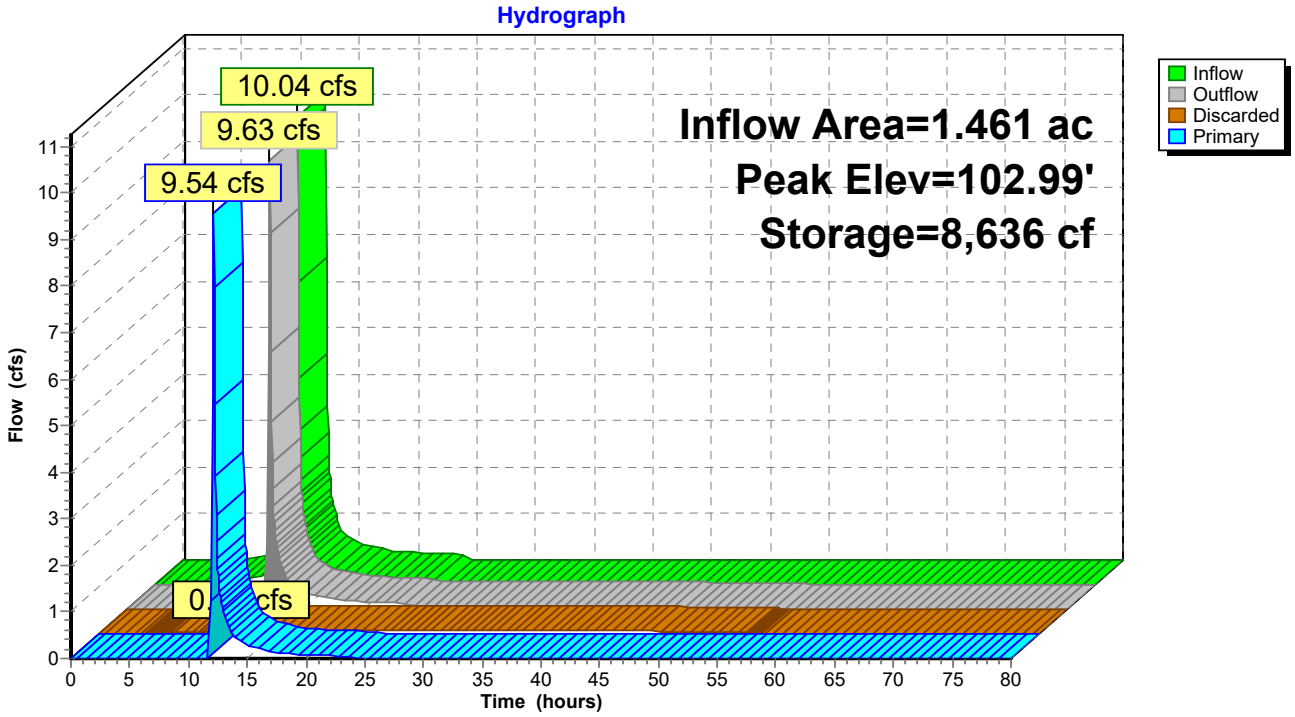
Pond BAS 2-C: BAS 2-C



Summary for Pond BAS 2-D: BAS 2-D

Inflow Area = 8.783 ac, 33.03% Impervious, Inflow Depth = 3.76" for 100-Year event
Inflow = 40.57 cfs @ 12.13 hrs, Volume= 2.754 af
Outflow = 1.76 cfs @ 14.93 hrs, Volume= 2.754 af, Atten= 96%, Lag= 168.1 min
Discarded = 0.57 cfs @ 14.93 hrs, Volume= 2.331 af
Primary = 1.19 cfs @ 14.93 hrs, Volume= 0.423 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 108.93' @ 14.93 hrs Surf.Area= 23,826 sf Storage= 76,417 cf

Plug-Flow detention time= 1,208.6 min calculated for 2.753 af (100% of inflow)
Center-of-Mass det. time= 1,209.5 min (2,055.0 - 845.5)

Volume	Invert	Avail.Storage	Storage Description
#1	105.00'	78,167 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

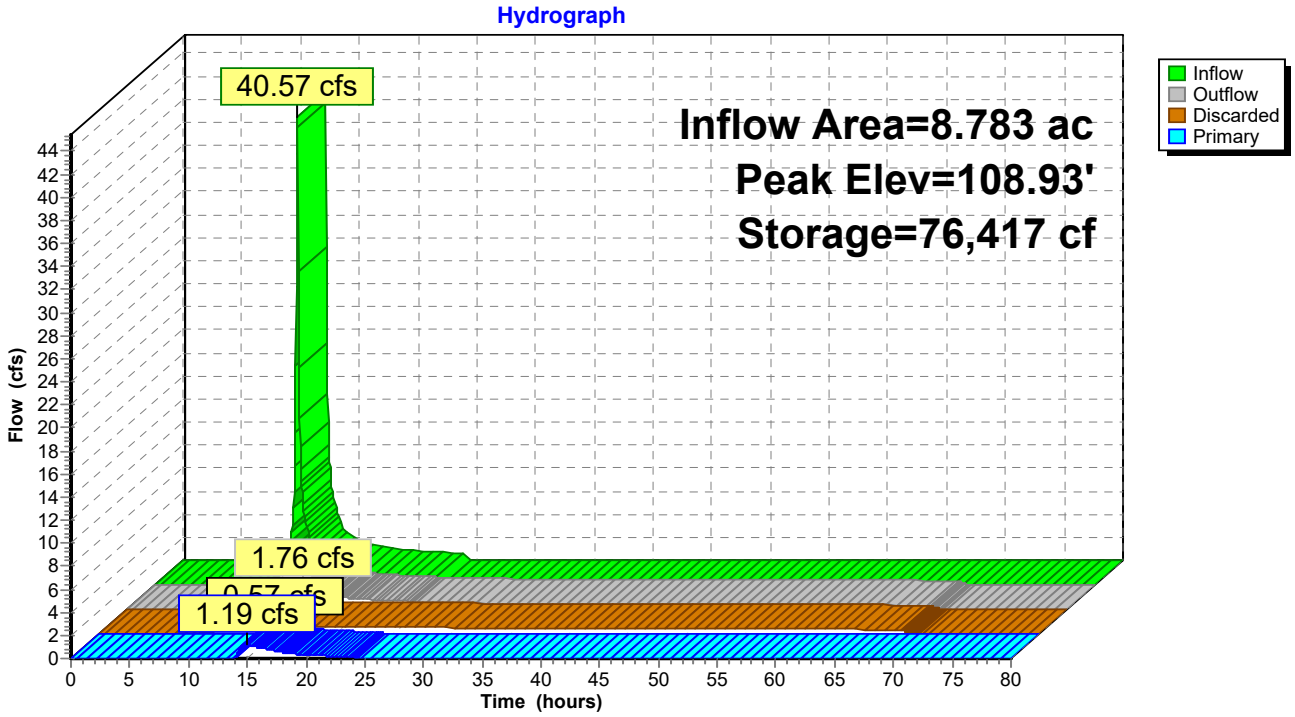
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.00	15,400	0	0	15,400
109.00	24,000	78,167	78,167	24,225

Device	Routing	Invert	Outlet Devices
#1	Discarded	105.00'	**1.020 in/hr Exfiltration over Wetted area**
#2	Primary	108.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.57 cfs @ 14.93 hrs HW=108.93' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.57 cfs)

Primary OutFlow Max=1.18 cfs @ 14.93 hrs HW=108.93' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 1.18 cfs @ 1.16 fps)

Pond BAS 2-D: BAS 2-D



Summary for Pond BAS 2-E: BAS 2-E

Inflow Area = 2.574 ac, 44.91% Impervious, Inflow Depth = 5.11" for 100-Year event
Inflow = 15.79 cfs @ 12.13 hrs, Volume= 1.097 af
Outflow = 8.54 cfs @ 12.23 hrs, Volume= 1.097 af, Atten= 46%, Lag= 6.1 min
Discarded = 0.21 cfs @ 12.23 hrs, Volume= 0.527 af
Primary = 8.34 cfs @ 12.23 hrs, Volume= 0.570 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 100.99' @ 12.23 hrs Surf.Area= 16,982 sf Storage= 16,050 cf

Plug-Flow detention time= 300.2 min calculated for 1.097 af (100% of inflow)
Center-of-Mass det. time= 300.1 min (1,116.8 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16,244 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

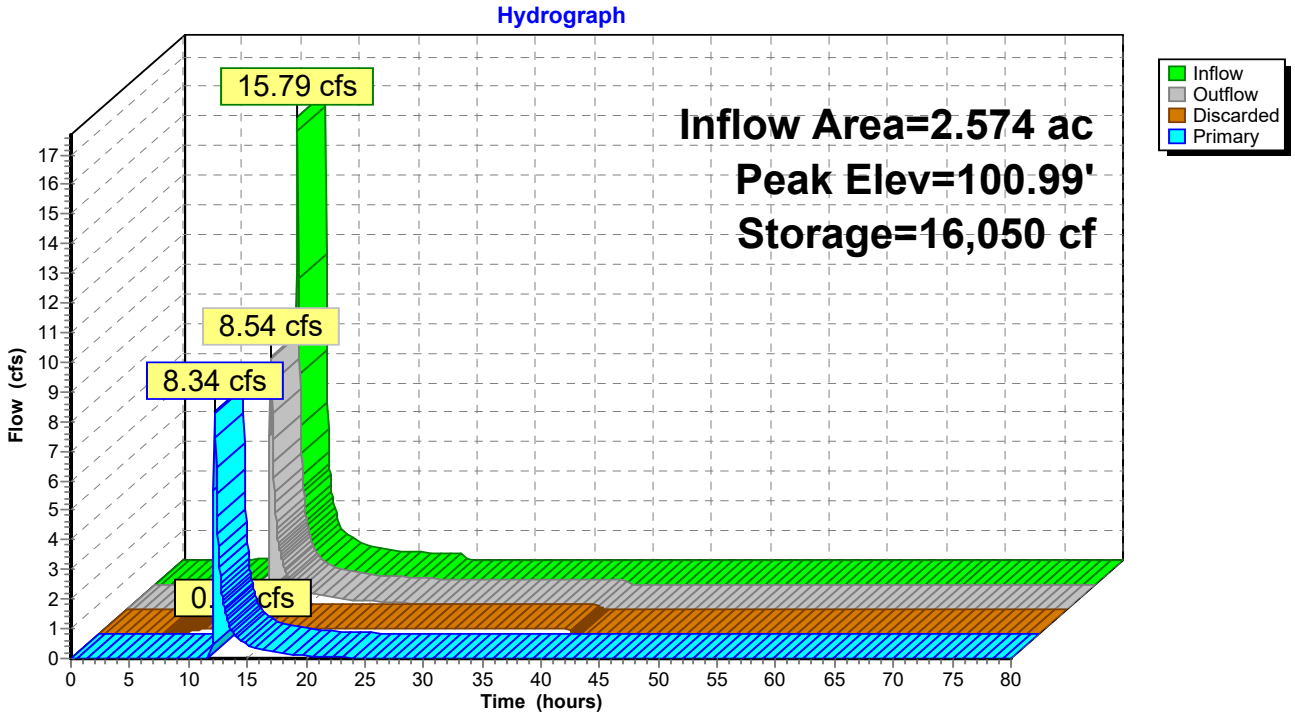
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.00	15,500	0	0	15,500
101.00	17,000	16,244	16,244	17,067

Device	Routing	Invert	Outlet Devices
#1	Discarded	100.00'	**0.520 in/hr Exfiltration over Wetted area**
#2	Primary	100.70'	**20.0' long x 23.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.21 cfs @ 12.23 hrs HW=100.99' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=8.22 cfs @ 12.23 hrs HW=100.99' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 8.22 cfs @ 1.44 fps)

Pond BAS 2-E: BAS 2-E



Summary for Pond BAS 2-F: BAS 2-F

Inflow Area = 3.255 ac, 41.28% Impervious, Inflow Depth = 4.89" for 100-Year event
Inflow = 19.20 cfs @ 12.13 hrs, Volume= 1.325 af
Outflow = 1.76 cfs @ 13.15 hrs, Volume= 1.325 af, Atten= 91%, Lag= 61.4 min
Discarded = 0.65 cfs @ 13.15 hrs, Volume= 1.195 af
Primary = 1.11 cfs @ 13.15 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 102.99' @ 13.15 hrs Surf.Area= 11,583 sf Storage= 28,454 cf

Plug-Flow detention time= 420.7 min calculated for 1.325 af (100% of inflow)
Center-of-Mass det. time= 420.8 min (1,242.5 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	28,589 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

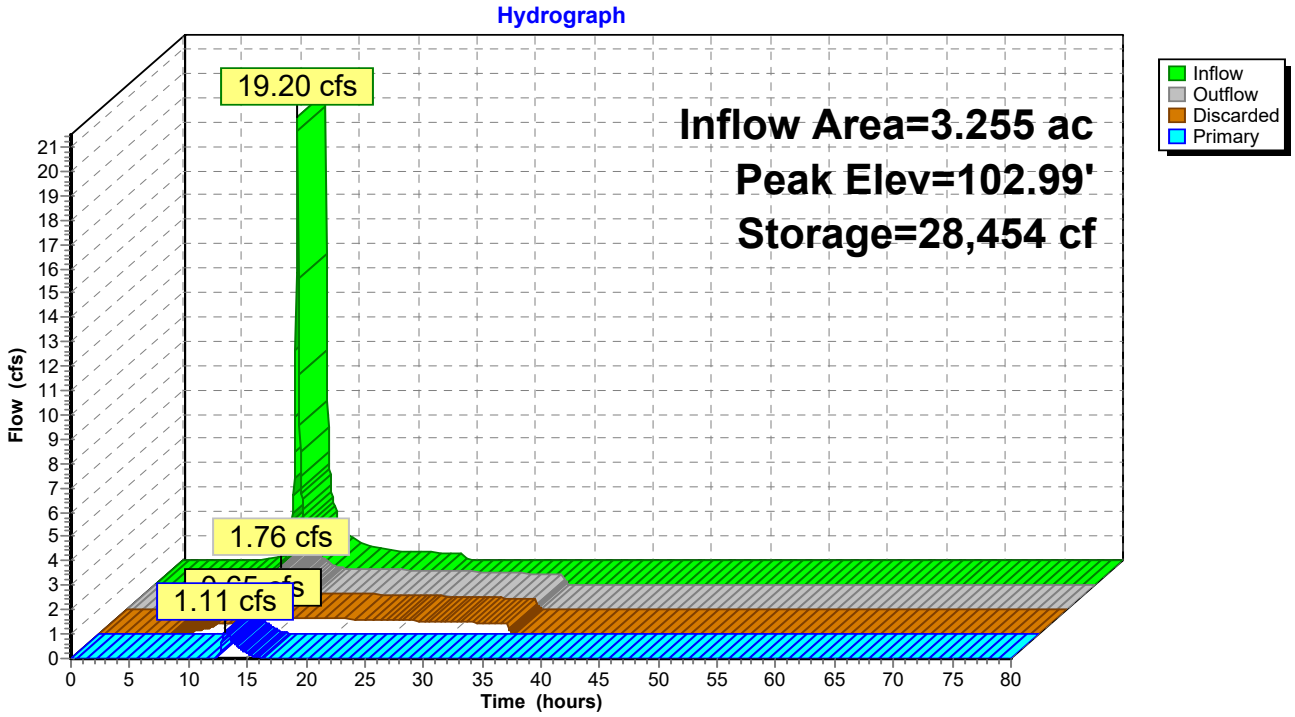
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.00	7,600	0	0	7,600
103.00	11,600	28,589	28,589	11,732

Device	Routing	Invert	Outlet Devices
#1	Discarded	100.00'	**2.410 in/hr Exfiltration over Wetted area**
#2	Primary	102.85'	**8.0' long x 23.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.65 cfs @ 13.15 hrs HW=102.99' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.65 cfs)

Primary OutFlow Max=1.10 cfs @ 13.15 hrs HW=102.99' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 1.10 cfs @ 1.00 fps)

Pond BAS 2-F: BAS 2-F



Summary for Pond BAS 3-A: BAS 3-A

Inflow Area = 2.218 ac, 40.95% Impervious, Inflow Depth = 5.69" for 100-Year event
Inflow = 14.81 cfs @ 12.13 hrs, Volume= 1.052 af
Outflow = 3.74 cfs @ 12.38 hrs, Volume= 1.052 af, Atten= 75%, Lag= 14.8 min
Discarded = 0.24 cfs @ 12.38 hrs, Volume= 0.732 af
Primary = 3.50 cfs @ 12.38 hrs, Volume= 0.319 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 103.96' @ 12.38 hrs Surf.Area= 10,017 sf Storage= 21,132 cf

Plug-Flow detention time= 684.2 min calculated for 1.051 af (100% of inflow)
Center-of-Mass det. time= 685.0 min (1,488.3 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	101.00'	21,516 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

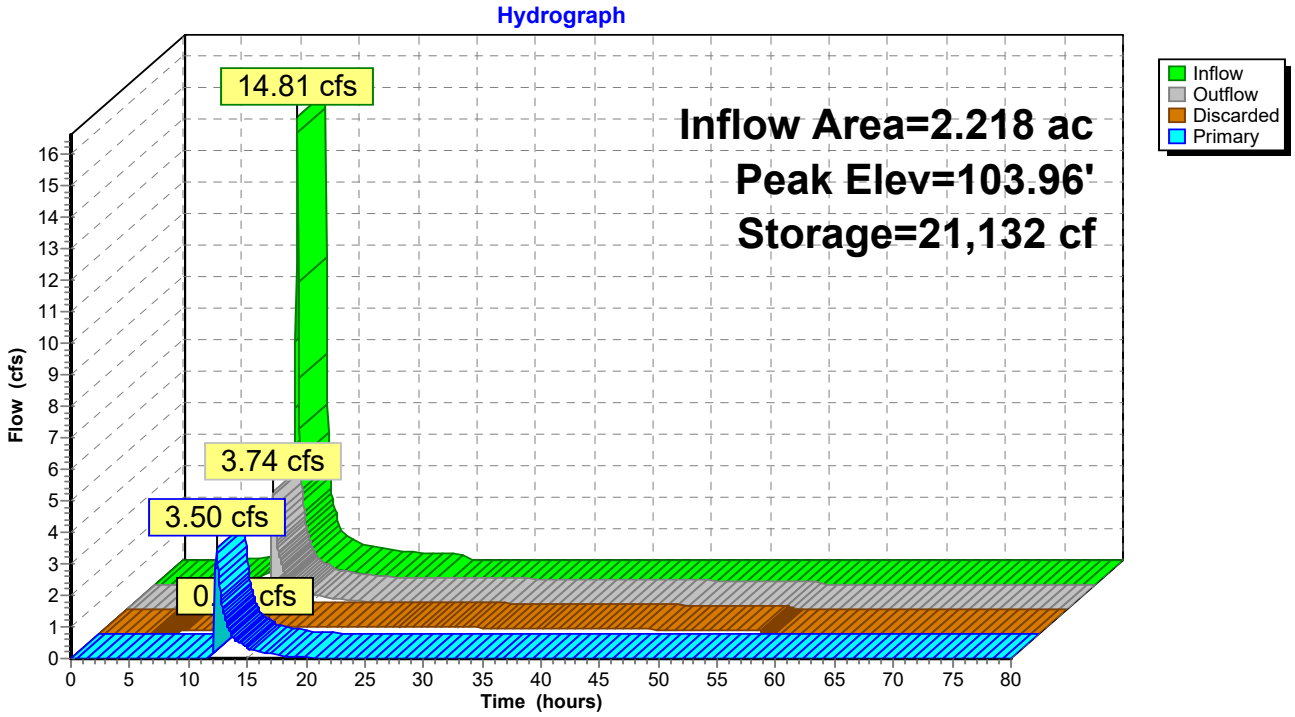
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
101.00	4,600	0	0	4,600
104.00	10,100	21,516	21,516	10,172

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.00'	**1.020 in/hr Exfiltration over Wetted area**
#2	Primary	103.80'	**20.0' long x 23.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.24 cfs @ 12.38 hrs HW=103.96' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=3.46 cfs @ 12.38 hrs HW=103.96' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 3.46 cfs @ 1.07 fps)

Pond BAS 3-A: BAS 3-A



Summary for Pond BAS 3-B: BAS 3-B

Inflow Area = 6.110 ac, 38.90% Impervious, Inflow Depth = 4.66" for 100-Year event
Inflow = 34.55 cfs @ 12.13 hrs, Volume= 2.372 af
Outflow = 3.91 cfs @ 12.95 hrs, Volume= 2.372 af, Atten= 89%, Lag= 49.4 min
Discarded = 0.43 cfs @ 12.95 hrs, Volume= 1.620 af
Primary = 3.48 cfs @ 12.95 hrs, Volume= 0.752 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 101.00' @ 12.95 hrs Surf.Area= 17,892 sf Storage= 53,864 cf

Plug-Flow detention time= 916.2 min calculated for 2.370 af (100% of inflow)
Center-of-Mass det. time= 917.3 min (1,743.9 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	53,920 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

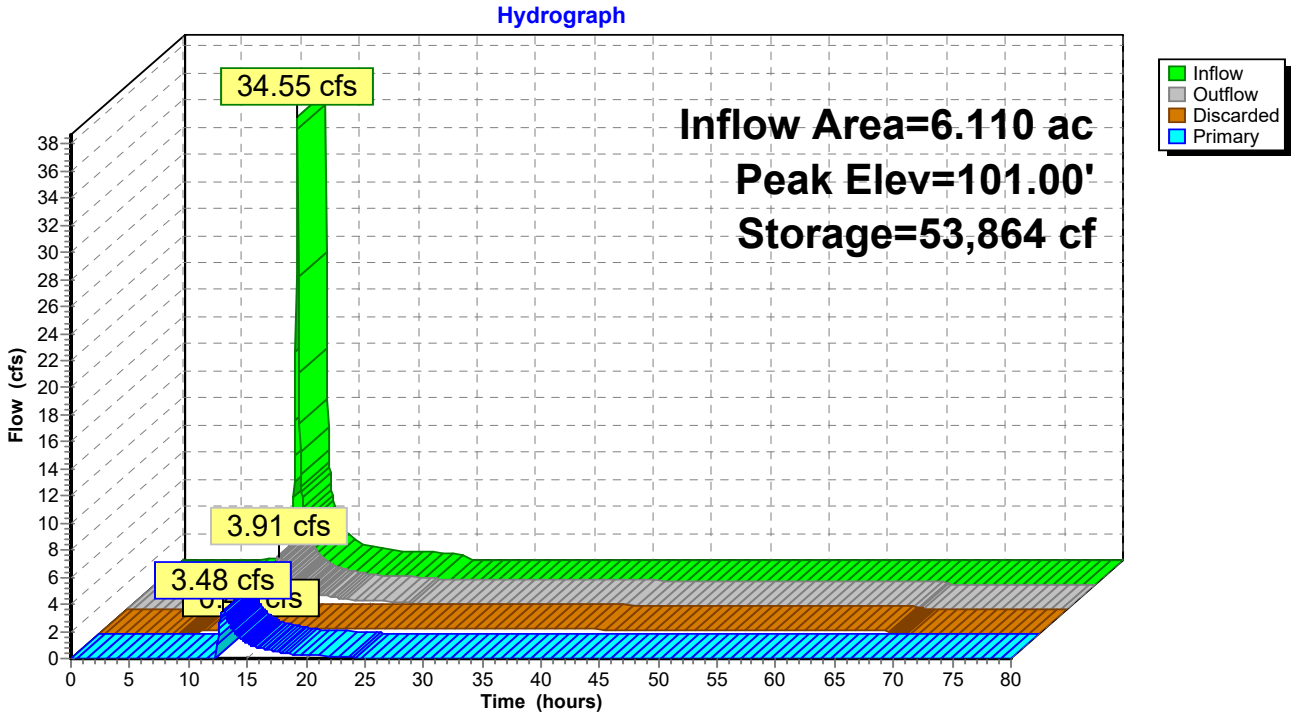
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
97.00	9,500	0	0	9,500
101.00	17,900	53,920	53,920	18,059

Device	Routing	Invert	Outlet Devices
#1	Discarded	97.00'	**1.020 in/hr Exfiltration over Wetted area**
#2	Primary	100.70'	**8.0' long x 23.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.43 cfs @ 12.95 hrs HW=101.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=3.48 cfs @ 12.95 hrs HW=101.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 3.48 cfs @ 1.47 fps)

Pond BAS 3-B: BAS 3-B



Summary for Pond BAS 6-A: BAS 6-A

Inflow Area = 3.389 ac, 43.46% Impervious, Inflow Depth = 5.00" for 100-Year event
Inflow = 20.39 cfs @ 12.13 hrs, Volume= 1.412 af
Outflow = 0.43 cfs @ 17.95 hrs, Volume= 1.412 af, Atten= 98%, Lag= 349.0 min
Discarded = 0.43 cfs @ 17.95 hrs, Volume= 1.412 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 90.61' @ 17.95 hrs Surf.Area= 18,247 sf Storage= 40,627 cf

Plug-Flow detention time= 982.6 min calculated for 1.412 af (100% of inflow)
Center-of-Mass det. time= 982.5 min (1,801.7 - 819.2)

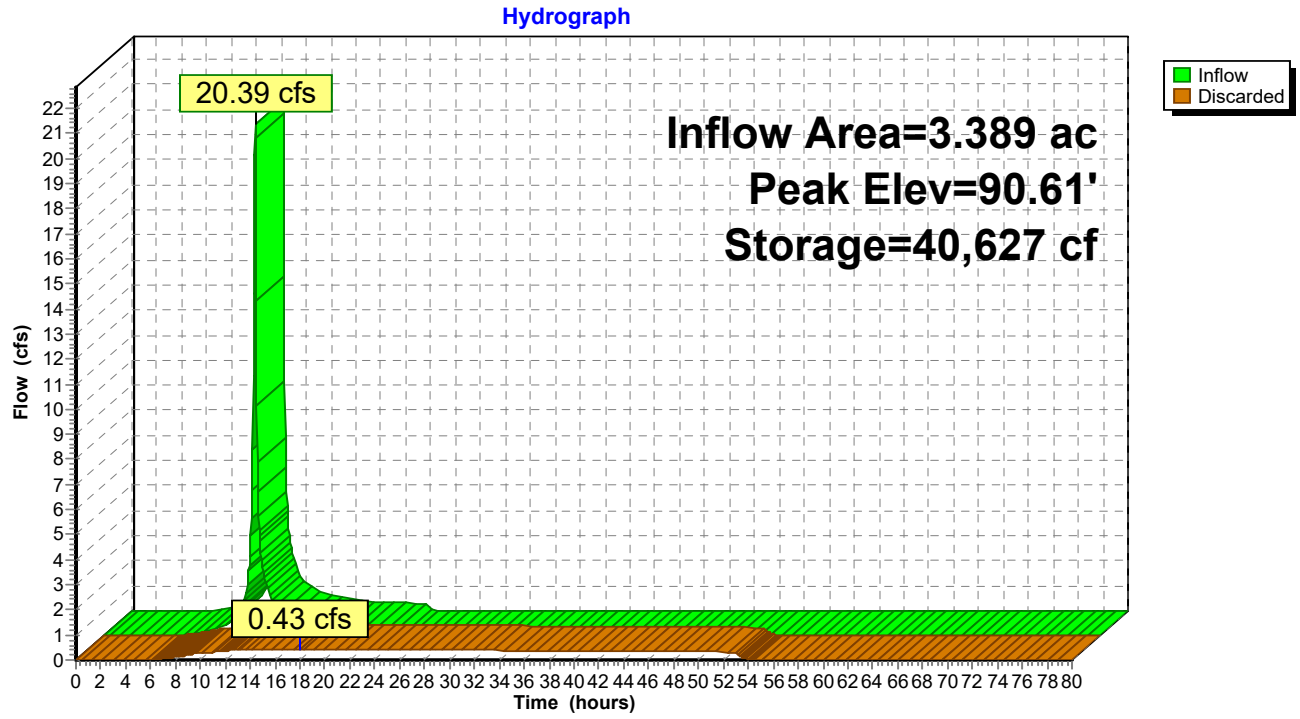
Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	47,858 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	13,000	0	0	13,000
91.00	19,100	47,858	47,858	19,246

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	**1.020 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.43 cfs @ 17.95 hrs HW=90.61' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.43 cfs)

Pond BAS 6-A: BAS 6-A



Summary for Pond BAS 7-A: BAS 7-A

Inflow Area = 4.980 ac, 47.17% Impervious, Inflow Depth = 4.55" for 100-Year event
Inflow = 27.54 cfs @ 12.13 hrs, Volume= 1.886 af
Outflow = 2.82 cfs @ 13.06 hrs, Volume= 1.886 af, Atten= 90%, Lag= 56.0 min
Discarded = 0.46 cfs @ 13.06 hrs, Volume= 1.473 af
Primary = 2.36 cfs @ 13.06 hrs, Volume= 0.413 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 93.99' @ 13.06 hrs Surf.Area= 19,480 sf Storage= 43,693 cf

Plug-Flow detention time= 823.5 min calculated for 1.886 af (100% of inflow)
Center-of-Mass det. time= 823.3 min (1,652.3 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	43,803 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

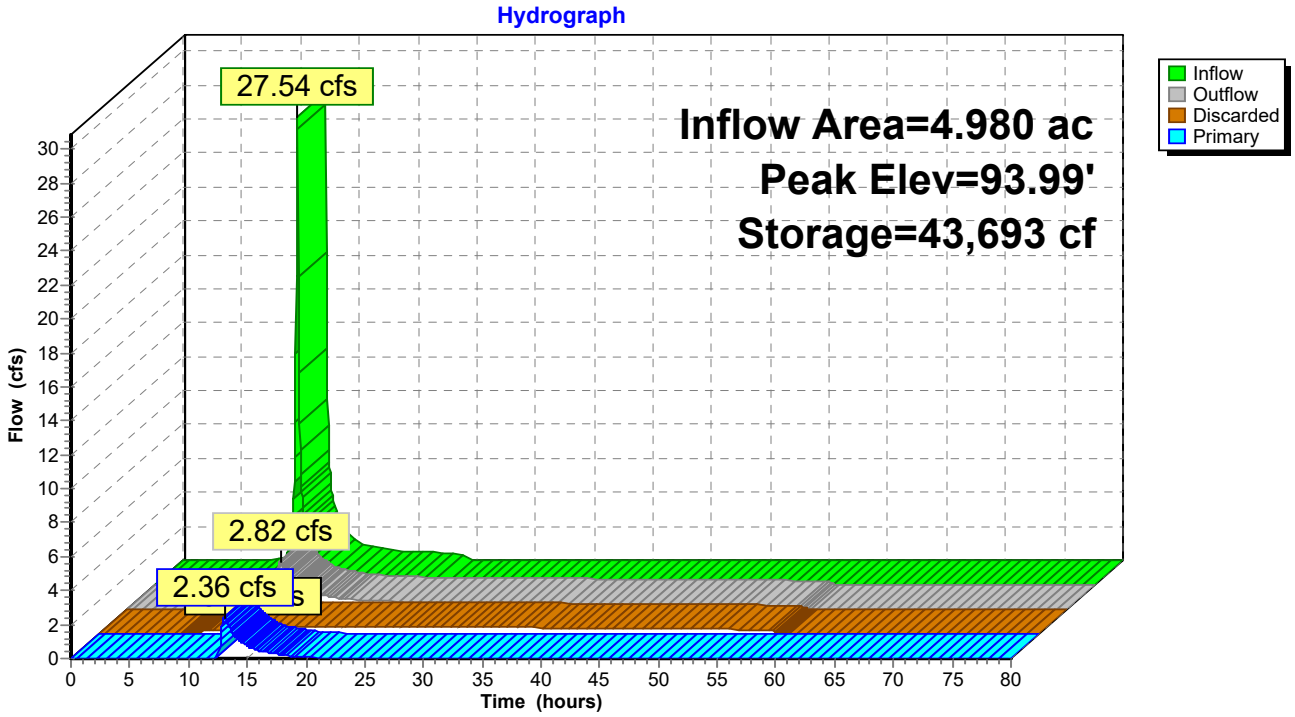
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	10,200	0	0	10,200
94.00	19,500	43,803	43,803	19,588

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.00'	**1.020 in/hr Exfiltration over Wetted area**
#2	Primary	93.87'	**20.0' long x 23.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.46 cfs @ 13.06 hrs HW=93.99' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=2.35 cfs @ 13.06 hrs HW=93.99' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.35 cfs @ 0.94 fps)

Pond BAS 7-A: BAS 7-A



Summary for Pond BAS 9-A: BAS 9-A

Inflow Area = 1.494 ac, 25.66% Impervious, Inflow Depth = 2.27" for 100-Year event
Inflow = 4.01 cfs @ 12.14 hrs, Volume= 0.283 af
Outflow = 0.19 cfs @ 15.63 hrs, Volume= 0.283 af, Atten= 95%, Lag= 209.6 min
Discarded = 0.19 cfs @ 15.63 hrs, Volume= 0.283 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 63.55' @ 15.63 hrs Surf.Area= 3,272 sf Storage= 6,236 cf

Plug-Flow detention time= 416.7 min calculated for 0.283 af (100% of inflow)
Center-of-Mass det. time= 416.9 min (1,298.2 - 881.3)

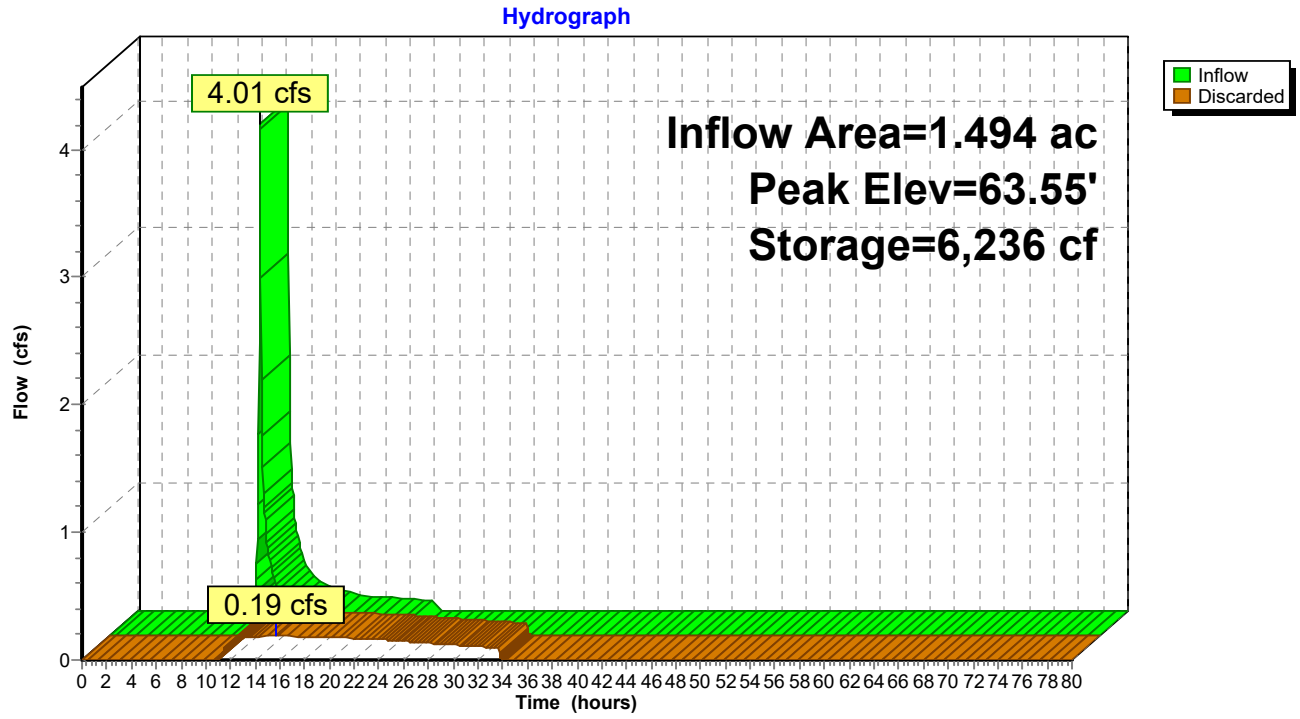
Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	7,774 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
61.00	1,700	0	0	1,700
64.00	3,600	7,774	7,774	3,675

Device	Routing	Invert	Outlet Devices
#1	Discarded	61.00'	**2.410 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.19 cfs @ 15.63 hrs HW=63.55' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Pond BAS 9-A: BAS 9-A



Summary for Pond BAS 9-B: BAS 9-B

Inflow Area = 5.910 ac, 58.27% Impervious, Inflow Depth = 4.53" for 100-Year event
Inflow = 32.32 cfs @ 12.13 hrs, Volume= 2.233 af
Outflow = 13.84 cfs @ 12.27 hrs, Volume= 2.233 af, Atten= 57%, Lag= 8.2 min
Discarded = 0.51 cfs @ 12.27 hrs, Volume= 0.698 af
Primary = 13.33 cfs @ 12.27 hrs, Volume= 1.534 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 64.98' @ 12.27 hrs Surf.Area= 8,971 sf Storage= 29,630 cf

Plug-Flow detention time= 146.1 min calculated for 2.233 af (100% of inflow)
Center-of-Mass det. time= 146.0 min (972.1 - 826.1)

Volume	Invert	Avail.Storage	Storage Description
#1	60.00'	29,817 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

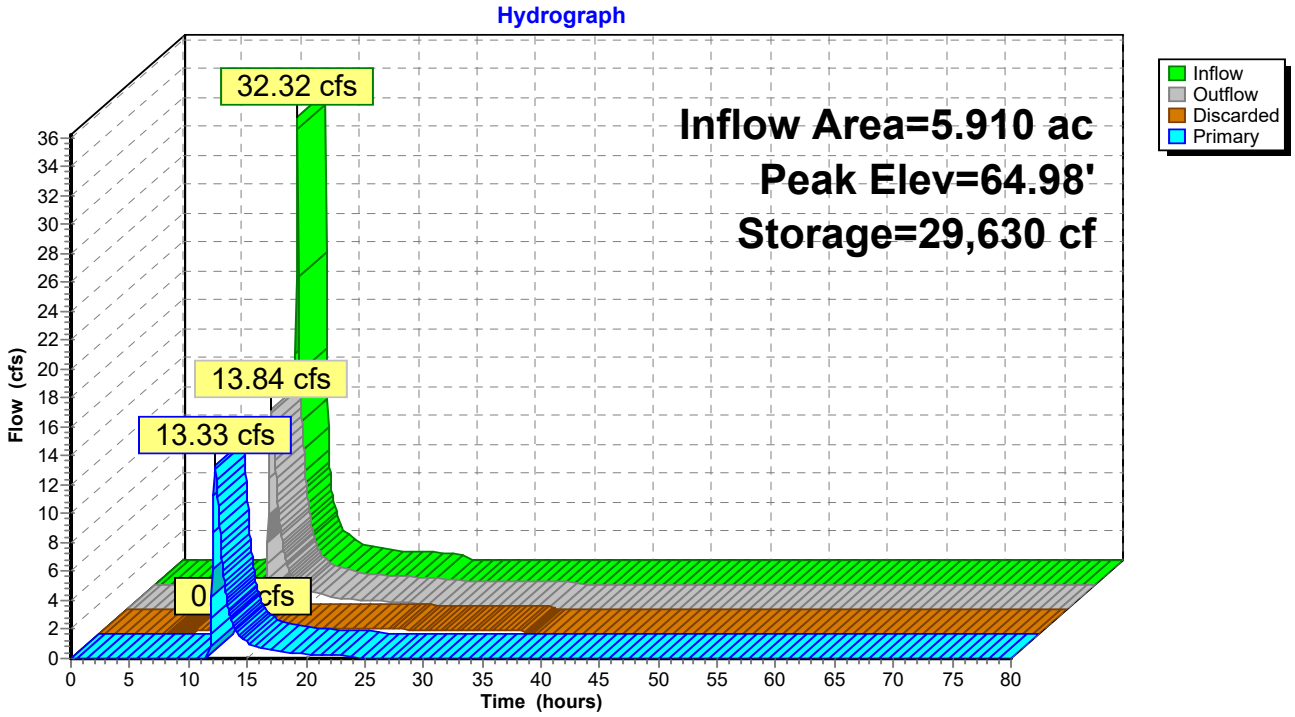
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
60.00	3,300	0	0	3,300
61.00	4,300	3,789	3,789	4,323
65.00	9,000	26,028	29,817	9,159

Device	Routing	Invert	Outlet Devices
#1	Discarded	60.00'	**2.410 in/hr Exfiltration over Wetted area**
#2	Device 3	62.40'	**1.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	60.00'	**18.0" Round Culvert** L= 41.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 60.00' / 59.79' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Discarded OutFlow Max=0.51 cfs @ 12.27 hrs HW=64.97' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.51 cfs)

Primary OutFlow Max=13.27 cfs @ 12.27 hrs HW=64.97' (Free Discharge)
↑**3=Culvert** (Passes 13.27 cfs of 21.26 cfs potential flow)
↑**2=Sharp-Crested Rectangular Weir** (Weir Controls 13.27 cfs @ 5.24 fps)

Pond BAS 9-B: BAS 9-B



Summary for Pond W-N: Wetland Series N

Inflow Area = 30.869 ac, 27.45% Impervious, Inflow Depth > 2.29" for 100-Year event
Inflow = 17.48 cfs @ 12.22 hrs, Volume= 5.884 af
Outflow = 5.66 cfs @ 12.60 hrs, Volume= 5.804 af, Atten= 68%, Lag= 22.9 min
Primary = 5.66 cfs @ 12.60 hrs, Volume= 5.804 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 86.41' @ 12.60 hrs Surf.Area= 27,074 sf Storage= 23,286 cf

Plug-Flow detention time= 136.0 min calculated for 5.801 af (99% of inflow)
Center-of-Mass det. time= 98.5 min (1,959.5 - 1,861.0)

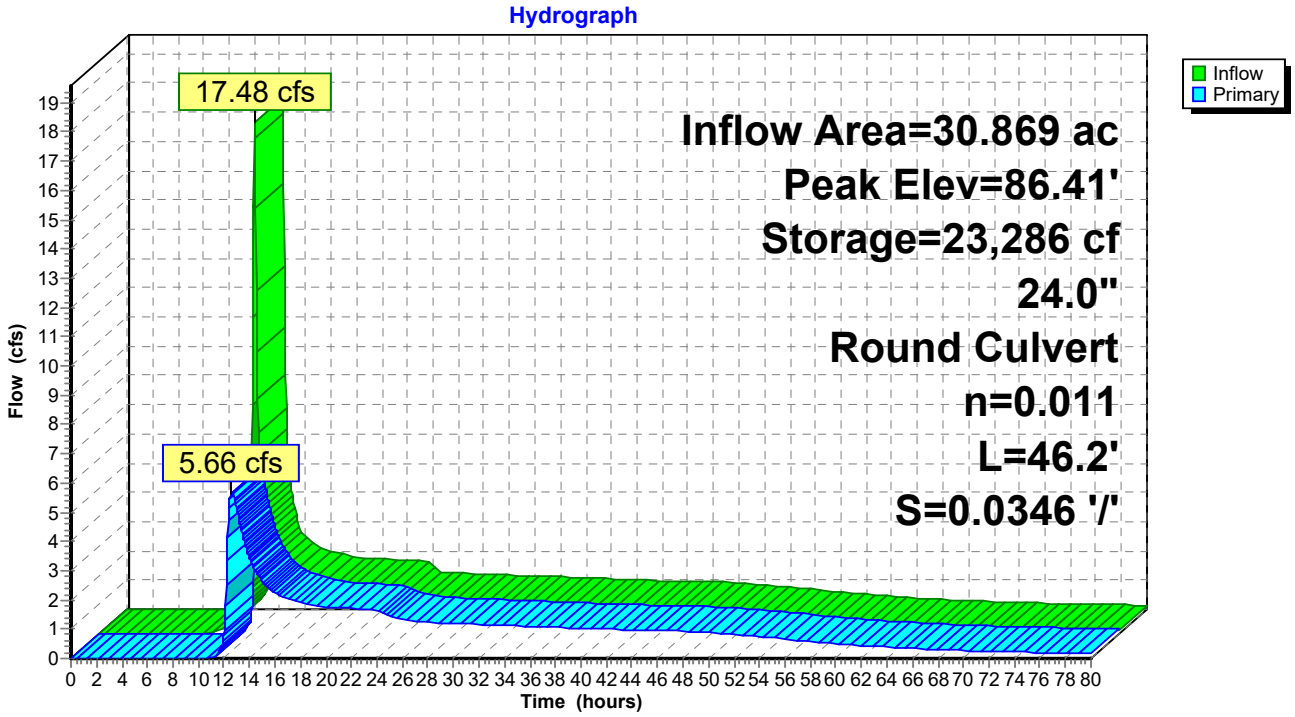
Volume	Invert	Avail.Storage	Storage Description
#1	85.50'	151,214 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
85.50	24,094	0	0	24,094
88.00	32,690	70,707	70,707	32,818
89.00	39,800	36,187	106,894	39,960
90.00	49,000	44,320	151,214	49,190

Device	Routing	Invert	Outlet Devices
#1	Primary	85.50'	**24.0" Round RCP_Round 24"** L= 46.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 85.50' / 83.90' S= 0.0346 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf

Primary OutFlow Max=5.65 cfs @ 12.60 hrs HW=86.41' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 5.65 cfs @ 4.06 fps)

Pond W-N: Wetland Series N



Summary for Pond W-O: Wetland Series O

Inflow Area = 61.489 ac, 21.22% Impervious, Inflow Depth > 2.26" for 100-Year event
Inflow = 28.42 cfs @ 12.36 hrs, Volume= 11.580 af
Outflow = 12.00 cfs @ 13.08 hrs, Volume= 11.448 af, Atten= 58%, Lag= 43.3 min
Primary = 12.00 cfs @ 13.08 hrs, Volume= 11.448 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 81.05' @ 13.08 hrs Surf.Area= 38,474 sf Storage= 55,004 cf

Plug-Flow detention time= 160.4 min calculated for 11.441 af (99% of inflow)
Center-of-Mass det. time= 126.6 min (1,861.1 - 1,734.5)

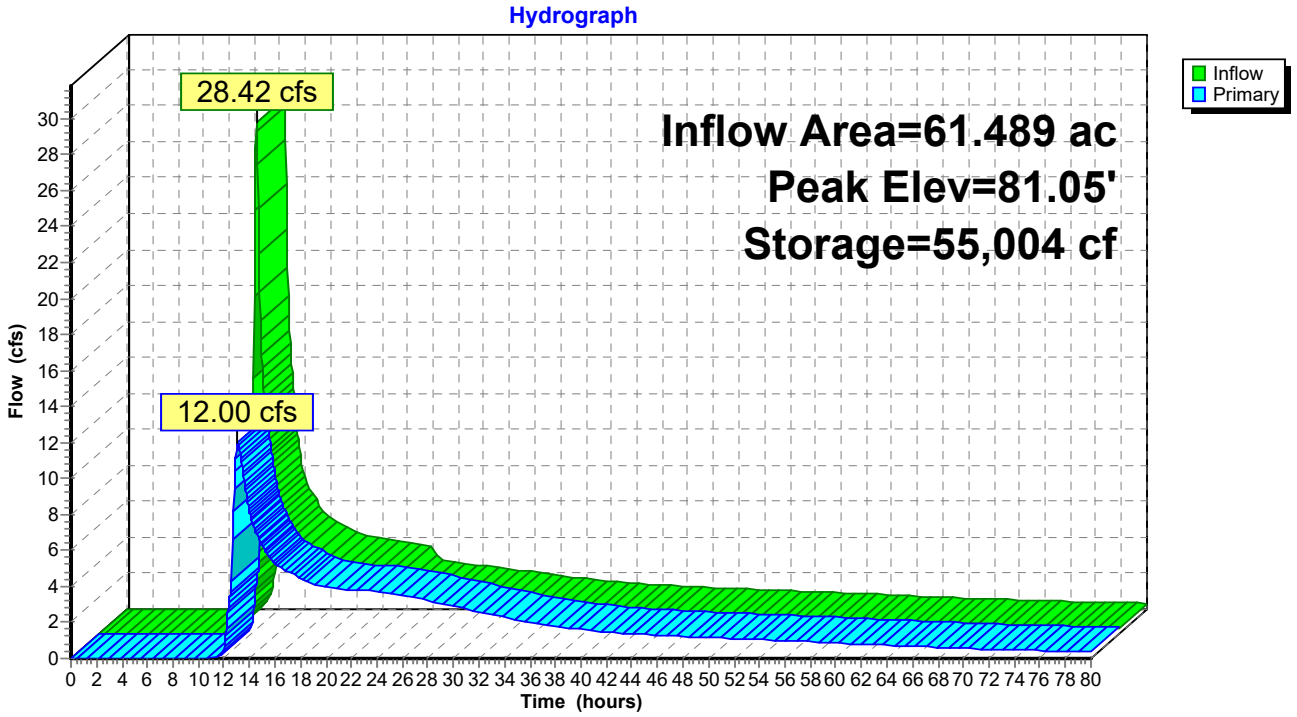
Volume	Invert	Avail.Storage	Storage Description
#1	78.68'	102,529 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
78.68	16,400	0	0	16,400
80.00	20,844	24,523	24,523	20,889
81.00	37,500	28,767	53,290	37,556
82.00	62,000	49,239	102,529	62,069

Device	Routing	Invert	Outlet Devices
#1	Primary	78.68'	**12.0" Round Culvert** L= 172.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.68' / 75.00' S= 0.0214 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Primary	80.80'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=11.99 cfs @ 13.08 hrs HW=81.04' (Free Discharge)
1=Culvert (Inlet Controls 4.08 cfs @ 5.19 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 7.91 cfs @ 1.62 fps)

Pond W-O: Wetland Series O



Summary for Pond W-QP: Wetland Series Q & P

Inflow Area = 42.589 ac, 23.35% Impervious, Inflow Depth > 2.41" for 100-Year event
Inflow = 33.97 cfs @ 12.23 hrs, Volume= 8.571 af
Outflow = 2.69 cfs @ 18.99 hrs, Volume= 7.929 af, Atten= 92%, Lag= 405.3 min
Primary = 2.69 cfs @ 18.99 hrs, Volume= 7.929 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 80.08' @ 18.99 hrs Surf.Area= 89,447 sf Storage= 118,962 cf

Plug-Flow detention time= 714.3 min calculated for 7.925 af (92% of inflow)
Center-of-Mass det. time= 525.3 min (2,126.0 - 1,600.7)

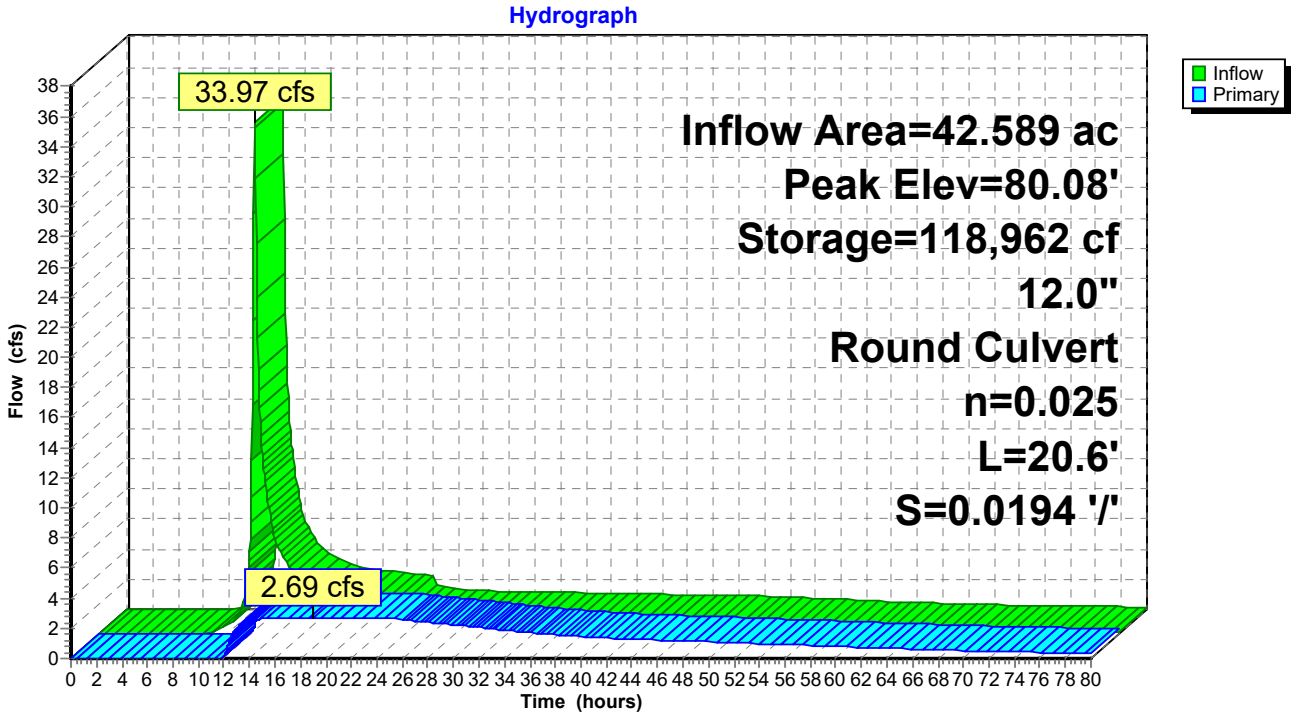
Volume	Invert	Avail.Storage	Storage Description
#1	78.70'	402,154 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
78.70	82,500	0	0	82,500
83.00	105,000	402,154	402,154	105,477

Device	Routing	Invert	Outlet Devices
#1	Primary	78.70'	**12.0" Round Culvert** L= 20.6' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 78.70' / 78.30' S= 0.0194 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=2.69 cfs @ 18.99 hrs HW=80.08' (Free Discharge)
1=Culvert (Barrel Controls 2.69 cfs @ 3.43 fps)

Pond W-QP: Wetland Series Q & P



Summary for Pond W-R: Wetland Series R

Inflow Area = 25.797 ac, 32.85% Impervious, Inflow Depth = 3.12" for 100-Year event
Inflow = 57.77 cfs @ 12.30 hrs, Volume= 6.710 af
Outflow = 1.27 cfs @ 24.10 hrs, Volume= 4.340 af, Atten= 98%, Lag= 708.1 min
Primary = 1.27 cfs @ 24.10 hrs, Volume= 4.340 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Peak Elev= 89.13' @ 24.10 hrs Surf.Area= 90,882 sf Storage= 242,686 cf

Plug-Flow detention time= 1,468.7 min calculated for 4.337 af (65% of inflow)
Center-of-Mass det. time= 1,358.7 min (2,218.9 - 860.2)

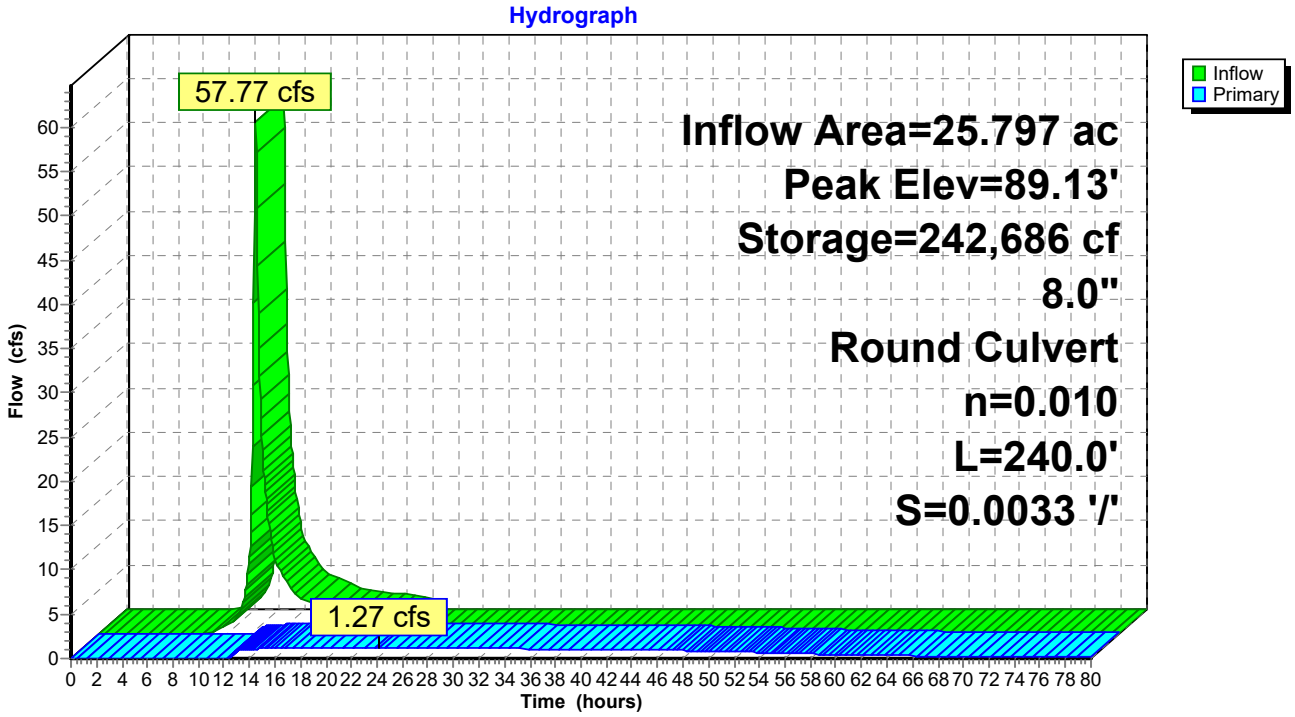
Volume	Invert	Avail.Storage	Storage Description
#1	86.27'	521,661 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
86.27	78,906	0	0	78,906
92.00	103,740	521,661	521,661	104,484

Device	Routing	Invert	Outlet Devices
#1	Primary	87.30'	**8.0" Round Culvert** L= 240.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.30' / 86.50' S= 0.0033 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.27 cfs @ 24.10 hrs HW=89.13' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.27 cfs @ 3.64 fps)

Pond W-R: Wetland Series R



SECTION 4 – STORMWATER MANAGEMENT CALCS

4.1 RECHARGE CALCULATIONS

The Required Recharge Volume is computed using the equation provided in the 2008 Massachusetts Stormwater Handbook. The volume is computed as an equivalent depth of rainfall over the proposed impervious areas in accordance with a Target Depth Factor based on the soil classifications. The Calculations is as follows:

Rv = (F) X (Impervious Area)
(Equation 1) Volume 3, Ch 1, page 15

- Rv = Required Recharge Volume, expressed in cubic feet, cubic yards, or acre-feet
- F = Target Depth Factor associated with each Hydrologic Soil Group (HSG)
- Impervious Area = new pavement, new rooftop area and courtyard areas
- The Target Depth Factor "F" per Table 2.3.2, Volume 3, Chapter 1 for each soil classification is as follows:
    - A soils = 0.60 inches
    - B soils = 0.35 inches
    - C soils = 0.25 inches
    - D soils = 0.10 inches

The proposed impervious area (driveways, roofs, roads) within limit of work is 384,875 SF. Based on the above formula, the required recharge volume for the site is as follows:

Recharge Within "A" Soils:

- Impervious Area = 351,315SF
- 0.6 inches x 1/12 feet x 351,315 SF = 17,566 CUBIC FEET

Recharge Within "B" Soils:

- Impervious Area = 644,115 SF
- 0.35 inches x 1/12 feet x 25,629 SF = 18,787 CUBIC FEET

Recharge Within "D" Soils:

- Impervious Area = 79,455 SF
- 0.35 inches x 1/12 feet x 25,629 SF = 663 CUBIC FEET

TOTAL RECHARGE VOLUME REQUIRED = 37,016 CUBIC FEET

RECHARGE VOLUMES		
BASIN	**Infiltration Rate (in/hr) (k)**	**Storage (Recharge) Volume (c.f.) (Rv)**
BASIN 1-A	2.41	42,522
BASIN 1-B	1.02	9,520
BASIN 1-C	1.02	438
BASIN 2-B	0.52	2,346
BASIN 2-C	1.02	7,373
BASIN 2-D	1.02	73,414
BASIN 2-E	0.52	11,213
BASIN 2-F	2.41	26,299
BASIN 3-A	1.02	19,540
BASIN 3-B	1.02	48,659
BASIN 6-A	1.02	40,394
BASIN 7-A	1.02	39,975
BASIN 9-A	2.41	6,066
BASIN 9-B	2.41	10,799
BASIN 10-B	2.41	8,477
BASIN 11-B	1.02	11,760
BASIN 12-A	2.41	31,215
BASIN 12-B	1.02	64,180
BASIN 15-A	1.02	755
	TOTAL RECHARGE	**454,945**

k = saturated hydraulic conductivity (in/hr)
Rv = storage volume (c.f.)
Volume 3, Chapter 1 of the MA Stormwater Handbook

Conclusion:

TOTAL RECHARGE VOLUME PROVIDED = 454,945 CF

The Storage Recharge volume numbers provided in the table above have been derived utilizing the HydroCAD output for stage storage.

