



Digitally signed by Jakob
Klein

Date: 2025.06.02
15:15:08-04'00'

Preliminary



APPENDIX C
STORMWATER CONVEYANCE
CALCULATIONS

Project Name:	Moody
Project Number:	R210002
Date:	3/31/2025
Calculated By:	RC
Checked By:	JK
Input data in blue boxes	

Rational C-Value Calculations for Inlet Areas										
Area ID	Drainage Area (ac)	SCM (ac)	Roof (ac)	Roadway (ac)	Driveway (ac)	Sidewalk (ac)	Open Space (ac)	Impervious C	Open Space C	Composite C Value
Catchments	32.29	1.86	7.45	3.90	1.89	0.88	16.31	0.95	0.2	0.57
Note C Value of 0.60 used for safety factor										

Project Name: **Moody**
Project Number: **R210002**
Date: **6/2/2025**
Calculated By: **RC**
Checked By: **JK**

Rip Rap Dissipater Calculations 10-Year Storm

Outlet ID	Pipe Diameter (in)	Pipe Velocity (fps)	Stone Class	Stone Depth (in)	Stone Material (tons)	Geo-Textile (SY)	Start Width (ft)	End Width (ft)	Length (ft)
FES 100	18	2.20	B	12	2	7	3	9	6
FES 125	24	4.48	B	12	3	11	4	12	8
FES OS 100	24	0.18	B	12	3	11	4	12	8
FES 110	18	4.48	B	12	2	7	3.0	9	6
FES 120	15	2.61	B	12	2	7	2.5	7.5	5
EW 101	36	4.21	I	18	13	30	6	18	12
FES OS 200	18	0.10	B	12	2	7	3	9	6
FES 203	18	2.05	B	12	2	7	3	9	6
FES 300	36	4.67	I	18	10	23	6	18	12
FES OS 300	24	5.98	I	18	4	12	4	12	8
FES 400	30	2.89	B	12	5	16	5	15	10
FES OS 400	24	3.57	B	12	3	11	4	12	8
FES 410	18	3.53	B	12	2	7	3	9	6
FES 420	15	2.45	B	12	2	7	2.5	7.5	5
FES 500	30	4.92	B	12	5	16	5	15	10
FES OS 500	24	0.32	B	12	3	11	4	12	8
FES 602	18	5.01	B	12	3	10	3	9	6
EW 610	54 (DBL)	5.17	I	18	40	75	16	16	40
EW 701	15	2.55	B	12	2	7	2.5	7.5	5

Calculations were determined from NCDOT Detail 876.02 *Guide for Rip Rap at Pipe Outlets*

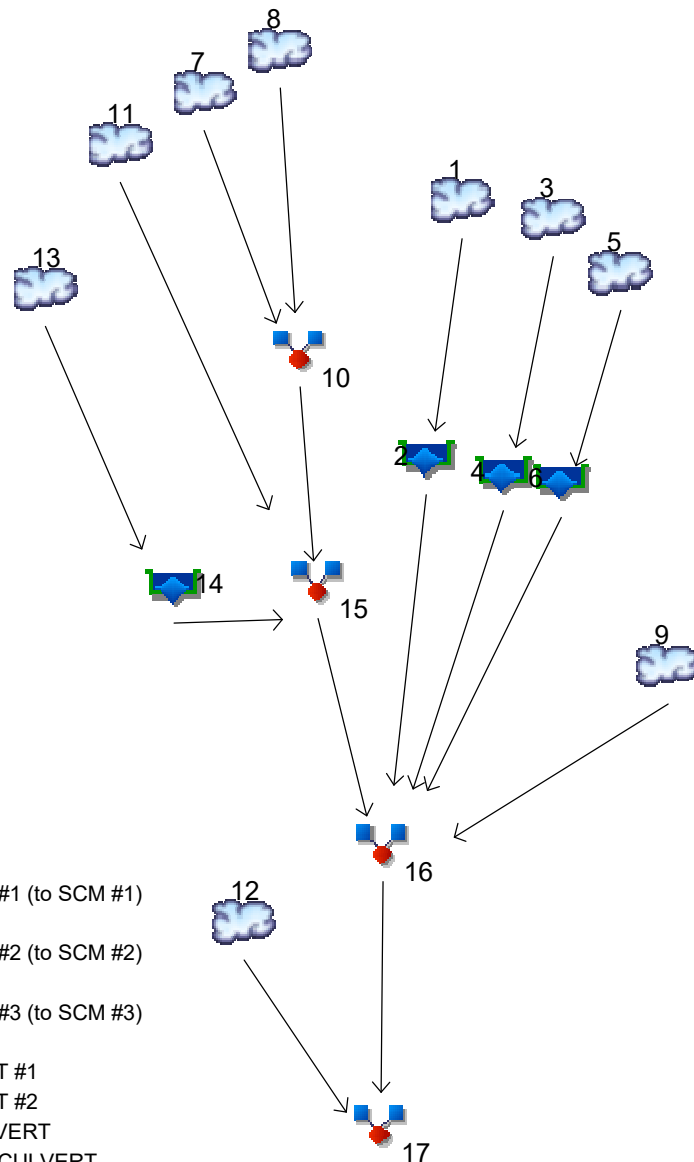
Values shown in table above are minimum quantities and dimensions

