	-19.10	0.29	0.49	53.06	0.29	66.69	9.40
3	AI 3 CI 4	159	36	624.23	625.82	1.00	0.013	635.95	641.40	626.84	628.13	0.52	8.52	54.90	1.01	1.25	52.57	0.65	66.69	13.27
4	CI 4 CI 5	35.00	36	625.82	626.17	1.00	0.013	641.40	641.42	628.79	628.89	0.12	7.44	10.60	0.19	1.46	51.32	0.11	66.69	12.53
5	CI 5 MH 6	71	36	626.17	626.88	1.00	0.013	641.42	643.30	629.00	629.12	0.61	7.95	-72.30	0.41	0.00	49.50	0.72	66.69	14.18
6	MH 6 CI 7	79	36	626.88	627.67	1.00	0.013	643.30	645.04	629.85	629.92	0.18	7.86	14.80	0.46	2.42	49.50	0.21	66.69	15.12
7	CI 7 CI 8	42.00	36	627.67	628.09	1.00	0.013	645.04	645.64	630.13	630.28	0.10	8.06	9.10	0.24	0.52	47.08	0.11	66.70	15.36
8	CI 8 CI 9	146	36	628.09	629.54	0.99	0.013	645.64	642.67	630.39	631.71	0.46	8.24	-44.10	0.87	0.78	46.56	0.51	66.46	10.96
9	CI9 MH 10	146	36	629.54	630.99	0.99	0.013	642.67	639.92	632.23	633.15	0.09	7.63	7.50	0.76	0.00	45.78	0.10	66.47	6.77
10	MH 10 DCI 11	31	24	630.99	631.31	1.02	0.013	639.92	639.67	633.25	633.42	0.15	5.42	-12.90	0.18	1.69	17.02	0.07	22.82	6.25
11	DCI 11 CI 12	169	24	631.31	632.98	0.99	0.013	639.67	643.47	633.49	634.22	0.36	4.96	30.70	0.75	0.88	12.31	0.20	22.48	9.25
12	CI 12 CI 13	35	18	632.98	633.33	1.00	0.013	643.47	643.47	634.42	634.45	0.64	3.88	-78.30	0.12	1.59	6.05	0.18	10.50	9.02
13	CI 13 AI 14	205	15	633.33	635.37	1.00	0.013	643.47	641.40	634.63	636.22	0.00	4.34	0.20	1.25	0.75	4.46	0.00	6.44	5.18
14	AI 14 AI 15	106	15	635.37	636.44	1.01	0.013	641.40	642.80	636.22	637.21	0.70	4.44	90.00	0.63	1.09	3.71	0.24	6.49	5.59
15	AI 15 AI 16	165	15	636.44	638.09	1.00	0.013	642.80	645.80	637.45	638.74	0.31	3.28	25.70	0.62	1.20	2.62	0.08	6.46	7.06
16	AI 16 AI 17	235	15	638.06	643.96	2.51	0.013	645.80	650.30	638.82	644.44	0.22	2.56	17.90	0.72	1.42	1.42	0.04	10.23	5.86
17	CI 5 CI 32	47	15	636.05	637.00	2.02	0.013	641.42	642.27	636.22	637.24	0.22	2.89	50.40	0.58	0.36	0.36	0.02	9.18	5.03
18	MH 10 AI 18	155	30	630.99	632.54	1.00	0.013	639.92	637.90	633.25	634.33	0.60	6.90	91.40	0.85	3.64	28.76	0.54	41.01	3.57
19	AI 18 AI 19	170	18	632.54	639.23	3.94	0.013	637.90	644.60	634.88	640.36	0.43	5.55	-71.10	1.30	1.53	8.76	0.25	20.83	4.24
20	AI 19 AI 20	141	15	639.23	644.86	3.99	0.013	644.60	650.30	640.61	645.94	0.30	6.16	41.10	1.70	1.72	7.23	0.19	12.90	4.36
21	AI 20 AI 21	181	15	644.86	648.46	1.99	0.013	650.30	653.90	646.13	649.40	0.18	5.03	25.80	1.45	1.25	5.51	0.09	9.11	4.50