Stage-Area-Storage for Pond BAS 1-A: BAS 1-A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
78.00	5,723	0
78.05	5,786	288
78.10	5,849	579
78.15	5,911	873
78.20	5,974	1,170
78.25	6,037	1,470
78.30	6,100	1,773
78.35	6,162	2,080
78.40	6,225	2,390
78.45	6,288	2,702
78.50	6,351	3,018
78.55	6,413	3,338
78.60	6,476	3,660
78.65	6,539	3,985
78.70	6,602	4,314
78.75	6,665	4,645
78.80	6,727	4,980
78.85	6,790	5,318
78.90	6,853	5,659
78.95	6,916	6,003
79.00	6,978	6,351
79.05	7,041	6,701
79.10	7,104	7,055
79.15	7,167	7,412
79.20	7,229	7,771
79.25	7,292	8,135
79.30	7,355	8,501
79.35	7,418	8,870
79.40	7,481	9,242
79.45	7,543	9,618
79.50	7,606	9,997
79.55	7,669	10,379
79.60	7,732	10,764
79.65	7,794	11,152
79.70	7,857	11,543
79.75	7,920	11,938
79.80	7,983	12,335
79.85	8,045	12,736
79.90	8,108	13,140
79.95	8,171	13,547
80.00	8,234	13,957
80.05	8,297	14,370
80.10	8,359	14,786
80.15	8,422	15,206
80.20	8,485	15,629
80.25	8,548	16,054
80.30	8,610	16,483
80.35	8,673	16,916
80.40	8,736	17,351
80.45	8,799	17,789
80.50	8,862	18,231
80.55	8,924	18,675
80.60	8,987	19,123
80.65	9,050	19,574
80.70	9,113	20,028
80.75	9,175	20,485
80.80	9,238	20,946
80.85	9,301	21,409
80.90	9,364	21,876
80.95	9,426	22,345
81.00	9,489	22,818
81.05	9,552	23,294
81.10	9,615	23,773
81.15	9,678	24,256
81.20	9,740	24,741
81.25	9,803	25,230
81.30	9,866	25,722
81.35	9,929	26,216
81.40	9,991	26,714
81.45	10,054	27,216
81.50	10,117	27,720
81.55	10,180	28,227
81.60	10,242	28,738
81.65	10,305	29,251
81.70	10,368	29,768
81.75	10,431	30,288
81.80	10,494	30,811
81.85	10,556	31,338
81.90	10,619	31,867
81.95	10,682	32,400
82.00	10,745	32,935
82.05	10,807	33,474
82.10	10,870	34,016
82.15	10,933	34,561
82.20	10,996	35,109
82.25	11,058	35,661
82.30	11,121	36,215
82.35	11,184	36,773
82.40	11,247	37,333
82.45	11,310	37,897
82.50	11,372	38,464
82.55	11,435	39,035
82.60	11,498	39,608
82.65	11,561	40,184
82.70	11,623	40,764
82.75	11,686	41,347
82.80	11,749	41,933
82.85	11,812	42,522
82.90	11,874	43,114
82.95	11,937	43,709
83.00	**12,000**	**44,308**

Stage-Area-Storage for Pond BAS 1-B: BAS 1-B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
80.00	3,170	0
80.05	3,217	160
80.10	3,264	322
80.15	3,312	486
80.20	3,359	653
80.25	3,406	822
80.30	3,453	993
80.35	3,500	1,167
80.40	3,547	1,343
80.45	3,595	1,522
80.50	3,642	1,703
80.55	3,689	1,886
80.60	3,736	2,072
80.65	3,783	2,260
80.70	3,830	2,450
80.75	3,878	2,643
80.80	3,925	2,838
80.85	3,972	3,035
80.90	4,019	3,235
80.95	4,066	3,437
81.00	4,113	3,642
81.05	4,160	3,849
81.10	4,208	4,058
81.15	4,255	4,269
81.20	4,302	4,483
81.25	4,349	4,699
81.30	4,396	4,918
81.35	4,443	5,139
81.40	4,491	5,362
81.45	4,538	5,588
81.50	4,585	5,816
81.55	4,632	6,047
81.60	4,679	6,279
81.65	4,727	6,515
81.70	4,774	6,752
81.75	4,821	6,992
81.80	4,868	7,234
81.85	4,915	7,479
81.90	4,962	7,726
81.95	5,010	7,975
82.00	5,057	8,227
82.05	5,104	8,481
82.10	5,151	8,737
82.15	5,198	8,996
82.20	5,245	9,257
82.25	5,293	9,520
82.30	5,340	9,786
82.35	5,387	10,054
82.40	5,434	10,325
82.45	5,481	10,598
82.50	5,528	10,873
82.55	5,575	11,151
82.60	5,623	11,430
82.65	5,670	11,713
82.70	5,717	11,997
82.75	5,764	12,284
82.80	5,811	12,574
82.85	5,858	12,866
82.90	5,906	13,160
82.95	5,953	13,456
83.00	**6,000**	**13,755**

Stage-Area-Storage for Pond BAS 1-C: BAS 1-C

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
81.00	70	0
81.02	74	1
81.04	78	3
81.06	82	5
81.08	85	6
81.10	89	8
81.12	93	10
81.14	97	12
81.16	101	14
81.18	105	16
81.20	109	18
81.22	112	20
81.24	116	22
81.26	120	25
81.28	124	27
81.30	128	30
81.32	132	32
81.34	135	35
81.36	139	38
81.38	143	40
81.40	147	43
81.42	151	46
81.44	155	49
81.46	159	53
81.48	162	56
81.50	166	59
81.52	170	62
81.54	174	66
81.56	178	69
81.58	182	73
81.60	185	77
81.62	189	80
81.64	193	84
81.66	197	88
81.68	201	92
81.70	205	96
81.72	209	100
81.74	212	105
81.76	216	109
81.78	220	113
81.80	224	118
81.82	228	122
81.84	232	127
81.86	236	131
81.88	239	136
81.90	243	141
81.92	247	146
81.94	251	151
81.96	255	156
81.98	259	161
82.00	263	166
82.02	266	172
82.04	270	177
82.06	274	182
82.08	278	188
82.10	282	193
82.12	286	199
82.14	289	205
82.16	293	211
82.18	297	217
82.20	301	223
82.22	305	229
82.24	309	235
82.26	313	241
82.28	316	247
82.30	320	254
82.32	324	260
82.34	328	267
82.36	332	273
82.38	336	280
82.40	340	287
82.42	343	293
82.44	347	300
82.46	351	307
82.48	355	314
82.50	359	322
82.52	363	329
82.54	366	336
82.56	370	343
82.58	374	351
82.60	378	358
82.62	382	366
82.64	386	374
82.66	390	381
82.68	393	389
82.70	397	397
82.72	401	405
82.74	405	413
82.76	409	421
82.78	413	430
82.80	416	438
82.82	420	446
82.84	424	455
82.86	428	463
82.88	432	472
82.90	436	480
82.92	440	489
82.94	443	498
82.96	447	507
82.98	451	516
83.00	**455**	**525**

Stage-Area-Storage for Pond BAS 10-A: EXIST BAS 10-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
54.00	220	220	0
54.20	359	359	57
54.40	531	532	146
54.60	737	739	272
54.80	977	979	443
55.00	1,250	1,254	665
55.20	1,420	1,426	932
55.40	1,601	1,609	1,234
55.60	1,793	1,803	1,573
55.80	1,996	2,009	1,952
56.00	2,210	2,225	2,372
56.20	2,313	2,333	2,824
56.40	2,418	2,444	3,297
56.60	2,526	2,557	3,792
56.80	2,636	2,673	4,308
57.00	2,748	2,791	4,846
57.20	2,863	2,912	5,407
57.40	2,980	3,035	5,992
57.60	3,099	3,160	6,599
57.80	3,221	3,288	7,231
58.00	3,345	3,419	7,888
58.20	3,471	3,552	8,569
58.40	3,600	3,687	9,276
58.60	3,731	3,825	10,010
58.80	3,864	3,966	10,769
59.00	4,000	4,108	11,555
59.20	4,140	4,256	12,369
59.40	4,282	4,405	13,212
59.60	4,427	4,558	14,082
59.80	4,575	4,712	14,983
60.00	**4,724**	**4,870**	**15,912**

Stage-Area-Storage for Pond BAS 10-B: BAS 10-B

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
77.00	2,050	2,050	0
77.10	2,112	2,114	208
77.20	2,174	2,179	422
77.30	2,238	2,244	643
77.40	2,302	2,311	870
77.50	2,368	2,379	1,103
77.60	2,434	2,447	1,344
77.70	2,501	2,517	1,590
77.80	2,569	2,587	1,844
77.90	2,638	2,658	2,104
78.00	2,708	2,731	2,372
78.10	2,779	2,804	2,646
78.20	2,851	2,878	2,927
78.30	2,924	2,953	3,216
78.40	2,997	3,029	3,512
78.50	3,072	3,106	3,816
78.60	3,147	3,184	4,127
78.70	3,224	3,263	4,445
78.80	3,301	3,343	4,772
78.90	3,379	3,424	5,106
79.00	3,458	3,506	5,447
79.10	3,538	3,589	5,797
79.20	3,619	3,672	6,155
79.30	3,701	3,757	6,521
79.40	3,784	3,843	6,895
79.50	3,868	3,929	7,278
79.60	3,952	4,017	7,669
79.70	4,038	4,105	8,069
79.80	4,124	4,194	8,477
79.90	4,212	4,285	8,893
80.00	**4,300**	**4,376**	**9,319**

Stage-Area-Storage for Pond BAS 11-B: BAS 11-B

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
44.00	30,000	30,000	0
44.02	30,000	30,012	240
44.04	30,000	30,025	480
44.06	30,000	30,037	720
44.08	30,000	30,049	960
44.10	30,000	30,061	1,200
44.12	30,000	30,074	1,440
44.14	30,000	30,086	1,680
44.16	30,000	30,098	1,920
44.18	30,000	30,111	2,160
44.20	30,000	30,123	2,400
44.22	30,000	30,135	2,640
44.24	30,000	30,147	2,880
44.26	30,000	30,160	3,120
44.28	30,000	30,172	3,360
44.30	30,000	30,184	3,600
44.32	30,000	30,196	3,840
44.34	30,000	30,209	4,080
44.36	30,000	30,221	4,320
44.38	30,000	30,233	4,560
44.40	30,000	30,246	4,800
44.42	30,000	30,258	5,040
44.44	30,000	30,270	5,280
44.46	30,000	30,282	5,520
44.48	30,000	30,295	5,760
44.50	30,000	30,307	6,000
44.52	30,000	30,319	6,240
44.54	30,000	30,332	6,480
44.56	30,000	30,344	6,720
44.58	30,000	30,356	6,960
44.60	30,000	30,368	7,200
44.62	30,000	30,381	7,440
44.64	30,000	30,393	7,680
44.66	30,000	30,405	7,920
44.68	30,000	30,418	8,160
44.70	30,000	30,430	8,400
44.72	30,000	30,442	8,640
44.74	30,000	30,454	8,880
44.76	30,000	30,467	9,120
44.78	30,000	30,479	9,360
44.80	30,000	30,491	9,600
44.82	30,000	30,503	9,840
44.84	30,000	30,516	10,080
44.86	30,000	30,528	10,320
44.88	30,000	30,540	10,560
44.90	30,000	30,553	10,800
44.92	30,000	30,565	11,040
44.94	30,000	30,577	11,280
44.96	30,000	30,589	11,520
44.98	30,000	30,602	11,760
45.00	**30,000**	**30,614**	**12,000**

Stage-Area-Storage for Pond BAS 12-A: BAS 12-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
93.00	9,500	9,500	0
93.10	9,679	9,682	959
93.20	9,860	9,867	1,936
93.30	10,042	10,052	2,931
93.40	10,226	10,240	3,944
93.50	10,412	10,429	4,976
93.60	10,600	10,620	6,027
93.70	10,789	10,813	7,096
93.80	10,980	11,007	8,185
93.90	11,172	11,203	9,292
94.00	11,366	11,401	10,419
94.10	11,562	11,600	11,566
94.20	11,759	11,801	12,732
94.30	11,959	12,004	13,917
94.40	12,159	12,209	15,123
94.50	12,362	12,415	16,349
94.60	12,566	12,623	17,596
94.70	12,772	12,833	18,863
94.80	12,979	13,044	20,150
94.90	13,189	13,257	21,459
95.00	13,399	13,472	22,788
95.10	13,612	13,689	24,139
95.20	13,826	13,907	25,510
95.30	14,042	14,127	26,904
95.40	14,260	14,348	28,319
95.50	14,479	14,571	29,756
95.60	14,700	14,796	31,215
95.70	14,922	15,023	32,696
95.80	15,147	15,252	34,199
95.90	15,372	15,482	35,725
96.00	**15,600**	**15,714**	**37,274**

Stage-Area-Storage for Pond BAS 12-B: BAS 12-B

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
91.00	24,250	24,250	0
91.10	24,554	24,559	2,440
91.20	24,860	24,870	4,911
91.30	25,168	25,183	7,412
91.40	25,478	25,498	9,945
91.50	25,790	25,815	12,508
91.60	26,103	26,134	15,103
91.70	26,419	26,455	17,729
91.80	26,736	26,777	20,387
91.90	27,056	27,102	23,076
92.00	27,377	27,428	25,798
92.10	27,700	27,757	28,552
92.20	28,025	28,087	31,338
92.30	28,352	28,420	34,157
92.40	28,681	28,754	37,008
92.50	29,012	29,090	39,893
92.60	29,344	29,428	42,811
92.70	29,679	29,768	45,762
92.80	30,015	30,110	48,747
92.90	30,354	30,454	51,765
93.00	30,694	30,800	54,817
93.10	31,036	31,147	57,904
93.20	31,380	31,497	61,025
93.30	31,726	31,849	64,180
93.40	32,073	32,202	67,370
93.50	32,423	32,558	70,595
93.60	32,775	32,915	73,854
93.70	33,128	33,274	77,150
93.80	33,484	33,635	80,480
93.90	33,841	33,998	83,846
94.00	**34,200**	**34,364**	**87,248**

Stage-Area-Storage for Pond BAS 15-A: BAS 15-A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
82.00	800	0
82.01	804	8
82.02	807	16
82.03	811	24
82.04	814	32
82.05	818	40
82.06	822	49
82.07	825	57
82.08	829	65
82.09	832	73
82.10	836	82
82.11	840	90
82.12	843	99
82.13	847	107
82.14	850	116
82.15	854	124
82.16	858	133
82.17	861	141
82.18	865	150
82.19	868	158
82.20	872	167
82.21	876	176
82.22	879	185
82.23	883	194
82.24	886	202
82.25	890	211
82.26	894	220
82.27	897	229
82.28	901	238
82.29	904	247
82.30	908	256
82.31	912	265
82.32	915	274
82.33	919	284
82.34	922	293
82.35	926	302
82.36	930	311
82.37	933	321
82.38	937	330
82.39	940	339
82.40	944	349
82.41	948	358
82.42	951	368
82.43	955	377
82.44	958	387
82.45	962	396
82.46	966	406
82.47	969	416
82.48	973	425
82.49	976	435
82.50	980	445
82.51	984	455
82.52	987	465
82.53	991	475
82.54	994	484
82.55	998	494
82.56	1,002	504
82.57	1,005	514
82.58	1,009	525
82.59	1,012	535
82.60	1,016	545
82.61	1,020	555
82.62	1,023	565
82.63	1,027	575
82.64	1,030	586
82.65	1,034	596
82.66	1,038	606
82.67	1,041	617
82.68	1,045	627
82.69	1,048	638
82.70	1,052	648
82.71	1,056	659
82.72	1,059	669
82.73	1,063	680
82.74	1,066	691
82.75	1,070	701
82.76	1,074	712
82.77	1,077	723
82.78	1,081	734
82.79	1,084	744
82.80	1,088	755
82.81	1,092	766
82.82	1,095	777
82.83	1,099	788
82.84	1,102	799
82.85	1,106	810
82.86	1,110	821
82.87	1,113	832
82.88	1,117	843
82.89	1,120	855
82.90	1,124	866
82.91	1,128	877
82.92	1,131	888
82.93	1,135	900
82.94	1,138	911
82.95	1,142	922
82.96	1,146	934
82.97	1,149	945
82.98	1,153	957
82.99	1,156	968
83.00	**1,160**	**980**

Stage-Area-Storage for Pond BAS 2-B: BAS 2-B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
99.00	3,000	0
99.01	3,006	30
99.02	3,011	60
99.03	3,017	90
99.04	3,023	120
99.05	3,029	151
99.06	3,034	181
99.07	3,040	211
99.08	3,046	242
99.09	3,052	272
99.10	3,058	303
99.11	3,063	333
99.12	3,069	364
99.13	3,075	395
99.14	3,081	426
99.15	3,087	456
99.16	3,092	487
99.17	3,098	518
99.18	3,104	549
99.19	3,110	580
99.20	3,116	612
99.21	3,121	643
99.22	3,127	674
99.23	3,133	705
99.24	3,139	737
99.25	3,145	768
99.26	3,151	800
99.27	3,157	831
99.28	3,162	863
99.29	3,168	894
99.30	3,174	926
99.31	3,180	958
99.32	3,186	990
99.33	3,192	1,022
99.34	3,198	1,053
99.35	3,204	1,085
99.36	3,210	1,118
99.37	3,216	1,150
99.38	3,222	1,182
99.39	3,227	1,214
99.40	3,233	1,246
99.41	3,239	1,279
99.42	3,245	1,311
99.43	3,251	1,344
99.44	3,257	1,376
99.45	3,263	1,409
99.46	3,269	1,441
99.47	3,275	1,474
99.48	3,281	1,507
99.49	3,287	1,540
99.50	3,293	1,573
99.51	3,299	1,606
99.52	3,305	1,639
99.53	3,311	1,672
99.54	3,317	1,705
99.55	3,323	1,738
99.56	3,329	1,771
99.57	3,335	1,805
99.58	3,341	1,838
99.59	3,347	1,872
99.60	3,353	1,905
99.61	3,359	1,939
99.62	3,366	1,972
99.63	3,372	2,006
99.64	3,378	2,040
99.65	3,384	2,073
99.66	3,390	2,107
99.67	3,396	2,141
99.68	3,402	2,175
99.69	3,408	2,209
99.70	3,414	2,243
99.71	3,420	2,278
99.72	3,426	2,312
99.73	3,433	2,346
99.74	3,439	2,380
99.75	3,445	2,415
99.76	3,451	2,449
99.77	3,457	2,484
99.78	3,463	2,519
99.79	3,469	2,553
99.80	3,476	2,588
99.81	3,482	2,623
99.82	3,488	2,658
99.83	3,494	2,692
99.84	3,500	2,727
99.85	3,507	2,762
99.86	3,513	2,798
99.87	3,519	2,833
99.88	3,525	2,868
99.89	3,531	2,903
99.90	3,538	2,939
99.91	3,544	2,974
99.92	3,550	3,009
99.93	3,556	3,045
99.94	3,562	3,081
99.95	3,569	3,116
99.96	3,575	3,152
99.97	3,581	3,188
99.98	3,587	3,224
99.99	3,594	3,259
100.00	**3,600**	**3,295**

Stage-Area-Storage for Pond BAS 2-C: BAS 2-C

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
100.00	2,000	0
100.05	2,027	101
100.10	2,053	203
100.15	2,080	306
100.20	2,107	411
100.25	2,134	517
100.30	2,162	624
100.35	2,189	733
100.40	2,217	843
100.45	2,245	955
100.50	2,273	1,068
100.55	2,301	1,182
100.60	2,330	1,298
100.65	2,358	1,415
100.70	2,387	1,533
100.75	2,416	1,654
100.80	2,445	1,775
100.85	2,475	1,898
100.90	2,504	2,023
100.95	2,534	2,148
101.00	2,563	2,276
101.05	2,593	2,405
101.10	2,624	2,535
101.15	2,654	2,667
101.20	2,685	2,801
101.25	2,715	2,936
101.30	2,746	3,072
101.35	2,777	3,210
101.40	2,808	3,350
101.45	2,840	3,491
101.50	2,871	3,634
101.55	2,903	3,778
101.60	2,935	3,924
101.65	2,967	4,072
101.70	2,999	4,221
101.75	3,032	4,372
101.80	3,065	4,524
101.85	3,097	4,678
101.90	3,130	4,834
101.95	3,163	4,991
102.00	3,197	5,150
102.05	3,230	5,311
102.10	3,264	5,473
102.15	3,298	5,637
102.20	3,332	5,803
102.25	3,366	5,971
102.30	3,400	6,140
102.35	3,435	6,311
102.40	3,470	6,483
102.45	3,505	6,658
102.50	3,540	6,834
102.55	3,575	7,012
102.60	3,610	7,191
102.65	3,646	7,373
102.70	3,682	7,556
102.75	3,718	7,741
102.80	3,754	7,928
102.85	3,790	8,116
102.90	3,827	8,307
102.95	3,863	8,499
103.00	**3,900**	**8,693**

Stage-Area-Storage for Pond BAS 2-D: BAS 2-D

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
105.00	15,400	15,400	0
105.10	15,592	15,597	1,550
105.20	15,785	15,795	3,118
105.30	15,979	15,994	4,707
105.40	16,174	16,195	6,314
105.50	16,371	16,396	7,942
105.60	16,569	16,599	9,589
105.70	16,768	16,804	11,255
105.80	16,968	17,009	12,942
105.90	17,169	17,216	14,649
106.00	17,372	17,423	16,376
106.10	17,576	17,632	18,123
106.20	17,780	17,843	19,891
106.30	17,987	18,054	21,680
106.40	18,194	18,267	23,489
106.50	18,402	18,481	25,318
106.60	18,612	18,696	27,169
106.70	18,823	18,912	29,041
106.80	19,035	19,130	30,934
106.90	19,248	19,349	32,848
107.00	19,462	19,569	34,783
107.10	19,678	19,790	36,740
107.20	19,895	20,012	38,719
107.30	20,113	20,236	40,719
107.40	20,332	20,461	42,742
107.50	20,552	20,687	44,786
107.60	20,774	20,914	46,852
107.70	20,997	21,143	48,941
107.80	21,220	21,372	51,051
107.90	21,446	21,603	53,185
108.00	21,672	21,836	55,341
108.10	21,899	22,069	57,519
108.20	22,128	22,304	59,721
108.30	22,358	22,540	61,945
108.40	22,589	22,777	64,192
108.50	22,821	23,015	66,463
108.60	23,054	23,254	68,756
108.70	23,289	23,495	71,074
108.80	23,525	23,737	73,414
108.90	23,762	23,980	75,779
109.00	**24,000**	**24,225**	**78,167**

Stage-Area-Storage for Pond BAS 2-E: BAS 2-E

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
100.00	15,500	15,500	0
100.02	15,529	15,531	310
100.04	15,559	15,561	621
100.06	15,588	15,592	933
100.08	15,617	15,623	1,245
100.10	15,647	15,653	1,557
100.12	15,676	15,684	1,871
100.14	15,706	15,715	2,184
100.16	15,735	15,746	2,499
100.18	15,765	15,777	2,814
100.20	15,794	15,808	3,129
100.22	15,824	15,838	3,446
100.24	15,854	15,869	3,762
100.26	15,883	15,900	4,080
100.28	15,913	15,931	4,398
100.30	15,943	15,962	4,716
100.32	15,972	15,993	5,035
100.34	16,002	16,025	5,355
100.36	16,032	16,056	5,675
100.38	16,062	16,087	5,996
100.40	16,092	16,118	6,318
100.42	16,122	16,149	6,640
100.44	16,151	16,180	6,963
100.46	16,181	16,212	7,286
100.48	16,211	16,243	7,610
100.50	16,241	16,274	7,935
100.52	16,271	16,306	8,260
100.54	16,301	16,337	8,585
100.56	16,331	16,368	8,912
100.58	16,362	16,400	9,239
100.60	16,392	16,431	9,566
100.62	16,422	16,463	9,894
100.64	16,452	16,494	10,223
100.66	16,482	16,526	10,552
100.68	16,512	16,557	10,882
100.70	16,543	16,589	11,213
100.72	16,573	16,621	11,544
100.74	16,603	16,652	11,876
100.76	16,634	16,684	12,208
100.78	16,664	16,716	12,541
100.80	16,694	16,747	12,875
100.82	16,725	16,779	13,209
100.84	16,755	16,811	13,544
100.86	16,786	16,843	13,879
100.88	16,816	16,875	14,215
100.90	16,847	16,907	14,552
100.92	16,877	16,939	14,889
100.94	16,908	16,971	15,227
100.96	16,939	17,003	15,565
100.98	16,969	17,035	15,905
101.00	**17,000**	**17,067**	**16,244**

Stage-Area-Storage for Pond BAS 2-F: BAS 2-F

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
100.00	7,600	7,600	0
100.10	7,720	7,724	766
100.20	7,840	7,848	1,544
100.30	7,962	7,974	2,334
100.40	8,085	8,101	3,136
100.50	8,208	8,228	3,951
100.60	8,333	8,357	4,778
100.70	8,458	8,486	5,618
100.80	8,584	8,617	6,470
100.90	8,712	8,748	7,335
101.00	8,840	8,881	8,212
101.10	8,969	9,014	9,102
101.20	9,099	9,148	10,006
101.30	9,230	9,284	10,922
101.40	9,362	9,420	11,852
101.50	9,495	9,557	12,795
101.60	9,628	9,695	13,751
101.70	9,763	9,835	14,720
101.80	9,899	9,975	15,704
101.90	10,036	10,116	16,700
102.00	10,173	10,258	17,711
102.10	10,312	10,401	18,735
102.20	10,451	10,545	19,773
102.30	10,591	10,690	20,825
102.40	10,733	10,836	21,891
102.50	10,875	10,983	22,972
102.60	11,018	11,131	24,066
102.70	11,162	11,280	25,175
102.80	11,307	11,429	26,299
102.90	11,453	11,580	27,437
103.00	**11,600**	**11,732**	**28,589**

Stage-Area-Storage for Pond BAS 3-A: BAS 3-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
101.00	4,600	4,600	0
101.10	4,749	4,751	467
101.20	4,900	4,904	950
101.30	5,054	5,060	1,448
101.40	5,210	5,218	1,961
101.50	5,368	5,378	2,490
101.60	5,529	5,541	3,034
101.70	5,692	5,707	3,596
101.80	5,858	5,874	4,173
101.90	6,026	6,045	4,767
102.00	6,196	6,217	5,378
102.10	6,369	6,392	6,006
102.20	6,544	6,569	6,652
102.30	6,721	6,749	7,315
102.40	6,901	6,931	7,996
102.50	7,083	7,116	8,696
102.60	7,268	7,303	9,413
102.70	7,454	7,492	10,149
102.80	7,644	7,684	10,904
102.90	7,835	7,878	11,678
103.00	8,029	8,075	12,471
103.10	8,226	8,273	13,284
103.20	8,425	8,475	14,116
103.30	8,626	8,679	14,969
103.40	8,829	8,885	15,842
103.50	9,035	9,093	16,735
103.60	9,243	9,304	17,649
103.70	9,454	9,518	18,584
103.80	9,667	9,734	19,540
103.90	9,882	9,952	20,517
104.00	**10,100**	**10,172**	**21,516**

Stage-Area-Storage for Pond BAS 3-B: BAS 3-B

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
97.00	9,500	9,500	0
97.10	9,678	9,681	959
97.20	9,857	9,864	1,936
97.30	10,038	10,049	2,930
97.40	10,221	10,235	3,943
97.50	10,406	10,423	4,975
97.60	10,592	10,612	6,025
97.70	10,780	10,804	7,093
97.80	10,969	10,997	8,181
97.90	11,160	11,191	9,287
98.00	11,353	11,388	10,413
98.10	11,547	11,586	11,558
98.20	11,743	11,785	12,722
98.30	11,941	11,987	13,906
98.40	12,140	12,190	15,110
98.50	12,341	12,394	16,334
98.60	12,543	12,601	17,578
98.70	12,748	12,809	18,843
98.80	12,953	13,019	20,128
98.90	13,161	13,230	21,434
99.00	13,370	13,443	22,760
99.10	13,581	13,658	24,108
99.20	13,793	13,874	25,476
99.30	14,008	14,093	26,867
99.40	14,223	14,312	28,278
99.50	14,441	14,534	29,711
99.60	14,660	14,757	31,166
99.70	14,881	14,982	32,643
99.80	15,103	15,209	34,142
99.90	15,327	15,437	35,664
100.00	15,553	15,667	37,208
100.10	15,780	15,898	38,774
100.20	16,009	16,132	40,364
100.30	16,240	16,367	41,976
100.40	16,472	16,603	43,612
100.50	16,706	16,842	45,271
100.60	16,941	17,082	46,953
100.70	17,178	17,323	48,659
100.80	17,417	17,567	50,389
100.90	17,658	17,812	52,143
101.00	**17,900**	**18,059**	**53,920**

Stage-Area-Storage for Pond BAS 6-A: BAS 6-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
88.00	13,000	13,000	0
88.10	13,184	13,189	1,309
88.20	13,370	13,379	2,637
88.30	13,557	13,571	3,983
88.40	13,746	13,764	5,348
88.50	13,935	13,958	6,733
88.60	14,126	14,153	8,136
88.70	14,319	14,350	9,558
88.80	14,512	14,548	10,999
88.90	14,707	14,748	12,460
89.00	14,903	14,949	13,941
89.10	15,101	15,151	15,441
89.20	15,300	15,355	16,961
89.30	15,500	15,559	18,501
89.40	15,701	15,766	20,061
89.50	15,904	15,973	21,641
89.60	16,108	16,182	23,242
89.70	16,313	16,392	24,863
89.80	16,520	16,604	26,504
89.90	16,728	16,817	28,167
90.00	16,937	17,031	29,850
90.10	17,147	17,246	31,554
90.20	17,359	17,463	33,280
90.30	17,572	17,681	35,026
90.40	17,786	17,901	36,794
90.50	18,002	18,122	38,583
90.60	18,219	18,344	40,394
90.70	18,437	18,567	42,227
90.80	18,657	18,792	44,082
90.90	18,878	19,018	45,959
91.00	**19,100**	**19,246**	**47,858**

Stage-Area-Storage for Pond BAS 7-A: BAS 7-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
91.00	10,200	10,200	0
91.10	10,462	10,464	1,033
91.20	10,727	10,732	2,092
91.30	10,996	11,003	3,179
91.40	11,267	11,277	4,292
91.50	11,543	11,555	5,432
91.60	11,821	11,836	6,600
91.70	12,103	12,121	7,796
91.80	12,388	12,409	9,021
91.90	12,676	12,700	10,274
92.00	12,968	12,994	11,556
92.10	13,263	13,292	12,868
92.20	13,562	13,593	14,209
92.30	13,863	13,898	15,580
92.40	14,168	14,206	16,982
92.50	14,477	14,517	18,414
92.60	14,788	14,831	19,877
92.70	15,103	15,149	21,372
92.80	15,422	15,471	22,898
92.90	15,743	15,795	24,456
93.00	16,068	16,123	26,047
93.10	16,396	16,455	27,670
93.20	16,728	16,789	29,326
93.30	17,063	17,127	31,016
93.40	17,401	17,469	32,739
93.50	17,743	17,814	34,496
93.60	18,087	18,162	36,287
93.70	18,436	18,513	38,114
93.80	18,787	18,868	39,975
93.90	19,142	19,226	41,871
94.00	**19,500**	**19,588**	**43,803**

Stage-Area-Storage for Pond BAS 9-A: BAS 9-A

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
61.00	1,700	1,700	0
61.10	1,752	1,754	173
61.20	1,805	1,809	350
61.30	1,858	1,865	534
61.40	1,913	1,921	722
61.50	1,968	1,978	916
61.60	2,024	2,036	1,116
61.70	2,080	2,095	1,321
61.80	2,138	2,155	1,532
61.90	2,196	2,216	1,748
62.00	2,255	2,277	1,971
62.10	2,315	2,339	2,199
62.20	2,375	2,402	2,434
62.30	2,437	2,466	2,675
62.40	2,499	2,530	2,921
62.50	2,562	2,596	3,174
62.60	2,626	2,662	3,434
62.70	2,690	2,729	3,700
62.80	2,755	2,797	3,972
62.90	2,822	2,866	4,251
63.00	2,888	2,935	4,536
63.10	2,956	3,005	4,828
63.20	3,024	3,077	5,127
63.30	3,094	3,148	5,433
63.40	3,164	3,221	5,746
63.50	3,234	3,295	6,066
63.60	3,306	3,369	6,393
63.70	3,378	3,444	6,727
63.80	3,451	3,520	7,069
63.90	3,525	3,597	7,418
64.00	**3,600**	**3,675**	**7,774**

Stage-Area-Storage for Pond BAS 9-B: BAS 9-B

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
60.00	3,300	3,300	0
60.10	3,394	3,396	335
60.20	3,489	3,494	679
60.30	3,586	3,593	1,033
60.40	3,684	3,693	1,396
60.50	3,783	3,795	1,769
60.60	3,884	3,898	2,153
60.70	3,986	4,002	2,546
60.80	4,089	4,108	2,950
60.90	4,194	4,215	3,364
61.00	4,300	4,323	3,789
61.10	4,397	4,423	4,224
61.20	4,494	4,523	4,668
61.30	4,593	4,625	5,123
61.40	4,693	4,728	5,587
61.50	4,794	4,831	6,061
61.60	4,896	4,936	6,546
61.70	4,999	5,042	7,040
61.80	5,103	5,149	7,545
61.90	5,208	5,258	8,061
62.00	5,314	5,367	8,587
62.10	5,421	5,477	9,124
62.20	5,530	5,589	9,671
62.30	5,639	5,701	10,230
62.40	5,750	5,815	10,799
62.50	5,861	5,930	11,380
62.60	5,974	6,046	11,972
62.70	6,088	6,163	12,575
62.80	6,203	6,281	13,189
62.90	6,319	6,400	13,815
63.00	6,435	6,521	14,453
63.10	6,554	6,642	15,102
63.20	6,673	6,765	15,764
63.30	6,793	6,888	16,437
63.40	6,914	7,013	17,122
63.50	7,036	7,139	17,820
63.60	7,160	7,266	18,530
63.70	7,284	7,394	19,252
63.80	7,410	7,523	19,986
63.90	7,536	7,653	20,734
64.00	7,664	7,785	21,494
64.10	7,793	7,917	22,267
64.20	7,923	8,051	23,052
64.30	8,054	8,185	23,851
64.40	8,186	8,321	24,663
64.50	8,319	8,458	25,488
64.60	8,453	8,596	26,327
64.70	8,588	8,735	27,179
64.80	8,724	8,875	28,045
64.90	8,862	9,017	28,924
65.00	**9,000**	**9,159**	**29,817**

4.2 DRAWDOWN TIME

Below are the drawdown time calculations for the infiltration systems proposed on the site. The calculation uses estimated hydraulic conductivity values "*K*" in accordance with the Rawls Rates table. The formula below utilized the recommended formula per the MA Stormwater Handbook as follows:

Drawdown Time = Rv / [(K*Bottom Area)*(1FT/12IN)]

- Rv = Storage Volume (CF)
- K = Saturated Hydraulic Conductivity per Rawls Rate Table (IN/HR)
- Bottom Area = Area of Bottom of Proposed Recharge Structure (SF)

Below is a summary table of the drawdown calculations:

Drawdown Calculations

Infiltration BMP	Infiltration Rate (in/hr) (k)	Storage (Recharge) Volume (c.f.) (Rv)	Bottom Area	Draw Down Time (hours)
BASIN 1-A	2.41	42,522	5,723	37.0
BASIN 1-B	1.02	9,520	3,170	35.3
BASIN 1-C	1.02	438	72	71.6
BASIN 2-B	0.52	2,346	3,000	18.0
BASIN 2-C	1.02	7,373	2,000	43.4
BASIN 2-D	1.02	73,414	15,400	56.1
BASIN 2-E	0.52	11,213	15,500	16.7
BASIN 2-F	2.41	26,299	7,600	17.2
BASIN 3-A	1.02	19,540	4,600	50.0
BASIN 3-B	1.02	48,659	9,500	60.3
BASIN 6-A	1.02	40,394	13,000	36.6
BASIN 7-A	1.02	39,975	10,200	46.1
BASIN 9-A	2.41	6,066	1,700	17.8
BASIN 9-B	2.41	10,799	3,300	16.3
BASIN 10-B	2.41	8,477	2,050	20.6
BASIN 11-B	1.02	11,760	30,000	4.6
BASIN 12-A	2.41	31,215	9,500	16.4
BASIN 12-B	1.02	64,180	24,250	31.1
BASIN 15-A	1.02	755	800	11.1

k = saturated hydraulic conductivity (in/hr)
Rv = storage volume (c.f.) Bottom Area (s.f.)
Volume 3, Chapter 1 of the MA Stormwater Handbook

Conclusion:
The calculations above show that the infiltration BMPs draw down in less than 72 hours, as required by Standard 3.

4.3 WATER QUALITY

This majority of the site qualifies for the treatment of 0.5" of Rainfall under the MA Stormwater Regulations. However, BMPs 1-A and 1-C fall within an Outstanding Resource Water and requires a treatment of 1.0". The tables below provide the sizing of the proprietary water quality units, and the sediment forebays.

Water Quality Volume (WQV)

Subcatchment	Non-Roof Impervious Area	0.5" or 1" Treatment Required	WQV Required	WQV Provided
P-1U	-	0.5	-	-
P-1A	42,030	1.0	3,503	42,522
P-1B	-	1.0	-	-
P-1C	4,524	1.0	377	438
P-2U	-	0.5	-	-
P-2A	-	0.5	-	-
P-2B	19,218	0.5	801	2,346
P-2C	-	0.5	-	-
P-2D	110,984	0.5	4,624	73,414
P-2E	37,861	0.5	1,578	11,213
P-2F	51,034	0.5	2,126	26,299
P-3U	-	0.5	-	*
P-3A	34,960	0.5	1,457	19,540
P-3B	94,029	0.5	3,918	48,659
P-4	-	0.5	-	-
P-5U	-	0.5	-	-
P-6U	-	0.5	-	-
P-6A	51,153	0.5	2,131	40,394
P-7U	32,738	0.5	1,364	*

* Consists of existing untreated pavement

Water Quality Volume (WQV)

Subcatchment	Non-Roof Impervious Area	0.5" or 1" Treatment Required	WQV Required	WQV Provided
P-7A	87,620	0.5	3,651	39,975
P-8U	-	0.5	-	-
P-9U	12,000	0.5	500	*
P-9A	15,000	0.5	625	6,066
P-9B	33,850	0.5	1,410	10,799
P-9C	104,000	0.5	4,333	Directed to 9-B
P-10U	4,986	0.5	208	*
P-10A	-	0.5	-	1,234
P-10B	21,301	0.5	888	8,477
P-11U	-	0.5	-	-
P-11A	11,889	0.5	495	Directed to 11-B
P-11B	-	0.5	-	11,760
P-12U	-	0.5	-	-
P-12A	65,132	0.5	2,714	31,215
P-12B	42,104	0.5	1,754	64,180
P-13	-	0.5	-	-
P-14	-	0.5	-	-
P-15U	-	0.5	-	-
P-15A	-	0.5	-	755

* Consists of existing untreated pavement

4.4 RIP RAP SPLASH PAD

Rip rap splash pads are designed to dissipate energy, prevent scour at the stormwater outlet, and minimize the potential for downstream erosion. A LEVEL SPREADER / PLUNGE POOLE was sized for each of the outlets of the drainage system. The calculations below are in accordance with the methodology of the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control" produced by The Connecticut Council on Soil and Water Conservation.

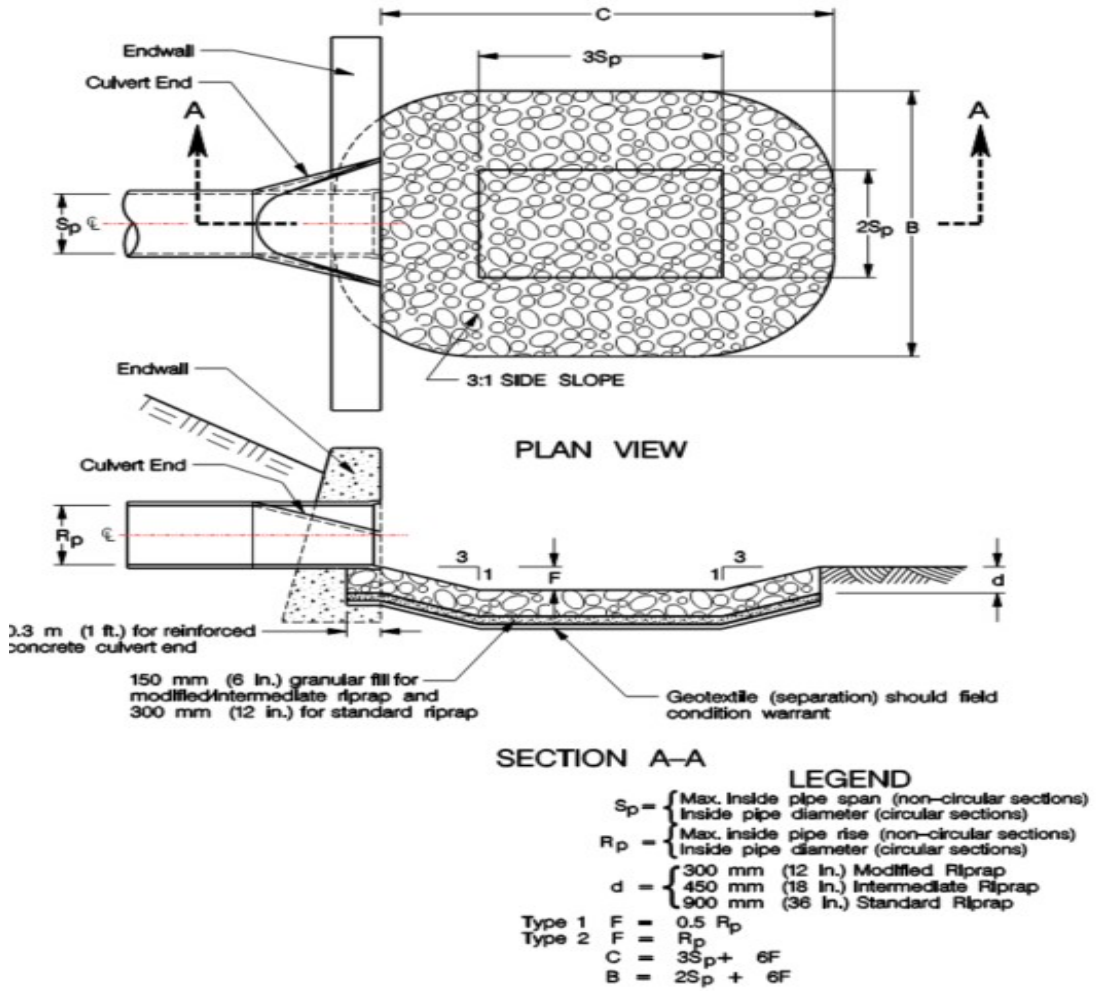
Preformed Scour Hole

Preformed Scour Hole Calculations

	Q	Do	TW	Depression	C	3Sp	B	2Sp	d50	
	(cfs)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(in.)
FES 2-A	0.2	1.0	0.30	0.50	6.00	3.00	5.00	2.00	0.00	0.06
FES 9-B	8.1	1.5	0.30	0.75	9.00	4.50	7.50	3.00	0.39	4.72

Conclusion:

As identified above, the discharge points have been designed to accommodate and exceed the required minimum Preformed scour hole sizing.



4.5 TSS REMOVAL

The project has been designed to comply with the required 80% TSS (minimum) removal per the Massachusetts Stormwater Regulations. Various combinations of stormwater BMPs including deep sump hooded catch basins, oil grit separators, proprietary water quality units and subsurface infiltration or detention basins are utilized.

We note that the TSS train leading to Basin 1-A and 1-C need to meet the 44% TSS pretreatment requirement prior to discharging to an Infiltration BMP. Both of these systems have Deep Sump Hooded Catch Basins that discharge to a Sediment Forebay which results in 44% TSS removal, satisfying this requirement.

Please refer to the attached TSS calculation sheets that follow:

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 1-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 1-C**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 2-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 2-D**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 2-E**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 2-F**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 3-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 3-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 6-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 7-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 9-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 9-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 10-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 11-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
CDS2014 WQU	**0.65**	**0.75**	**0.49**	**0.26**
Subsurface Infiltration System	**0.80**	**0.26**	**0.21**	**0.05**
	0.00	**0.04**	**0.00**	**0.05**
	0.00	**0.40**	**0.00**	**0.05**

Total TSS Removal = **95%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 12-A**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: **BASIN 12-B**

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin w/Sediment Forebay Pretreatment	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.00**	**0.00**	**0.00**
	0.00	**0.04**	**0.00**	**0.00**
	0.00	**0.40**	**0.00**	**0.00**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **PCC**

Prepared By: **JG**

Date: **8/4/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

SECTION 5 – LONG TERM OPERATION & MAINTENANCE

LONG-TERM STORMWATER OPERATION & MAINTENANCE PLAN

WEATHERVANE AT PEMBROKE COUNTRY CLUB

8/8/2023

PROJECT OVERVIEW:

The proposed project consists of 162 single-family residential detached condominiums, a 8-unit multifamily building, 2 existing residential homes, a clubhouse/function/property and a maintenance facility. The project has been designed to comply with the Massachusetts Stormwater Management Regulations.

Appended to this document is a sample maintenance form and a chart describing the anticipated frequency of tasks.

OWNER AND RESPONSIBLE PARTY:

Current Land Owners:
Weathervane at Pembroke Country Club
190 Old Derby Street, Suite 311
Hingham, MA 02043

Proposed Site Contractor:
J.F. Price Co.
611 Pleasant Street
Weymouth, MA 02189

Proposed Owner (Once project is approved)*:
Weathervane At Pembroke Country Club
190 Old Derby Street, Suite 311
Hingham, MA 02043

**Should the property be transferred to new ownership, the approved and permitted Operation and Maintenance plan shall be adhered to in perpetuity.*

Weathervane at Pembroke Country Club has facilities maintenance personnel on-staff. For any service beyond their service ability, they subcontract to the appropriate vendors such as street sweeping, catch basin and water quality unit cleaning, etc.

Ultimately, a Condominium Association will be established that will take over long-term O&M Responsibilities for the residential portion of this project upon project completion and turnover from Weathervane at Pembroke Country Club to the Condominium Association.

CONSTRUCTION MANAGEMENT:

A construction manager with adequate knowledge and experience on projects of similar size and scope shall be employed to oversee all site work related construction. The contractor shall incorporate the appropriate techniques to control sediment and erosion pollution during construction in accordance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas* and any conditions of approval from the local conservation commission.

Care should be taken when constructing stormwater control structures. Light earth-moving equipment shall be used to excavate in the vicinity of the infiltration areas. Use of heavy equipment causes excessive compaction of the soils beneath the basin resulting in reduced infiltration capacity. At no time shall temporary infiltration areas or settling basins be constructed in the vicinity of the proposed infiltration basins in order to prevent the soils from becoming clogged with sediment.

ON-GOING MAINTENANCE CONTRACT

The non-structural and structural approaches recommended below, as well as the required BMP maintenance, will be completed by Weathervane at Pembroke Country Club contractor, JF Price Co. Adequate personnel with appropriate training and access to proper equipment will be available to complete the tasks. Future responsible parties must be notified of their responsibility to operate and maintain the system in perpetuity.

MAINTENANCE LOG

The Responsible Party shall develop and maintain a log of inspections, maintenance, repairs, and disposal (including location of disposal) during the life of the project. Records will be maintained for at least 3 years and be made available to the Massachusetts Department of Environmental Protection or the Town of Pembroke in accordance with the provisions of the Massachusetts Stormwater Handbook. A sample of such a maintenance log is provided.

STORMWATER BMP MAINTENANCE

The proposed stormwater management system has been designed with appropriate BMPs aimed at reducing the pollutants discharge based upon the intended use of the property. All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements; others are more involved. The Responsible Party must have all BMPs regularly inspected to ensure they are operating properly on an as needed basis, including during runoff events exceeding 0.5 inches of rainfall.

A description of the non-structural and structural approaches to be incorporated is indicated below. The following best management practices are proposed to be incorporated into the stormwater management design to reduce source runoff and improve stormwater runoff discharge quality. The Responsible Party will regularly inspect all BMPs to ensure they are

operating properly. If any deficiencies are identified during these inspections, action to resolve it will be initiated and documented on the maintenance log.

STRUCTURAL BMPs

Deep Sump Hooded Catch Basins

Catch basins shall be labeled with "Do Not Dump, Drains to local Waterway" markers and repair/replace markers as necessary. On a regular basis the inlet pipe and outlet pipe shall be checked for debris and removed as necessary to ensure unobstructed flow of water. Inspections shall occur at least twice annually, once in the fall and then in the spring after the snow melts. Inspections shall verify the tees are secure and free flowing. Depth of sediment below water line. Basins are to be cleaned whenever sediment and hydrocarbons are observed. Basins shall be cleaned using a vacuum pump. All liquid shall be pumped from the sump of each basin at least once per year. All sediments and hydrocarbons should be properly handled and disposed of in accordance with local, state, and federal guidelines and regulations.

Water Quality Units

The water quality units (Contech) have been designed with drain manholes at grade to aid in the removal of sediment and debris accumulating in the structure and inspection ports to monitor the accumulation of sediment. Preventative maintenance shall be performed in accordance with manufacturer's instructions, which is enclosed in this section. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections. Refer to the enclosed "CDS Inspection and Maintenance Guide".

Subsurface Infiltration Stone System

Inspect and clean pretreatment BMP's every six months and after every major storm event (2-year return frequency). Check inlet/outlet pipes to determine if they are clogged. Inspect trench after the first several rainfall events, after all major storms, and on regularly scheduled dates every 6-months. Remove accumulated sediment trash, debris, leaves, and grass clippings.

Infiltration Basins

Remove debris and sediment on an as needed basis. Sediment shall be removed using light equipment so as not to compact the underlying soil. Sediment transported off site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Vegetated surfaces shall be repaired to ensure stable surfaces exist. Maintenance shall be done using a "gator" or golf cart sized vehicle to access the basins. Any debris or landscape growth extending within the identified maintenance access paths shall be trimmed/removed accordingly to maintain a clear and open pathway. At least twice a year, mow the vegetated berms, side slopes and basin bottom (if applicable).

Remove grass clippings and organic matter to prevent an impervious mat from forming. Inspection should occur twice annually, once in the fall and then in the spring after the snow melts.

Sediment Forebay

Frequently remove accumulated sediment. At a minimum, inspect forebay monthly and clean them out at least four times a year. Stabilize the floor and sidewalls of the forebay before making it operational. Grass height shall be no higher than 6-inches, and no lower than 3-inches. Check for signs of riling and gullying and repair as needed.

Stone Check Dams

Inspect at least once a month or after every rainfall event. Remove sediment accumulations. Check structure and abutments for erosion, piping, or rock displacement. Repair immediately.

Grass Swale

Inspect swales after the first few months to ensure there is no riling or gullying and that vegetation is adequate. Thereafter, inspect twice a year for slope integrity, vegetative health, soil erosion, ponding, and sediment accumulation. Remove sediment and debris manually at least once per year.

NON-STRUCTURAL BMPs

Pavement Sweeping

As street sweeping is a BMP under DEP guidelines, this non-structural BMP is an effective removal of Total Suspended Solids (TSS) in a comprehensive stormwater management program. Litter and debris are to be regularly picked up and removed from the pavement. Paved areas are to be swept a minimum of two times per year, at least once during April and again in September. This BMP is not needed to meet the 80% TSS removal requirement.

Detention Basin

Inspect Wet Basin at least once per year to ensure it is working as designed. Inspect the outlet structures for evidence of clogging or excessive outflow releases. At least twice a year, mow the upper stage, side slopes, embankment, and emergency spillway. At this time, also check the sediment forebay for accumulated material., sediment, trash and debris and remove it. Remove sediment from the basin at least once every 10 years.

Pervious Areas and Slopes

Wherever possible, runoff from paved areas and snowmelt shall be directed over vegetated areas to promote settlement of suspended solids before entering a wetland or resource area. Steep pervious slopes will be permanently vegetated to dissipate energy

and reduce potential erosion. No constructed vegetated slopes should exceed 2H:1V. Slopes exceeding 2:1 shall be stabilized with riprap or other similar measures to minimize the potential for future erosion. Irrigation system(s) shall be designed and maintained such that water is not applied to/or allowed to run off onto any impervious surfaces. Although overspray or runoff may be unavoidable during periods of high winds. In the event of accidental damage to system components or other unusual circumstances the system components shall be promptly corrected. Maximum of 1 inch of irrigation water will be applied to irrigated areas per week.

Drainage Control Structures, Flared End Sections, Trash Racks, Riprap Pads, Swales, and Level Spreader Splash Pads

Basin control structures, flared end sections, trash racks, riprap pads and level spreader splash pads shall be inspected and any debris or growth surrounding or within these structures shall be removed. Any/all debris or vegetation encroaching on the control structures or outfall components shall be removed or appropriately trimmed back to maintain the designed control elevation and flow patterns/cross section without impediment. Inspection should occur twice annually, once in the fall and then in the spring after the snow melts. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections and manufacturer's requirements.

Fertilizers

Use of fertilizers shall follow the requirements of 330 CMR 31.0 including but not limited to:

- No fertilizers containing phosphorous shall be applied in the absence of a current soil test indicating that supplemental phosphorous is required.
- No fertilizer shall be applied intentionally or otherwise to impervious surfaces and if so applied, shall be immediately cleaned up.
- All record keeping requirements shall be followed.
- All time of application requirements including prohibition of applications when heavy rain is forecast within 24 hours shall be followed.
- Lawn clippings: No lawn clippings shall be disposed of onsite.

Pest and Insect Control

- As a first-line defense against pests/insects and weeds (the "First-Line Defense"), the party responsible for maintenance shall avoid the use of non-organic pesticides, herbicides, fungicides and insecticides unless spot treatment is required for a specific control application. The owner shall not be required to undertake extraordinary measures or incur unreasonable cost to locate, purchase or apply non-organic products.

- If the First-Line Defense fails, as determined by the owner or party responsible for maintenance, in its sole but reasonable discretion, non-organic approaches to pest/insect control may be used, the same to be applied by a professional licensed in the Commonwealth of Massachusetts, where required. But in no event shall such non-organic approaches be used within the 25ft buffer zone to the wetlands.

Waste Management

Solid waste and recycling will be contained in garbage cans maintained at each residence for routine and regular trash pickup. Waste deposition in the receptacles will be consistent with state and local regulations. Solid waste and recycling for the Clubhouse and Function will be contained in dumpsters maintained by the restaurant for routine and regular trash pickup. Waste deposition in the dumpsters will be consistent with state and local regulations.

Snow Removal

There shall be no plowing of stockpiling of snow within any resource areas. Typically, a combination of plowing and/or snow blowing is utilized on the individual driveways and a snow blowing "bobcat" is used to clear the sidewalks. No sodium chloride shall be used for ice removal. Alternatively, sand or formulations without chloride may be used. Calcium magnesium acetate (CMA) is preferred. Deicing compounds must be stored or sheltered on impervious pads (i.e. in residential garages and the maintenance facility). No de-icing compounds shall be stored or utilized in wetland resource areas nor the 25ft buffer. Snow that is plowed from the paved driveway surfaces shall be plowed to the edges of the pavement. When capacity of these areas is exceeded, accumulated snow shall be removed. Refer to the attached 11x17 O&M Map which identifies the location of BMPs and provides additional Snow Removal information.

Trash Pickup

Trash will be picked up at each individual home in the standard containers required by the local or private trash company.

Hazardous Waste and Spill Control Containment

In the event of a discharge or spill of oil or another hazardous material, outlets to stormwater management facilities immediately downstream of the spill shall be plugged so that hazardous materials do not enter the system. In the event of a discharge of oil or other hazardous material, responsible facility personnel shall notify the appropriate state agencies, the Town of Pembroke DPW and the EPA National Response Center 1-800-424-8802 shall be notified. All hazardous waste materials will be disposed of in a manner specified by local, state and/or federal regulations and by the manufacturer of such products.

Pet Waste Management

Pooper scooper laws for pets shall be followed. Residents shall not dump pet waste into storm drains, catch basins, stormwater basins, or any other drainage system components. Pet waste shall be scooped up and disposed of properly.

Other Miscellaneous Maintenance Items

Washing or pressure washing of impervious areas will not be part of routine maintenance procedures, though it may be used on occasion in small areas to treat specific problems. No coal tar-based driveway sealer products shall be used on the paved surfaces throughout the site. Asphalt binder sealers shall be used instead.

Stormwater BMP Inspection and Maintenance Log

Facility Name	
Address	
Begin Date	End Date

Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the municipality and start a new log at that time.

BMP ID# — Always use ID# from the Operation and Maintenance Manual.

Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.

