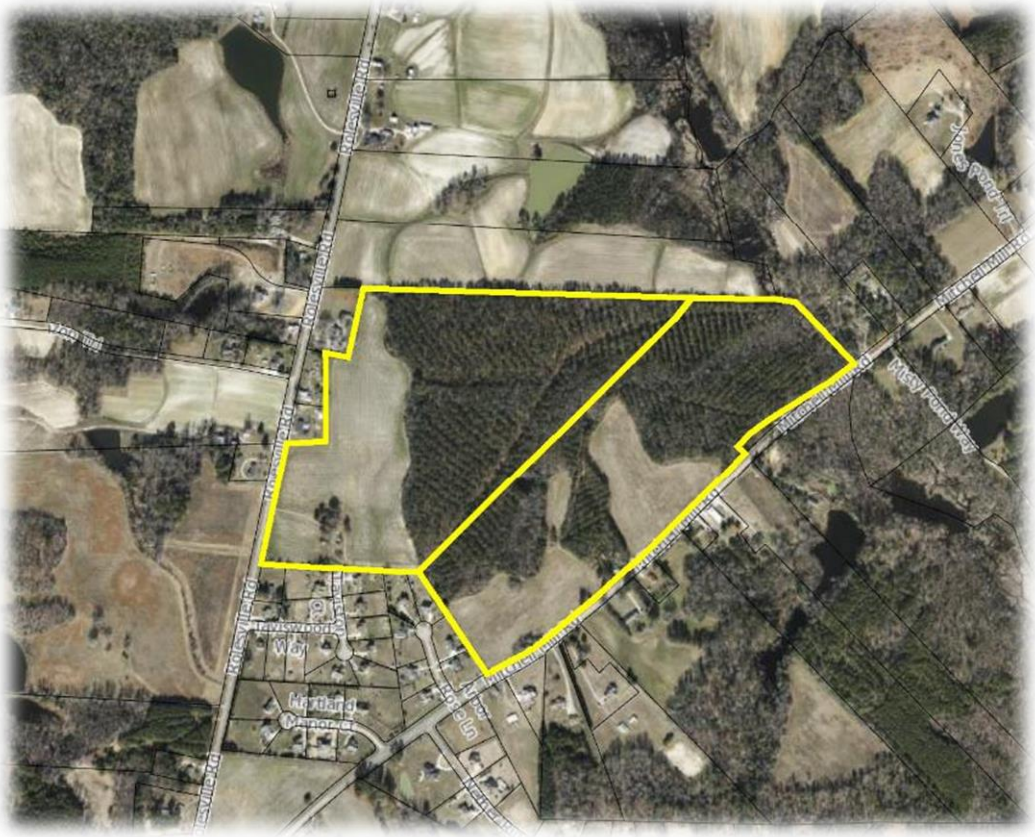
STORMWATER CONVEYANCE ANALYSIS

TIMMONS GROUP
ENGINEERING | DESIGN | TECHNOLOGY

ROLESVILLE CROSSING
ROLESVILLE, NORTH CAROLINA



JULY 22, 2022

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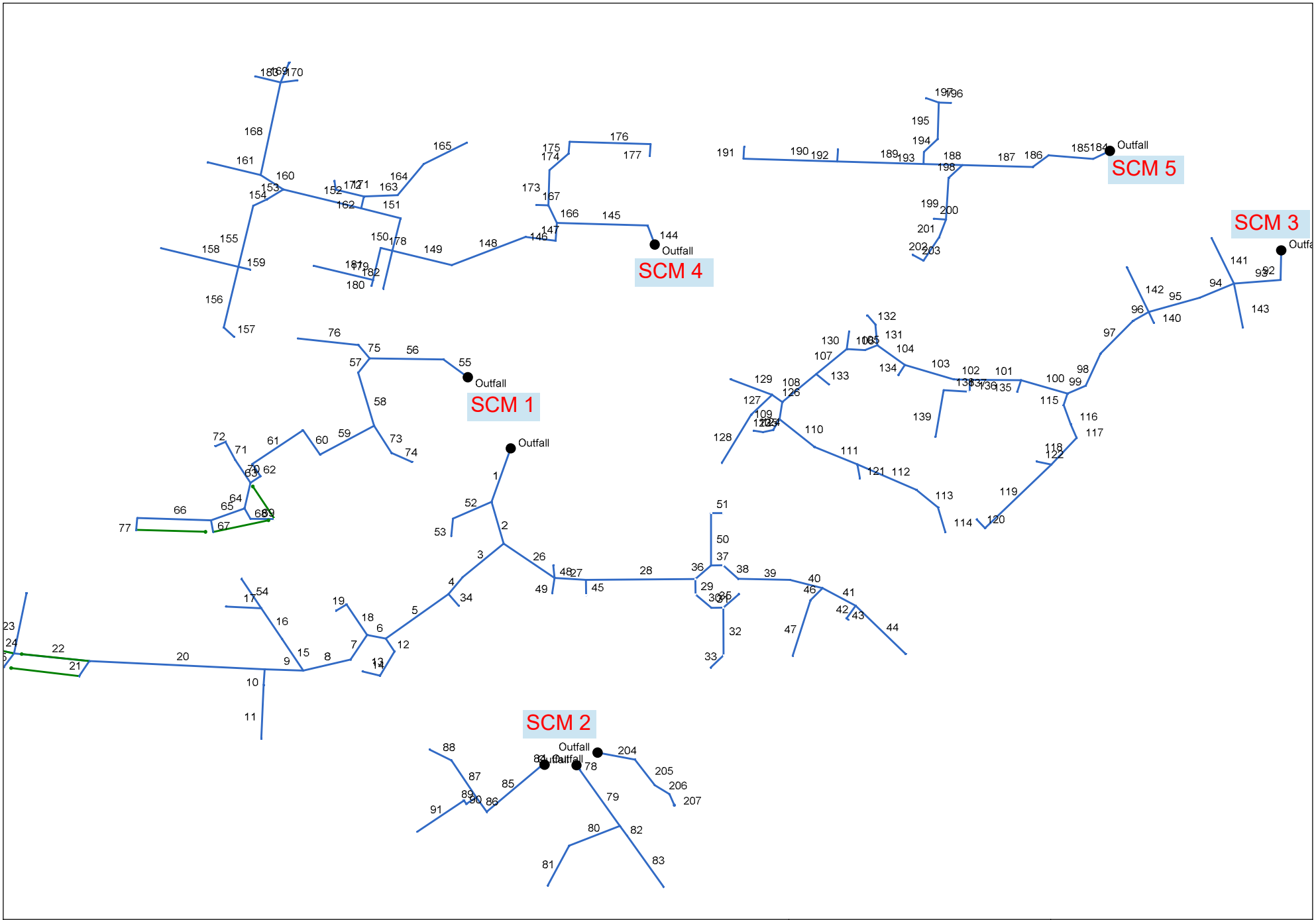
Table of Contents

Hydraflow Storm Sewer Pipe Design

Calculations

Pipe Profiles

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



Project File: 2022-07-22_43398-STRM.stm	Number of lines: 207	Date: 7/22/2022

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	127.807	0.06	16.18	0.62	0.04	9.93	5.0	34.2	3.3	33.22	101.7	6.04	48	0.50	370.00	370.64	371.91	372.35	374.50	387.16	P(101)
2	1	97.429	0.12	15.82	0.62	0.07	9.71	5.0	33.9	3.4	32.64	71.35	6.97	42	0.50	370.75	371.24	372.41	373.01	387.16	386.25	P(102)
3	2	118.671	0.20	7.82	0.62	0.12	4.89	5.0	33.2	3.4	16.64	113.1	4.82	42	1.26	371.50	373.00	373.01	374.24	386.25	386.26	P(183)
4	3	49.527	0.27	7.62	0.62	0.17	4.77	5.0	33.0	3.4	16.28	125.7	6.53	36	3.55	373.20	374.96	374.24	376.25	386.26	387.22	P(103)
5	4	172.579	0.05	7.02	0.62	0.03	4.39	5.0	32.2	3.5	15.22	51.77	5.67	36	0.60	375.06	376.10	376.25	377.34	387.22	392.16	P(104)
6	5	42.426	0.00	6.34	0.62	0.00	3.97	5.0	32.1	3.5	13.79	31.48	5.91	30	0.59	376.20	376.45	377.36	377.70	392.16	392.54	P(105)
7	6	66.729	0.07	5.40	0.62	0.04	3.39	5.0	31.8	3.5	11.83	31.75	5.36	30	0.60	376.55	376.95	377.70	378.10	392.54	394.42	P(106)
8	7	109.000	0.06	5.33	0.62	0.04	3.35	5.0	31.4	3.5	11.77	31.91	5.67	30	0.61	377.05	377.71	378.10	378.86	394.42	396.68	P(107)
9	8	86.735	0.17	3.85	0.62	0.11	2.39	5.0	12.1	5.6	13.36	31.75	5.88	30	0.60	377.81	378.33	378.94	379.56	396.68	397.75	P(108)
10	9	35.000	0.13	0.35	0.62	0.08	0.22	5.0	7.4	6.6	1.44	10.92	4.77	15	2.86	389.50	390.50	389.81	390.97	397.75	397.75	P(146)
11	10	120.374	0.22	0.22	0.62	0.14	0.14	5.0	5.0	7.4	1.01	4.99	3.11	15	0.60	390.70	391.42	391.08	391.81	397.75	398.27	P(147)
12	5	35.001	0.11	0.63	0.62	0.07	0.39	5.0	6.0	7.1	2.75	5.00	4.16	15	0.60	385.00	385.21	385.66	385.88	392.16	392.15	P(138)
13	12	63.351	0.12	0.52	0.62	0.07	0.32	5.0	5.5	7.2	2.33	15.58	4.12	15	5.82	385.31	389.00	385.88	389.61	392.15	394.19	P(139)
14	13	40.574	0.40	0.40	0.62	0.25	0.25	5.0	5.0	7.4	1.83	6.17	4.00	15	0.91	390.47	390.84	390.94	391.38	394.19	394.33	P(140)
15	8	85.538	0.36	1.42	0.62	0.22	0.92	5.0	31.0	3.5	3.26	11.35	4.84	18	1.17	384.00	385.00	384.55	385.69	396.68	390.91	P(143)
16	15	83.327	0.01	1.06	0.62	0.01	0.70	5.0	30.5	3.6	2.50	8.91	4.06	18	0.72	385.20	385.80	385.74	386.40	390.91	392.62	P(144)
17	16	79.285	0.02	0.02	0.62	0.01	0.01	5.0	5.0	7.4	0.09	11.19	1.73	18	1.14	386.60	387.50	386.70	387.61	392.62	391.82	P(145)
18	6	82.747	0.42	0.94	0.62	0.26	0.58	5.0	5.2	7.3	4.25	6.47	5.26	15	1.00	385.10	385.93	385.84	386.76	392.54	391.90	P(141)
19	18	27.033	0.52	0.52	0.62	0.32	0.32	5.0	5.0	7.4	2.38	12.23	3.56	15	3.59	386.03	387.00	386.76	387.62	391.90	391.90	P(142)
20	9	392.666	0.71	3.33	0.62	0.44	2.06	5.0	10.7	5.9	12.14	17.50	5.94	24	0.60	378.43	380.78	379.66	382.03	397.75	393.12	P(109)
21	20	40.909	0.75	0.75	0.62	0.47	0.47	5.0	5.0	7.4	3.43	14.60	7.10	15	5.11	385.91	388.00	386.32	388.75	393.12	392.43	P(148)
22	20	169.455	0.35	1.87	0.62	0.22	1.16	5.0	9.6	6.1	7.08	17.55	4.32	24	0.60	380.88	381.90	382.03	382.84	393.12	386.73	P(110)

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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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	138.381	1.05	1.05	0.62	0.65	0.65	5.0	5.0	7.4	4.80	8.93	4.92	18	0.72	383.00	384.00	383.78	384.84	386.73	386.70	P(111)
24	22	43.040	0.06	0.06	0.62	0.04	0.04	5.0	5.0	7.4	0.27	8.77	1.15	18	0.70	381.90	382.20	382.84	382.39	386.73	385.98	P(182)
25	22	38.921	0.41	0.41	0.62	0.25	0.25	5.0	5.0	7.4	1.88	8.34	2.89	15	1.67	382.00	382.65	382.84	383.19	386.73	386.36	P(149)
26	2	137.771	0.20	7.88	0.62	0.12	4.74	5.0	15.7	5.0	23.82	70.68	5.59	42	0.49	371.30	371.98	373.01	373.48	386.25	384.27	P(114)
27	26	70.318	0.15	6.63	0.62	0.09	3.97	5.0	15.5	5.1	20.07	31.32	6.60	30	0.58	372.10	372.51	373.55	374.03	384.27	384.75	P(115)
28	27	245.189	0.02	6.27	0.62	0.01	3.75	5.0	14.6	5.2	19.40	29.28	6.36	30	0.51	372.65	373.90	374.14	375.39	384.75	386.55	P(116)
29	28	35.000	0.08	1.35	0.62	0.05	0.84	5.0	10.6	5.9	4.94	8.13	4.79	18	0.60	377.32	377.53	378.16	378.38	386.55	386.55	P(127)
30	29	46.278	0.27	1.27	0.62	0.17	0.79	5.0	10.3	6.0	4.69	12.64	4.97	18	1.45	377.63	378.30	378.38	379.13	386.55	386.69	P(128)
31	30	27.000	0.15	1.00	0.62	0.09	0.62	5.0	10.1	6.0	3.72	11.07	4.79	18	1.11	378.50	378.80	379.13	379.54	386.69	386.69	P(129)
32	31	107.116	0.63	0.81	0.62	0.39	0.50	5.0	6.0	7.1	3.55	9.67	5.10	15	2.24	378.90	381.30	379.54	382.06	386.69	387.79	P(130)
33	32	39.198	0.18	0.18	0.62	0.11	0.11	5.0	5.0	7.4	0.82	8.12	2.21	15	1.58	381.50	382.12	382.06	382.48	387.79	388.08	P(131)
34	4	34.889	0.33	0.33	0.62	0.20	0.20	5.0	5.0	7.4	1.51	14.17	5.47	15	4.82	381.32	383.00	381.60	383.49	387.22	387.21	1 (62)
35	31	45.907	0.04	0.04	0.62	0.02	0.02	5.0	5.0	7.4	0.18	6.46	2.11	15	1.00	379.85	380.31	379.99	380.47	386.69	385.63	P(132)
36	28	46.531	0.07	4.90	0.62	0.04	2.90	5.0	14.4	5.2	15.09	30.06	5.58	30	0.54	374.00	374.25	375.39	375.56	386.55	385.70	P(117)
37	36	27.000	0.00	4.64	0.62	0.00	2.73	5.0	14.4	5.2	14.28	19.47	6.52	24	0.74	375.80	376.00	377.07	377.36	385.70	385.70	P(118)
38	37	45.412	0.05	4.64	0.62	0.03	2.73	5.0	14.2	5.2	14.34	19.86	6.58	24	0.77	376.25	376.60	377.51	377.96	385.70	385.64	P(119)
39	38	115.769	0.27	4.59	0.62	0.17	2.70	5.0	13.9	5.3	14.32	18.45	6.28	24	0.67	376.60	377.37	377.96	378.73	385.64	384.51	P(120)
40	39	75.645	0.19	4.32	0.62	0.12	2.54	5.0	13.7	5.3	13.53	17.83	6.03	24	0.62	377.37	377.84	378.73	379.16	384.51	383.79	P(121)
41	40	83.581	0.55	1.80	0.62	0.34	1.12	5.0	13.4	5.4	6.01	9.33	4.38	18	0.79	377.84	378.50	379.16	379.45	383.79	383.33	P(122)
42	41	35.000	0.42	1.13	0.62	0.26	0.70	5.0	5.0	7.4	5.16	6.36	5.55	15	0.97	379.41	379.75	380.26	380.67	383.33	383.33	P(137)
43	42	4.499	0.71	0.71	0.62	0.44	0.44	5.0	5.0	7.4	3.25	9.63	3.98	15	2.22	379.80	379.90	380.67	380.63	383.33	383.34	1 (66)
44	41	155.757	0.12	0.12	0.62	0.07	0.07	5.0	5.0	7.4	0.55	9.59	1.55	18	0.83	378.70	380.00	379.45	380.27	383.33	385.17	P(123)

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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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	27	35.000	0.21	0.21	0.62	0.13	0.13	5.0	5.0	7.4	0.96	7.72	3.64	15	1.43	378.50	379.00	378.80	379.38	384.75	384.75	P(126)
46	40	38.835	0.30	2.33	0.62	0.19	1.30	5.0	5.8	7.1	9.25	17.78	4.89	24	0.62	377.91	378.15	379.16	379.24	383.79	383.96	P(135)
47	46	131.000	2.03	2.03	0.55	1.12	1.12	5.0	5.0	7.4	8.24	16.41	4.92	24	0.53	378.15	378.84	379.24	379.86	383.96	382.20	P(136)
48	26	28.295	0.37	0.37	0.62	0.23	0.23	5.0	5.0	7.4	1.69	14.42	5.70	15	4.98	378.00	379.41	378.29	379.93	384.27	384.92	P(124)
49	26	35.000	0.68	0.68	0.62	0.42	0.42	5.0	5.0	7.4	3.11	14.97	6.97	15	5.37	377.50	379.38	377.89	380.09	384.27	384.27	P(125)
50	36	117.536	0.08	0.19	0.62	0.05	0.12	5.0	6.1	7.0	0.83	13.53	1.66	18	1.66	374.35	376.30	375.56	376.64	385.70	382.27	P(133)
51	50	27.051	0.11	0.11	0.62	0.07	0.07	5.0	5.0	7.4	0.50	12.42	3.73	15	3.70	376.50	377.50	376.67	377.78	382.27	382.19	P(134)
52	1	94.727	0.12	0.30	0.62	0.07	0.19	5.0	6.0	7.1	1.31	5.93	3.58	15	0.84	375.00	375.80	375.40	376.25	387.16	389.03	P(112)
53	52	39.162	0.18	0.18	0.62	0.11	0.11	5.0	5.0	7.4	0.82	5.65	2.88	15	0.77	375.90	376.20	376.25	376.56	389.03	388.52	P(113)
54	16	79.290	1.03	1.03	0.66	0.68	0.68	5.0	5.0	7.4	5.01	5.56	5.12	15	0.63	386.00	386.50	386.93	387.43	392.62	390.20	
55	End	67.753	0.00	6.81	0.00	0.00	4.24	0.0	10.2	6.0	25.38	174.5	4.47	48	1.48	370.00	371.00	372.57	372.49	374.50	379.50	P(150)
56	55	165.281	0.54	6.81	0.62	0.33	4.24	5.0	9.6	6.1	25.86	41.59	8.03	30	1.03	371.10	372.80	372.53	374.53	379.50	382.85	P(151)
57	56	41.384	0.00	5.47	0.00	0.00	3.41	0.0	9.5	6.1	20.92	34.92	6.35	30	0.72	372.90	373.20	374.53	374.75	382.85	383.50	P(152)
58	57	124.566	0.30	5.47	0.62	0.19	3.41	5.0	9.0	6.3	21.29	53.25	6.89	30	1.69	373.30	375.40	374.75	376.97	383.50	385.99	P(153)
59	58	137.485	1.09	4.67	0.62	0.68	2.91	5.0	8.4	6.4	18.61	34.27	6.34	30	0.70	375.54	376.50	376.97	377.96	385.99	384.34	P(154)
60	59	66.886	0.20	3.58	0.62	0.12	2.23	5.0	8.0	6.5	14.50	34.38	5.59	30	0.70	376.63	377.10	377.96	378.38	384.34	383.55	P(155)
61	60	136.500	0.30	3.38	0.62	0.19	2.11	5.0	7.2	6.7	14.14	34.39	6.17	30	0.70	377.34	378.30	378.46	379.57	383.55	389.98	P(156)
62	61	32.883	0.48	3.08	0.62	0.30	1.92	5.0	7.1	6.7	12.96	21.60	6.61	24	0.91	378.50	378.80	379.62	380.09	389.98	389.83	P(157)
63	62	27.000	0.08	2.60	0.62	0.05	1.63	5.0	7.0	6.8	11.02	27.53	5.96	24	1.48	379.00	379.40	380.09	380.59	389.83	389.83	P(158)
64	63	59.000	0.21	1.84	0.62	0.13	1.16	5.0	6.7	6.8	7.90	19.33	8.07	18	3.39	383.00	385.00	383.67	386.09	389.83	389.64	P(159)
65	64	79.355	0.19	1.19	0.62	0.12	0.75	5.0	6.3	7.0	5.24	12.97	5.17	18	1.52	385.29	386.50	386.09	387.38	389.64	391.06	P(160)
66	65	165.290	0.28	0.65	0.62	0.17	0.42	5.0	5.2	7.3	3.05	9.53	4.39	15	2.18	386.70	390.30	387.38	391.00	391.06	394.36	P(161)
67	65	27.007	0.35	0.35	0.62	0.22	0.22	5.0	5.0	7.4	1.60	5.56	3.58	15	0.74	386.90	387.10	387.38	387.60	391.06	390.81	P(171)

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Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
68	64	27.000	0.22	0.44	0.62	0.14	0.27	5.0	6.1	7.0	1.92	6.81	3.22	15	1.11	385.40	385.70	386.09	386.25	389.64	389.64	P(169)
69	68	54.161	0.22	0.22	0.62	0.14	0.14	5.0	5.0	7.4	1.01	8.60	2.78	15	1.77	385.80	386.76	386.25	387.15	389.64	391.29	P(170)
70	63	62.000	0.05	0.68	0.62	0.03	0.42	5.0	5.6	7.2	3.03	8.20	5.23	15	1.61	382.00	383.00	382.53	383.70	389.83	390.27	P(167) (1)
71	70	46.022	0.23	0.63	0.62	0.14	0.39	5.0	5.3	7.3	2.85	8.51	5.21	15	1.74	383.20	384.00	383.70	384.68	390.27	390.71	P(167)
72	71	23.867	0.40	0.40	0.62	0.25	0.25	5.0	5.0	7.4	1.83	9.89	3.94	15	2.35	384.20	384.76	384.68	385.30	390.71	388.46	P(168)
73	58	72.447	0.28	0.50	0.62	0.17	0.31	5.0	6.0	7.0	2.18	5.03	3.90	15	0.61	380.30	380.74	380.88	381.33	385.99	387.46	P(165)
74	73	50.245	0.22	0.22	0.62	0.14	0.14	5.0	5.0	7.4	1.01	13.82	4.79	15	4.58	382.70	385.00	382.93	385.39	387.46	388.33	P(166)
75	56	39.296	0.15	0.80	0.62	0.09	0.50	5.0	5.9	7.1	3.51	5.64	4.68	15	0.76	377.50	377.80	378.21	378.56	382.85	382.26	P(163)
76	75	136.294	0.65	0.65	0.62	0.40	0.40	5.0	5.0	7.4	2.97	4.63	4.00	15	0.51	377.90	378.60	378.63	379.33	382.26	380.97	P(164)
77	66	27.000	0.37	0.37	0.66	0.24	0.24	5.0	5.0	7.4	1.80	3.79	4.22	12	0.96	390.50	390.76	391.00	391.33	394.36	394.36	
78	End	11.782	0.00	2.62	0.00	0.00	1.44	0.0	9.4	6.2	8.87	181.2	3.37	54	0.85	383.00	383.10	384.27	383.94	388.04	388.06	P(201)
79	78	156.000	0.24	2.62	0.55	0.13	1.44	5.0	8.1	6.5	9.30	24.35	4.63	30	0.35	383.20	383.75	384.27	384.82	388.06	389.19	P(202)
80	79	122.072	0.12	0.71	0.55	0.07	0.39	5.0	5.9	7.1	2.77	17.13	2.74	24	0.57	384.40	385.10	385.37	385.68	389.19	390.49	P(206)
81	80	101.680	0.59	0.59	0.55	0.32	0.32	5.0	5.0	7.4	2.39	4.75	3.88	15	0.54	385.30	385.85	385.93	386.48	390.49	389.44	P(207)
82	79	27.002	0.37	1.67	0.55	0.20	0.92	5.0	5.8	7.1	6.54	16.86	4.52	24	0.56	384.40	384.55	385.37	385.46	389.19	389.19	P(208)
83	82	140.847	1.30	1.30	0.55	0.72	0.72	5.0	5.0	7.4	5.27	8.16	4.89	18	0.60	384.65	385.50	385.53	386.38	389.19	388.91	P(209)
84	End	11.494	0.00	3.41	0.00	0.00	1.88	0.0	7.9	6.5	12.24	93.84	4.47	42	0.87	383.00	383.10	384.25	384.16	384.96	386.98	P(211)
85	84	156.000	0.26	3.41	0.55	0.14	1.88	5.0	6.9	6.8	12.73	29.37	5.62	30	0.51	383.10	383.90	384.25	385.10	386.98	388.97	P(212)
86	85	40.000	0.32	3.15	0.55	0.18	1.73	5.0	6.6	6.9	11.89	29.00	5.49	30	0.50	384.00	384.20	385.12	385.36	388.97	388.67	P(213)
87	86	99.883	0.45	0.82	0.55	0.25	0.45	5.0	5.7	7.1	3.22	7.79	3.86	18	0.55	384.60	385.15	385.36	385.83	388.67	390.18	P(214)
88	87	54.554	0.37	0.37	0.55	0.20	0.20	5.0	5.0	7.4	1.50	13.46	3.05	15	4.34	385.25	387.62	385.83	388.10	390.18	391.32	P(215)
89	86	27.000	0.45	2.01	0.55	0.25	1.11	5.0	5.8	7.1	7.87	16.86	5.15	24	0.56	384.60	384.75	385.56	385.75	388.67	388.67	6 (3)
90	89	9.132	0.31	1.56	0.55	0.17	0.86	5.0	5.7	7.1	6.12	7.77	4.87	18	0.55	384.85	384.90	385.85	385.91	388.67	388.70	6 (23)

Project File: 2022-07-22_43398-STRM.stm

Number of lines: 207

Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
91	90	125.899	1.25	1.25	0.55	0.69	0.69	5.0	5.0	7.4	5.07	7.83	3.47	18	0.56	385.00	385.70	386.46	386.70	388.70	388.40	6 (20)
92	End	66.402	0.00	12.29	0.00	0.00	8.11	0.0	19.8	4.5	36.49	90.77	5.71	36	1.85	344.00	345.23	347.52	347.54	347.42	352.17	P(301)
93	92	104.914	0.33	12.29	0.66	0.22	8.11	5.0	19.5	4.5	36.76	82.36	6.86	36	1.53	346.12	347.72	348.44	349.69	352.17	356.40	P(302)
94	93	82.859	0.19	9.91	0.66	0.13	6.54	5.0	19.3	4.6	29.85	51.81	7.24	36	0.60	348.90	349.40	350.53	351.17	356.40	359.71	P(303)
95	94	118.633	0.00	9.72	0.66	0.00	6.42	5.0	18.8	4.6	29.58	51.60	7.12	36	0.60	349.51	350.22	351.17	351.98	359.71	360.87	P(304)
96	95	40.478	0.17	8.99	0.66	0.11	5.93	5.0	18.7	4.6	27.47	93.76	9.10	36	1.98	353.00	353.80	354.11	355.49	360.87	361.48	P(305)
97	96	103.072	0.11	8.82	0.66	0.07	5.82	5.0	18.3	4.7	27.21	94.97	7.20	36	2.03	354.00	356.09	355.49	357.78	361.48	364.75	P(306)
98	97	79.800	0.04	8.71	0.66	0.03	5.75	5.0	18.0	4.7	27.08	51.73	6.90	36	0.60	356.19	356.67	357.78	358.35	364.75	367.66	P(307)
99	98	44.559	0.00	8.67	0.66	0.00	5.72	5.0	17.9	4.7	27.07	51.92	6.91	36	0.61	356.77	357.04	358.35	358.72	367.66	368.25	2 (78)
100	99	108.532	0.13	7.34	0.66	0.09	4.84	5.0	17.4	4.8	23.20	51.61	6.22	36	0.60	357.14	357.79	358.72	359.34	368.25	365.85	P(308)
101	100	114.761	0.20	6.28	0.66	0.13	4.14	5.0	17.0	4.8	20.05	32.48	6.61	30	0.63	357.89	358.61	359.34	360.13	365.85	364.28	P(309)
102	101	35.891	0.16	4.96	0.66	0.11	3.27	5.0	16.9	4.9	15.90	36.87	5.72	30	0.81	358.71	359.00	360.13	360.35	364.28	364.44	P(310)
103	102	114.102	0.08	4.80	0.66	0.05	3.17	5.0	16.4	4.9	15.60	51.51	6.49	30	1.58	359.20	361.00	360.35	362.33	364.44	366.28	P(311)
104	103	75.720	0.01	4.56	0.66	0.01	3.01	0.0	16.1	5.0	14.96	56.56	6.35	30	1.90	361.20	362.64	362.33	363.94	366.28	367.60	P(312)
105	104	29.618	0.03	4.48	0.66	0.02	2.96	5.0	15.9	5.0	14.75	31.97	5.73	30	0.61	362.64	362.82	363.94	364.11	367.60	367.92	P(313)
106	105	40.904	0.05	4.45	0.66	0.03	2.94	5.0	15.8	5.0	14.73	31.41	6.02	30	0.59	362.92	363.16	364.12	364.45	367.92	369.26	P(314)
107	106	88.467	0.13	4.04	0.66	0.09	2.67	5.0	15.3	5.1	13.53	31.74	5.44	30	0.60	363.16	363.69	364.45	364.93	369.26	370.22	P(315)
108	107	98.465	0.02	3.51	0.66	0.01	2.32	5.0	15.0	5.1	11.88	23.91	6.57	24	1.12	363.90	365.00	364.93	366.24	370.22	371.20	P(316)
109	108	39.271	0.16	2.80	0.66	0.11	1.85	5.0	14.9	5.1	9.50	14.99	6.81	18	2.04	365.20	366.00	366.24	367.19	371.20	372.50	P(317)
110	109	100.083	0.15	0.63	0.66	0.10	0.42	5.0	13.8	5.3	2.21	14.08	2.72	18	1.80	366.20	368.00	367.19	368.56	372.50	374.31	P(318)
111	110	103.735	0.24	0.48	0.66	0.16	0.32	5.0	12.4	5.5	1.76	21.38	4.40	18	4.15	368.20	372.50	368.56	373.00	374.31	377.90	P(319)
112	111	143.956	0.00	0.16	0.00	0.00	0.11	0.0	8.6	6.4	0.67	8.16	2.85	15	1.60	372.70	375.00	373.00	375.32	377.90	381.95	P(320)

Project File: 2022-07-22_43398-STRM.stm

Number of lines: 207

Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
113	112	62.677	0.03	0.16	0.66	0.02	0.11	5.0	6.9	6.8	0.72	7.30	3.27	15	1.28	375.20	376.00	375.47	376.33	381.95	381.90	P(321)
114	113	58.217	0.13	0.13	0.66	0.09	0.09	5.0	5.0	7.4	0.63	5.98	2.92	15	0.86	376.20	376.70	376.47	377.01	381.90	381.31	P(322)
115	99	27.000	0.05	1.33	0.66	0.03	0.88	5.0	8.8	6.3	5.53	9.26	5.21	18	0.78	359.98	360.19	360.82	361.10	368.25	368.25	P(327) (1)
116	115	47.185	0.04	1.28	0.66	0.03	0.84	5.0	8.5	6.4	5.37	16.11	6.55	18	2.35	360.69	361.80	361.29	362.69	368.25	371.37	P(327)
117	116	32.298	0.14	1.24	0.66	0.09	0.82	5.0	8.4	6.4	5.24	18.48	5.71	18	3.10	362.00	363.00	362.69	363.88	371.37	371.98	P(328) (1)
118	117	82.539	0.35	1.10	0.66	0.23	0.73	5.0	7.9	6.5	4.74	18.31	6.69	18	3.04	366.50	369.01	367.02	369.85	371.98	374.25	P(328)
119	118	206.000	0.45	0.54	0.66	0.30	0.36	5.0	6.3	7.0	2.49	11.37	3.43	15	3.10	369.01	375.40	369.85	376.03	374.25	379.95	P(329)
120	119	27.000	0.09	0.09	0.66	0.06	0.06	5.0	5.0	7.4	0.44	6.58	1.79	15	1.04	375.60	375.88	376.03	376.14	379.95	379.95	P(330)
121	111	31.702	0.08	0.08	0.66	0.05	0.05	5.0	5.0	7.4	0.39	8.88	2.98	15	1.89	374.10	374.70	374.28	374.94	377.90	378.52	P(349)
122	118	32.779	0.21	0.21	0.66	0.14	0.14	5.0	5.0	7.4	1.02	7.65	3.69	15	1.40	369.79	370.25	370.10	370.65	374.25	374.77	P(332)
123	109	28.295	0.30	2.01	0.66	0.20	1.33	5.0	5.4	7.2	9.61	10.81	6.64	18	1.06	368.60	368.90	369.70	370.10	372.50	372.59	P(346)
124	123	23.070	1.43	1.71	0.66	0.94	1.13	5.0	5.3	7.3	8.21	8.18	5.28	18	0.61	369.40	369.54	370.63	370.77	372.59	373.20	P(347)
125	124	21.093	0.28	0.28	0.66	0.18	0.18	5.0	5.0	7.4	1.36	5.97	1.16	15	0.85	369.77	369.95	371.03	371.03	373.20	373.27	P(348)
126	108	27.988	0.09	0.69	0.66	0.06	0.46	5.0	8.2	6.4	2.94	8.88	4.25	18	0.71	367.50	367.70	368.09	368.35	371.20	371.36	P(342)
127	126	64.903	0.22	0.43	0.66	0.15	0.28	5.0	7.5	6.6	1.88	5.07	3.74	15	0.62	367.90	368.30	368.43	368.84	371.36	372.50	P(343)
128	127	126.456	0.21	0.21	0.66	0.14	0.14	5.0	5.0	7.4	1.02	5.14	3.15	15	0.63	368.50	369.30	368.88	369.70	372.50	377.35	P(344)
129	126	99.037	0.17	0.17	0.66	0.11	0.11	5.0	5.0	7.4	0.83	5.03	2.47	15	0.61	367.90	368.50	368.35	368.86	371.36	371.50	P(345)
130	106	39.716	0.36	0.36	0.66	0.24	0.24	5.0	5.0	7.4	1.75	5.71	3.83	15	0.78	364.70	365.01	365.18	365.54	369.26	368.72	P(340)
131	104	46.962	0.04	0.07	0.66	0.03	0.05	5.0	8.8	6.3	0.29	4.90	1.49	15	0.57	363.53	363.80	363.94	364.01	367.60	367.52	P(338)
132	131	27.069	0.03	0.03	0.66	0.02	0.02	5.0	5.0	7.4	0.15	5.27	1.84	15	0.66	364.00	364.18	364.14	364.33	367.52	367.47	P(339)
133	107	36.622	0.40	0.40	0.66	0.26	0.26	5.0	5.0	7.4	1.95	8.14	2.39	18	0.60	363.69	363.91	364.93	364.44	370.22	367.60	P(341)
134	103	27.063	0.16	0.16	0.66	0.11	0.11	5.0	5.0	7.4	0.78	13.54	3.44	18	1.66	362.20	362.65	362.44	362.98	366.28	366.36	P(337)