DBL is double barrel pipe

Watershed Model Schematic

CULVERT SIZING

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



Legend

Hyd.	Origin	Description
1	SCS Runoff	MOODY POD 2A #1 (to SCM #1)
2	Reservoir	MOODY SCM #1
3	SCS Runoff	MOODY POD 2A #2 (to SCM #2)
4	Reservoir	MOODY SCM #2
5	SCS Runoff	MOODY POD 2A #3 (to SCM #3)
6	Reservoir	MOODY SCM #3
7	SCS Runoff	NCDOT CULVERT #1
8	SCS Runoff	NCDOT CULVERT #2
9	SCS Runoff	MULBERRY CULVERT
10	Combine	KALAS PHASE 2 CULVERT
11	SCS Runoff	OFFSITE BYPASS (FROM KALAS 2)
12	SCS Runoff	ONSITE BYPASS
13	SCS Runoff	KALAS 2 SCM7 POST DEV DA
14	Reservoir	KALAS 2 SCM #7A
15	Combine	POI 7
16	Combine	COMBINE AT ONSITE BYPASS
17	Combine	TANSLEY CULVERTS

Hydrograph Return Period Recap **CULVERT SIZING**

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	-----	-----	-----	-----	47.24	59.87	-----	80.14	MOODY POD 2A #1 (to SCM #1)
2	Reservoir	1	-----	-----	-----	-----	6.829	22.89	-----	59.45	MOODY SCM #1
3	SCS Runoff	-----	-----	-----	-----	-----	7.521	9.544	-----	12.79	MOODY POD 2A #2 (to SCM #2)
4	Reservoir	3	-----	-----	-----	-----	0.123	0.332	-----	1.006	MOODY SCM #2
5	SCS Runoff	-----	-----	-----	-----	-----	45.23	57.07	-----	76.01	MOODY POD 2A #3 (to SCM #3)
6	Reservoir	5	-----	-----	-----	-----	34.62	48.78	-----	70.48	MOODY SCM #3
7	SCS Runoff	-----	-----	-----	-----	-----	22.96	31.01	-----	44.43	NCDOT CULVERT #1
8	SCS Runoff	-----	-----	-----	-----	-----	23.94	32.32	-----	46.30	NCDOT CULVERT #2
9	SCS Runoff	-----	-----	-----	-----	-----	24.42	33.20	-----	47.93	MULBERRY CULVERT
10	Combine	7, 8,	-----	-----	-----	-----	46.78	63.17	-----	90.50	KALAS PHASE 2 CULVERT
11	SCS Runoff	-----	-----	-----	-----	-----	31.14	40.31	-----	55.22	OFFSITE BYPASS (FROM KALAS 2)
12	SCS Runoff	-----	-----	-----	-----	-----	27.36	35.35	-----	48.32	ONSITE BYPASS
13	SCS Runoff	-----	-----	-----	-----	-----	37.75	48.32	-----	65.36	KALAS 2 SCM7 POST DEV DA
14	Reservoir	13	-----	-----	-----	-----	1.793	5.755	-----	24.08	KALAS 2 SCM #7A
15	Combine	10, 11, 14	-----	-----	-----	-----	60.60	84.27	-----	138.29	POI 7
16	Combine	2, 4, 6, 9, 15	-----	-----	-----	-----	117.04	163.87	-----	262.83	COMBINE AT ONSITE BYPASS
17	Combine	12, 16	-----	-----	-----	-----	134.54	192.31	-----	306.41	TANSLEY CULVERTS
Proj. file: 20241205 Tansley Culvert Modeling Revised.gpw										Monday, 03 / 31 / 2025	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