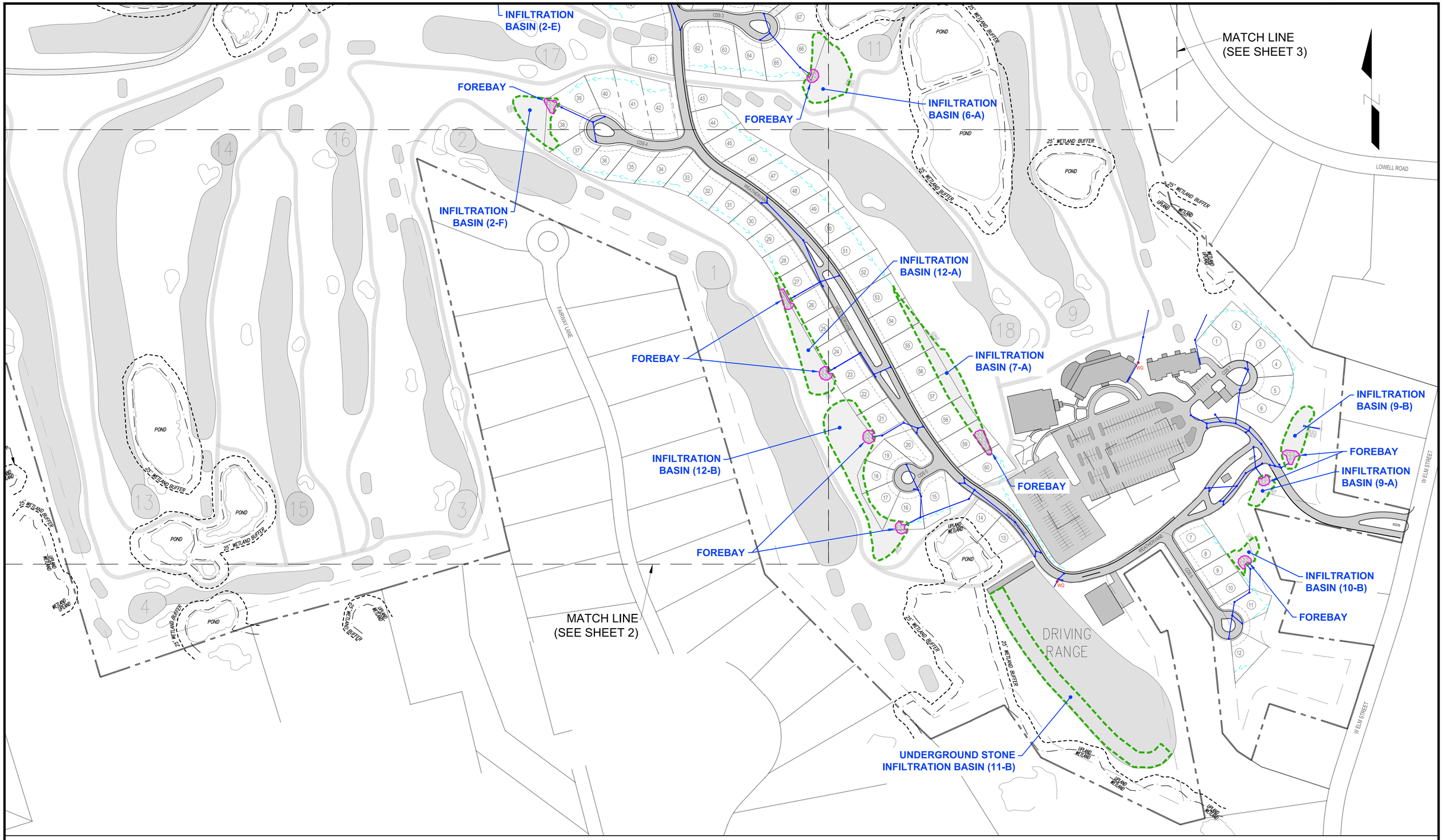
Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.

Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.

Comments and actions taken — Describe any maintenance done and need for follow-up.

Stormwater BMP Inspection Matrix

Conventional & LID Best Management Practices	**Inspection & Maint. Frequency**	**Erosion& Scour**	**Obstructions**	**Trash & Debris**	**Sediment Build-Up Removal**	**Vegetation Cover**	**Remove/Reset Filter Fabric & Stone As Required**	**Vac Truck Sediment & Contaminants**	**Remove/Reset Riprap as Required**
Catch Basins/Area	Twice-Annually (Spring and Fall)								
Subsurface Infiltration System	Twice-Annually (Spring and Fall)								
Grass Swales	Twice-Annually (Spring and Fall)								
Outlet Structure	Twice-Annually (Spring and Fall)								
Water Quality Units	Twice-Annually (Spring and Fall)								
Infiltration Basin, Sediment Forebays,	Twice-Annually (Spring and Fall)								
Emergency Overflows	Twice-Annually (Spring and Fall)								
Street Sweeping	Twice-Annually (Spring and Fall)								
Outlets (FES, Rip Rap Pad, Level Spreaders)	Twice-Annually (Spring and Fall)								



INFILTRATION BASIN
DETENTION BASIN
RAIN GARDEN
SEDIMENT FOREBAY
SWALE
DRAINAGE SYSTEM
CDS WATER QUALITY UNIT

SNOW STORAGE:

1. EMERGENCY ACCESS TO BE PLOWED
2. STREETS TO BE PLOWED TO EACH EDGE OF PAVEMENT MAINTAINING MIN 20' WIDE ACCESS AT ALL TIMES.
3. DRIVEWAYS TO BE PLOWED TO EITHER SIDE OF DRIVEWAY.
4. IN MAJOR SNOW EMERGENCIES CONDOMINIUM ASSOCIATION AS AN OPTION OF LAST RESORT COMMITS TO HAULING EXCESS SNOW IN ORDER TO MAINTAIN PROPER ACCESS.
5. NO SNOW STORAGE SHALL OCCUR WITHIN WETLAND RESOURCE AREA.

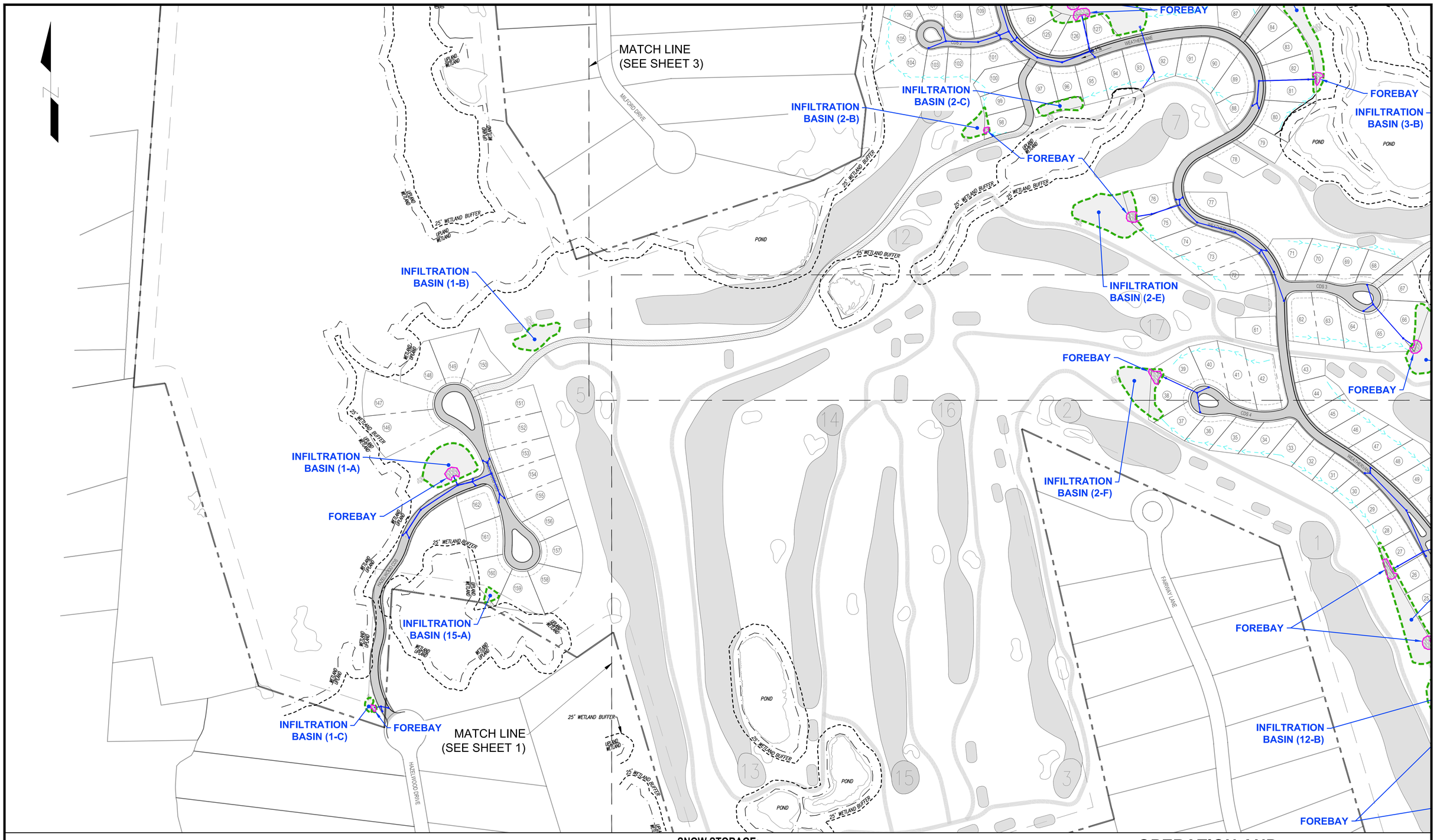
120 60 0 120 240

OPERATION AND MAINTENANCE BMP MAP

(SHEET 1)

PEMBROKE COUNTRY CLUB

94 WEST ELM STREET
PEMBROKE, MA
DATE: AUGUST 3, 2023



INFILTRATION BASIN
DETENTION BASIN
RAIN GARDEN
SEDIMENT FOREBAY
SWALE
DRAINAGE SYSTEM
CDS WATER QUALITY UNIT

SNOW STORAGE:

1. EMERGENCY ACCESS TO BE PLOWED
2. STREETS TO BE PLOWED TO EACH EDGE OF PAVEMENT MAINTAINING MIN 20' WIDE ACCESS AT ALL TIMES.
3. DRIVEWAYS TO BE PLOWED TO EITHER SIDE OF DRIVEWAY.
4. IN MAJOR SNOW EMERGENCIES CONDOMINIUM ASSOCIATION AS AN OPTION OF LAST RESORT COMMITS TO HAULING EXCESS SNOW IN ORDER TO MAINTAIN PROPER ACCESS.
5. NO SNOW STORAGE SHALL OCCUR WITHIN WETLAND RESOURCE AREA.

120 60 0 120 240

OPERATION AND MAINTENANCE BMP MAP

(SHEET 2)

PEMBROKE COUNTRY CLUB

94 WEST ELM STREET
PEMBROKE, MA
DATE: AUGUST 3, 2023

DETENTION BASIN (2-A)

INFILTRATION BASIN (2-D)

RAIN GARDEN

INFILTRATION BASIN (3-A)

GRASS SWALE

FOREBAY

FOREBAY

INFILTRATION BASIN (2-C)

INFILTRATION BASIN (2-B)

FOREBAY

INFILTRATION BASIN (3-B)

FOREBAY

INFILTRATION BASIN (2-E)

FOREBAY

FOREBAY

INFILTRATION BASIN (6-A)

MATCH LINE (SEE SHEET 2)

MATCH LINE (SEE SHEET 1)

DWELLEY STREET

DWELLEY STREET

MAPLE AVE

WEATHERVANE

WEATHERVANE

WEATHERVANE

MILFORD DRIVE

LOWELL ROAD

CDS 1

CDS 2

CDS 3

UPLAND WETLAND

WETLAND UPLAND

WETLAND UPLAND

25' WETLAND BUFFER

25' WETLAND BUFFER

25' WETLAND BUFFER

25' WETLAND BUFFER

25' WETLAND BUFFER

25' WETLAND BUFFER

POND

POND

POND

POND

SNOW STORAGE:

1. EMERGENCY ACCESS TO BE PLOWED
2. STREETS TO BE PLOWED TO EACH EDGE OF PAVEMENT MAINTAINING MIN 20' WIDE ACCESS AT ALL TIMES.
3. DRIVEWAYS TO BE PLOWED TO EITHER SIDE OF DRIVEWAY.
4. IN MAJOR SNOW EMERGENCIES CONDOMINIUM ASSOCIATION AS AN OPTION OF LAST RESORT COMMITS TO HAULING EXCESS SNOW IN ORDER TO MAINTAIN PROPER ACCESS.
5. NO SNOW STORAGE SHALL OCCUR WITHIN WETLAND RESOURCE AREA.

120 60 0 120 240

INFILTRATION BASIN

DETENTION BASIN

RAIN GARDEN

SEDIMENT FOREBAY

SWALE

DRAINAGE SYSTEM

CDS WATER QUALITY UNIT

OPERATION AND MAINTENANCE BMP MAP

(SHEET 3)

PEMBROKE COUNTRY CLUB

94 WEST ELM STREET
PEMBROKE, MA
DATE: AUGUST 3, 2023

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CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122

CONTECH ENGINEERED SOLUTIONS
800.925.5240
www.ContechES.com

CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SECTION 6 – SOILS TESTING DATA

Merrill Engineers- Land Surveyors
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26 Union St., Plymouth, MA. 02360
508-746-6060

FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 8 DATE: 11/6/23 TIME: 11:40 WEATHER: 35° Rainy
SITE ADDRESS or MAP/LOT #: Pembroke Country Club - Hazelwood
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%):

VEGETATION: LANDFORM:
DISTANCES FROM:
OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-7	A_p	Sandy Loam	10YR3/2		M-F (Massive, Friable)
7-24	B_W	Sandy Loam	10YR5/4		M-F
24-73	C_1	Loamy Sand	2.5Y6/3		M-F 3% Gravel
73-124	C_2	Sand	2.5Y6/3		L.S.G. (Loose Single Grain) 2% Stone 5% Gravel

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 120" Weeping from Face: Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: Witnessed By: Mach./Oper.:
Comments:

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 9 DATE: _____ TIME: 11:15 WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: _____

LAND USE: _____ SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____

VEGETATION: _____ LANDFORM: _____
DISTANCES FROM:
OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____
DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-5	A	Sandy Loam	10YR 3/2		M-F
5-80	C	Sand	2.5Y 6/3	42"	L.S.G. 5% Stone 15% Gravel

80

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

14.3

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 68" Weeping from Face: _____ Saturating the Face: _____ Mottling: 42"

76.5

Estimated Depth to Seasonal High Ground Water : _____

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: _____ Witnessed By: _____ Mach./Oper.: _____
Comments: Silt pockets in north face of test pit, not consistent in location or elevation.

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

mound just off path shown on plan (10'± perp to orientation

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 10 DATE: _____ TIME: 10:56 WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: 85.8

LAND USE: _____ SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____

VEGETATION: _____ LANDFORM: _____
DISTANCES FROM:
OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____
DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-6	Ap	Sandy Loam	10YR 3/2		M-F
6-20	Bw	Sandy Loam	10YR 5/4		M-F
20-112	C	Sand	2.5Y 6/3		LS&G 5% Stone 10% Gravel

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 120" Weeping from Face: _____ Saturating the Face: _____ Mottling: 90" (see below)
Estimated Depth to Seasonal High Ground Water : _____

76.5

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: _____ Witnessed By: _____ Mach./Oper.: _____
Comments: Loose for C layer @ 90" with redox 1in (faint)

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 11-A DATE: _____ TIME: 10:30 WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: _____
LAND USE: _____ SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____
VEGETATION: _____ LANDFORM: _____
DISTANCES FROM:
OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____
DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-8	Ap	Sandy Loam	10YR 3/2		M-F
8-24	Bw	Sandy Loam	10YR 5/4		M-F
24-96	C1	Loamy Sand	2.5Y 6/3		2% stone 5% gravel M-F ~~coarse depositional~~
96-112	C2	Sand	2.5Y 6/3	—	L.S.G. 2% stone 5% gravel Firm in place, v. loose in hand

93.5

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐
GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 110" Weeping from Face: _____ Saturating the Face: _____ Mottling: _____
Estimated Depth to Seasonal High Ground Water : _____

111.3

PERCOLATION TEST

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:		

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: _____ Witnessed By: _____ Mach./Oper.: _____
Comments: _____

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 11-B DATE: _____ TIME: 10:40 WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: _____

LAND USE: _____ SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____

VEGETATION: _____ LANDFORM: _____

DISTANCES FROM:

OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-6	A_p	Sandy Loam	10YR 3/2		M-F
6-29	B_w	Sandy Loam	10YR 5/4		M-F
29-96	C_1	Fine Sandy Loam	2.5Y 6/3		M-F 0% stone 0% Gravel 5% cobble 2% stone
96-120	C_2	Sand	2.5Y 6/3		saturated, difficult to probe

Redox @ 60" ± at side of face of #

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 106 Weeping from Face: _____ Saturating the Face: _____ Mottling: 82
Estimated Depth to Seasonal High Ground Water : _____

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: _____ Witnessed By: _____ Mach./Oper.: _____
Comments: _____

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

Redox @ 5Y 6/1
7.5YR 6/8

11-B 30 ft South of 11A

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 31 (Hole #) ~~7/13/23~~ 7/13/23 (Date) 11:00 (Time) _____ (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) _____ (Vegetation) _____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) _____ (Slope (%))

   Description of Location: _____

2. Soil Parent Material: _____ _____ (Landform) _____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: ___ Depth to Weeping in Hole 72 Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	O				Cnc : Dpl:						
5-20	Fill				Cnc : Dpl:						
20-26	1C	LS			Cnc : Dpl:						LS with some restrictive clay
26-96	2C	S		44"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32 (Hole #) ~~7/12~~ 7/13/23 (Date) 4:36 (Time) ____ (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) ____ (Vegetation) ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) ____ (Slope (%))

   Description of Location: ____

2. Soil Parent Material: ____ Landform ____ Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body ____ feet; Drainage Way ____ feet; Wetlands ____ feet; Property Line ____ feet; Drinking Water Well ____ feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ___ Depth to Weeping in Hole ___Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
A	0-12				Cnc : Dpl:						
Bw	12-54				Cnc : Dpl:						
C	54-132			130"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 33 (Hole #) 7/13/23 ~~1/5/23~~ (Date) 9 (Time) (Weather) (Latitude) (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) (Vegetation) (Surface Stones (e.g., cobbles, stones, boulders, etc.)) (Slope (%))

   Description of Location:

2. Soil Parent Material: (Landform) (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet; Drainage Way ____ feet; Wetlands ____ feet; Property Line ____ feet; Drinking Water Well ____ feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: ___ Depth to Weeping in Hole 12' Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-14	Ap	SL			Cnc : Dpl:						
14-32	Bw	SL			Cnc : Dpl:						
32-108	C1	LS			Cnc : Dpl:						
108-144	C2	S		126	Cnc : Dpl:		5%	5%			
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 34 (Hole #) ~~1/5/23~~ 7/13/23 (Date) 10:30 (Time) _____ (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) _____ (Vegetation) _____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) _____ (Slope (%))

   Description of Location: _____

2. Soil Parent Material: _____ (Landform) _____ (Position on Landscape (SU, SH, BS, FS, TS, Plain)) _____

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ___ Depth to Weeping in Hole ___Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-13	Ap	SL			Cnc : Dpl:						
13-30	Bw	SL			Cnc : Dpl:						
30-132	C	LS		115"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 35 (Hole #) ~~1/6/23~~ 7/13/23 (Date) 11:00 (Time) _____ (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) _____ (Vegetation) _____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) _____ (Slope (%))

   Description of Location: _____

2. Soil Parent Material: _____ (Landform) _____ (Position on Landscape (SU, SH, BS, FS, TS, Plain)) _____

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: 108 Depth to Weeping in Hole 112 Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-12	Ap	SL			Cnc : Dpl:						
12-24	Bw	SL			Cnc : Dpl:						
24-96	C1	LS			Cnc : Dpl:		5%	10%			
96-112	C2	S		100	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 36 (Hole #) 1/5/23 (Date) ____ (Time) ____ (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) ____ (Vegetation) ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) ____ (Slope (%))

Description of Location: woods next to stake

2. Soil Parent Material: ____ Landform ____ Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body ____ feet; Drainage Way ____ feet; Wetlands ____ feet; Property Line ____ feet; Drinking Water Well ____ feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ___ Depth to Weeping in Hole ___Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-72	Fill				Cnc : Dpl:			15%			
72-108	C_1	LS			Cnc : Dpl:						
108-126	C_2	LS		108"	Cnc : Dpl:						Depleted
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 42 (Hole #) 1/5/23 (Date) 1:30 (Time) ____ (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) ____ (Vegetation) ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) ____ (Slope (%))

   Description of Location: ____

2. Soil Parent Material: ____ Landform ____ Position on Landscape (SU, SH, BS, FS, TS, Plain) ____

3. Distances from: Open Water Body ____ feet; Drainage Way ____ feet; Wetlands ____ feet; Property Line ____ feet; Drinking Water Well ____ feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 65" Depth to Weeping in Hole 90" Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-12	A_p	SL			Cnc : Dpl:						
12-36	B_w	LS			Cnc : Dpl:						
36-90	C	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 43 (Hole #) ~~1/5/23~~ 7/13/23 (Date) 2:00 (Time) _____ (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) _____ (Vegetation) _____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) _____ (Slope (%))

Description of Location: Woods next to Stake

2. Soil Parent Material: _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: 114 Depth to Weeping in Hole 120 Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	Ap				Cnc : Dpl:						
6-18	B_w				Cnc : Dpl:						
18-78	C_1				Cnc : Dpl:						
78-102	C_2				Cnc : Dpl:						
102-120	C_3			102"	Cnc : Dpl:						
					Cnc : Dpl:						Depleted

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-44 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Wooded area between driving range and fairway.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: ____ Depth to Weeping in Hole 132" Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	A_P	SL			Cnc : Dpl:						
5-21	B_W	SL			Cnc : Dpl:						
21-31	Fill				Cnc : Dpl:						
31-132	C	FS			Cnc : Dpl:						Mottling starts at 7.5
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-45 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Near the center of the driving range.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A_P	LS			Cnc : Dpl:						
3-35	C_1	S			Cnc : Dpl:						
35-144	C_2	FS		124”	Cnc : Dpl:						Banding at 6’
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-46 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Southern part of the driving range.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-10	A_P	SL			Cnc : Dpl:						
10-96	C_1	S			Cnc : Dpl:						
96-120	C_2	LS			Cnc : Dpl:						Signs of mottling at 8.4'. Might be trapped water in new layer.
120-144	C_3	S		126"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-47 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Northeast corner of driving range.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: ____ Depth to Weeping in Hole 108" Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-7	A_P	SL			Cnc : Dpl:						
7-36	B_W	SL			Cnc : Dpl:						
36-58	C_1	LS			Cnc : Dpl:						
58-108	C_2	S		90"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-48 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Northeast corner of driving range.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-7	A_P	SL			Cnc : Dpl:						
7-36	B_W	SL			Cnc : Dpl:						
36-54	C_1	LS			Cnc : Dpl:						Signs of mottling at 4.5'. Might be trapped water.
54-108	C_2	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-49 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: West side of west elm street entrance driveway.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-24	Fill				Cnc : Dpl:						
24-28	A_P	SL			Cnc : Dpl:						
28-32	B_W	SL			Cnc : Dpl:						
32-120	C	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-50 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: East side of west elm street entrance driveway.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	A_P	SL			Cnc : Dpl:						
5-12	B_W	SL			Cnc : Dpl:						
12-18	Fill				Cnc : Dpl:						
18-126	C	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-51 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: East side of west elm street entrance driveway.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☒ Yes ☐ No If Yes: ☒ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4	A_P	SL			Cnc : Dpl:						
4-16	B_W	SL			Cnc : Dpl:						
16-24	Fill				Cnc : Dpl:						
24-120	C	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-25 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Wooded area between 78 and 85 Hazelwood Drive.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	A_P	SL			Cnc : Dpl:						
6-20	B_W	SL			Cnc : Dpl:						
20-120	C	FS			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-26 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Wooded area to the west of the water line easement.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A_P	SL			Cnc : Dpl:						
3-11	B_W	SL			Cnc : Dpl:						
11-126	C	S		114”	Cnc : Dpl:						Mottling at 9.5”
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-27 (Hole #) | 7/14/23 (Date) | 11:30am (Time) | Overcast (Weather) | _____ (Latitude) | _____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | _____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Wooded area to the east of the water line easement.

2. Soil Parent Material: _____ | _____ (Landform) | _____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body _____ feet | Drainage Way _____ feet | Wetlands _____ feet | Property Line _____ feet | Drinking Water Well _____ feet | Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: ____ Depth to Weeping in Hole 132 Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A_P	SL			Cnc : Dpl:						
3-12	B_W	SL			Cnc : Dpl:						
12-132	C	S			Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of Pembroke

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 38-39 (Hole #) | 7/14/23 (Date) | 4:30pm (Time) | Overcast (Weather) | ____ (Latitude) | ____ (Longitude)

1. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | Wooded (Vegetation) | ____ (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

Description of Location: Wooded area behind 37 Anthony Drive.

2. Soil Parent Material: ____ | ____ (Landform) | ____ (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body ____ feet | Drainage Way ____ feet | Wetlands ____ feet | Property Line ____ feet | Drinking Water Well ____ feet | Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: ____ Depth to Weeping in Hole 136" Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-2	O				Cnc : Dpl:						
2-6	A_P	SL			Cnc : Dpl:						
6-22	B_W	SL			Cnc : Dpl:						
22-136	C	LS		102"	Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Weathervane at Pembroke Country Club
Owner Name

94 West Elm Street
Street Address

B11-33
Map/Lot #

Pembroke
City

MA
State

02359
Zip Code

B. Site Information

1. (Check one) ☐ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☐ Yes ☐ No If yes:

Merrimac-urban Land complex-0-8%
Plymouth Carver complex-3-8%
Soil Name

Web soil Survey
Source

626B, 481B
Soil Map Unit

Sandy and gravelly supraglacial meltout till
Sandy gravelly glaciofluvial deposits
Soil Parent material

Bouldery
Soil Limitations

outwash plains, moraines, pitted outwash plains, Kames, Eskers
Landform

3. Surficial Geological Report Available? ☑ Yes ☐ No If yes:

2018 Bjornstrom, Janetstrom, Mary DiGiacomo
Year Published/Source

Map 3402-152 (Hanover)
Map Unit

Coarse Deposits - poorly sorted to well sorted, gravel & sand, finer layers contain very fine sand
Description of Geologic Map Unit

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer:

7. Current Water Resource Conditions (USGS): 01/29/2020
Month/Day/ Year

Range: ☐ Above Normal ☒ Normal ☐ Below Normal
Wetland Type

8. Other references reviewed:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-1 (Hole #) 1/30/20 (Date) 8:31 (Time) sunny 25° (Weather)

1. Land Use: woodland (e.g., woodland, agricultural field, vacant lot, etc.) conifer & deciduous trees (Vegetation) none (Surface Stones (e.g., cobbles, stones, boulders, etc.)) Latitude Longitude: 0-1% (Slope (%))

   Description of Location: wooded area next to residential houses

2. Soil Parent Material: sandy glacialfluvial deposits outwash plains (Landform) summit (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-11"	A	loam	7.5YR 2.5/2	—	—	—	—	—	massive	very friable	—
11"-26"	B	sandy loam	7.5YR 5/8	—	—	—	—	<5%	massive	very friable	—
26"-156"	C	loamy sand	7.5YR 5/6	—	—	—	<2%	<5%	massive	very friable	—

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-2 (Hole #) 1/30/2020 (Date) 9:20 (Time) Sunny 25° (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: woodland (e.g., woodland, agricultural field, vacant lot, etc.) deciduous trees (Vegetation) a few boulders (Surface Stones (e.g., cobbles, stones, boulders, etc.) 3-5% (Slope (%)

   Description of Location: Wooded area near residential houses

2. Soil Parent Material: sand/gravelly glaciofluvial Deposits (Landform) outwash plain (Position on Landscape (SU, SH, BS, FS, TS) ST

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-2"	O	loam	7.5YR2.5/1	—	—	—	—	—	massive	very friable	—
2"-6"	A	loam	7.5YR4/4	—	—	—	—	—	massive	very friable	—
6"-14"	B	sandy loam	7.5YR7/8	—	—	—	—	—	massive	very friable	—
14"-72"	C1	loamy sand	7.5YR4/3	—	—	—	—	—	massive	very friable	remove
72"-168"	C2	fine/medium sand	7.5YR 5/4	—	—	—	<5%	—	single grain	loose	—

Additional Notes: 6" 168"

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: TP3 (Hole #) 1/30/2020 (Date) 10:30 (Time) Sunny 25° (Weather) ____ (Latitude) ____ (Longitude:)

1. Land Use: Woodland (e.g., woodland, agricultural field, vacant lot, etc.) deciduous trees (Vegetation) boulders (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 3-5% (Slope (%))

   Description of Location: Wooded Area close to parking lot

2. Soil Parent Material: sand/gravelly glaciofluvial deposits Landform: outwash plain Position on Landscape (SU, SH, BS, FS, TS): summit

3. Distances from: Open Water Body ____ feet; Property Line ____ feet; Drainage Way ____ feet; Drinking Water Well ____ feet; Wetlands ____ feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	A	loam	7.5YR 2.5/1	—	—	—	—	—	massive	very friable	—
4"-16"	A	loam	7.5YR 3/3	—	—	—	—	—	massive	very friable	—
16"-24"	B	loamy sand	7.5YR 4/4	—	—	—	—	10%	massive	very friable	—
24"-67"	C	loamy sand	7.5YR 5/6	—	—	—	<10%	—	massive	very friable	remove
67"-180"	C2	fine-med sand		—	—	—	<2%	—	single grain	loose	—

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: TP-4 (Hole #) 1/30/20 (Date) 11:15 AM (Time) sunny 30° (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: woodland (e.g., woodland, agricultural field, vacant lot, etc.) deciduous trees (Vegetation) a few boulders (Surface Stones (e.g., cobbles, stones, boulders, etc.) 0-2% (Slope (%)

Description of Location: Wooded Area next to parking lot

2. Soil Parent Material: glaciofluvial deposits outwash plain (Landform) Summit (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-8"	A	Loam	10YR 3/4	—	—	—	—	—	massive	very friable	—
8"-24"	BC	Loamy Sand	10YR 4/4	—	—	—	—	<5%	massive	very friable	—
24"-~~80~~"	C	Loamy Sand	10YR 5/3	—	—	—	<5%	<5%	massive	very friable	—

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-5 (Hole #) 1/20/2020 (Date) 12:15 (Time) Sunny 30° (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: woodland (e.g., woodland, agricultural field, vacant lot, etc.) deciduous trees (Vegetation) a few small boulders (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 1-2% (Slope (%))

   Description of Location: woods with medium sized trees 6"-2'

2. Soil Parent Material: sandy glaciofluvial deposits Outwash plain (Landform) Summit (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-6"	A	loam	7.5 YR 3/1	-	-	-	-	-	massive	very friable	-
6"-16"	B	sandy loam	7.5 YR 4/6	-	-	-	<2%	-	massive	very friable	
16"-24"	C	loamy sand	7.5 YR 4/3	-	-	-	2%	10%	massive	very friable	24"-31" concentrations on east side of pit ~~features~~ not found elsewhere

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: TP-6 (Hole #) 1/30/2018 (Date) 1:00 (Time) Sunny 30° (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: Edge of woodland (e.g., woodland, agricultural field, vacant lot, etc.) trees on edge (Vegetation) none (Surface Stones (e.g., cobbles, stones, boulders, etc.) 0-1% (Slope (%)

Description of Location: Edge of parking lot & woodland

2. Soil Parent Material: glaciofulvial deposits Landform: a wash plain Position on Landscape (SU, SH, BS, FS, TS): Summit

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-5"	A_p	loam	7.5YR3/1	—	—	—	—	—	massive	very friable	—
5"-30"	B_w	sandy loam	7.5YR4/6	—	—	—	5%	—	massive	very friable	—
30"-44"	BC	loamy sand	7.5YR5/3	—	—	—	5%	<5%	massive	very friable	—
44"-147"	C	loamy sand	7.5YR4/4	—	—	—	10%	<2%	massive	very friable	50"-54" pocket of coarse sand 60"-64" pocket of coarse sand

Additional Notes:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: TP-7 (Hole #) 1/30/2020 (Date) 1:00 pm (Time) Sunny 30° (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: parking lot (e.g., woodland, agricultural field, vacant lot, etc.) none (Vegetation) none (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 0-1% (Slope (%))

   Description of Location: parking lot for country club

2. Soil Parent Material: glaciofluvial deposits Landform: outwash plains Position on Landscape (SU, SH, BS, FS, TS): Summit

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-10"	~~A~~ Fill	—	—	—	—	—	—	50%	—	—	—
10"-162"	C	loamy sand	7.5YR 5/6	—	—	—	5-10%	5%	massive	very friable	—

Additional Notes:
~~N~~ 162"

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #_____	Obs. Hole #_____
☐ Depth observed standing water in observation hole	_____ inches	_____ inches
☐ Depth weeping from side of observation hole	_____ inches	_____ inches
☐ Depth to soil redoximorphic features (mottles)	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

2. Estimated Depth to High Groundwater: _____ inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: 67" inches Lower boundary: 180" inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Taylor Corsano — Signature of Soil Evaluator

1/30/2020 — Date

Taylor Corsano /SE14263 — Typed or Printed Name of Soil Evaluator / License #

12/1/2021 — Expiration Date of License

Martha Sullivan, Bruce Bouck — Name of Approving Authority Witness

Approving Authority

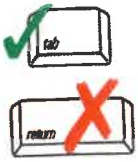
Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:

Commonwealth of Massachusetts
City/Town of
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Site Information

Weathervane at Pembroke Country club
Owner Name

94 W Elm street,
Street Address or Lot #

Pembroke | MA | 02359
City/Town | State | Zip Code

James Bristol III | 781-740-8660
Contact Person (if different from Owner) | Telephone Number

B. Test Results

	1/30/2020 Date / 9:28 AM Time	1/30/2020 Date / 11:38 AM Time
Observation Hole #	TP-1	TP-4
Depth of Perc	65" → 83"	69" → 88"
Start Pre-Soak	9:28 AM	11:39 AM
End Pre-Soak	9:43 AM	11:54 AM
Time at 12"	9:43 AM	11:54 AM
Time at 9"	9:55 AM	12:14 PM
Time at 6"	10:09 AM	12:36 PM
Time (9"-6")	14 min	22 min
Rate (Min./Inch)	4.67 min/inch	7.33 min/inch
	Test Passed: ☑ / Test Failed: ☐	Test Passed: ☑ / Test Failed: ☐

Taylor Corsano
Test Performed By:

Martha Sullivan
Board of Health Witness

Comments:

Commonwealth of Massachusetts
City/Town of
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

Weathervane at Pembroke Country club
Owner Name

94 W Elm Street
Street Address or Lot #

Pembroke | MA | 02359
City/Town | State | Zip Code

Contact Person (if different from Owner) | Telephone Number

B. Test Results

	Date: 1/30/2020 Time: 9:52 AM	Date: Time:
Observation Hole #	TP-2	
Depth of Perc	55" → 73"	
Start Pre-Soak	9:54 AM	
End Pre-Soak	10:09 AM	
Time at 12"	10:09 AM	
Time at 9"	10:16 AM	
Time at 6"	10:23 AM	
Time (9"-6")	7 min	
Rate (Min./Inch)	2.33 min/inch	
	Test Passed: ☑ Test Failed: ☐	Test Passed: ☐ Test Failed: ☐

Taylor Corsano
Test Performed By:

Martha Sullivan
Board of Health Witness

Comments:

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-1 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

   Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
   Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-5"	Fill	loam									
5"-24"	B	loamy sand									
24"-120"	C	sand									

Additional Notes: _____

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-2 (Hole #) Date ____ Time ____ Weather ____ Latitude ____ Longitude: ____

1. Land Use ____ (e.g., woodland, agricultural field, vacant lot, etc.) Vegetation ____ Surface Stones (e.g., cobbles, stones, boulders, etc.) ____ Slope (%) ____

   Description of Location: ____

2. Soil Parent Material: ____ Landform ____ Position on Landscape (SU, SH, BS, FS, TS) ____

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
   Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6"	Topsoil A	loam									
6"-36"	B	loamy sand									
36"-108"	C	sand									

Additional Notes: ____

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-3 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-5"	Fill/A	Loam									
5"-12"	B	loamy sand									
12"-60"	C1	coarse sand									
60"-114"	C2	fine sand									

Additional Notes: _____

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-4 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

   Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet

   Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: 126" Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3"	A	w/ m									
3"-42"	B	sandy loam/loamy sand						40%			
42"-114"	C	coarse sand		108"		40-50%	5-10%				

Additional Notes: _____

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-5 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

   Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
   Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-10"	A	loam									
10"-24"	B	loamy sand									
24"-72"	C	fine sand		72"							Line of mottling

Additional Notes: _____

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City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-6 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

   Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
   Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: 102" Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-12"	A	Fill									
12"-24"	B	loamy sand									
24"-102"	C	sand (coarse)		48" 54"		16-20% throughout					groundwater @ 2.5'

Additional Notes: _____

Commonwealth of Massachusetts
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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 127 (Hole #) _____ (Date) _____ (Time) _____ (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

   Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
   Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☑ No If yes: 8' Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-2"	A	loam									
2"-18"	B	loamy sand									
18"-96"	C_1	loamy sand		55"		10%					Redox @ 55"
96"-97"	C_2	coarse sand	coarse sand @	Bottom of pit							

Additional Notes: likely a loamy sand with pocket of coarse sand

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-19 DATE: ~~12/14/21~~ 1/5/23 TIME: 9:15 AM WEATHER: Cloudy 40°
SITE ADDRESS or MAP/LOT #: Remodel CC
OWNER: JOB NO.: 22-061
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☒ No: ☐ SLOPE (%): 0-3

VEGETATION: wooded LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ____ ft PROPERTY LINE: ____ ft POSSIBLE WET AREA: ____ ft DRAINAGEWAY: ____ ft
DRINKING WATER WELL: ____ ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-12	B	L-S	10YR 3/2		
12-28	B	L-S	10YR 5/6		
28-68	C	FINE-SAND	2.5Y 5/4		
				STANDING	
				@ 62"	
				52" DAMP	WEEPING / POSSIBLE REDOX

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☒ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☒ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: 62" Weeping from Face: Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:	N/A	DAT	Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: ~~Lisa Duffy~~ Mach./Oper.: JF Price
Comments:

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 18-A DATE: ~~12/14/21~~ 1/5/23 TIME: 9:30 AM WEATHER: Cloudy 45°
SITE ADDRESS or MAP/LOT #: Pembroke CC
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%):

VEGETATION: GRASS LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-72		FILL			
72-94	B	L-S			
94-168	C	SAND			

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments:

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-108 DATE: 12/14/21 TIME: 10AM WEATHER:
SITE ADDRESS or MAP/LOT #:
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%):

VEGETATION: GRASS LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-48/60	F	LL			
48/60 - 110"		SAND	2.5Y 4/4 @ 88"	WEEPING/REDOX	
			STANDING @ 96"		

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☑ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: Saturating the Face: Mottling: 88"
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:	N/A		Percolation Hole #:	
Test Date:			Test Date:	
Depth of Perc:			Depth of Perc:	
Start of Presoak:			Start of Presoak:	
End of Presoak:			End of Presoak:	
Time @ 12":			Time @ 12":	
Time @ 9":			Time @ 9":	
Time Elapse:(12"-9")			Time Elapse:(12"-9")	
Time AT 6":			Time AT 6":	
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):	
Rate: (min/in.):			Rate: (min/in.):	
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:	

Performed By: David Newhall Witnessed By: ~~Lisa Cullity~~ Mach./Oper.: JF Price
Comments:

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-17 DATE: ~~12/14/21~~ 1-5-23 TIME: 11AM WEATHER: Cloudy 45°
SITE ADDRESS or MAP/LOT #: Pembroke - CC
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: X No: SLOPE (%):

VEGETATION: Grass LANDFORM:

DISTANCES FROM:

OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-6	A	L-S	10YR 3/2		GR FR
6-16	B	L-S	10YR 5/6		MASSIVE FR
16-120	C	L-S	2.5Y 5/2	None	MASSIVE FR

PARENT MATERIAL: Unsuitable Material Present? Yes: No: X If Yes:
Disturbed Soil: Fill Mat'l: Impervious Layer(s): Weathered/Fractured Rock: Bedrock:

GROUNDWATER OBSERVED: Yes: No: X If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:	N/A		Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments:

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-16 DATE: ~~12/14/21~~ 1/5/23 TIME: 11:30 WEATHER: Cloudy
SITE ADDRESS or MAP/LOT #: Pondbrook Rd
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%):

VEGETATION: Grass LANDFORM:

DISTANCES FROM:

OPEN WATER BODY: ____ ft PROPERTY LINE: ____ ft POSSIBLE WET AREA: ____ ft DRAINAGEWAY: ____ ft
DRINKING WATER WELL: ____ ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (Inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-28	Fill	—	—	—	(TRAPPED WATER
28-36	B	L-S			
36-72	C	L-S			

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☒ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☒ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: Saturating the Face: Mottling: 36"
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:		

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments:

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-14 DATE: ~~12/14/21~~ 1-5-23 TIME: 12:45 WEATHER: cloudy
SITE ADDRESS or MAP/LOT #: Pembroke cc
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☒ SLOPE (%):

VEGETATION: GRASS LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-32	FILL				
32-44	A_B	10 YR 2/2	L-S	WEAK FINE	GR FR
44-76	C	SAND	7.5 Y 6/2	@ 34"	SG LOOSE

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☒ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: 34" Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:	N/P		Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments:

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-15 DATE: ~~12/14/21~~ 1-5-23 TIME: CC WEATHER: CLOUDY
SITE ADDRESS or MAP/LOT #: Remington
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%): 0-3

VEGETATION: WOODED LANDFORM:

DISTANCES FROM:

OPEN WATER BODY: ____ ft PROPERTY LINE: ____ ft POSSIBLE WET AREA: ____ ft DRAINAGEWAY: ____ ft
DRINKING WATER WELL: ____ ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-18	A	L-S	10YR 2/2		
18-30	B	L-S	10YR 5/6		
30-58	C	L-S	2.5Y 5/2	Redox Co	weeping @ ~~18~~ 16"
		↓		28"	FROM RAIN ??
		COARSE			
		SAND			

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☐ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments:

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 22-2 DATE: ~~12/14/21~~ 1/5/23 TIME: 1:45 PM WEATHER: CLOUDY RAIN
SITE ADDRESS or MAP/LOT #: Dennis 6C
OWNER: DDD JOB NO.: 100.GH
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ SLOPE (%):

VEGETATION: Grass / Edge Woods LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ft PROPERTY LINE: ft POSSIBLE WET AREA: ft DRAINAGEWAY: ft
DRINKING WATER WELL: ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (Inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-22	FILL				
22-30	A_B	L-S	10 YR 3/2	@ 48"	
30-42	B	L-S	10 YR 5/6		
42-80	C_1	L-S	2.5Y 5/2		

PARENT MATERIAL: Unsuitable Material Present? Yes: ☒ No: ☒ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☒ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☒ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: 48" Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:		

Percolation Hole #:		
Test Date:		
Depth of Perc:		
Start of Presoak:		
End of Presoak:		
Time @ 12":		
Time @ 9":		
Time Elapse:(12"-9")		
Time AT 6":		
Time Elapse: (9"-6"):		
Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: ~~Lise Cailly~~ Mach./Oper.: JF Price
Comments:

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: _____ DATE: 12/14/21 TIME: _____ WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: _____

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____

VEGETATION: _____ LANDFORM: _____
DISTANCES FROM:
OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____
DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0"-8"	A	Loam			
8"-16"	B	loamy sand			
16-110"	C	sand			

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☑ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: _____ Weeping from Face: 78" Saturating the Face: _____ Mottling: _____
Estimated Depth to Seasonal High Ground Water : _____

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments: _____

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: TP-24 DATE: 12/14/21 TIME: _____ WEATHER: _____
SITE ADDRESS or MAP/LOT #: _____
OWNER: _____ JOB NO.: _____
LOCATION (Identify on Plan): _____ GROUND ELEVATION AT SURFACE OF HOLE: _____

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☐ _____ SLOPE (%): _____

VEGETATION: _____ LANDFORM: _____

DISTANCES FROM:
OPEN WATER BODY: _____ ft PROPERTY LINE: _____ ft POSSIBLE WET AREA: _____ ft DRAINAGEWAY: _____ ft
DRINKING WATER WELL: _____ ft OTHER: _____

DEEP OBSERVATION HOLE LOG

Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0"-8"	A	Loamy			
8"-26"	B	Loamy sand			
26"-120"	C	sand			

PARENT MATERIAL: _____ Unsuitable Material Present? Yes: ☐ No: ☐ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☑ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: _____ Weeping from Face: 100" Saturating the Face: _____ Mottling: _____
Estimated Depth to Seasonal High Ground Water : _____

PERCOLATION TEST

Percolation Hole #:			Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price
Comments: _____

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FORMS 11 AND 12
SOIL EVALUATOR FORM

ON-SITE REVIEW

DEEP HOLE #: 23-22 DATE: ~~12/14/21~~ TIME: 3:1[illegible] WEATHER:
SITE ADDRESS or MAP/LOT #:
OWNER: JOB NO.:
LOCATION (Identify on Plan): GROUND ELEVATION AT SURFACE OF HOLE:

LAND USE: Commercial SURFACE STONES: Yes: ☐ No: ☒ SLOPE (%):

VEGETATION: LANDFORM:

DISTANCES FROM:
OPEN WATER BODY: ____ ft PROPERTY LINE: ____ ft POSSIBLE WET AREA: ____ ft DRAINAGEWAY: ____ ft
DRINKING WATER WELL: ____ ft OTHER:

DEEP OBSERVATION HOLE LOG

Depth (Inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-12	A	L S	10YR 3/2		GR FR
12-38	B	L S	10YR 5/8		MASSIVE FR
38-90	C1	SAND	2.5Y 5/4	@ 70"	S.G. LOOS
				weep/ DAMP	

PARENT MATERIAL: Unsuitable Material Present? Yes: ☐ No: ☒ If Yes:
Disturbed Soil: ☐ Fill Mat'l: ☐ Impervious Layer(s): ☐ Weathered/Fractured Rock: ☐ Bedrock: ☐

GROUNDWATER OBSERVED: Yes: ☑ No: ☐ If Yes: What is the depth of Groundwater:
Standing in Hole: Weeping from Face: 70" Saturating the Face: Mottling:
Estimated Depth to Seasonal High Ground Water :

PERCOLATION TEST

Percolation Hole #:	N/A		Percolation Hole #:		
Test Date:			Test Date:		
Depth of Perc:			Depth of Perc:		
Start of Presoak:			Start of Presoak:		
End of Presoak:			End of Presoak:		
Time @ 12":			Time @ 12":		
Time @ 9":			Time @ 9":		
Time Elapse:(12"-9")			Time Elapse:(12"-9")		
Time AT 6":			Time AT 6":		
Time Elapse: (9"-6"):			Time Elapse: (9"-6"):		
Rate: (min/in.):			Rate: (min/in.):		
Test Passed/ Failed/ Discon/ Add. Test Req'd:			Test Passed/ Failed/ Discon/ Add. Testing Req'd:		

Performed By: David Newhall Witnessed By: ~~Lisa Cullity~~ Mach./Oper.: JF Price
Comments:

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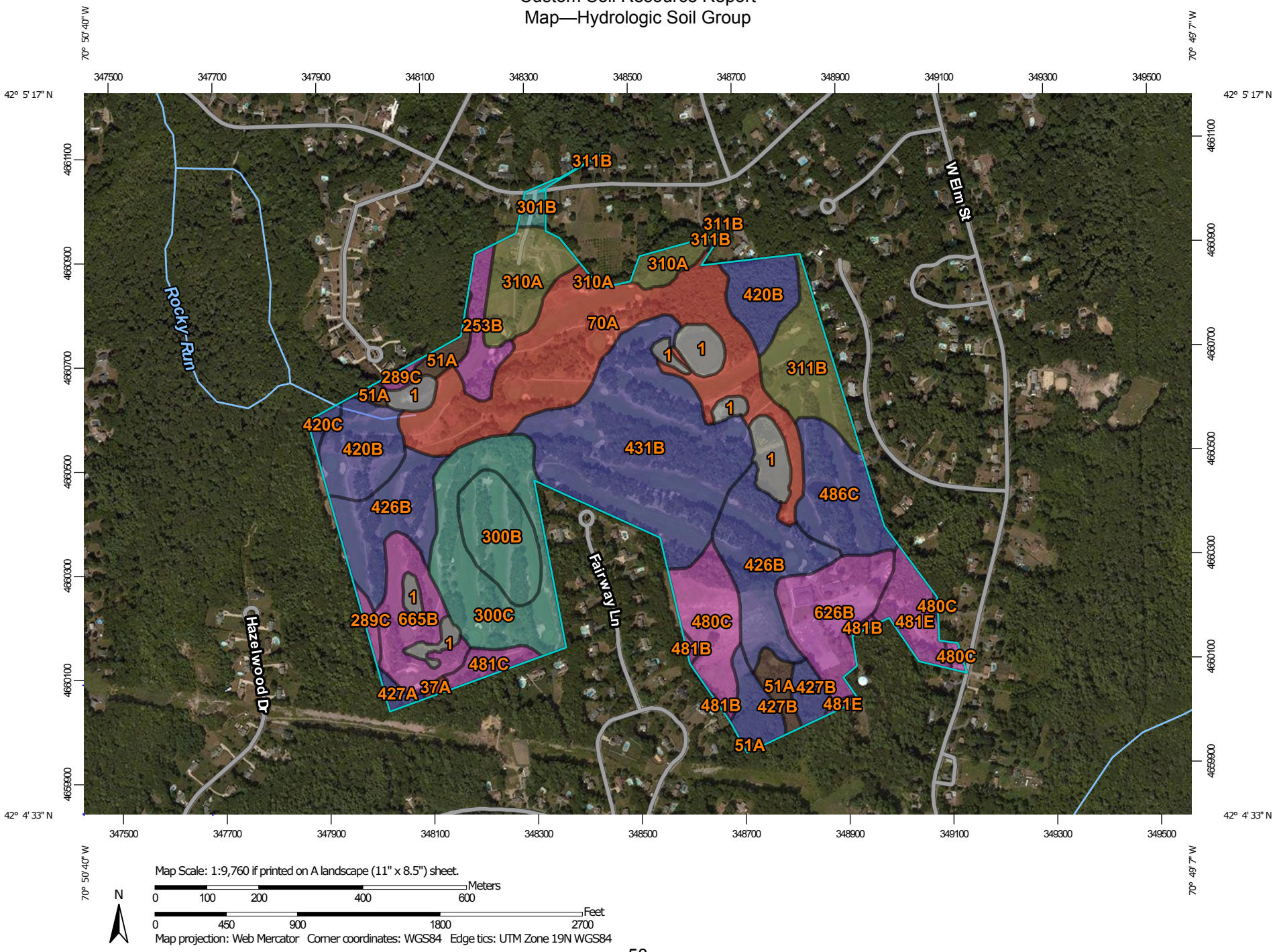
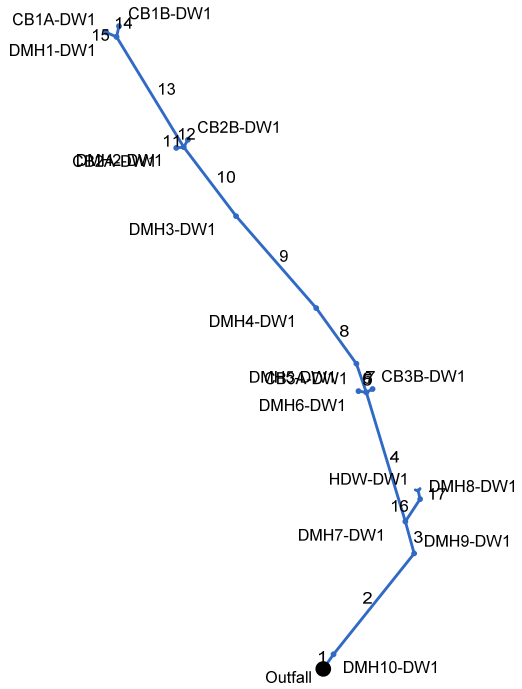
Map—Hydrologic Soil Group



SECTION 7 – HYDRAULIC PIPE SIZING

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



Project File: Storm-DW1.stm	Number of lines: 17	Date: 7/31/2023

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	25.030	0.00	2.46	0.00	0.00	0.78	0.0	10.9	5.9	4.56	17.33	4.23	24	0.50	97.00	97.13	97.75	97.88	99.18	102.33	Pipe - (41) (1)
2	1	180.982	0.00	2.46	0.00	0.00	0.78	0.0	10.2	6.0	4.66	17.33	4.32	24	0.50	97.13	98.03	97.88	98.79	102.33	108.00	Pipe - (41)
3	2	46.230	0.00	2.46	0.00	0.00	0.78	0.0	10.0	6.0	4.69	17.33	4.26	24	0.50	98.03	98.26	98.79	99.02	108.00	107.91	Pipe - (40) (1)
4	3	189.442	0.00	0.94	0.00	0.00	0.53	0.0	9.1	6.2	3.31	17.33	3.44	24	0.50	98.26	99.21	99.02	99.84	107.91	108.08	Pipe - (40)
5	4	10.029	0.09	0.09	0.82	0.07	0.07	6.0	6.0	7.0	0.49	2.72	2.61	12	0.50	103.90	103.95	104.19	104.24	108.08	107.91	Pipe - (49)
6	4	11.153	0.06	0.06	0.79	0.05	0.05	6.0	6.0	7.0	0.34	2.83	2.38	12	0.54	103.89	103.95	104.12	104.19	108.08	107.93	Pipe - (50)
7	4	42.507	0.00	0.79	0.00	0.00	0.41	0.0	8.9	6.3	2.59	4.94	4.07	15	0.50	99.54	99.75	100.18	100.39	108.08	108.51	Pipe - (59) (1) (1)
8	7	95.975	0.00	0.79	0.00	0.00	0.41	0.0	8.5	6.4	2.62	4.94	4.08	15	0.50	99.75	100.23	100.40	100.88	108.51	109.35	Pipe - (59) (1)
9	8	170.807	0.00	0.79	0.00	0.00	0.41	0.0	7.8	6.5	2.69	4.94	4.10	15	0.50	100.23	101.08	100.88	101.74	109.35	108.87	Pipe - (59)
10	9	121.336	0.00	0.79	0.00	0.00	0.41	0.0	7.3	6.6	2.74	4.94	4.01	15	0.50	101.08	101.69	101.78	102.36	108.87	107.66	Pipe - (61)
11	10	11.925	0.16	0.16	0.66	0.11	0.11	6.0	6.0	7.0	0.74	3.87	3.36	12	1.01	103.26	103.38	103.56	103.74	107.66	107.43	Pipe - (70)
12	10	10.477	0.08	0.08	0.78	0.06	0.06	6.0	6.0	7.0	0.43	3.77	2.84	12	0.95	103.26	103.36	103.49	103.63	107.66	107.43	Pipe - (69)
13	10	181.105	0.00	0.55	0.00	0.00	0.24	0.0	6.3	6.9	1.68	2.52	2.93	12	0.50	101.69	102.60	102.60	103.17	107.66	105.89	Pipe - (58)
14	13	15.678	0.20	0.20	0.38	0.07	0.07	6.0	6.0	7.0	0.52	2.54	0.91	12	0.51	102.60	102.68	103.32	103.33	105.89	105.65	Pipe - (54)
15	13	15.322	0.35	0.35	0.48	0.17	0.17	6.0	6.0	7.0	1.18	2.57	2.06	12	0.52	102.60	102.68	103.32	103.34	105.89	105.65	Pipe - (55)
16	3	37.759	0.00	1.52	0.00	0.00	0.24	0.0	6.1	6.9	1.69	2.73	3.66	12	0.50	101.65	101.84	102.22	102.41	107.91	108.44	Pipe - (63) (1)
17	16	12.917	1.52	1.52	0.16	0.24	0.24	6.0	6.0	7.0	1.70	2.73	3.34	12	0.50	101.94	102.00	102.57	102.60	108.44	104.06	Pipe - (63)