Project File: 2022-07-22_43398-STRM.stm

Number of lines: 207

Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
135	100	27.542	0.93	0.93	0.66	0.61	0.61	5.0	5.0	7.4	4.53	8.87	6.14	15	1.89	361.20	361.72	361.83	362.58	365.85	365.69	P(333)
136	101	27.000	0.22	1.12	0.66	0.15	0.74	5.0	6.2	7.0	5.17	7.83	4.73	18	0.56	359.70	359.85	360.59	360.74	364.28	364.28	P(334)
137	136	4.000	0.14	0.90	0.66	0.09	0.59	5.0	6.2	7.0	4.16	9.09	3.44	18	0.75	359.85	359.88	361.26	360.66	364.28	363.90	P(335) (1)
138	137	54.730	0.14	0.76	0.66	0.09	0.50	5.0	5.7	7.1	3.58	8.63	4.06	18	0.68	359.88	360.25	360.66	360.97	363.90	364.71	P(335)
139	138	106.000	0.62	0.62	0.66	0.41	0.41	5.0	5.0	7.4	3.02	4.98	4.25	15	0.59	360.38	361.01	361.08	361.71	364.71	363.41	P(336)
140	95	27.000	0.51	0.51	0.66	0.34	0.34	5.0	5.0	7.4	2.48	10.17	5.42	15	2.48	355.00	355.67	355.42	356.30	360.87	360.87	P(326)
141	93	113.777	0.19	0.19	0.66	0.13	0.13	5.0	5.0	7.4	0.93	4.99	3.04	15	0.60	350.87	351.55	351.23	351.93	356.40	355.26	P(323)
142	95	110.874	0.22	0.22	0.66	0.15	0.15	5.0	5.0	7.4	1.07	4.67	0.94	15	0.52	350.42	351.00	351.98	352.01	360.87	354.04	P(325)
143	93	100.691	1.86	1.86	0.66	1.23	1.23	5.0	5.0	7.4	9.06	17.46	4.18	24	0.60	347.92	348.52	349.69	349.59	356.40	352.03	P(324)
144	End	45.520	0.29	12.74	0.57	0.17	7.31	5.0	13.1	5.4	39.72	174.3	5.79	48	1.47	367.00	367.67	369.53	369.55	371.50	378.22	P(401)
145	144	203.657	0.03	12.45	0.57	0.02	7.15	5.0	12.0	5.6	40.15	111.2	7.15	48	0.60	367.77	368.99	369.55	370.88	378.22	382.60	P(402)
146	145	40.153	0.58	11.07	0.57	0.33	6.36	5.0	11.8	5.7	36.00	111.1	6.40	48	0.60	368.99	369.23	370.88	371.01	382.60	381.82	P(403)
147	146	68.031	0.25	10.49	0.57	0.14	6.03	5.0	11.4	5.7	34.59	111.5	6.72	48	0.60	369.33	369.74	371.01	371.49	381.82	382.71	P(404)
148	147	177.103	0.47	10.24	0.57	0.27	5.89	5.0	10.4	5.9	35.01	111.7	6.87	48	0.60	369.84	370.91	371.49	372.67	382.71	379.50	P(405)
149	148	136.500	0.17	9.77	0.57	0.10	5.62	5.0	9.5	6.1	34.41	110.7	6.77	48	0.59	371.01	371.82	372.67	373.56	379.50	381.15	P(406)
150	149	75.435	0.55	7.98	0.57	0.31	4.60	5.0	9.0	6.3	28.78	52.08	6.78	36	0.61	371.82	372.28	373.56	374.01	381.15	381.91	P(407)
151	150	91.156	0.26	7.43	0.57	0.15	4.28	5.0	8.7	6.3	27.10	40.98	7.68	30	1.00	372.40	373.31	374.01	375.08	381.91	381.21	P(409)
152	151	179.400	0.05	5.17	0.57	0.03	3.00	5.0	7.9	6.5	19.49	32.11	6.61	30	0.61	374.50	375.60	375.91	377.10	381.21	383.84	P(410)
153	152	42.000	0.31	3.04	0.57	0.18	1.73	5.0	7.8	6.6	11.36	22.62	6.46	24	1.00	378.32	378.74	379.32	379.95	383.84	385.52	P(411)
154	153	34.597	0.29	2.73	0.57	0.17	1.56	5.0	7.6	6.6	10.27	18.84	5.82	24	0.69	379.00	379.24	380.05	380.39	385.52	385.82	P(412)
155	154	141.429	0.36	2.44	0.57	0.21	1.39	5.0	6.8	6.8	9.47	30.07	6.20	24	1.77	379.50	382.00	380.39	383.10	385.82	387.76	P(413)
156	155	140.000	0.48	0.76	0.57	0.27	0.43	5.0	5.5	7.2	3.12	15.17	5.41	18	2.09	382.78	385.70	383.24	386.37	387.76	389.69	P(414)

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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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
157	156	30.892	0.28	0.28	0.57	0.16	0.16	5.0	5.0	7.4	1.18	6.26	2.98	15	0.94	385.90	386.19	386.37	386.62	389.69	389.90	P(415)
158	155	178.544	1.00	1.00	0.57	0.57	0.57	5.0	5.0	7.4	4.20	7.86	3.93	18	0.56	382.10	383.10	383.10	383.89	387.76	386.12	P(438)
159	155	27.000	0.32	0.32	0.57	0.18	0.18	5.0	5.0	7.4	1.35	11.79	2.29	15	3.33	382.10	383.00	383.10	383.46	387.76	387.76	P(439)
160	152	60.340	0.15	2.08	0.57	0.09	1.24	5.0	7.5	6.6	8.18	15.95	4.44	24	0.50	375.80	376.10	377.10	377.12	383.84	384.84	P(433)
161	160	121.542	0.61	0.61	0.57	0.35	0.35	5.0	5.0	7.4	2.56	5.07	4.10	15	0.62	379.32	380.07	379.95	380.71	384.84	384.44	P(440)
162	151	27.000	0.16	2.00	0.57	0.09	1.14	5.0	7.8	6.6	7.47	23.84	5.75	24	1.11	374.30	374.60	375.08	375.57	381.21	381.21	P(430)
163	162	75.247	0.26	0.91	0.57	0.15	0.52	5.0	7.3	6.7	3.46	6.45	4.92	15	1.00	376.55	377.30	377.20	378.05	381.21	382.36	P(427)
164	163	91.351	0.33	0.65	0.57	0.19	0.37	5.0	6.6	6.9	2.54	4.78	3.96	15	0.55	377.50	378.00	378.15	378.65	382.36	383.23	P(428)
165	164	108.103	0.32	0.32	0.57	0.18	0.18	5.0	5.0	7.4	1.35	5.56	2.78	15	0.74	378.20	379.00	378.81	379.46	383.23	384.26	P(429)
166	145	43.914	0.10	1.35	0.57	0.06	0.77	5.0	8.0	6.5	4.99	11.21	5.46	18	1.14	372.00	372.50	372.70	373.36	382.60	383.62	P(416)
167	166	27.000	0.15	0.15	0.57	0.09	0.09	5.0	5.0	7.4	0.63	12.43	3.98	15	3.70	378.00	379.00	378.19	379.31	383.62	383.62	P(422)
168	160	212.924	0.45	1.32	0.57	0.26	0.80	5.0	6.4	6.9	5.55	7.55	4.67	18	0.52	376.30	377.40	377.26	378.36	384.84	382.21	P(434)
169	168	58.490	0.38	0.38	0.57	0.22	0.22	5.0	5.0	7.4	1.60	7.52	0.91	18	0.51	377.50	377.80	379.25	379.27	382.21	381.45	P(435)
170	168	37.903	0.34	0.34	0.57	0.19	0.19	5.0	5.0	7.4	1.43	10.51	0.82	18	1.00	377.50	377.88	379.25	379.26	382.21	381.59	P(436)
171	162	64.999	0.13	0.93	0.57	0.07	0.53	5.0	5.1	7.3	3.89	27.77	5.13	24	1.51	375.30	376.28	375.81	376.97	381.21	381.80	P(431)
172	171	20.340	0.80	0.80	0.57	0.46	0.46	5.0	5.0	7.4	3.36	6.40	4.87	15	0.98	376.80	377.00	377.44	377.74	381.80	380.94	P(432)
173	166	78.952	0.06	1.10	0.57	0.03	0.63	5.0	7.5	6.6	4.16	8.36	4.60	18	0.63	372.70	373.20	373.45	373.98	383.62	384.50	P(417)
174	173	56.606	0.00	1.04	0.00	0.00	0.59	0.0	7.1	6.7	3.99	10.81	5.03	18	1.06	373.40	374.00	374.03	374.76	384.50	384.30	P(418)
175	174	27.066	0.22	1.04	0.57	0.13	0.59	5.0	6.9	6.8	4.03	9.03	4.69	18	0.74	374.20	374.40	374.90	375.17	384.30	384.26	P(419)
176	175	181.068	0.42	0.82	0.57	0.24	0.47	5.0	5.3	7.3	3.40	9.23	4.50	18	0.77	374.60	376.00	375.23	376.70	384.26	380.64	P(420)
177	176	27.010	0.40	0.40	0.57	0.23	0.23	5.0	5.0	7.4	1.68	6.81	3.59	15	1.11	376.20	376.50	376.70	377.01	380.64	380.65	P(421)
178	149	27.000	0.11	1.38	0.57	0.06	0.79	5.0	6.2	7.0	5.49	9.04	5.15	18	0.74	374.50	374.70	375.34	375.60	381.15	381.15	3 (45)

Project File: 2022-07-22_43398-STRM.stm

Number of lines: 207

Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
179	178	73.978	0.15	1.27	0.57	0.09	0.72	5.0	5.8	7.1	5.15	9.46	4.73	18	0.81	374.70	375.30	375.60	376.17	381.15	380.54	P(425)
180	179	13.507	0.31	0.31	0.57	0.18	0.18	5.0	5.0	7.4	1.30	12.42	2.60	15	3.70	375.50	376.00	376.17	376.45	380.54	380.52	3 (46)
181	179	136.500	0.81	0.81	0.57	0.46	0.46	5.0	5.0	7.4	3.41	4.62	4.02	15	0.51	375.30	376.00	376.17	376.77	380.54	378.90	P(426)
182	149	87.485	0.24	0.24	0.57	0.14	0.14	5.0	5.0	7.4	1.01	23.94	1.56	24	1.12	371.82	372.80	373.56	373.15	381.15	380.52	P(423)
183	168	48.180	0.15	0.15	0.90	0.14	0.14	5.0	5.0	7.4	1.00	10.37	0.60	18	0.83	377.60	378.00	379.25	379.25	382.21	381.25	P(437)
184	End	42.007	0.50	5.38	0.66	0.33	3.55	5.0	11.8	5.7	20.12	57.99	5.31	30	2.00	355.00	355.84	357.37	357.36	357.88	360.84	P(501)
185	184	99.756	0.52	4.88	0.66	0.34	3.22	5.0	11.4	5.7	18.50	31.81	6.33	30	0.60	355.94	356.54	357.36	358.00	360.84	363.90	P(502)
186	185	44.105	0.28	4.36	0.66	0.18	2.88	5.0	11.2	5.8	16.64	37.05	6.06	30	0.82	356.64	357.00	358.00	358.38	363.90	364.99	P(503)
187	186	157.790	0.02	4.08	0.66	0.01	2.69	5.0	10.4	5.9	15.98	30.10	6.07	30	0.54	357.10	357.95	358.40	359.30	364.99	369.56	P(504)
188	187	87.000	0.40	3.50	0.66	0.26	2.31	5.0	9.9	6.0	13.96	42.00	9.12	24	3.45	361.00	364.00	361.79	365.34	369.56	370.82	P(505)
189	188	193.281	0.44	1.84	0.66	0.29	1.21	5.0	6.6	6.9	8.34	21.83	4.81	24	0.93	364.20	366.00	365.34	367.03	370.82	373.30	P(506)
190	189	210.000	0.44	0.92	0.66	0.29	0.61	5.0	5.2	7.3	4.43	15.88	4.50	18	2.29	366.20	371.00	367.03	371.81	373.30	376.45	P(507)
191	190	27.010	0.48	0.48	0.66	0.32	0.32	5.0	5.0	7.4	2.34	6.81	3.94	15	1.11	371.20	371.50	371.81	372.11	376.45	376.44	P(508)
192	189	27.010	0.48	0.48	0.66	0.32	0.32	5.0	5.0	7.4	2.34	9.70	5.21	15	2.26	369.00	369.61	369.42	370.22	373.30	373.29	P(519)
193	188	27.000	0.44	1.26	0.66	0.29	0.83	5.0	9.8	6.1	5.05	8.08	4.81	18	0.59	365.92	366.08	366.78	366.94	370.82	370.82	P(514)
194	193	42.430	0.07	0.82	0.66	0.05	0.54	5.0	9.4	6.1	3.33	8.22	3.92	18	0.61	366.18	366.44	366.94	367.13	370.82	370.97	P(515)
195	194	82.103	0.06	0.75	0.66	0.04	0.50	5.0	8.8	6.3	3.12	8.11	3.98	18	0.60	366.44	366.93	367.13	367.60	370.97	370.69	P(516)
196	195	27.000	0.03	0.03	0.66	0.02	0.02	5.0	5.0	7.4	0.15	5.56	1.03	15	0.74	367.03	367.23	367.60	367.38	370.69	370.69	P(518)
197	195	30.152	0.66	0.66	0.66	0.44	0.44	5.0	5.0	7.4	3.21	5.26	4.44	15	0.66	367.03	367.23	367.74	367.95	370.69	369.70	P(517)
198	187	42.430	0.03	0.56	0.66	0.02	0.37	5.0	9.6	6.1	2.26	17.70	2.23	24	0.61	357.95	358.21	359.30	358.73	369.56	368.95	P(509)
199	198	93.399	0.08	0.53	0.66	0.05	0.35	5.0	7.6	6.6	2.31	17.51	3.67	24	0.60	358.31	358.87	358.80	359.40	368.95	365.60	P(510)
200	199	27.448	0.14	0.14	0.66	0.09	0.09	5.0	5.0	7.4	0.68	9.47	3.60	15	2.15	361.10	361.69	361.33	362.01	365.60	365.45	P(513)

Project File: 2022-07-22_43398-STRM.stm

Number of lines: 207

Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

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	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
201	199	42.664	0.04	0.31	0.66	0.03	0.20	5.0	6.8	6.8	1.40	9.24	2.86	18	0.77	358.87	359.20	359.40	359.64	365.60	364.60	P(511) (1)
202	201	63.493	0.12	0.27	0.66	0.08	0.18	5.0	5.8	7.1	1.27	5.73	3.26	15	0.79	359.20	359.70	359.64	360.14	364.60	363.94	P(511)
203	202	27.153	0.15	0.15	0.66	0.10	0.10	5.0	5.0	7.4	0.73	7.74	2.32	15	1.44	359.70	360.09	360.14	360.42	363.94	363.95	P(512)
204	End	85.030	0.01	1.53	0.55	0.01	0.84	5.0	6.1	7.0	5.90	16.81	1.95	24	0.47	383.00	383.40	385.11	385.15	385.25	385.69	
205	204	72.520	0.01	1.52	0.30	0.00	0.83	5.0	5.4	7.2	6.03	17.02	3.36	24	0.48	383.50	383.85	385.21	384.72	385.69	388.68	
206	205	38.730	0.72	1.51	0.55	0.40	0.83	5.0	5.2	7.3	6.06	8.38	5.15	18	0.54	383.95	384.16	384.90	385.11	388.68	388.37	
207	206	27.040	0.79	0.79	0.55	0.43	0.43	5.0	5.0	7.4	3.21	8.19	3.87	18	0.52	384.36	384.50	385.11	385.18	388.37	387.81	

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES:Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; 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	CB101	0.27	0.00	0.27	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.01	1.26	0.15	1.26	2.0	Off
2	CB102	0.55	0.00	0.55	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.83	0.23	1.83	2.0	Off
3	CB183	0.91	0.00	0.91	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
4	CB103	1.23	0.00	1.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.99	0.27	2.99	2.0	Off
5	CB104	0.23	0.00	0.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.03	1.13	0.14	1.13	2.0	Off
6	CB105	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
7	CB106	0.32	0.00	0.32	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.00	1.37	0.17	1.37	2.0	Off
8	CB107	0.27	0.00	0.27	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.01	1.26	0.15	1.26	2.0	Off
9	CB108	0.78	0.00	0.78	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.61	0.26	2.61	2.0	Off
10	CB144	0.59	0.00	0.59	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.07	1.91	0.24	1.91	2.0	Off
11	DI145	1.01	0.00	1.01	0.00	DrCrb	6.0	3.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.23	2.32	0.23	2.32	0.0	Off
12	CB136	0.50	0.00	0.50	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.05	1.75	0.22	1.75	2.0	Off
13	CB137	0.55	0.00	0.55	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.83	0.23	1.83	2.0	Off
14	CB138	1.83	0.00	1.83	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.14	5.14	0.31	5.14	2.0	Off
15	DI141	1.65	0.00	1.65	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.13	1.28	0.13	1.28	0.0	Off
16	DI142	0.05	0.00	0.05	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.01	0.12	0.01	0.12	0.0	Off
17	DI143	0.09	0.00	0.09	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.02	0.19	0.02	0.19	0.0	Off
18	CB139	1.92	0.00	1.92	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.15	5.44	0.32	5.44	2.0	Off
19	CB140	2.38	0.00	2.38	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	6.91	0.34	6.91	2.0	Off
20	CB109	3.25	0.00	2.04	1.21	Comb	6.0	3.00	0.00	3.00	2.30	0.030	2.00	0.040	0.020	0.013	0.20	8.05	0.31	5.25	2.0	22
21	CB146	3.43	0.00	2.12	1.31	Comb	6.0	3.00	0.00	3.00	2.30	0.030	2.00	0.040	0.020	0.013	0.20	8.23	0.32	5.45	2.0	25
22	CB110	1.60	1.21	1.84	0.97	Comb	6.0	3.00	0.00	3.00	2.30	0.030	2.00	0.040	0.020	0.013	0.19	7.58	0.30	4.74	2.0	24
23	DI111	4.80	0.00	4.80	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.26	2.61	0.26	2.61	0.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
24	CB182	0.27	0.97	1.24	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	3.02	0.27	3.02	2.0	Off
25	CB147	1.88	1.31	3.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.23	9.30	0.39	9.30	2.0	Off
26	CB114	0.91	0.00	0.91	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
27	CB115	0.69	0.00	0.69	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.18	0.25	2.18	2.0	Off
28	CB116	0.09	0.00	0.09	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.08	0.67	0.08	0.67	2.0	Off
29	CB127	0.37	0.00	0.37	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.01	1.47	0.18	1.47	2.0	Off
30	CB128	1.23	0.00	1.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.99	0.27	2.99	2.0	Off
31	CB129	0.69	0.00	0.69	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.18	0.25	2.18	2.0	Off
32	CB130	2.88	0.00	2.88	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.21	8.43	0.38	8.43	2.0	Off
33	CB131	0.82	0.00	0.82	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.81	0.26	2.81	2.0	Off
34	CB181	1.51	0.00	1.51	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.12	4.02	0.29	4.02	2.0	Off
35	CB149	0.18	0.00	0.18	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.04	1.00	0.12	1.00	2.0	Off
36	CB117	0.32	0.00	0.32	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.00	1.37	0.17	1.37	2.0	Off
37	CB118	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
38	CB119	0.23	0.00	0.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.03	1.13	0.14	1.13	2.0	Off
39	CB120	1.23	0.00	1.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.99	0.27	2.99	2.0	Off
40	CB121	0.87	0.00	0.87	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
41	CB122	2.52	0.00	2.52	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.19	7.34	0.35	7.34	2.0	Off
42	CB148A	1.92	0.00	1.92	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.15	5.44	0.32	5.44	2.0	Off
43	CB148B	3.25	0.00	3.25	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.23	9.47	0.40	9.47	2.0	Off
44	CB123	0.55	0.00	0.55	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.83	0.23	1.83	2.0	Off
45	CB126	0.96	0.00	0.96	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
46	CB134	1.37	0.00	1.37	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.51	0.28	3.51	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
47	DI135	8.24	0.00	8.24	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.46	21.20	0.63	21.20	2.0	Off
48	CB124	1.69	0.00	1.69	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.13	4.67	0.30	4.67	2.0	Off
49	CB125	3.11	0.00	3.11	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.22	9.08	0.39	9.08	2.0	Off
50	CB132	0.37	0.00	0.37	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.01	1.47	0.18	1.47	2.0	Off
51	CB133	0.50	0.00	0.50	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.05	1.75	0.22	1.75	2.0	Off
52	CB112	0.55	0.00	0.55	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.83	0.23	1.83	2.0	Off
53	CB113	0.82	0.00	0.82	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.81	0.26	2.81	2.0	Off
54	DI143A	5.01	0.00	5.01	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.27	2.69	0.27	2.69	0.0	Off
55	DI149	0.00	0.00	0.00	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.00	0.00	0.00	0.00	0.0	Off
56	CB150	2.47	0.00	2.47	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	7.20	0.35	7.20	2.0	Off
57	CB151	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
58	CB152	1.37	0.00	1.37	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.51	0.28	3.51	2.0	Off
59	DI153	4.99	0.00	4.99	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.27	2.67	0.27	2.67	0.0	Off
60	DI154	0.91	0.00	0.91	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.09	0.86	0.09	0.86	0.0	Off
61	CB155	1.37	0.00	1.37	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.51	0.28	3.51	2.0	Off
62	CB156	2.20	0.00	2.20	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.17	6.34	0.33	6.34	2.0	Off
63	CB157	0.37	0.45	0.82	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.79	0.26	2.79	2.0	Off
64	CB158	0.96	0.23	1.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
65	CB159	0.87	0.28	0.92	0.23	Comb	6.0	3.00	0.00	3.00	2.30	0.020	2.00	0.040	0.020	0.013	0.15	5.63	0.25	2.39	2.0	64
66	CB160	1.28	0.00	1.00	0.28	Comb	6.0	3.00	0.00	3.00	2.30	0.020	2.00	0.040	0.020	0.013	0.16	5.91	0.26	2.72	2.0	65
67	CB170	1.60	0.51	1.45	0.67	Comb	6.0	3.00	0.00	3.00	2.30	0.020	2.00	0.040	0.020	0.013	0.19	7.33	0.29	4.36	2.0	69
68	CB168	1.01	0.00	1.01	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
69	CB169	1.01	0.67	1.22	0.45	Comb	6.0	3.00	0.00	3.00	2.30	0.020	2.00	0.040	0.020	0.013	0.17	6.63	0.28	3.58	2.0	63

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
70	CB180	0.23	0.00	0.23	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.03	1.13	0.14	1.13	2.0	Off
71	CB166	1.05	0.00	1.05	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
72	DI167	1.83	0.00	1.83	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.14	1.37	0.14	1.37	0.0	Off
73	CB164	1.28	0.00	1.28	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	3.17	0.27	3.17	2.0	Off
74	CB165	1.01	0.00	1.01	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
75	CB162	0.69	0.00	0.69	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.18	0.25	2.18	2.0	Off
76	DI163	2.97	0.00	2.97	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.21	8.69	0.38	8.69	2.0	Off
77	CB161	1.80	0.00	1.29	0.51	Comb	3.0	3.00	0.00	3.00	2.30	0.020	2.00	0.040	0.020	0.013	0.18	6.85	0.12	3.82	0.0	67
78	DI201	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
79	CB202	0.97	0.00	0.97	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
80	CB206	0.49	0.00	0.49	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.05	1.72	0.21	1.72	2.0	Off
81	CB207	2.39	0.00	2.39	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	6.96	0.35	6.96	2.0	Off
82	CB208	1.50	0.00	1.50	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.12	3.99	0.29	3.99	2.0	Off
83	DI209	5.27	0.00	5.27	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.33	14.68	0.50	14.68	2.0	Off
84	DI212	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
85	CB213	1.05	0.00	1.05	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
86	CB214	1.30	0.00	1.30	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	3.24	0.27	3.24	2.0	Off
87	CB215	1.83	0.00	1.83	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.14	5.12	0.31	5.12	2.0	Off
88	CB216	1.50	0.00	1.50	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.12	3.99	0.29	3.99	2.0	Off
89	CB217	1.83	0.00	1.83	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.14	5.12	0.31	5.12	2.0	Off
90	CB218	1.26	0.00	1.26	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	3.08	0.27	3.08	2.0	Off
91	DI219	5.07	0.00	5.07	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.32	14.19	0.49	14.19	2.0	Off
92	JB301	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
93	CB302	1.61	0.00	1.61	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.13	4.37	0.29	4.37	2.0	Off
94	CB303	0.93	0.00	0.93	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
95	CB304	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
96	CB305	0.83	0.00	0.83	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.83	0.26	2.83	2.0	Off
97	CB306	0.54	0.00	0.54	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.81	0.22	1.81	2.0	Off
98	CB307	0.19	0.00	0.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.04	1.03	0.13	1.03	2.0	Off
99	CB276	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
100	CB308	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
101	CB309	0.97	0.00	0.97	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
102	CB310	0.78	0.00	0.78	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.62	0.26	2.62	2.0	Off
103	CB311	0.39	0.00	0.39	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.02	1.52	0.19	1.52	2.0	Off
104	CB312	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
105	CB313	0.15	0.00	0.15	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.06	0.88	0.11	0.88	2.0	Off
106	CB314	0.24	0.00	0.24	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.02	1.17	0.14	1.17	2.0	Off
107	CB315	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
108	CB316	0.10	0.00	0.10	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.08	0.69	0.09	0.69	2.0	Off
109	CB317	0.78	0.00	0.78	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.62	0.26	2.62	2.0	Off
110	CB318	0.73	0.00	0.73	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.39	0.25	2.39	2.0	Off
111	CB319	1.17	0.00	1.17	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
112	CB320	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
113	CB321	0.15	0.00	0.15	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.06	0.88	0.11	0.88	2.0	Off
114	CB322	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
115	CB278	0.24	0.00	0.24	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.02	1.17	0.14	1.17	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
116	CB327	0.19	0.00	0.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.04	1.03	0.13	1.03	2.0	Off
117	CB350	0.68	0.00	0.68	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.16	0.25	2.16	2.0	Off
118	CB328	1.70	0.00	1.70	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.13	4.71	0.30	4.71	2.0	Off
119	CB329	2.19	0.00	2.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.17	6.32	0.33	6.32	2.0	Off
120	CB330	0.44	0.00	0.44	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.03	1.62	0.20	1.62	2.0	Off
121	CB349	0.39	0.00	0.39	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.02	1.52	0.19	1.52	2.0	Off
122	CB332	1.02	0.00	1.02	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
123	CB346	1.46	0.00	1.46	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.12	3.84	0.28	3.84	2.0	Off
124	DI347	6.96	0.00	6.96	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.41	18.51	0.58	18.51	2.0	Off
125	CB348	1.36	0.00	1.36	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.48	0.28	3.48	2.0	Off
126	CB342	0.44	0.00	0.44	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.03	1.62	0.20	1.62	2.0	Off
127	CB343	1.07	0.00	1.07	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
128	CB344	1.02	0.00	1.02	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
129	CB345	0.83	0.00	0.83	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.83	0.26	2.83	2.0	Off
130	CB340	1.75	0.00	1.75	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.14	4.87	0.30	4.87	2.0	Off
131	CB338	0.19	0.00	0.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.04	1.03	0.13	1.03	2.0	Off
132	CB339	0.15	0.00	0.15	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.06	0.88	0.11	0.88	2.0	Off
133	DI341	1.95	0.00	1.95	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.15	5.53	0.32	5.53	2.0	Off
134	CB337	0.78	0.00	0.78	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.62	0.26	2.62	2.0	Off
135	CB333	4.53	0.00	4.53	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.30	12.85	0.46	12.85	2.0	Off
136	CB334B	1.07	0.00	1.07	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
137	CB334A	0.68	0.00	0.68	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.16	0.25	2.16	2.0	Off
138	CB335	0.68	0.00	0.68	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.16	0.25	2.16	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
139	DI336	3.02	0.00	3.02	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.19	1.91	0.19	1.91	0.0	Off
140	CB326	2.48	0.00	2.48	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	7.24	0.35	7.24	2.0	Off
141	CB323	0.93	0.00	0.93	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
142	CB325	1.07	0.00	1.07	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
143	DI324	9.06	0.00	9.06	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.50	22.85	0.66	22.85	2.0	Off
144	DI401	1.22	0.00	1.22	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.10	1.05	0.10	1.05	0.0	Off
145	CB402	0.13	0.00	0.13	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.07	0.81	0.10	0.81	2.0	Off
146	CB403	2.44	0.00	2.44	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	7.10	0.35	7.10	2.0	Off
147	CB404	1.05	0.00	1.05	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
148	DI405	1.98	0.00	1.98	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.14	1.44	0.14	1.44	0.0	Off
149	CB406	0.71	0.00	0.71	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.32	0.25	2.32	2.0	Off
150	CB407	2.31	0.00	2.31	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.17	6.71	0.34	6.71	2.0	Off
151	CB409	1.09	0.00	1.09	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
152	CB410	0.21	0.00	0.21	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.03	1.08	0.13	1.08	2.0	Off
153	CB411	1.30	0.00	1.30	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.26	0.27	3.26	2.0	Off
154	CB412	1.22	0.00	1.22	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
155	CB413	1.51	0.00	1.51	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.12	4.03	0.29	4.03	2.0	Off
156	CB414	2.02	0.00	2.02	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.16	5.77	0.32	5.77	2.0	Off
157	CB415	1.18	0.00	1.18	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
158	DI438	4.20	0.00	4.20	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.24	2.39	0.24	2.39	0.0	Off
159	CB439	1.35	0.00	1.35	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.41	0.27	3.41	2.0	Off
160	CB433	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
161	DI440	2.56	0.00	2.56	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.17	1.72	0.17	1.72	0.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

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)	
162	CB430	0.67	0.00	0.67	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.12	0.25	2.12	2.0	Off
163	CB427	1.09	0.00	1.09	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
164	CB428	1.39	0.00	1.39	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.57	0.28	3.57	2.0	Off
165	CB429	1.35	0.00	1.35	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.41	0.27	3.41	2.0	Off
166	CB416	0.42	0.00	0.42	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.03	1.59	0.20	1.59	2.0	Off
167	CB422	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
168	CB434	1.89	0.00	1.89	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.013	0.15	5.35	0.31	5.35	2.0	Off
169	DI435	1.60	0.00	1.60	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.13	1.25	0.13	1.25	0.0	Off
170	CB436	1.43	0.00	1.43	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.013	0.11	3.73	0.28	3.73	2.0	Off
171	CB431	0.55	0.00	0.55	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.06	1.83	0.23	1.83	2.0	Off
172	DI432	3.36	0.00	3.36	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.21	2.06	0.21	2.06	0.0	Off
173	CB417	0.25	0.00	0.25	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.02	1.20	0.15	1.20	2.0	Off
174	CB418	0.00	0.00	0.00	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.17	0.00	0.00	0.00	2.0	Off
175	CB419	0.93	0.00	0.93	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
176	CB420	1.77	0.00	1.77	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.14	4.92	0.31	4.92	2.0	Off
177	CB421	1.68	0.00	1.68	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.13	4.63	0.30	4.63	2.0	Off
178	CB424	0.46	0.00	0.46	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.04	1.67	0.21	1.67	2.0	Off
179	CB425	0.63	0.00	0.63	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	1.97	0.24	1.97	2.0	Off
180	CB441	1.30	0.00	1.30	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.26	0.27	3.26	2.0	Off
181	DI426	3.41	0.00	3.41	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.21	2.07	0.21	2.07	0.0	Off
182	CB423	1.01	0.00	1.01	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.10	2.93	0.27	2.93	2.0	Off
183	CB437	1.00	0.00	1.00	0.00	Comb	4.0	0.19	0.37	0.19	2.00	Sag	2.00	0.050	0.020	0.013	0.21	7.41	0.21	7.41	0.0	Off
184	CB501	2.43	0.00	2.43	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	7.09	0.35	7.09	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Inlet Report