22	AI 21 CI 204	168	15	648.46	651.83	2.01	0.013	653.90	658.37	649.49	652.66	0.24	4.45	18.20	0.97	4.26	4.26	0.09	9.15	5.71
23	AI 18 AI 22	33	24	632.54	633.88	4.06	0.013	637.90	643.00	634.88	635.31	0.45	6.00	47.90	0.20	1.30	16.36	0.32	45.58	7.69
24	AI 22 MH 23	163	21	633.88	640.52	4.07	0.013	643.00	650.80	635.64	641.94	0.40	6.73	-32.90	1.48	0.00	15.06	0.32	31.97	8.86
25	MH 23 CI 24	28	21	640.52	640.83	1.11	0.013	650.80	649.72	642.26	642.45	0.00	6.37	6.00	0.23	3.04	15.06	0.00	16.67	7.27
26	CI 24 CI 25	35	21	640.83	641.22	1.11	0.013	649.72	649.72	642.45	642.50	0.00	5.78	-0.90	0.22	3.61	12.02	0.00	16.72	7.22
27	CI 25 MH 26	31	21	641.22	641.56	1.10	0.013	649.72	650.50	642.50	642.62	0.06	4.99	-5.70	0.15	0.00	8.41	0.03	16.59	7.88
28	MH 26 AI 27	131	21	641.56	643.00	1.10	0.013	650.50	648.30	642.65	644.06	0.18	5.41	14.60	0.76	2.86	8.41	0.08	16.61	4.24
29	AI 27 AI 28	211	15	643.00	647.22	2.00	0.013	648.30	652.30	644.15	647.63	0.90	1.96	-92.90	0.54	1.07	1.07	0.13	9.13	4.67
30	AI 27 CI 201	41	15	643.00	646.46	8.44	0.013	648.30	652.02	644.15	647.31	0.35	4.43	-30.70	0.24	4.48	4.48	0.14	18.76	4.71
31	DCI 11 DCI 29	35	15	631.31	634.11	8.00	0.013	639.67	639.67	633.49	634.81	0.65	3.38	-55.60	0.15	3.02	3.02	0.19	18.26	4.86
32	CI 12 CI 30	188	15	632.98	643.86	5.79	0.013	643.47	649.11	634.42	644.79	0.00	4.95	25.70	1.46	0.70	5.38	0.00	15.54	4.32
33	CI 30 CI 31	44	15	643.86	644.60	1.69	0.013	649.11	649.85	644.79	644.96	0.00	1.79	-44.50	0.11	0.80	0.80	0.00	8.39	4.89
34	CI 30 CI 30 A	146	15	643.86	647.37	2.40	0.013	649.11	653.47	644.79	648.16	0.00	4.36	22.00	0.83	1.85	3.88	0.00	10.01	5.31
35	CI 30A CI 30B	35	15	647.37	648.21	2.40	0.013	653.47	653.47	648.16	648.78	0.00	3.11	-80.00	0.13	2.03	2.03	0.00	10.00	4.69
36	FE 50 MH 50A	17	24	623.00	623.37	2.20	0.013	624.50	627.00	625.00	624.86	0.00	6.28	0.00	0.11	2.16	17.50	0.00	33.57	2.14
37	MH50A MH 50 B	75	24	623.37	625.02	2.20	0.013	627.00	630.05	624.86	626.41	0.00	6.36	40.00	0.46	0.00	15.34	0.00	33.55	3.64
38	MH 50B DCI 51	160	24	625.02	628.54	2.20	0.013	630.05	639.95	626.41	629.93	0.00	6.60	-60.00	1.07	0.00	15.34	0.00	33.57	10.02
39	DCI 51 DCI 52	35	18	628.54	629.24	2.00	0.013	639.95	636.95	629.93	630.74	0.70	8.83	0.00	0.70	3.12	15.34	0.82	14.85	6.21
40	DCI 52 AI 53	92	15	629.24	631.09	2.00	0.013	636.95	637.52	631.56	632.32	0.58	5.00	-10.00	0.79	1.56	6.13	0.23	9.14	5.20