Project File: Storm-DW1.stm

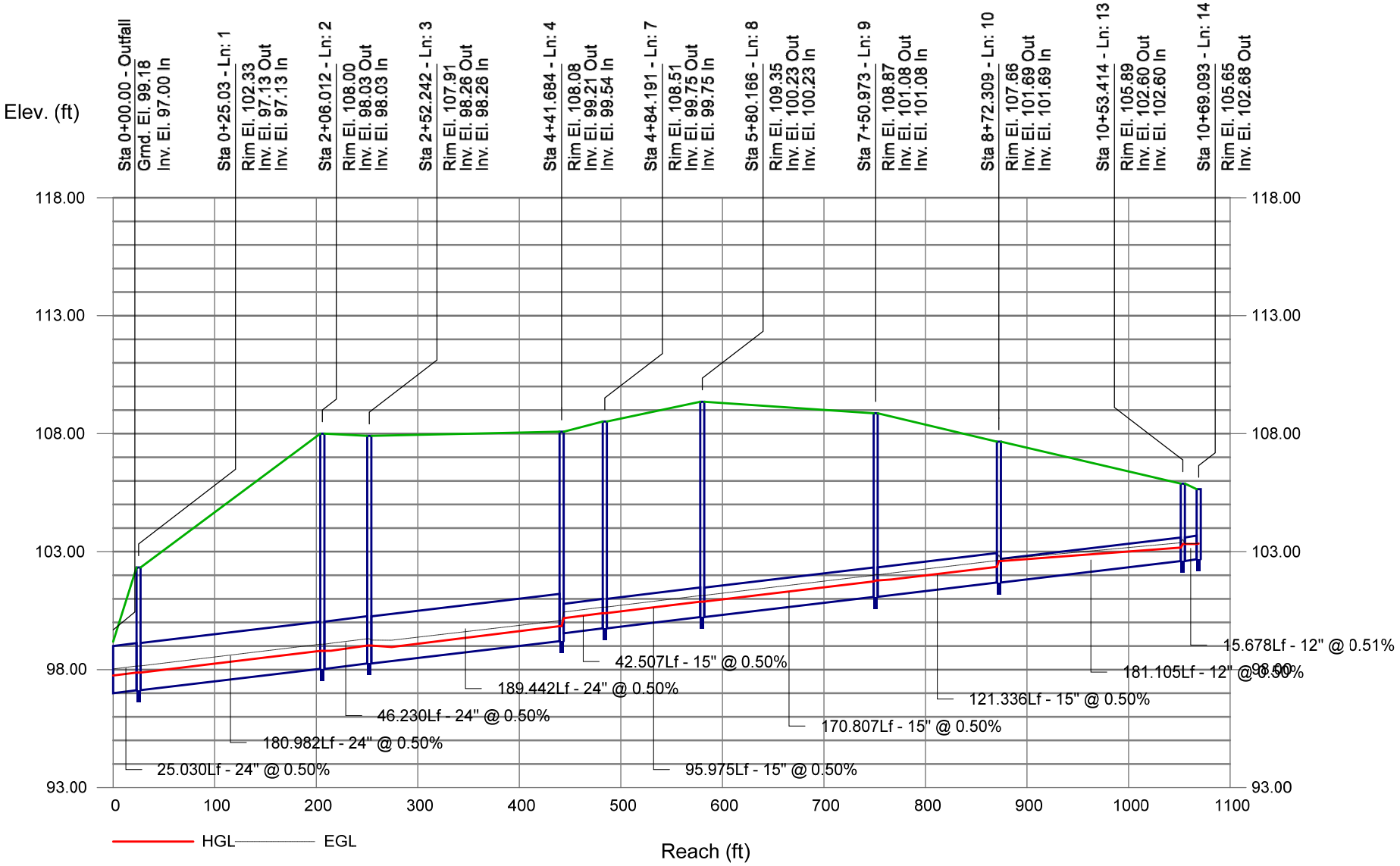
Number of lines: 17

Run Date: 7/31/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

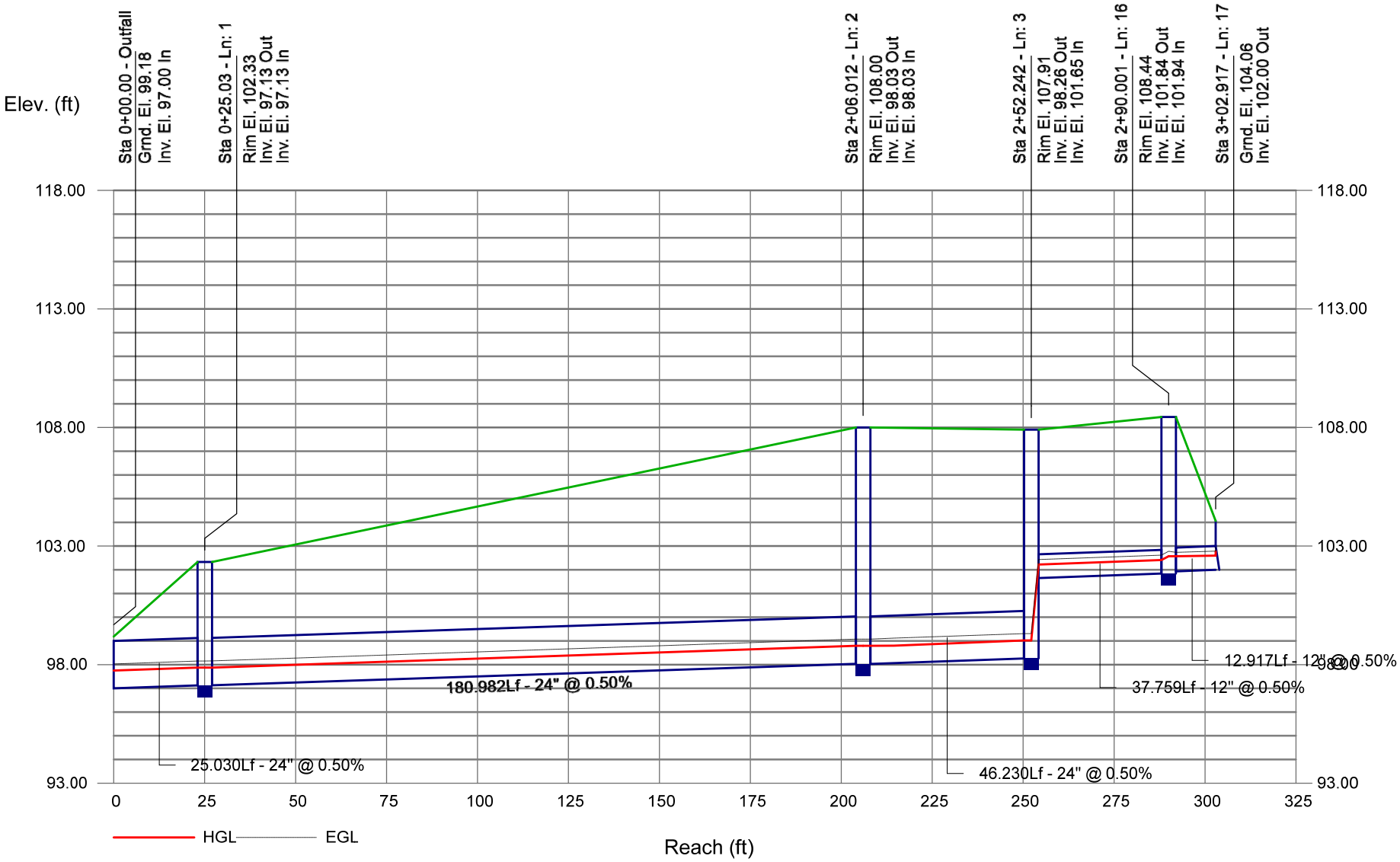
Storm Sewer Profile

Proj. file: Storm-DW1.stm

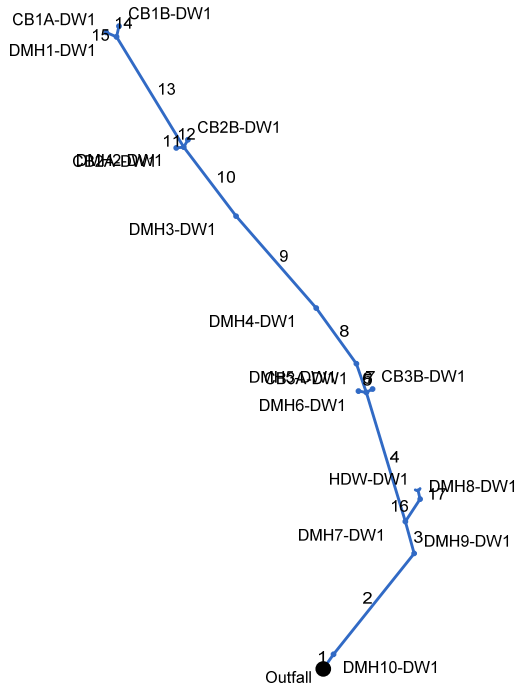


Storm Sewer Profile

Proj. file: Storm-DW1.stm



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



Project File: Storm-DW1.stm	Number of lines: 17	Date: 7/31/2023

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	25.030	0.00	2.46	0.00	0.00	0.78	0.0	10.6	8.2	6.37	17.33	4.70	24	0.50	97.00	97.13	97.89	98.02	99.18	102.33	Pipe - (41) (1)
2	1	180.982	0.00	2.46	0.00	0.00	0.78	0.0	9.9	8.4	6.49	17.33	4.77	24	0.50	97.13	98.03	98.02	98.94	102.33	108.00	Pipe - (41)
3	2	46.230	0.00	2.46	0.00	0.00	0.78	0.0	9.8	8.4	6.52	17.33	4.72	24	0.50	98.03	98.26	98.94	99.16	108.00	107.91	Pipe - (40) (1)
4	3	189.442	0.00	0.94	0.00	0.00	0.53	0.0	8.9	8.6	4.59	17.33	3.78	24	0.50	98.26	99.21	99.16	99.96	107.91	108.08	Pipe - (40)
5	4	10.029	0.09	0.09	0.82	0.07	0.07	6.0	6.0	9.5	0.67	2.72	2.85	12	0.50	103.90	103.95	104.24	104.29	108.08	107.91	Pipe - (49)
6	4	11.153	0.06	0.06	0.79	0.05	0.05	6.0	6.0	9.5	0.46	2.83	2.59	12	0.54	103.89	103.95	104.16	104.23	108.08	107.93	Pipe - (50)
7	4	42.507	0.00	0.79	0.00	0.00	0.41	0.0	8.8	8.7	3.58	4.94	4.39	15	0.50	99.54	99.75	100.33	100.54	108.08	108.51	Pipe - (59) (1) (1)
8	7	95.975	0.00	0.79	0.00	0.00	0.41	0.0	8.4	8.8	3.62	4.94	4.23	15	0.50	99.75	100.23	100.64	101.00	108.51	109.35	Pipe - (59) (1)
9	8	170.807	0.00	0.79	0.00	0.00	0.41	0.0	7.7	9.0	3.70	4.94	4.41	15	0.50	100.23	101.08	101.05	101.87	109.35	108.87	Pipe - (59)
10	9	121.336	0.00	0.79	0.00	0.00	0.41	0.0	7.3	9.1	3.75	4.94	4.42	15	0.50	101.08	101.69	101.92	102.49	108.87	107.66	Pipe - (61)
11	10	11.925	0.16	0.16	0.66	0.11	0.11	6.0	6.0	9.5	1.01	3.87	3.68	12	1.01	103.26	103.38	103.61	103.80	107.66	107.43	Pipe - (70)
12	10	10.477	0.08	0.08	0.78	0.06	0.06	6.0	6.0	9.5	0.58	3.77	3.11	12	0.95	103.26	103.36	103.53	103.68	107.66	107.43	Pipe - (69)
13	10	181.105	0.00	0.55	0.00	0.00	0.24	0.0	6.3	9.4	2.30	2.52	3.03	12	0.50	101.69	102.60	102.79	103.48	107.66	105.89	Pipe - (58)
14	13	15.678	0.20	0.20	0.38	0.07	0.07	6.0	6.0	9.5	0.71	2.54	0.92	12	0.51	102.60	102.68	103.60	103.60	105.89	105.65	Pipe - (54)
15	13	15.322	0.35	0.35	0.48	0.17	0.17	6.0	6.0	9.5	1.61	2.57	2.08	12	0.52	102.60	102.68	103.60	103.62	105.89	105.65	Pipe - (55)
16	3	37.759	0.00	1.52	0.00	0.00	0.24	0.0	6.1	9.5	2.31	2.73	3.89	12	0.50	101.65	101.84	102.36	102.55	107.91	108.44	Pipe - (63) (1)
17	16	12.917	1.52	1.52	0.16	0.24	0.24	6.0	6.0	9.5	2.31	2.73	3.51	12	0.50	101.94	102.00	102.73	102.77	108.44	104.06	Pipe - (63)

Project File: Storm-DW1.stm

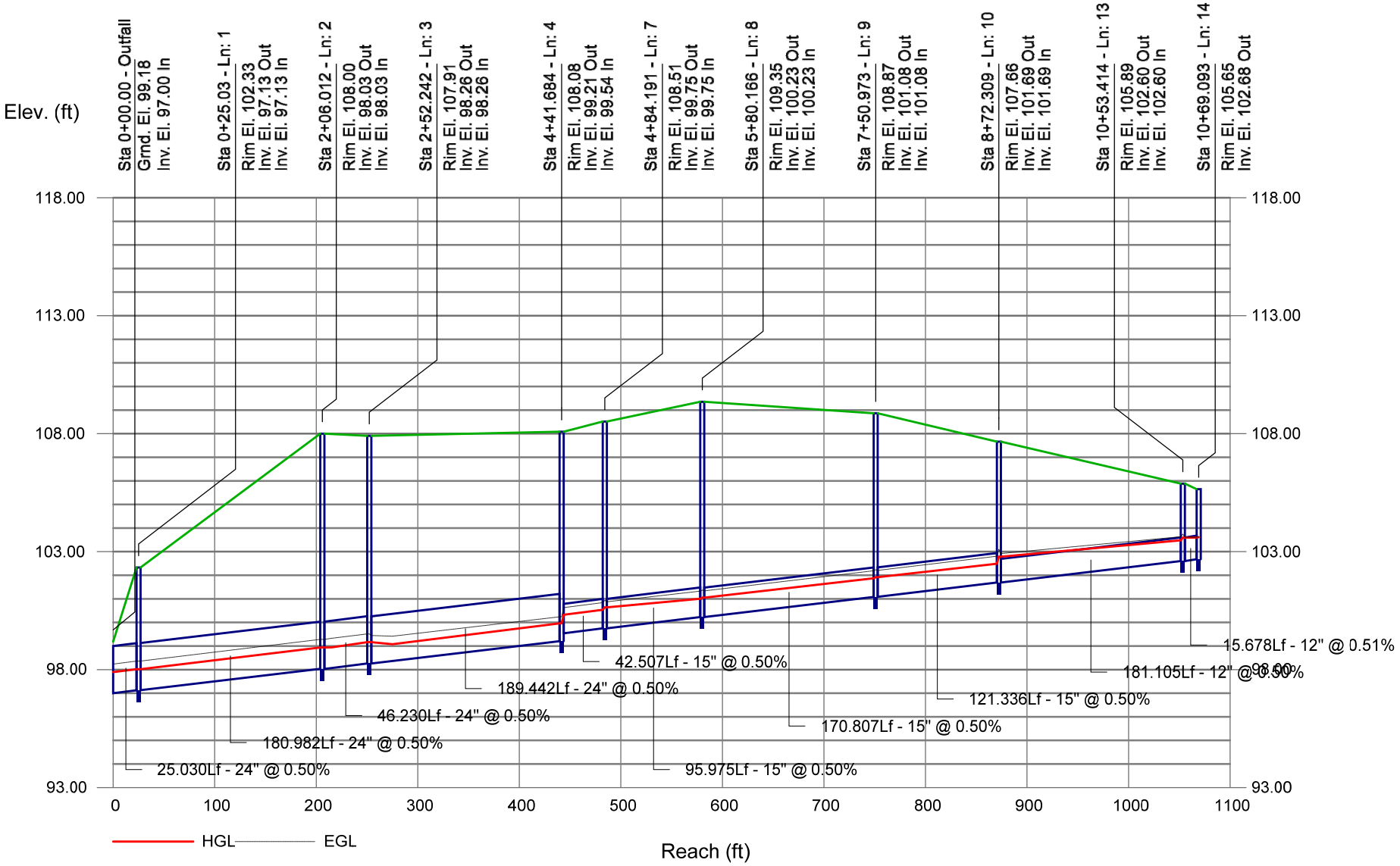
Number of lines: 17

Run Date: 7/31/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

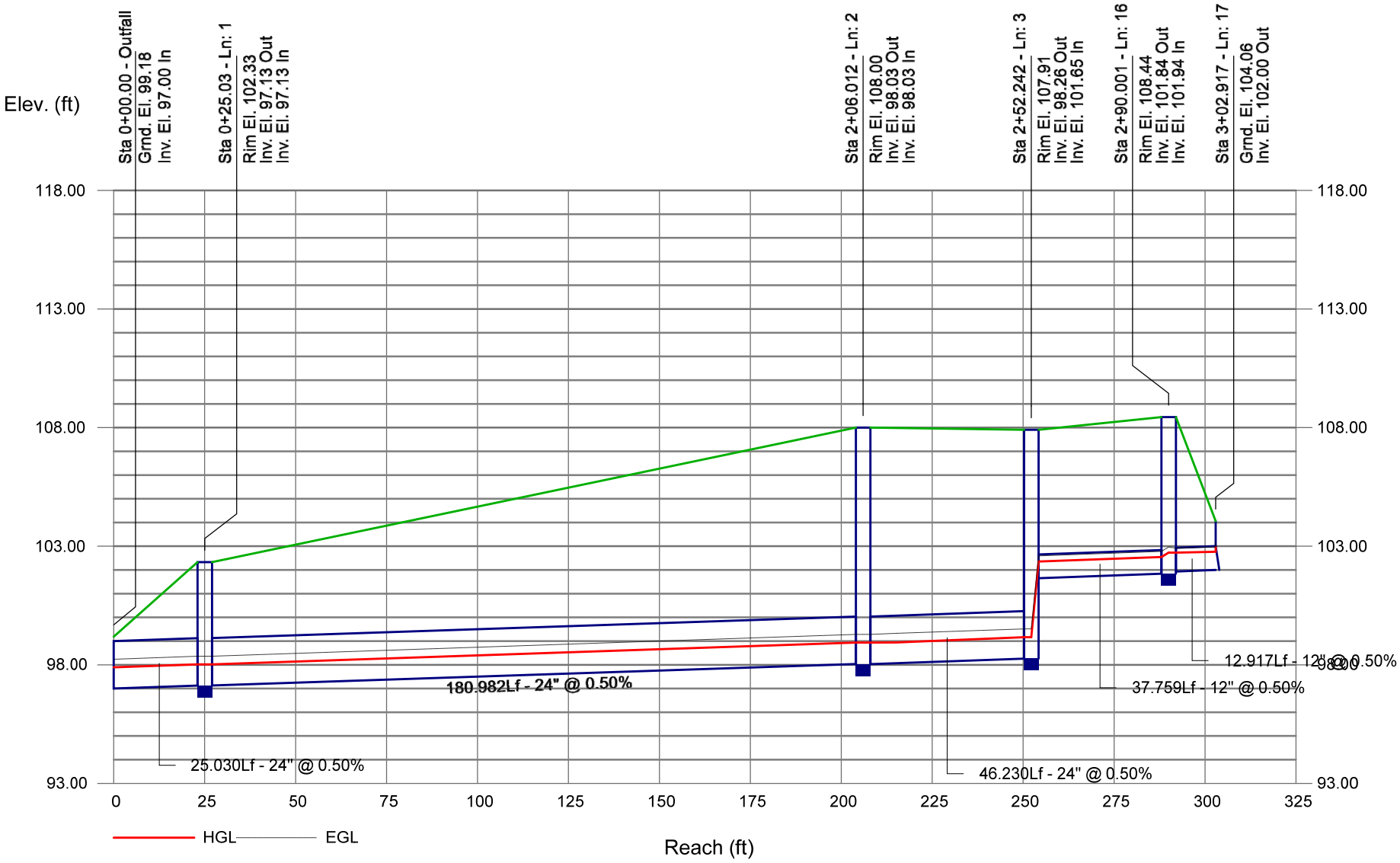
Storm Sewer Profile

Proj. file: Storm-DW1.stm

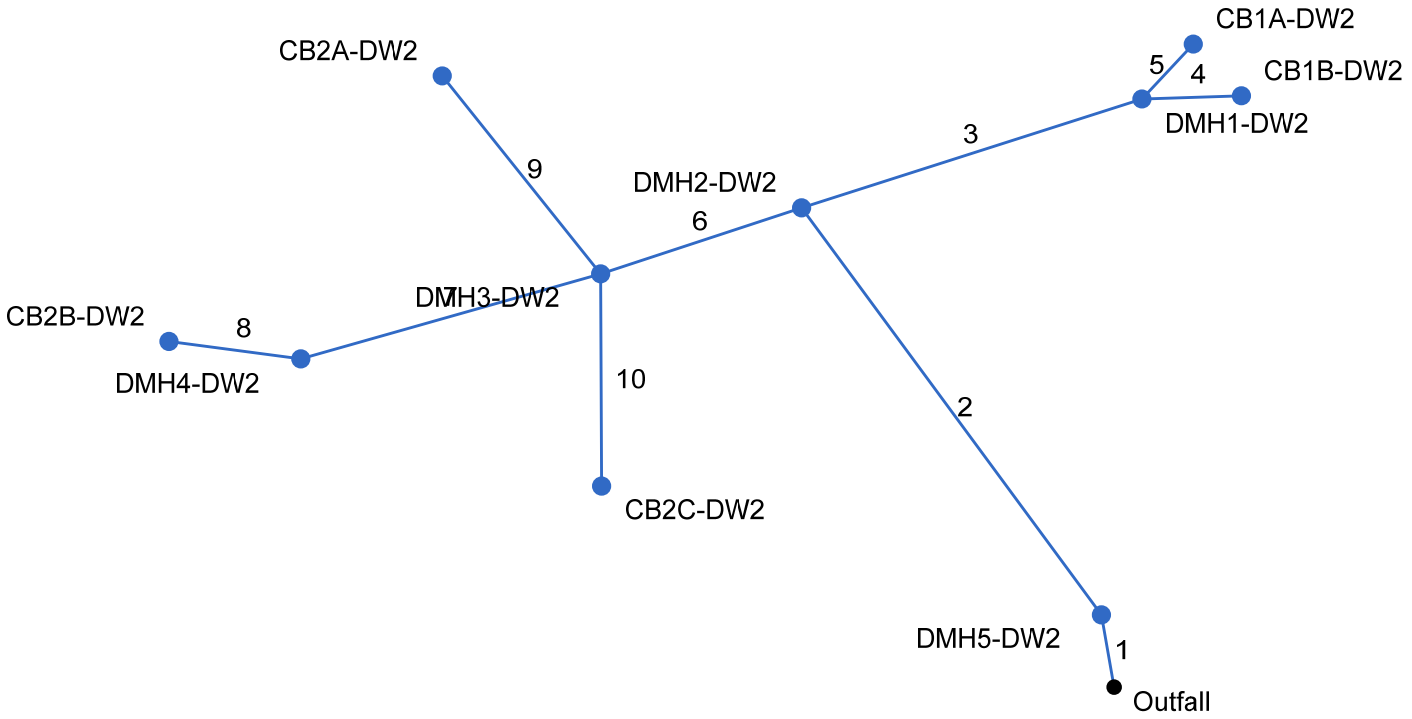


Storm Sewer Profile

Proj. file: Storm-DW1.stm



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



Project File: Storm-DW2.stm	Number of lines: 10	Date: 7/31/2023

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	22.968	0.00	1.83	0.00	0.00	0.92	0.0	7.2	6.7	6.13	16.96	4.64	24	0.48	97.00	97.11	97.88	97.99	98.64	102.60	Pipe - (44) (1)
2	1	147.584	0.00	1.83	0.00	0.00	0.92	0.0	6.7	6.8	6.24	17.35	4.87	24	0.50	97.21	97.95	98.04	98.83	102.60	104.76	Pipe - (44)
3	2	90.201	0.00	0.38	0.00	0.00	0.21	0.0	6.1	6.9	1.44	6.33	5.07	12	2.69	98.95	101.38	99.27	101.89	104.76	105.67	Pipe - (68)
4	3	24.457	0.18	0.18	0.64	0.11	0.11	6.0	6.0	7.0	0.79	2.73	2.80	12	0.50	101.48	101.60	101.89	101.97	105.67	105.69	Pipe - (48)
5	3	21.489	0.20	0.20	0.48	0.09	0.09	6.0	6.0	7.0	0.66	2.73	2.51	12	0.50	101.48	101.59	101.89	101.93	105.67	105.67	Pipe - (47)
6	2	53.500	0.00	1.45	0.00	0.00	0.71	0.0	6.5	6.8	4.86	8.08	4.75	18	0.50	98.45	98.72	99.29	99.57	104.76	104.90	Pipe - (45) (2)
7	6	78.331	0.00	0.75	0.00	0.00	0.34	0.0	6.2	6.9	2.32	2.73	3.83	12	0.50	98.82	99.21	99.57	99.91	104.90	103.71	Pipe - (45)
8	7	32.847	0.75	0.75	0.45	0.34	0.34	6.0	6.0	7.0	2.34	2.49	3.60	12	0.49	99.31	99.47	100.08	100.24	103.71	102.83	Pipe - (46)
9	6	73.372	0.29	0.29	0.55	0.16	0.16	6.0	6.0	7.0	1.14	3.86	2.57	12	1.00	98.82	99.55	99.57	100.00	104.90	103.70	Pipe - (67)
10	6	66.722	0.40	0.40	0.53	0.21	0.21	6.0	6.0	7.0	1.48	3.86	2.99	12	1.00	98.82	99.49	99.57	100.00	104.90	103.63	Pipe - (66)

Project File: Storm-DW2.stm

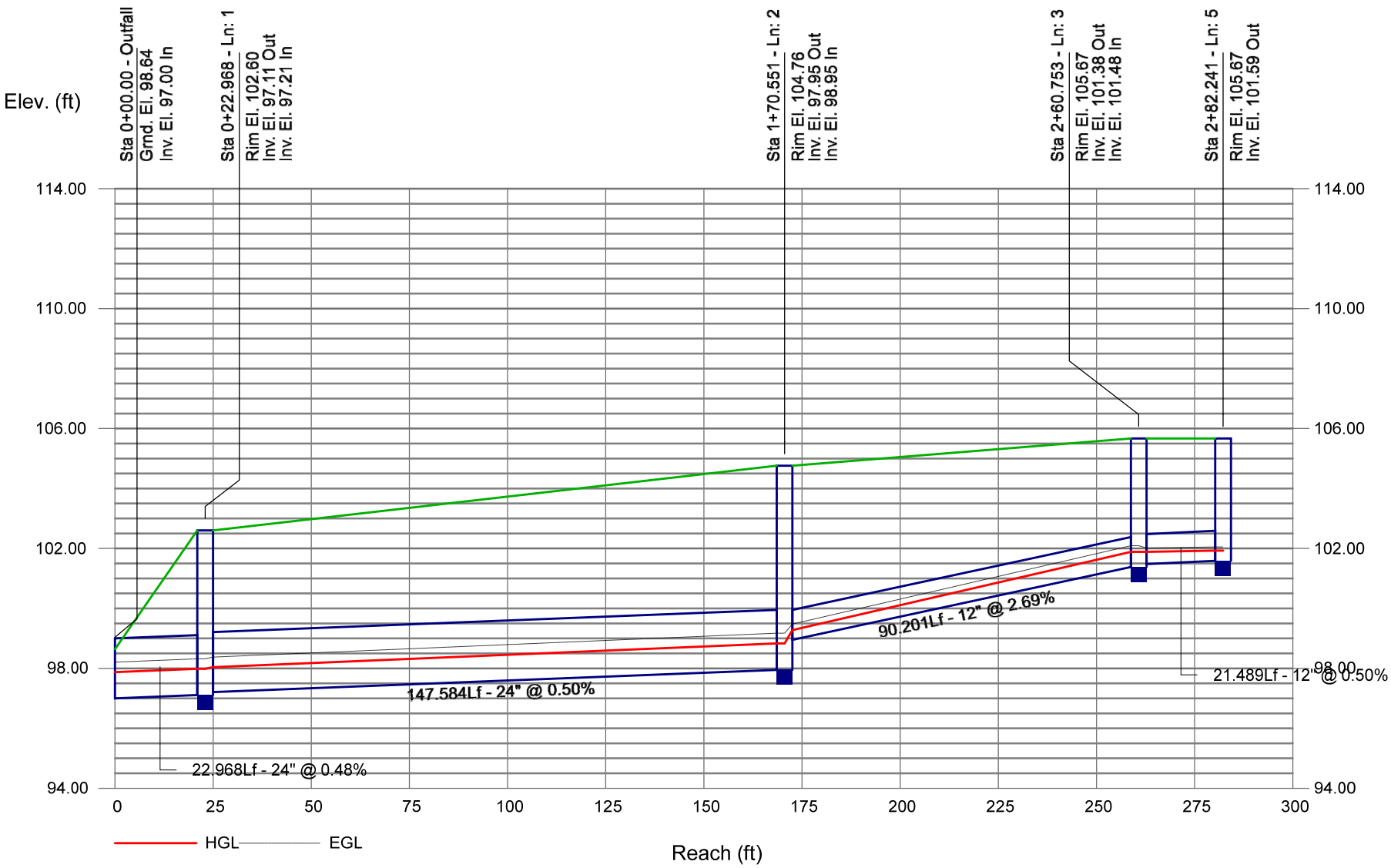
Number of lines: 10

Run Date: 7/31/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

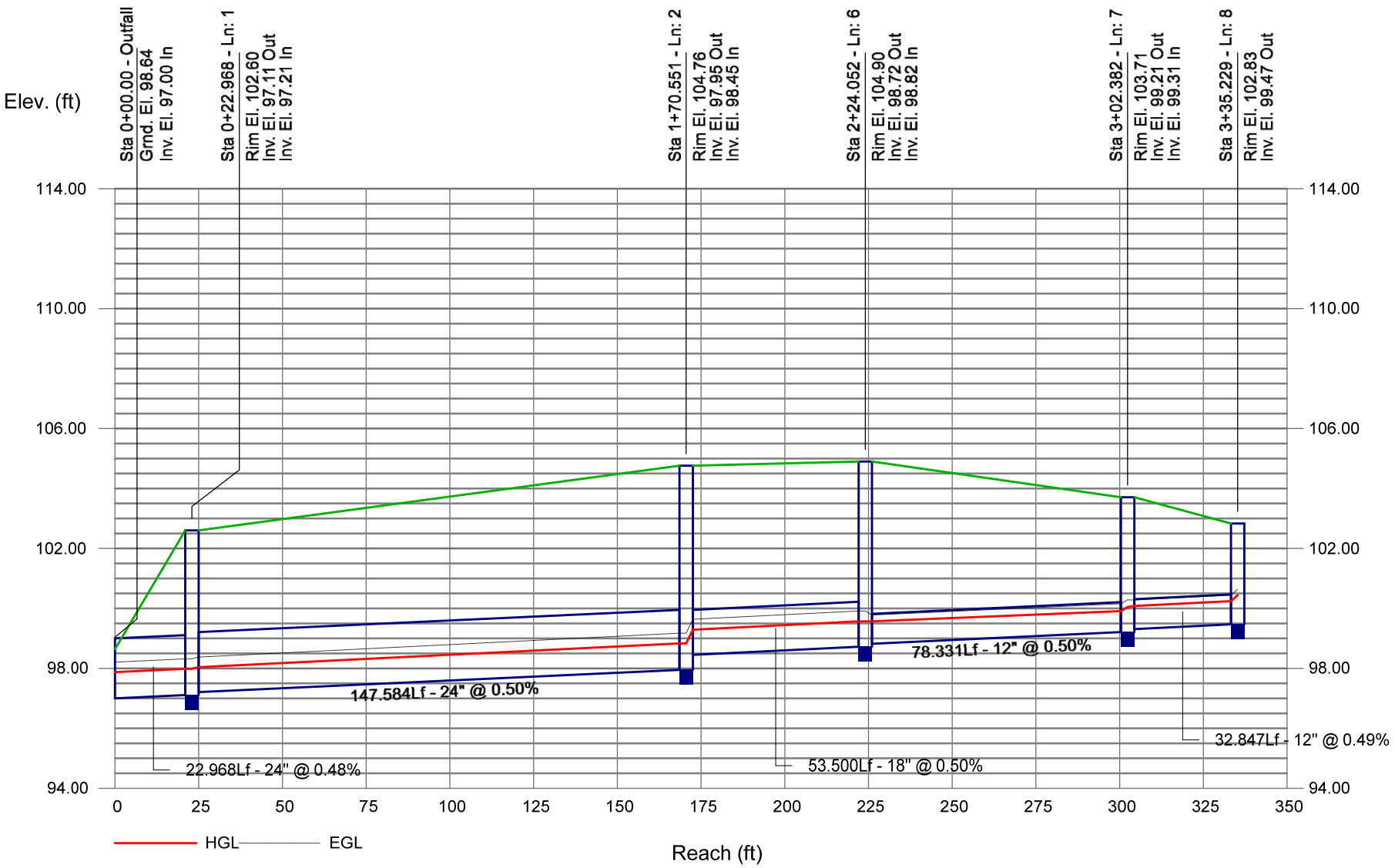
Storm Sewer Profile

Proj. file: Storm-DW2.stm

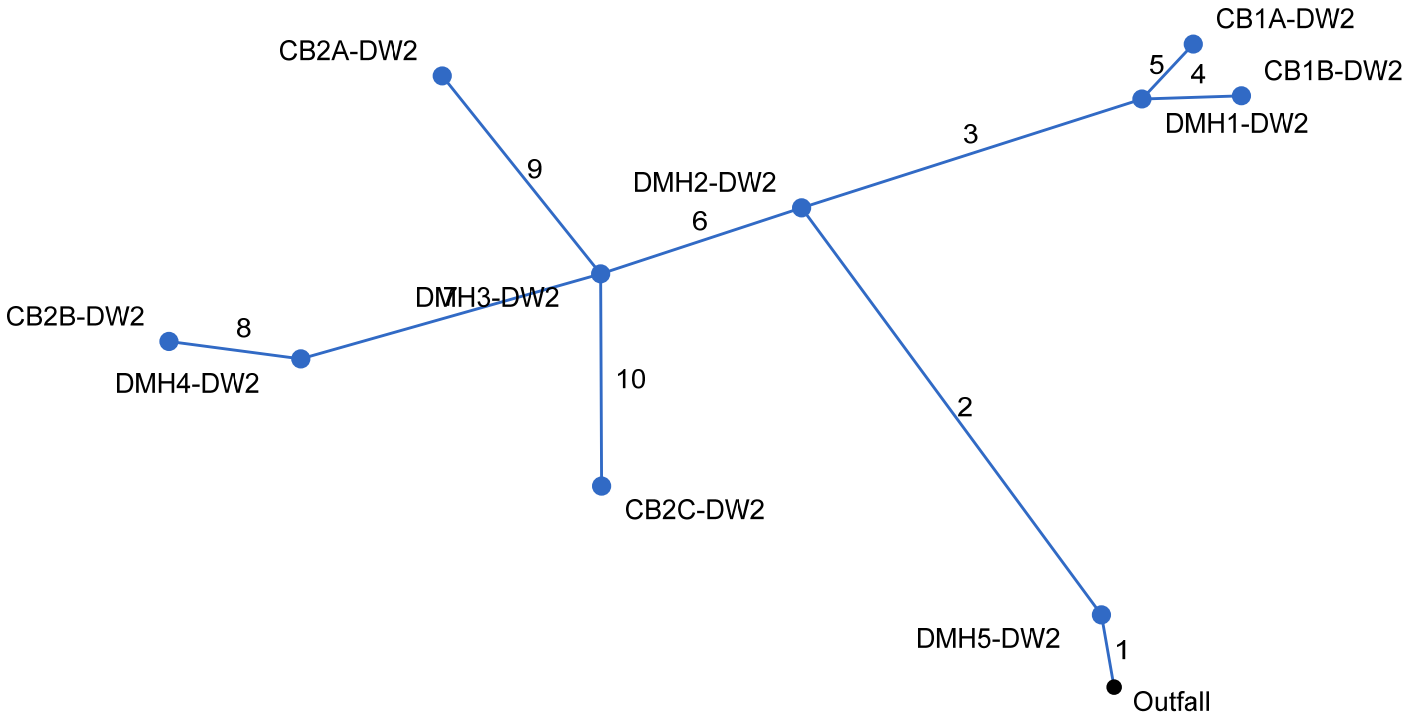


Storm Sewer Profile

Proj. file: Storm-DW2.stm



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



Project File: Storm-DW2.stm	Number of lines: 10	Date: 7/31/2023

Storm Sewer Tabulation

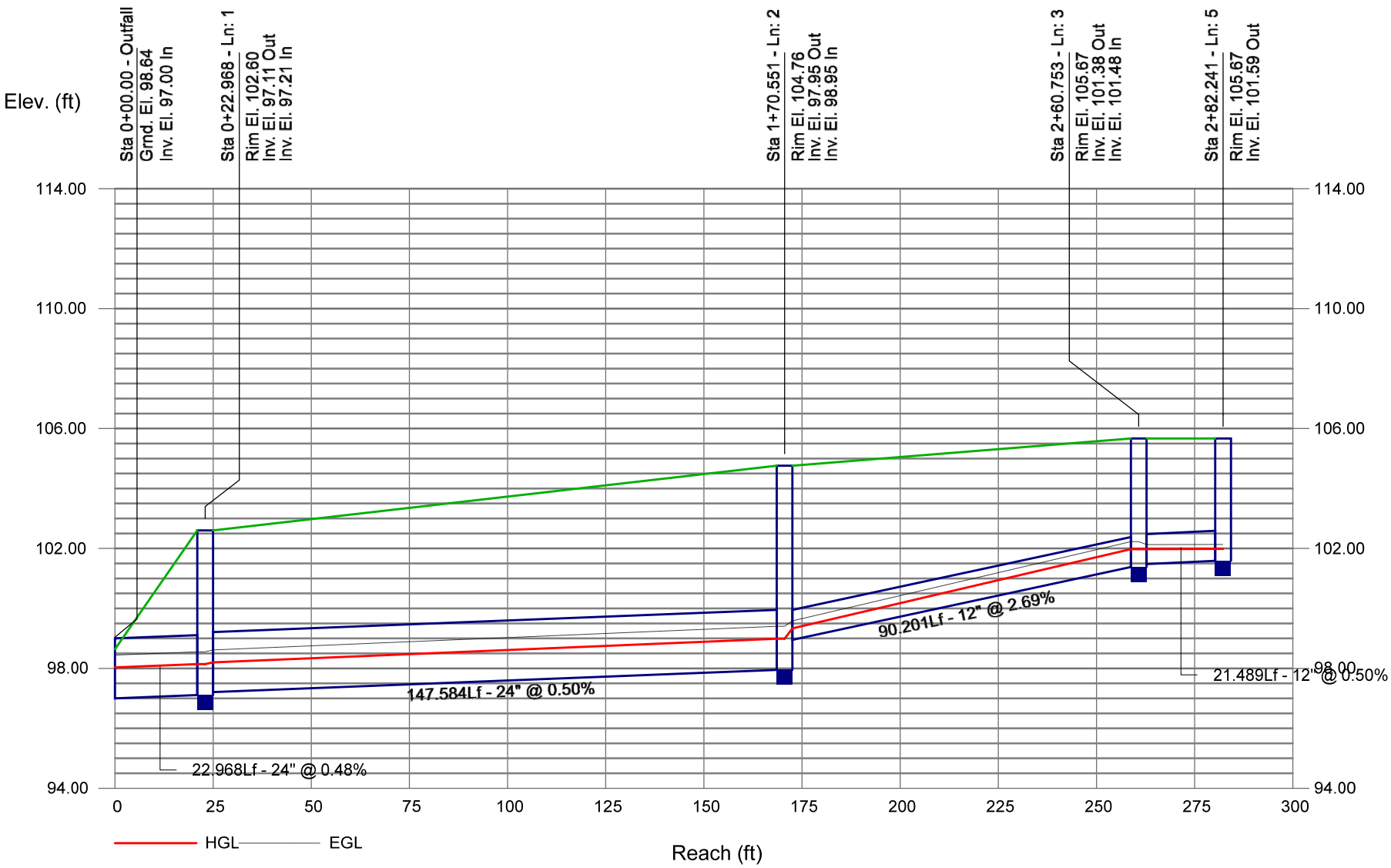
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	22.968	0.00	1.83	0.00	0.00	0.92	0.0	7.2	9.1	8.39	16.96	5.14	24	0.48	97.00	97.11	98.03	98.14	98.64	102.60	Pipe - (44) (1)
2	1	147.584	0.00	1.83	0.00	0.00	0.92	0.0	6.7	9.3	8.52	17.35	5.33	24	0.50	97.21	97.95	98.20	98.99	102.60	104.76	Pipe - (44)
3	2	90.201	0.00	0.38	0.00	0.00	0.21	0.0	6.1	9.4	1.97	6.33	5.57	12	2.69	98.95	101.38	99.33	101.98	104.76	105.67	Pipe - (68)
4	3	24.457	0.18	0.18	0.64	0.11	0.11	6.0	6.0	9.5	1.08	2.73	3.01	12	0.50	101.48	101.60	101.98	102.04	105.67	105.69	Pipe - (48)
5	3	21.489	0.20	0.20	0.48	0.09	0.09	6.0	6.0	9.5	0.90	2.73	2.70	12	0.50	101.48	101.59	101.98	101.98	105.67	105.67	Pipe - (47)
6	2	53.500	0.00	1.45	0.00	0.00	0.71	0.0	6.5	9.3	6.63	8.08	5.10	18	0.50	98.45	98.72	99.48	99.75	104.76	104.90	Pipe - (45) (2)
7	6	78.331	0.00	0.75	0.00	0.00	0.34	0.0	6.1	9.4	3.17	2.73	4.03	12	0.50	98.82	99.21	100.15	100.68	104.90	103.71	Pipe - (45)
8	7	32.847	0.75	0.75	0.45	0.34	0.34	6.0	6.0	9.5	3.18	2.49	4.05	12	0.49	99.31	99.47	100.82	101.08	103.71	102.83	Pipe - (46)
9	6	73.372	0.29	0.29	0.55	0.16	0.16	6.0	6.0	9.5	1.55	3.86	2.31	12	1.00	98.82	99.55	100.15	100.25	104.90	103.70	Pipe - (67)
10	6	66.722	0.40	0.40	0.53	0.21	0.21	6.0	6.0	9.5	2.02	3.86	2.75	12	1.00	98.82	99.49	100.15	100.31	104.90	103.63	Pipe - (66)

Project File: Storm-DW2.stm | Number of lines: 10 | Run Date: 7/31/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

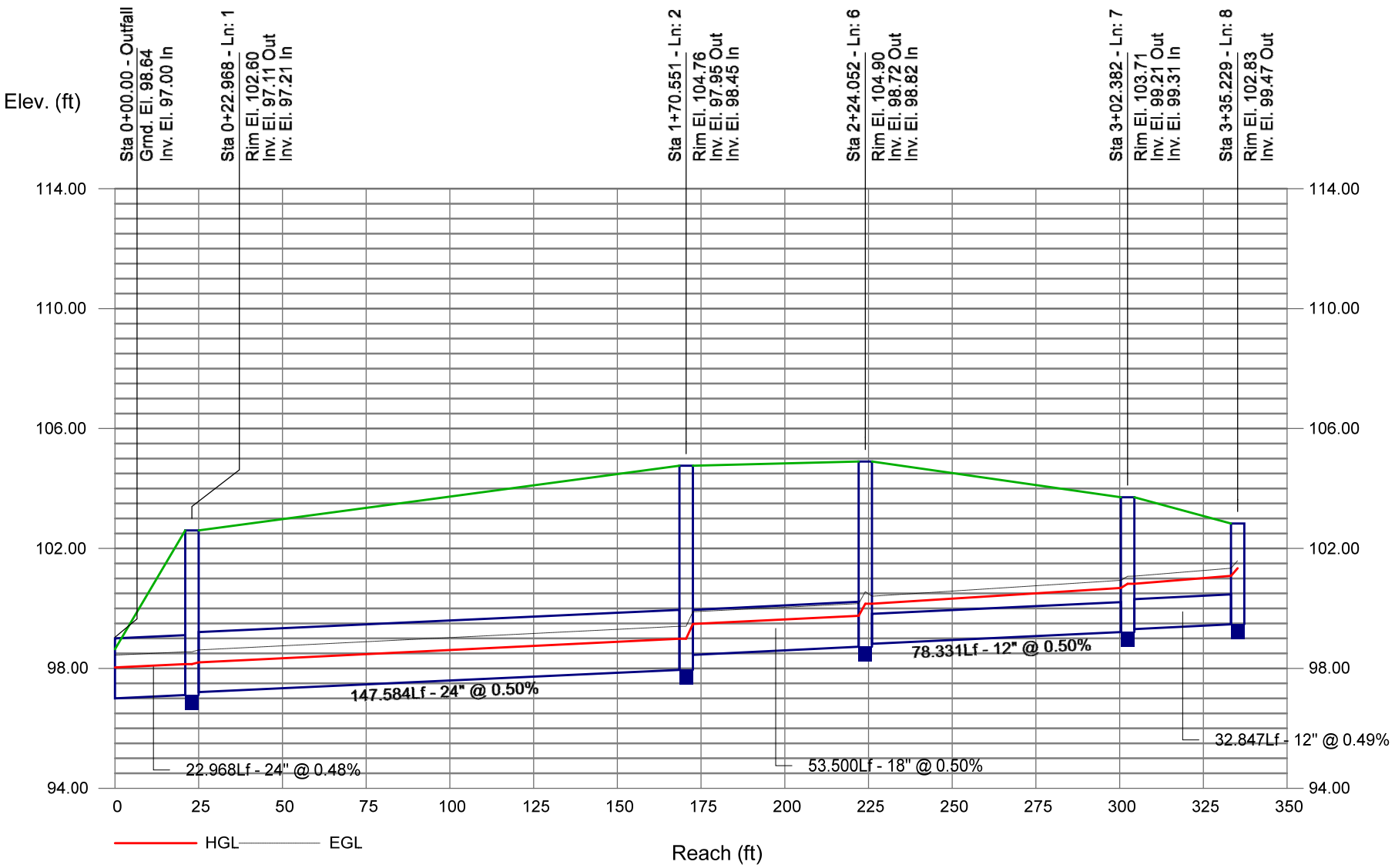
Storm Sewer Profile

Proj. file: Storm-DW2.stm

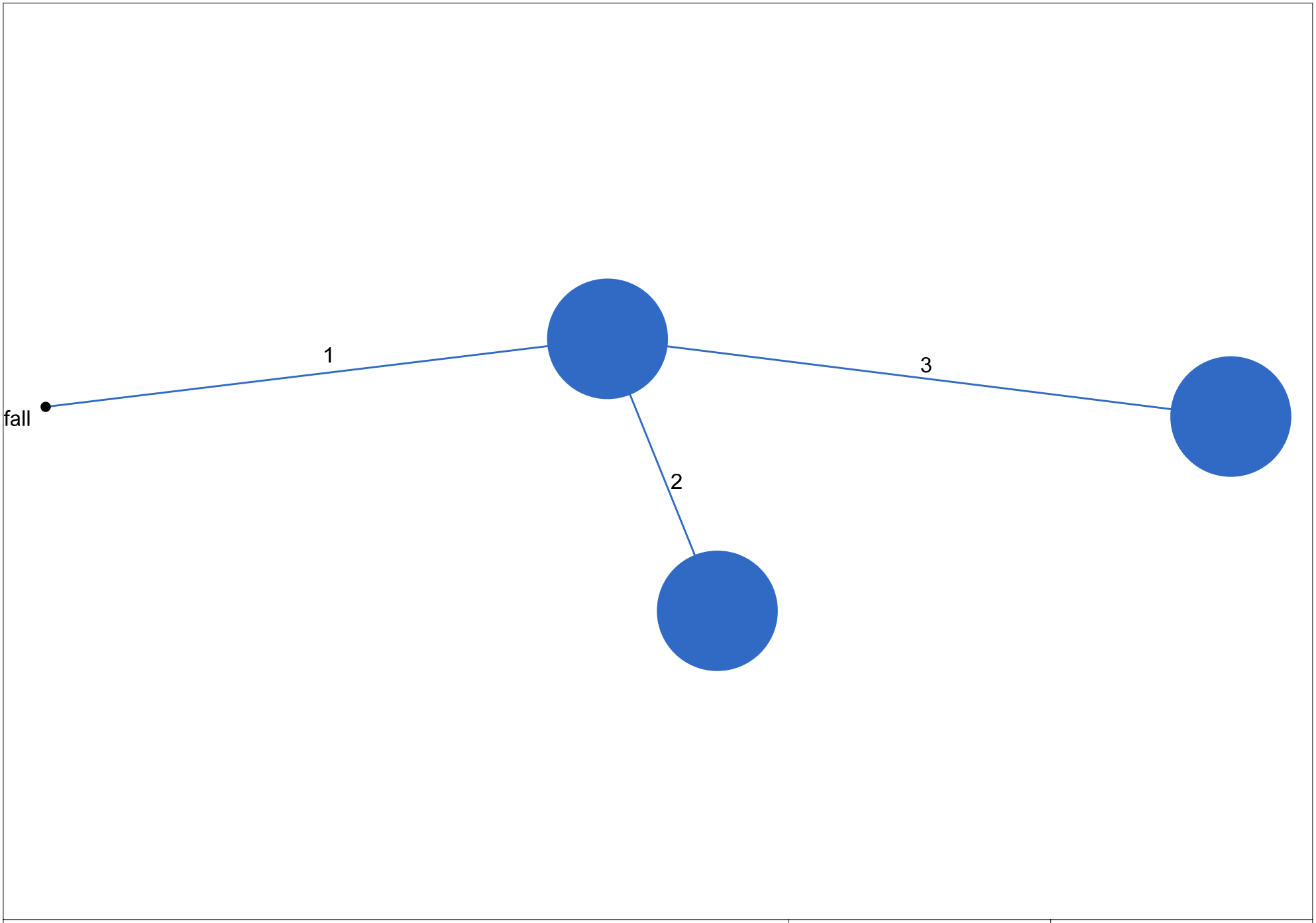


Storm Sewer Profile

Proj. file: Storm-DW2.stm



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



Project File: Storm-HZ1.stm	Number of lines: 3	Date: 8/1/2023

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	19.157	0.00	0.17	0.00	0.00	0.13	0.0	6.1	6.9	0.88	2.73	3.08	12	0.50	81.00	81.10	81.39	81.49	82.13	84.81	Pipe - (36)
2	1	14.387	0.08	0.08	0.69	0.06	0.06	6.0	6.0	7.0	0.39	4.36	2.25	12	1.50	81.20	81.42	81.49	81.67	84.81	84.71	Pipe - (37)
3	1	21.326	0.09	0.09	0.82	0.07	0.07	6.0	6.0	7.0	0.50	3.56	2.62	12	1.00	81.20	81.41	81.49	81.70	84.81	84.66	Pipe - (38)

Project File: Storm-HZ1.stm

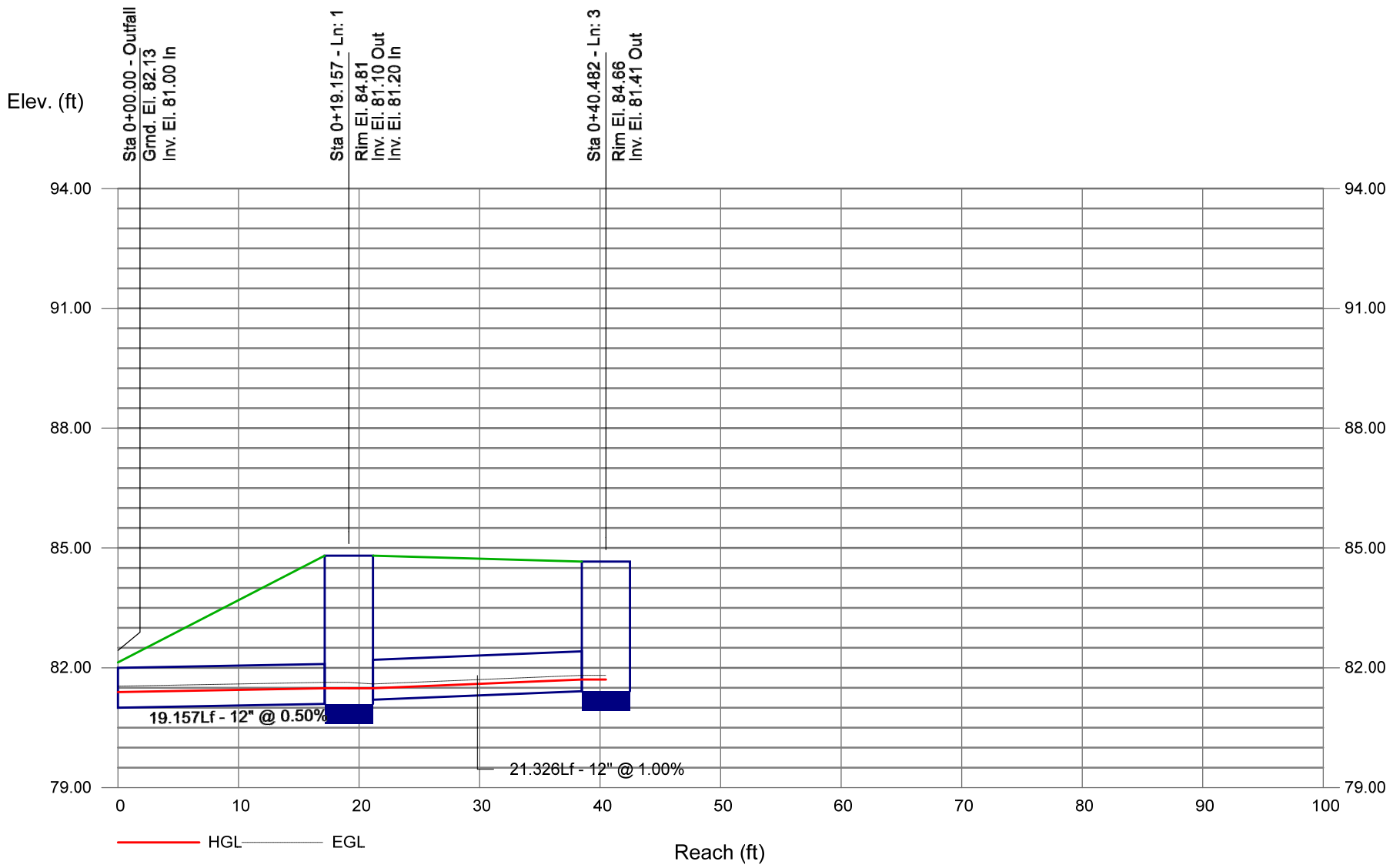
Number of lines: 3

Run Date: 8/1/2023

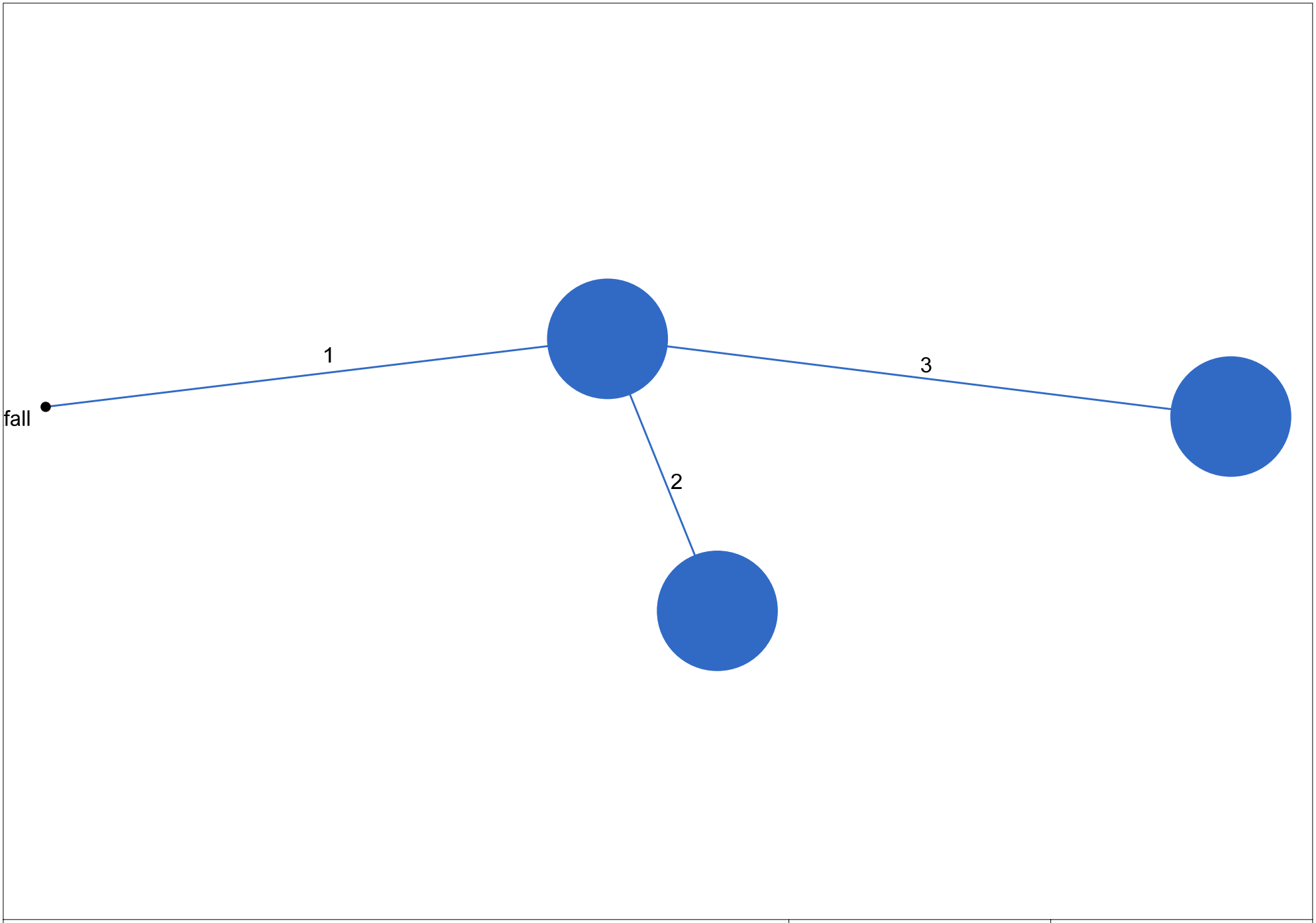
NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-HZ1.stm



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



Project File: Storm-HZ1.stm	Number of lines: 3	Date: 8/1/2023

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	19.157	0.00	0.17	0.00	0.00	0.13	0.0	6.2	9.4	1.20	2.73	3.36	12	0.50	81.00	81.10	81.46	81.56	82.13	84.81	Pipe - (36)
2	1	14.387	0.08	0.08	0.69	0.06	0.06	6.0	6.0	9.5	0.53	4.36	1.95	12	1.50	81.20	81.42	81.74	81.72	84.81	84.71	Pipe - (37)
3	1	21.326	0.09	0.09	0.82	0.07	0.07	6.0	6.0	9.5	0.68	3.56	2.21	12	1.00	81.20	81.41	81.74	81.76	84.81	84.66	Pipe - (38)