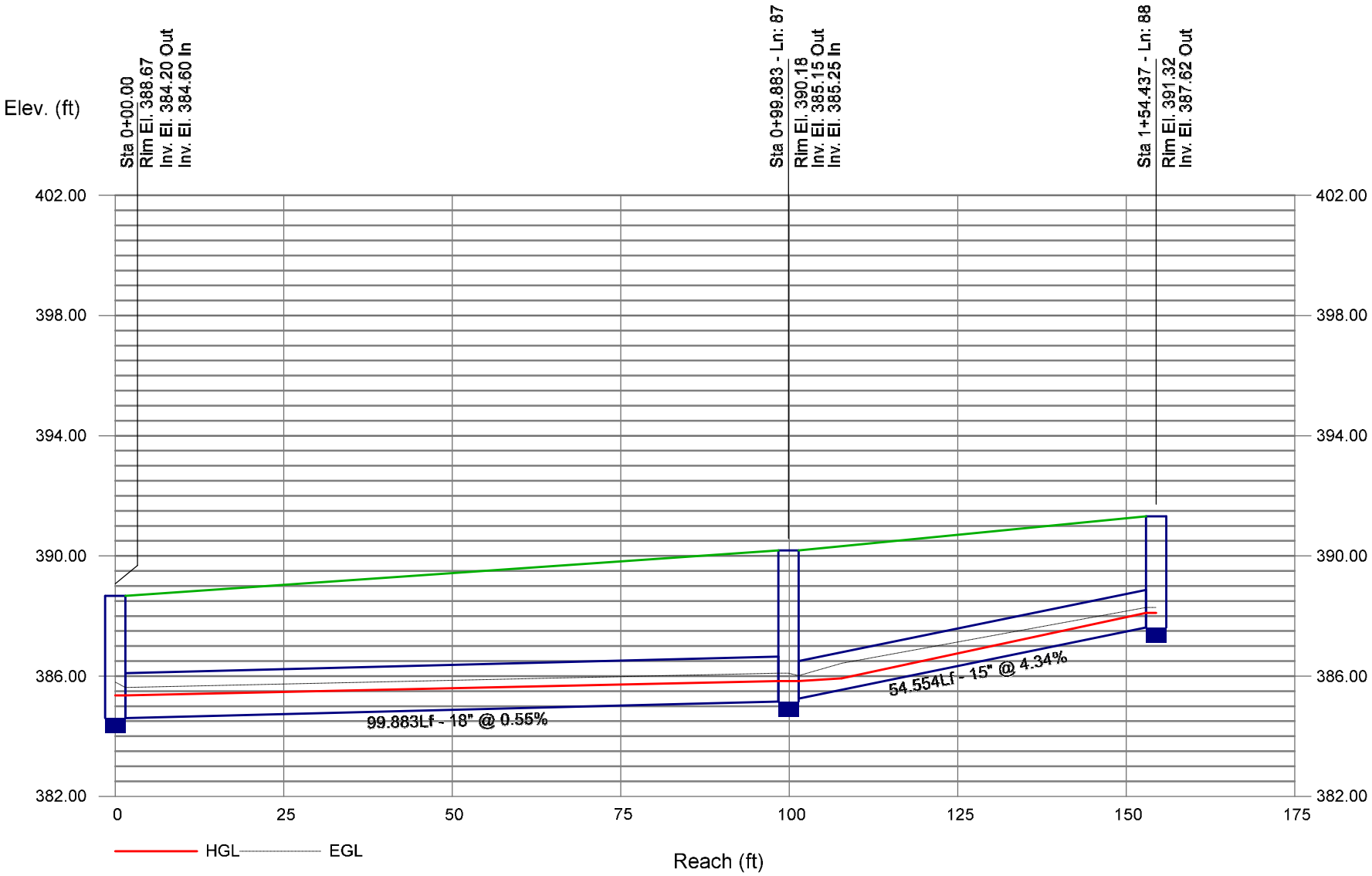
Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
185	CB502	2.53	0.00	2.53	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.19	7.39	0.35	7.39	2.0	Off
186	CB503	1.36	0.00	1.36	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.11	3.48	0.28	3.48	2.0	Off
187	CB504	0.10	0.00	0.10	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.08	0.69	0.09	0.69	2.0	Off
188	CB505	1.95	0.00	1.95	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.15	5.53	0.32	5.53	2.0	Off
189	CB506	2.14	0.00	2.14	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.16	6.17	0.33	6.17	2.0	Off
190	CB507	2.14	0.00	2.14	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.16	6.17	0.33	6.17	2.0	Off
191	CB508	2.34	0.00	2.34	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	6.79	0.34	6.79	2.0	Off
192	CB519	2.34	0.00	2.34	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.18	6.79	0.34	6.79	2.0	Off
193	CB514	2.14	0.00	2.14	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.16	6.17	0.33	6.17	2.0	Off
194	CB515	0.34	0.00	0.34	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.01	1.41	0.17	1.41	2.0	Off
195	CB516	0.29	0.00	0.29	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.01	1.30	0.16	1.30	2.0	Off
196	CB518	0.15	0.00	0.15	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.06	0.88	0.11	0.88	2.0	Off
197	DI517	3.21	0.00	3.21	0.00	DrCrb	6.0	12.00	0.00	0.00	0.00	Sag	0.00	0.100	0.100	0.000	0.20	2.00	0.20	2.00	0.0	Off
198	CB509	0.15	0.00	0.15	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.06	0.88	0.11	0.88	2.0	Off
199	CB510	0.39	0.00	0.39	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.02	1.52	0.19	1.52	2.0	Off
200	CB513	0.68	0.00	0.68	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.08	2.16	0.25	2.16	2.0	Off
201	CB520	0.19	0.00	0.19	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	-0.04	1.03	0.13	1.03	2.0	Off
202	CB511	0.58	0.00	0.58	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.07	1.89	0.23	1.89	2.0	Off
203	CB512	0.73	0.00	0.73	0.00	Comb	6.0	3.00	3.29	3.00	2.30	Sag	2.00	0.040	0.020	0.000	0.09	2.39	0.25	2.39	2.0	Off
204	DI203	0.04	0.00	0.04	0.00	DrGrt	0.0	0.00	3.66	3.16	2.16	Sag	2.00	0.020	0.020	0.000	0.01	3.33	0.01	3.33	0.0	Off
205	DI203A	0.02	0.00	0.02	0.00	DrGrt	0.0	0.00	3.66	3.16	2.16	Sag	2.00	0.020	0.020	0.000	0.01	2.94	0.01	2.94	0.0	Off
206	CB204	2.92	0.00	2.92	0.00	Comb	4.0	3.00	3.29	3.00	2.30	Sag	2.00	0.050	0.020	0.000	0.22	8.04	0.39	8.04	2.0	Off
207	CB205	3.21	0.00	3.21	0.00	Comb	4.0	3.00	3.29	3.00	2.30	Sag	2.00	0.050	0.020	0.000	0.24	8.85	0.40	8.85	2.0	Off

Project File: 2022-07-22_43398-STRM.stm | Number of lines: 207 | Run Date: 7/22/2022

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

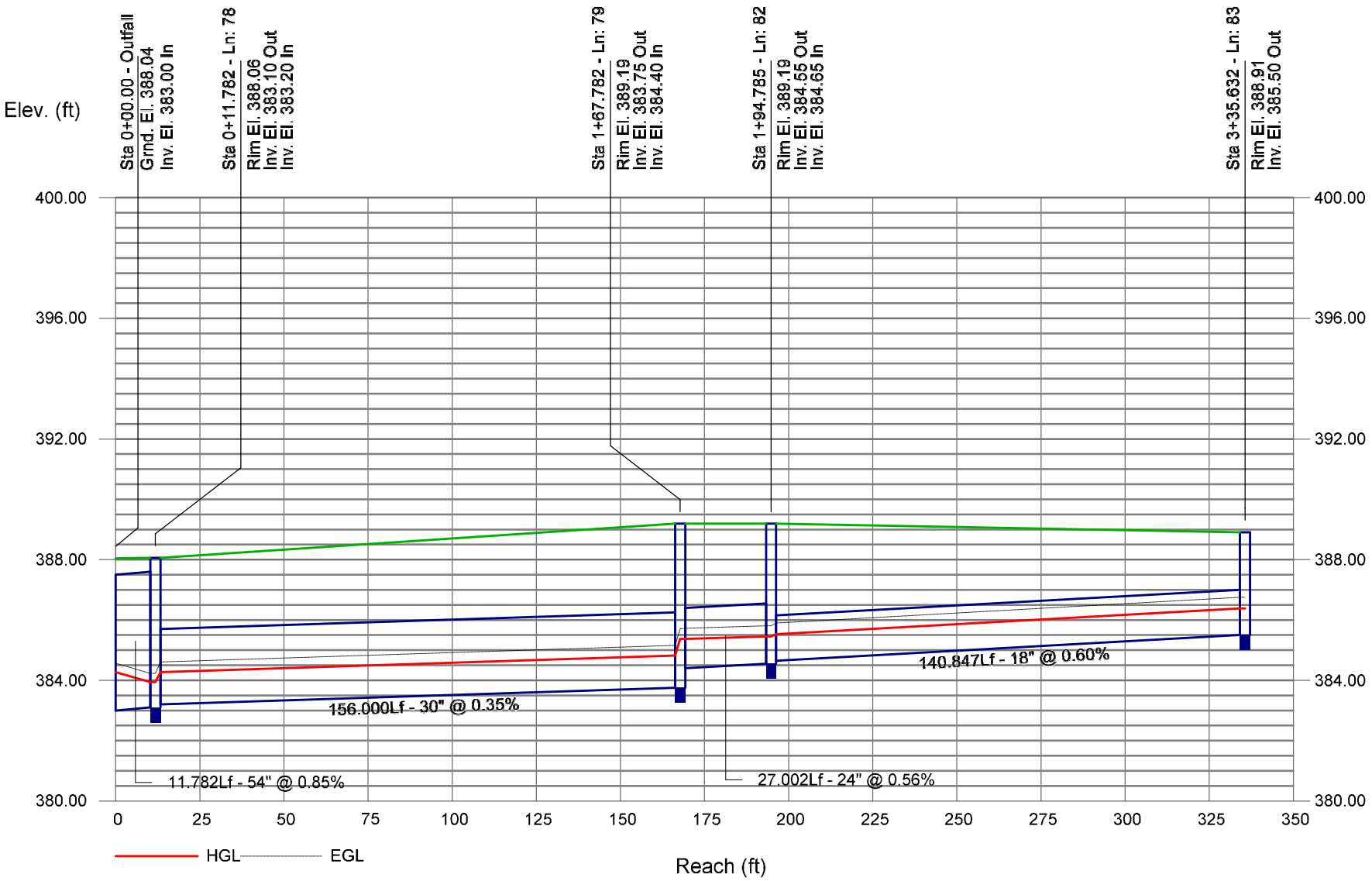
Storm Sewer Profile

Proj. file: 2022-07-22_43398-STRM.stm



Storm Sewer Profile

Proj. file: 2022-07-22_43398-STRM.stm



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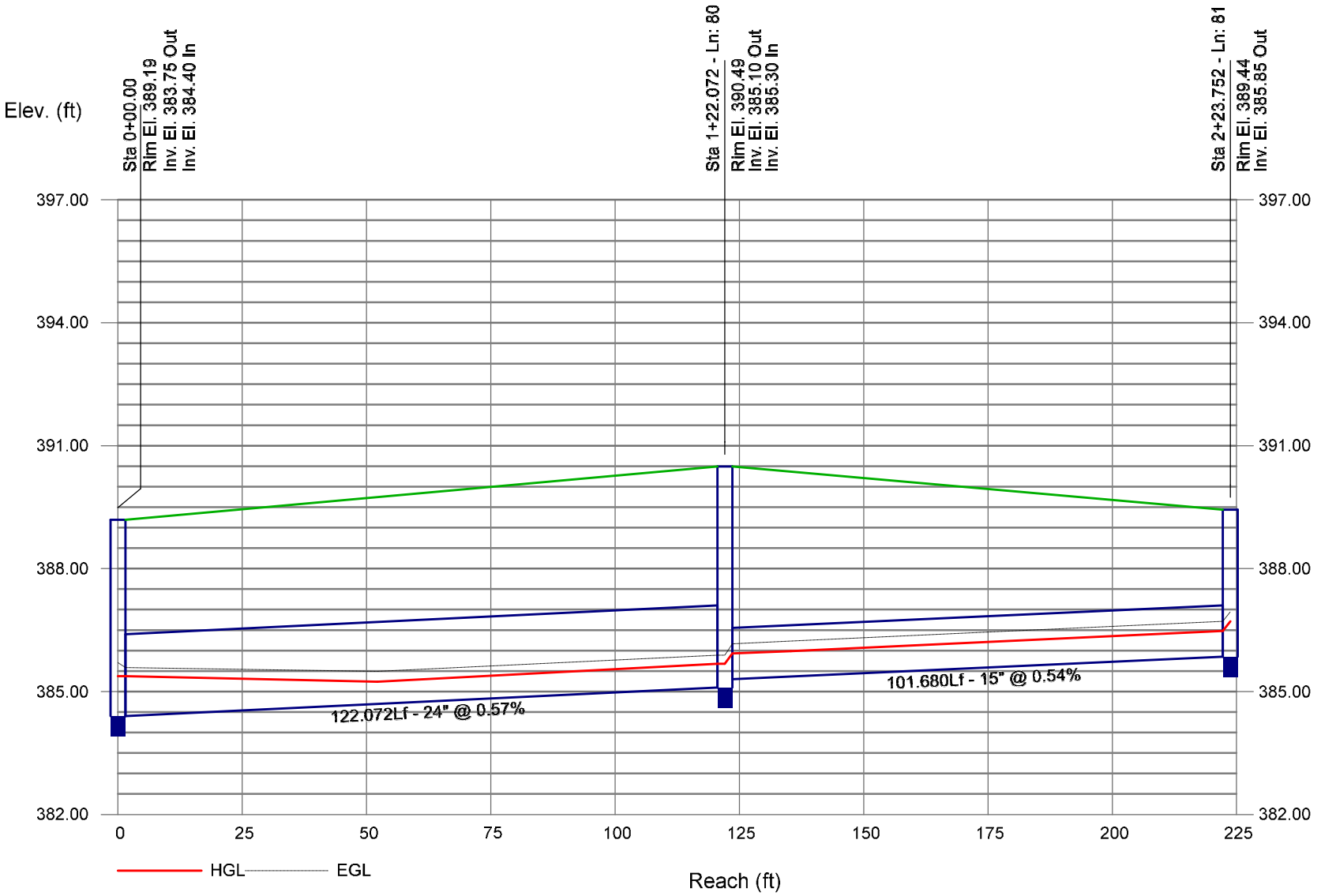

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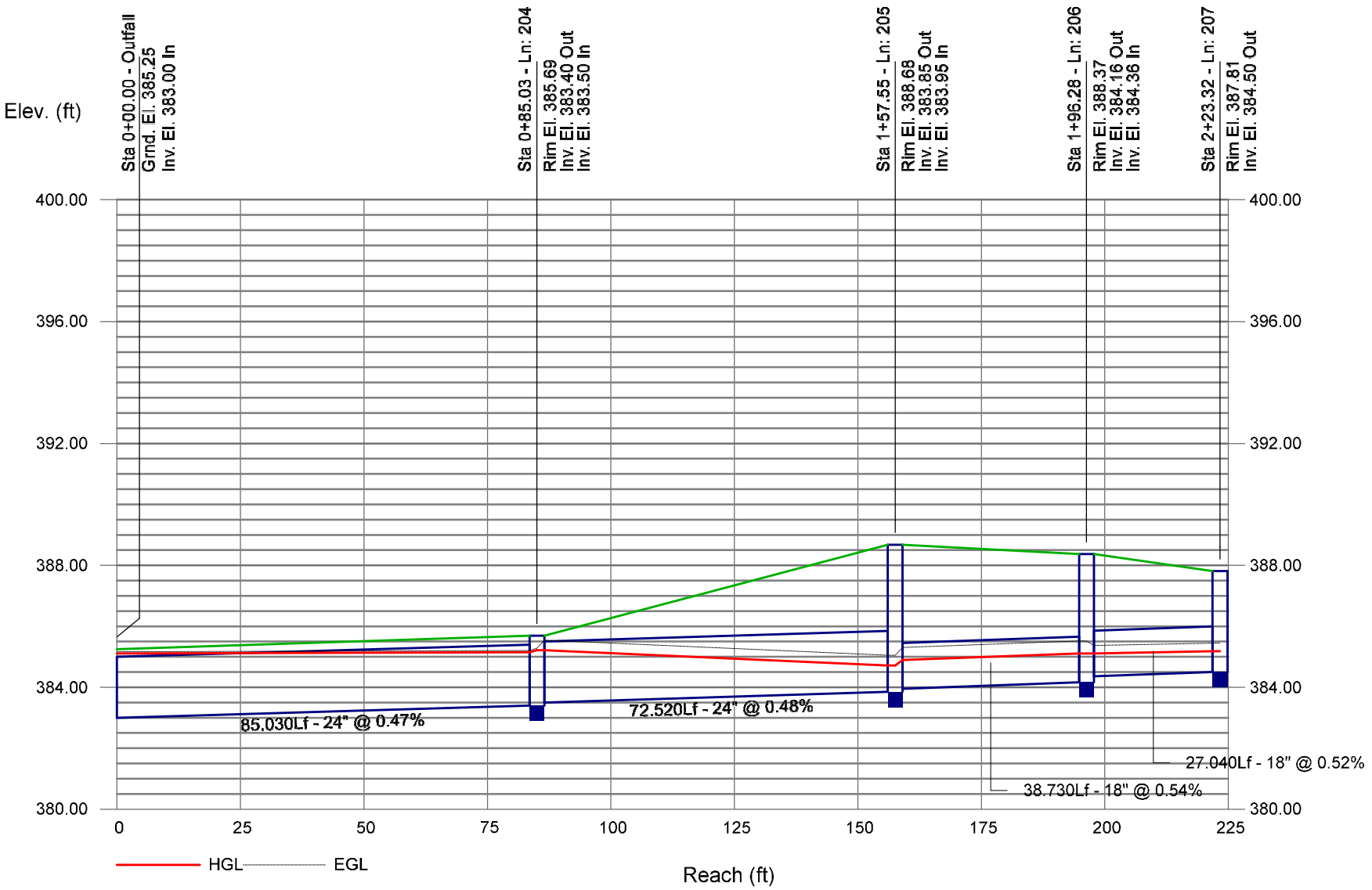

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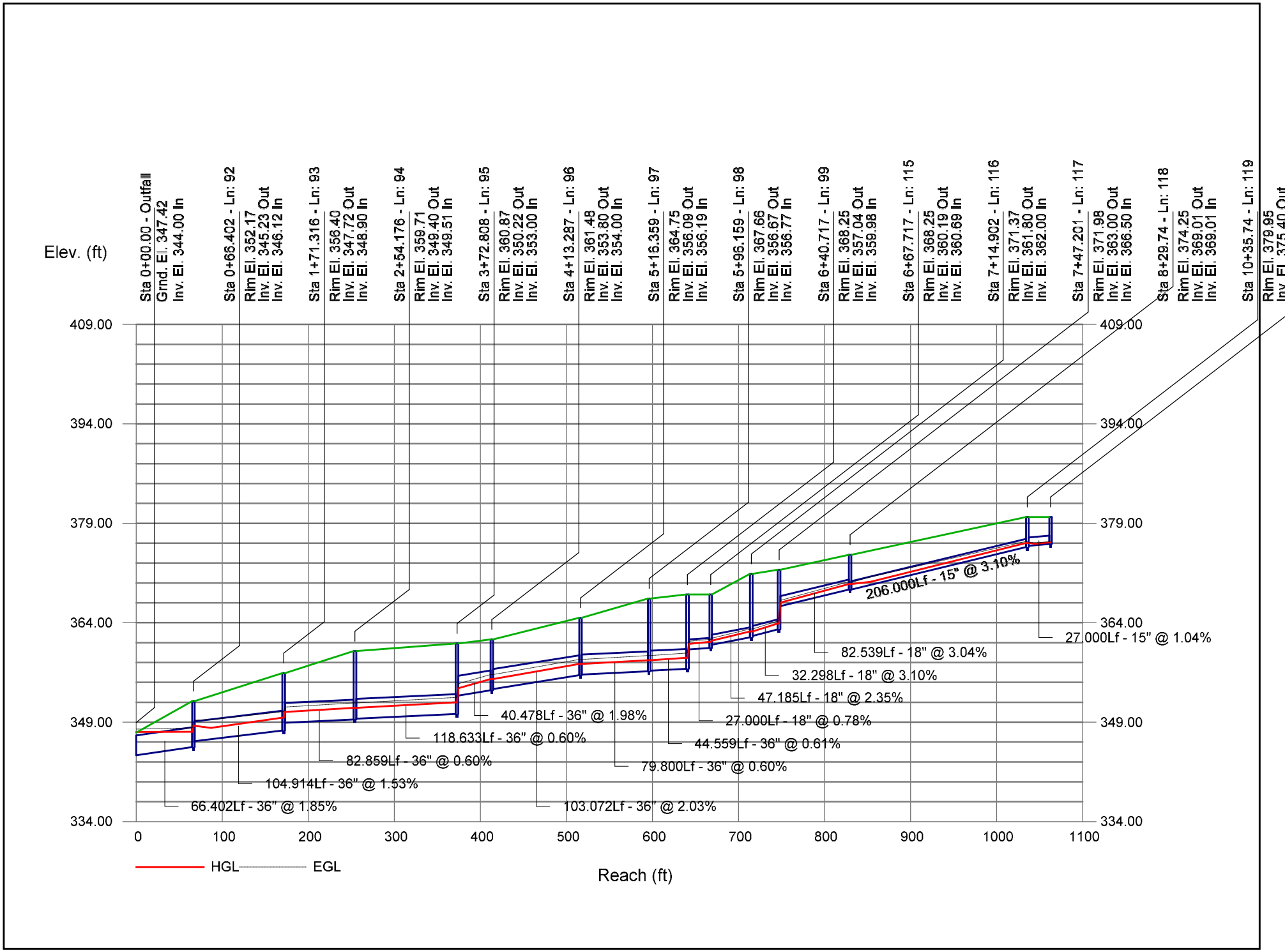

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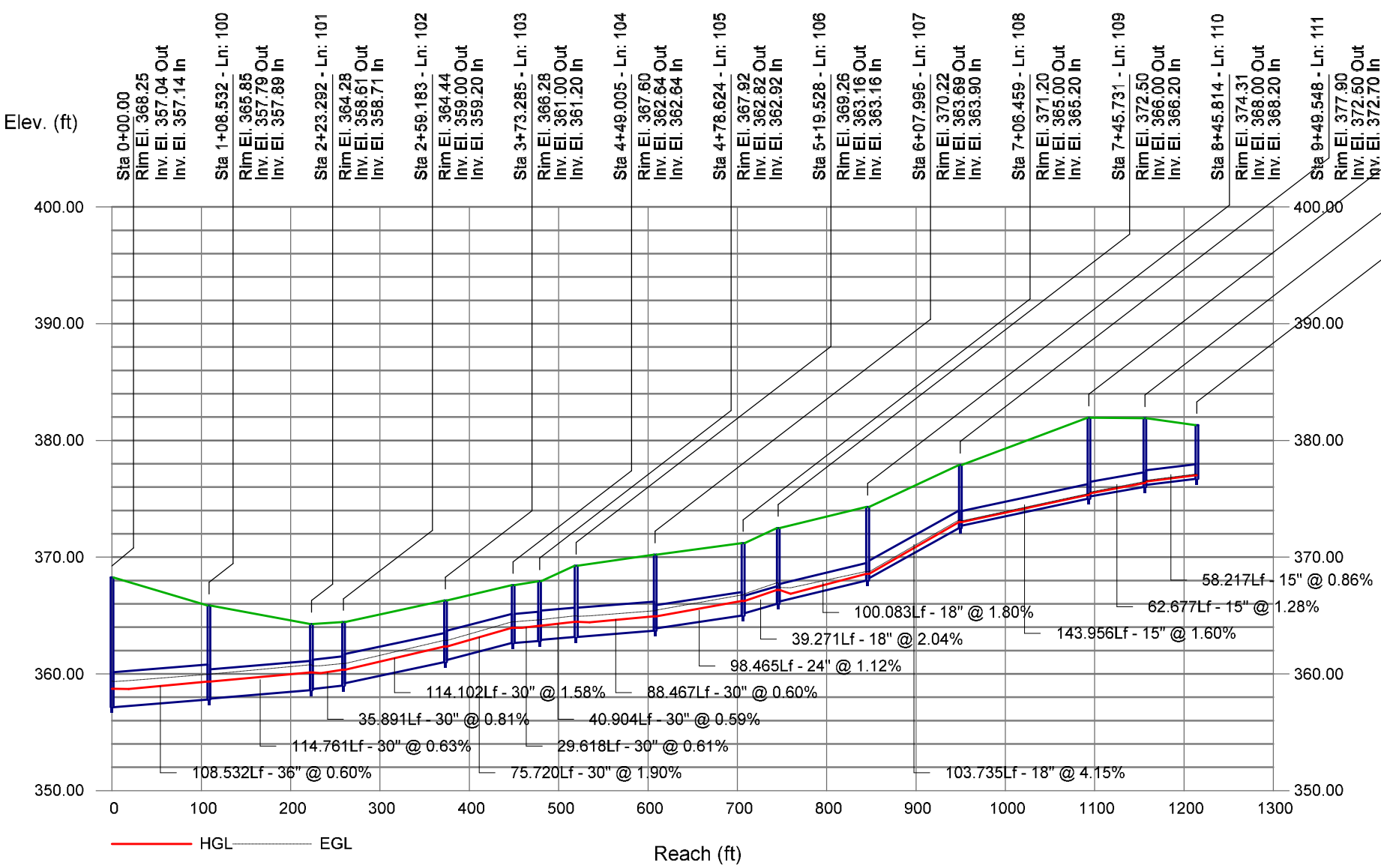

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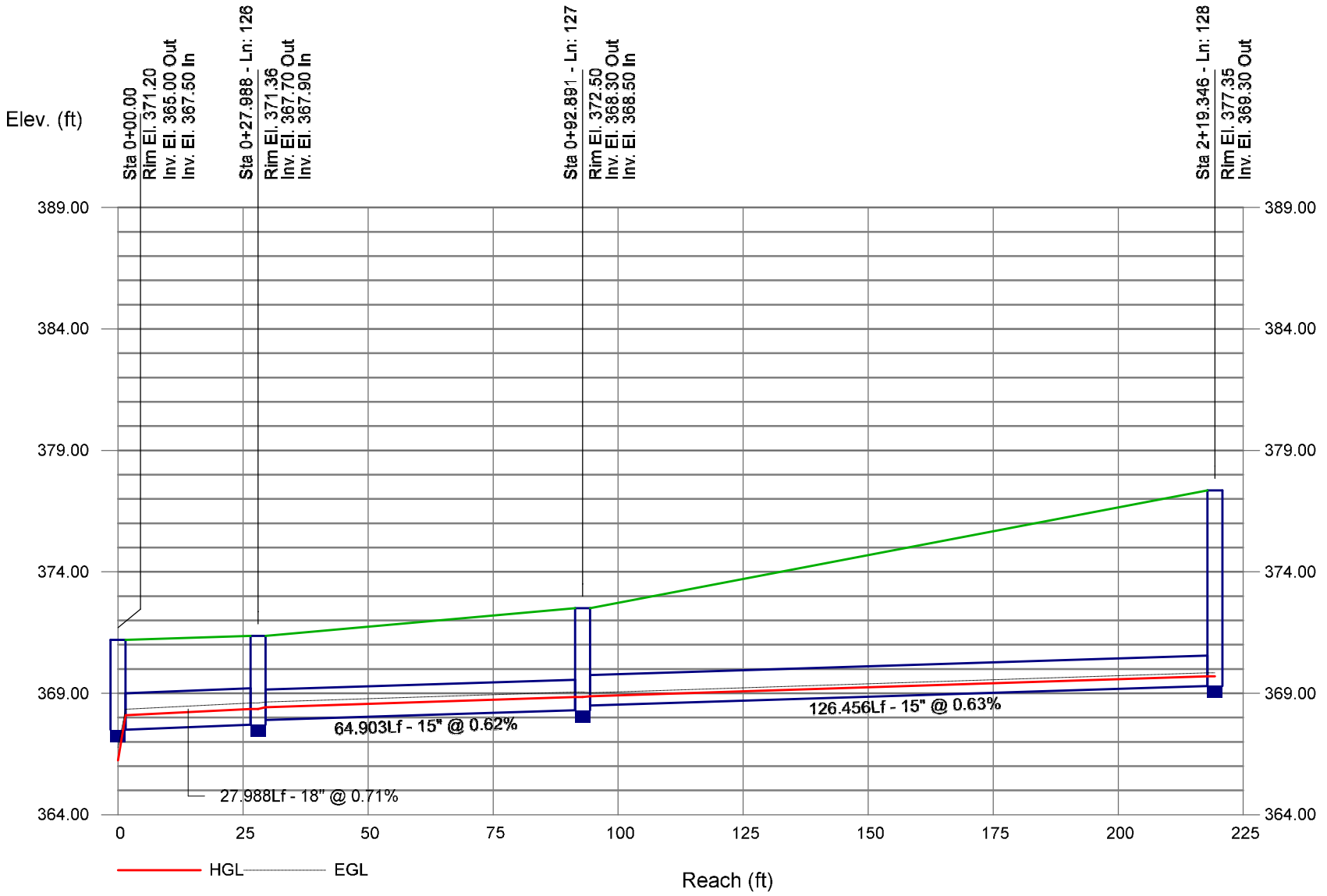

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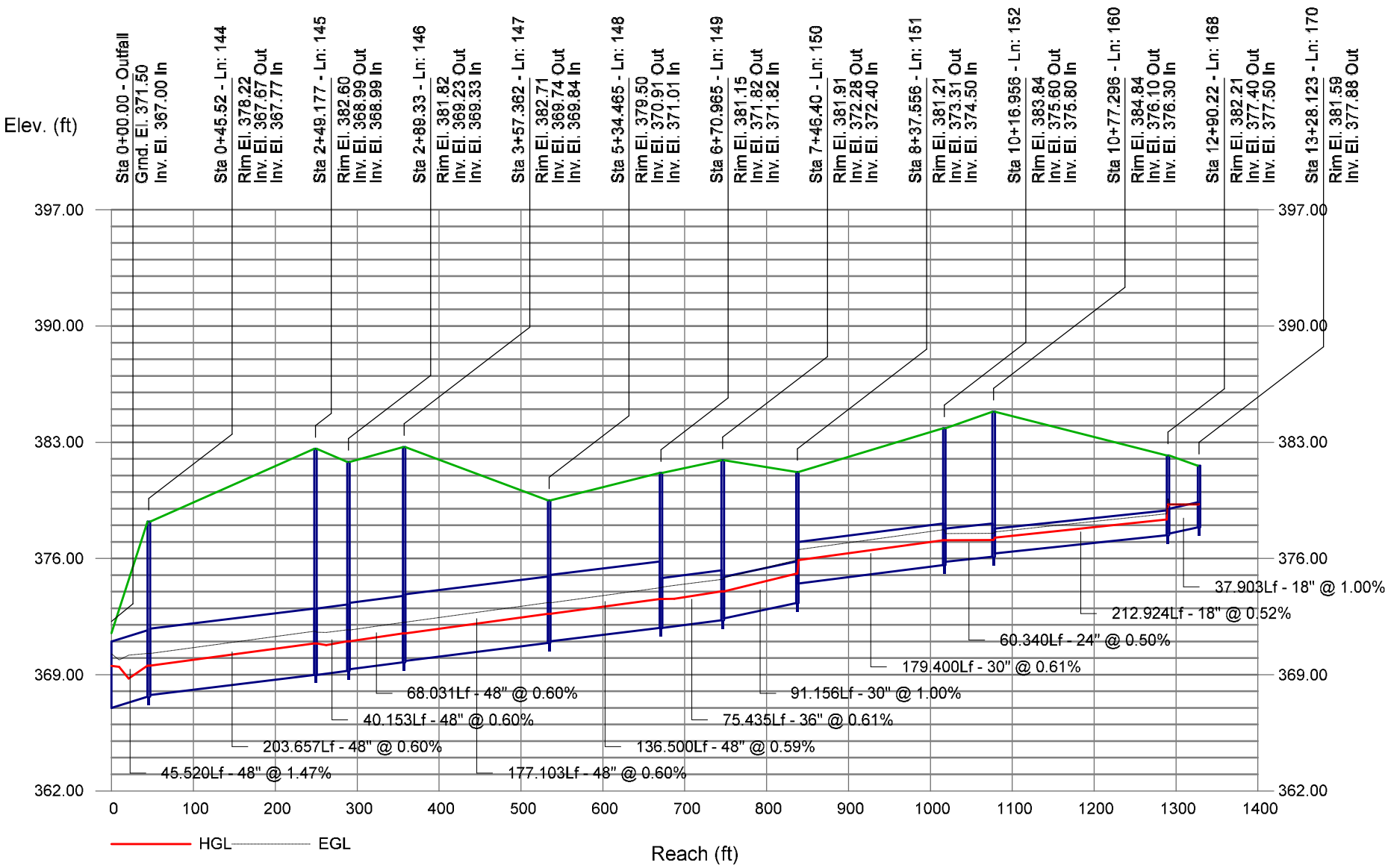