41	AI 53 AI 54	109	15	631.09	633.60	2.30	0.013	637.52	638.60	632.55	634.46	0.00	4.42	-50.00	0.69	2.10	4.57	0.00	9.79	4.14
42	AI 54 CI 55	116	15	633.60	641.18	6.55	0.013	638.60	646.92	634.46	641.81	0.18	3.38	-15.00	0.46	0.83	2.47	0.04	16.52	5.11
43	CI 55 CI 56	40	15	641.18	641.99	2.00	0.013	646.92	646.92	641.85	642.50	0.00	2.95	-15.00	0.15	0.68	1.64	0.00	9.14	4.42
44	CI 56 AI 57	25	15	641.99	642.50	2.01	0.013	646.92	647.80	642.50	642.89	0.00	2.47	0.00	0.08	0.96	0.96	0.00	9.15	4.91
45	DCI 52 CI 58	135	15	629.24	633.83	3.40	0.013	636.95	643.75	631.56	634.82	0.06	5.41	90.00	1.25	0.68	6.09	0.03	11.90	8.93
46	CI 58 CI 59	162	15	633.83	639.31	3.38	0.013	643.75	647.75	634.85	640.13	0.38	4.43	-95.00	0.93	1.95	4.21	0.14	11.88	7.62
47	CI 59 CI 60	35	15	639.31	640.50	3.40	0.013	647.75	647.75	640.27	641.10	0.70	3.05	84.40	0.12	2.26	2.26	0.16	11.91	6.65
48	CI 58 CI 61	38	15	633.83	634.40	1.48	0.013	643.75	644.09	634.85	634.84	0.00	2.11	0.00	0.10	1.20	1.20	0.00	7.87	9.25
49	FE 71 OS 72	93	48	616.00	618.05	2.20	0.013	0.00	625.60	620.00	621.27	0.00	10.16	0.00	0.64	118.22	118.22	0.00	213.04	4.33
50	FE 73 AI 74	69	15	629.50	630.18	0.99	0.013	0.00	634.60	630.75	630.83	1.00	3.12	0.00	0.26	2.65	2.65	0.26	6.43	3.77

South 100 Year-20 Minute Storm Calculations

LineNo.	LineID	Pipe Length (ft)	Pipe Size (in)	Invert Down (ft)	Invert Up (ft)	Slope (%)	n Value	Top El Down (ft)	Top El Up (ft)	HGL (Down) (ft)	HGL (Up) (ft)	Juntion Loss	Velocity Average (ft/s)	Deflec. Angle (Deg)	Energy Loss (ft)	Known Q (cfs)	Total Q (cfs)	Minor Loss (ft)	Capacity (Full) (cfs)	Free-board (ft)
1	FE1 AI 2	80	36	623.00	623.80	1.01	0.013	626.00	635.20	626.00	626.93	0.00	10.20	146.50	0.93	0.46	72.10	0.00	66.90	8.27
2	AI 2 AI 3	43	36	623.80	624.23	1.00	0.013	635.20	635.95	626.93	627.43	0.23	10.14	-19.10	0.50	0.66	71.64	0.37	66.69	8.52
3	AI 3 CI 4	159	36	624.23	625.82	1.00	0.013	635.95	641.40	627.79	629.60	0.52	10.04	54.90	1.80	1.69	70.98	0.82	66.69	11.80
4	CI 4 CI 5	35.00	36	625.82	626.17	1.00	0.013	641.40	641.42	630.41	630.79	0.12	9.80	10.60	0.38	1.97	69.29	0.18	66.69	10.63
5	CI 5 MH 6	71	36	626.17	626.88	1.00	0.013	641.42	643.30	630.97	631.68	0.61	9.46	-72.30	0.71	0.00	66.83	0.85	66.69	11.62
6	MH 6 CI 7	79	36	626.88	627.67	1.00	0.013	643.30	645.04	632.53	633.32	0.18	9.46	14.80	0.79	3.27	66.83	0.25	66.69	11.72