Project File: Storm-HZ1.stm

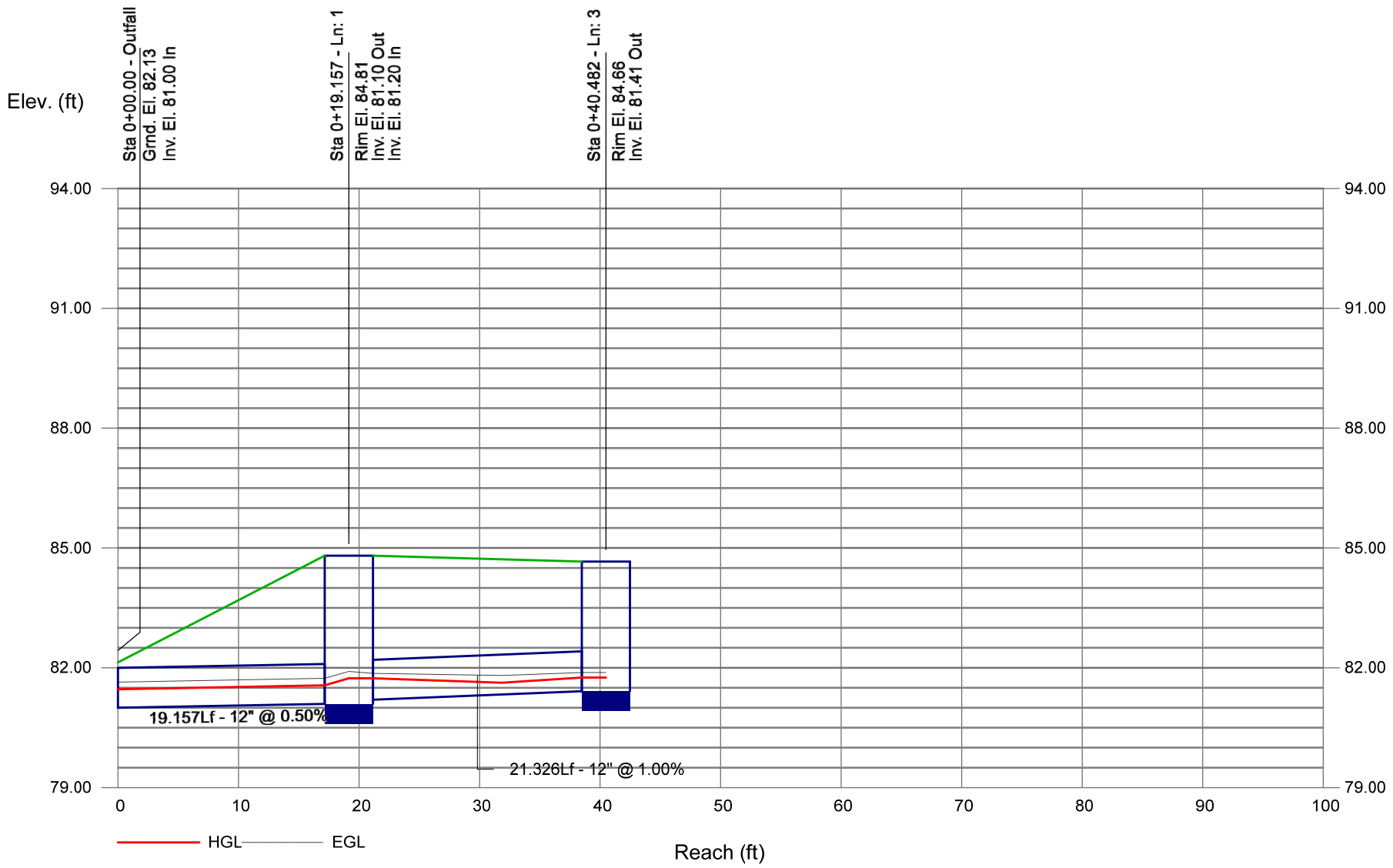
Number of lines: 3

Run Date: 8/1/2023

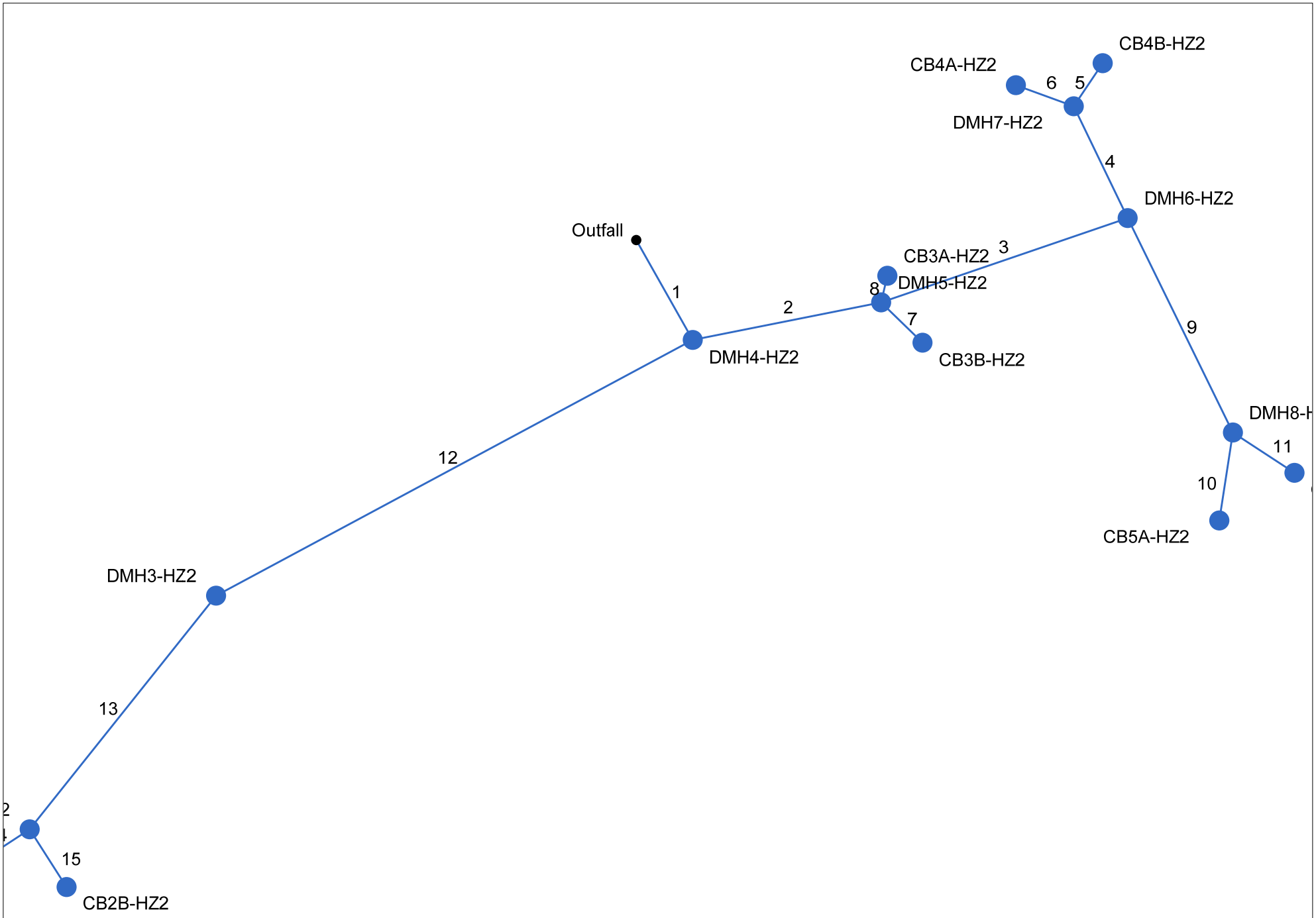
NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-HZ1.stm



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



Project File: Storm-HZ2.stm	Number of lines: 15	Date: 8/2/2023

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	29.989	0.00	3.29	0.00	0.00	1.52	0.0	7.1	6.7	10.17	17.33	5.50	24	0.50	78.00	78.15	79.14	79.29	79.65	85.06	Pipe - (60)
2	1	42.744	0.00	2.47	0.00	0.00	1.12	0.0	6.5	6.8	7.65	34.65	4.80	24	2.00	78.25	79.10	79.29	80.09	85.06	86.38	Pipe - (59) (1)
3	2	58.961	0.00	2.38	0.00	0.00	1.07	0.0	6.4	6.9	7.33	11.38	6.20	18	1.00	79.60	80.19	80.48	81.24	86.38	85.96	Pipe - (59)
4	3	32.853	0.00	1.40	0.00	0.00	0.62	0.0	6.1	6.9	4.29	5.46	6.80	12	2.00	80.69	81.35	81.36	82.22	85.96	85.90	Pipe - (53)
5	4	13.231	0.75	0.75	0.43	0.32	0.32	6.0	6.0	7.0	2.25	3.86	3.86	12	1.00	81.45	81.58	82.22	82.22	85.90	85.70	Pipe - (64)
6	4	14.016	0.65	0.65	0.45	0.29	0.29	6.0	6.0	7.0	2.05	3.86	3.62	12	1.00	81.45	81.59	82.22	82.20	85.90	85.69	Pipe - (65)
7	2	14.276	0.05	0.05	0.58	0.03	0.03	6.0	6.0	7.0	0.20	3.86	2.30	12	1.00	81.15	81.29	81.30	81.48	86.38	85.53	Pipe - (66)
8	2	7.474	0.03	0.03	0.75	0.03	0.03	6.0	6.0	7.0	0.17	6.68	2.80	12	3.00	81.15	81.37	81.26	81.55	86.38	85.52	Pipe - (67)
9	3	62.819	0.00	0.98	0.00	0.00	0.45	0.0	6.1	6.9	3.12	7.01	4.05	15	1.00	80.44	81.07	81.24	81.78	85.96	85.84	Pipe - (55)
10	9	24.082	0.46	0.46	0.46	0.21	0.21	6.0	6.0	7.0	1.46	3.85	3.88	12	1.00	81.32	81.56	81.78	82.07	85.84	85.63	Pipe - (62)
11	9	17.509	0.52	0.52	0.46	0.24	0.24	6.0	6.0	7.0	1.67	4.70	4.25	12	1.48	81.32	81.58	81.78	82.13	85.84	85.64	Pipe - (63)
12	1	126.078	0.00	0.82	0.00	0.00	0.40	0.0	6.4	6.9	2.75	8.04	3.01	18	0.50	78.25	78.88	79.29	79.51	85.06	83.79	Pipe - (69)
13	12	75.770	0.00	0.82	0.00	0.00	0.40	0.0	6.1	6.9	2.79	7.43	3.90	18	0.50	78.88	79.26	79.52	79.90	83.79	82.95	Pipe - (58)
14	13	13.523	0.20	0.20	0.79	0.15	0.15	6.0	6.0	7.0	1.07	3.57	3.23	12	1.00	79.66	79.80	80.11	80.23	82.95	82.80	Pipe - (42)
15	13	17.637	0.63	0.63	0.40	0.25	0.25	6.0	6.0	7.0	1.73	3.55	4.16	12	1.00	79.66	79.84	80.15	80.39	82.95	82.80	Pipe - (44)

Project File: Storm-HZ2.stm

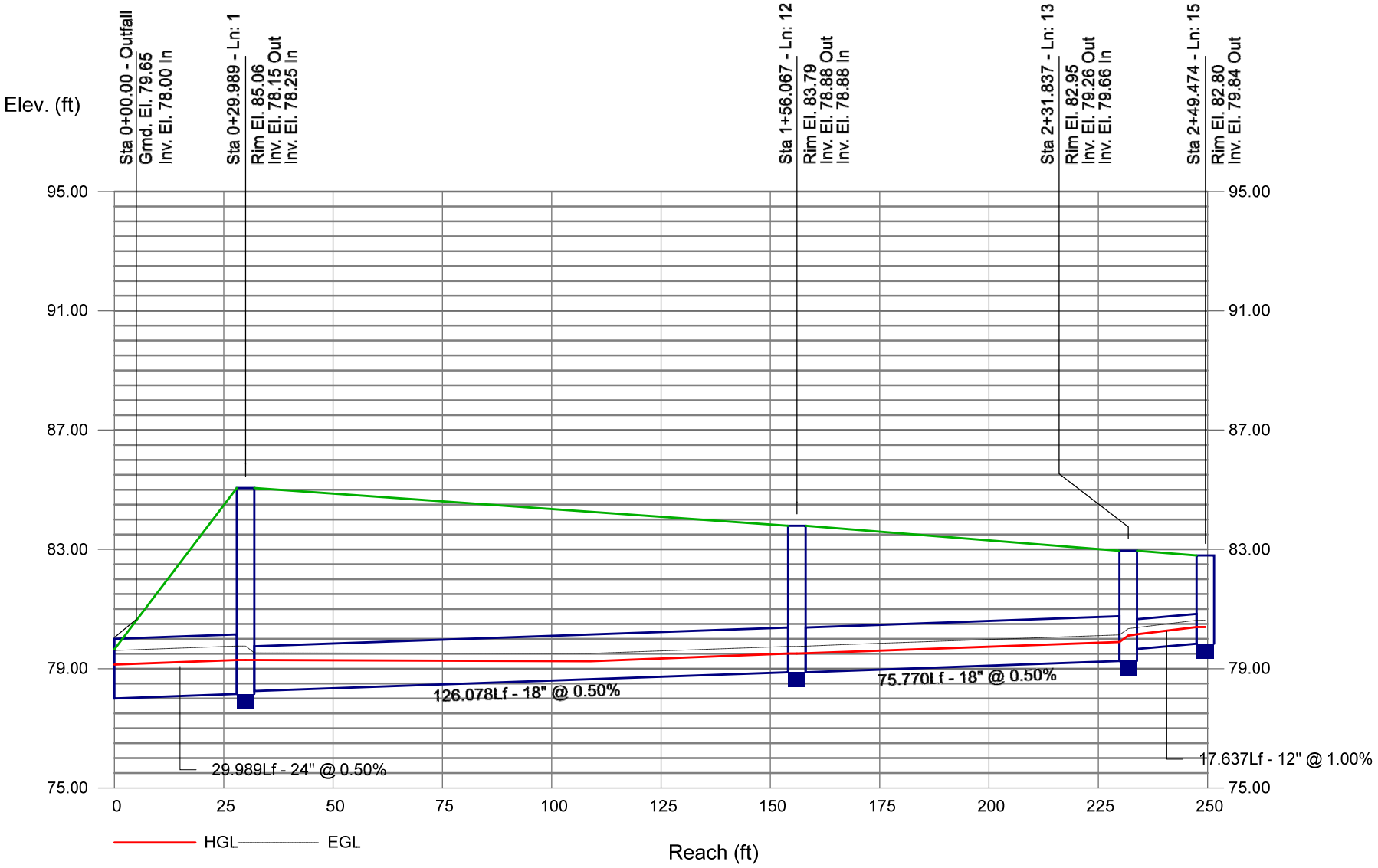
Number of lines: 15

Run Date: 8/2/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

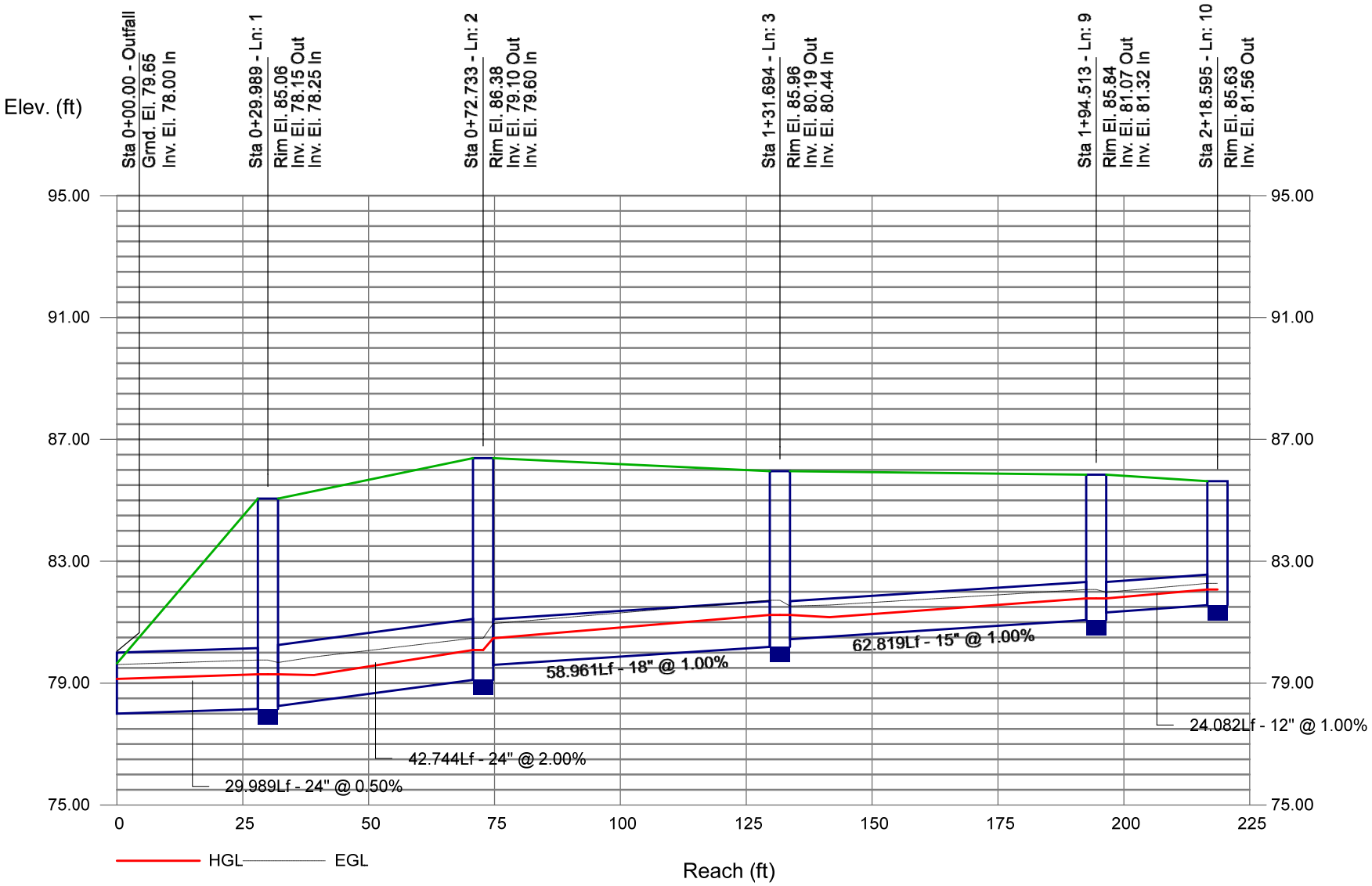
Storm Sewer Profile

Proj. file: Storm-HZ2.stm



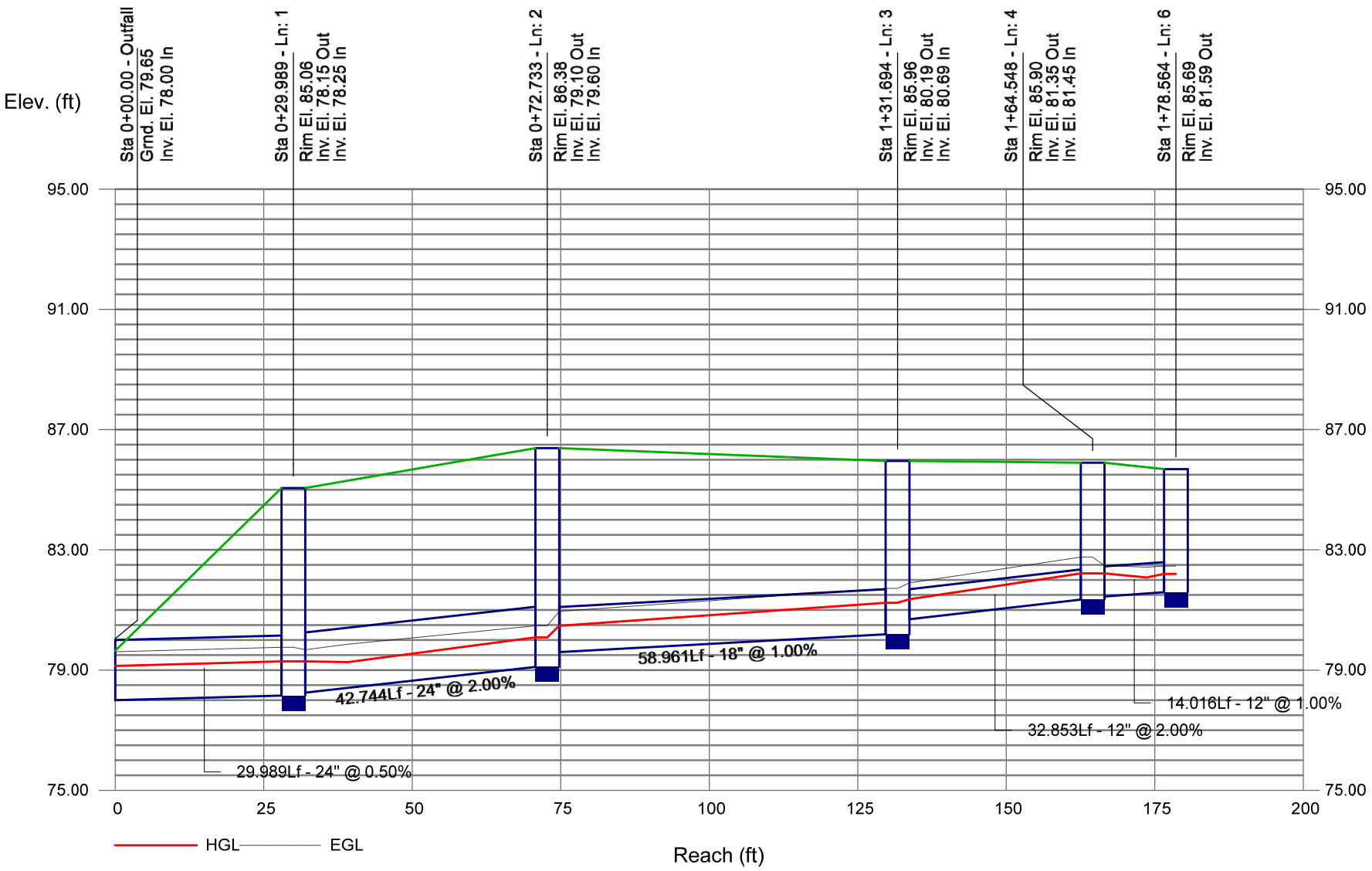
Storm Sewer Profile

Proj. file: Storm-HZ2.stm

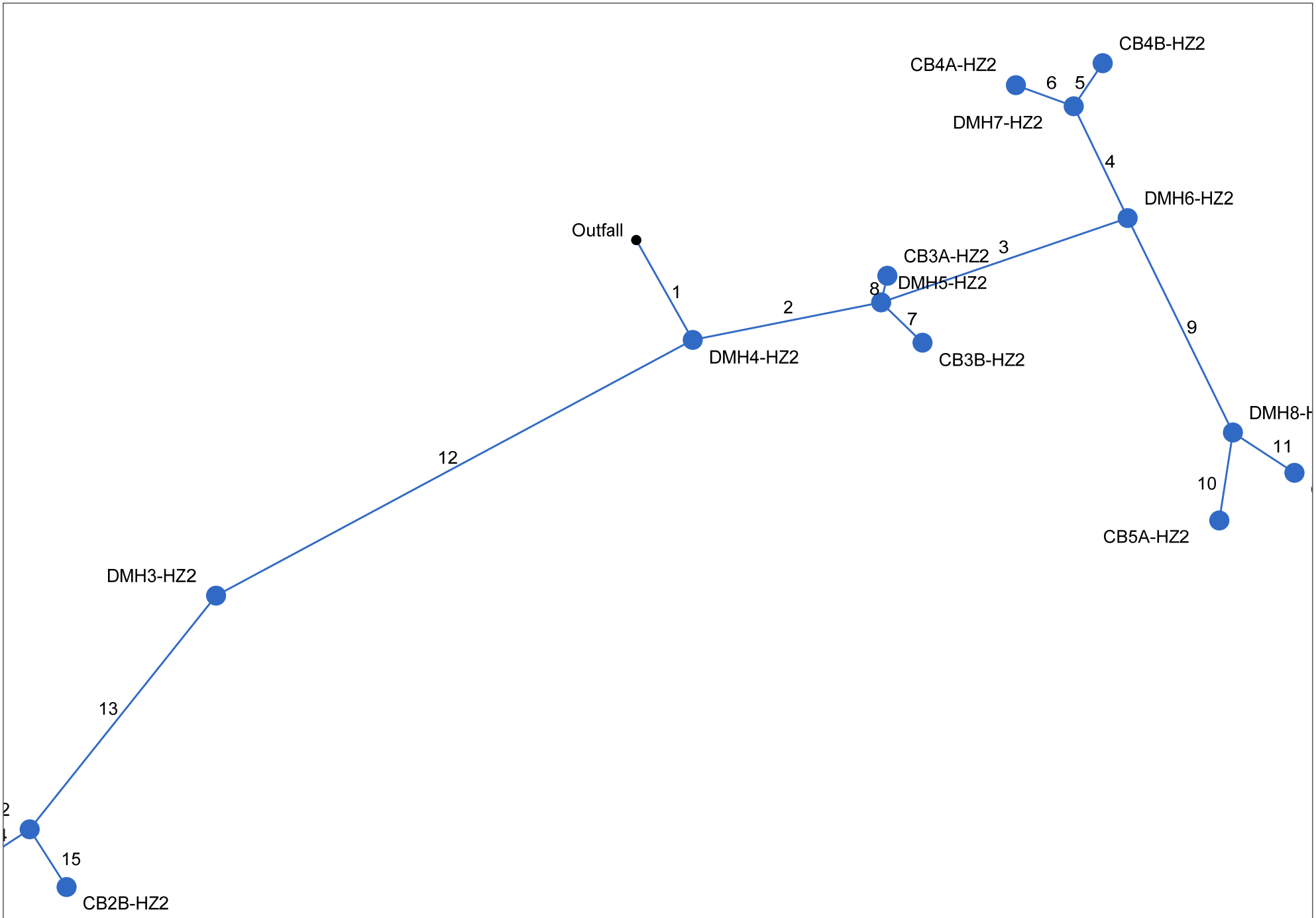


Storm Sewer Profile

Proj. file: Storm-HZ2.stm



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



Project File: Storm-HZ2.stm	Number of lines: 15	Date: 8/2/2023

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	29.989	0.00	3.29	0.00	0.00	1.52	0.0	7.5	9.0	13.72	17.33	6.12	24	0.50	78.00	78.15	79.33	79.50	79.65	85.06	Pipe - (60)
2	1	42.744	0.00	2.47	0.00	0.00	1.12	0.0	6.5	9.3	10.46	34.65	4.52	24	2.00	78.25	79.10	80.07	80.26	85.06	86.38	Pipe - (59) (1)
3	2	58.961	0.00	2.38	0.00	0.00	1.07	0.0	6.3	9.4	10.01	11.38	6.89	18	1.00	79.60	80.19	80.69	81.41	86.38	85.96	Pipe - (59)
4	3	32.853	0.00	1.40	0.00	0.00	0.62	0.0	6.1	9.5	5.85	5.46	7.67	12	2.00	80.69	81.35	81.61	82.30	85.96	85.90	Pipe - (53)
5	4	13.231	0.75	0.75	0.43	0.32	0.32	6.0	6.0	9.5	3.07	3.86	4.59	12	1.00	81.45	81.58	82.30	82.33	85.90	85.70	Pipe - (64)
6	4	14.016	0.65	0.65	0.45	0.29	0.29	6.0	6.0	9.5	2.79	3.86	4.29	12	1.00	81.45	81.59	82.30	82.31	85.90	85.69	Pipe - (65)
7	2	14.276	0.05	0.05	0.58	0.03	0.03	6.0	6.0	9.5	0.27	3.86	2.52	12	1.00	81.15	81.29	81.33	81.51	86.38	85.53	Pipe - (66)
8	2	7.474	0.03	0.03	0.75	0.03	0.03	6.0	6.0	9.5	0.24	6.68	3.07	12	3.00	81.15	81.37	81.28	81.57	86.38	85.52	Pipe - (67)
9	3	62.819	0.00	0.98	0.00	0.00	0.45	0.0	6.1	9.5	4.25	7.01	4.52	15	1.00	80.44	81.07	81.41	81.90	85.96	85.84	Pipe - (55)
10	9	24.082	0.46	0.46	0.46	0.21	0.21	6.0	6.0	9.5	1.99	3.85	4.11	12	1.00	81.32	81.56	81.90	82.16	85.84	85.63	Pipe - (62)
11	9	17.509	0.52	0.52	0.46	0.24	0.24	6.0	6.0	9.5	2.27	4.70	4.51	12	1.48	81.32	81.58	81.90	82.22	85.84	85.64	Pipe - (63)
12	1	126.078	0.00	0.82	0.00	0.00	0.40	0.0	6.6	9.3	3.74	8.04	2.20	18	0.50	78.25	78.88	80.07	80.19	85.06	83.79	Pipe - (69)
13	12	75.770	0.00	0.82	0.00	0.00	0.40	0.0	6.1	9.5	3.80	7.43	2.60	18	0.50	78.88	79.26	80.23	80.29	83.79	82.95	Pipe - (58)
14	13	13.523	0.20	0.20	0.79	0.15	0.15	6.0	6.0	9.5	1.46	3.57	2.97	12	1.00	79.66	79.80	80.41	80.31	82.95	82.80	Pipe - (42)
15	13	17.637	0.63	0.63	0.40	0.25	0.25	6.0	6.0	9.5	2.35	3.55	4.02	12	1.00	79.66	79.84	80.41	80.49	82.95	82.80	Pipe - (44)

Project File: Storm-HZ2.stm

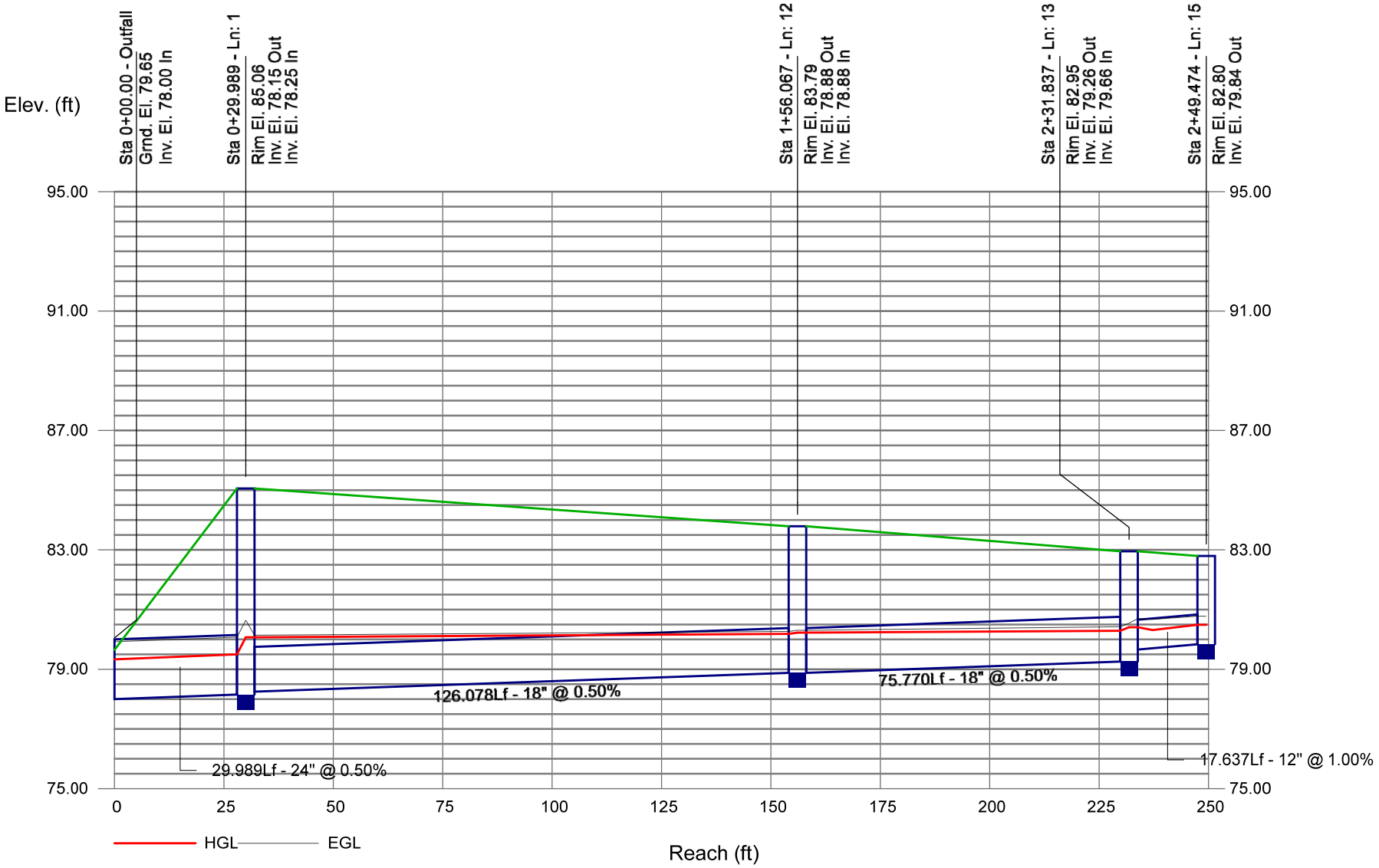
Number of lines: 15

Run Date: 8/2/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

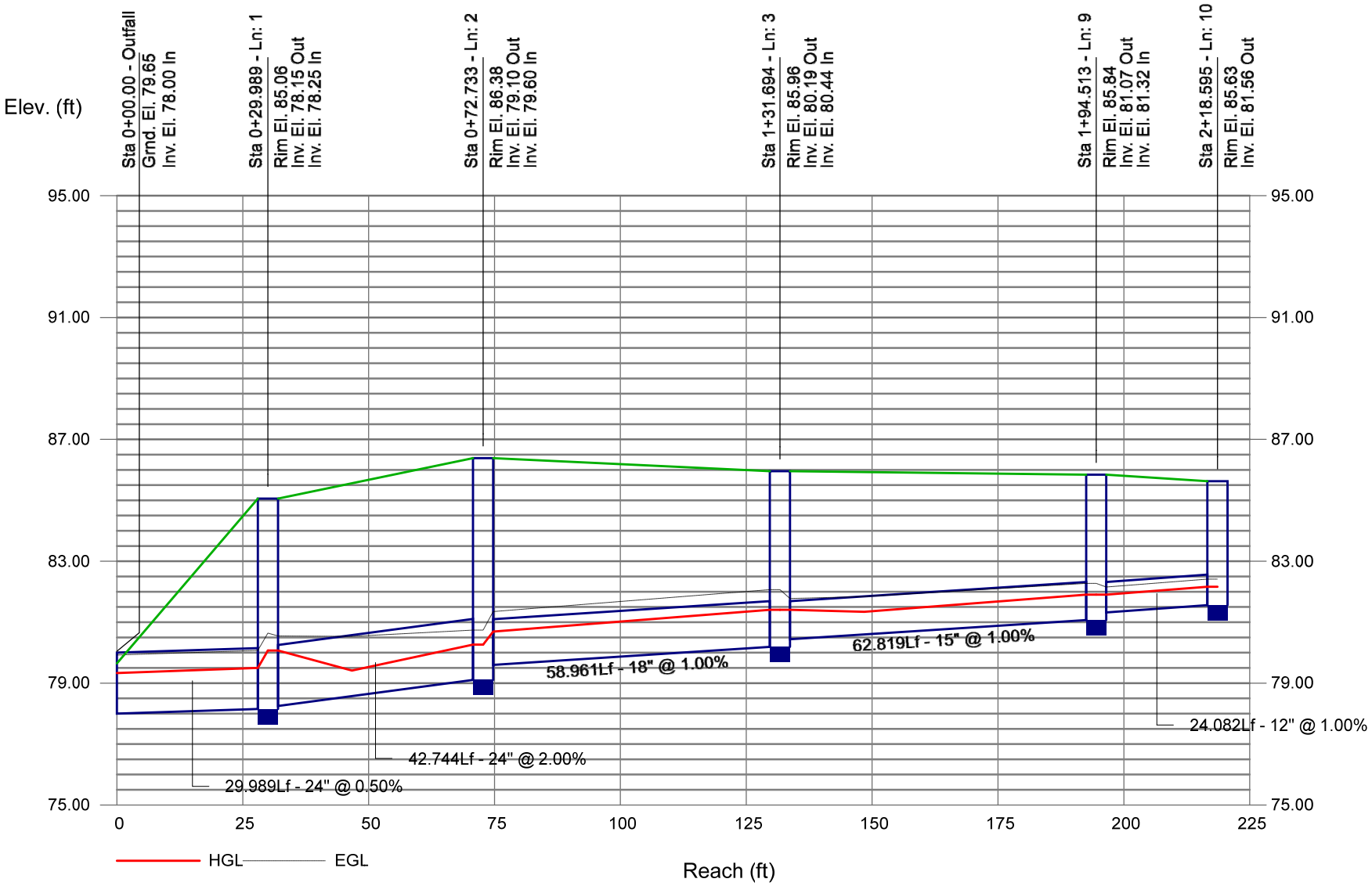
Storm Sewer Profile

Proj. file: Storm-HZ2.stm



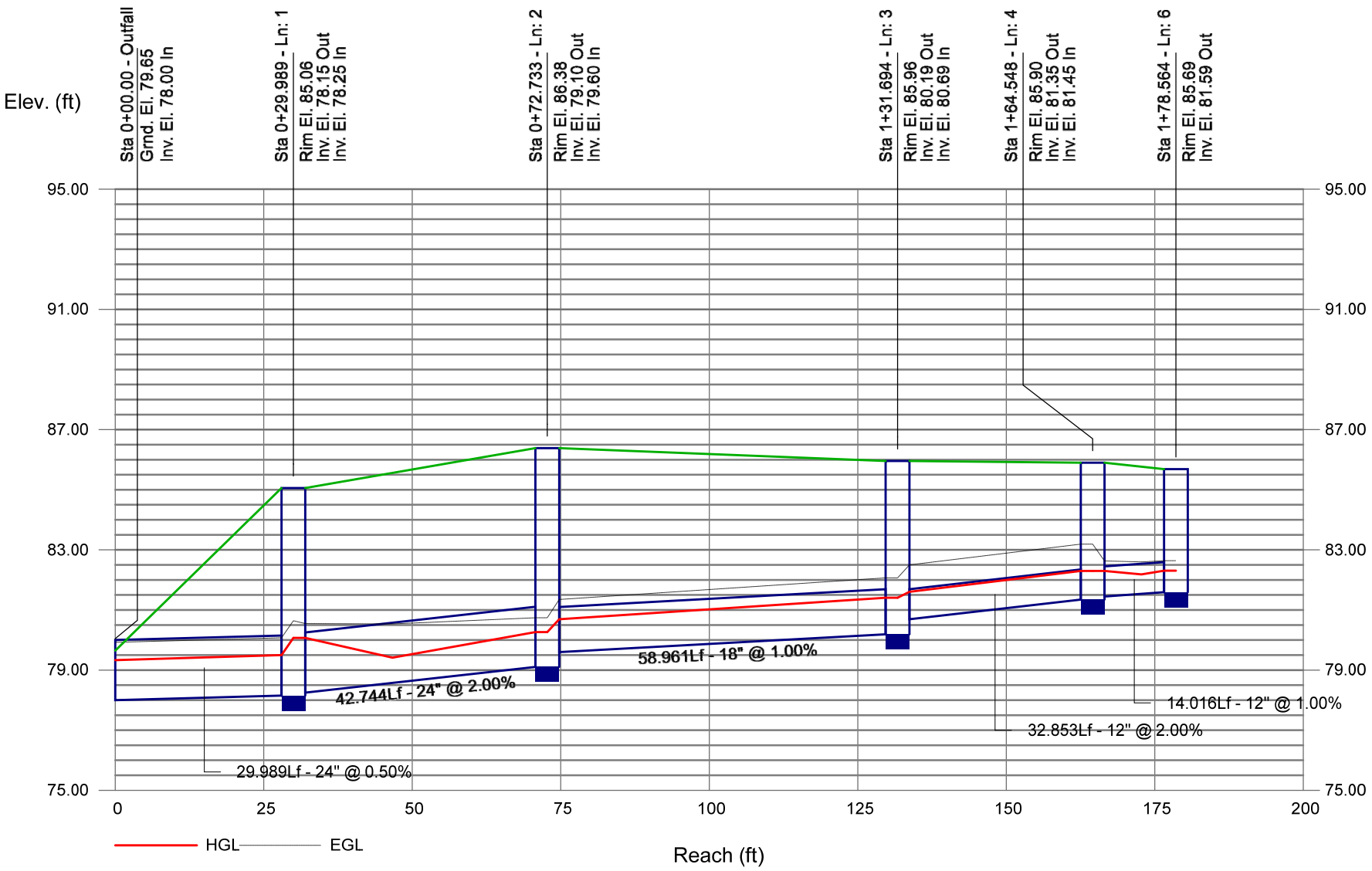
Storm Sewer Profile

Proj. file: Storm-HZ2.stm

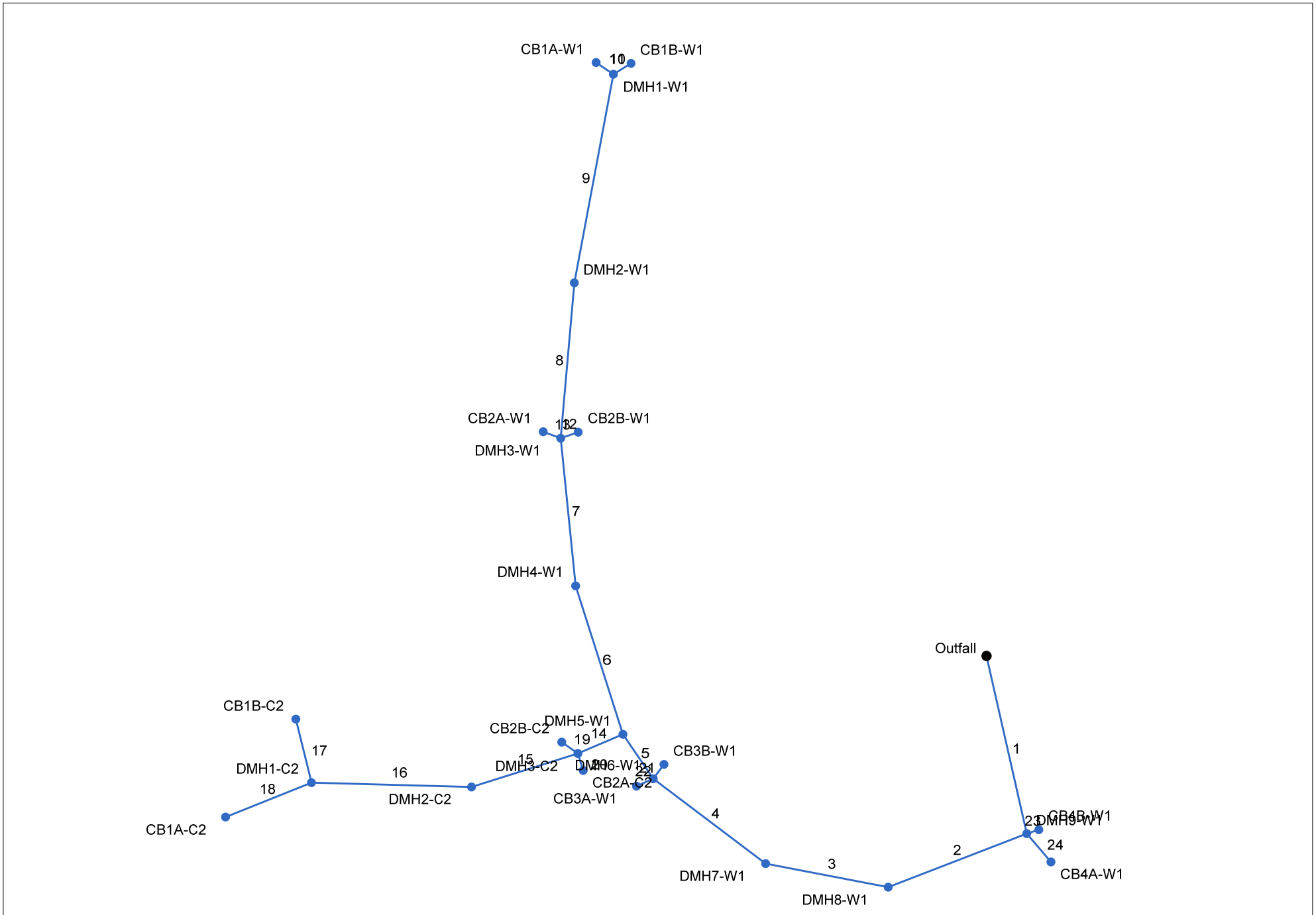


Storm Sewer Profile

Proj. file: Storm-HZ2.stm



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



Project File: Storm-W1.stm	Number of lines: 24	Date: 7/27/2023

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	104.695	0.00	2.66	0.00	0.00	1.51	0.0	8.8	6.3	9.50	15.99	5.32	24	0.50	105.00	105.52	106.10	106.64	106.80	109.32	Pipe - (324)
2	1	85.028	0.00	1.58	0.00	0.00	0.93	0.0	8.4	6.4	5.96	7.43	3.45	18	0.50	105.52	105.95	107.07	107.31	109.32	110.13	Pipe - (327)
3	2	71.417	0.00	1.58	0.00	0.00	0.93	0.0	8.0	6.5	6.03	7.43	3.78	18	0.50	106.05	106.41	107.43	107.60	110.13	111.28	Pipe - (326)
4	3	80.618	0.00	1.58	0.00	0.00	0.93	0.0	7.7	6.5	6.09	12.60	4.56	18	1.44	106.51	107.67	107.72	108.62	111.28	112.63	Pipe - (325)
5	4	30.807	0.00	1.24	0.00	0.00	0.73	0.0	7.7	6.6	4.80	9.94	5.26	15	2.37	107.77	108.50	108.62	109.39	112.63	113.14	Pipe - (228)
6	5	89.525	0.00	0.65	0.00	0.00	0.43	0.0	7.4	6.6	2.84	4.31	5.27	12	1.25	109.00	110.12	109.59	110.84	113.14	114.62	Pipe - (315)
7	6	85.215	0.00	0.65	0.00	0.00	0.43	0.0	7.1	6.7	2.87	4.96	5.16	12	1.65	110.22	111.63	110.84	112.36	114.62	116.03	Pipe - (314)
8	7	89.524	0.00	0.21	0.00	0.00	0.18	0.0	6.6	6.8	1.25	5.27	2.92	12	1.87	111.73	113.40	112.36	113.87	116.03	117.80	Pipe - (311)
9	8	121.958	0.00	0.21	0.00	0.00	0.18	0.0	6.1	6.9	1.27	7.74	4.10	12	4.02	113.50	118.40	113.87	118.88	117.80	122.64	Pipe - (308)
10	9	11.837	0.12	0.12	0.90	0.11	0.11	6.0	6.0	7.0	0.75	3.86	2.86	12	1.00	118.50	118.62	118.88	118.98	122.64	122.71	Pipe - (309)
11	9	11.886	0.09	0.09	0.85	0.08	0.08	6.0	6.0	7.0	0.52	3.86	2.29	12	1.00	118.50	118.62	118.88	118.92	122.64	122.71	Pipe - (310)
12	7	10.655	0.17	0.17	0.67	0.11	0.11	6.0	6.0	7.0	0.79	3.86	2.26	12	1.00	111.73	111.84	112.36	112.21	116.03	115.89	Pipe - (312)
13	7	10.630	0.28	0.28	0.48	0.13	0.13	6.0	6.0	7.0	0.92	3.86	2.45	12	1.00	111.73	111.84	112.36	112.24	116.03	115.89	Pipe - (313)
14	5	28.029	0.00	0.58	0.00	0.00	0.30	0.0	7.4	6.6	2.01	4.80	4.94	12	1.82	109.00	109.51	109.45	110.11	113.14	113.11	Pipe - (615)
15	14	63.828	0.00	0.29	0.00	0.00	0.15	0.0	7.0	6.7	1.01	3.21	2.87	12	0.81	109.61	110.13	110.11	110.55	113.11	113.74	Pipe - (614)
16	15	91.610	0.00	0.29	0.00	0.00	0.15	0.0	6.5	6.8	1.03	2.73	3.22	12	0.50	110.33	110.79	110.76	111.22	113.74	114.66	Pipe - (613)
17	16	37.458	0.13	0.13	0.50	0.07	0.07	6.0	6.0	7.0	0.47	2.52	1.95	12	0.50	110.79	110.98	111.22	111.27	114.66	114.30	Pipe - (611)
18	16	53.046	0.15	0.15	0.55	0.08	0.08	6.0	6.0	7.0	0.58	2.52	2.25	12	0.50	110.79	111.05	111.22	111.37	114.66	114.32	Pipe - (612)
19	14	11.285	0.16	0.16	0.51	0.08	0.08	6.0	6.0	7.0	0.57	2.52	1.55	12	0.50	109.61	109.67	110.11	110.12	113.11	112.97	Pipe - (617)
20	14	10.225	0.13	0.13	0.53	0.07	0.07	6.0	6.0	7.0	0.50	2.52	1.33	12	0.50	109.61	109.66	110.11	110.12	113.11	112.92	Pipe - (616)
21	4	10.307	0.20	0.20	0.54	0.11	0.11	6.0	6.0	7.0	0.76	5.46	2.58	12	2.00	108.17	108.38	108.62	108.74	112.63	112.47	Pipe - (238)
22	4	10.421	0.15	0.15	0.63	0.09	0.09	6.0	6.0	7.0	0.63	5.46	2.31	12	2.00	108.17	108.38	108.62	108.71	112.63	112.47	Pipe - (239)

Project File: Storm-W1.stm | Number of lines: 24 | Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

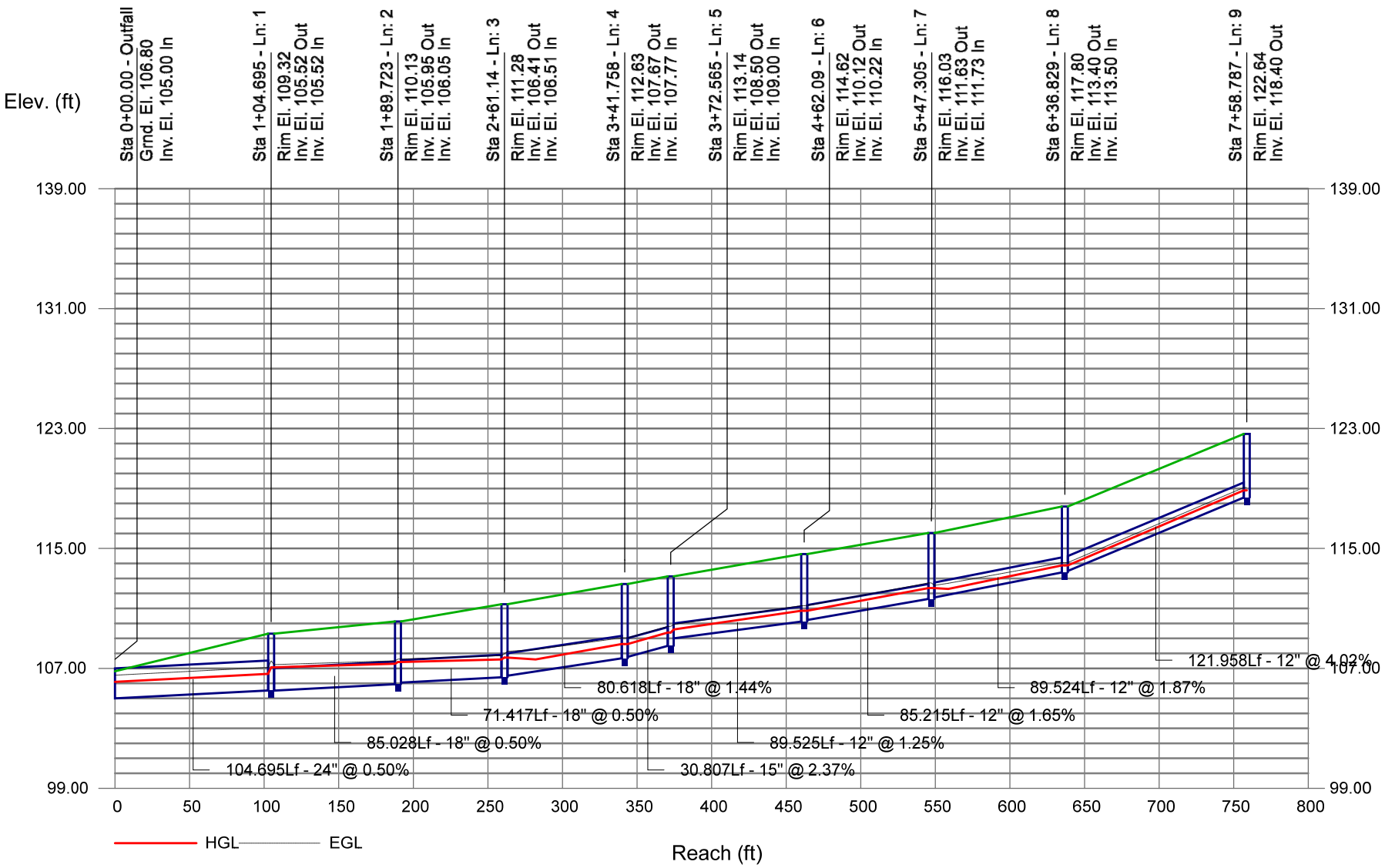
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	1	7.357	0.43	0.43	0.63	0.27	0.27	6.0	6.0	7.0	1.88	2.63	2.39	12	0.54	106.00	106.04	107.07	107.09	109.32	109.31	Pipe - (322)
24	1	21.246	0.65	0.65	0.47	0.31	0.31	6.0	6.0	7.0	2.13	2.56	2.71	12	0.52	106.00	106.11	107.07	107.11	109.32	109.31	Pipe - (323)

Project File: Storm-W1.stm | Number of lines: 24 | Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

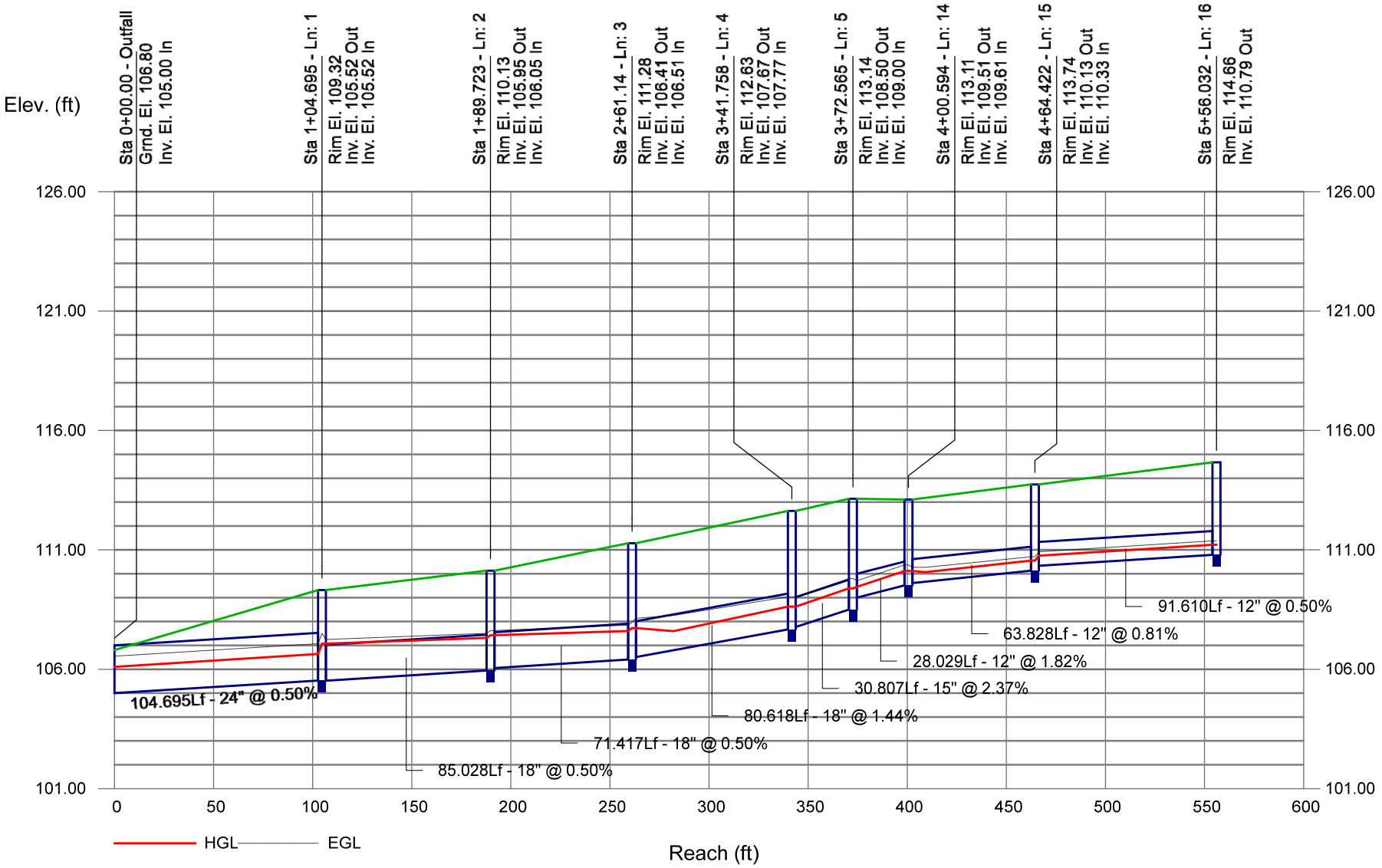
Storm Sewer Profile

Proj. file: Storm-W1.stm

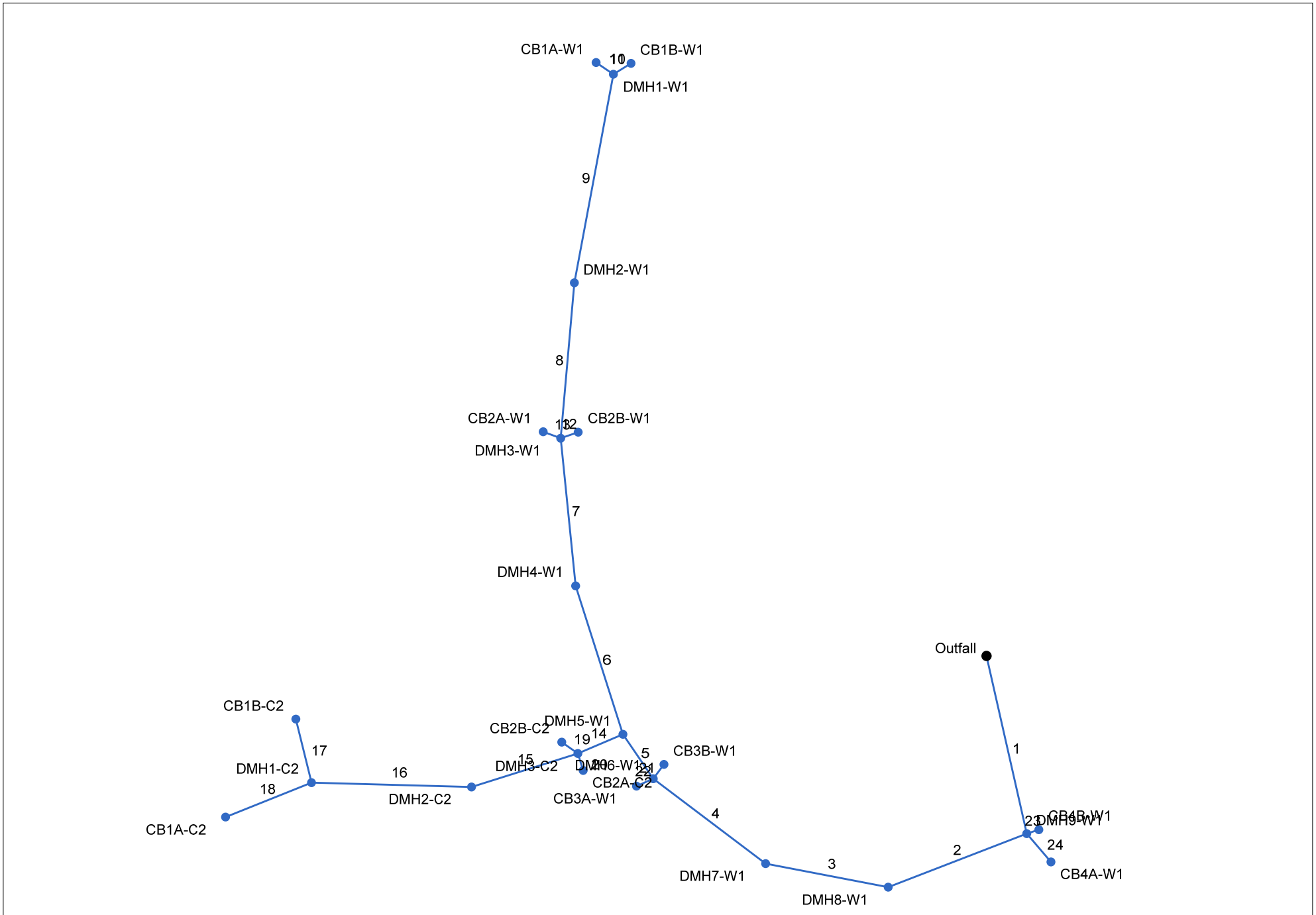


Storm Sewer Profile

Proj. file: Storm-W1.stm



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



Project File: Storm-W1.stm	Number of lines: 24	Date: 7/27/2023

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	104.695	0.00	2.66	0.00	0.00	1.51	0.0	8.5	8.7	13.18	15.99	5.77	24	0.50	105.00	105.52	106.31	106.96	106.80	109.32	Pipe - (324)
2	1	85.028	0.00	1.58	0.00	0.00	0.93	0.0	8.2	8.8	8.23	7.43	4.66	18	0.50	105.52	105.95	107.42	107.95	109.32	110.13	Pipe - (327)
3	2	71.417	0.00	1.58	0.00	0.00	0.93	0.0	7.9	8.9	8.30	7.43	4.70	18	0.50	106.05	106.41	108.14	108.59	110.13	111.28	Pipe - (326)
4	3	80.618	0.00	1.58	0.00	0.00	0.93	0.0	7.7	9.0	8.38	12.60	4.74	18	1.44	106.51	107.67	108.76	109.28	111.28	112.63	Pipe - (325)
5	4	30.807	0.00	1.24	0.00	0.00	0.73	0.0	7.6	9.0	6.59	9.94	5.37	15	2.37	107.77	108.50	109.63	109.95	112.63	113.14	Pipe - (228)
6	5	89.525	0.00	0.65	0.00	0.00	0.43	0.0	7.3	9.1	3.90	4.31	4.97	12	1.25	109.00	110.12	110.39	111.30	113.14	114.62	Pipe - (315)
7	6	85.215	0.00	0.65	0.00	0.00	0.43	0.0	7.0	9.2	3.94	4.96	5.30	12	1.65	110.22	111.63	111.40	112.47	114.62	116.03	Pipe - (314)
8	7	89.524	0.00	0.21	0.00	0.00	0.18	0.0	6.5	9.3	1.71	5.27	3.27	12	1.87	111.73	113.40	112.47	113.96	116.03	117.80	Pipe - (311)
9	8	121.958	0.00	0.21	0.00	0.00	0.18	0.0	6.1	9.5	1.73	7.74	4.39	12	4.02	113.50	118.40	113.96	118.96	117.80	122.64	Pipe - (308)
10	9	11.837	0.12	0.12	0.90	0.11	0.11	6.0	6.0	9.5	1.03	3.86	3.07	12	1.00	118.50	118.62	118.96	119.04	122.64	122.71	Pipe - (309)
11	9	11.886	0.09	0.09	0.85	0.08	0.08	6.0	6.0	9.5	0.71	3.86	2.46	12	1.00	118.50	118.62	118.96	118.97	122.64	122.71	Pipe - (310)
12	7	10.655	0.17	0.17	0.67	0.11	0.11	6.0	6.0	9.5	1.08	3.86	2.51	12	1.00	111.73	111.84	112.47	112.28	116.03	115.89	Pipe - (312)
13	7	10.630	0.28	0.28	0.48	0.13	0.13	6.0	6.0	9.5	1.25	3.86	2.72	12	1.00	111.73	111.84	112.47	112.31	116.03	115.89	Pipe - (313)
14	5	28.029	0.00	0.58	0.00	0.00	0.30	0.0	7.4	9.0	2.74	4.80	3.49	12	1.82	109.00	109.51	110.39	110.51	113.14	113.11	Pipe - (615)
15	14	63.828	0.00	0.29	0.00	0.00	0.15	0.0	6.9	9.2	1.38	3.21	2.16	12	0.81	109.61	110.13	110.70	110.78	113.11	113.74	Pipe - (614)
16	15	91.610	0.00	0.29	0.00	0.00	0.15	0.0	6.5	9.3	1.40	2.73	3.50	12	0.50	110.33	110.79	110.84	111.30	113.74	114.66	Pipe - (613)
17	16	37.458	0.13	0.13	0.50	0.07	0.07	6.0	6.0	9.5	0.64	2.52	1.33	12	0.50	110.79	110.98	111.48	111.49	114.66	114.30	Pipe - (611)
18	16	53.046	0.15	0.15	0.55	0.08	0.08	6.0	6.0	9.5	0.79	2.52	1.77	12	0.50	110.79	111.05	111.48	111.52	114.66	114.32	Pipe - (612)
19	14	11.285	0.16	0.16	0.51	0.08	0.08	6.0	6.0	9.5	0.78	2.52	0.99	12	0.50	109.61	109.67	110.70	110.70	113.11	112.97	Pipe - (617)
20	14	10.225	0.13	0.13	0.53	0.07	0.07	6.0	6.0	9.5	0.68	2.52	0.86	12	0.50	109.61	109.66	110.70	110.70	113.11	112.92	Pipe - (616)
21	4	10.307	0.20	0.20	0.54	0.11	0.11	6.0	6.0	9.5	1.04	5.46	1.33	12	2.00	108.17	108.38	109.63	109.63	112.63	112.47	Pipe - (238)
22	4	10.421	0.15	0.15	0.63	0.09	0.09	6.0	6.0	9.5	0.86	5.46	1.10	12	2.00	108.17	108.38	109.63	109.63	112.63	112.47	Pipe - (239)