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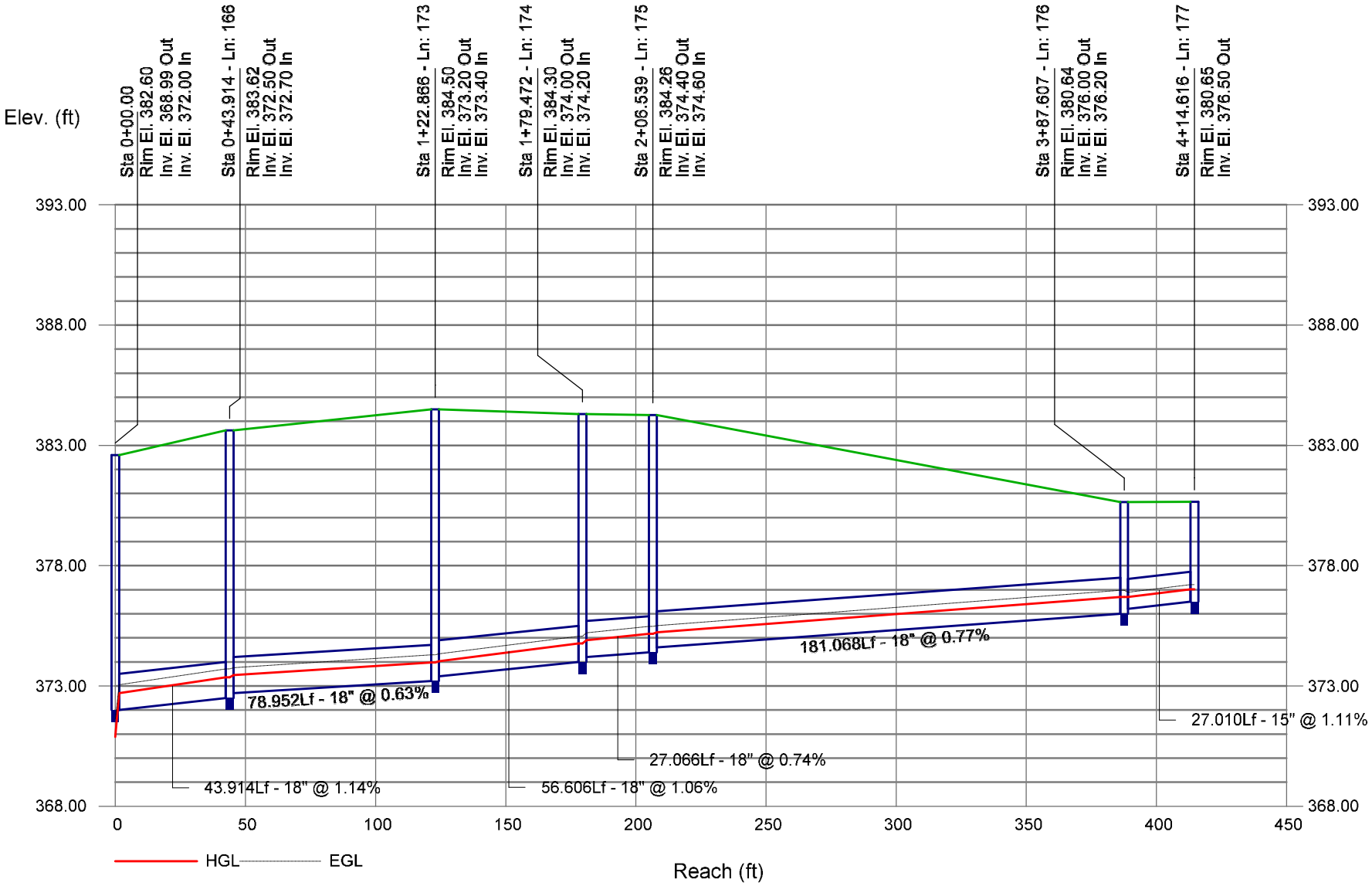

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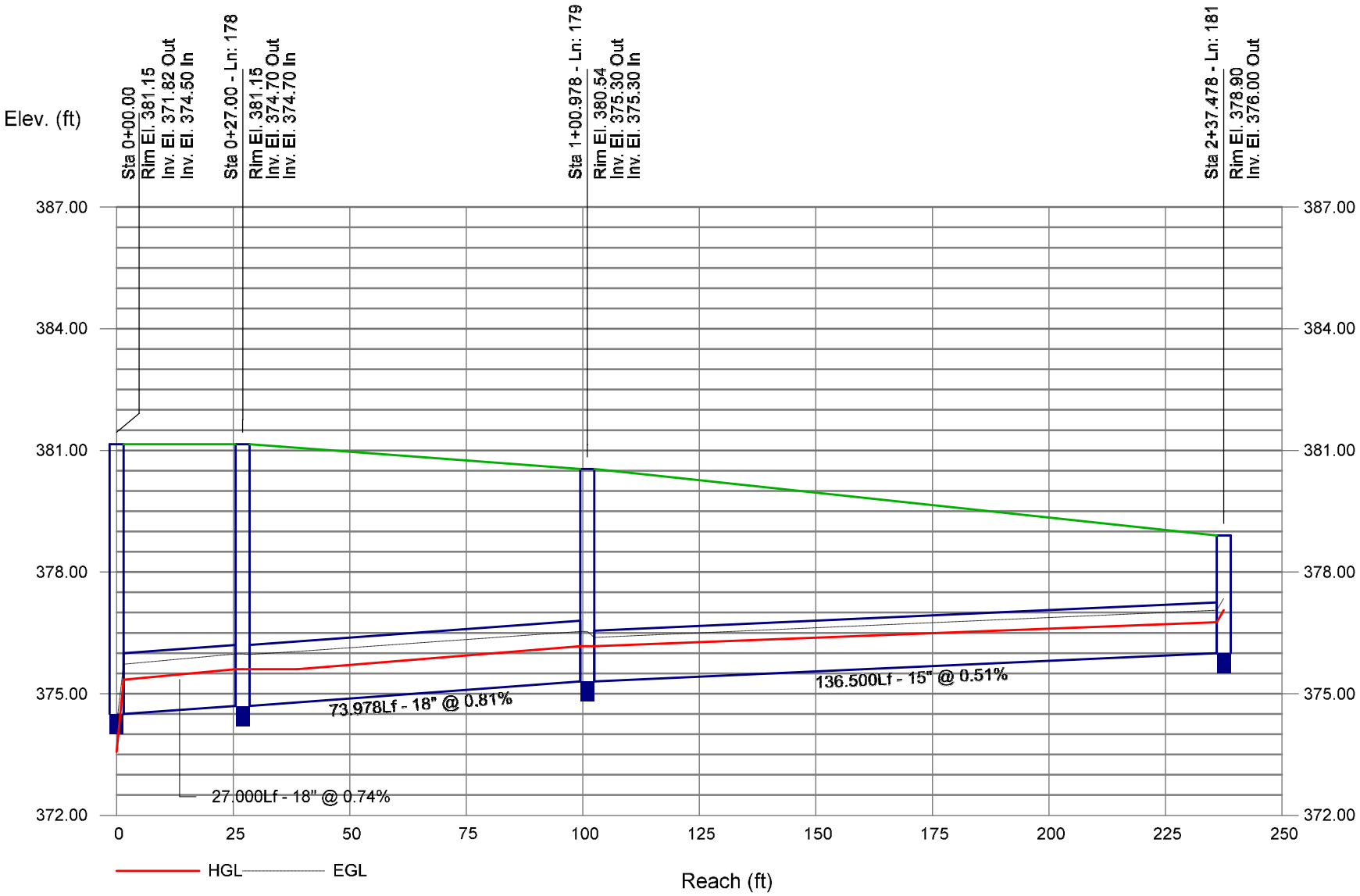

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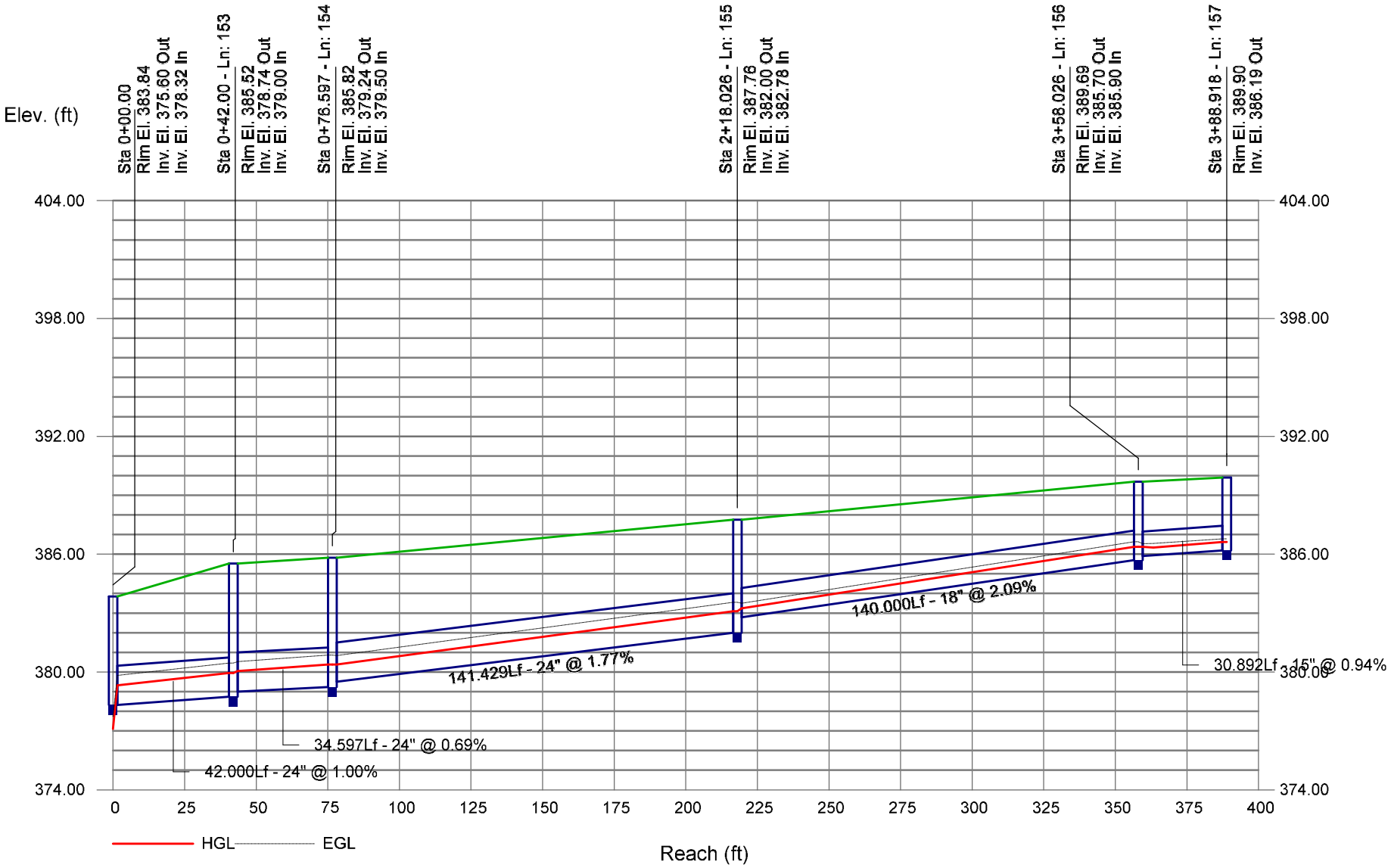

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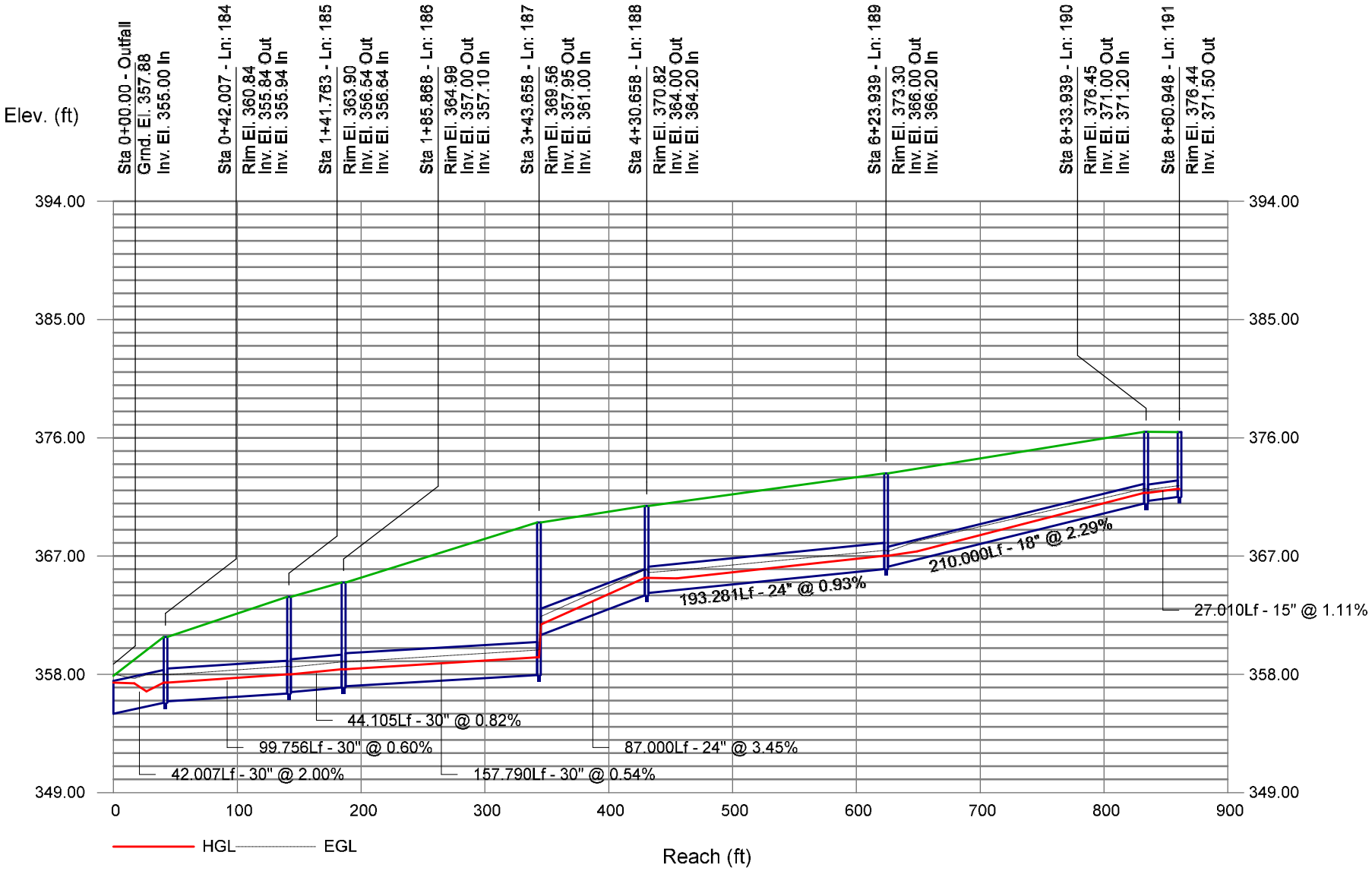

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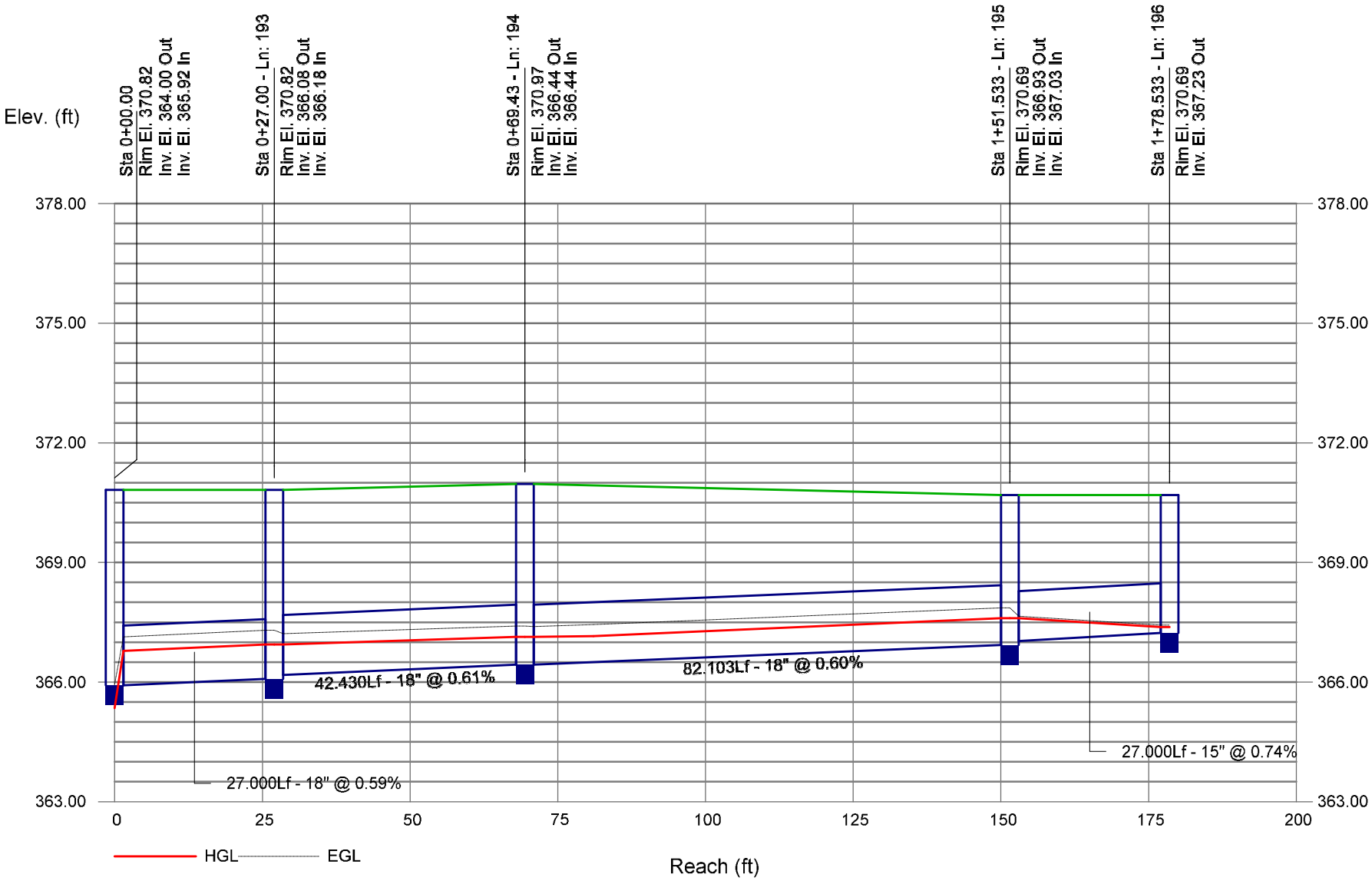

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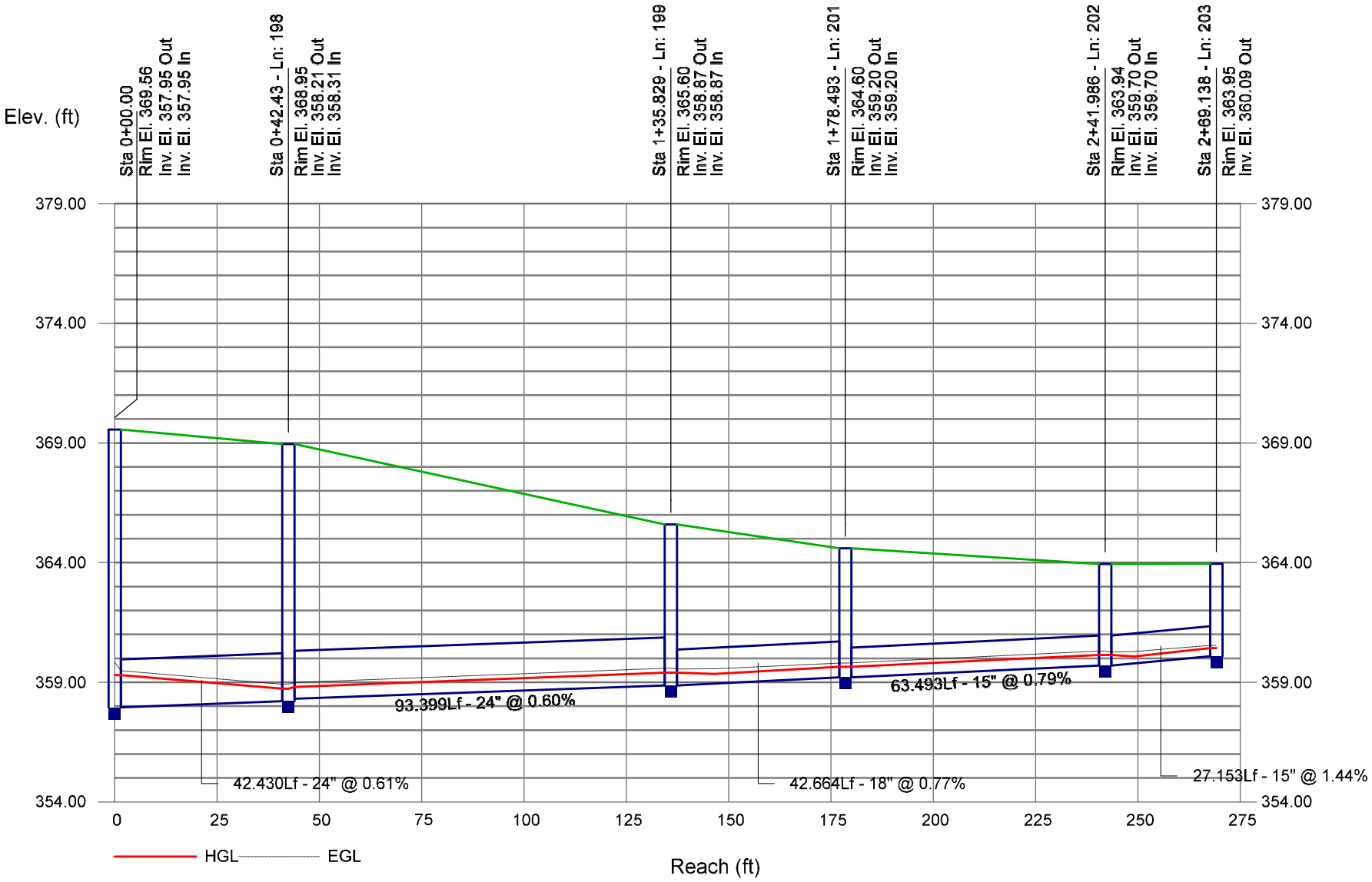

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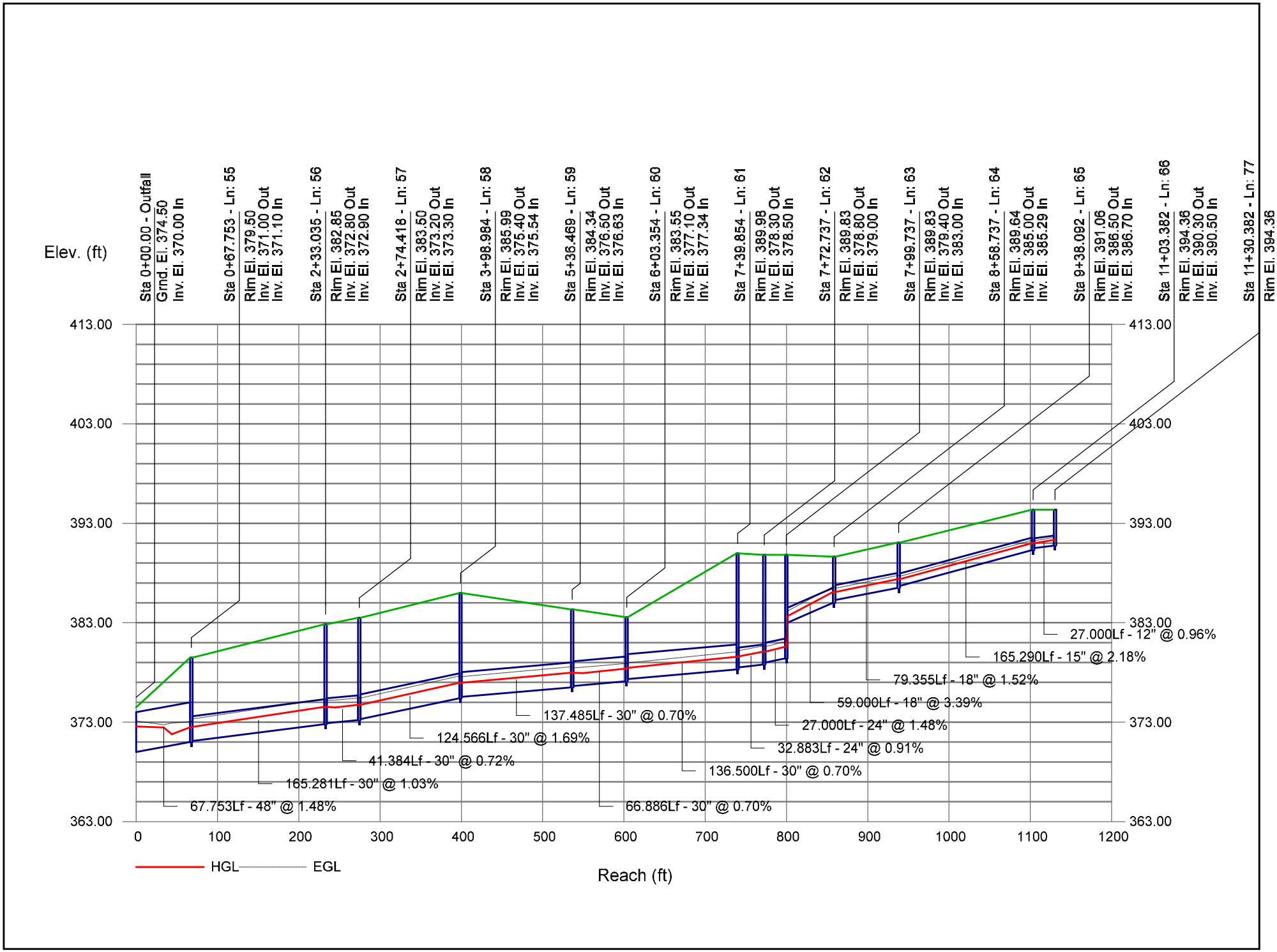

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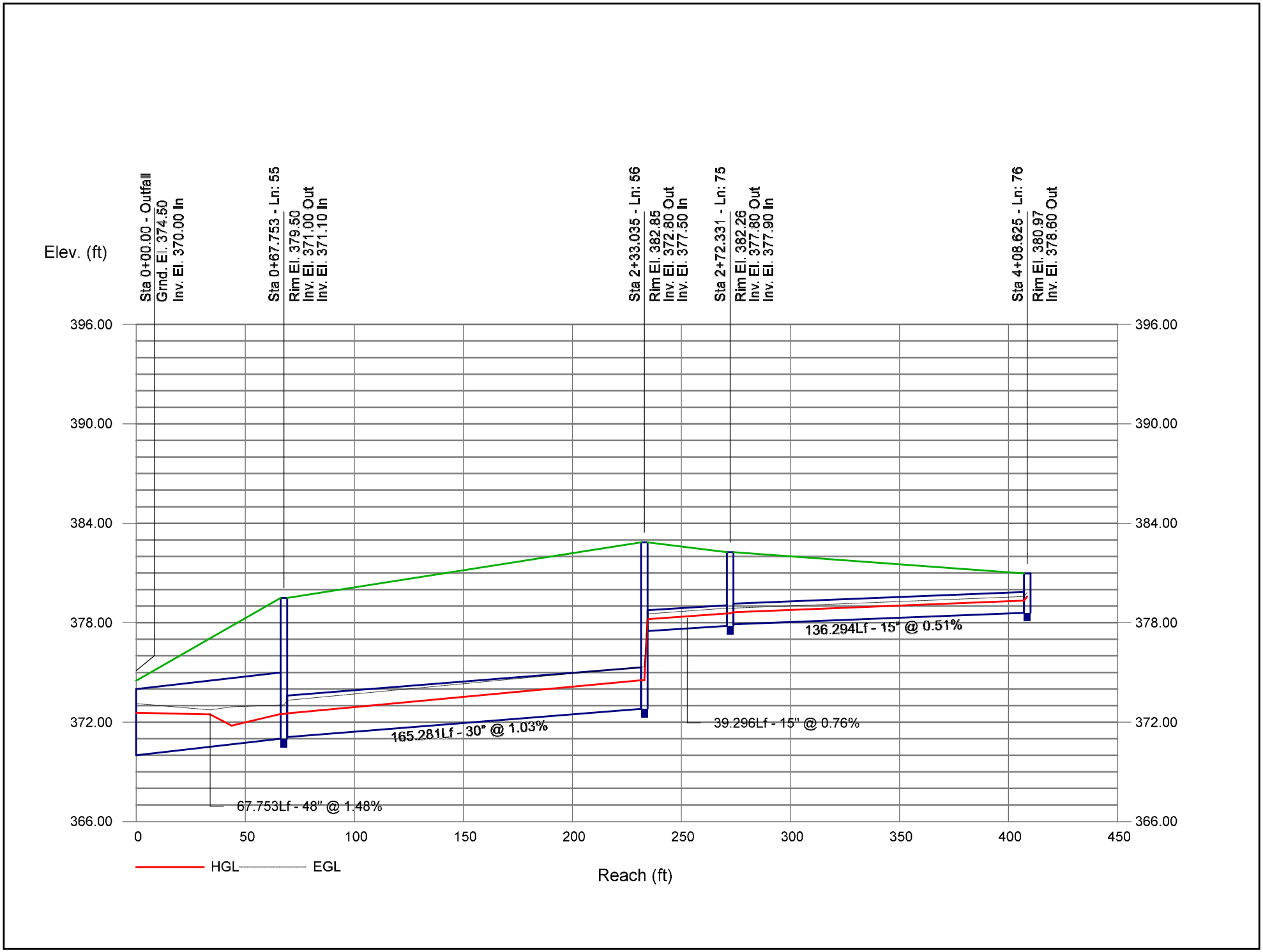

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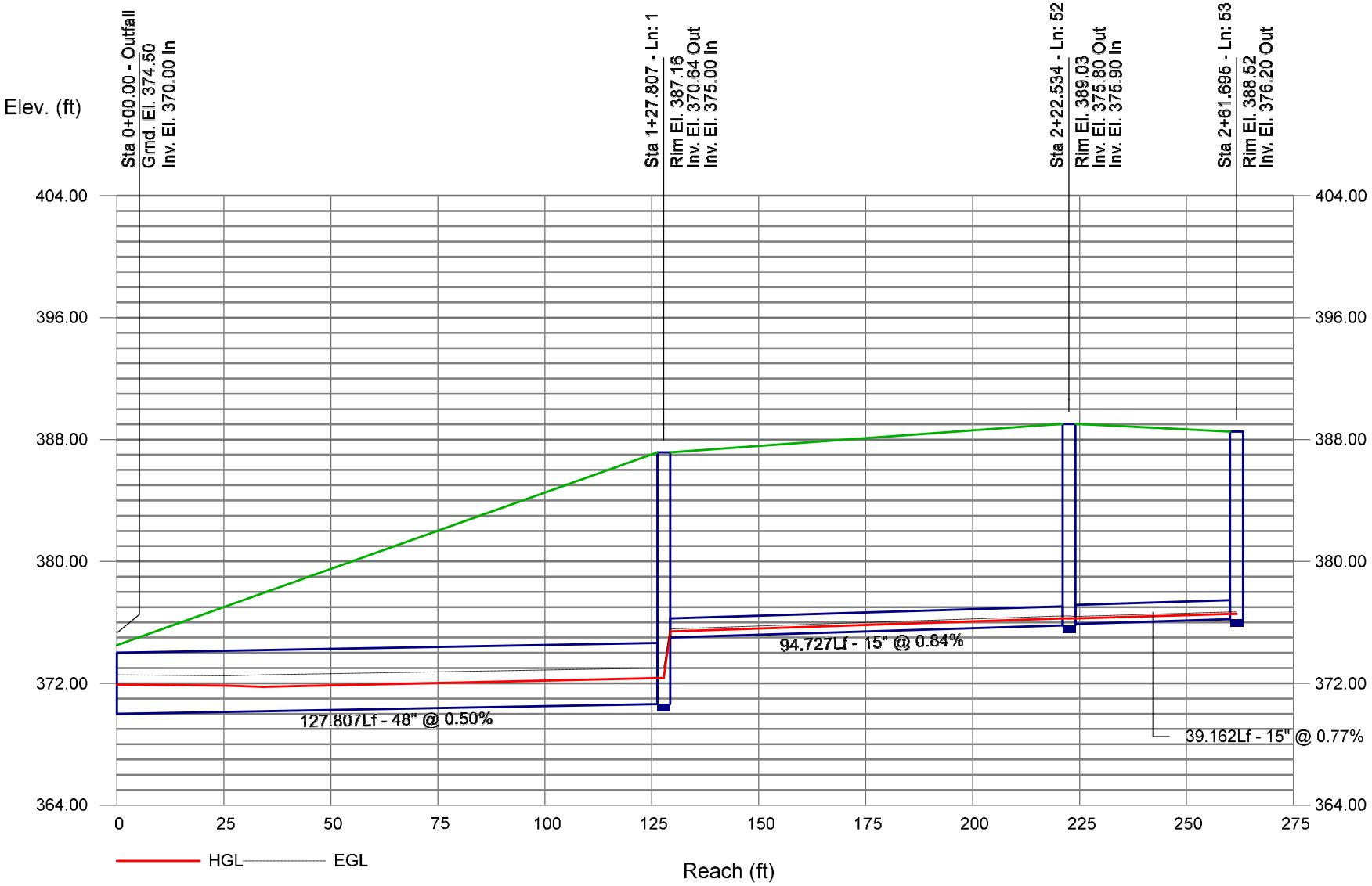