7	CI 7 CI 8	42.00	36	627.67	628.09	1.00	0.013	645.04	645.64	633.57	633.96	0.10	8.99	9.10	0.38	0.70	63.56	0.13	66.70	11.68
8	CI 8 CI 9	146	36	628.09	629.54	0.99	0.013	645.64	642.67	634.08	635.38	0.46	8.89	-44.10	1.30	1.05	62.86	0.57	66.46	7.29
9	CI9 MH 10	146	36	629.54	630.99	0.99	0.013	642.67	639.92	635.95	637.20	0.09	8.75	7.50	1.25	0.00	61.81	0.11	66.47	2.72
10	MH 10 DCI 11	31	24	630.99	631.31	1.02	0.013	639.92	639.67	637.31	637.63	0.15	7.32	-12.90	0.33	2.28	22.99	0.12	22.82	2.04
11	DCI 11 CI 12	169	24	631.31	632.98	0.99	0.013	639.67	643.47	637.76	638.67	0.36	5.29	30.70	0.91	1.19	16.63	0.16	22.48	4.80
12	CI 12 CI 13	35	18	632.98	633.33	1.00	0.013	643.47	643.47	638.83	639.04	0.64	4.62	-78.30	0.21	2.15	8.17	0.21	10.50	4.43
13	CI 13 AI 14	205	15	633.33	635.37	1.00	0.013	643.47	641.40	639.25	641.04	0.00	4.91	0.20	1.78	1.01	6.02	0.00	6.44	0.36
14	AI 14 AI 15	106	15	635.37	636.44	1.01	0.013	641.40	642.80	641.04	641.67	0.70	4.08	90.00	0.64	1.47	5.01	0.18	6.49	1.13
15	AI 15 AI 16	165	15	636.44	638.09	1.00	0.013	642.80	645.80	641.85	642.35	0.31	2.88	25.70	0.50	1.62	3.54	0.04	6.46	3.45
16	AI 16 AI 17	235	15	638.06	643.96	2.51	0.013	645.80	650.30	642.39	644.51	0.22	2.61	17.90	0.73	1.92	1.92	0.05	10.23	5.79
17	CI 5 CI 32	47	15	636.05	637.00	2.02	0.013	641.42	642.27	636.25	637.28	0.22	3.18	50.40	0.59	0.49	0.49	0.02	9.18	4.99
18	MH 10 AI 18	155	30	630.99	632.54	1.00	0.013	639.92	637.90	637.31	638.70	0.60	7.91	91.40	1.39	4.91	38.82	0.58	41.01	-0.80
19	AI 18 AI 19	170	18	632.54	639.23	3.94	0.013	637.90	644.60	639.28	641.44	0.43	6.70	-71.10	2.16	2.07	11.83	0.30	20.83	3.16
20	AI 19 AI 20	141	15	639.23	644.86	3.99	0.013	644.60	650.30	641.74	646.04	0.30	8.05	41.10	3.00	2.32	9.76	0.31	12.90	4.26
21	AI 20 AI 21	181	15	644.86	648.46	1.99	0.013	650.30	653.90	646.35	649.55	0.18	6.31	25.80	2.30	1.69	7.44	0.12	9.11	4.35
22	AI 21 CI 204	168	15	648.46	651.83	2.01	0.013	653.90	658.37	649.67	652.79	0.24	5.21	18.20	1.34	5.75	5.75	0.12	9.15	5.58
23	AI 18 AI 22	33	24	632.54	633.88	4.06	0.013	637.90	643.00	639.28	639.59	0.45	7.03	47.90	0.32	1.76	22.08	0.35	45.58	3.41
24	AI 22 MH 23	163	21	633.88	640.52	4.07	0.013	643.00	650.80	639.94	642.62	0.40	8.45	-32.90	2.68	0.00	20.32	0.44	31.97	8.18
25	MH 23 CI 24	28	21	640.52	640.83	1.11	0.013	650.80	649.72	643.07	643.53	0.00	8.45	6.00	0.46	4.10	20.32	0.00	16.67	6.19
26	CI 24 CI 25	35	21	640.83	641.22	1.11	0.013	649.72	649.72	643.53	643.90	0.00	6.74	-0.90	0.37	4.87	16.22	0.00	16.72	5.82