Project File: Storm-W1.stm

Number of lines: 24

Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

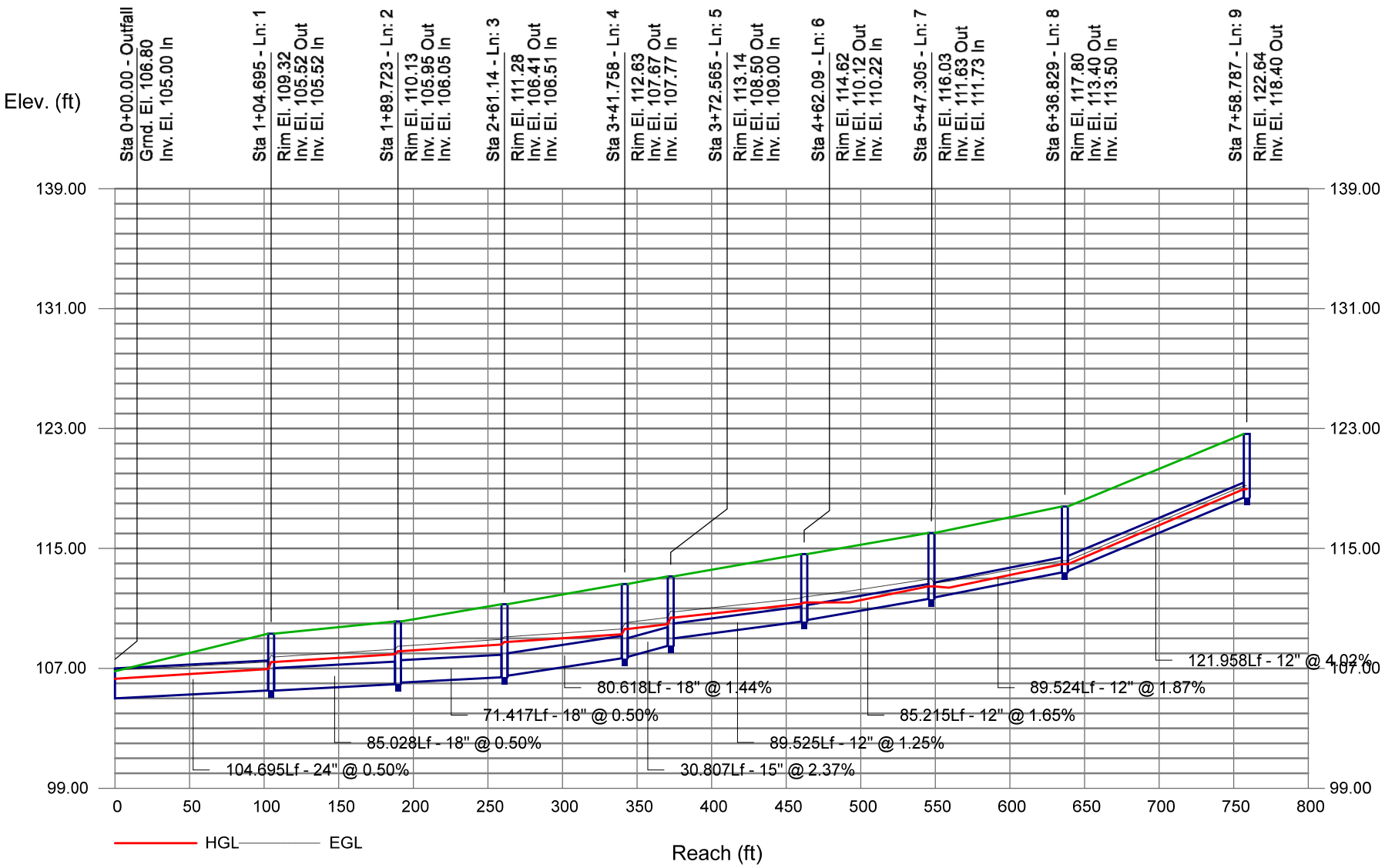
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	1	7.357	0.43	0.43	0.63	0.27	0.27	6.0	6.0	9.5	2.55	2.63	3.25	12	0.54	106.00	106.04	107.42	107.46	109.32	109.31	Pipe - (322)
24	1	21.246	0.65	0.65	0.47	0.31	0.31	6.0	6.0	9.5	2.90	2.56	3.69	12	0.52	106.00	106.11	107.42	107.56	109.32	109.31	Pipe - (323)

Project File: Storm-W1.stm | Number of lines: 24 | Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

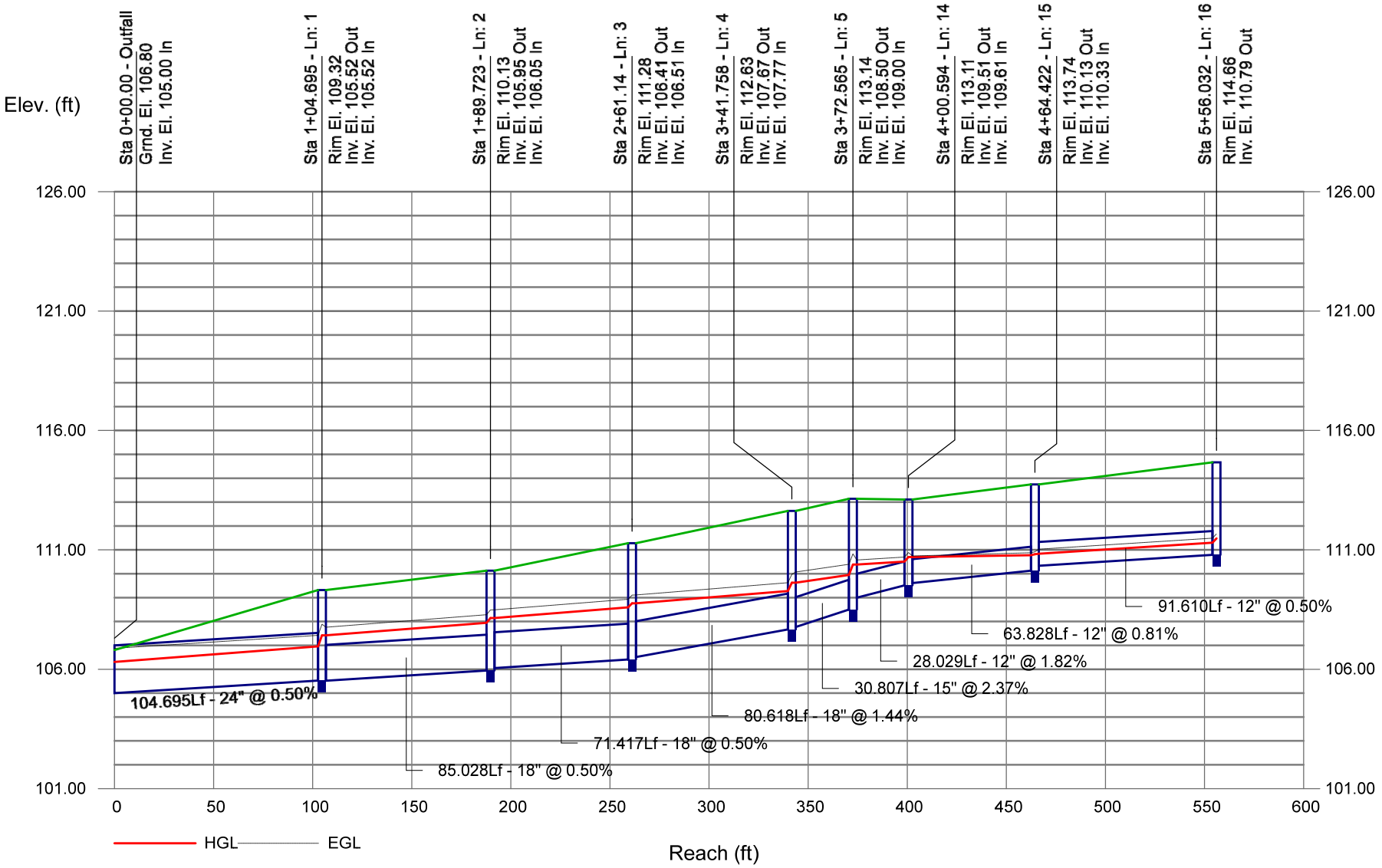
Storm Sewer Profile

Proj. file: Storm-W1.stm

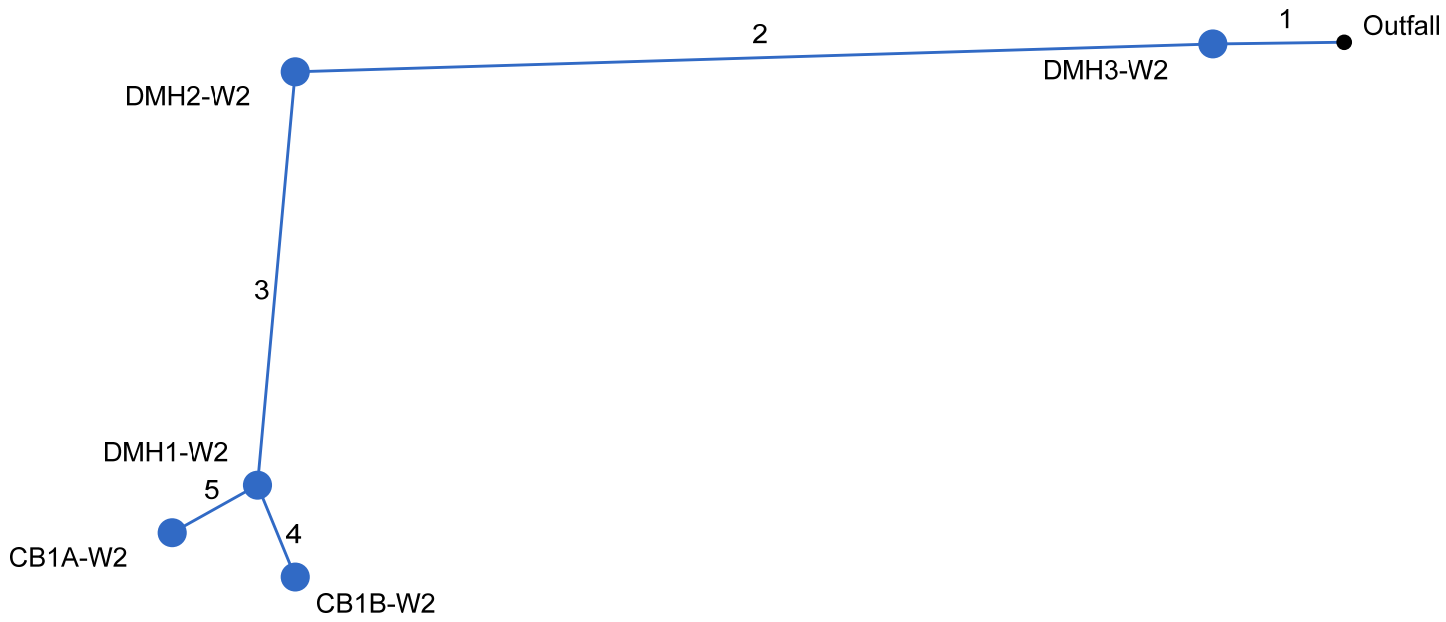


Storm Sewer Profile

Proj. file: Storm-W1.stm



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



Project File: Storm-W2.stm	Number of lines: 5	Date: 7/27/2023

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	20.001	0.00	1.09	0.00	0.00	0.57	0.0	6.8	6.8	3.83	8.04	4.35	18	0.50	102.00	102.10	102.75	102.85	103.64	106.60	Pipe - (255) (1)
2	1	139.817	0.00	1.09	0.00	0.00	0.57	0.0	6.3	6.9	3.90	14.55	4.86	18	1.64	102.20	104.49	102.85	105.24	106.60	110.00	Pipe - (255)
3	2	63.350	0.00	1.09	0.00	0.00	0.57	0.0	6.1	6.9	3.93	12.34	4.86	18	1.38	104.59	105.47	105.24	106.22	110.00	110.01	Pipe - (254)
4	3	15.255	0.71	0.71	0.54	0.38	0.38	6.0	6.0	7.0	2.64	2.52	3.63	12	0.50	105.97	106.05	106.84	106.92	110.01	110.05	Pipe - (252)
5	3	14.851	0.38	0.38	0.49	0.19	0.19	6.0	6.0	7.0	1.30	2.52	3.24	12	0.50	105.97	106.04	106.48	106.55	110.01	110.04	Pipe - (253)

Project File: Storm-W2.stm

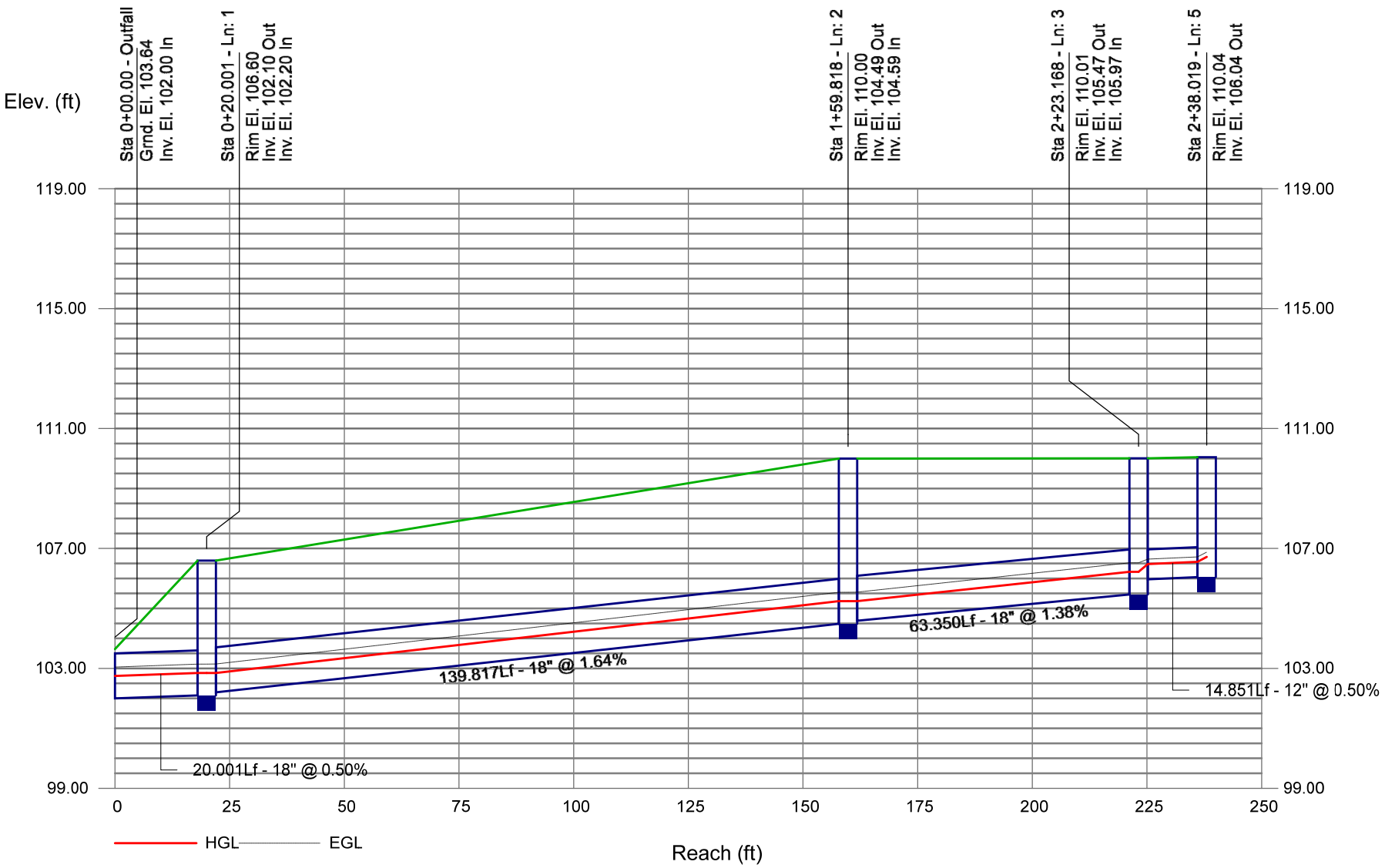
Number of lines: 5

Run Date: 7/27/2023

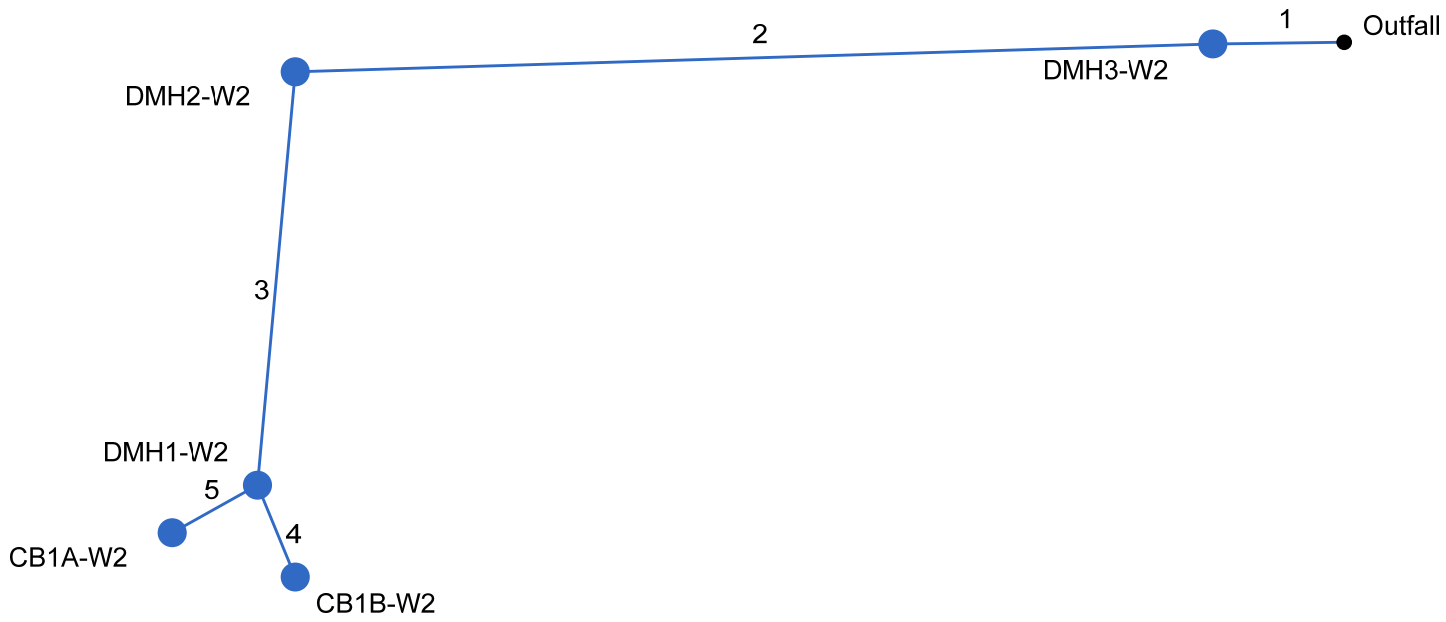
NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W2.stm



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



Project File: Storm-W2.stm	Number of lines: 5	Date: 7/27/2023

Storm Sewer Tabulation

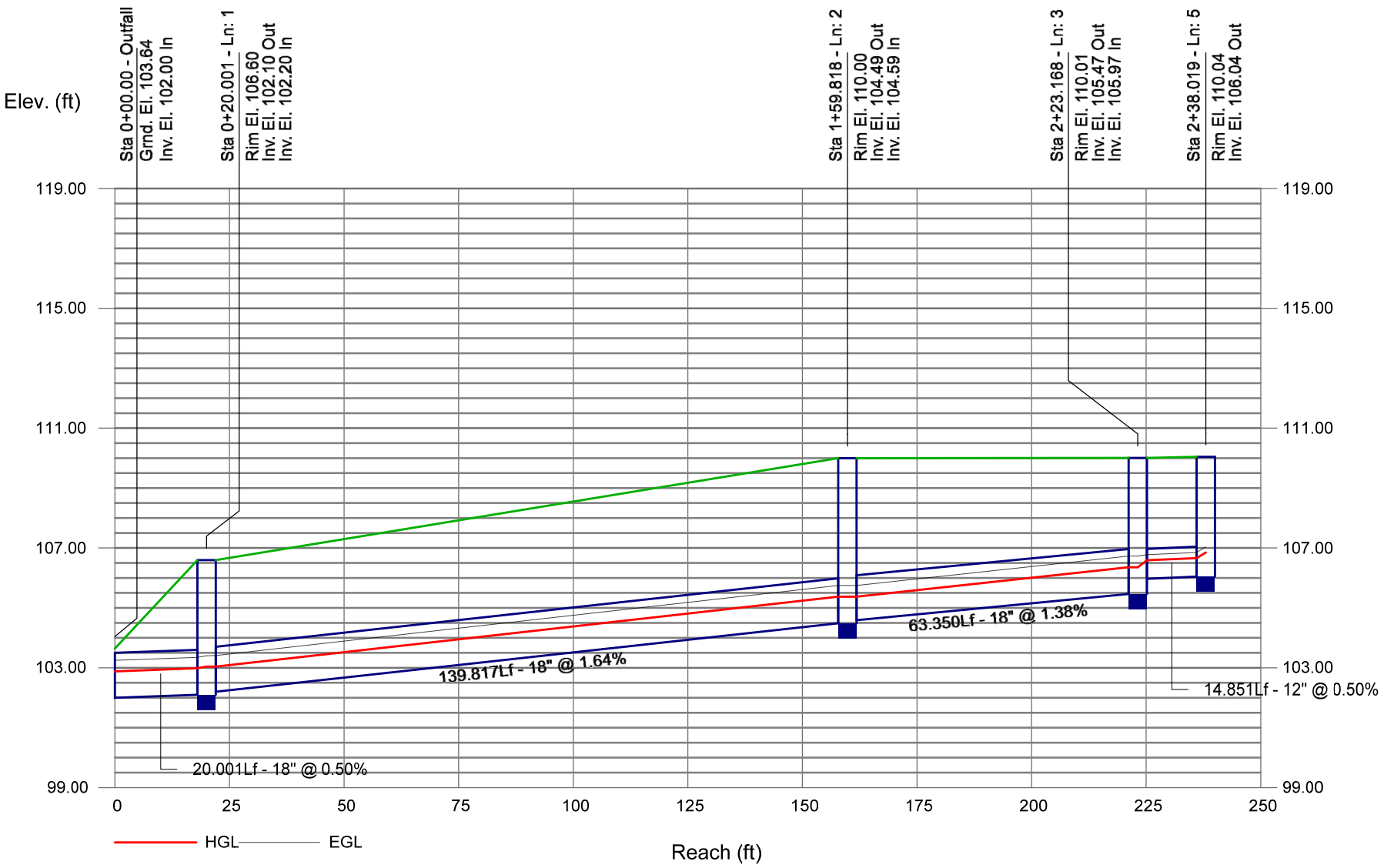
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.001	0.00	1.09	0.00	0.00	0.57	0.0	6.7	9.3	5.24	8.04	4.84	18	0.50	102.00	102.10	102.88	102.98	103.64	106.60	Pipe - (255) (1)
2	1	139.817	0.00	1.09	0.00	0.00	0.57	0.0	6.3	9.4	5.32	14.55	5.06	18	1.64	102.20	104.49	103.04	105.38	106.60	110.00	Pipe - (255)
3	2	63.350	0.00	1.09	0.00	0.00	0.57	0.0	6.1	9.5	5.36	12.34	5.31	18	1.38	104.59	105.47	105.38	106.36	110.00	110.01	Pipe - (254)
4	3	15.255	0.71	0.71	0.54	0.38	0.38	6.0	6.0	9.5	3.60	2.52	4.58	12	0.50	105.97	106.05	106.97	107.13	110.01	110.05	Pipe - (252)
5	3	14.851	0.38	0.38	0.49	0.19	0.19	6.0	6.0	9.5	1.77	2.52	3.48	12	0.50	105.97	106.04	106.59	106.66	110.01	110.04	Pipe - (253)

Project File: Storm-W2.stm | Number of lines: 5 | Run Date: 7/27/2023

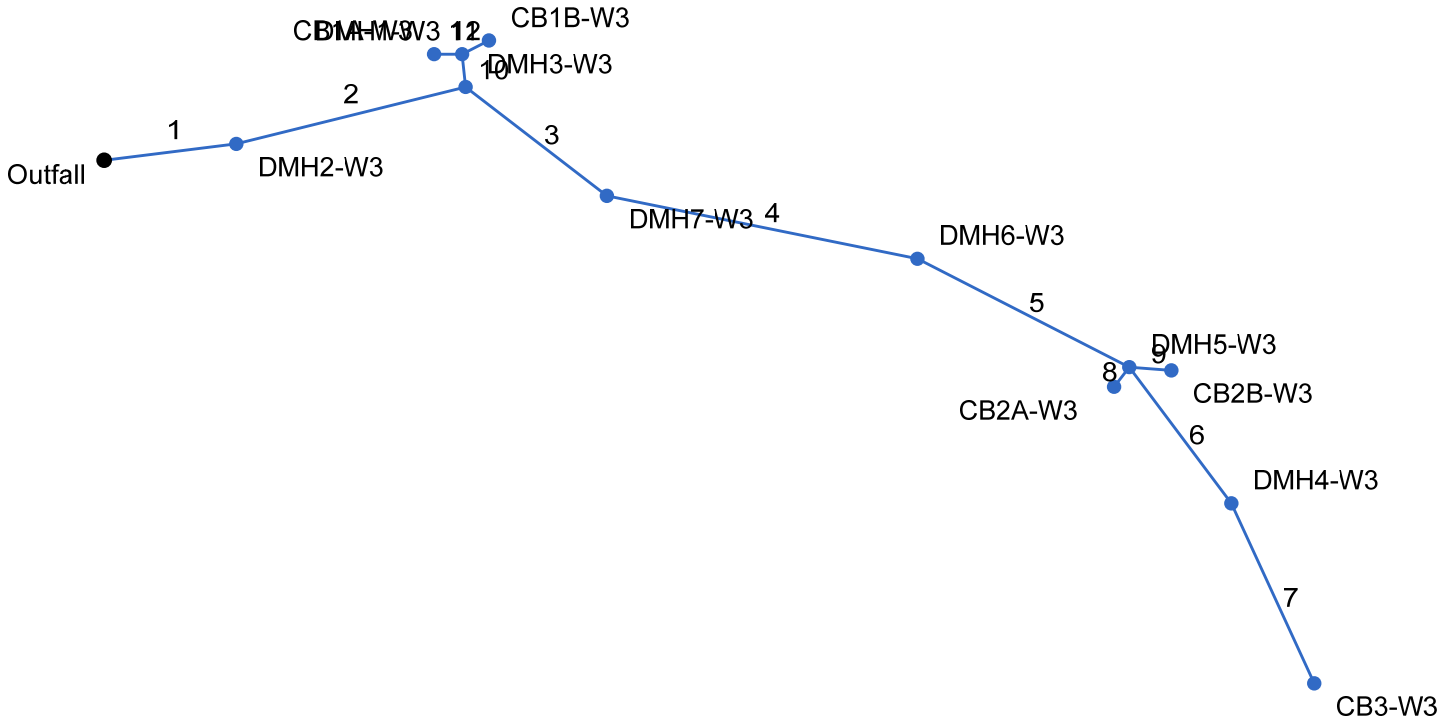
NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W2.stm



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



Project File: Storm-W3.stm	Number of lines: 12	Date: 7/27/2023

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	46.656	0.00	1.47	0.00	0.00	0.75	0.0	8.4	6.4	4.79	8.04	4.70	18	0.50	100.00	100.23	100.84	101.07	101.11	104.58	Pipe - (271)
2	1	83.897	0.00	1.47	0.00	0.00	0.75	0.0	8.1	6.4	4.83	21.28	5.12	18	3.50	100.33	103.27	101.07	104.11	104.58	108.29	Pipe - (270)
3	2	69.993	0.00	0.42	0.00	0.00	0.27	0.0	7.9	6.5	1.74	4.76	4.72	12	1.53	103.77	104.84	104.19	105.40	108.29	108.99	Pipe - (269)
4	3	111.905	0.00	0.42	0.00	0.00	0.27	0.0	7.5	6.6	1.77	3.46	4.15	12	0.81	104.94	105.84	105.44	106.41	108.99	110.29	Pipe - (268)
5	4	88.824	0.00	0.42	0.00	0.00	0.27	0.0	7.1	6.7	1.80	3.86	4.35	12	1.00	105.94	106.83	106.42	107.40	110.29	111.25	Pipe - (267)
6	5	71.574	0.00	0.08	0.00	0.00	0.07	0.0	6.5	6.8	0.47	4.05	1.92	12	1.10	106.93	107.72	107.40	108.00	111.25	111.96	Pipe - (604) (1)
7	6	87.191	0.08	0.08	0.83	0.07	0.07	6.0	6.0	7.0	0.48	3.86	2.95	12	1.00	107.82	108.69	108.06	108.98	111.96	112.74	Pipe - (604)
8	5	10.439	0.24	0.24	0.53	0.13	0.13	6.0	6.0	7.0	0.89	3.86	2.78	12	1.00	106.93	107.04	107.40	107.43	111.25	111.09	Pipe - (266)
9	5	14.655	0.10	0.10	0.72	0.07	0.07	6.0	6.0	7.0	0.51	3.86	2.01	12	1.00	106.93	107.08	107.40	107.37	111.25	111.16	Pipe - (265)
10	2	15.014	0.00	1.05	0.00	0.00	0.48	0.0	6.1	7.0	3.35	3.59	5.14	12	0.87	103.77	103.90	104.54	104.68	108.29	108.34	Pipe - (261)
11	10	9.760	0.59	0.59	0.48	0.28	0.28	6.0	6.0	7.0	1.97	3.86	3.73	12	1.00	104.00	104.10	104.68	104.70	108.34	108.15	Pipe - (258)
12	10	11.165	0.45	0.45	0.44	0.20	0.20	6.0	6.0	7.0	1.39	3.86	3.00	12	1.00	104.00	104.11	104.68	104.61	108.34	108.15	Pipe - (259)

Project File: Storm-W3.stm

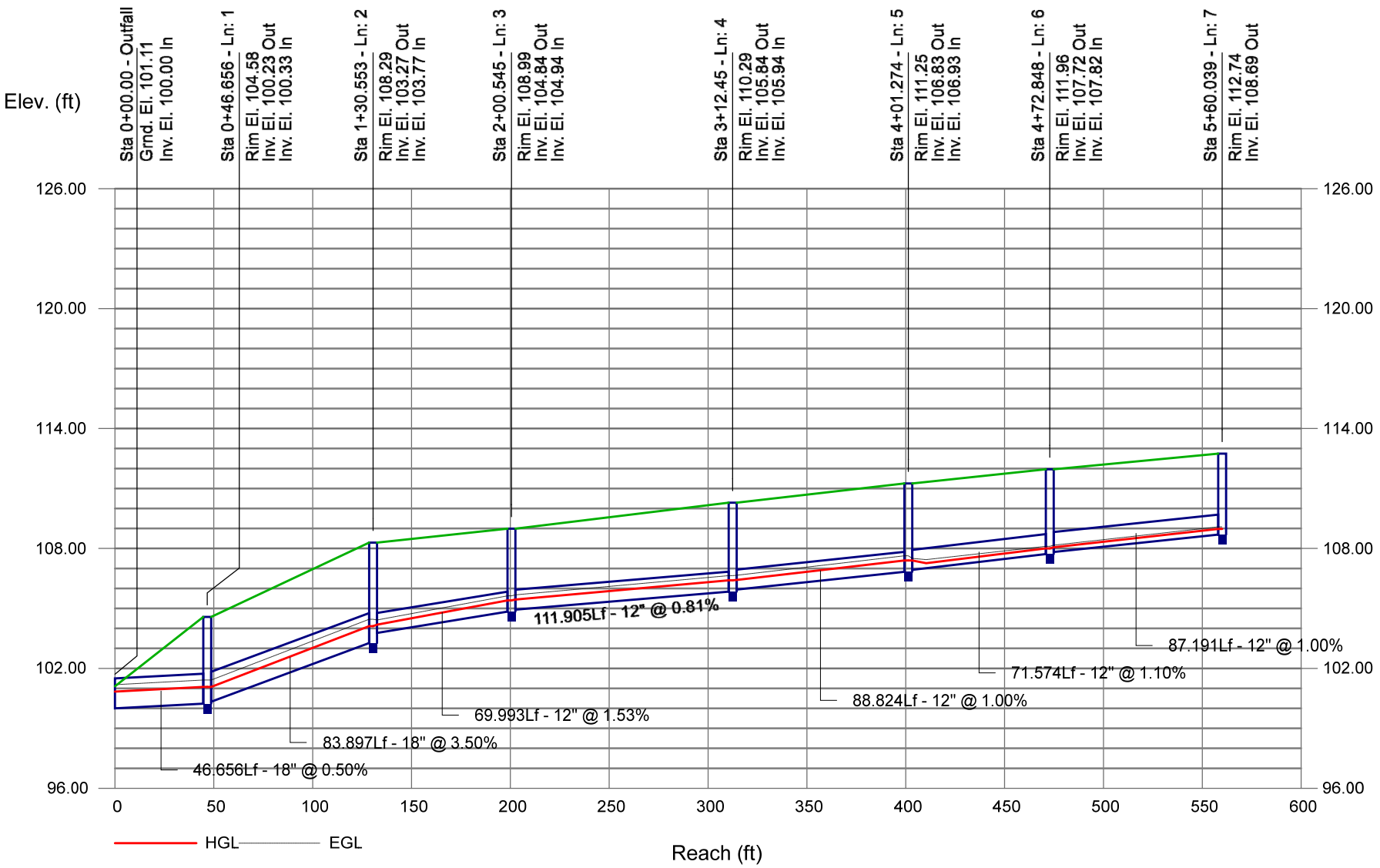
Number of lines: 12

Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

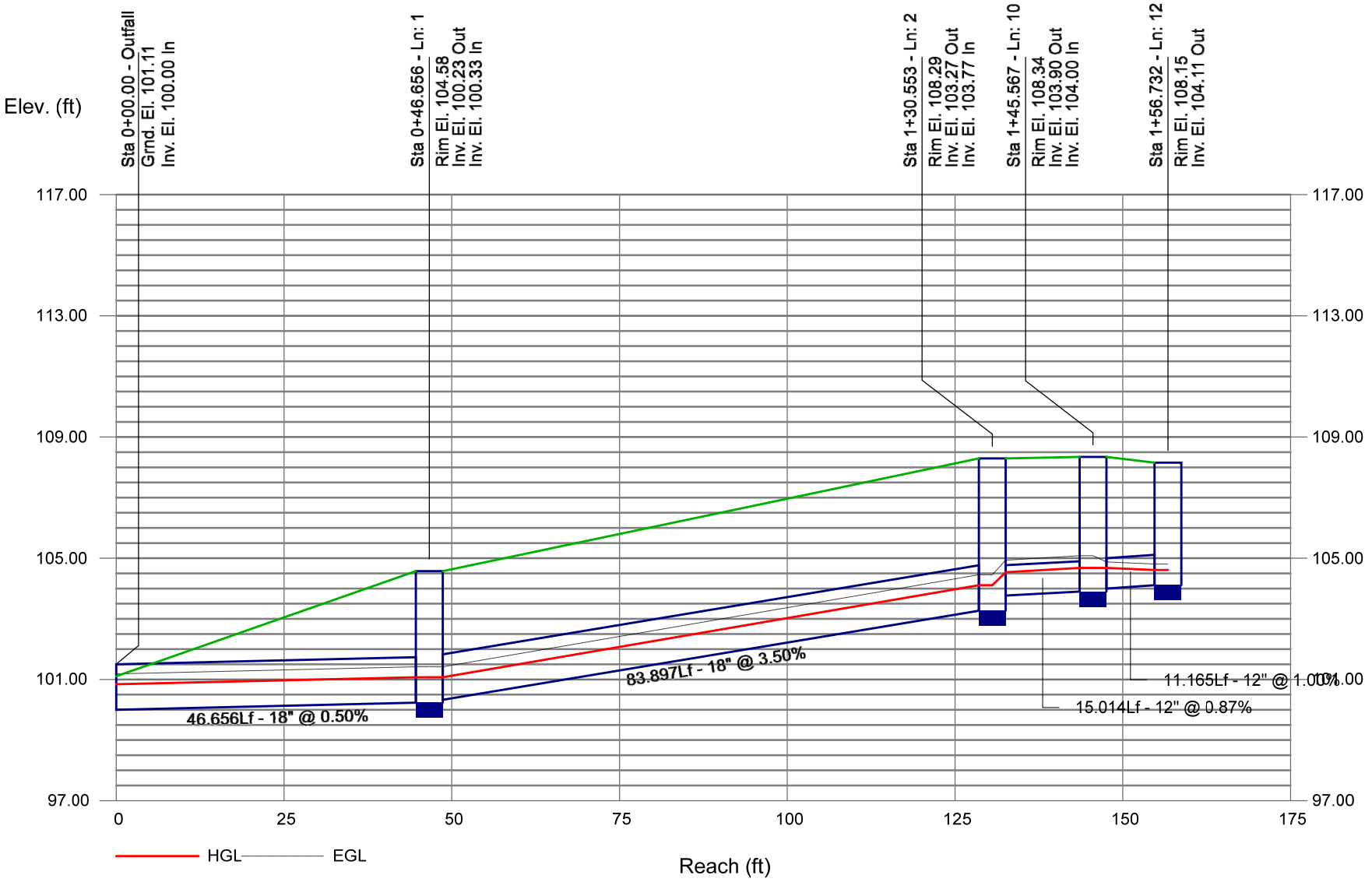
Storm Sewer Profile

Proj. file: Storm-W3.stm

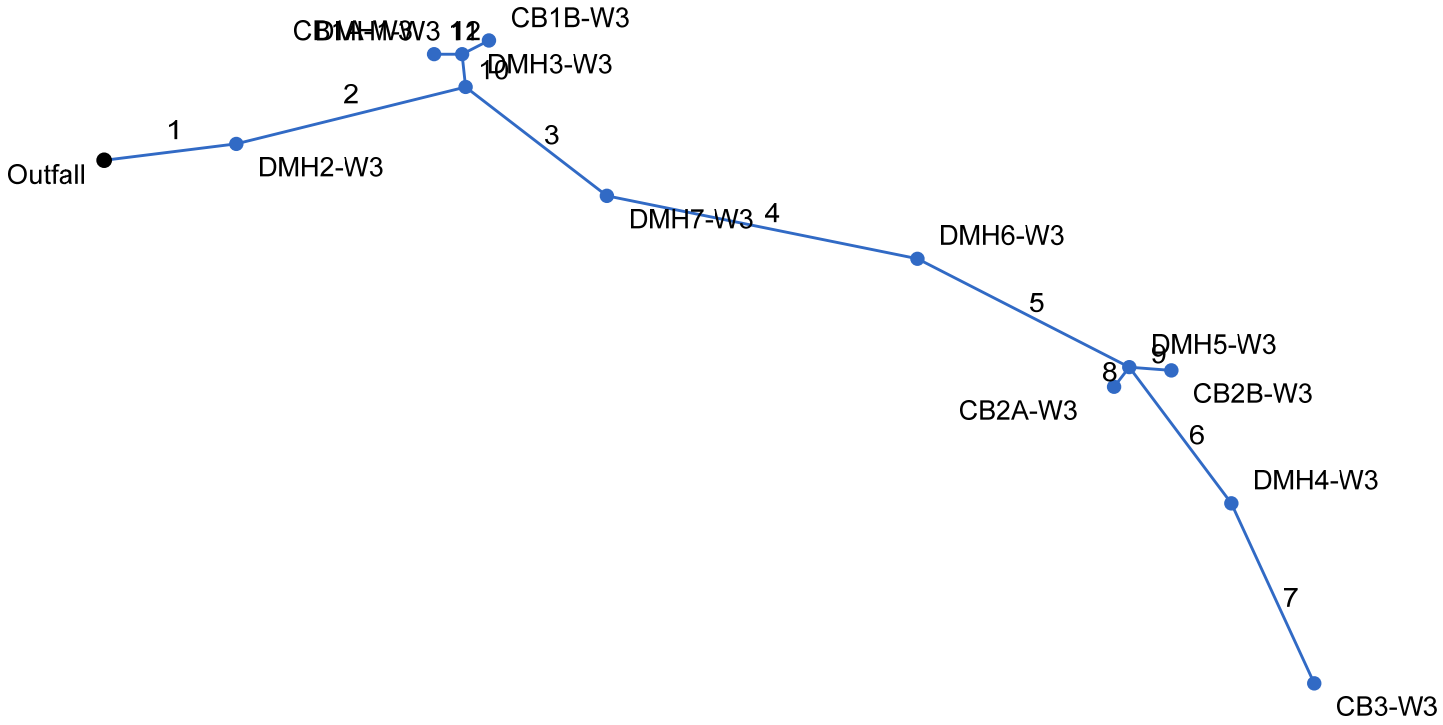


Storm Sewer Profile

Proj. file: Storm-W3.stm



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



Project File: Storm-W3.stm	Number of lines: 12	Date: 7/27/2023

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	46.656	0.00	1.47	0.00	0.00	0.75	0.0	8.2	8.8	6.62	8.04	5.14	18	0.50	100.00	100.23	100.99	101.29	101.11	104.58	Pipe - (271)
2	1	83.897	0.00	1.47	0.00	0.00	0.75	0.0	8.0	8.9	6.68	21.28	5.24	18	3.50	100.33	103.27	101.36	104.27	104.58	108.29	Pipe - (270)
3	2	69.993	0.00	0.42	0.00	0.00	0.27	0.0	7.7	9.0	2.41	4.76	5.21	12	1.53	103.77	104.84	104.27	105.50	108.29	108.99	Pipe - (269)
4	3	111.905	0.00	0.42	0.00	0.00	0.27	0.0	7.3	9.1	2.44	3.46	4.58	12	0.81	104.94	105.84	105.56	106.51	108.99	110.29	Pipe - (268)
5	4	88.824	0.00	0.42	0.00	0.00	0.27	0.0	7.0	9.2	2.46	3.86	4.80	12	1.00	105.94	106.83	106.52	107.50	110.29	111.25	Pipe - (267)
6	5	71.574	0.00	0.08	0.00	0.00	0.07	0.0	6.5	9.3	0.64	4.05	2.08	12	1.10	106.93	107.72	107.50	108.05	111.25	111.96	Pipe - (604) (1)
7	6	87.191	0.08	0.08	0.83	0.07	0.07	6.0	6.0	9.5	0.65	3.86	3.23	12	1.00	107.82	108.69	108.10	109.03	111.96	112.74	Pipe - (604)
8	5	10.439	0.24	0.24	0.53	0.13	0.13	6.0	6.0	9.5	1.21	3.86	3.01	12	1.00	106.93	107.04	107.50	107.50	111.25	111.09	Pipe - (266)
9	5	14.655	0.10	0.10	0.72	0.07	0.07	6.0	6.0	9.5	0.69	3.86	2.18	12	1.00	106.93	107.08	107.50	107.42	111.25	111.16	Pipe - (265)
10	2	15.014	0.00	1.05	0.00	0.00	0.48	0.0	6.1	9.5	4.57	3.59	5.81	12	0.87	103.77	103.90	104.77	104.98	108.29	108.34	Pipe - (261)
11	10	9.760	0.59	0.59	0.48	0.28	0.28	6.0	6.0	9.5	2.68	3.86	3.42	12	1.00	104.00	104.10	105.51	105.55	108.34	108.15	Pipe - (258)
12	10	11.165	0.45	0.45	0.44	0.20	0.20	6.0	6.0	9.5	1.90	3.86	2.41	12	1.00	104.00	104.11	105.51	105.53	108.34	108.15	Pipe - (259)

Project File: Storm-W3.stm

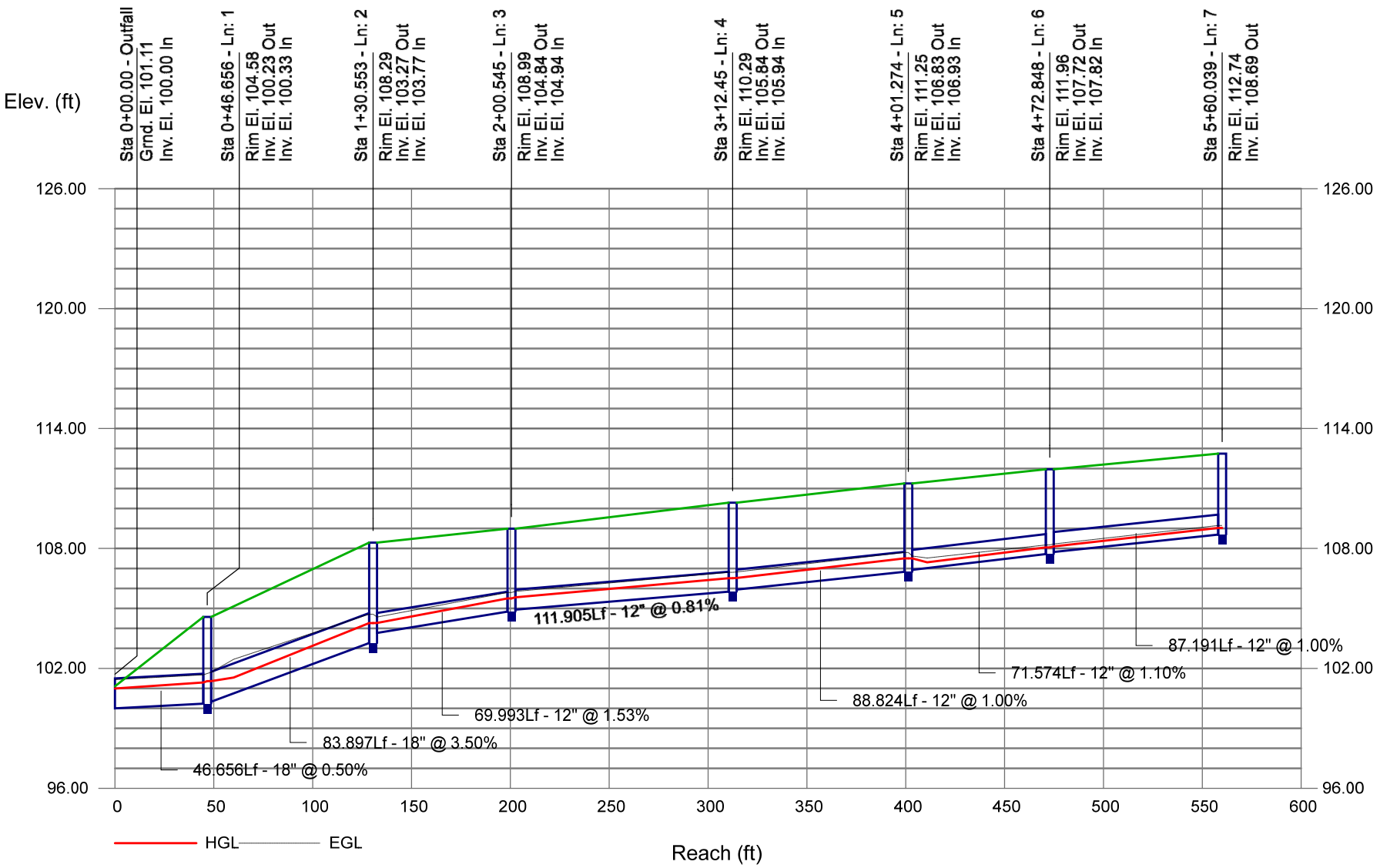
Number of lines: 12

Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

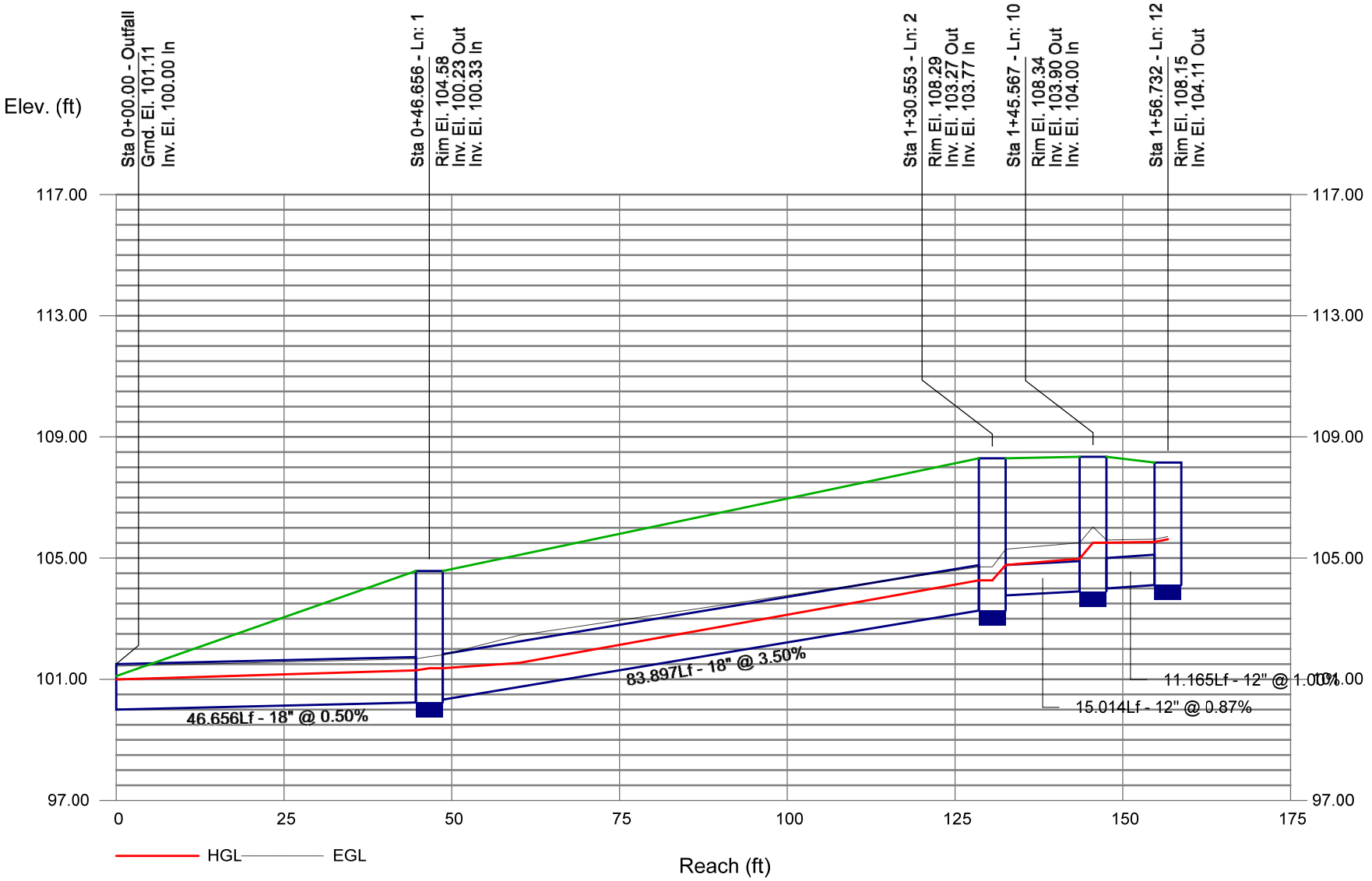
Storm Sewer Profile

Proj. file: Storm-W3.stm

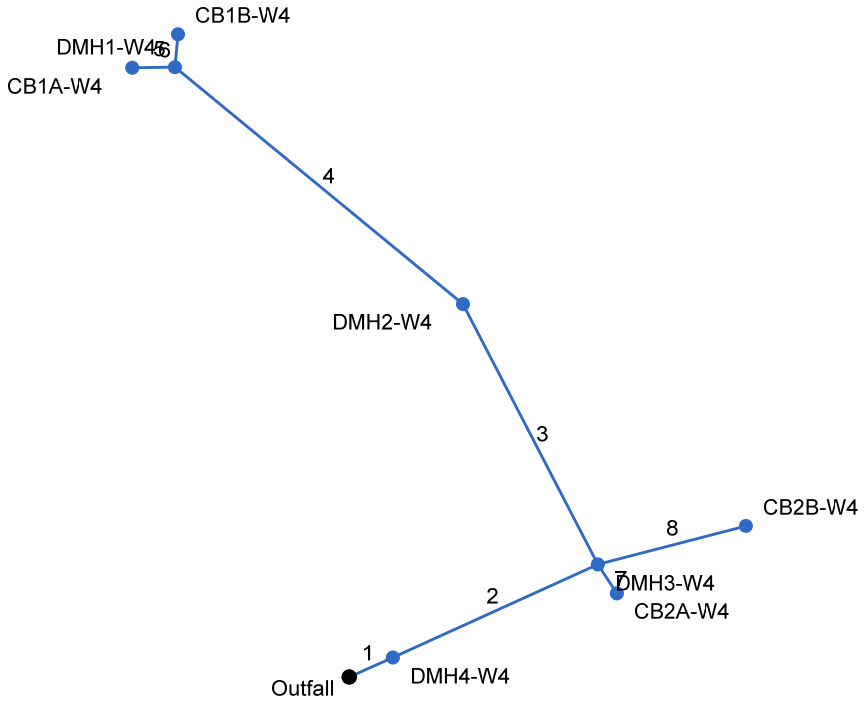


Storm Sewer Profile

Proj. file: Storm-W3.stm



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



Project File: Storm-W4.stm	Number of lines: 8	Date: 7/27/2023

Storm Sewer Tabulation

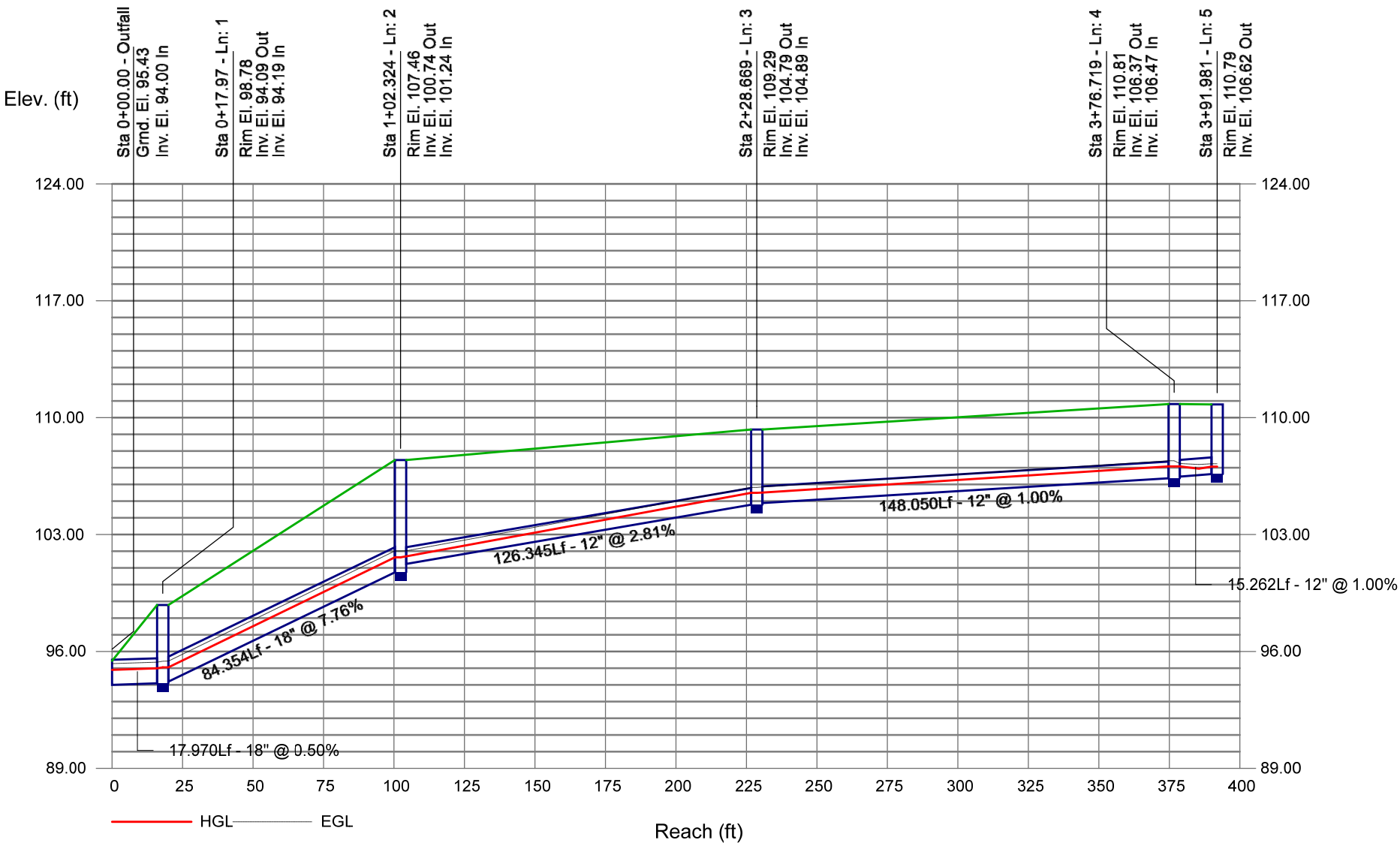
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	17.970	0.00	1.53	0.00	0.00	0.81	0.0	7.2	6.7	5.39	8.04	4.88	18	0.50	94.00	94.09	94.89	94.99	95.43	98.78	Pipe - (337) (1)
2	1	84.354	0.00	1.53	0.00	0.00	0.81	0.0	6.9	6.7	5.44	31.70	5.07	18	7.76	94.19	100.74	95.05	101.64	98.78	107.46	Pipe - (337)
3	2	126.345	0.00	0.75	0.00	0.00	0.40	0.0	6.6	6.8	2.73	6.47	6.24	12	2.81	101.24	104.79	101.69	105.50	107.46	109.29	Pipe - (336)
4	3	148.050	0.00	0.75	0.00	0.00	0.40	0.0	6.1	6.9	2.78	3.86	4.99	12	1.00	104.89	106.37	105.52	107.08	109.29	110.81	Pipe - (335)
5	4	15.262	0.30	0.30	0.54	0.16	0.16	6.0	6.0	7.0	1.13	3.86	2.78	12	1.00	106.47	106.62	107.08	107.07	110.81	110.79	Pipe - (330)
6	4	14.632	0.45	0.45	0.53	0.24	0.24	6.0	6.0	7.0	1.66	3.86	3.53	12	1.00	106.47	106.61	107.08	107.16	110.81	110.66	Pipe - (331)
7	2	14.656	0.35	0.35	0.51	0.18	0.18	6.0	6.0	7.0	1.23	5.46	3.82	12	2.00	101.24	101.53	101.64	102.00	107.46	107.29	Pipe - (332)
8	2	55.741	0.43	0.43	0.54	0.23	0.23	6.0	6.0	7.0	1.61	3.86	4.21	12	1.00	101.24	101.80	101.69	102.34	107.46	107.35	Pipe - (333)