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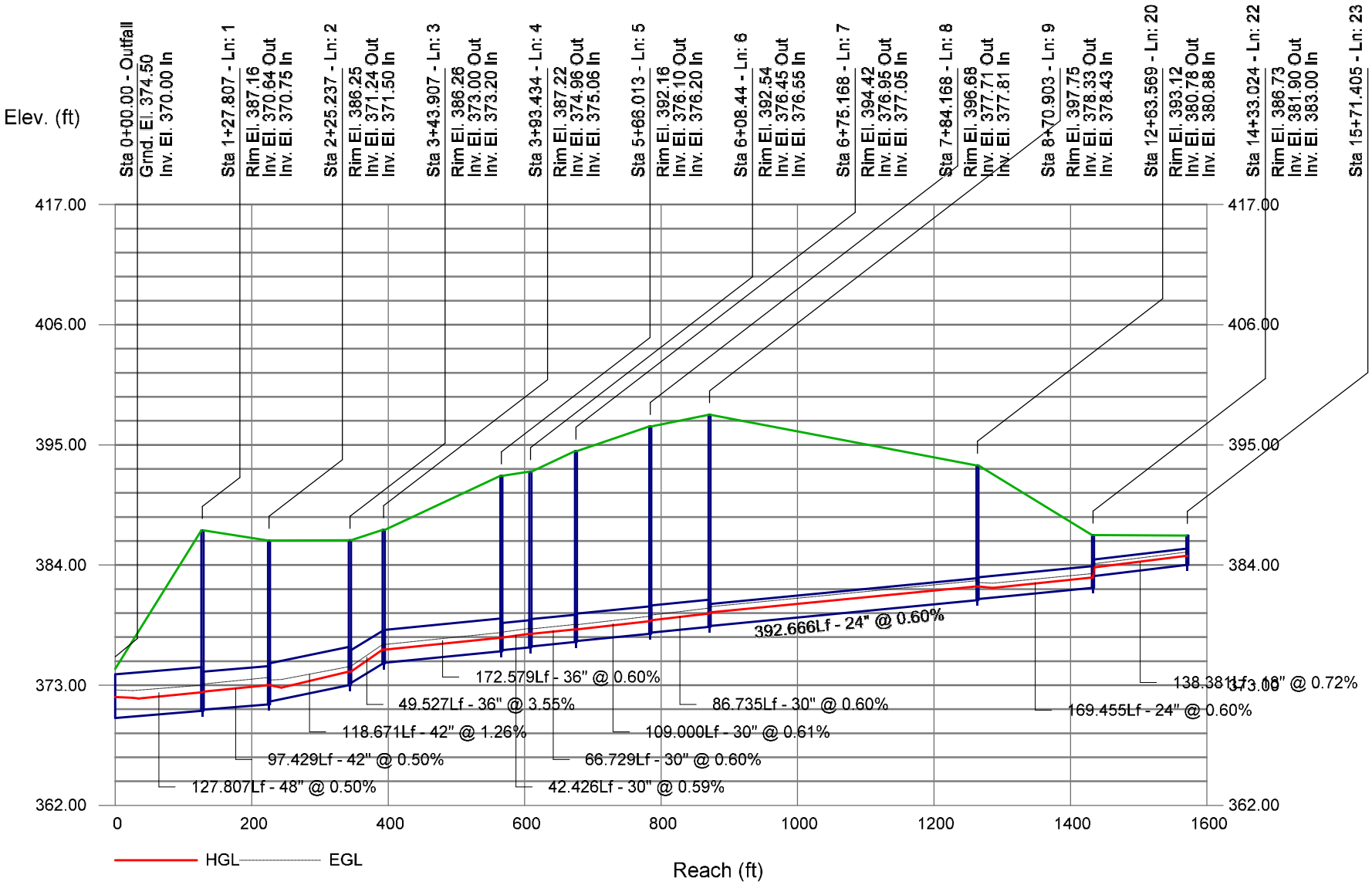

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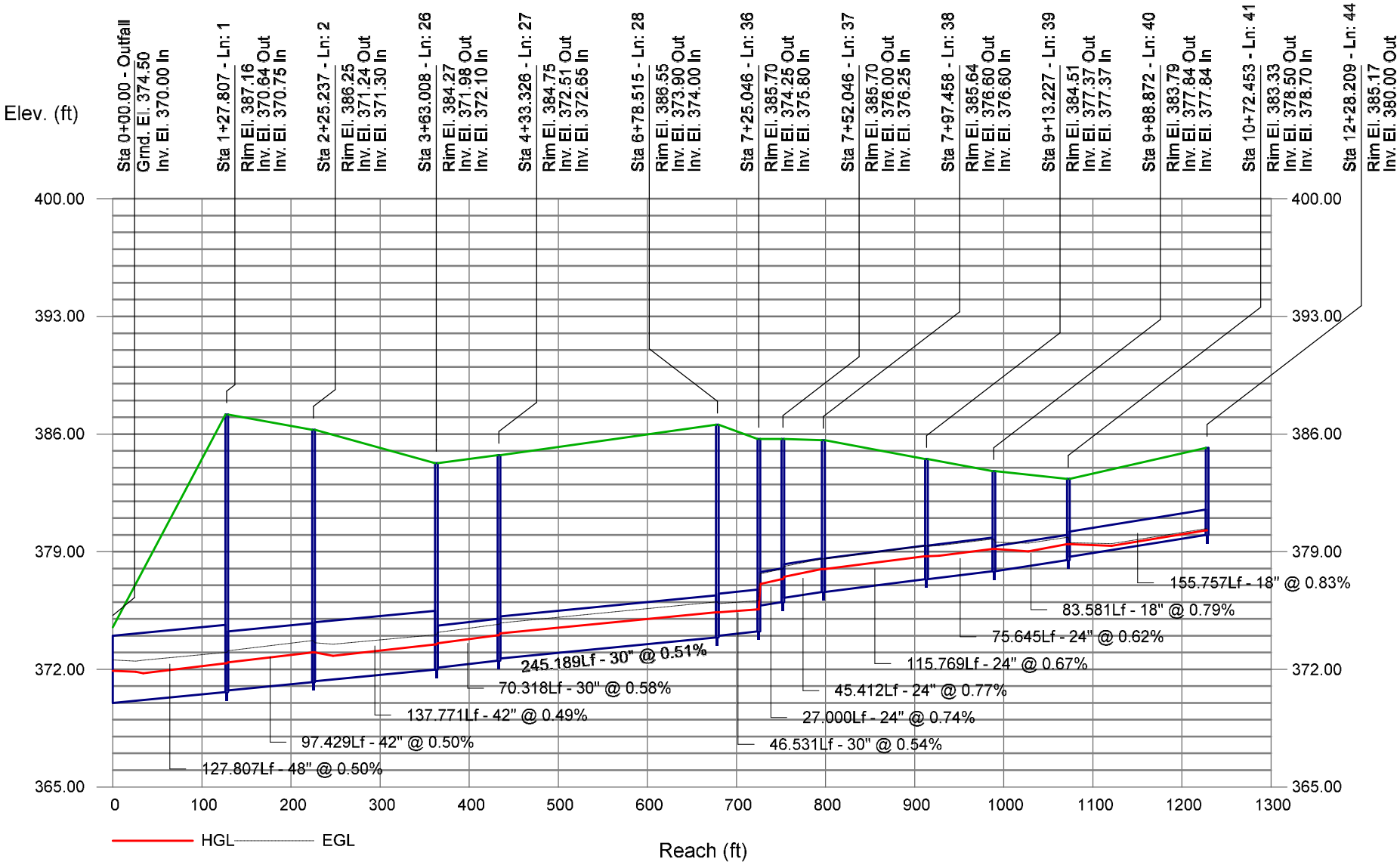

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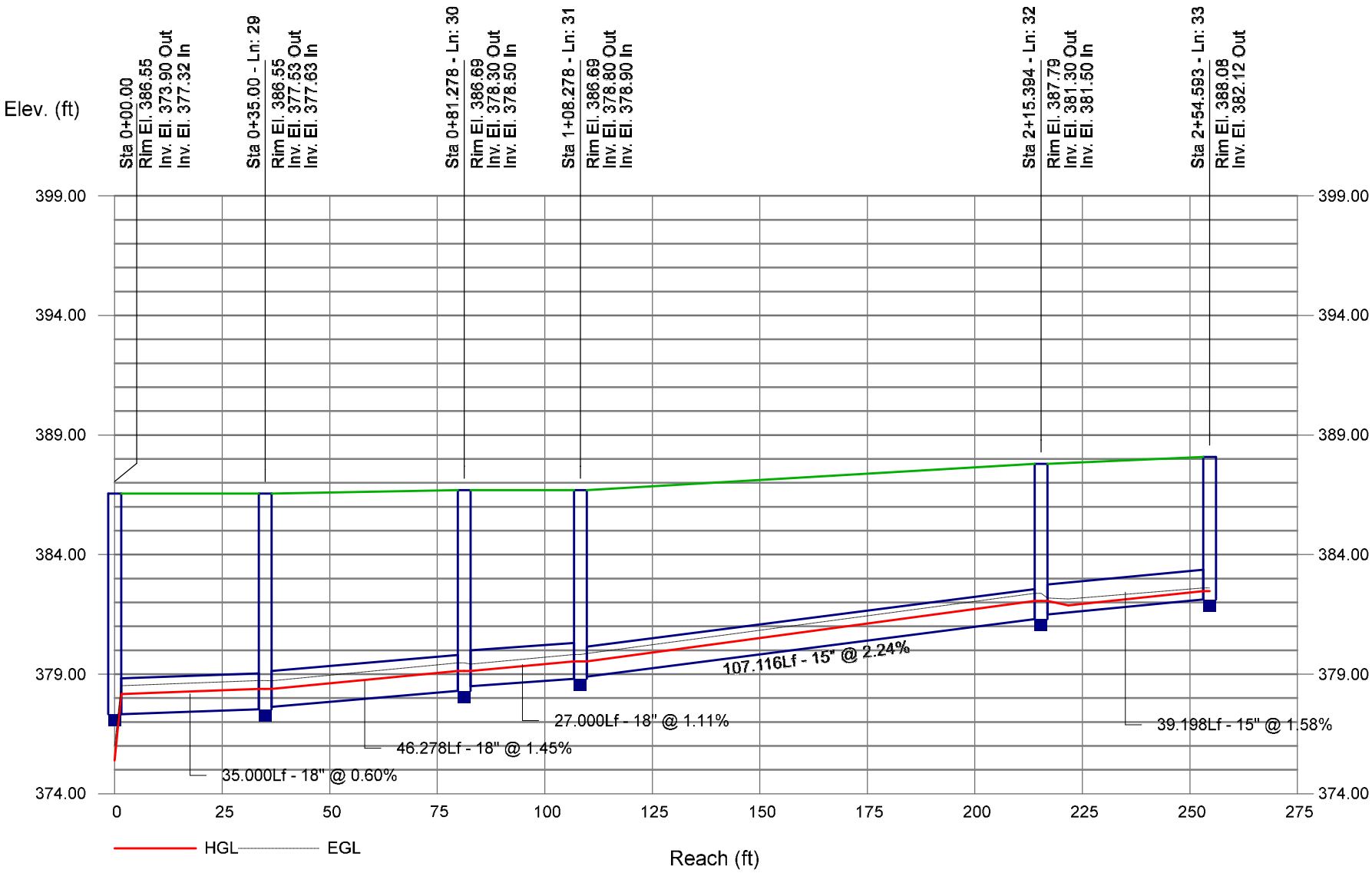

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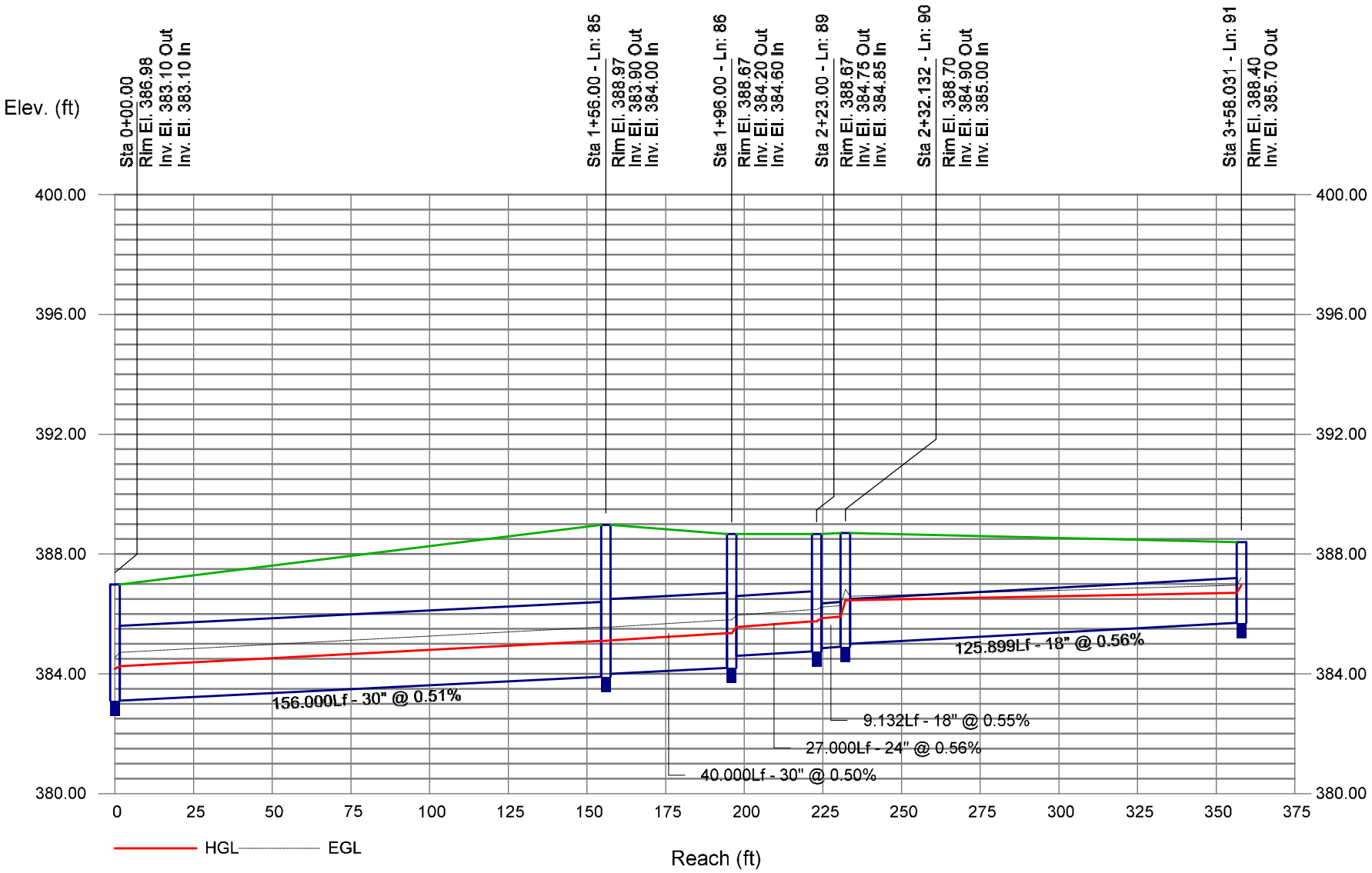

2.2.2 Runoff Coefficient

Composite C				
SCM1	3.79	0.95	3.60	
	7.46	0.95	7.09	
	14.02	0.35	4.91	
	25.27		15.59	0.62
SCM2	1.10	0.95	1.05	
	2.09	0.95	1.99	
	6.47	0.35	2.26	
	9.66		5.30	0.55
SCM3	2.82	0.95	2.68	
	3.86	0.95	3.67	
	6.42	0.35	2.25	
	13.10		8.59	0.66
SCM4	1.94	0.95	1.84	
	4.22	0.95	4.01	
	10.89	0.35	3.81	
	17.05		9.66	0.57
SCM5	1.38	0.95	1.31	
	2.00	0.95	1.90	
	3.24	0.35	1.13	
	6.62		4.35	0.66

The runoff coefficient (C) is the variable of the rational method least susceptible to precise determination and requires judgment and understanding on the part of the design engineer. While engineering judgment will always be required in the selection of runoff coefficients, typical coefficients represent the integrated effects of many drainage basin parameters. Table 2.2 gives the recommended runoff coefficients for the rational method.

Table 2.2 Recommended Runoff Coefficient Values

(Sources: North Carolina Erosion and Sediment Control Planning and Design Manual and The City of Raleigh's Storm Drainage Design Manual, 1989)

Description of Area	Runoff Coefficient, C
Woodlands	0.20 - .025
Parks, cemeteries	0.25
Playgrounds	0.35
Lawns:	
Sandy soil, flat, 2%	0.10
Sandy soil, average, 2 - 7%	0.15
Sandy soil, steep, > 7%	0.20
Clay soil, flat, 2%	0.17
Clay soil, average, 2 - 7%	0.22
Clay soil, steep, > 7%	0.35
Graded or no plant cover:	
Sandy soil, flat, 0 - 5%	0.30
Sandy soil, flat, 5 - 10%	0.40
Clayey soil, flat, 0 - 5%	0.50
Clayey soil, average, 5 - 10%	0.60
Residential:	
Single-family (R - 4)	0.50
Single-family (R - 6)	0.55
Multi-family (R - 10)	0.60
Multi-family (R - 20)	0.70
Multi-family (R - 30)	0.75
Business:	
O & I (I, II, III)	0.85
I1 & I2	0.85 – 0.95
Shopping Centers	0.85 – 0.95
Streets:	
Gravel areas	0.50
Drives, walks, and roofs	0.95
Asphalt and Concrete	0.95 – 1.00

Swale and Outlet Protection Calculations

Swale Design Calculations

Culvert Analysis

Outlet Protection Calculations

North American Green
5401 St. Wendel-Cynthiana Rd.
Poseyville, Indiana 47633
Tel. 800.772.2040
>Fax 812.867.0247
www.nagreen.com
ECMDS v7.0

CHANNEL ANALYSIS

> > > TYP. 12" DEEP V-SWALE

Name	TYP. 12" DEEP V-SWALE
Discharge	3.2 =0.55 * 7.3"/HR * 0.80 AC
Channel Slope	0.01
Channel Bottom Width	0
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Sod Former
Vegetation Density	Very Good 80-95%
Soil Type	Clay (GC)

Unreinforced Vegetation

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	3.2 cfs	2.16 ft/s	0.7 ft	0.033	4 lbs/ft2	0.44 lbs/ft2	9.13	STABLE	--
Underlying Substrate	Straight	3.2 cfs	2.16 ft/s	0.7 ft	0.033	4 lbs/ft2	0.21 lbs/ft2	19.25	STABLE	--

S75BN

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75BN Unvegetated	Straight	3.2 cfs	2.16 ft/s	0.7 ft	0.033	1.6 lbs/ft2	0.44 lbs/ft2	3.65	STABLE	D
Underlying Substrate	Straight	3.2 cfs	2.16 ft/s	0.7 ft	0.033	1.97 lbs/ft2	0.21 lbs/ft2	9.49	STABLE	D

Name	TYP. 12" DEEP V-SWALE
Discharge	3.2 =0.55 * 7.3"/HR * 0.80 AC
Channel Slope	0.045
Channel Bottom Width	0
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Sod Former
Vegetation Density	Very Good 80-95%
Soil Type	Clay (GC)

Unreinforced Vegetation

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	3.2 cfs	3.8 ft/s	0.53 ft	0.033	4 lbs/ft2	1.49 lbs/ft2	2.69	STABLE	--
Underlying Substrate	Straight	3.2 cfs	3.8 ft/s	0.53 ft	0.033	4 lbs/ft2	0.7 lbs/ft2	5.67	STABLE	--

S75BN

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75BN Unvegetated	Straight	3.2 cfs	3.8 ft/s	0.53 ft	0.033	1.6 lbs/ft2	1.49 lbs/ft2	1.08	STABLE	D
Underlying Substrate	Straight	3.2 cfs	3.8 ft/s	0.53 ft	0.033	1.97 lbs/ft2	0.7 lbs/ft2	2.8	STABLE	D

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CHANNEL ANALYSIS

> > > TYP. 18" V-SWALE

Name	TYP. 18" V-SWALE
Discharge	7 =0.55 * 7.3"/HR * 1.70 AC
Channel Slope	0.015
Channel Bottom Width	0
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Sod Former
Vegetation Density	Very Good 80-95%
Soil Type	Clay (GC)

Unreinforced Vegetation

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	7 cfs	3.06 ft/s	0.87 ft	0.033	4 lbs/ft2	0.82 lbs/ft2	4.9	STABLE	--
Underlying Substrate	Straight	7 cfs	3.06 ft/s	0.87 ft	0.033	4 lbs/ft2	0.39 lbs/ft2	10.32	STABLE	--

S75BN

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75BN Unvegetated	Straight	7 cfs	3.06 ft/s	0.87 ft	0.033	1.6 lbs/ft2	0.82 lbs/ft2	1.96	STABLE	D
Underlying Substrate	Straight	7 cfs	3.06 ft/s	0.87 ft	0.033	1.97 lbs/ft2	0.39 lbs/ft2	5.09	STABLE	D

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CHANNEL ANALYSIS

> > > SWALE 100

Name	FLAT B0TT0M SWALE
Discharge	9.2 =0.66 * 7.3"/HR * 1.9 AC
Channel Slope	0.07
Channel Bottom Width	1
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Sod Former
Vegetation Density	Very Good 80-95%
Soil Type	Clay (GC)

C125BN

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
C125BN Unvegetated	Straight	9.2 cfs	5.8 ft/s	0.58 ft	0.033	2.8 lbs/ft2	2.53 lbs/ft2	1.11	STABLE	D
Underlying Substrate	Straight	9.2 cfs	5.8 ft/s	0.58 ft	0.033	3.45 lbs/ft2	1.48 lbs/ft2	2.33	STABLE	D

Unreinforced Vegetation

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	9.2 cfs	5.8 ft/s	0.58 ft	0.033	4 lbs/ft2	2.53 lbs/ft2	1.58	STABLE	--
Underlying Substrate	Straight	9.2 cfs	5.8 ft/s	0.58 ft	0.033	4 lbs/ft2	1.48 lbs/ft2	2.7	STABLE	--

Calculated By
April Blye

TIMMONS GROUP
ENGINEERING | DESIGN | TECHNOLOGY

Project Name
Rolesville Crossing
Project Number
43398

Pipe Outlet Protection (NYDOT Method)

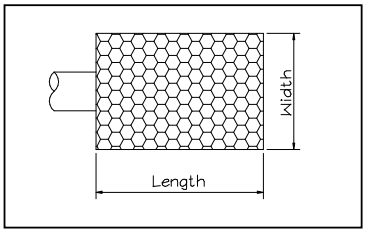
Structure Name: EW606

Pipe Diameter = 48 in
Pipe Slope = 0.006 ft/ft
Mannings n = 0.013
Velocity Flowing Full = **8.88 fps**

From Fig. 8.06.c: ZONE = 3

Rip Rap Class = 1
Apron Thickness = 24 in
Apron Length = 32.0 ft
Apron Width = 3xDia.= 12.0 ft

From Fig. 8.06.e:



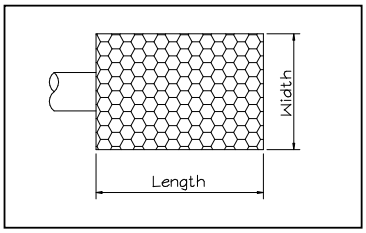
Structure Name: EW700

Pipe Diameter = 42 in
Pipe Slope = 0.0041 ft/ft
Mannings n = 0.013
Velocity Flowing Full = **6.71 fps**

From Fig. 8.06.c: ZONE = 2

Rip Rap Class = B
Apron Thickness = 18 in
Apron Length = 21.0 ft
Apron Width = 3xDia.= 10.5 ft

From Fig. 8.06.e:



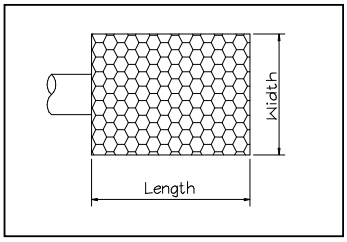
Structure Name: EW600

Pipe Diameter = 48 in
Pipe Slope = 0.004 ft/ft
Mannings n = 0.013
Velocity Flowing Full = **7.25 fps**

From Fig. 8.06.c: ZONE = 2

Rip Rap Class = B
Apron Thickness = 18 in
Apron Length = 24.0 ft
Apron Width = 3xDia.= 12.0 ft

From Fig. 8.06.e:



Structure Name: EW604

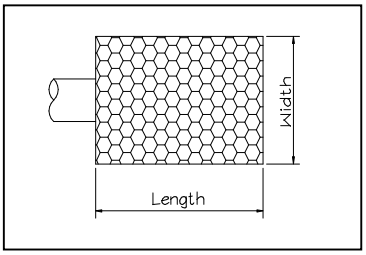
Pipe Diameter = 48 in
Pipe Slope = 0.0067 ft/ft
Mannings n = 0.013
Velocity Flowing Full = **9.38 fps**

From Fig. 8.06.c: ZONE = 3

Rip Rap Class = 1
Apron Thickness = 24 in
Apron Length = 32.0 ft

Apron Width = 3xDia.= 12.0 ft

From Fig. 8.06.e:



Structure Name: EW602

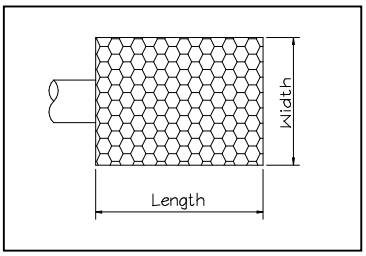
Pipe Diameter = 42 in
Pipe Slope = 0.006 ft/ft
Mannings n = 0.013
Velocity Flowing Full = **8.12 fps**

From Fig. 8.06.c: ZONE = 2

Rip Rap Class = B
Apron Thickness = 18 in
Apron Length = 21.0 ft

Apron Width = 3xDia.= 10.5 ft

From Fig. 8.06.e:



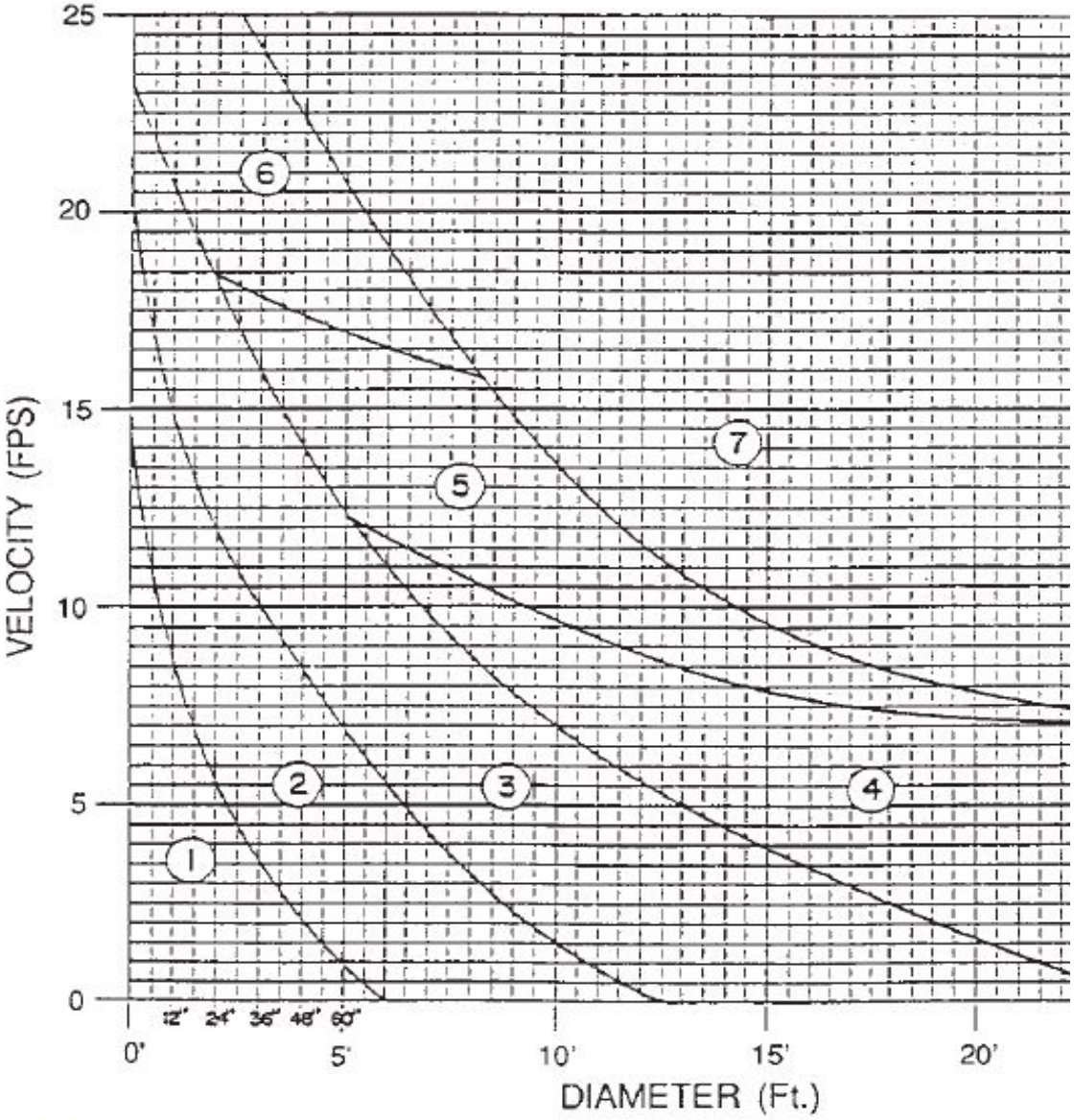

25
20
15
10
5
0
VELOCITY (FPS)
6
7
5
2
3
4
1
12"
24"
36"
48"
60"
0'
5'
10'
15'
20'
DIAMETER (Ft.)