27	CI 25 MH 26	31	21	641.22	641.56	1.10	0.013	649.72	650.50	643.90	644.06	0.06	4.72	-5.70	0.16	0.00	11.35	0.02	16.59	6.44
28	MH 26 AI 27	131	21	641.56	643.00	1.10	0.013	650.50	648.30	644.08	644.71	0.18	4.73	14.60	0.64	3.86	11.35	0.06	16.61	3.59
29	AI 27 AI 28	211	15	643.00	647.22	2.00	0.013	648.30	652.30	644.77	647.70	0.90	2.24	-92.90	0.59	1.44	1.44	0.15	9.13	4.60
30	AI 27 CI 201	41	15	643.00	646.46	8.44	0.013	648.30	652.02	644.77	647.44	0.35	5.38	-30.70	0.37	6.05	6.05	0.19	18.76	4.58
31	DCI 11 DCI 29	35	15	631.31	634.11	8.00	0.013	639.67	639.67	637.76	637.90	0.65	3.32	-55.60	0.14	4.08	4.08	0.11	18.26	1.77
32	CI 12 CI 30	188	15	632.98	643.86	5.79	0.013	643.47	649.11	638.83	644.94	0.00	6.19	25.70	2.29	0.95	7.27	0.00	15.54	4.17
33	CI 30 CI 31	44	15	643.86	644.60	1.69	0.013	649.11	649.85	644.94	645.02	0.00	1.99	-44.50	0.11	1.08	1.08	0.00	8.39	4.83
34	CI 30 CI 30 A	146	15	643.86	647.37	2.40	0.013	649.11	653.47	644.94	648.29	0.00	5.04	22.00	1.05	2.50	5.24	0.00	10.01	5.18
35	CI 30A CI 30B	35	15	647.37	648.21	2.40	0.013	653.47	653.47	648.29	648.87	0.00	3.50	-80.00	0.14	2.74	2.74	0.00	10.00	4.60
36	FE 50 MH 50A	17	24	623.00	623.37	2.20	0.013	624.50	627.00	625.00	625.09	0.00	7.79	0.00	0.17	2.92	23.37	0.00	33.57	1.91
37	MH50A MH 50 B	75	24	623.37	625.02	2.20	0.013	627.00	630.05	625.09	626.62	0.00	7.35	40.00	0.60	0.00	20.45	0.00	33.55	3.43
38	MH 50B DCI 51	160	24	625.02	628.54	2.20	0.013	630.05	639.95	626.62	630.14	0.00	7.58	-60.00	1.36	0.00	20.45	0.00	33.57	9.81
39	DCI 51 DCI 52	35	18	628.54	629.24	2.00	0.013	639.95	636.95	630.14	631.47	0.70	11.57	0.00	1.33	4.21	20.45	1.46	14.85	5.48
40	DCI 52 AI 53	92	15	629.24	631.09	2.00	0.013	636.95	637.52	632.93	634.35	0.58	6.54	-10.00	1.43	2.11	8.02	0.39	9.14	3.17
41	AI 53 AI 54	109	15	631.09	633.60	2.30	0.013	637.52	638.60	634.74	635.65	0.00	4.82	-50.00	0.91	2.84	5.91	0.00	9.79	2.95
42	AI 54 CI 55	116	15	633.60	641.18	6.55	0.013	638.60	646.92	635.65	641.88	0.18	3.42	-15.00	0.49	1.12	3.07	0.05	16.52	5.04
43	CI 55 CI 56	40	15	641.18	641.99	2.00	0.013	646.92	646.92	641.93	642.55	0.00	3.10	-15.00	0.15	0.92	1.95	0.00	9.14	4.37
44	CI 56 AI 57	25	15	641.99	642.50	2.01	0.013	646.92	647.80	642.55	642.91	0.00	2.46	0.00	0.08	1.03	1.03	0.00	9.15	4.89
45	DCI 52 CI 58	135	15	629.24	633.83	3.40	0.013	636.95	643.75	632.93	635.08	0.06	6.70	90.00	2.15	0.92	8.22	0.04	11.90	8.67