Project File: Storm-W4.stm | Number of lines: 8 | Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

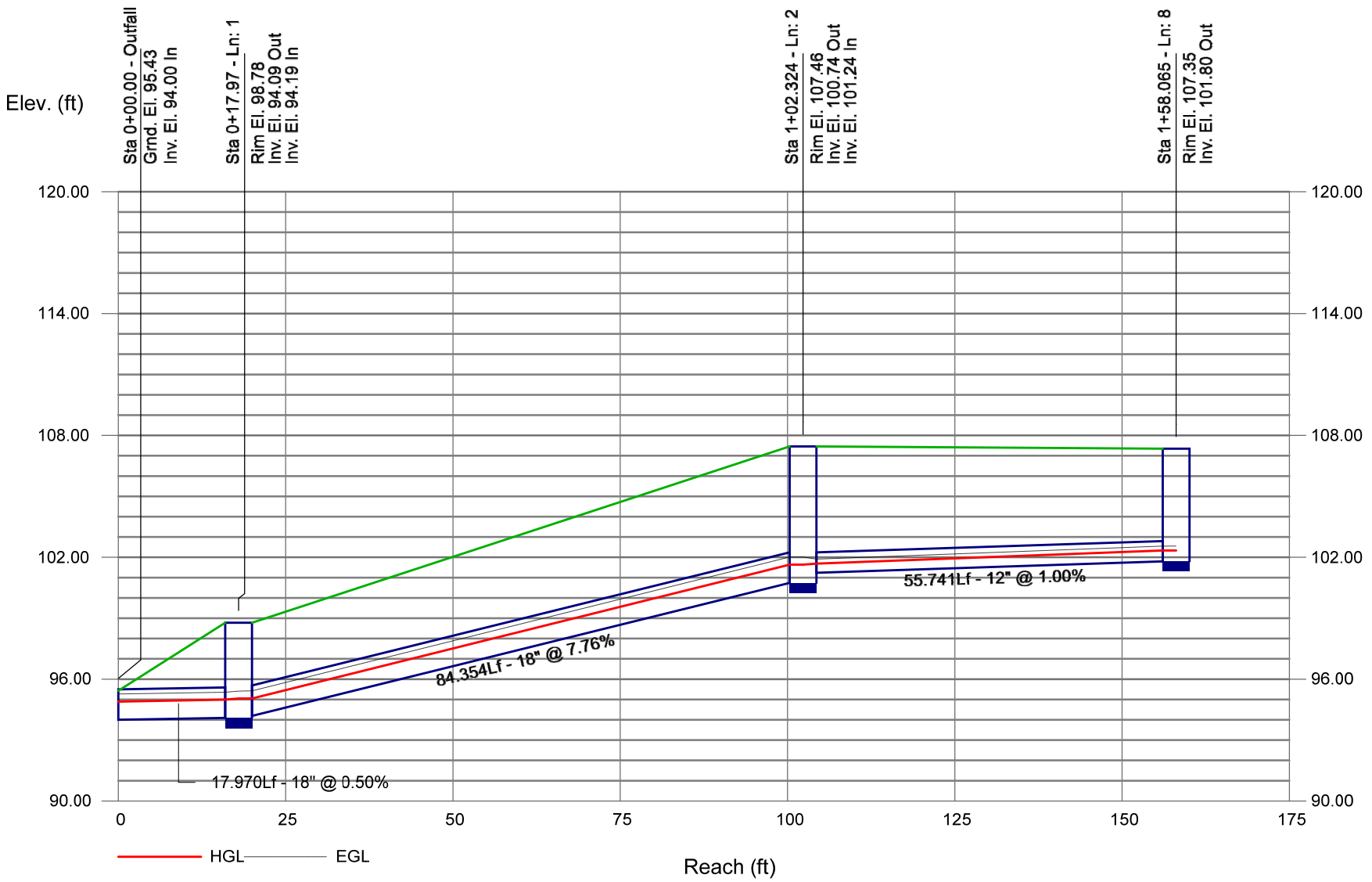
Storm Sewer Profile

Proj. file: Storm-W4.stm

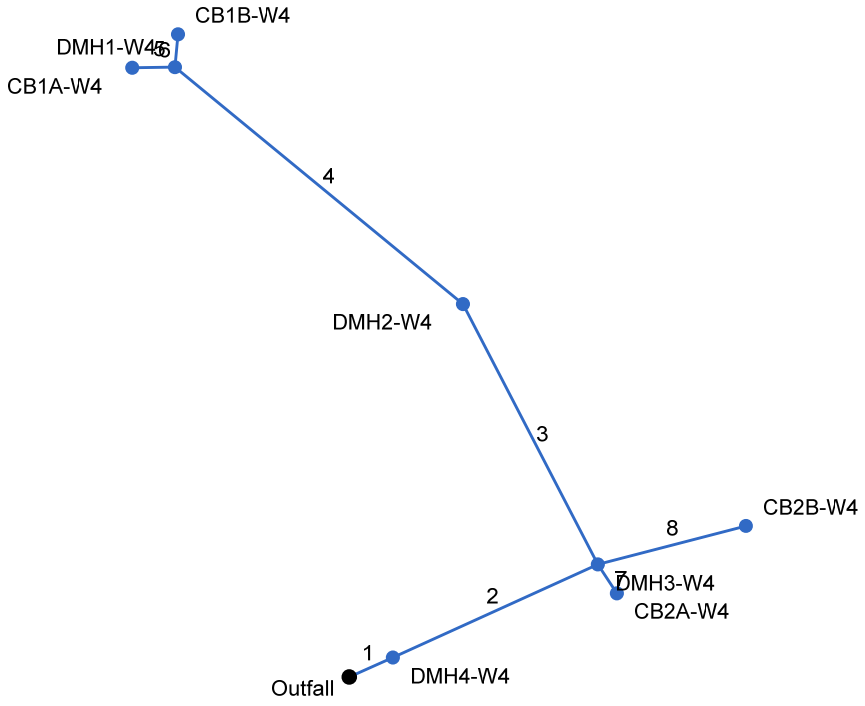


Storm Sewer Profile

Proj. file: Storm-W4.stm



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



Project File: Storm-W4.stm	Number of lines: 8	Date: 7/27/2023

Storm Sewer Tabulation

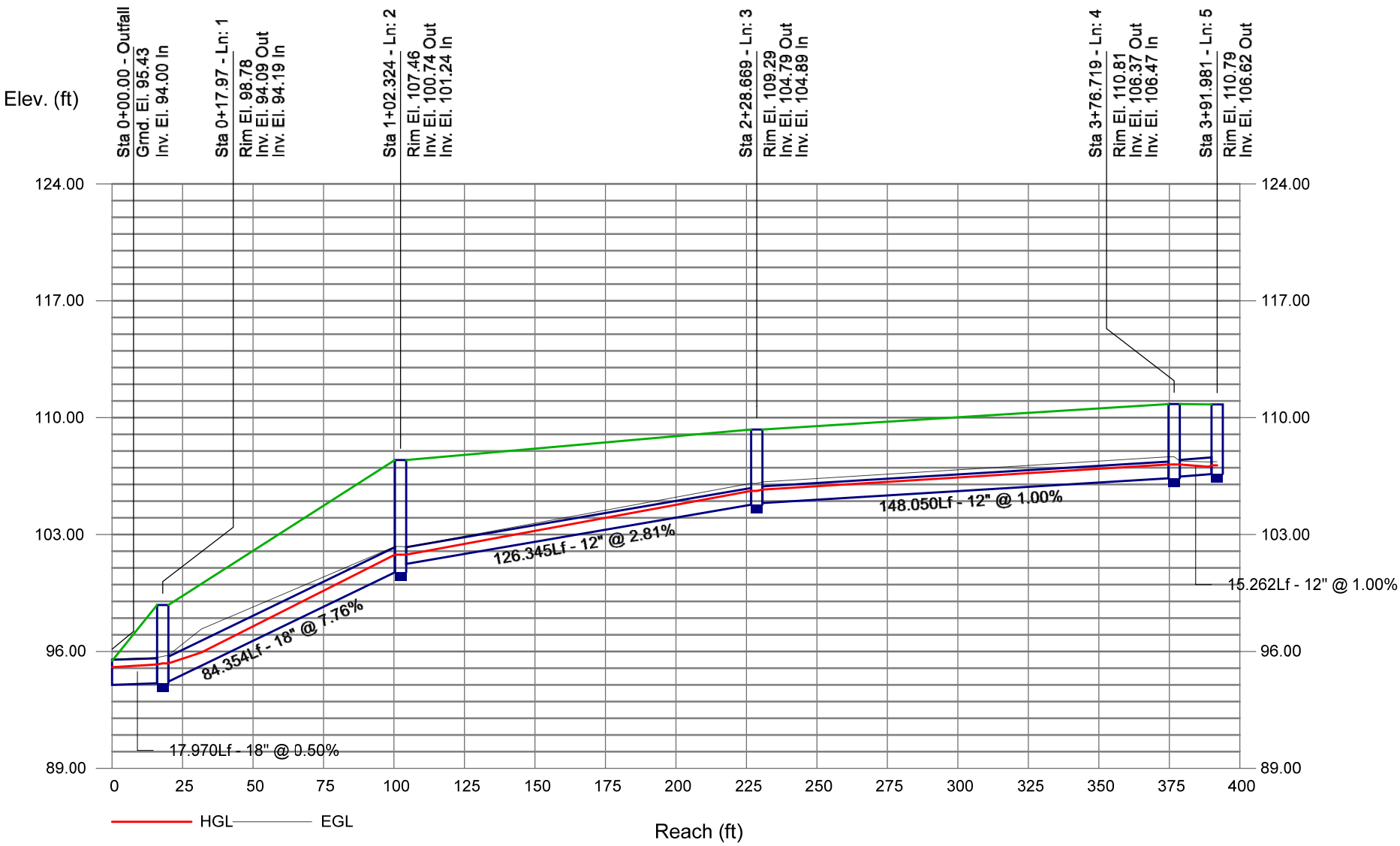
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	17.970	0.00	1.53	0.00	0.00	0.81	0.0	7.1	9.1	7.40	8.04	5.38	18	0.50	94.00	94.09	95.05	95.22	95.43	98.78	Pipe - (337) (1)
2	1	84.354	0.00	1.53	0.00	0.00	0.81	0.0	6.8	9.2	7.47	31.70	5.51	18	7.76	94.19	100.74	95.28	101.80	98.78	107.46	Pipe - (337)
3	2	126.345	0.00	0.75	0.00	0.00	0.40	0.0	6.5	9.3	3.74	6.47	6.85	12	2.81	101.24	104.79	101.80	105.61	107.46	109.29	Pipe - (336)
4	3	148.050	0.00	0.75	0.00	0.00	0.40	0.0	6.1	9.5	3.79	3.86	5.53	12	1.00	104.89	106.37	105.69	107.20	109.29	110.81	Pipe - (335)
5	4	15.262	0.30	0.30	0.54	0.16	0.16	6.0	6.0	9.5	1.54	3.86	3.10	12	1.00	106.47	106.62	107.20	107.15	110.81	110.79	Pipe - (330)
6	4	14.632	0.45	0.45	0.53	0.24	0.24	6.0	6.0	9.5	2.26	3.86	3.97	12	1.00	106.47	106.61	107.20	107.26	110.81	110.66	Pipe - (331)
7	2	14.656	0.35	0.35	0.51	0.18	0.18	6.0	6.0	9.5	1.68	5.46	3.76	12	2.00	101.24	101.53	101.80	102.08	107.46	107.29	Pipe - (332)
8	2	55.741	0.43	0.43	0.54	0.23	0.23	6.0	6.0	9.5	2.20	3.86	4.53	12	1.00	101.24	101.80	101.80	102.43	107.46	107.35	Pipe - (333)

Project File: Storm-W4.stm | Number of lines: 8 | Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

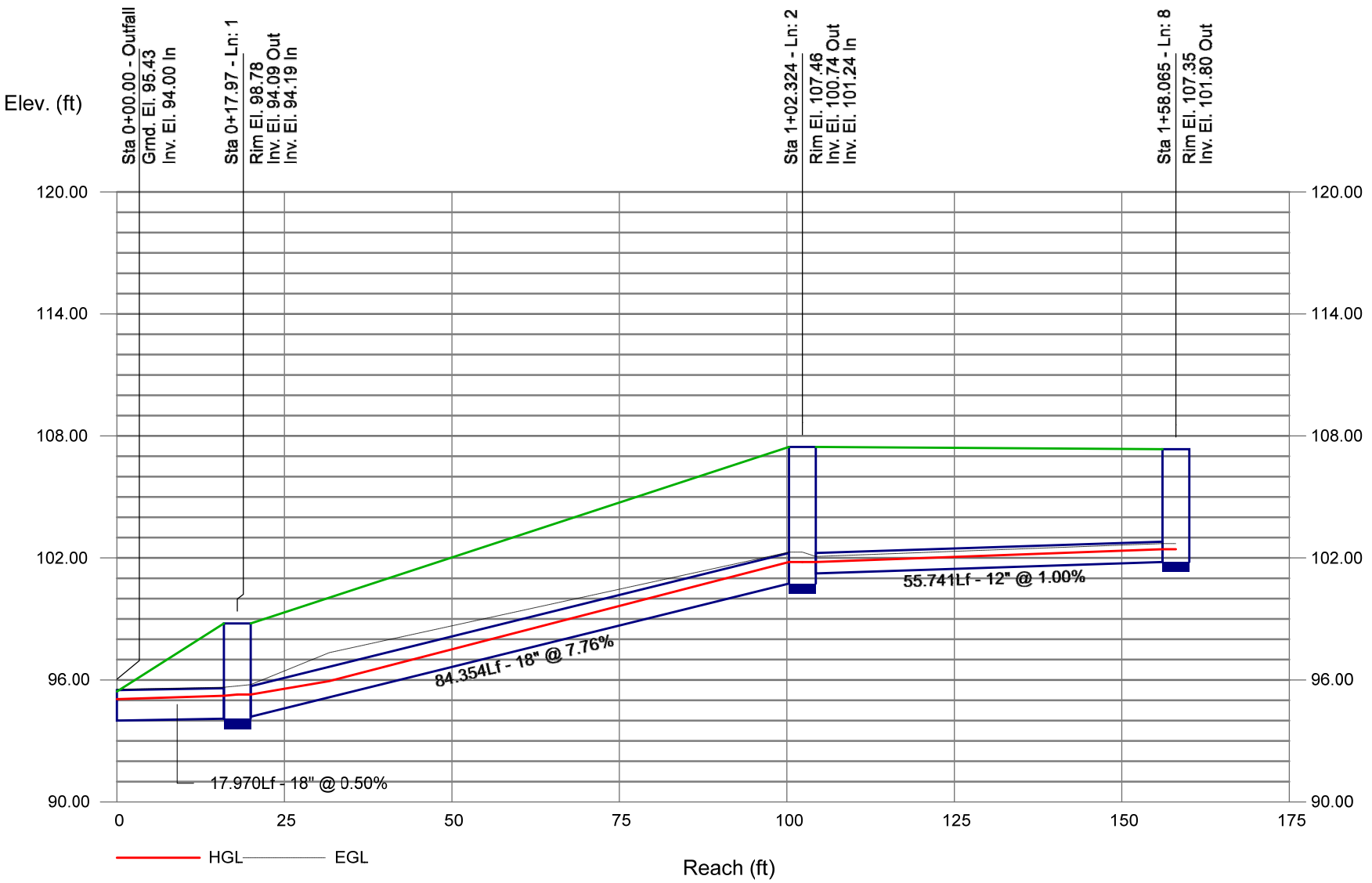
Storm Sewer Profile

Proj. file: Storm-W4.stm

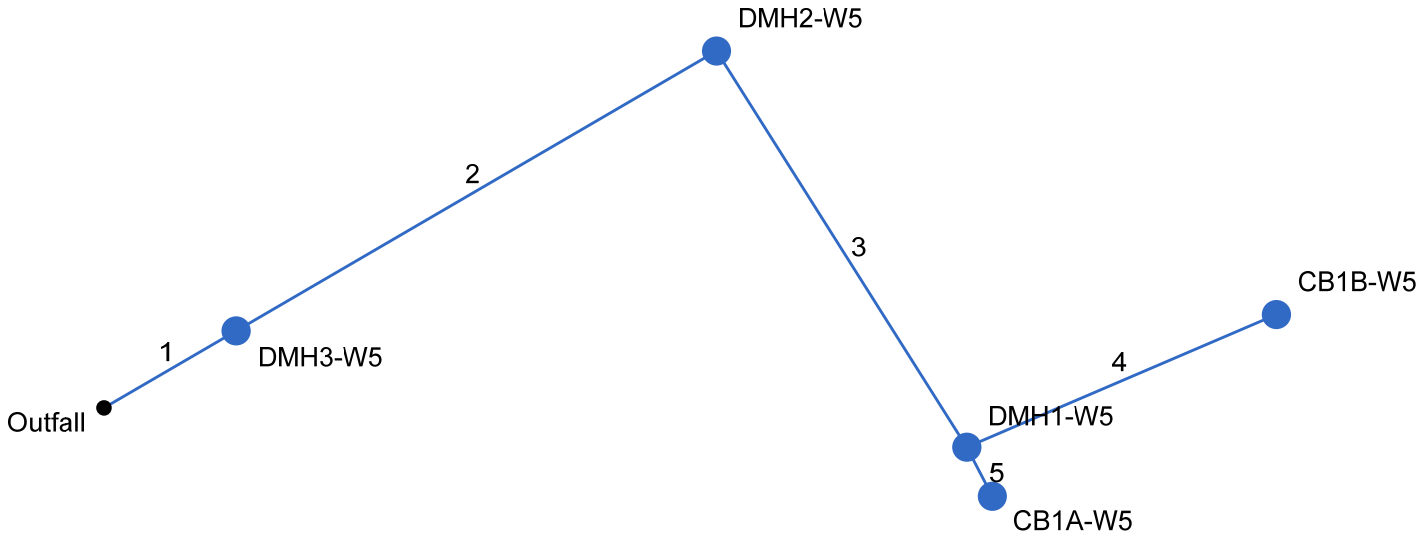


Storm Sewer Profile

Proj. file: Storm-W4.stm



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



Project File: Storm-W5.stm	Number of lines: 5	Date: 7/27/2023

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	23.278	0.00	0.92	0.00	0.00	0.43	0.0	7.0	6.7	2.87	8.04	3.97	18	0.50	93.00	93.12	93.64	93.76	94.11	98.62	Pipe - (356) (1) (1)
2	1	84.567	0.00	0.92	0.00	0.00	0.43	0.0	6.7	6.8	2.91	29.12	4.53	18	6.55	93.22	98.76	93.76	99.41	98.62	105.05	Pipe - (356) (1)
3	2	71.531	0.00	0.92	0.00	0.00	0.43	0.0	6.4	6.9	2.94	2.73	3.75	12	0.50	99.26	99.61	100.26	100.67	105.05	104.38	Pipe - (355)
4	3	51.222	0.49	0.49	0.48	0.24	0.24	6.0	6.0	7.0	1.64	3.86	2.21	12	1.00	99.71	100.22	101.00	101.07	104.38	104.27	Pipe - (340)
5	3	8.293	0.42	0.42	0.46	0.19	0.19	6.0	6.0	7.0	1.34	5.46	1.71	12	2.00	99.71	99.88	101.00	101.01	104.38	104.29	Pipe - (339)

Project File: Storm-W5.stm

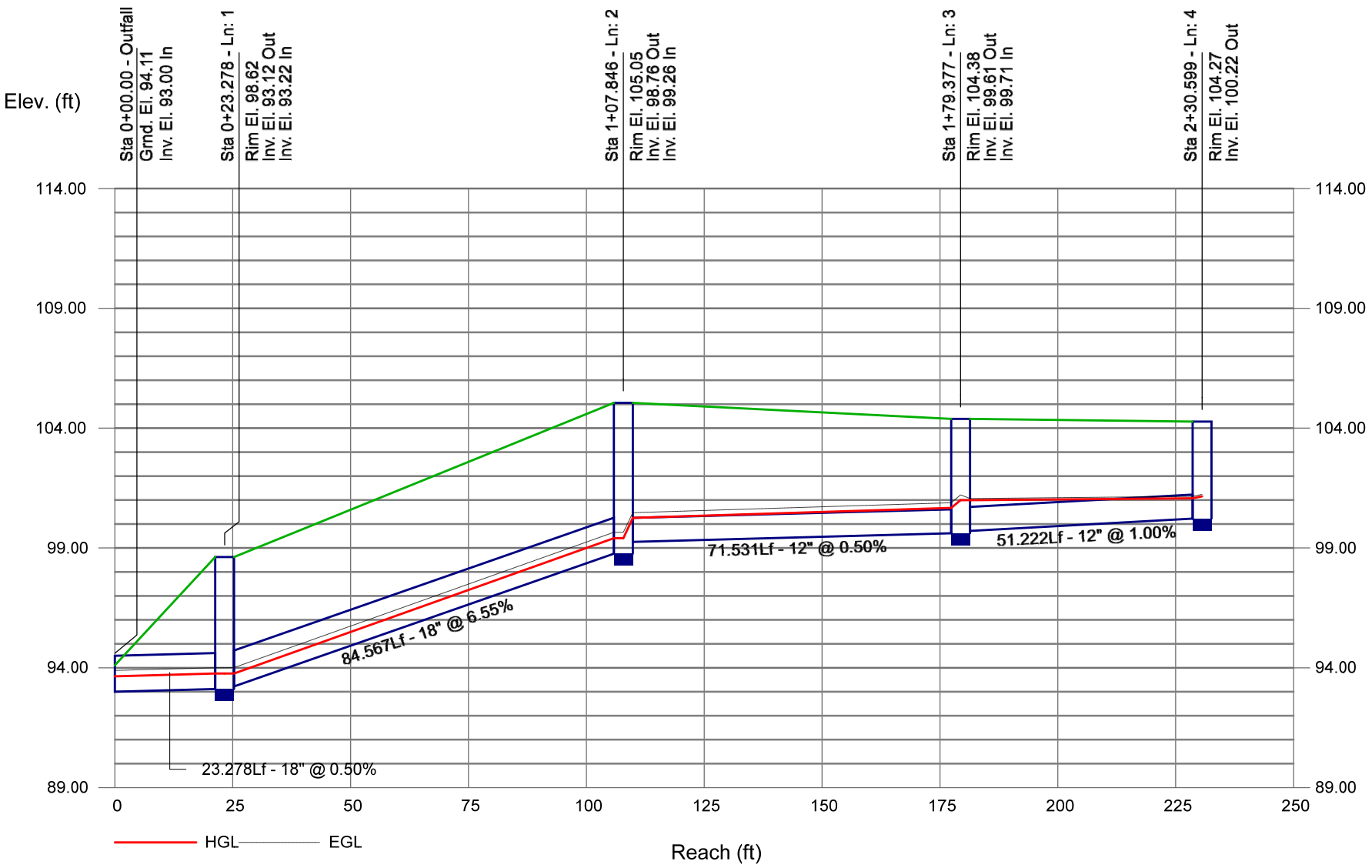
Number of lines: 5

Run Date: 7/27/2023

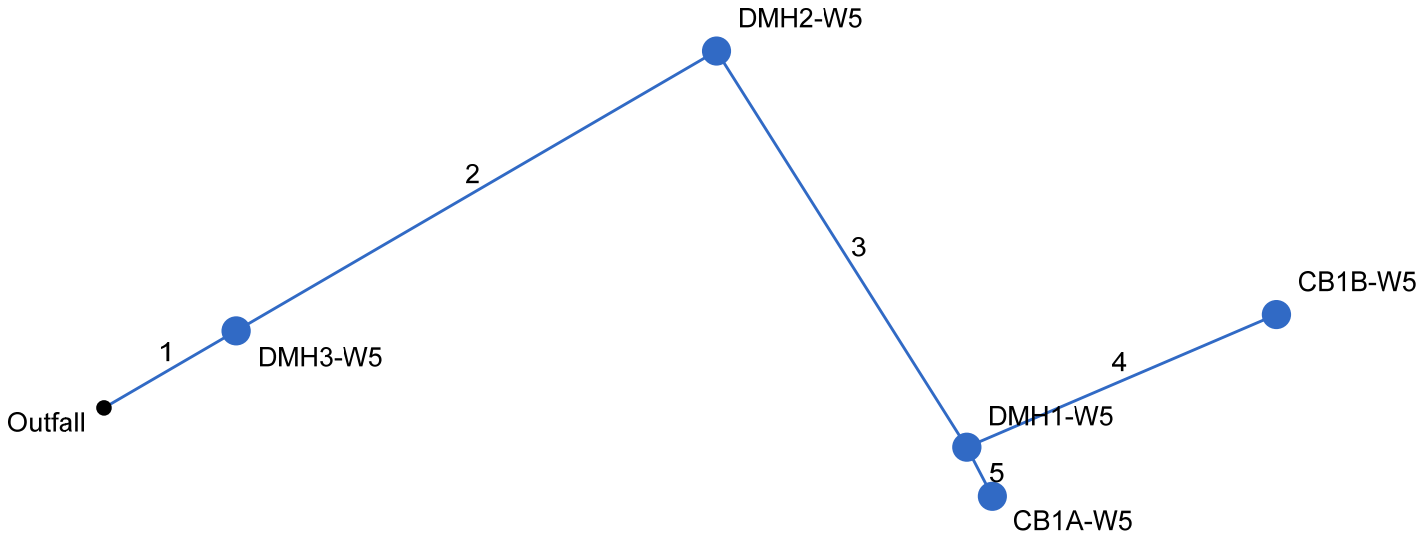
NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W5.stm



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



Project File: Storm-W5.stm	Number of lines: 5	Date: 7/27/2023

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	23.278	0.00	0.92	0.00	0.00	0.43	0.0	6.8	9.2	3.96	8.04	4.47	18	0.50	93.00	93.12	93.74	93.88	94.11	98.62	Pipe - (356) (1) (1)
2	1	84.567	0.00	0.92	0.00	0.00	0.43	0.0	6.5	9.3	4.00	29.12	4.89	18	6.55	93.22	98.76	93.88	99.52	98.62	105.05	Pipe - (356) (1)
3	2	71.531	0.00	0.92	0.00	0.00	0.43	0.0	6.3	9.4	4.03	2.73	5.13	12	0.50	99.26	99.61	100.26	101.04	105.05	104.38	Pipe - (355)
4	3	51.222	0.49	0.49	0.48	0.24	0.24	6.0	6.0	9.5	2.24	3.86	2.86	12	1.00	99.71	100.22	101.44	101.62	104.38	104.27	Pipe - (340)
5	3	8.293	0.42	0.42	0.46	0.19	0.19	6.0	6.0	9.5	1.83	5.46	2.33	12	2.00	99.71	99.88	101.44	101.46	104.38	104.29	Pipe - (339)

Project File: Storm-W5.stm

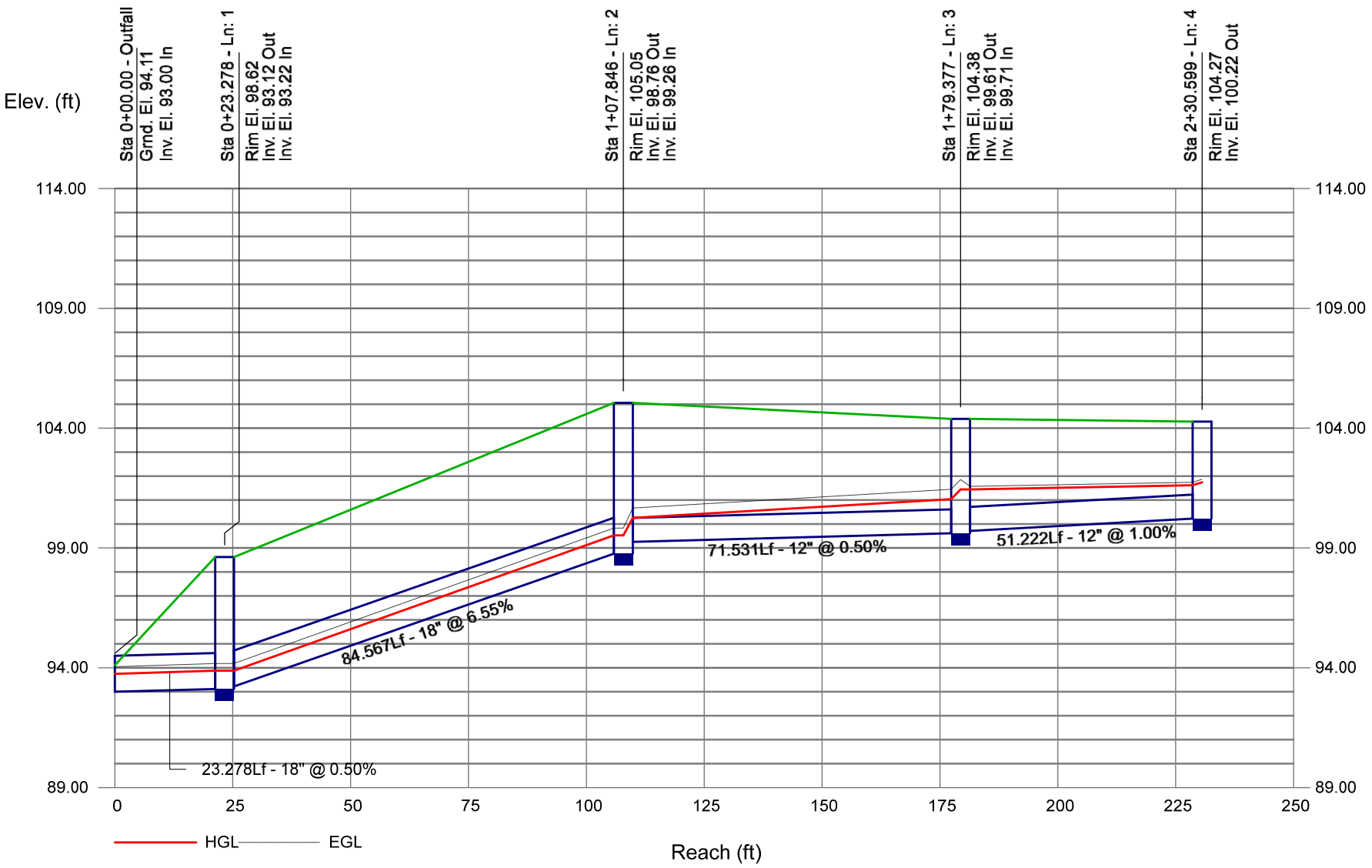
Number of lines: 5

Run Date: 7/27/2023

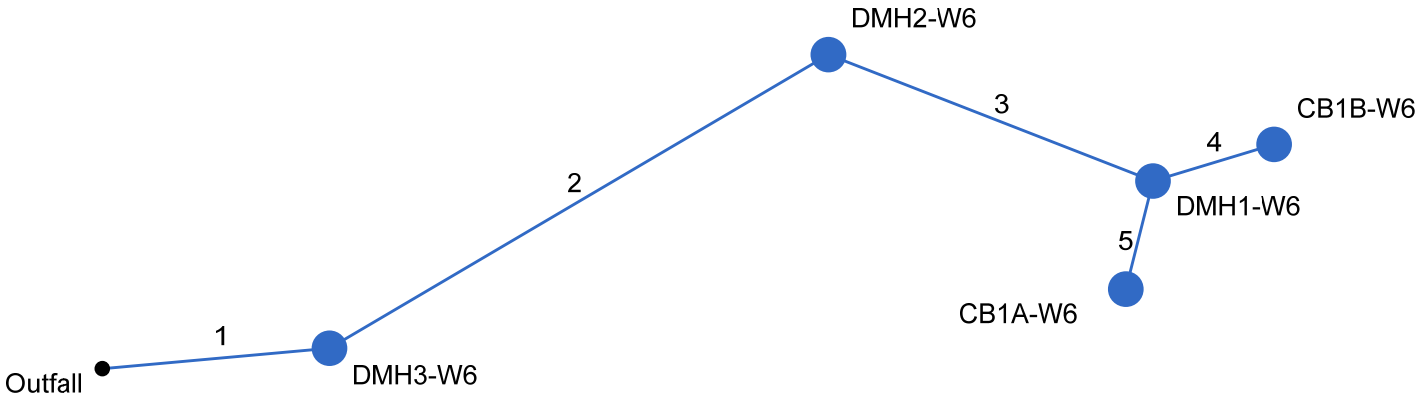
NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W5.stm



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



Project File: Storm-W6.stm	Number of lines: 5	Date: 7/27/2023

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	27.812	0.00	0.52	0.00	0.00	0.26	0.0	6.5	6.8	1.76	2.73	3.73	12	0.50	92.00	92.14	92.56	92.74	93.11	97.40	Pipe - (360) (1)
2	1	70.712	0.00	0.52	0.00	0.00	0.26	0.0	6.3	6.9	1.78	9.78	6.66	12	6.42	93.35	97.89	93.64	98.46	97.40	103.43	Pipe - (360)
3	2	42.499	0.00	0.52	0.00	0.00	0.26	0.0	6.1	6.9	1.79	2.73	3.70	12	0.50	97.99	98.20	98.58	98.79	103.43	102.85	Pipe - (359)
4	3	15.351	0.32	0.32	0.50	0.16	0.16	6.0	6.0	7.0	1.09	3.86	2.45	12	1.00	98.30	98.46	99.11	98.90	102.85	102.51	Pipe - (358)
5	3	13.660	0.20	0.20	0.50	0.10	0.10	6.0	6.0	7.0	0.71	3.86	1.96	12	1.00	98.30	98.44	99.11	98.79	102.85	102.56	Pipe - (357)

Project File: Storm-W6.stm

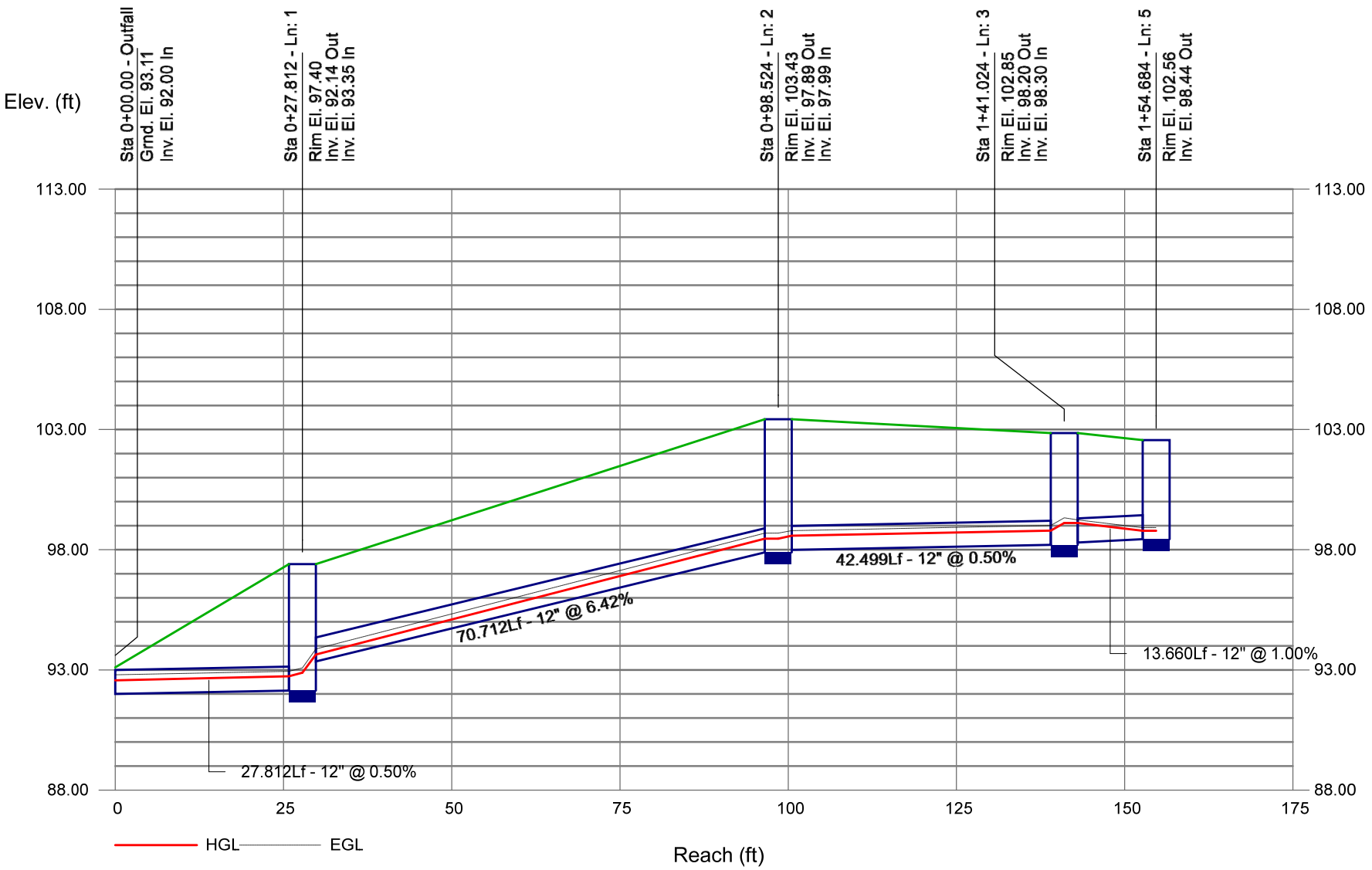
Number of lines: 5

Run Date: 7/27/2023

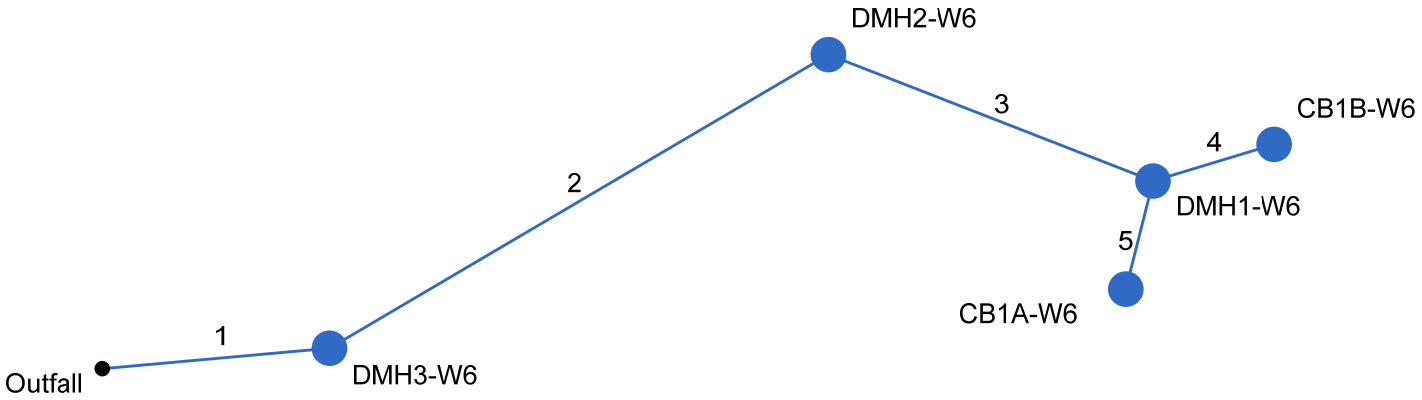
NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W6.stm



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



Project File: Storm-W6.stm	Number of lines: 5	Date: 7/27/2023

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	27.812	0.00	0.52	0.00	0.00	0.26	0.0	6.4	9.3	2.41	2.73	4.09	12	0.50	92.00	92.14	92.66	92.89	93.11	97.40	Pipe - (360) (1)
2	1	70.712	0.00	0.52	0.00	0.00	0.26	0.0	6.3	9.4	2.43	9.78	7.34	12	6.42	93.35	97.89	93.69	98.56	97.40	103.43	Pipe - (360)
3	2	42.499	0.00	0.52	0.00	0.00	0.26	0.0	6.1	9.5	2.44	2.73	3.93	12	0.50	97.99	98.20	98.73	98.94	103.43	102.85	Pipe - (359)
4	3	15.351	0.32	0.32	0.50	0.16	0.16	6.0	6.0	9.5	1.49	3.86	2.84	12	1.00	98.30	98.46	99.18	98.97	102.85	102.51	Pipe - (358)
5	3	13.660	0.20	0.20	0.50	0.10	0.10	6.0	6.0	9.5	0.96	3.86	2.24	12	1.00	98.30	98.44	99.18	98.85	102.85	102.56	Pipe - (357)

Project File: Storm-W6.stm

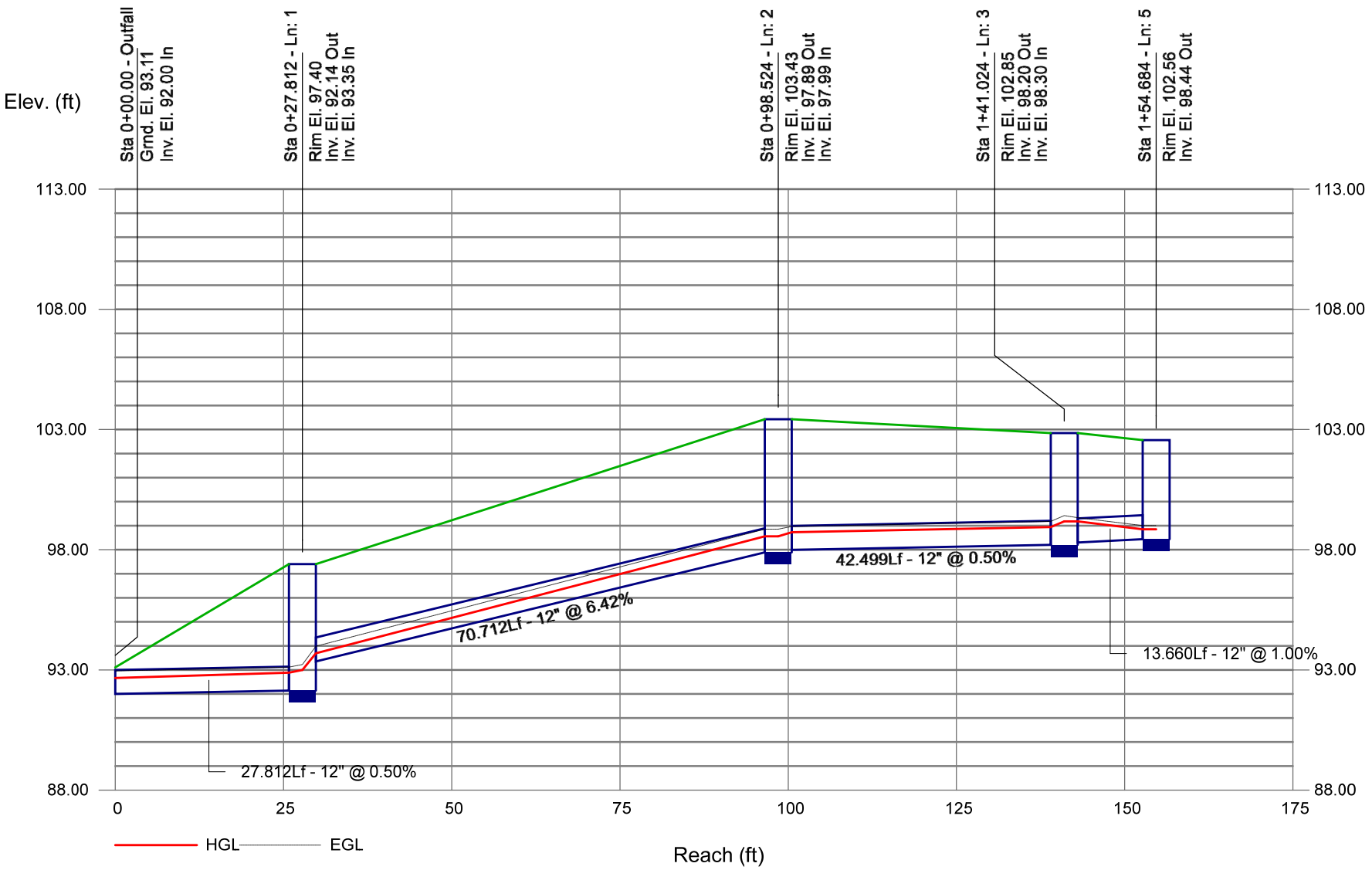
Number of lines: 5

Run Date: 7/27/2023

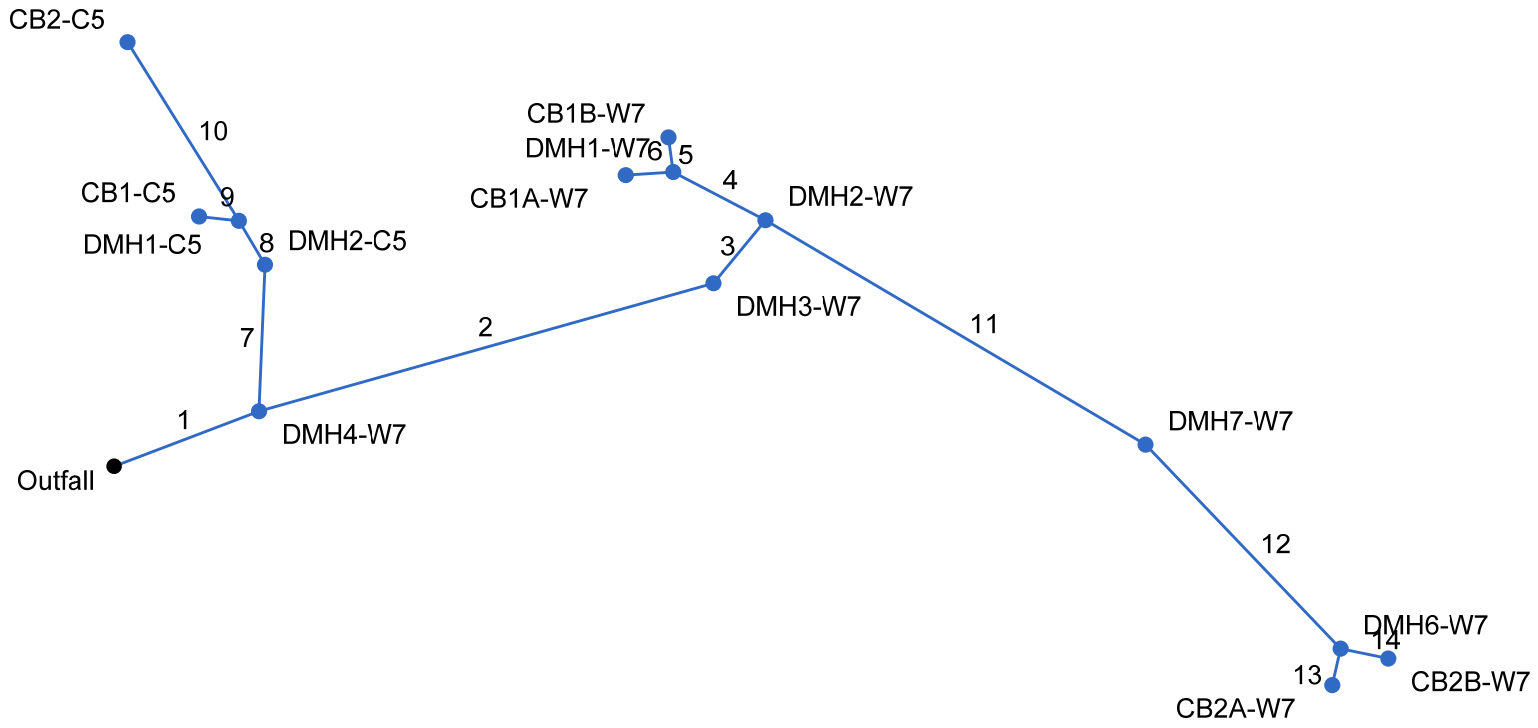
NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: Storm-W6.stm



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



Project File: Storm-W7.stm	Number of lines: 14	Date: 7/27/2023

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	49.036	0.00	1.15	0.00	0.00	0.66	0.0	8.2	6.4	4.26	7.99	4.51	18	0.49	91.00	91.24	91.79	92.03	92.64	96.04	Pipe - (329)
2	1	146.465	0.00	0.66	0.00	0.00	0.40	0.0	7.6	6.6	2.62	2.73	3.96	12	0.50	91.34	92.07	92.13	92.86	96.04	99.78	Pipe - (302)
3	2	29.889	0.00	0.66	0.00	0.00	0.40	0.0	7.4	6.6	2.63	2.73	3.76	12	0.50	92.17	92.32	93.02	93.14	99.78	100.38	Pipe - (300)
4	3	34.031	0.00	0.29	0.00	0.00	0.16	0.0	6.1	6.9	1.12	4.34	3.98	12	1.27	95.92	96.35	96.27	96.80	100.38	100.74	Pipe - (298)
5	4	14.133	0.24	0.24	0.49	0.12	0.12	6.0	6.0	7.0	0.81	3.86	3.19	12	1.00	96.45	96.59	96.80	96.97	100.74	100.64	Pipe - (297)
6	4	14.329	0.05	0.05	0.90	0.05	0.05	6.0	6.0	7.0	0.32	3.86	1.82	12	1.00	96.45	96.59	96.80	96.83	100.74	100.64	Pipe - (296)
7	1	59.442	0.00	0.49	0.00	0.00	0.26	0.0	6.7	6.8	1.80	9.87	6.71	12	6.54	91.99	95.87	92.28	96.44	96.04	100.84	Pipe - (305)
8	7	19.285	0.00	0.49	0.00	0.00	0.26	0.0	6.6	6.8	1.80	2.73	3.71	12	0.50	95.96	96.06	96.56	96.65	100.84	100.12	Pipe - (596)
9	8	12.155	0.21	0.21	0.53	0.11	0.11	6.0	6.0	7.0	0.77	2.52	2.48	12	0.50	96.40	96.46	96.84	96.86	100.12	99.72	Pipe - (597)
10	8	79.636	0.28	0.28	0.54	0.15	0.15	6.0	6.0	7.0	1.07	2.52	2.20	12	0.50	96.06	96.46	96.84	96.95	100.12	99.72	Pipe - (598)
11	3	146.134	0.00	0.37	0.00	0.00	0.24	0.0	6.6	6.8	1.61	2.73	2.85	12	0.50	92.42	93.15	93.37	93.71	100.38	98.86	Pipe - (299)
12	11	101.258	0.00	0.37	0.00	0.00	0.24	0.0	6.1	6.9	1.64	2.73	3.63	12	0.50	93.25	93.76	93.81	94.32	98.86	97.81	Pipe - (293)
13	12	14.966	0.18	0.18	0.59	0.10	0.10	6.0	6.0	7.0	0.72	3.56	2.16	12	1.00	93.86	94.01	94.47	94.36	97.81	97.50	Pipe - (291)
14	12	14.952	0.20	0.20	0.68	0.13	0.13	6.0	6.0	7.0	0.93	3.56	2.48	12	1.00	93.86	94.01	94.47	94.41	97.81	97.50	Pipe - (292)