Figure 8.06c

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

CULVERT1 - 10YR

Invert Elev Dn (ft)	=	354.00
Pipe Length (ft)	=	100.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	356.00
Rise (in)	=	72.0
Shape	=	Circular
Span (in)	=	72.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

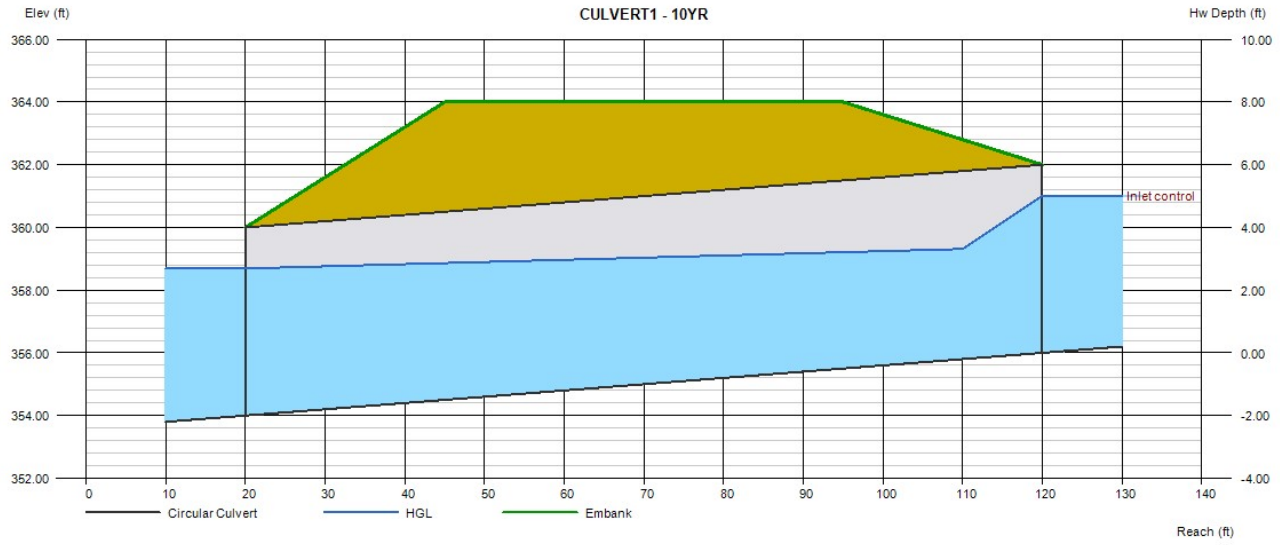
Top Elevation (ft)	=	364.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	310.44
Qmax (cfs)	=	310.44
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	310.44
Qpipe (cfs)	=	310.44
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.54
Veloc Up (ft/s)	=	9.45
HGL Dn (ft)	=	358.69
HGL Up (ft)	=	359.38
Hw Elev (ft)	=	361.01
Hw/D (ft)	=	0.83
Flow Regime	=	Inlet Control



Hydrology Report

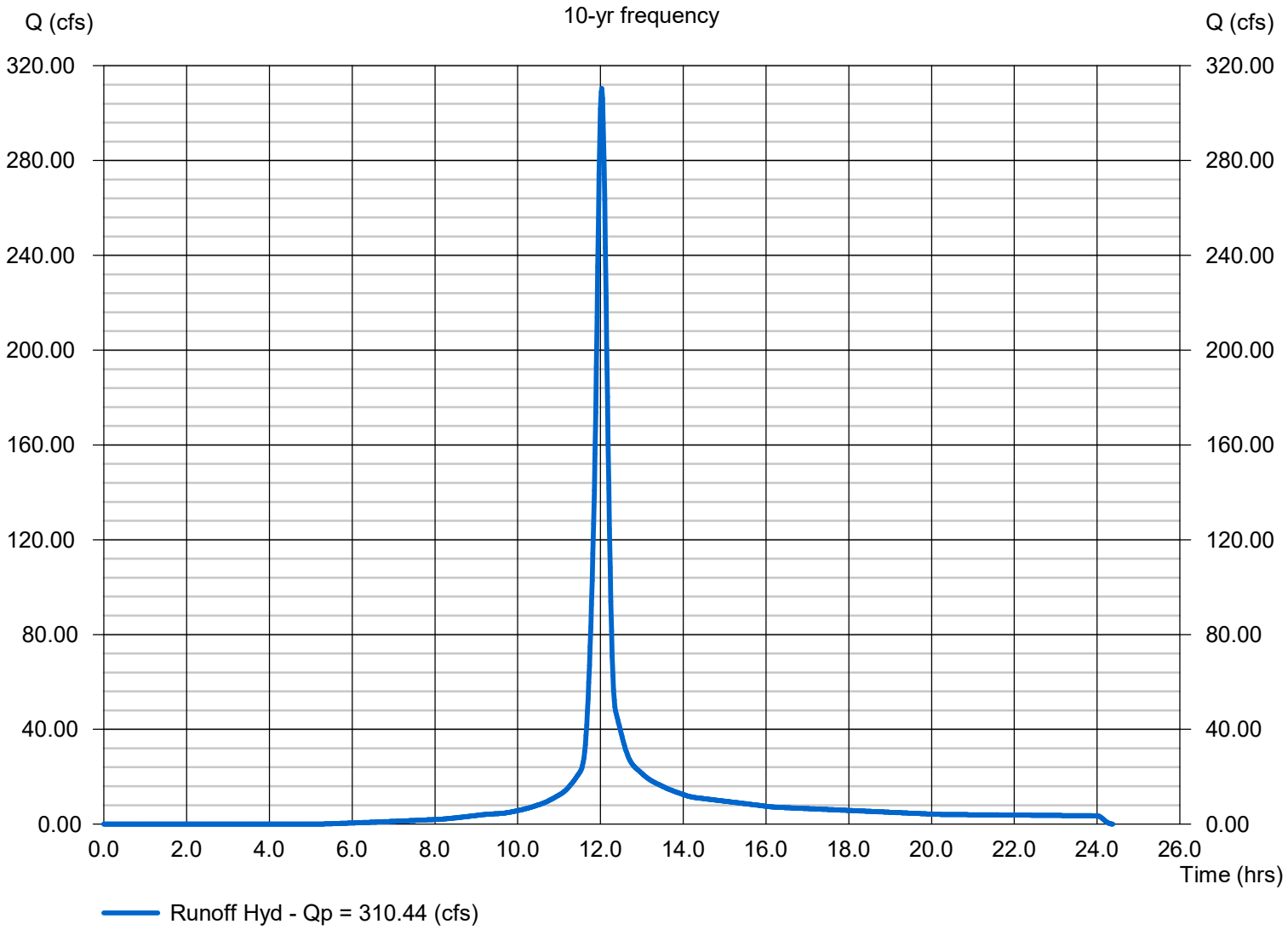
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

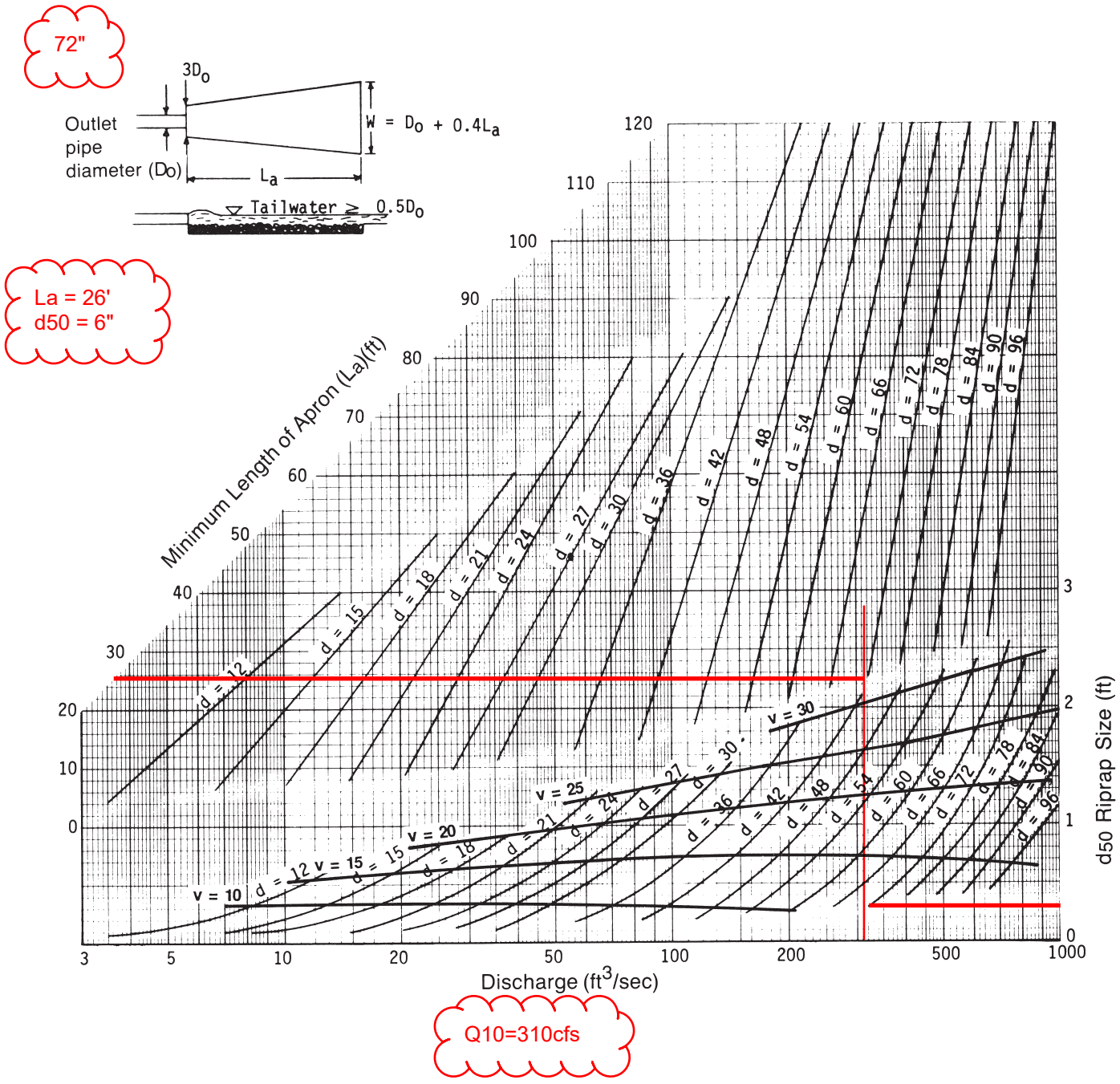
CULVERT1-Q10

Hydrograph type	= SCS	Peak discharge (cfs)	= 310.44
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 65.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 2300
Tc method	= Kirpich	Time of conc. (min)	= 15
Total precip. (in)	= 5.16	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 853,335 (cuft); 19.590 (acft)

Runoff Hydrograph





Curves may not be extrapolated.

Figure 8.06b Design of outlet protection from a round pipe flowing full, maximum tailwater condition ($T_w \geq 0.5$ diameter).

Culvert Report

CULVERT1 - 25YR

Invert Elev Dn (ft)	=	354.00
Pipe Length (ft)	=	100.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	356.00
Rise (in)	=	72.0
Shape	=	Circular
Span (in)	=	72.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

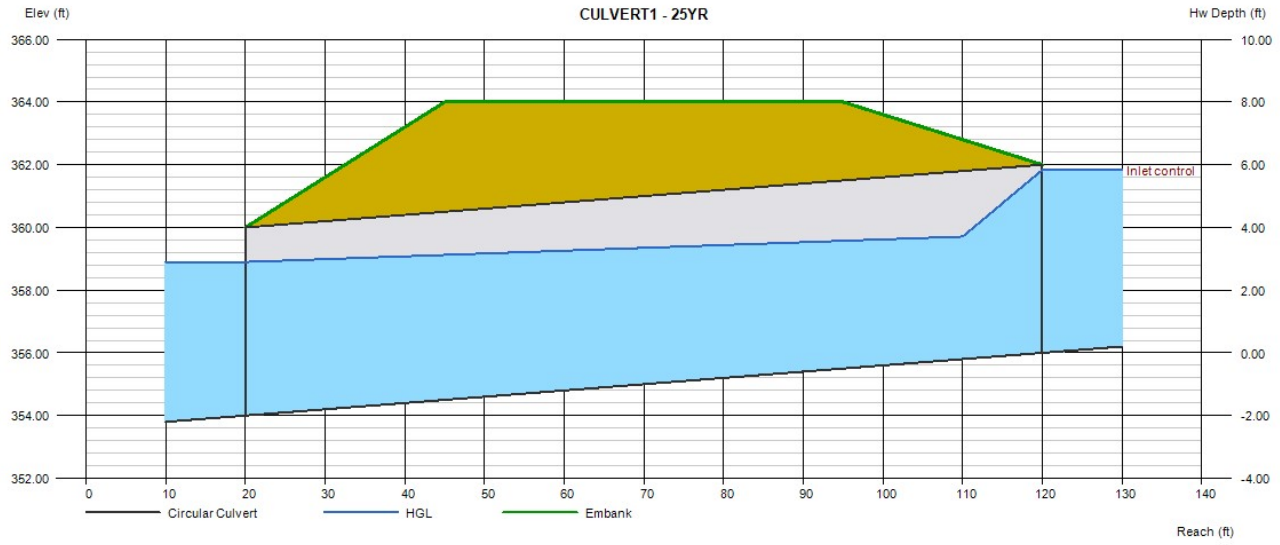
Top Elevation (ft)	=	364.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	387.29
Qmax (cfs)	=	387.29
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	387.29
Qpipe (cfs)	=	387.29
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	7.83
Veloc Up (ft/s)	=	10.26
HGL Dn (ft)	=	358.90
HGL Up (ft)	=	359.80
Hw Elev (ft)	=	361.84
Hw/D (ft)	=	0.97
Flow Regime	=	Inlet Control



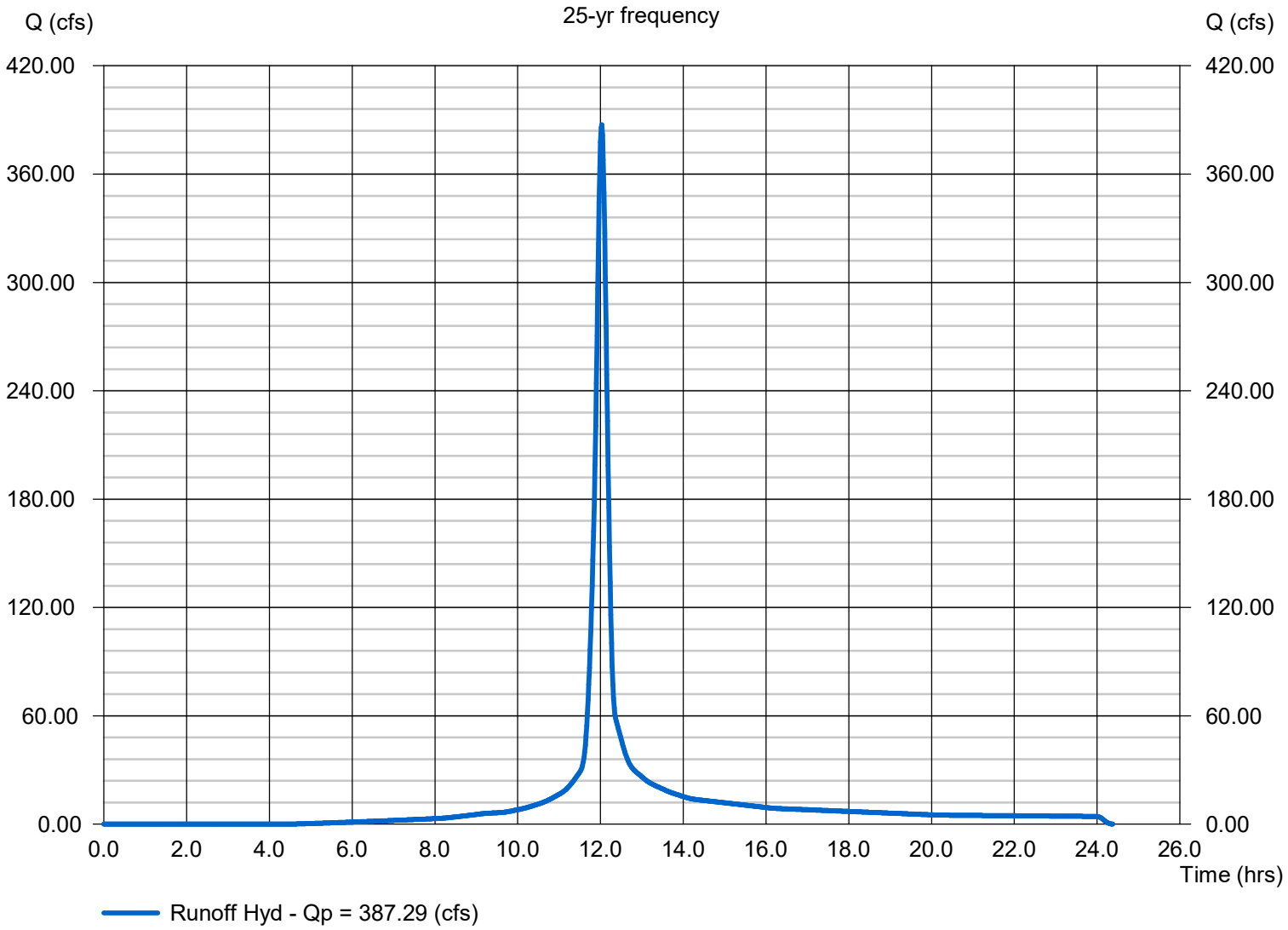
Hydrology Report

CULVERT1-Q25

Hydrograph type	= SCS	Peak discharge (cfs)	= 387.29
Storm frequency (yrs)	= 25	Time interval (min)	= 1
Drainage area (ac)	= 65.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 2300
Tc method	= Kirpich	Time of conc. (min)	= 15
Total precip. (in)	= 6.16	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 1,076,318 (cuft); 24.709 (acft)

Runoff Hydrograph



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

CULVERT1 - 100YR

Invert Elev Dn (ft)	=	354.00
Pipe Length (ft)	=	100.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	356.00
Rise (in)	=	72.0
Shape	=	Circular
Span (in)	=	72.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

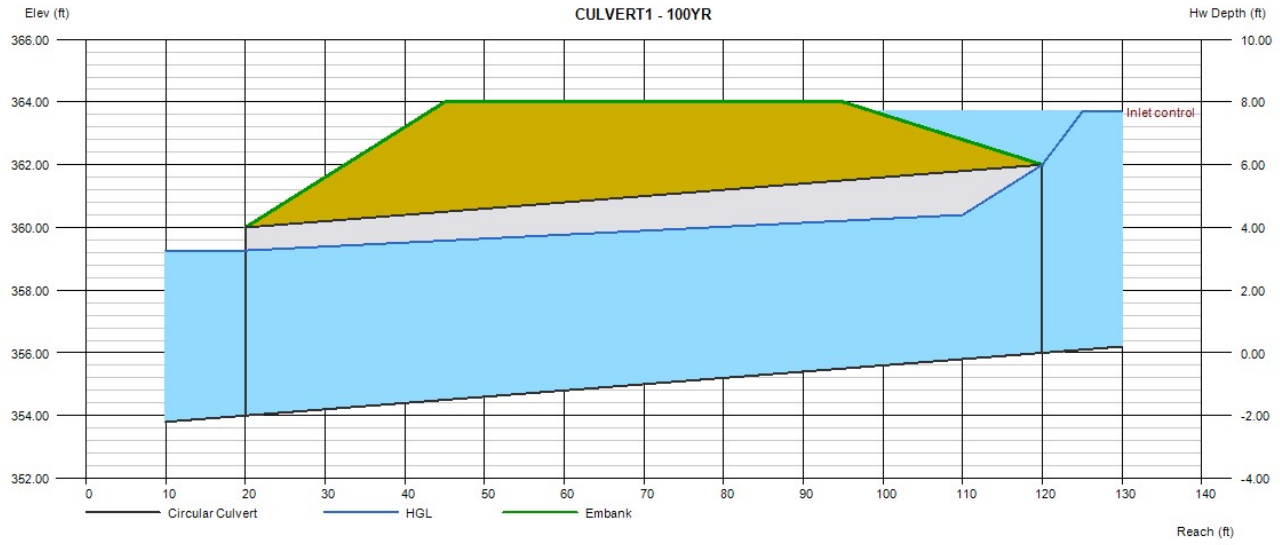
Top Elevation (ft)	=	364.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	547.27
Qmax (cfs)	=	547.27
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	547.27
Qpipe (cfs)	=	547.27
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	10.41
Veloc Up (ft/s)	=	11.96
HGL Dn (ft)	=	359.26
HGL Up (ft)	=	360.53
Hw Elev (ft)	=	363.69
Hw/D (ft)	=	1.28
Flow Regime	=	Inlet Control



Hydrology Report

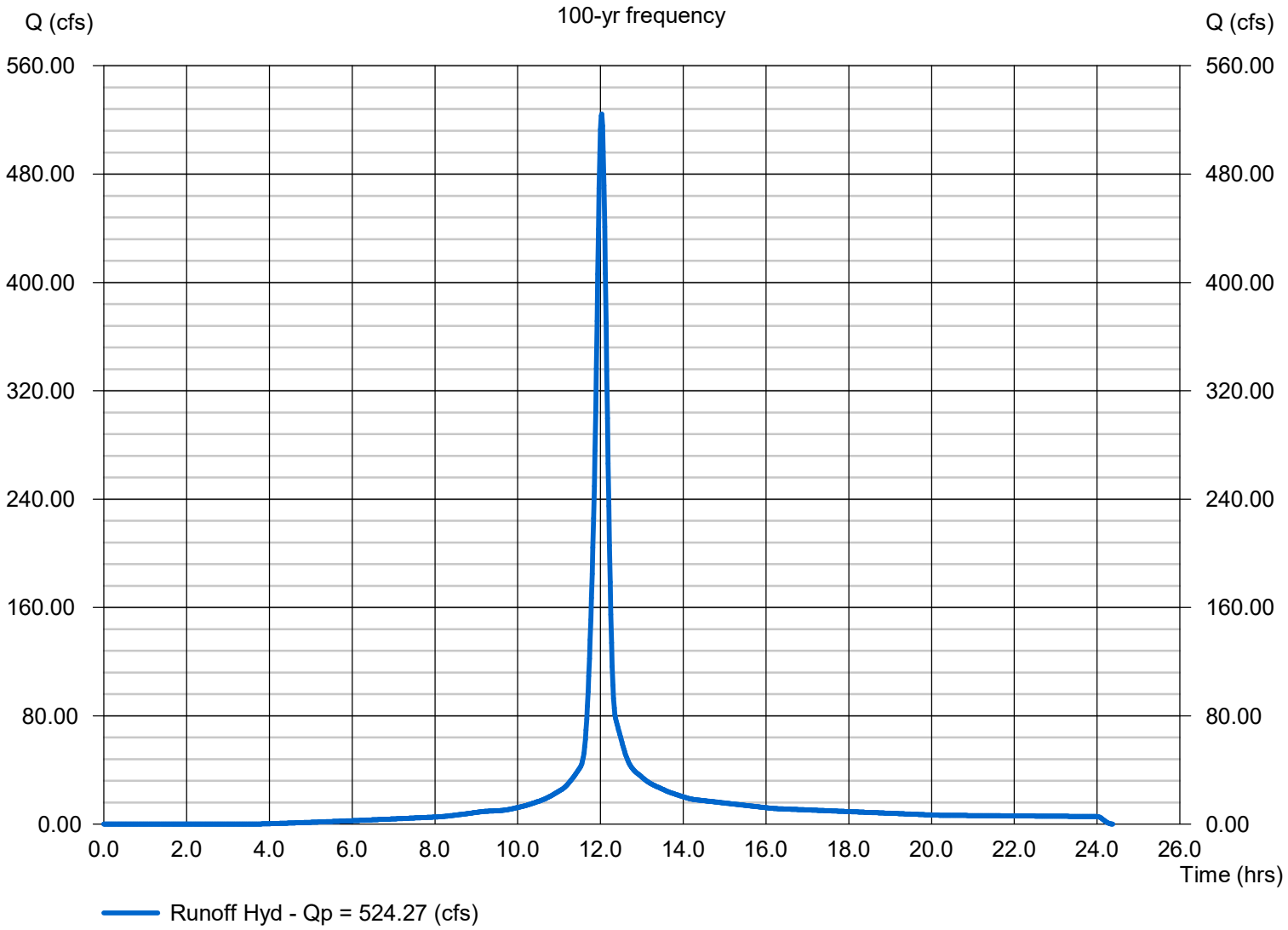
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

CULVERT1-Q100

Hydrograph type	= SCS	Peak discharge (cfs)	= 524.27
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 65.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 2300
Tc method	= Kirpich	Time of conc. (min)	= 15
Total precip. (in)	= 7.95	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 1,482,459 (cuft); 34.033 (acft)

Runoff Hydrograph



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

CULVERT2-Q10

Invert Elev Dn (ft)	=	375.00
Pipe Length (ft)	=	108.00
Slope (%)	=	0.93
Invert Elev Up (ft)	=	376.00
Rise (in)	=	44.0
Shape	=	Circular
Span (in)	=	44.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

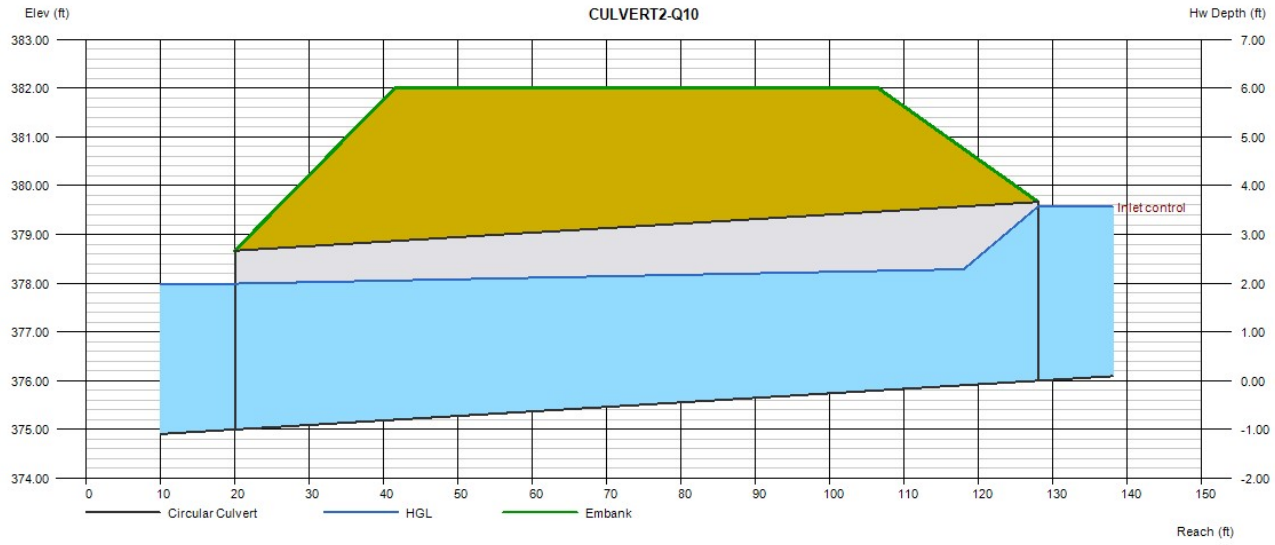
Top Elevation (ft)	=	382.00
Top Width (ft)	=	65.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	112.45
Qmax (cfs)	=	112.45
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	112.45
Qpipe (cfs)	=	112.45
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.10
Veloc Up (ft/s)	=	8.00
HGL Dn (ft)	=	377.99
HGL Up (ft)	=	378.31
Hw Elev (ft)	=	379.57
Hw/D (ft)	=	0.97
Flow Regime	=	Inlet Control



Hydrology Report

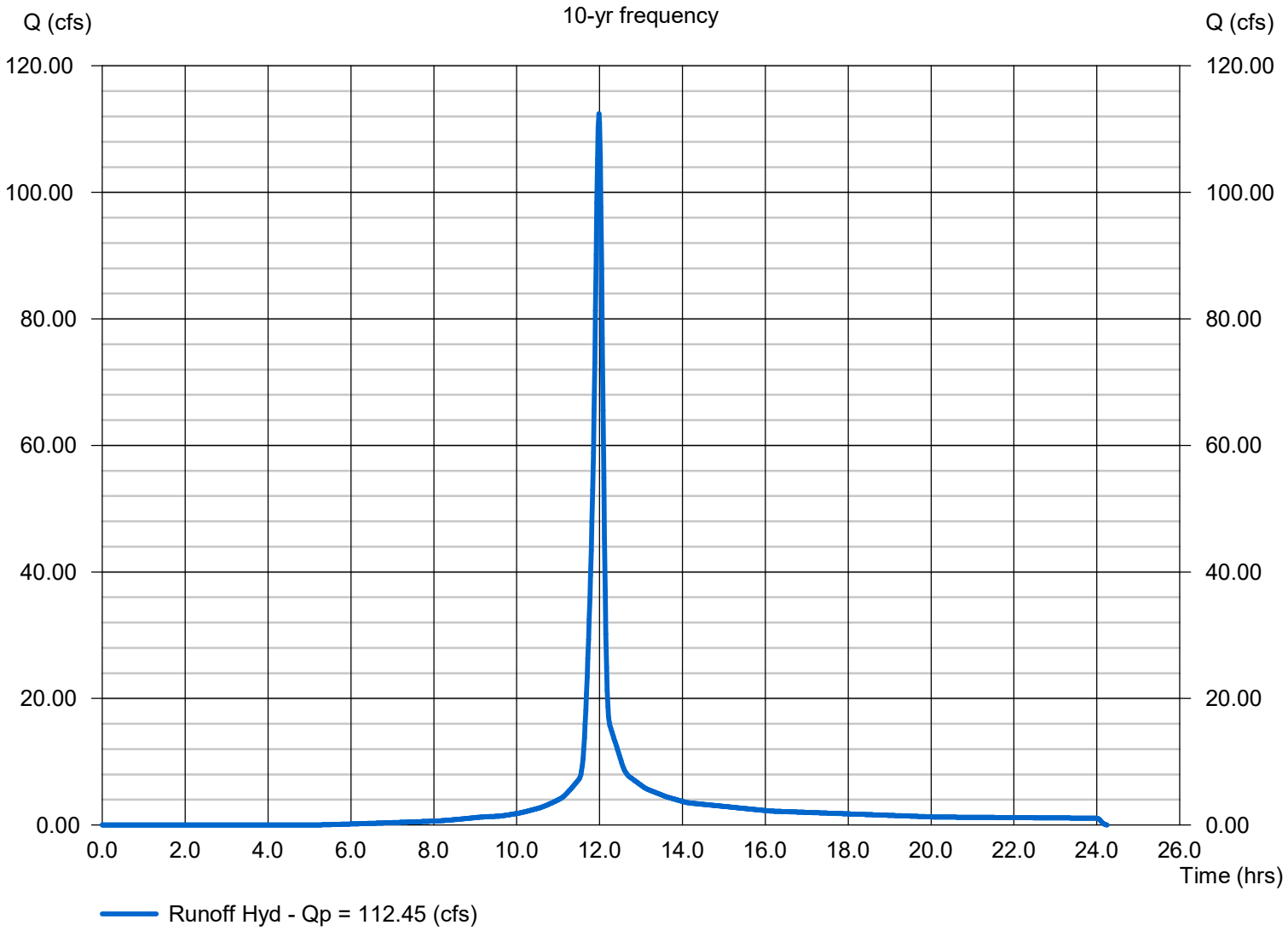
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

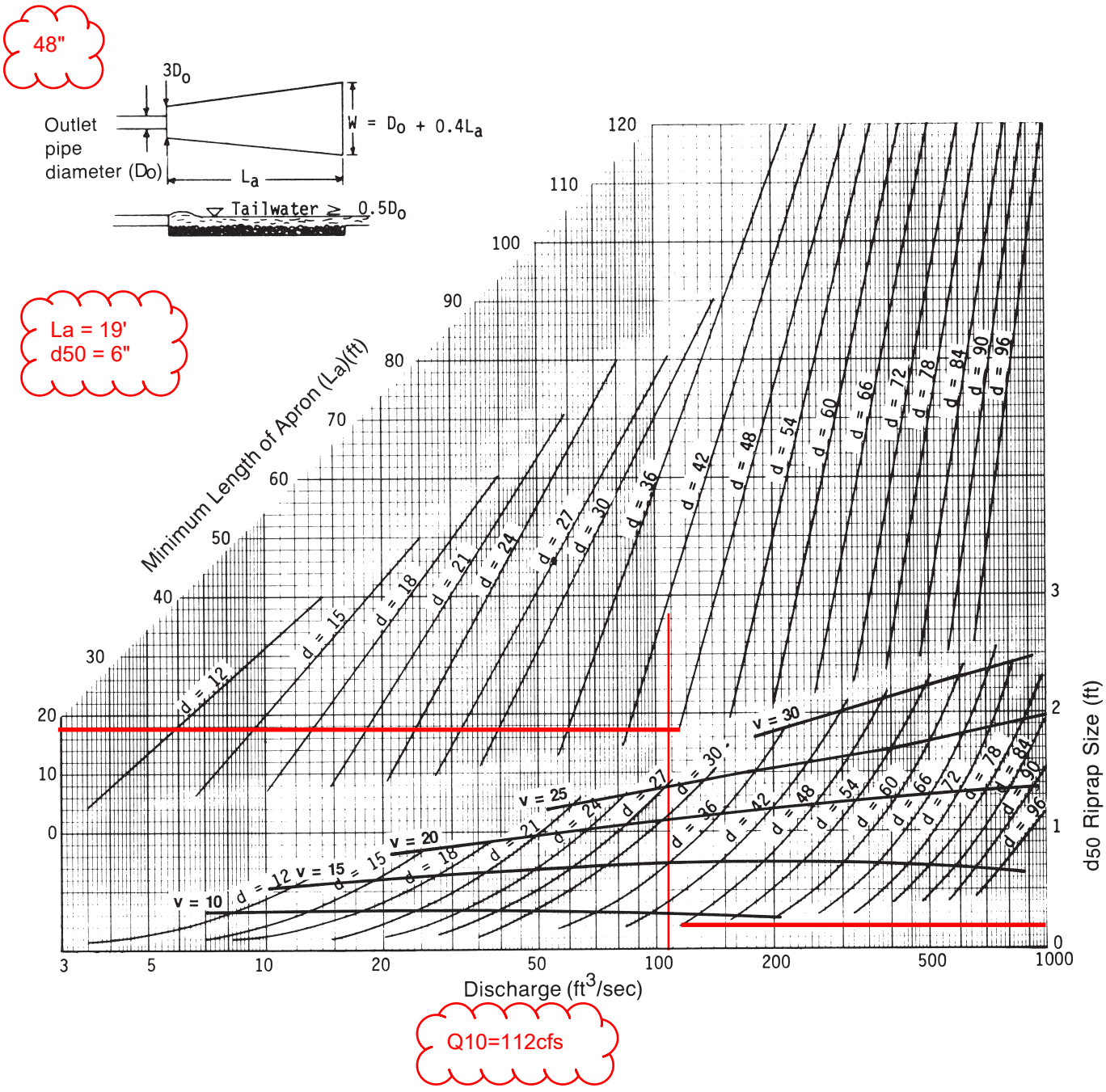
CULVERT2-Q10

Hydrograph type	= SCS	Peak discharge (cfs)	= 112.45
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 20.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 1200
Tc method	= Kirpich	Time of conc. (min)	= 9
Total precip. (in)	= 5.16	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 262,565 (cuft); 6.028 (acft)

Runoff Hydrograph





Curves may not be extrapolated.

Figure 8.06b Design of outlet protection from a round pipe flowing full, maximum tailwater condition ($T_w \geq 0.5$ diameter).