46	CI 58 CI 59	162	15	633.83	639.31	3.38	0.013	643.75	647.75	635.12	640.26	0.38	5.14	-95.00	1.35	2.63	5.68	0.19	11.88	7.49
47	CI 59 CI 60	35	15	639.31	640.50	3.40	0.013	647.75	647.75	640.45	641.20	0.70	3.46	84.40	0.14	3.05	3.05	0.20	11.91	6.55
48	CI 58 CI 61	38	15	633.83	634.40	1.48	0.013	643.75	644.09	635.12	635.11	0.00	1.78	0.00	0.04	1.62	1.62	0.00	7.87	8.98
49	FE 71 OS 72	93	48	616.00	618.05	2.20	0.013	0.00	625.60	620.00	621.72	0.00	12.98	0.00	1.08	159.90	159.90	0.00	213.04	3.88
50	FE 73 AI 74	69	15	629.50	630.18	0.99	0.013	0.00	634.60	630.75	630.94	1.00	3.76	0.00	0.33	3.58	3.58	0.33	6.43	9.00

North 15 Year-20 Minute Storm Calculations

LineNo.	LineID	Pipe Length (ft)	Pipe Size (in)	Invert Down (ft)	Invert Up (ft)	Slope (%)	n Value	Top El Down (ft)	Top El Up (ft)	HGL (Down) (ft)	HGL (Up) (ft)	Juntion Loss	Velocity Average (ft/s)	Deflec. Angle (Deg)	Energy Loss (ft)	Known Q (cfs)	Total Q (cfs)	Minor Loss (ft)	Capacity (Full) (cfs)	Free-board (ft)
1	FE 33 DCI 34	173	36	622.97	624.70	1.00	0.013	0.00	637.00	626.00	626.45	0.00	5.64	-136.10	0.60	2.52	30.00	0.00	66.71	10.55
2	DCI 34 DCI 35	35	36	624.70	625.05	1.00	0.013	637.00	637.00	626.45	626.72	0.05	6.61	-0.30	0.16	2.57	27.48	0.04	66.69	10.28
3	DCI 35 AI 36	95	36	625.05	625.99	0.99	0.013	637.00	635.32	626.76	627.55	0.30	6.09	25.70	0.37	1.56	23.87	0.19	66.34	7.77
4	AI 36 AI 37	184.00	36	625.99	627.83	1.00	0.013	635.32	636.92	627.74	629.34	0.58	5.75	-67.20	0.66	3.59	22.31	0.36	66.69	7.58
5	AI 37 MH 38	195	24	627.83	629.78	1.00	0.013	636.92	637.35	629.69	631.22	0.65	6.15	81.10	1.15	0.00	16.61	0.47	22.62	6.13
6	MH 38 CI 39	44	21	629.78	630.22	1.00	0.013	637.35	636.98	631.70	631.97	0.67	5.37	84.80	0.29	2.26	12.92	0.30	15.84	5.01
7	CI 39 CI 40	35.00	21	630.22	630.57	1.00	0.013	636.98	636.98	632.27	632.43	0.65	4.43	-80.90	0.16	2.81	10.66	0.20	15.84	4.55
8	CI 40 MH 41	37	18	630.57	630.94	1.00	0.013	636.98	637.40	632.63	632.83	0.53	4.44	56.00	0.21	0.00	7.85	0.16	10.50	4.57
9	MH 41 DAI 42	121	18	630.94	632.14	0.99	0.013	637.40	637.00	633.00	633.63	0.51	4.45	-52.10	0.65	5.51	7.85	0.16	10.46	3.37
10	DAI 42 AI 43	250	15	632.14	637.15	2.00	0.013	637.00	642.50	633.78	637.76	0.70	2.91	-89.70	0.87	2.34	2.34	0.17	9.14	4.74
11	DCI 35 MH 44	113	15	628.52	630.77	2.00	0.013	637.00	638.00	628.81	631.18	0.61	3.94	-73.60	1.36	0.00	1.04	0.08	9.13	6.82