Project File: Storm-W7.stm

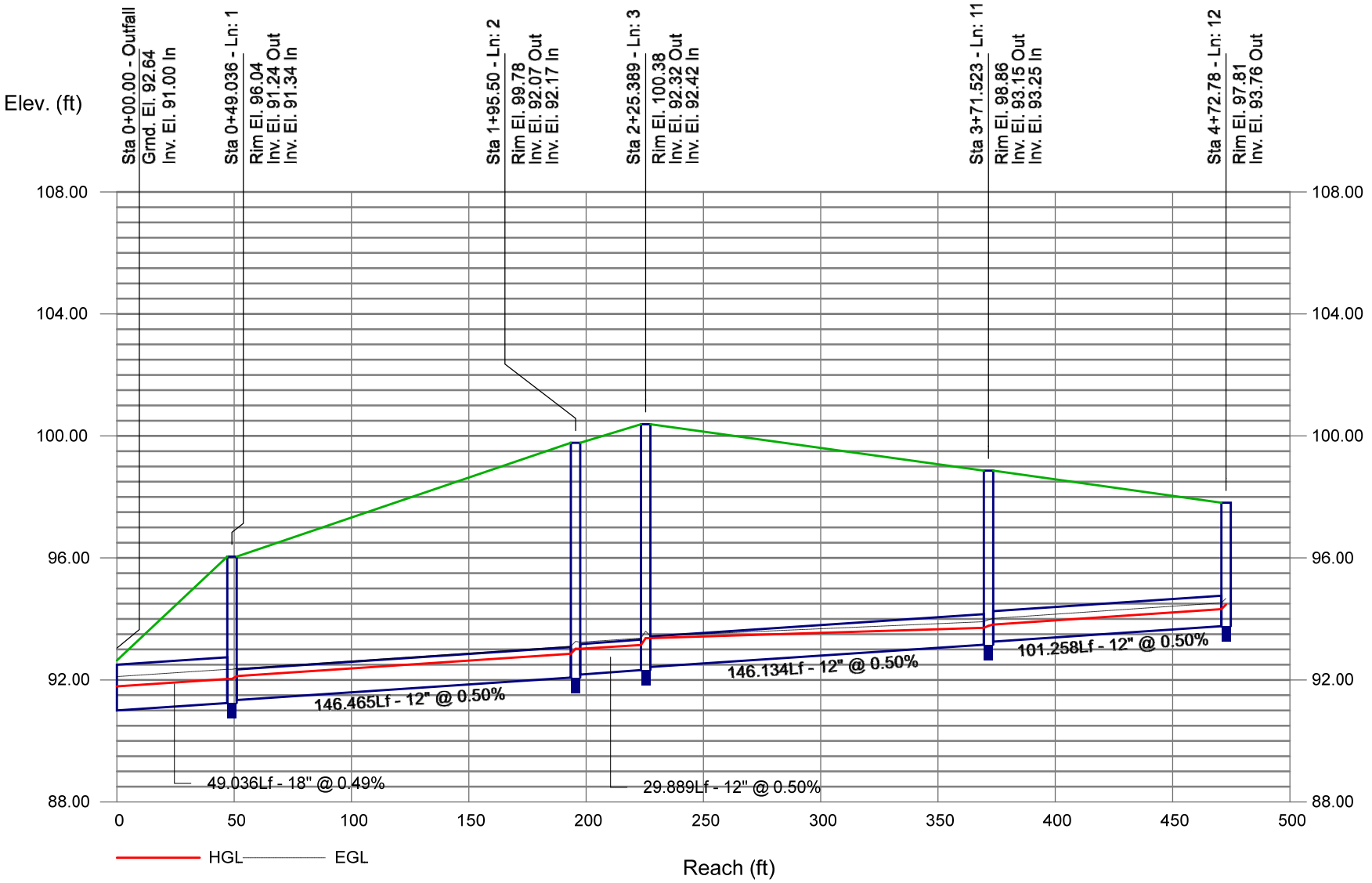
Number of lines: 14

Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

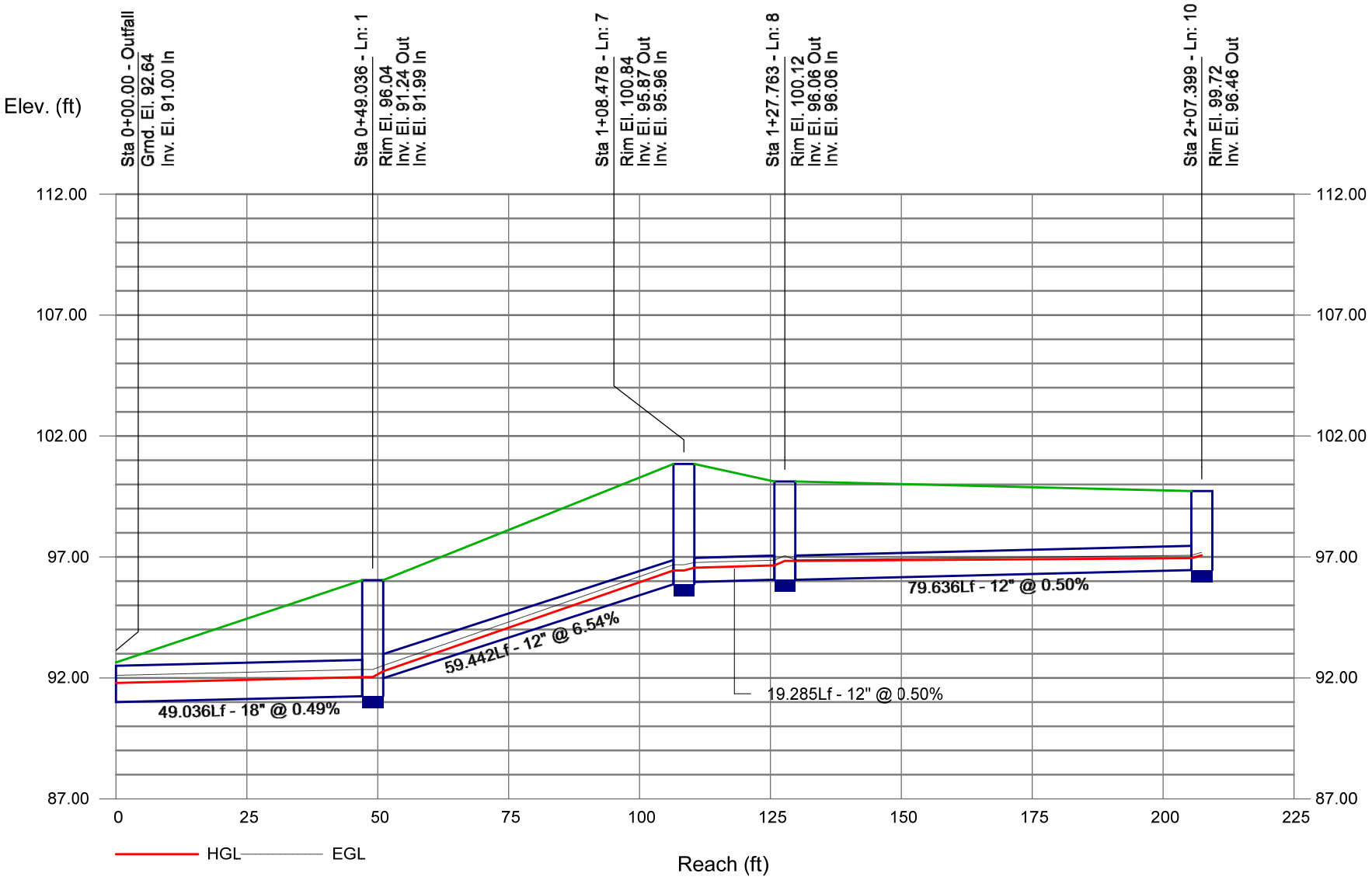
Storm Sewer Profile

Proj. file: Storm-W7.stm



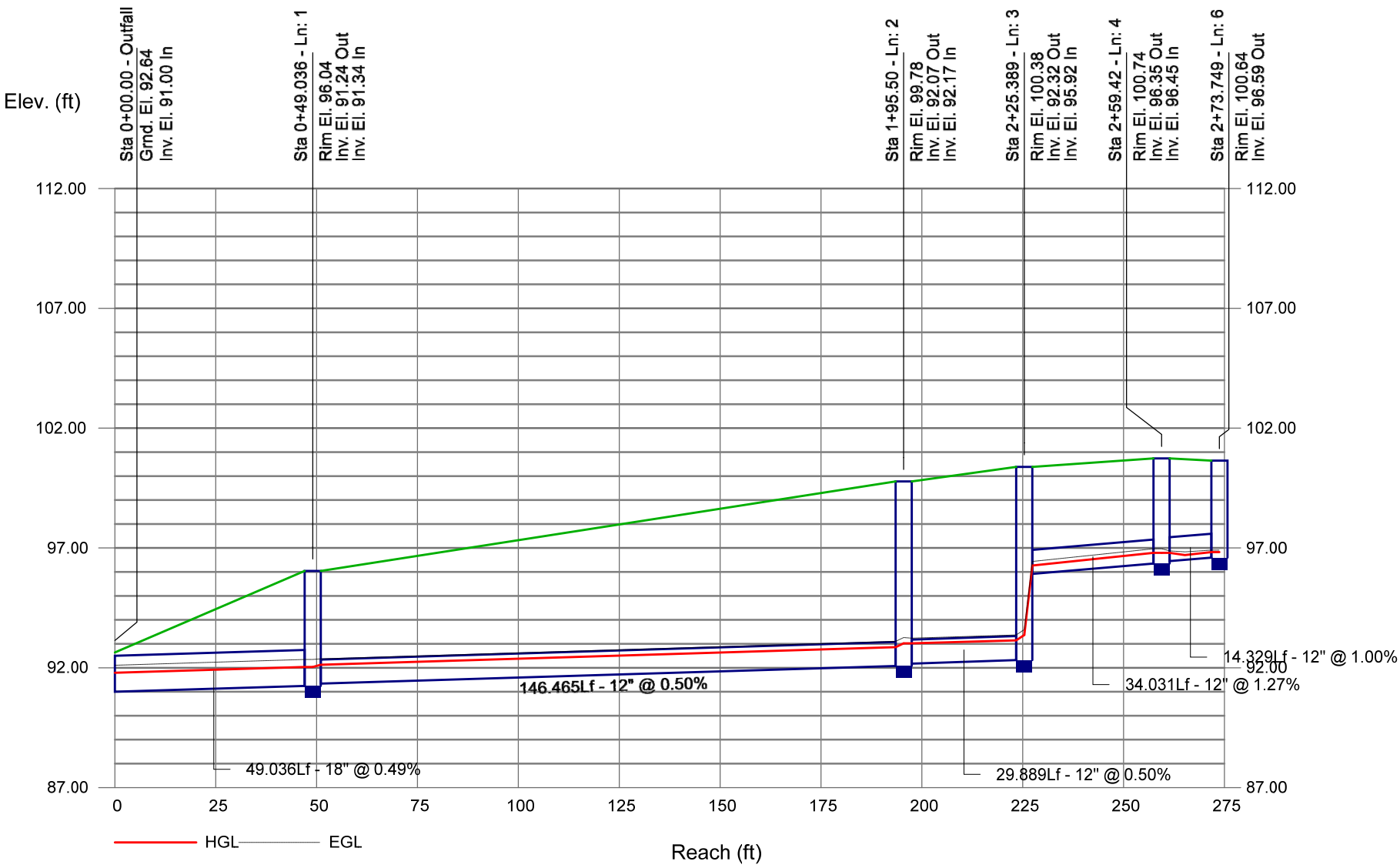
Storm Sewer Profile

Proj. file: Storm-W7.stm

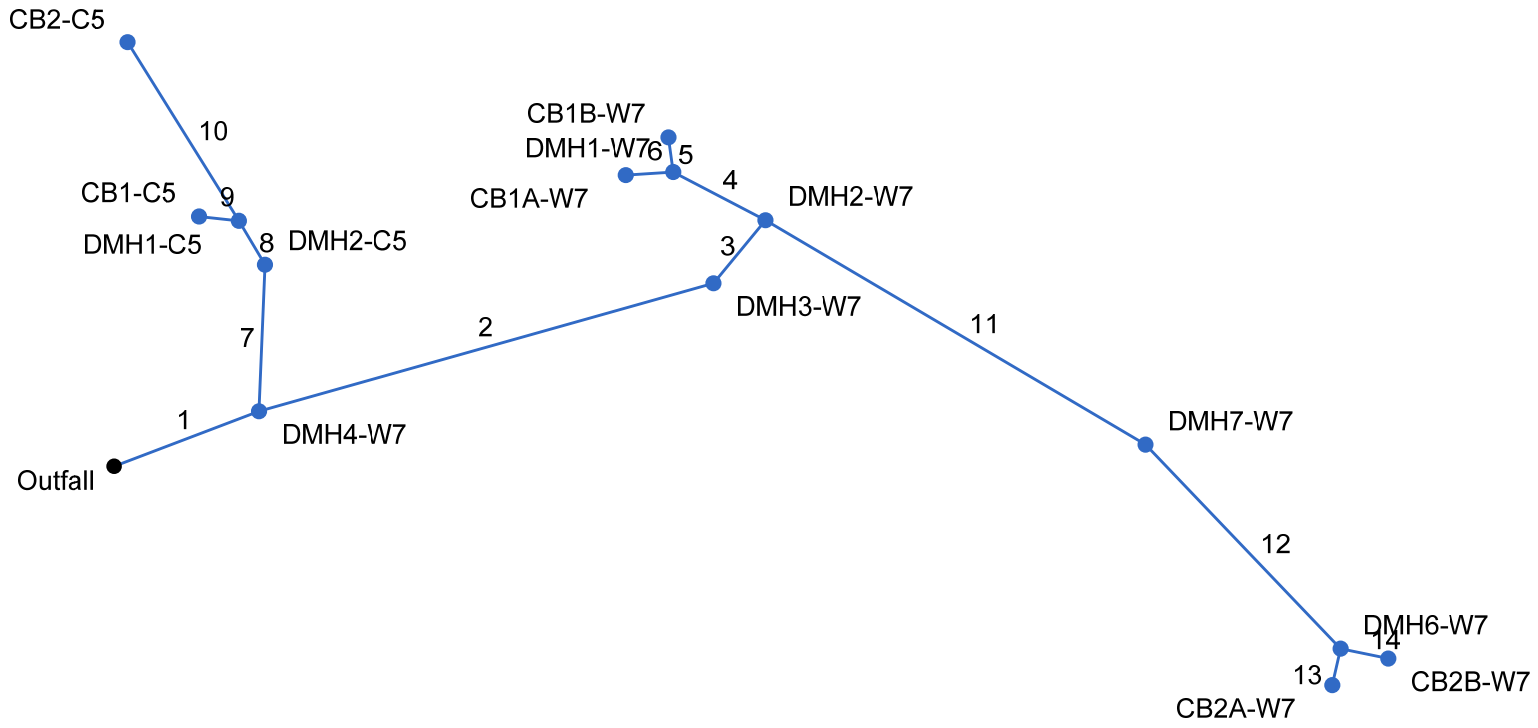


Storm Sewer Profile

Proj. file: Storm-W7.stm



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



Project File: Storm-W7.stm	Number of lines: 14	Date: 7/27/2023

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	49.036	0.00	1.15	0.00	0.00	0.66	0.0	8.3	8.8	5.83	7.99	4.95	18	0.49	91.00	91.24	91.93	92.21	92.64	96.04	Pipe - (329)
2	1	146.465	0.00	0.66	0.00	0.00	0.40	0.0	7.8	8.9	3.56	2.73	4.54	12	0.50	91.34	92.07	92.54	93.79	96.04	99.78	Pipe - (302)
3	2	29.889	0.00	0.66	0.00	0.00	0.40	0.0	7.7	9.0	3.58	2.73	4.55	12	0.50	92.17	92.32	94.00	94.26	99.78	100.38	Pipe - (300)
4	3	34.031	0.00	0.29	0.00	0.00	0.16	0.0	6.1	9.5	1.53	4.34	4.36	12	1.27	95.92	96.35	96.33	96.88	100.38	100.74	Pipe - (298)
5	4	14.133	0.24	0.24	0.49	0.12	0.12	6.0	6.0	9.5	1.10	3.86	3.39	12	1.00	96.45	96.59	96.88	97.04	100.74	100.64	Pipe - (297)
6	4	14.329	0.05	0.05	0.90	0.05	0.05	6.0	6.0	9.5	0.44	3.86	1.94	12	1.00	96.45	96.59	96.88	96.87	100.74	100.64	Pipe - (296)
7	1	59.442	0.00	0.49	0.00	0.00	0.26	0.0	6.7	9.3	2.46	9.87	4.96	12	6.54	91.99	95.87	92.54	96.54	96.04	100.84	Pipe - (305)
8	7	19.285	0.00	0.49	0.00	0.00	0.26	0.0	6.6	9.3	2.46	2.73	3.93	12	0.50	95.96	96.06	96.71	96.80	100.84	100.12	Pipe - (596)
9	8	12.155	0.21	0.21	0.53	0.11	0.11	6.0	6.0	9.5	1.05	2.52	2.19	12	0.50	96.40	96.46	97.01	97.02	100.12	99.72	Pipe - (597)
10	8	79.636	0.28	0.28	0.54	0.15	0.15	6.0	6.0	9.5	1.46	2.52	2.25	12	0.50	96.06	96.46	97.01	97.13	100.12	99.72	Pipe - (598)
11	3	146.134	0.00	0.37	0.00	0.00	0.24	0.0	6.8	9.2	2.18	2.73	2.78	12	0.50	92.42	93.15	94.58	95.05	100.38	98.86	Pipe - (299)
12	11	101.258	0.00	0.37	0.00	0.00	0.24	0.0	6.2	9.4	2.23	2.73	2.83	12	0.50	93.25	93.76	95.08	95.42	98.86	97.81	Pipe - (293)
13	12	14.966	0.18	0.18	0.59	0.10	0.10	6.0	6.0	9.5	0.98	3.56	1.24	12	1.00	93.86	94.01	95.51	95.53	97.81	97.50	Pipe - (291)
14	12	14.952	0.20	0.20	0.68	0.13	0.13	6.0	6.0	9.5	1.26	3.56	1.61	12	1.00	93.86	94.01	95.51	95.53	97.81	97.50	Pipe - (292)

Project File: Storm-W7.stm

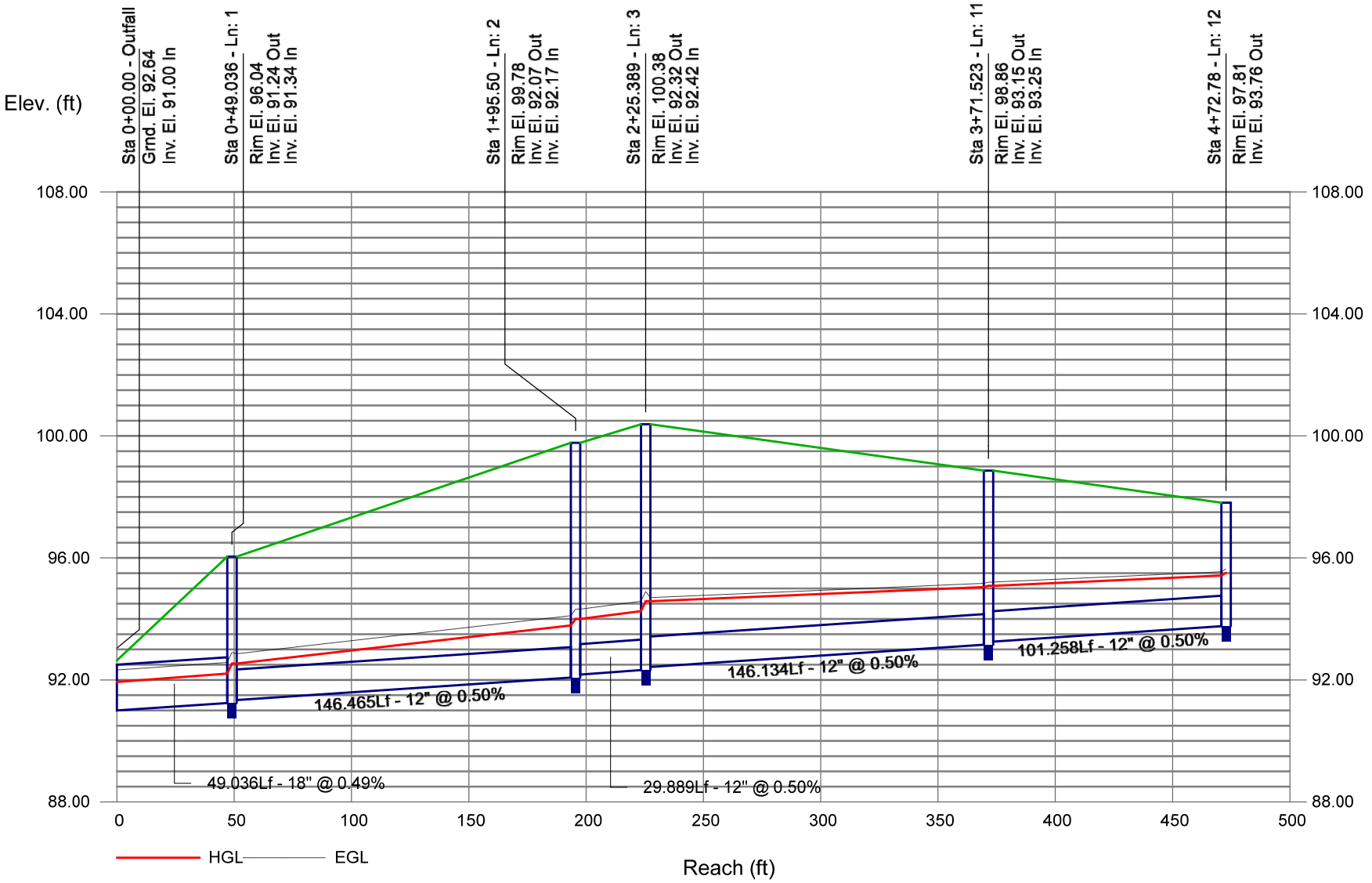
Number of lines: 14

Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

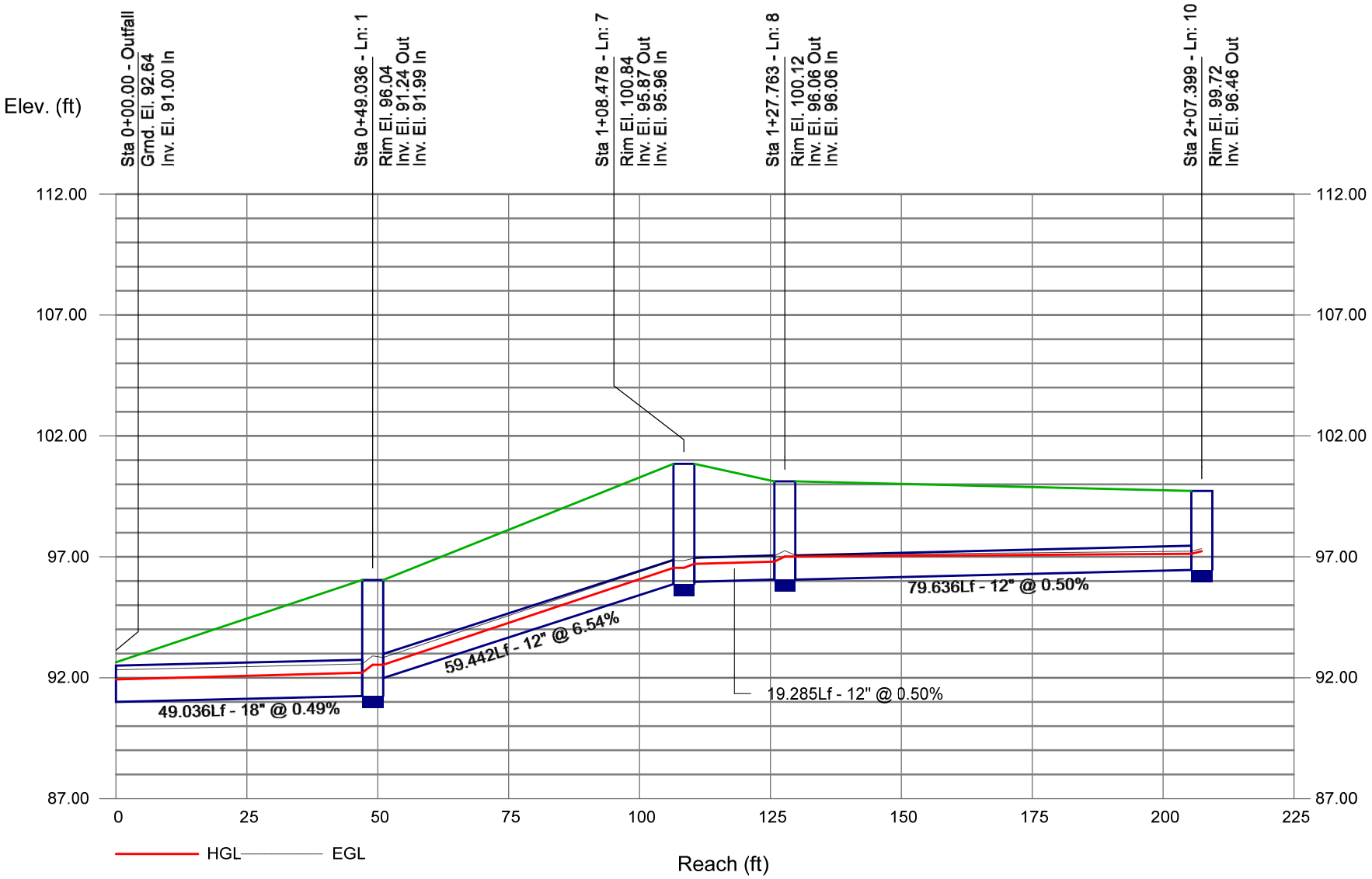
Storm Sewer Profile

Proj. file: Storm-W7.stm



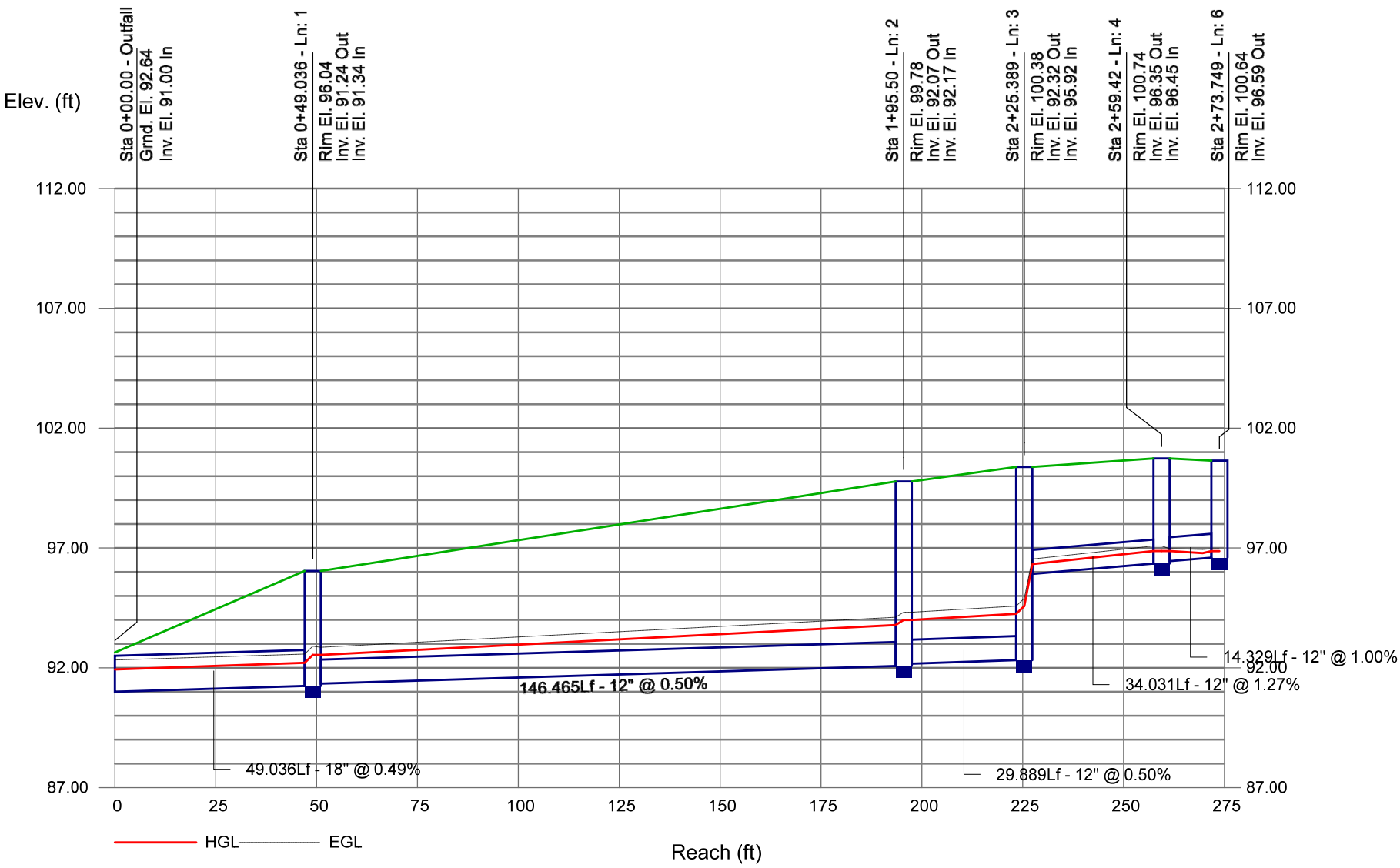
Storm Sewer Profile

Proj. file: Storm-W7.stm

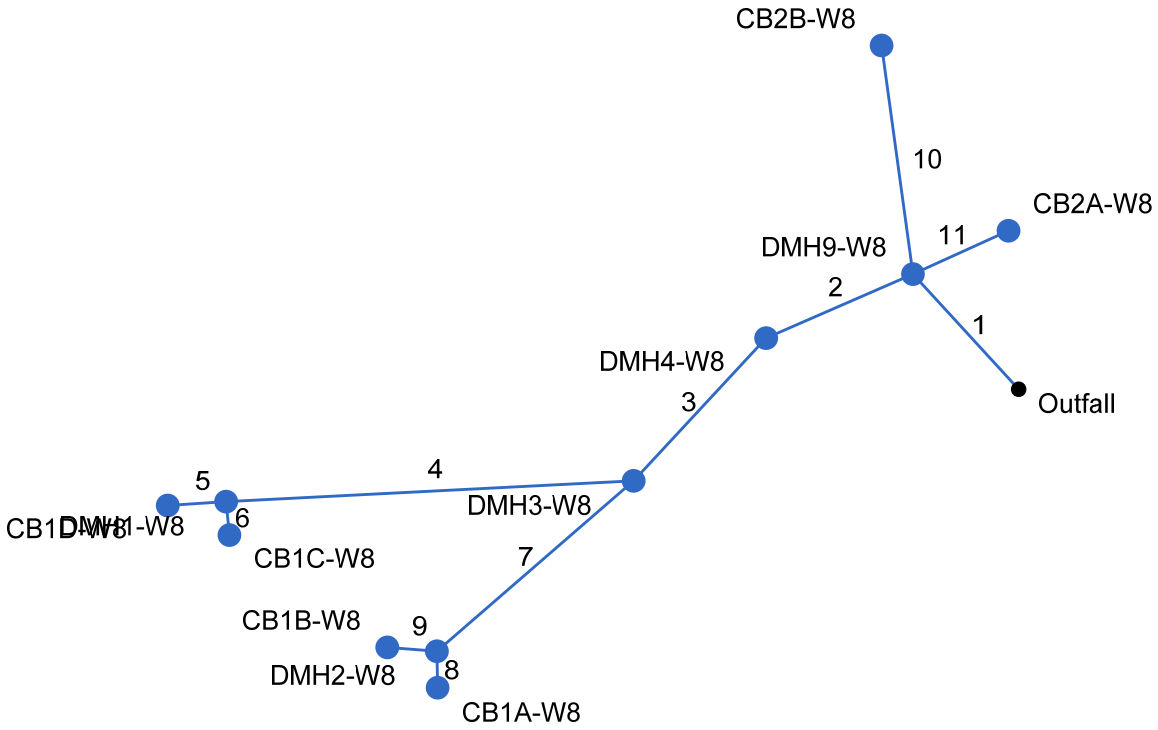


Storm Sewer Profile

Proj. file: Storm-W7.stm



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



Project File: Storm-W8.stm	Number of lines: 11	Date: 7/27/2023

Storm Sewer Tabulation

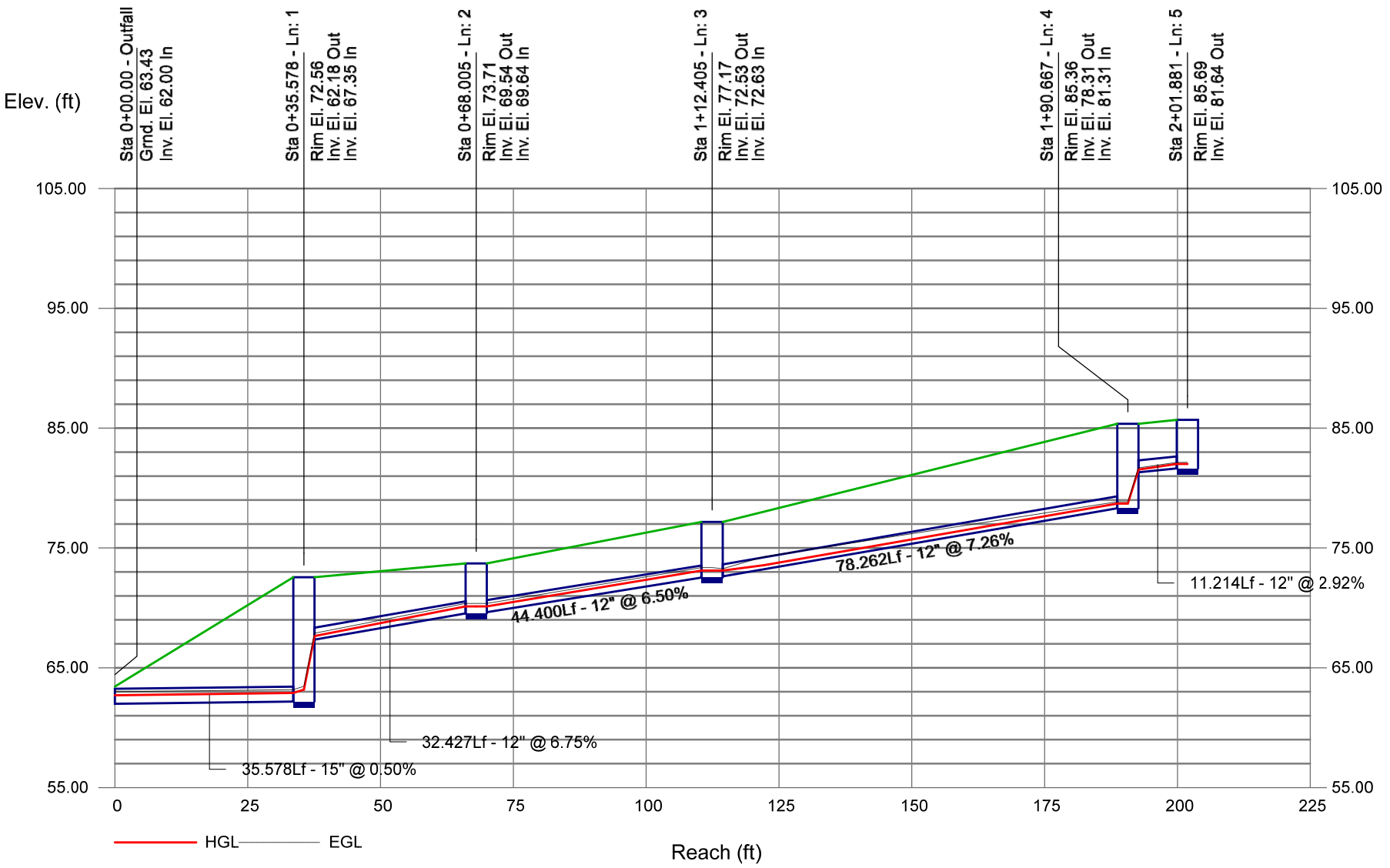
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	35.578	0.00	1.10	0.00	0.00	0.46	0.0	6.8	6.8	3.10	4.94	4.26	15	0.50	62.00	62.18	62.71	62.90	63.43	72.56	Pipe - (369)
2	1	32.427	0.00	0.53	0.00	0.00	0.28	0.0	6.7	6.8	1.88	10.03	6.87	12	6.75	67.35	69.54	67.64	70.12	72.56	73.71	Pipe - (367) (1)
3	2	44.400	0.00	0.53	0.00	0.00	0.28	0.0	6.5	6.8	1.89	9.84	4.52	12	6.50	69.64	72.53	70.12	73.12	73.71	77.17	Pipe - (367)
4	3	78.262	0.00	0.24	0.00	0.00	0.13	0.0	6.1	7.0	0.90	10.39	2.73	12	7.26	72.63	78.31	73.12	78.71	77.17	85.36	Pipe - (601)
5	4	11.214	0.23	0.23	0.50	0.11	0.11	6.0	6.0	7.0	0.78	6.59	4.31	12	2.92	81.31	81.64	81.54	82.01	85.36	85.69	Pipe - (605)
6	4	8.376	0.02	0.02	0.90	0.02	0.02	6.0	6.0	7.0	0.11	7.49	2.61	12	3.77	81.31	81.63	81.40	81.76	85.36	85.68	Pipe - (606)
7	3	57.304	0.00	0.28	0.00	0.00	0.15	0.0	6.0	7.0	1.03	10.43	2.97	12	7.31	72.63	76.82	73.12	77.25	77.17	81.90	Pipe - (364) (1)
8	7	9.315	0.12	0.12	0.59	0.07	0.07	6.0	6.0	7.0	0.48	7.78	4.02	12	4.06	77.82	78.20	77.99	78.48	81.90	82.25	Pipe - (364)
9	7	9.514	0.17	0.17	0.47	0.08	0.08	6.0	6.0	7.0	0.56	8.38	4.37	12	4.72	77.82	78.27	77.99	78.58	81.90	82.32	Pipe - (602)
10	1	58.217	0.33	0.33	0.30	0.10	0.10	6.0	6.0	7.0	0.69	9.45	4.94	12	6.00	67.35	70.84	67.53	71.19	72.56	77.93	Pipe - (365)
11	1	21.378	0.24	0.24	0.34	0.08	0.08	6.0	6.0	7.0	0.57	5.46	3.60	12	2.00	67.35	67.78	67.57	68.09	72.56	72.13	Pipe - (366)

Project File: Storm-W8.stm | Number of lines: 11 | Run Date: 7/27/2023

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

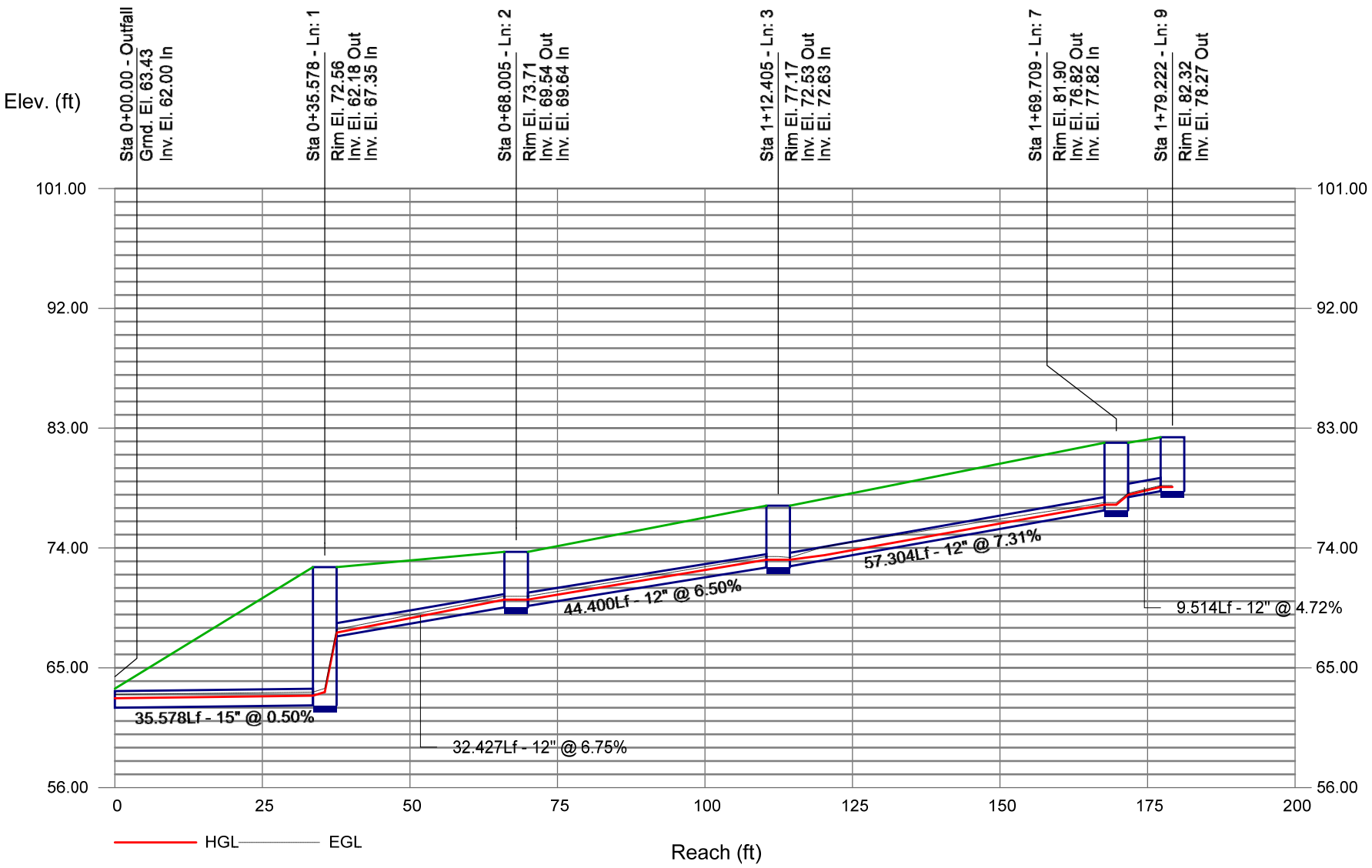
Storm Sewer Profile

Proj. file: Storm-W8.stm



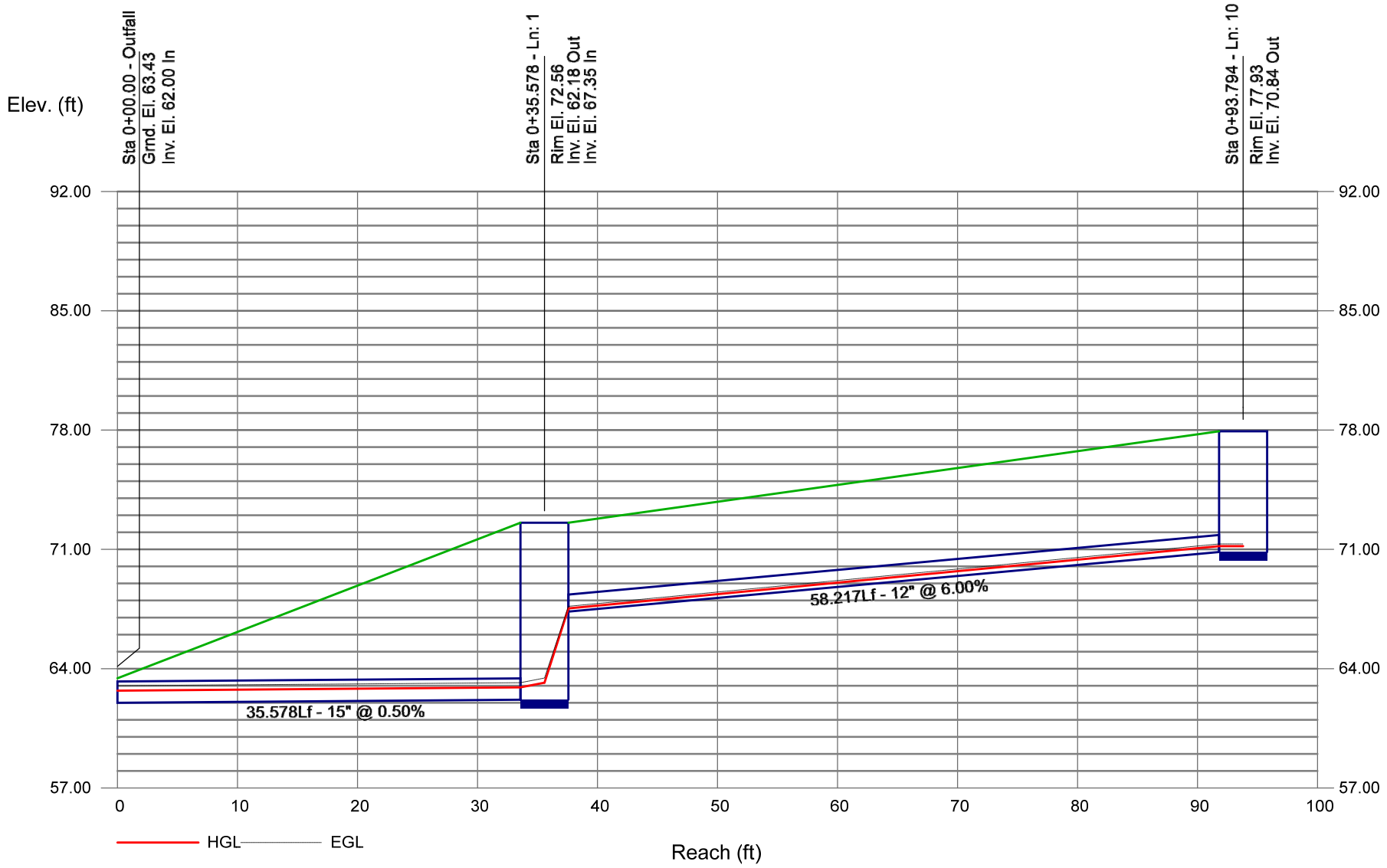
Storm Sewer Profile

Proj. file: Storm-W8.stm

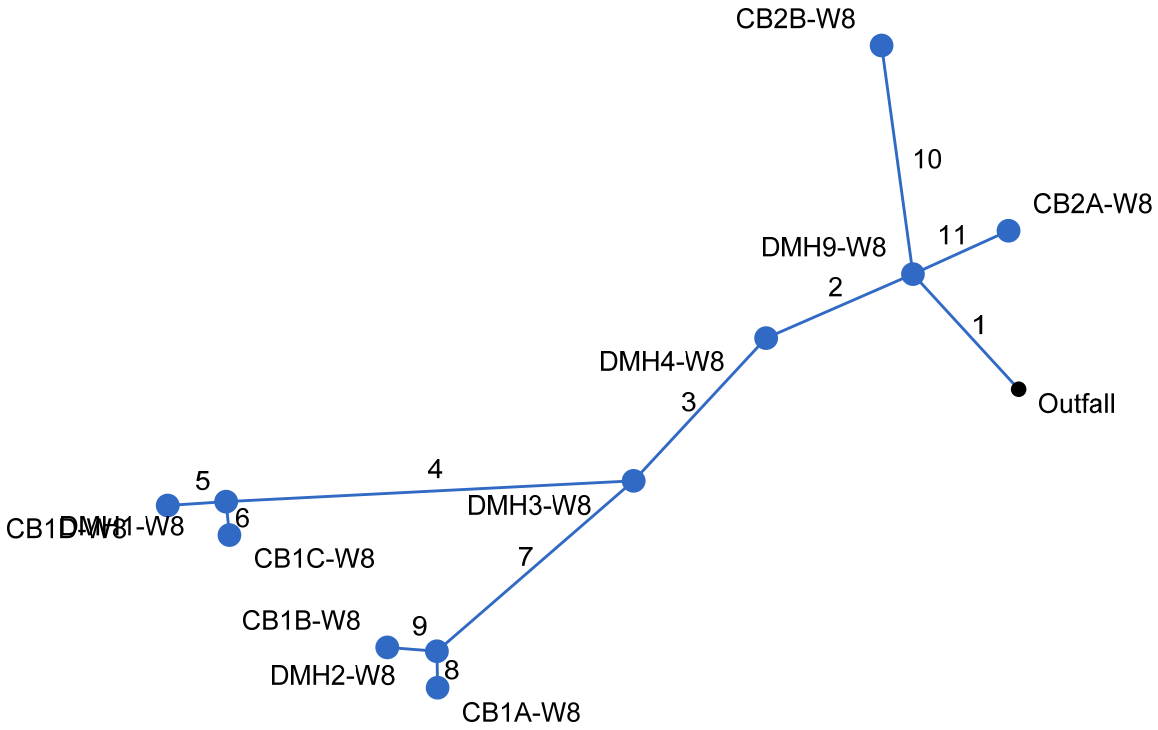


Storm Sewer Profile

Proj. file: Storm-W8.stm



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



Project File: Storm-W8.stm	Number of lines: 11	Date: 7/27/2023

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	35.578	0.00	1.10	0.00	0.00	0.46	0.0	6.7	9.3	4.24	4.94	4.65	15	0.50	62.00	62.18	62.83	63.09	63.43	72.56	Pipe - (369)
2	1	32.427	0.00	0.53	0.00	0.00	0.28	0.0	6.6	9.3	2.57	10.03	7.58	12	6.75	67.35	69.54	67.70	70.23	72.56	73.71	Pipe - (367) (1)
3	2	44.400	0.00	0.53	0.00	0.00	0.28	0.0	6.5	9.3	2.59	9.84	4.97	12	6.50	69.64	72.53	70.23	73.22	73.71	77.17	Pipe - (367)
4	3	78.262	0.00	0.24	0.00	0.00	0.13	0.0	6.0	9.5	1.22	10.39	2.97	12	7.26	72.63	78.31	73.22	78.78	77.17	85.36	Pipe - (601)
5	4	11.214	0.23	0.23	0.50	0.11	0.11	6.0	6.0	9.5	1.07	6.59	4.72	12	2.92	81.31	81.64	81.58	82.07	85.36	85.69	Pipe - (605)
6	4	8.376	0.02	0.02	0.90	0.02	0.02	6.0	6.0	9.5	0.16	7.49	2.85	12	3.77	81.31	81.63	81.41	81.79	85.36	85.68	Pipe - (606)
7	3	57.304	0.00	0.28	0.00	0.00	0.15	0.0	6.0	9.5	1.40	10.43	3.24	12	7.31	72.63	76.82	73.22	77.32	77.17	81.90	Pipe - (364) (1)
8	7	9.315	0.12	0.12	0.59	0.07	0.07	6.0	6.0	9.5	0.65	7.78	4.40	12	4.06	77.82	78.20	78.02	78.53	81.90	82.25	Pipe - (364)
9	7	9.514	0.17	0.17	0.47	0.08	0.08	6.0	6.0	9.5	0.76	8.38	4.78	12	4.72	77.82	78.27	78.02	78.63	81.90	82.32	Pipe - (602)
10	1	58.217	0.33	0.33	0.30	0.10	0.10	6.0	6.0	9.5	0.94	9.45	5.41	12	6.00	67.35	70.84	67.56	71.25	72.56	77.93	Pipe - (365)
11	1	21.378	0.24	0.24	0.34	0.08	0.08	6.0	6.0	9.5	0.78	5.46	3.94	12	2.00	67.35	67.78	67.61	68.15	72.56	72.13	Pipe - (366)

Project File: Storm-W8.stm

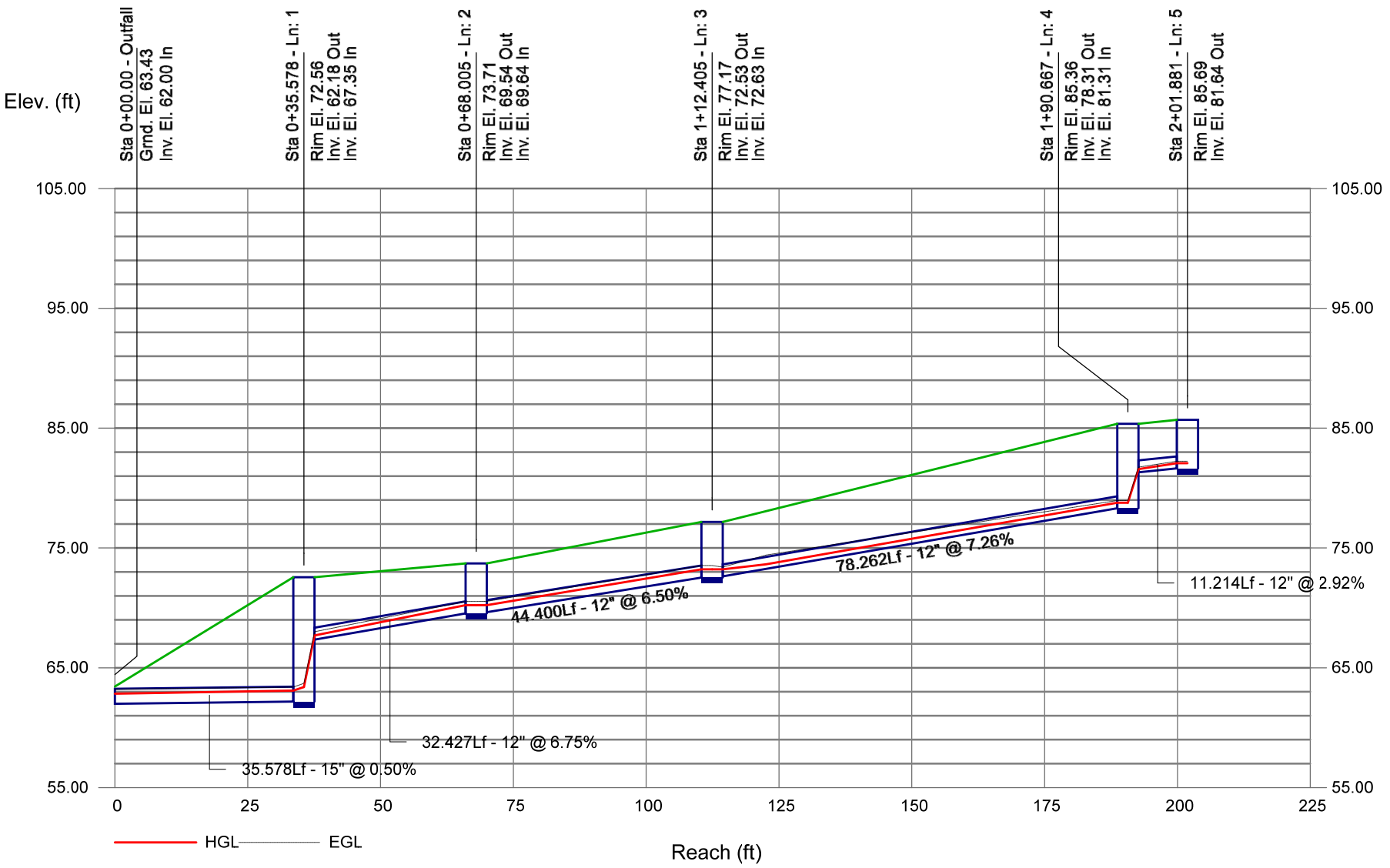
Number of lines: 11

Run Date: 7/27/2023

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

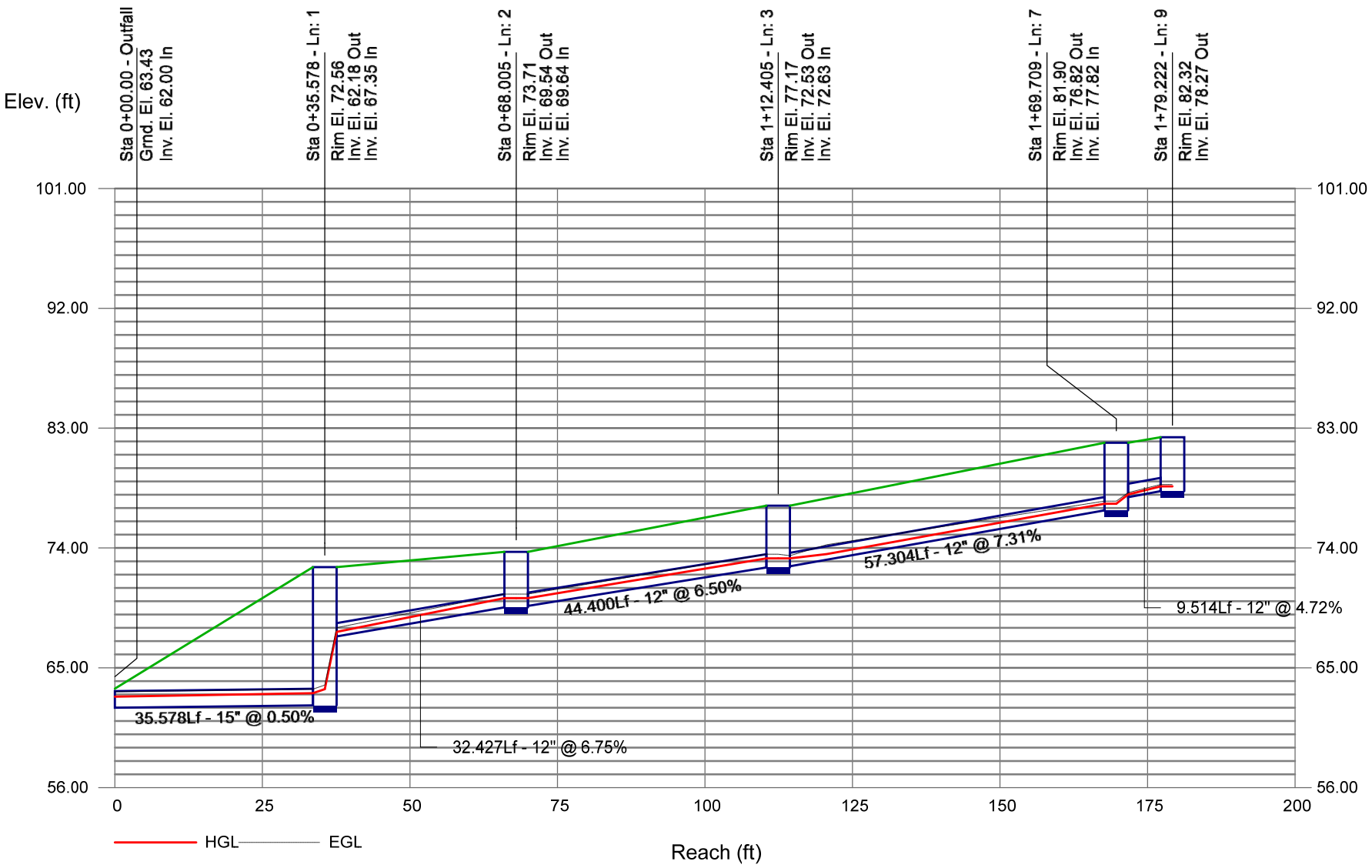
Storm Sewer Profile

Proj. file: Storm-W8.stm



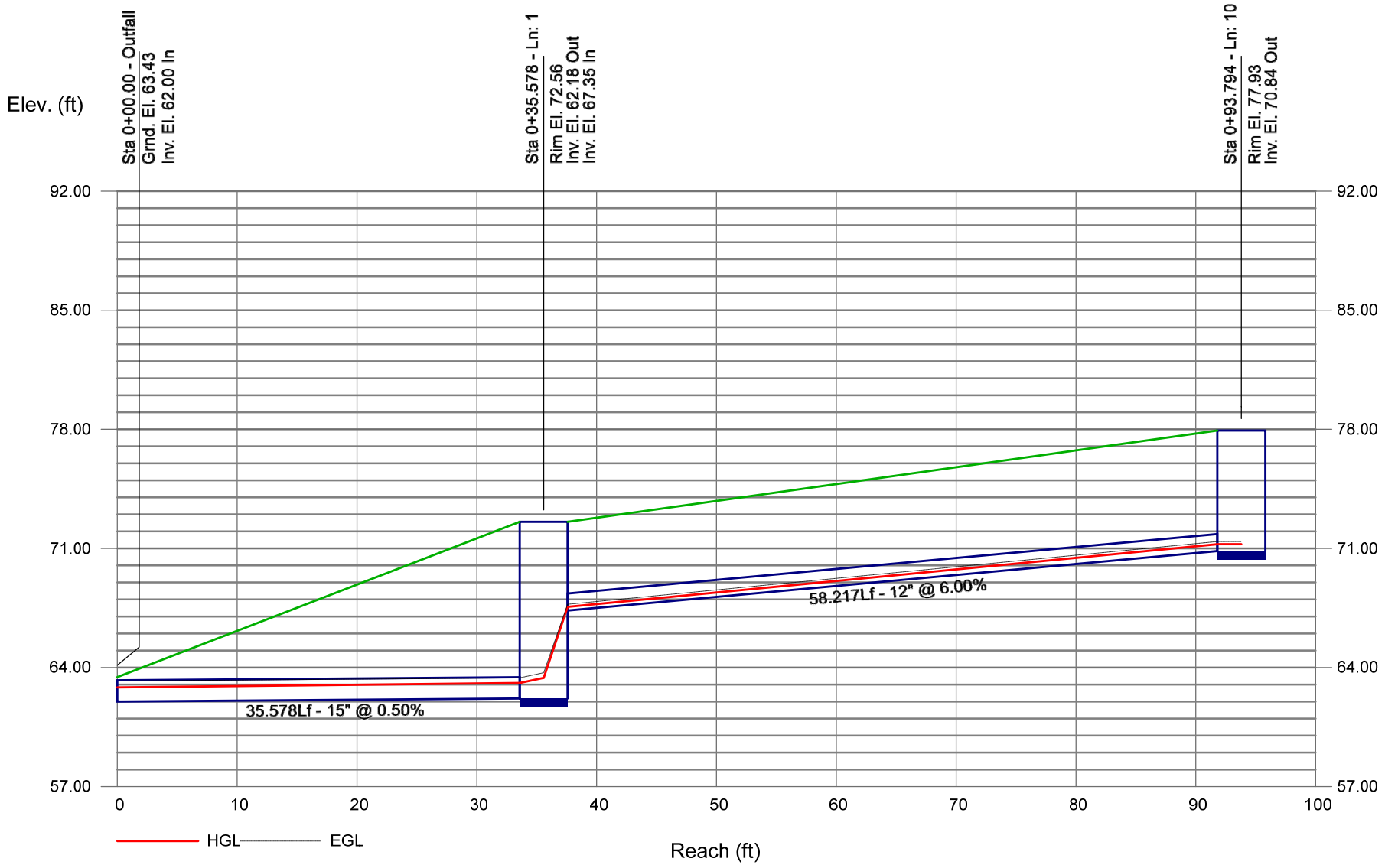
Storm Sewer Profile

Proj. file: Storm-W8.stm



Storm Sewer Profile

Proj. file: Storm-W8.stm



Storm Sewer IDF Curves

IDF file: Pembroke-Hydraflow.IDF