Culvert Report

CULVERT2-Q25

Invert Elev Dn (ft)	=	375.00
Pipe Length (ft)	=	108.00
Slope (%)	=	0.93
Invert Elev Up (ft)	=	376.00
Rise (in)	=	48.0
Shape	=	Circular
Span (in)	=	48.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

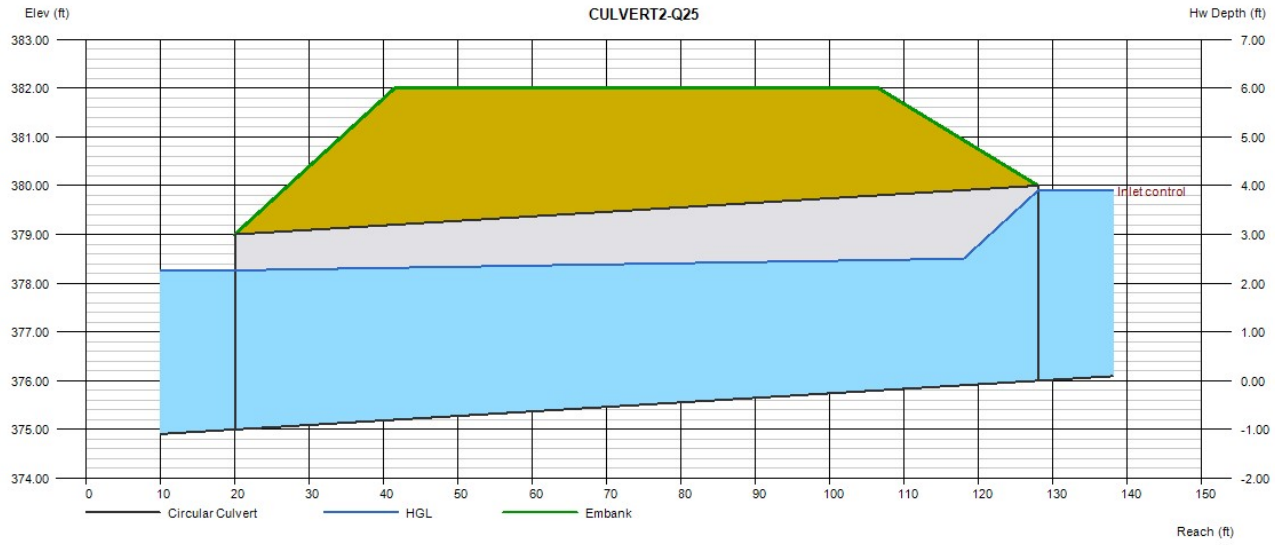
Top Elevation (ft)	=	382.00
Top Width (ft)	=	65.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	140.07
Qmax (cfs)	=	140.07
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	140.07
Qpipe (cfs)	=	140.07
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.38
Veloc Up (ft/s)	=	8.37
HGL Dn (ft)	=	378.26
HGL Up (ft)	=	378.53
Hw Elev (ft)	=	379.90
Hw/D (ft)	=	0.98
Flow Regime	=	Inlet Control



Hydrology Report

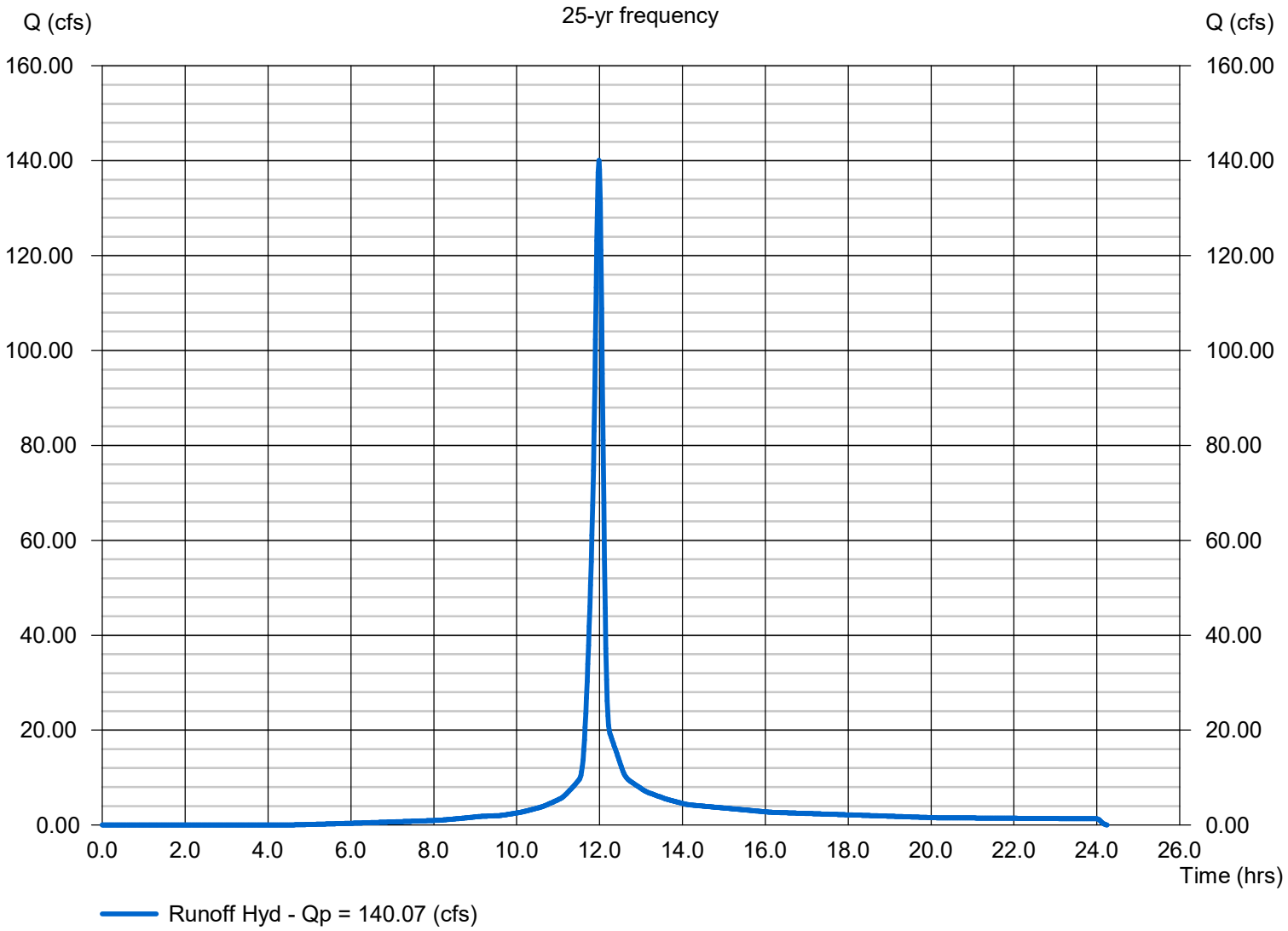
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Dec 22 2021

CULVERT2-Q25

Hydrograph type	= SCS	Peak discharge (cfs)	= 140.07
Storm frequency (yrs)	= 25	Time interval (min)	= 1
Drainage area (ac)	= 20.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 1200
Tc method	= Kirpich	Time of conc. (min)	= 9
Total precip. (in)	= 6.16	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 331,175 (cuft); 7.603 (acft)

Runoff Hydrograph



Culvert Report

CULVERT2-Q100

Invert Elev Dn (ft)	=	375.00
Pipe Length (ft)	=	108.00
Slope (%)	=	0.93
Invert Elev Up (ft)	=	376.00
Rise (in)	=	44.0
Shape	=	Circular
Span (in)	=	44.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

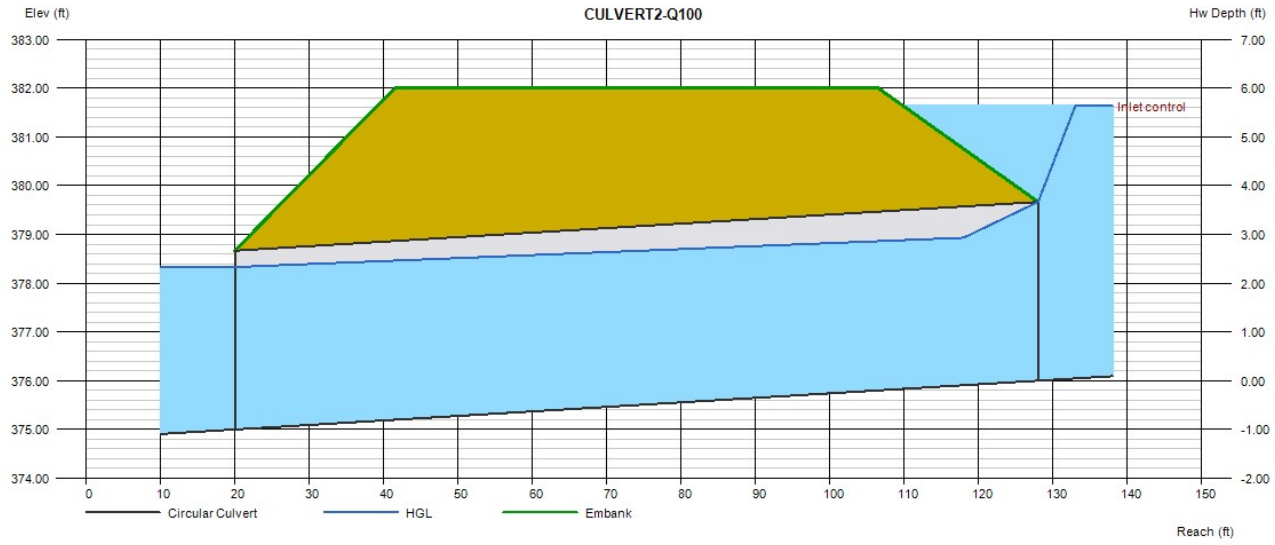
Top Elevation (ft)	=	382.00
Top Width (ft)	=	65.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	189.24
Qmax (cfs)	=	189.24
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	189.24
Qpipe (cfs)	=	189.24
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	9.39
Veloc Up (ft/s)	=	10.25
HGL Dn (ft)	=	378.33
HGL Up (ft)	=	378.99
Hw Elev (ft)	=	381.64
Hw/D (ft)	=	1.54
Flow Regime	=	Inlet Control



Hydrology Report

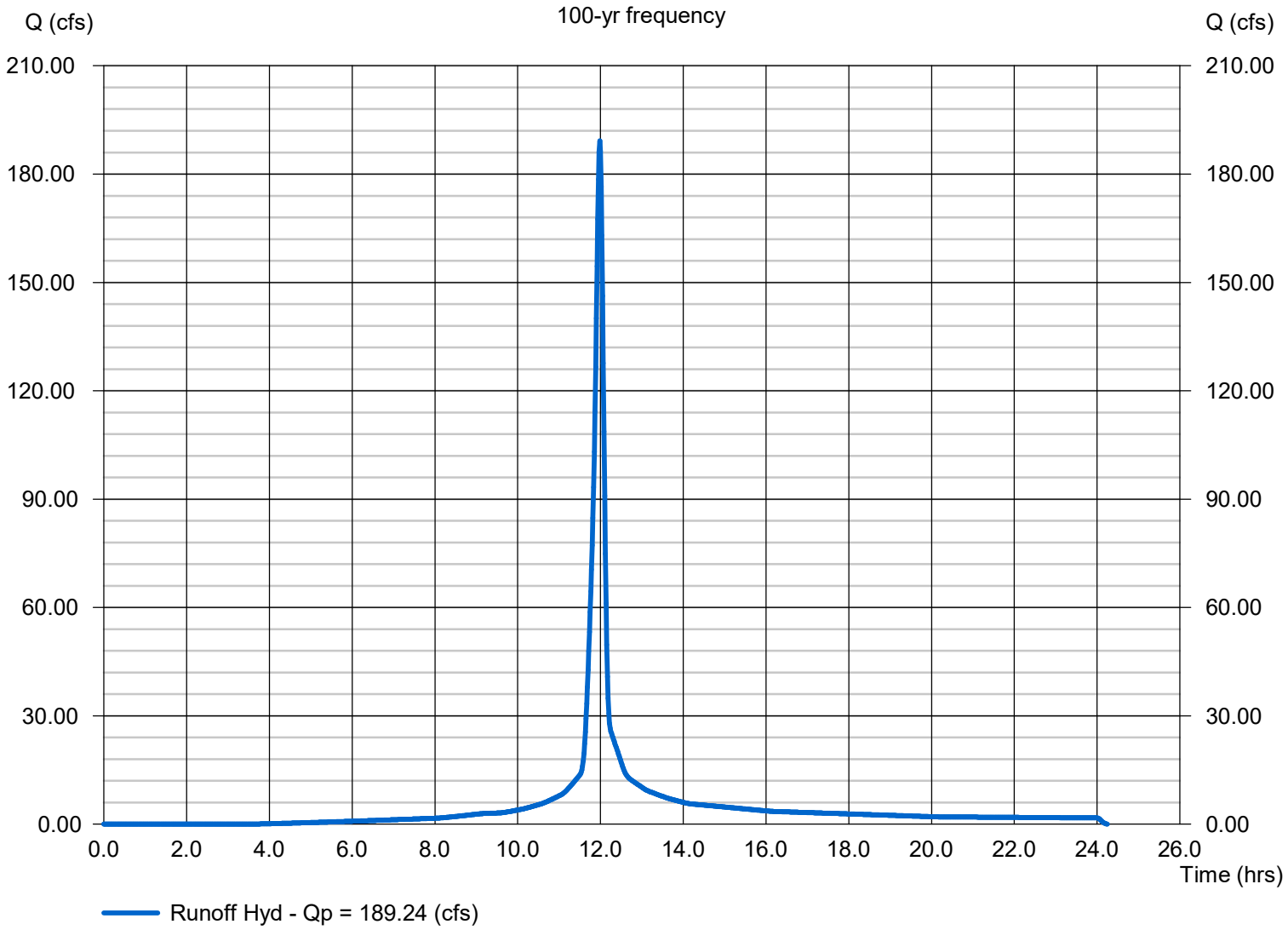
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Sep 10 2021

CULVERT2-Q100

Hydrograph type	= SCS	Peak discharge (cfs)	= 189.24
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 20.000	Curve number (CN)	= 86
Basin Slope (%)	= 1.60	Hydraulic length (ft)	= 1200
Tc method	= Kirpich	Time of conc. (min)	= 9
Total precip. (in)	= 7.95	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 456,141 (cuft); 10.472 (acft)

Runoff Hydrograph



Maps

NOAA Rainfall Data

Inlet Drainage Area Map

NOAA Atlas 14, Volume 2, Version 3
Location name: Zebulon, North Carolina, USA*
Latitude: 35.886°, Longitude: -78.4437°
Elevation: 384.61 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

AMS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Annual exceedance probability (1/years)								
	1/2	1/5	1/10	1/25	1/50	1/100	1/200	1/500	1/1000
5-min	5.17 (4.74-5.65)	6.25 (5.72-6.83)	7.13 (6.52-7.78)	7.96 (7.25-8.69)	8.60 (7.79-9.36)	9.16 (8.26-9.97)	9.66 (8.66-10.5)	10.2 (9.07-11.2)	10.7 (9.44-11.7)
10-min	4.14 (3.79-4.52)	5.01 (4.59-5.47)	5.70 (5.21-6.22)	6.34 (5.78-6.92)	6.85 (6.20-7.46)	7.28 (6.56-7.93)	7.66 (6.86-8.36)	8.08 (7.19-8.83)	8.45 (7.45-9.25)
15-min	3.47 (3.18-3.79)	4.23 (3.87-4.61)	4.80 (4.40-5.24)	5.36 (4.88-5.85)	5.78 (5.24-6.30)	6.13 (5.53-6.68)	6.44 (5.78-7.03)	6.78 (6.03-7.41)	7.07 (6.23-7.74)
30-min	2.40 (2.20-2.62)	3.00 (2.75-3.28)	3.48 (3.19-3.80)	3.97 (3.62-4.33)	4.35 (3.95-4.74)	4.70 (4.23-5.12)	5.01 (4.49-5.48)	5.40 (4.80-5.90)	5.73 (5.04-6.27)
60-min	1.50 (1.38-1.64)	1.93 (1.76-2.10)	2.27 (2.07-2.47)	2.64 (2.41-2.88)	2.95 (2.67-3.22)	3.24 (2.92-3.53)	3.52 (3.15-3.84)	3.87 (3.44-4.23)	4.18 (3.68-4.57)
2-hr	0.882 (0.805-0.968)	1.14 (1.04-1.25)	1.36 (1.23-1.49)	1.61 (1.45-1.76)	1.83 (1.64-2.00)	2.03 (1.81-2.22)	2.24 (1.99-2.45)	2.52 (2.21-2.76)	2.76 (2.40-3.03)
3-hr	0.623 (0.569-0.688)	0.810 (0.737-0.893)	0.971 (0.881-1.07)	1.16 (1.05-1.28)	1.33 (1.19-1.46)	1.49 (1.33-1.64)	1.66 (1.47-1.82)	1.90 (1.65-2.08)	2.11 (1.82-2.32)
6-hr	0.375 (0.343-0.413)	0.487 (0.445-0.536)	0.586 (0.533-0.643)	0.703 (0.636-0.770)	0.807 (0.725-0.882)	0.911 (0.811-0.995)	1.02 (0.899-1.11)	1.17 (1.02-1.27)	1.31 (1.12-1.43)
12-hr	0.220 (0.202-0.241)	0.287 (0.263-0.315)	0.347 (0.316-0.380)	0.419 (0.380-0.458)	0.484 (0.435-0.527)	0.550 (0.489-0.598)	0.621 (0.546-0.675)	0.719 (0.622-0.781)	0.810 (0.691-0.881)
24-hr	0.133 (0.123-0.143)	0.177 (0.165-0.191)	0.209 (0.194-0.225)	0.251 (0.232-0.270)	0.284 (0.261-0.305)	0.317 (0.291-0.342)	0.352 (0.322-0.380)	0.401 (0.364-0.433)	0.440 (0.397-0.476)
2-day	0.077 (0.071-0.083)	0.102 (0.094-0.109)	0.119 (0.111-0.128)	0.142 (0.131-0.153)	0.160 (0.148-0.172)	0.179 (0.164-0.192)	0.198 (0.181-0.213)	0.224 (0.204-0.242)	0.245 (0.221-0.266)
3-day	0.054 (0.050-0.058)	0.071 (0.066-0.077)	0.083 (0.078-0.090)	0.099 (0.092-0.107)	0.112 (0.103-0.120)	0.125 (0.115-0.134)	0.138 (0.126-0.148)	0.156 (0.142-0.168)	0.170 (0.154-0.184)
4-day	0.043 (0.040-0.046)	0.056 (0.052-0.060)	0.066 (0.061-0.070)	0.078 (0.072-0.083)	0.088 (0.081-0.094)	0.097 (0.090-0.104)	0.108 (0.099-0.115)	0.122 (0.111-0.131)	0.133 (0.121-0.143)
7-day	0.028 (0.026-0.030)	0.037 (0.034-0.039)	0.042 (0.040-0.045)	0.050 (0.047-0.054)	0.056 (0.052-0.060)	0.062 (0.057-0.066)	0.068 (0.063-0.073)	0.077 (0.071-0.083)	0.084 (0.076-0.090)
10-day	0.022 (0.021-0.024)	0.029 (0.027-0.031)	0.033 (0.031-0.035)	0.039 (0.036-0.041)	0.043 (0.040-0.046)	0.047 (0.044-0.050)	0.051 (0.047-0.055)	0.057 (0.053-0.061)	0.062 (0.057-0.066)
20-day	0.015 (0.014-0.016)	0.019 (0.018-0.020)	0.021 (0.020-0.023)	0.025 (0.023-0.026)	0.027 (0.025-0.029)	0.030 (0.028-0.032)	0.032 (0.030-0.035)	0.036 (0.033-0.038)	0.039 (0.036-0.042)
30-day	0.012 (0.012-0.013)	0.015 (0.014-0.016)	0.017 (0.016-0.018)	0.020 (0.018-0.021)	0.021 (0.020-0.023)	0.023 (0.022-0.025)	0.025 (0.023-0.026)	0.027 (0.025-0.029)	0.029 (0.027-0.031)
45-day	0.010 (0.010-0.011)	0.013 (0.012-0.013)	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.020 (0.018-0.021)	0.021 (0.020-0.023)	0.022 (0.021-0.024)
60-day	0.009 (0.009-0.010)	0.011 (0.011-0.012)	0.012 (0.012-0.013)	0.014 (0.013-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.019 (0.018-0.020)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of annual maxima series (AMS).

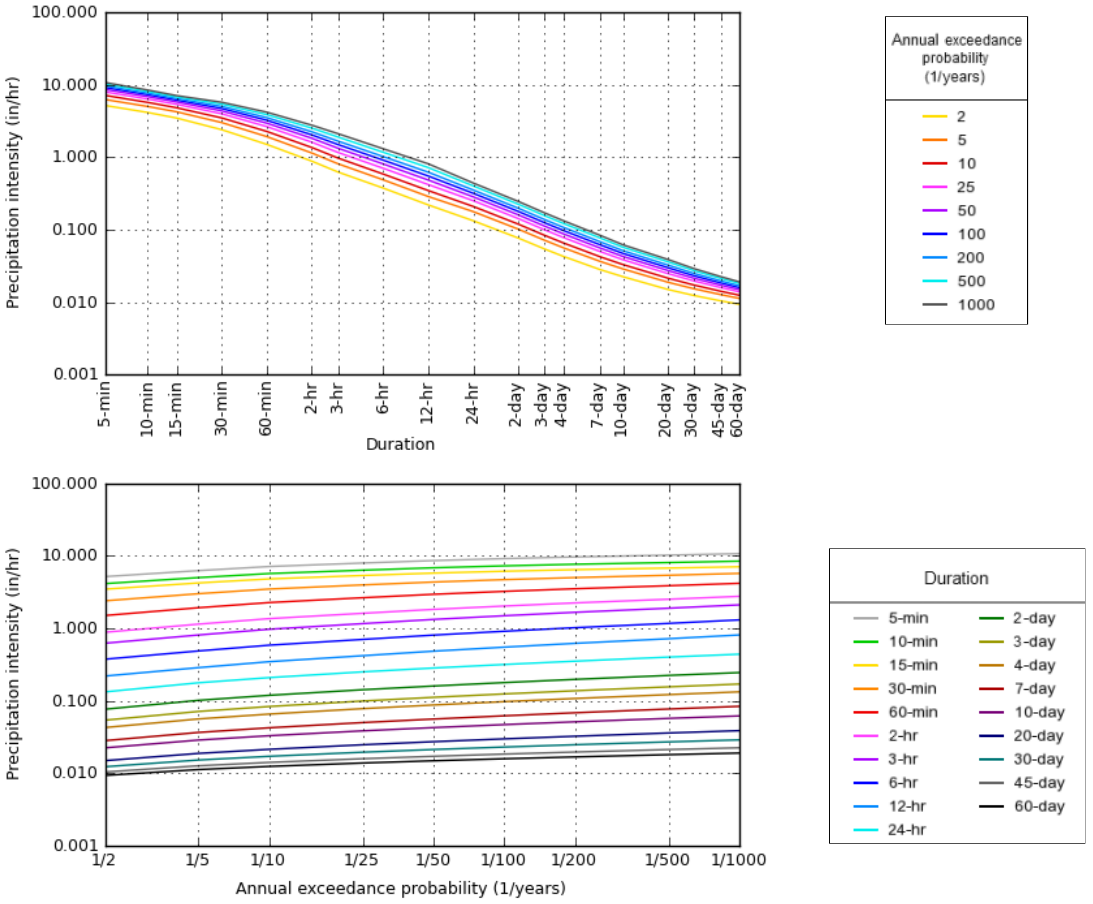
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and annual exceedance probability) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

AMS-based intensity-duration-frequency (IDF) curves
Latitude: 35.8860°, Longitude: -78.4437°



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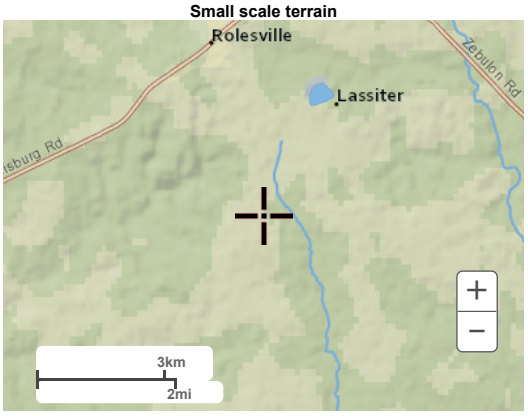
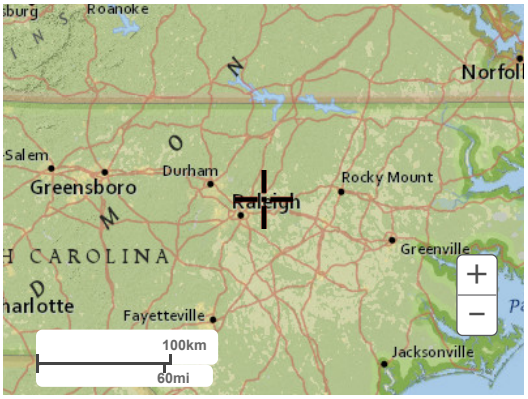
Back to Top

Maps & aerials

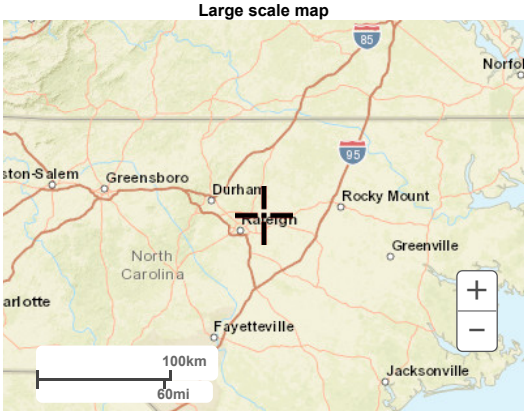
Small scale terrain



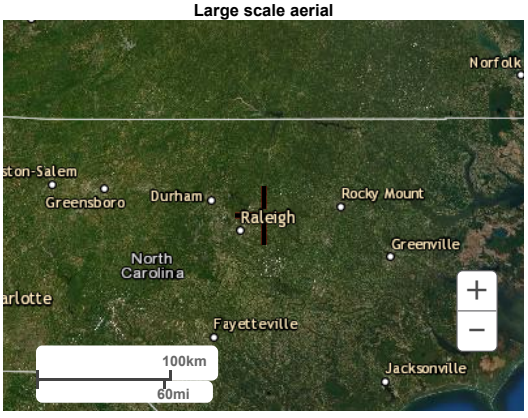
Large scale terrain



Large scale map



Large scale aerial



Back to Top

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National Oceanic and Atmospheric Administration
National Weather Service
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

INLET AREA MAP

ROLESVILLE CROSSING - July 21, 2022

0 100 200 Feet

TIMMONS GROUP

S:\332\43398-Wheeler_Tract\DWG\Sheet\Exhibit\43398-332C-EX-INLET.dwg | Plotted on 7/21/2022 8:10 PM | by April Blye

Appendices

Appendix A: Rolesville Rd and Mitchell Mill Storm Report

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

Project File: STM Rolesville Rd IT1.stm	Number of lines: 7	Date: 9/16/2021

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	55.640	0.000	Comb	0.00	0.37	0.50	10.0	378.40	0.90	378.90	36	Cir	0.013	1.50	384.65	3-5 to OUT
2	1	50.000	-91.192	Comb	0.00	0.09	0.90	10.0	380.90	1.30	381.55	15	Cir	0.013	0.50	385.27	3-4 to 3-5
3	2	153.563	-4.481	Comb	0.00	0.15	0.85	10.0	381.65	1.30	383.65	15	Cir	0.013	0.50	386.89	3-3 to 3-4
4	3	201.924	4.343	Comb	0.00	0.01	0.85	10.0	383.75	1.75	387.29	15	Cir	0.013	0.50	390.93	3-2 to 3-3
5	4	194.978	-0.021	Comb	0.00	0.15	0.45	10.0	387.16	1.37	389.83	15	Cir	0.013	0.50	393.10	3-1 to 3-2
6	5	47.558	0.000	DrGrt	0.00	0.40	0.45	10.0	389.83	5.11	392.26	15	Cir	0.013	1.00	395.27	3-0 to 3-1
7	1	75.564	89.020	DrGrt	0.00	0.44	0.50	10.0	381.64	1.01	382.40	15	Cir	0.012	1.00	0.00	3-6 to 3-5

Project File: STM Rolesville Rd IT1.stm | Number of lines: 7 | Date: 9/16/2021

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	3-5	Combination	384.65	Cir	2.17	2.17	36	Cir	378.90	15 15	Cir Cir	380.90 381.64
2	3-4	Combination	385.27	Cir	2.17	2.17	15	Cir	381.55	15	Cir	381.65
3	3-3	Combination	386.89	Cir	2.17	2.17	15	Cir	383.65	15	Cir	383.75
4	3-2	Combination	390.93	Cir	2.17	2.17	15	Cir	387.29	15	Cir	387.16
5	3-1	Combination	393.10	Cir	4.00	4.00	15	Cir	389.83	15	Cir	389.83
6	3-0	DropGrate	395.27	Cir	2.17	2.17	15	Cir	392.26			
7	3-6	DropGrate	0.00	Cir	4.00	4.00	15	Cir	382.40			

Project File: STM Rolesville Rd IT1.stm | Number of Structures: 7 | Run Date: 9/16/2021

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	3-5 to OUT	4.07	36	Cir	55.640	378.40	378.90	0.899	380.80	379.53	0.33	379.53	End	Combination
2	3-4 to 3-5	2.20	15	Cir	50.000	380.90	381.55	1.300	381.37	382.14	n/a	382.14	1	Combination
3	3-3 to 3-4	1.89	15	Cir	153.563	381.65	383.65	1.302	382.14	384.20	n/a	384.20	2	Combination
4	3-2 to 3-3	1.37	15	Cir	201.924	383.75	387.29	1.753	384.20	387.75	0.09	387.75	3	Combination
5	3-1 to 3-2	1.44	15	Cir	194.978	387.16	389.83	1.369	387.75	390.31	n/a	390.31 j	4	Combination
6	3-0 to 3-1	1.08	15	Cir	47.558	389.83	392.26	5.110	390.31	392.67	n/a	392.67 j	5	DropGrate
7	3-6 to 3-5	1.33	15	Cir	75.564	381.64	382.40	1.006	382.01	382.85	n/a	382.85	1	DropGrate

Project File: STM Rolesville Rd IT1.stm

Number of lines: 7

Run Date: 9/16/2021

NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.