12	MH 44 CI 45	136	15	630.77	633.49	2.00	0.013	638.00	639.44	631.26	633.90	0.31	2.65	26.30	0.50	0.68	1.04	0.04	9.13	5.54
13	CI 45 CI 46	35	15	633.49	634.19	2.00	0.013	639.44	639.44	633.94	634.43	0.76	1.54	-92.80	0.09	0.36	0.36	0.06	9.13	5.01
14	AI 37 AI 47	272	15	627.83	635.44	2.80	0.013	636.92	642.60	629.69	636.02	0.02	2.75	-1.70	0.89	2.11	2.11	0.00	10.80	6.58
15	MH 38 CI 48	177	15	629.78	635.45	3.20	0.013	637.35	641.82	631.70	636.22	0.80	3.83	-94.40	0.88	1.61	3.69	0.27	11.56	5.60
16	CI 48 CI 49	35	15	635.45	636.57	3.20	0.013	641.82	641.82	636.49	637.15	0.79	2.83	93.30	0.11	2.08	2.08	0.17	11.55	4.67
17	FE 62 AI 63	151	15	623.00	624.58	1.04	0.013	0.00	629.80	624.25	625.54	0.00	5.21	-65.80	1.29	0.94	5.78	0.00	6.60	4.26
18	AI 63 AI 64	136	15	624.58	628.50	2.88	0.013	629.80	633.70	625.54	629.38	0.29	5.01	-23.80	0.97	2.79	4.84	0.12	10.96	4.32
19	AI 64 CI 65	170	15	628.50	633.40	2.88	0.013	633.70	638.71	629.50	633.97	0.79	2.84	-93.90	0.55	2.05	2.05	0.17	10.96	4.74
20	FE 66 AI 67	94	18	623.00	623.94	1.00	0.013	0.00	635.20	624.50	626.08	0.00	7.70	67.10	1.58	3.72	13.61	0.00	10.50	9.12
21	AI 67 AI 68	230	18	629.95	634.40	1.93	0.013	635.20	639.70	630.86	635.60	0.19	7.69	16.20	3.28	3.71	9.89	0.13	14.61	4.10
22	AI 68 AI 69	203	15	634.40	638.40	1.97	0.013	639.70	643.70	635.73	639.12	0.08	3.52	7.60	0.89	3.22	3.22	0.02	9.06	4.58
23	AI 68 CI 70	136	15	634.40	640.00	4.12	0.013	639.70	645.50	635.73	640.69	0.70	3.34	-86.90	0.56	2.96	2.96	0.20	13.10	4.81

North 100 Year-20 Minute Storm Calculations

LineNo.	LineID	Pipe Length (ft)	Pipe Size (in)	Invert Down (ft)	Invert Up (ft)	Slope (%)	n Value	Top El Down (ft)	Top El Up (ft)	HGL (Down) (ft)	HGL (Up) (ft)	Juntion Loss	Velocity Average (ft/s)	Deflec. Angle (Deg)	Energy Loss (ft)	Known Q (cfs)	Total Q (cfs)	Minor Loss (ft)	Capacity (Full) (cfs)	Free-board (ft)
1	FE 33 DCI 34	173	36	622.97	624.70	1.00	0.013	0.00	637.00	626.00	626.73	0.00	6.85	-136.10	0.82	3.40	40.50	0.00	66.69	10.27
2	DCI 34 DCI 35	35	36	624.70	625.05	1.00	0.013	637.00	637.00	626.73	626.99	0.05	7.48	-0.30	0.18	3.47	37.10	0.05	66.69	10.01
3	DCI 35 AI 36	95	36	625.05	625.99	0.99	0.013	637.00	635.32	627.04	627.80	0.30	6.86	25.70	0.43	2.10	32.22	0.24	66.34	7.52
4	AI 36 AI 37	184.00	36	625.99	627.83	1.00	0.013	635.32	636.92	628.04	629.58	0.58	6.44	-67.20	0.74	4.85	30.12	0.45	66.69	7.34