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	3-5	1.11	0.08	1.20	0.00	Comb	4.0	3.00	6.90	3.00	2.30	Sag	2.00	0.083	0.030	0.013	0.18	2.49	0.35	2.49	2.0	Off
2	3-4	0.49	0.00	0.48	0.01	Comb	4.0	3.00	0.00	3.00	2.30	0.009	2.00	0.083	0.004	0.013	0.18	4.88	0.20	0.42	2.0	1
3	3-3	0.77	0.00	0.75	0.02	Comb	4.0	3.00	0.00	3.00	2.30	0.013	2.00	0.083	0.017	0.013	0.19	3.63	0.21	0.57	2.0	Off
4	3-2	0.05	0.00	0.05	0.00	Comb	4.0	3.00	0.00	3.00	2.30	0.025	2.00	0.083	0.020	0.013	0.06	0.76	0.17	0.00	2.0	3
5	3-1	0.41	0.05	0.46	0.00	Comb	4.0	3.00	0.00	3.00	2.30	0.031	2.00	0.083	0.024	0.013	0.14	1.65	0.17	0.00	2.0	4
6	3-0	1.08	0.00	1.03	0.05	DrGrt	0.0	0.00	0.00	3.00	3.00	0.019	2.00	0.100	0.100	0.024	0.16	5.22	0.16	5.22	0.0	5
7	3-6	1.33	0.00	1.25	0.08	DrGrt	0.0	0.00	0.00	3.00	3.00	0.013	2.00	0.100	0.100	0.024	0.20	6.02	0.20	6.02	0.0	1

Project File: STM Rolesville Rd IT1.stm | Number of lines: 7 | Run Date: 9/16/2021

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

WheelerTr

Line No.	Line ID	Inlet ID	Gnd/Rim El Up (ft)	Gnd/Rim El Dn (ft)	Invert Up (ft)	Invert Dn (ft)	Line Length (ft)	Line Size (in)	Line Type	Line Slope (%)	Drng Area (ac)	Runoff Coeff (C)	i Sys (in/hr)	n-val Pipe	Flow Rate (cfs)	Capac Full (cfs)	HGL Up (ft)	HGL Dn (ft)	Vel Up (ft/s)
1	3-5 to OUT	3-5	384.65	384.64	378.90	378.40	55.640	36	Cir	0.90	0.37	0.50	4.68	0.013	4.07	63.22	379.53	380.80	3.77
2	3-4 to 3-5	3-4	385.27	384.65	381.55	380.90	50.000	15	Cir	1.30	0.09	0.90	4.73	0.013	2.20	7.36	382.14	381.37	3.85
3	3-3 to 3-4	3-3	386.89	385.27	383.65	381.65	153.563	15	Cir	1.30	0.15	0.85	4.92	0.013	1.89	7.37	384.20	382.14	3.66
4	3-2 to 3-3	3-2	390.93	386.89	387.29	383.75	201.924	15	Cir	1.75	0.01	0.85	5.35	0.013	1.37	8.55	387.75	384.20	3.32
5	3-1 to 3-2	3-1	393.10	390.93	389.83	387.16	194.978	15	Cir	1.37	0.15	0.45	5.84	0.013	1.44	7.56	390.31 j	387.75	3.38
6	3-0 to 3-1	3-0	395.27	393.10	392.26	389.83	47.558	15	Cir	5.11	0.40	0.45	6.02	0.013	1.08	14.60	392.67 j	390.31	3.10
7	3-6 to 3-5	3-6	0.00	384.65	382.40	381.64	75.564	15	Cir	1.01	0.44	0.50	6.02	0.012	1.33	7.02	382.85	382.01	3.29

Project File: STM Rolesville Rd IT1.stm | Number of lines: 7 | Date: 9/16/2021

NOTES: Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80 -- Return period = 10 Yrs. ; ** Critical depth

WheelerTr

Vel Dn (ft/s)	
0.67	
5.23	
4.22	
3.48	
2.52	
2.53	
4.39	

Project File: STM Rolesville Rd IT1.stm	Number of lines: 7	Date: 9/16/2021

NOTES: ** Critical depth

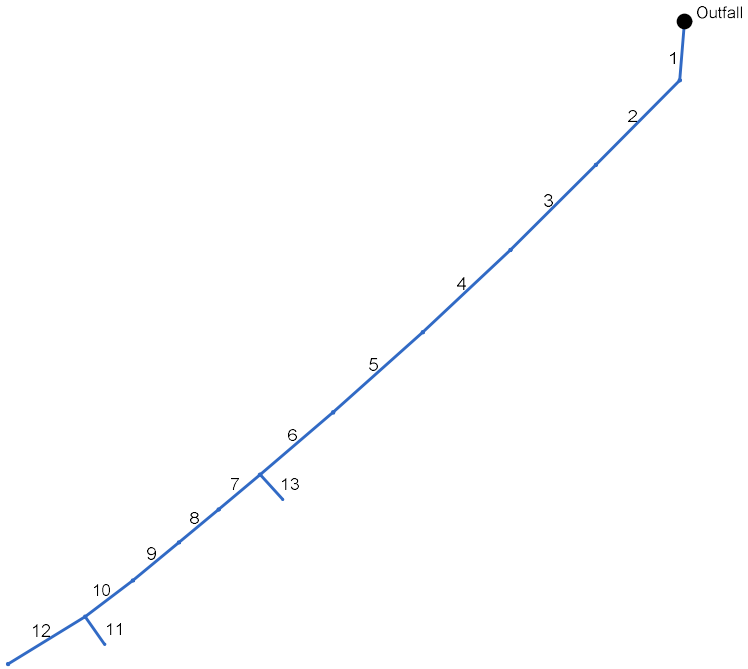
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	4.07	378.40	380.80	2.40	1.08	0.67	0.22	381.02	0.000	55.640	378.90	379.53	0.63**	1.08	3.77	0.22	379.75	0.000	0.000	n/a	1.50	0.33
2	15	2.20	380.90	381.37	0.47*	0.42	5.23	0.23	381.60	0.000	50.000	381.55	382.14	0.59**	0.57	3.85	0.23	382.37	0.000	0.000	n/a	0.50	n/a
3	15	1.89	381.65	382.14	0.49	0.45	4.22	0.21	382.35	0.000	153.563	383.65	384.20	0.55**	0.52	3.66	0.21	384.40	0.000	0.000	n/a	0.50	n/a
4	15	1.37	383.75	384.20	0.45	0.39	3.48	0.17	384.37	0.000	201.924	387.29	387.75	0.46**	0.41	3.32	0.17	387.92	0.000	0.000	n/a	0.50	0.09
5	15	1.44	387.16	387.75	0.59	0.43	2.52	0.18	387.93	0.000	194.978	389.83	390.31 j	0.48**	0.43	3.38	0.18	390.48	0.000	0.000	n/a	0.50	n/a
6	15	1.08	389.83	390.31	0.48	0.35	2.53	0.15	390.45	0.000	47.558	392.26	392.67 j	0.41**	0.35	3.10	0.15	392.82	0.000	0.000	n/a	1.00	n/a
7	15	1.33	381.64	382.01	0.37*	0.30	4.39	0.17	382.18	0.000	75.564	382.40	382.85	0.45**	0.40	3.29	0.17	383.02	0.000	0.000	n/a	1.00	n/a

Project File: STM Rolesville Rd IT1.stm | Number of lines: 7 | Run Date: 9/16/2021

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

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



Project File: STM Mitchell Mill Rd IT2.stm	Number of lines: 13	Date: 9/16/2021

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	99.000	94.739	Comb	0.00	0.24	0.85	10.0	374.69	0.31	375.00	24	Cir	0.013	1.03	379.27	4-8 to OUT
2	1	198.637	39.872	Comb	0.00	0.24	0.85	10.0	374.80	1.75	378.28	24	Cir	0.013	0.50	382.78	4-7 to 4-8
3	2	200.957	0.449	Comb	0.00	0.09	0.85	10.0	378.38	1.30	380.99	24	Cir	0.013	0.50	385.54	4-6 to 4-7
4	3	200.636	1.518	Comb	0.00	0.24	0.85	10.0	381.09	1.75	384.60	24	Cir	0.013	0.50	389.08	4-5 to 4-6
5	4	200.512	1.560	Comb	0.00	0.18	0.85	10.0	385.26	0.60	386.46	24	Cir	0.013	0.50	392.18	4-4 to 4-5
6	5	160.327	1.344	Comb	0.00	0.14	0.85	10.0	386.56	0.51	387.37	24	Cir	0.013	1.50	393.38	4-3 to 4-4
7	6	90.614	0.315	Comb	0.00	0.11	0.85	10.0	387.47	0.66	388.07	24	Cir	0.013	0.50	393.41	4-2 to 4-3
8	7	85.853	0.497	Comb	0.00	0.13	0.85	10.0	388.17	0.44	388.55	24	Cir	0.013	0.50	393.83	4-1 to 4-2 (1) (1)
9	8	99.787	-0.073	Comb	0.00	0.15	0.85	10.0	388.55	0.37	388.92	24	Cir	0.013	0.50	393.94	4-1 to 4-2 (1)
10	9	100.059	2.577	Comb	0.00	0.26	0.85	10.0	388.83	0.63	389.46	24	Cir	0.013	1.50	394.37	4-1 to 4-2
11	10	56.866	-88.460	None	0.00	1.44	0.50	15.0	391.16	1.55	392.04	18	Cir	0.013	1.00	394.39	to 4-1
12	10	150.632	5.443	Comb	0.00	0.30	0.70	10.0	389.56	0.50	390.31	24	Cir	0.013	1.00	395.27	4-0 to 4-1
13	6	55.985	-91.722	None	0.00	0.65	0.50	15.0	389.78	0.45	390.03	18	Cir	0.013	1.00	1.46	to 4-3

Project File: STM Mitchell Mill Rd IT2.stm | Number of lines: 13 | Date: 9/16/2021

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	4-8	Combination	379.27	Cir	2.17	2.17	24	Cir	375.00	24	Cir	374.80
2	4-7	Combination	382.78	Cir	2.17	2.17	24	Cir	378.28	24	Cir	378.38
3	4-6	Combination	385.54	Cir	2.17	2.17	24	Cir	380.99	24	Cir	381.09
4	4-5	Combination	389.08	Cir	2.17	2.17	24	Cir	384.60	24	Cir	385.26
5	4-4	Combination	392.18	Cir	2.17	2.17	24	Cir	386.46	24	Cir	386.56
6	4-3	Combination	393.38	Cir	2.17	2.17	24	Cir	387.37	24 18	Cir Cir	387.47 389.78
7	4-2	Combination	393.41	Cir	2.17	2.17	24	Cir	388.07	24	Cir	388.17
8	Structure - (25)	Combination	393.83	Cir	2.17	2.17	24	Cir	388.55	24	Cir	388.55
9	Structure - (24)	Combination	393.94	Cir	2.17	2.17	24	Cir	388.92	24	Cir	388.83
10	4-1	Combination	394.37	Cir	2.17	2.17	24	Cir	389.46	18 24	Cir Cir	391.16 389.56
11	IN-SOUTH	None	394.39	n/a	n/a	n/a	18	Cir	392.04			
12	4-0	Combination	395.27	Cir	2.17	2.17	24	Cir	390.31			
13	IN-NORTH	None	1.46	n/a	n/a	n/a	18	Cir	390.03			

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	4-8 to OUT	11.24	24	Cir	99.000	374.69	375.00	0.313	376.19	376.48	0.32	376.81	End	Combination
2	4-7 to 4-8	10.63	24	Cir	198.637	374.80	378.28	1.752	376.81	379.45	n/a	379.45 j	1	Combination
3	4-6 to 4-7	10.01	24	Cir	200.957	378.38	380.99	1.299	379.45	382.12	n/a	382.12	2	Combination
4	4-5 to 4-6	9.92	24	Cir	200.636	381.09	384.60	1.749	382.12	385.73	n/a	385.73	3	Combination
5	4-4 to 4-5	9.27	24	Cir	200.512	385.26	386.46	0.598	386.30	387.55	0.22	387.55	4	Combination
6	4-3 to 4-4	8.79	24	Cir	160.327	386.56	387.37	0.505	387.62	388.43	n/a	388.43	5	Combination
7	4-2 to 4-3	6.88	24	Cir	90.614	387.47	388.07	0.662	388.43	389.00	n/a	389.00 j	6	Combination
8	4-1 to 4-2 (1) (1)	6.56	24	Cir	85.853	388.17	388.55	0.443	389.09	389.47	0.17	389.64	7	Combination
9	4-1 to 4-2 (1)	6.17	24	Cir	99.787	388.55	388.92	0.371	389.64	389.85	0.15	389.99	8	Combination
10	4-1 to 4-2	5.69	24	Cir	100.059	388.83	389.46	0.630	389.99	390.30	n/a	390.30 j	9	Combination
11	to 4-1	3.69	18	Cir	56.866	391.16	392.04	1.548	391.71	392.77	0.29	392.77	10	None
12	4-0 to 4-1	1.26	24	Cir	150.632	389.56	390.31	0.498	390.30	390.70	0.14	390.70	10	Combination
13	to 4-3	1.67	18	Cir	55.985	389.78	390.03	0.447	390.28	390.53	0.16	390.69	6	None

Project File: STM Mitchell Mill Rd IT2.stm | Number of lines: 13 | Run Date: 9/16/2021

NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.

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	4-8	1.23	0.12	1.28	0.07	Comb	4.0	3.00	0.00	3.00	2.30	0.018	2.00	0.083	0.035	0.013	0.23	3.69	0.24	0.90	2.0	Off
2	4-7	1.23	0.00	1.11	0.12	Comb	4.0	3.00	0.00	3.00	2.30	0.015	2.00	0.083	0.016	0.013	0.22	5.41	0.26	1.15	2.0	1
3	4-6	0.46	0.00	0.46	0.00	Comb	4.0	3.00	0.00	3.00	2.30	0.013	2.00	0.083	0.015	0.013	0.16	1.95	0.17	0.00	2.0	2
4	4-5	1.23	0.04	1.20	0.07	Comb	4.0	3.00	0.00	3.00	2.30	0.018	2.00	0.083	0.029	0.013	0.22	3.83	0.24	0.88	2.0	Off
5	4-4	0.92	0.06	0.94	0.04	Comb	4.0	3.00	0.00	3.00	2.30	0.016	2.00	0.083	0.020	0.013	0.20	3.93	0.23	0.74	2.0	4
6	4-3	0.72	0.02	0.68	0.06	Comb	4.0	2.30	0.00	3.00	2.30	0.004	2.00	0.083	0.022	0.013	0.24	5.16	0.26	1.14	2.0	5
7	4-2	0.56	0.03	0.57	0.02	Comb	4.0	3.00	0.00	3.00	2.30	0.003	2.00	0.083	0.034	0.013	0.24	4.02	0.24	0.85	2.0	6
8	Structure - (25)	0.67	0.00	0.63	0.03	Comb	4.0	3.00	0.00	3.00	2.30	0.003	2.00	0.083	0.032	0.013	0.24	4.25	0.25	0.95	2.0	7
9	Structure - (24)	0.77	0.00	0.73	0.04	Comb	4.0	3.00	0.00	3.00	2.30	0.004	2.00	0.083	0.038	0.013	0.24	4.01	0.25	0.95	2.0	Off
10	4-1	1.33	0.03	1.29	0.06	Comb	4.0	3.00	0.00	3.00	2.30	0.010	2.00	0.083	0.065	0.013	0.25	3.34	0.25	0.96	2.0	Off
11	IN-SOUTH	3.69	0.00	0.00	3.69	None	0.0	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
12	4-0	1.26	0.00	1.24	0.03	Comb	4.0	3.00	0.00	3.00	2.30	0.028	2.00	0.083	0.040	0.013	0.20	2.96	0.21	0.57	2.0	10
13	IN-NORTH	1.67	0.00	0.00	1.67	None	0.0	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off

Project File: STM Mitchell Mill Rd IT2.stm | Number of lines: 13 | Run Date: 9/16/2021

NOTES: Inlet N-Values = 0.016; Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

WheelerTr

Line No.	Line ID	Inlet ID	Gnd/Rim El Up (ft)	Gnd/Rim El Dn (ft)	Invert Up (ft)	Invert Dn (ft)	Line Length (ft)	Line Size (in)	Line Type	Line Slope (%)	Drng Area (ac)	Runoff Coeff (C)	i Sys (in/hr)	n-val Pipe	Flow Rate (cfs)	Capac Full (cfs)	HGL Up (ft)	HGL Dn (ft)	Vel Up (ft/s)
1	4-8 to OUT	4-8	379.27	370.29	375.00	374.69	99.000	24	Cir	0.31	0.24	0.85	4.06	0.013	11.24	12.66	376.48	376.19	4.50
2	4-7 to 4-8	4-7	382.78	379.27	378.28	374.80	198.637	24	Cir	1.75	0.24	0.85	4.15	0.013	10.63	29.94	379.45 j	376.81	5.58
3	4-6 to 4-7	4-6	385.54	382.78	380.99	378.38	200.957	24	Cir	1.30	0.09	0.85	4.24	0.013	10.01	25.78	382.12	379.45	5.46
4	4-5 to 4-6	4-5	389.08	385.54	384.60	381.09	200.636	24	Cir	1.75	0.24	0.85	4.34	0.013	9.92	29.92	385.73	382.12	5.45
5	4-4 to 4-5	4-4	392.18	389.08	386.46	385.26	200.512	24	Cir	0.60	0.18	0.85	4.46	0.013	9.27	17.50	387.55	386.30	5.32
6	4-3 to 4-4	4-3	393.38	392.18	387.37	386.56	160.327	24	Cir	0.51	0.14	0.85	4.56	0.013	8.79	16.08	388.43	387.62	5.22
7	4-2 to 4-3	4-2	393.41	393.38	388.07	387.47	90.614	24	Cir	0.66	0.11	0.85	4.64	0.013	6.88	18.40	389.00 j	388.43	4.81
8	4-1 to 4-2 (1) (1)	Structure - (25)	393.83	393.41	388.55	388.17	85.853	24	Cir	0.44	0.13	0.85	4.72	0.013	6.56	15.05	389.47	389.09	4.64
9	4-1 to 4-2 (1)	Structure - (24)	393.94	393.83	388.92	388.55	99.787	24	Cir	0.37	0.15	0.85	4.83	0.013	6.17	13.77	389.85	389.64	4.33
10	4-1 to 4-2	4-1	394.37	393.94	389.46	388.83	100.059	24	Cir	0.63	0.26	0.85	4.95	0.013	5.69	17.95	390.30 j	389.99	4.53
11	to 4-1	IN-SOUTH	394.39	394.37	392.04	391.16	56.866	18	Cir	1.55	1.44	0.50	5.12	0.013	3.69	13.06	392.77	391.71	4.30
12	4-0 to 4-1	4-0	395.27	394.37	390.31	389.56	150.632	24	Cir	0.50	0.30	0.70	6.02	0.013	1.26	15.96	390.70	390.30	2.96
13	to 4-3	IN-NORTH	1.46	393.38	390.03	389.78	55.985	18	Cir	0.45	0.65	0.50	5.12	0.013	1.67	7.02	390.53	390.28	3.24

Project File: STM Mitchell Mill Rd IT2.stm | Number of lines: 13 | Date: 9/16/2021

NOTES: Intensity = 72.98 / (Inlet time + 12.40) ^ 0.80 -- Return period = 10 Yrs. ; ** Critical depth

WheelerTr

Vel Dn (ft/s)	
4.45	
3.38	
5.87	
6.07	
5.65	
5.23	
4.64	
4.62	
3.53	
3.00	
6.35	
1.19	
3.25	

Project File: STM Mitchell Mill Rd IT2.stm	Number of lines: 13	Date: 9/16/2021

NOTES: ** Critical depth

Hydraulic Grade Line Computations

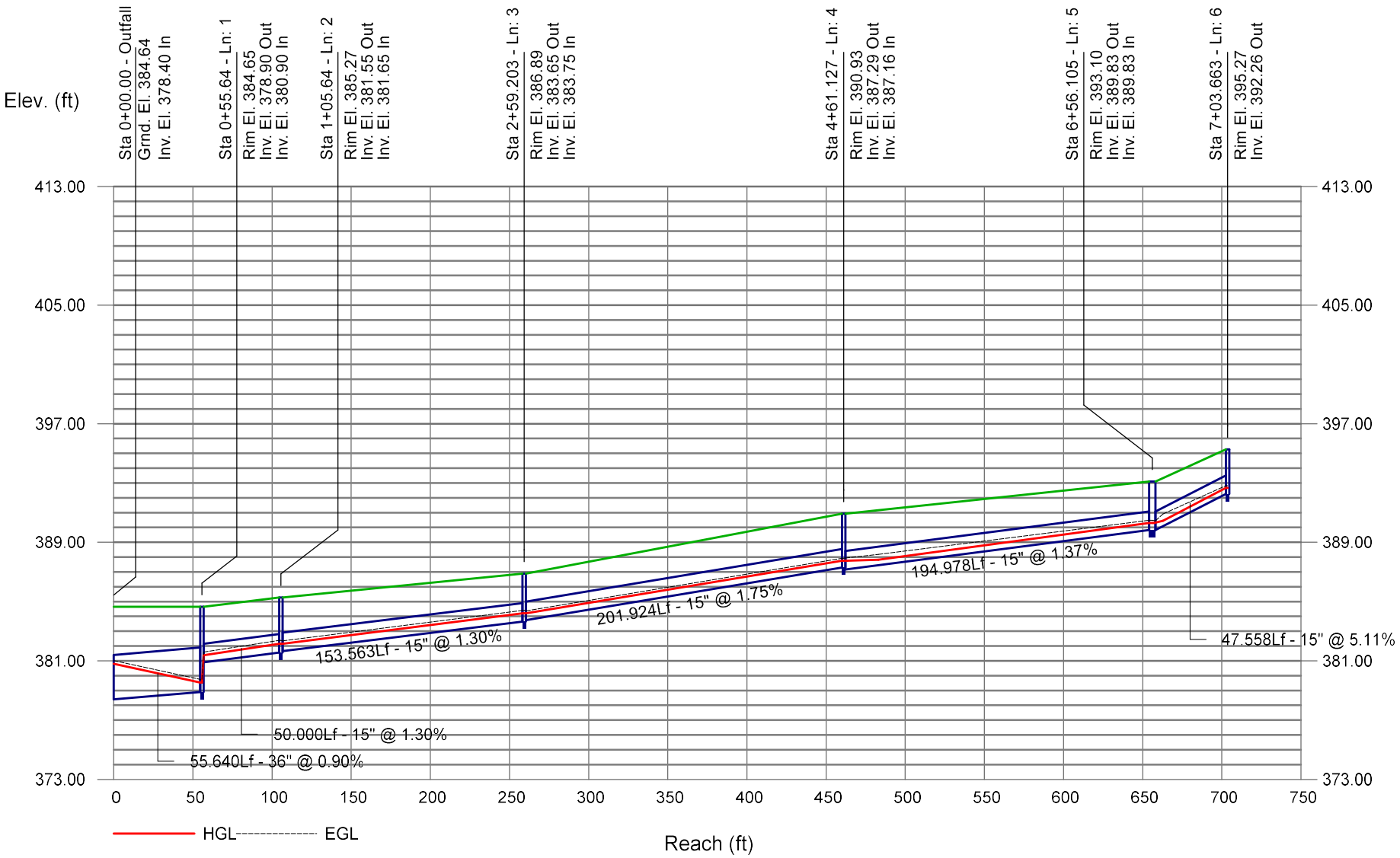
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	11.24	374.69	376.19	1.50	2.53	4.45	0.31	376.50	0.297	99.000	375.00	376.48	1.48	2.50	4.50	0.32	376.80	0.305	0.301	0.298	1.03	0.32
2	24	10.63	374.80	376.81	2.00	1.90	3.38	0.18	376.99	0.221	198.637	378.28	379.45 j	1.17**	1.90	5.58	0.48	379.93	0.533	0.377	n/a	0.50	0.24
3	24	10.01	378.38	379.45	1.07	1.71	5.87	0.46	379.91	0.000	200.957	380.99	382.12	1.13**	1.83	5.46	0.46	382.59	0.000	0.000	n/a	0.50	n/a
4	24	9.92	381.09	382.12	1.03	1.63	6.07	0.46	382.58	0.000	200.636	384.60	385.73	1.13**	1.82	5.45	0.46	386.19	0.000	0.000	n/a	0.50	n/a
5	24	9.27	385.26	386.30	1.04*	1.64	5.65	0.44	386.74	0.000	200.512	386.46	387.55	1.09**	1.74	5.32	0.44	387.99	0.000	0.000	n/a	0.50	0.22
6	24	8.79	386.56	387.62	1.06*	1.68	5.23	0.42	388.04	0.000	160.327	387.37	388.43	1.06**	1.68	5.22	0.42	388.85	0.000	0.000	n/a	1.50	n/a
7	24	6.88	387.47	388.43	0.96	1.43	4.64	0.36	388.79	0.000	90.614	388.07	389.00 j	0.93**	1.43	4.81	0.36	389.36	0.000	0.000	n/a	0.50	0.18
8	24	6.56	388.17	389.09	0.92*	1.42	4.62	0.33	389.43	0.442	85.853	388.55	389.47	0.92	1.41	4.64	0.33	389.81	0.446	0.444	0.381	0.50	0.17
9	24	6.17	388.55	389.64	1.09	1.75	3.53	0.19	389.83	0.224	99.787	388.92	389.85	0.93	1.43	4.33	0.29	390.14	0.385	0.305	0.304	0.50	0.15
10	24	5.69	388.83	389.99	1.16	1.26	3.00	0.32	390.31	0.000	100.059	389.46	390.30 j	0.84**	1.26	4.53	0.32	390.62	0.000	0.000	n/a	1.50	n/a
11	18	3.69	391.16	391.71	0.55*	0.58	6.35	0.29	391.99	0.000	56.866	392.04	392.77	0.73**	0.86	4.30	0.29	393.06	0.000	0.000	n/a	1.00	0.29
12	24	1.26	389.56	390.30	0.74	0.43	1.19	0.14	390.44	0.000	150.632	390.31	390.70	0.39**	0.43	2.96	0.14	390.83	0.000	0.000	n/a	1.00	0.14
13	18	1.67	389.78	390.28	0.50*	0.51	3.25	0.16	390.44	0.446	55.985	390.03	390.53	0.50	0.51	3.24	0.16	390.69	0.442	0.444	0.249	1.00	0.16

Project File: STM Mitchell Mill Rd IT2.stm | Number of lines: 13 | Run Date: 9/16/2021

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

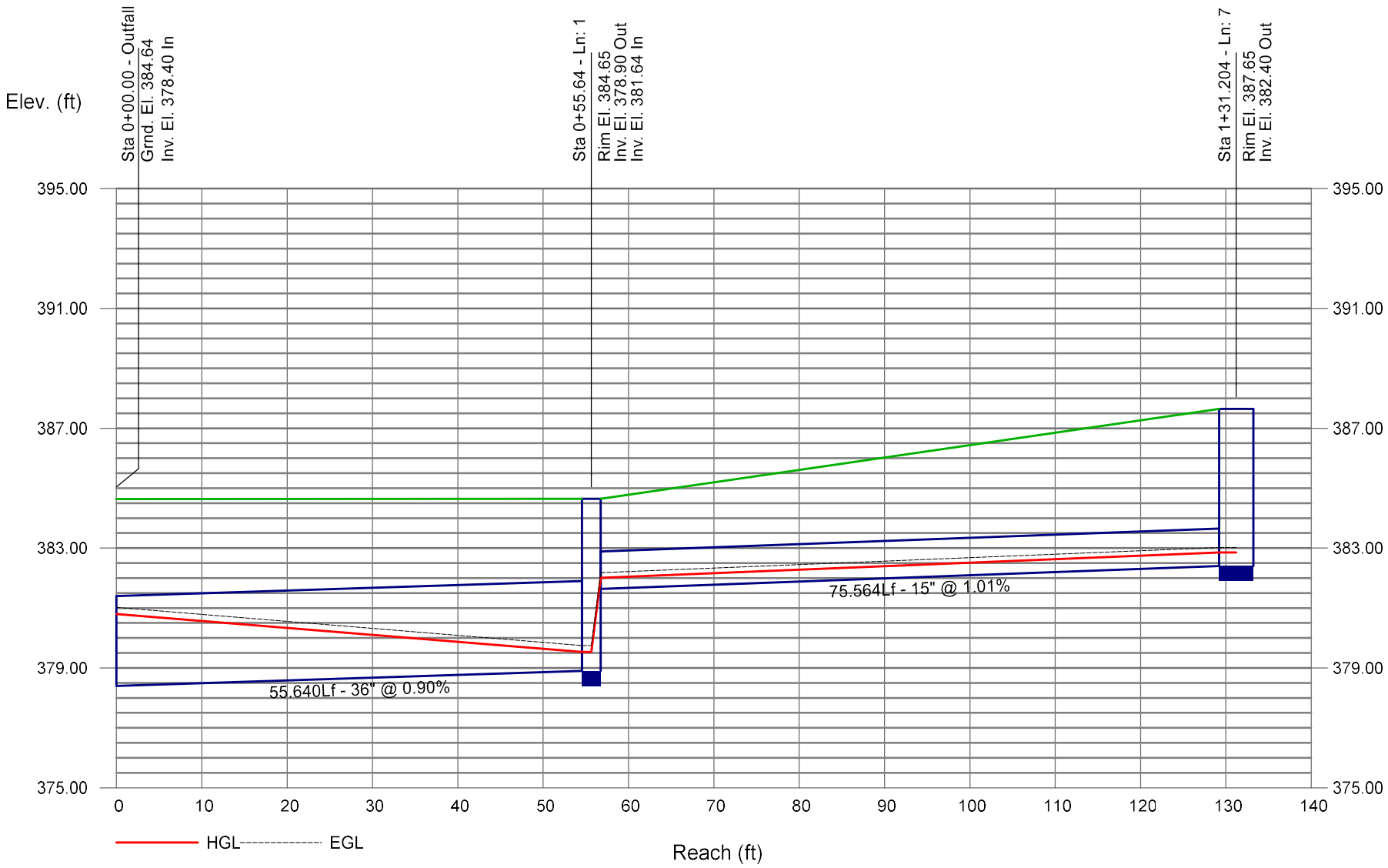
Storm Sewer Profile

Proj. file: STM Rolesville Rd IT1.stm



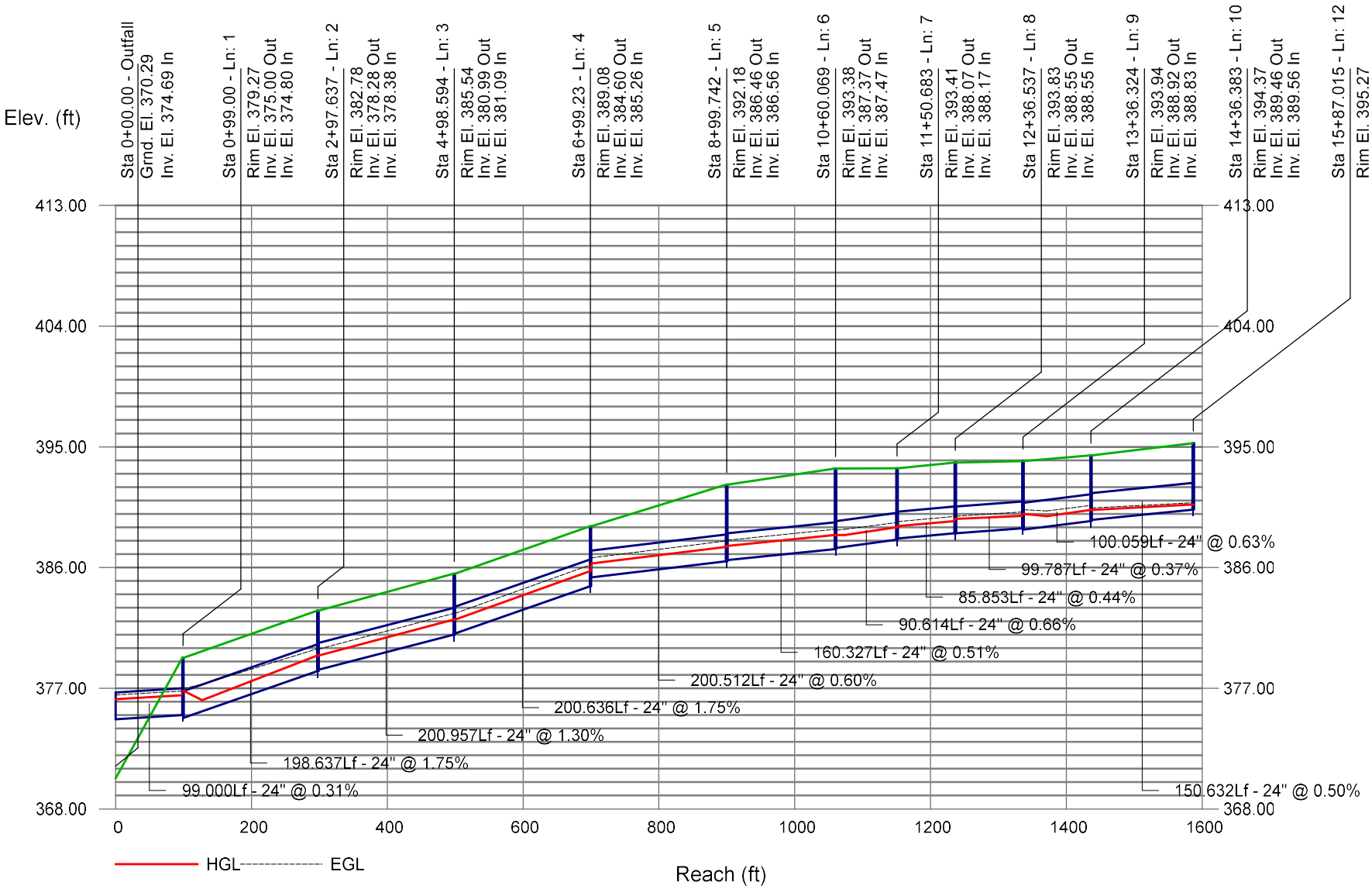
Storm Sewer Profile

Proj. file: STM Rolesville Rd IT1.stm



Storm Sewer Profile

Proj. file: STM Mitchell Mill Rd IT2.stm



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NAD 83

SCALE 1"=50'
0 50' 100'

ROLESVILLE RD

BEGIN CONSTR.
STA. 101+92.07

END CONSTR.
STA. 110+01.41

BP
PI
PI
PI
EP

N11° 58' 11.82"E

N11° 32' 42.39"E

ROLESVILLE ROAD - S.R. 1003
60' PUBLIC R/W

Approx. Location of Exist. ROW

Approx. Location of Exist. ROW

RVRD CONST. BASELINE

3-6 | 0.50
0.44 Ac.

3-5 | 0.50
0.37 Ac.

3-4 | 0.90
0.09 Ac.

3-3 | 0.85
0.15 Ac.

3-2 | 0.85
0.14 Ac.

3-1 | 0.45
0.15 Ac.

3-0 | 0.45
0.40 Ac.

PC

ROAD1 CONST.
BASELINE

MMRD
CURVE

Δ = 5°11'05"
R = 7400.00
T = 335.04
L = 669.62
C = 669.39
PC = 210+54.64
PI = 213+89.68
PT = 217+24.26
Ed = MATCH EXIST.

ROAD2 CONST.
BASELINE

EP

4-1 | 0.70
0.30 Ac.

4-2 | 0.85
0.26 Ac.

4-3 | 0.85
0.15 Ac.

4-4 | 0.85
0.13 Ac.

4-5 | 0.85
0.11 Ac.

4-6 | 0.85
0.10 Ac.

4-7 | 0.85
0.18 Ac.

4-8 | 0.85
0.24 Ac.

4-9 | 0.85
0.09 Ac.

BEGIN CONSTR.
STA. 203+00.00

N61° 23' 08.24"E

N49° 47' 45.52"E

MMRD CONST. BASELINE

PC

PT

PC

PT

MMRD
CURVE

Δ = 7°01'18"
R = 2000.00
T = 122.71
L = 245.11
C = 244.95
PC = 201+44.38
PI = 202+67.09
PT = 203+89.49
Ed = MATCH EXIST.

MMRD
CURVE

Δ = 11°35'23"
R = 1500.00
T = 152.23
L = 303.42
C = 302.90
PC = 204+67.79
PI = 206+20.02
PT = 207+71.21
Ed = MATCH EXIST.

IN-1 | 0.50
1.44 Ac.

IN-2 | 0.65
0.86 Ac.

MATCHLINE BELOW - STA. 216+00

MITCHELL MILL ROAD - S.R. 2224
60' PUBLIC R/W

DRAINAGE AREA
DIVIDE (TYP.)

SCALE 1"=50'
50' 100'

MITCHELL MILL RD

MATCHLINE ABOVE - STA. 216+00

MMRD
CURVE

Δ = 6°35'39"
R = 2500.00
T = 144.02
L = 287.73
C = 287.57
PC = 221+95.86
PI = 223+39.88
PT = 224+83.59
Ed = MATCH EXIST.

DRAINAGE AREA NUMBER

C-FACTOR

1 | 0.85
0.00 Ac.

ACREAGE

4-10 | 0.85
0.24 Ac.

4-11 | 0.85
0.24 Ac.

N44° 36' 40.81"E

N51° 12' 19.98"E

END CONSTR.
STA. 220+74.49

PC

PT

MMRD CONST. BASELINE

MITCHELL MILL ROAD - S.R. 2224
60' PUBLIC R/W

SCALE 1"=50'
0 50' 100'

MITCHELL MILL RD

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 112 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

DATE

DATE
09/17/21
DRAWN BY
BPW
DESIGNED BY
BPW
CHECKED BY
BPW
SCALE
1" = 50'

TIMMONS GROUP

WHEELER TRACT - OFFSITE IMPROVEMENTS
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
DRAINAGE AREA MAP

JOB NO.
43398
SHEET NO.
EX

\\timmons.com\gfx\300\322\43398-Wheeler_Tract\DWG\Sheet\Exhibit\43398-203C-HYDR.dwg | Plotted on 9/16/2021 10:44 AM | by Kaitlyn Jenkins