5	AI 37 MH 38	195	24	627.83	629.78	1.00	0.013	636.92	637.35	630.03	631.94	0.65	7.14	81.10	1.92	0.00	22.42	0.51	22.62	5.41
6	MH 38 CI 39	44	21	629.78	630.22	1.00	0.013	637.35	636.98	632.46	632.99	0.67	7.25	84.80	0.53	3.05	17.44	0.55	15.84	3.99
7	CI 39 CI 40	35.00	21	630.22	630.57	1.00	0.013	636.98	636.98	633.54	633.83	0.65	5.98	-80.90	0.29	3.79	14.39	0.36	15.84	3.15
8	CI 40 MH 41	37	18	630.57	630.94	1.00	0.013	636.98	637.40	634.19	634.57	0.53	6.00	56.00	0.38	0.00	10.60	0.30	10.50	2.83
9	MH 41 DAI 42	121	18	630.94	632.14	0.99	0.013	637.40	637.00	634.86	636.10	0.51	6.00	-52.10	1.23	7.44	10.60	0.29	10.46	0.90
10	DAI 42 AI 43	250	15	632.14	637.15	2.00	0.013	637.00	642.50	636.38	637.86	0.70	3.48	-89.70	1.08	3.16	3.16	0.21	9.14	4.64
11	DCI 35 MH 44	113	15	628.52	630.77	2.00	0.013	637.00	638.00	628.85	631.25	0.61	4.33	-73.60	1.40	0.00	1.41	0.10	9.13	6.75
12	MH 44 CI 45	136	15	630.77	633.49	2.00	0.013	638.00	639.44	631.35	633.97	0.31	2.92	26.30	0.51	0.92	1.41	0.05	9.13	5.47
13	CI 45 CI 46	35	15	633.49	634.19	2.00	0.013	639.44	639.44	634.02	634.47	0.76	1.69	-92.80	0.09	0.49	0.49	0.07	9.13	4.97
14	AI 37 AI 47	272	15	627.83	635.44	2.80	0.013	636.92	642.60	630.03	636.12	0.02	3.27	-1.70	1.08	2.85	2.85	0.01	10.80	6.48
15	MH 38 CI 48	177	15	629.78	635.45	3.20	0.013	637.35	641.82	632.46	636.34	0.80	4.68	-94.40	1.24	2.17	4.98	0.35	11.56	5.48
16	CI 48 CI 49	35	15	635.45	636.57	3.20	0.013	641.82	641.82	636.69	637.24	0.79	3.24	93.30	0.14	2.81	2.81	0.22	11.55	4.58
17	FE 62 AI 63	151	15	623.00	624.58	1.05	0.013	0.00	629.80	624.25	626.45	0.00	6.36	-65.80	2.20	1.27	7.80	0.00	6.61	3.35
18	AI 63 AI 64	136	15	624.58	628.50	2.88	0.013	629.80	633.70	626.45	629.52	0.29	5.70	-23.80	1.39	3.76	6.53	0.17	10.96	4.18
19	AI 64 CI 65	170	15	628.50	633.40	2.88	0.013	633.70	638.71	629.69	634.07	0.79	3.23	-93.90	0.64	2.77	2.77	0.21	10.96	4.64
20	FE 66 AI 67	94	18	623.00	623.94	1.00	0.013	0.00	635.20	624.50	627.38	0.00	10.40	67.10	2.88	5.02	18.37	0.00	10.50	7.82
21	AI 67 AI 68	230	18	629.95	634.40	1.93	0.013	635.20	639.70	631.08	635.76	0.19	8.63	16.20	3.84	5.01	13.35	0.18	14.61	3.94
22	AI 68 AI 69	203	15	634.40	638.40	1.97	0.013	639.70	643.70	635.95	639.23	0.08	4.27	7.60	1.21	4.35	4.35	0.03	9.06	4.47
23	AI 68 CI 70	136	15	634.40	640.00	4.12	0.013	639.70	645.50	635.95	640.80	0.70	4.03	-86.90	0.74	3.99	3.99	0.25	13.10	4.70

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