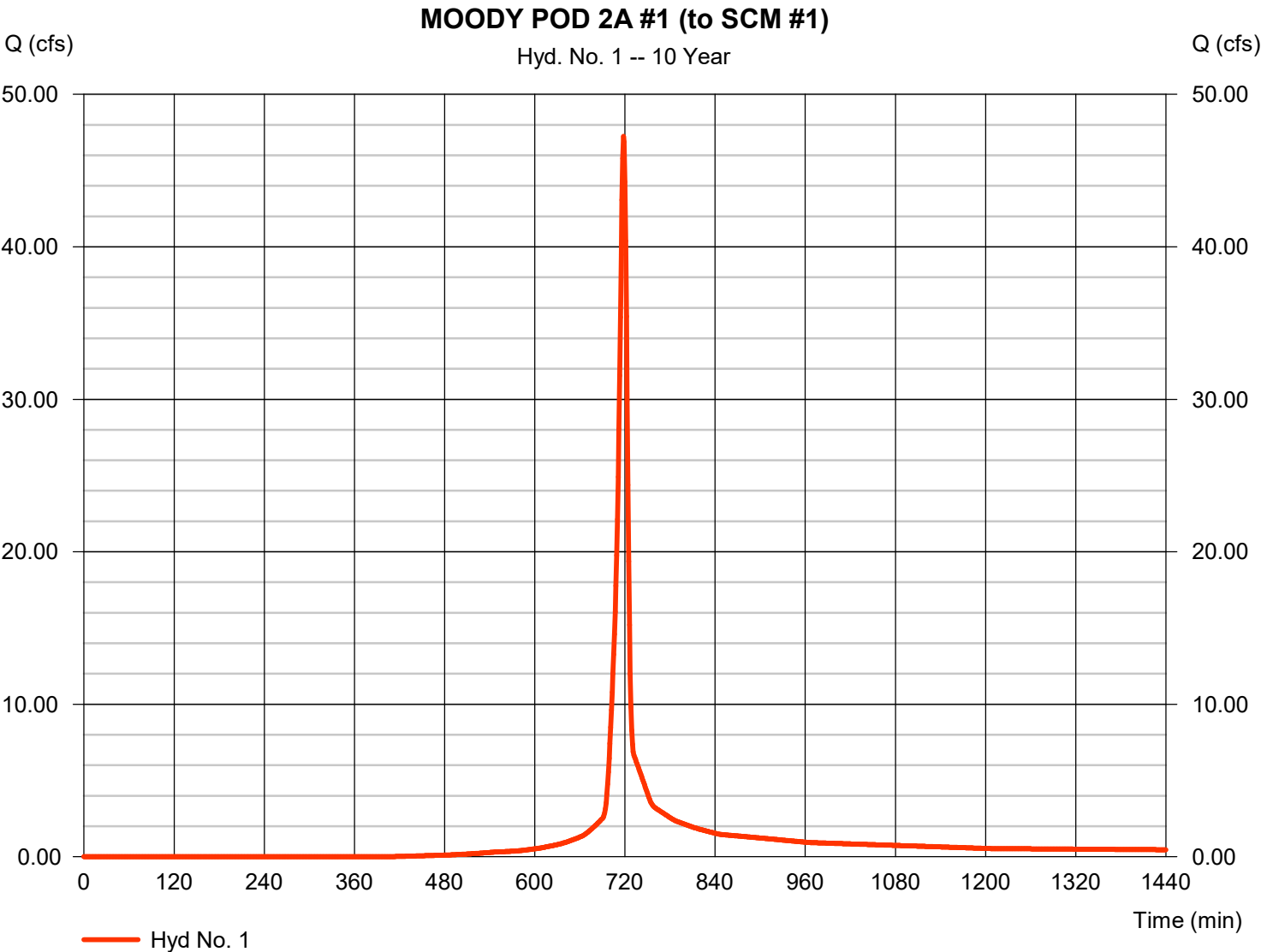
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	47.24	1	718	101,170	-----	-----	-----	MOODY POD 2A #1 (to SCM #1)
2	Reservoir	6.829	1	731	71,530	1	366.22	95,191	MOODY SCM #1
3	SCS Runoff	7.521	1	718	15,465	-----	-----	-----	MOODY POD 2A #2 (to SCM #2)
4	Reservoir	0.123	1	1042	6,526	3	362.83	27,876	MOODY SCM #2
5	SCS Runoff	45.23	1	718	97,191	-----	-----	-----	MOODY POD 2A #3 (to SCM #3)
6	Reservoir	34.62	1	722	89,512	5	363.95	39,963	MOODY SCM #3
7	SCS Runoff	22.96	1	743	128,914	-----	-----	-----	NCDOT CULVERT #1
8	SCS Runoff	23.94	1	745	141,854	-----	-----	-----	NCDOT CULVERT #2
9	SCS Runoff	24.42	1	735	110,272	-----	-----	-----	MULBERRY CULVERT
10	Combine	46.78	1	744	270,767	7, 8,	-----	-----	KALAS PHASE 2 CULVERT
11	SCS Runoff	31.14	1	725	97,228	-----	-----	-----	OFFSITE BYPASS (FROM KALAS 2)
12	SCS Runoff	27.36	1	720	66,239	-----	-----	-----	ONSITE BYPASS
13	SCS Runoff	37.75	1	721	95,690	-----	-----	-----	KALAS 2 SCM7 POST DEV DA
14	Reservoir	1.793	1	819	68,016	13	374.10	60,603	KALAS 2 SCM #7A
15	Combine	60.60	1	730	436,011	10, 11, 14	-----	-----	POI 7
16	Combine	117.04	1	727	713,852	2, 4, 6, 9, 15	-----	-----	COMBINE AT ONSITE BYPASS
17	Combine	134.54	1	725	780,090	12, 16	-----	-----	TANSLEY CULVERTS
20241205 Tansley Culvert Modeling Revised.gpr					Return Period: 10 Year			Monday, 03 / 31 / 2025	

Hydrograph Report

Hyd. No. 1

MOODY POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.24 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	101,170 cuft
Drainage area	=	9.460 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	6.69 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



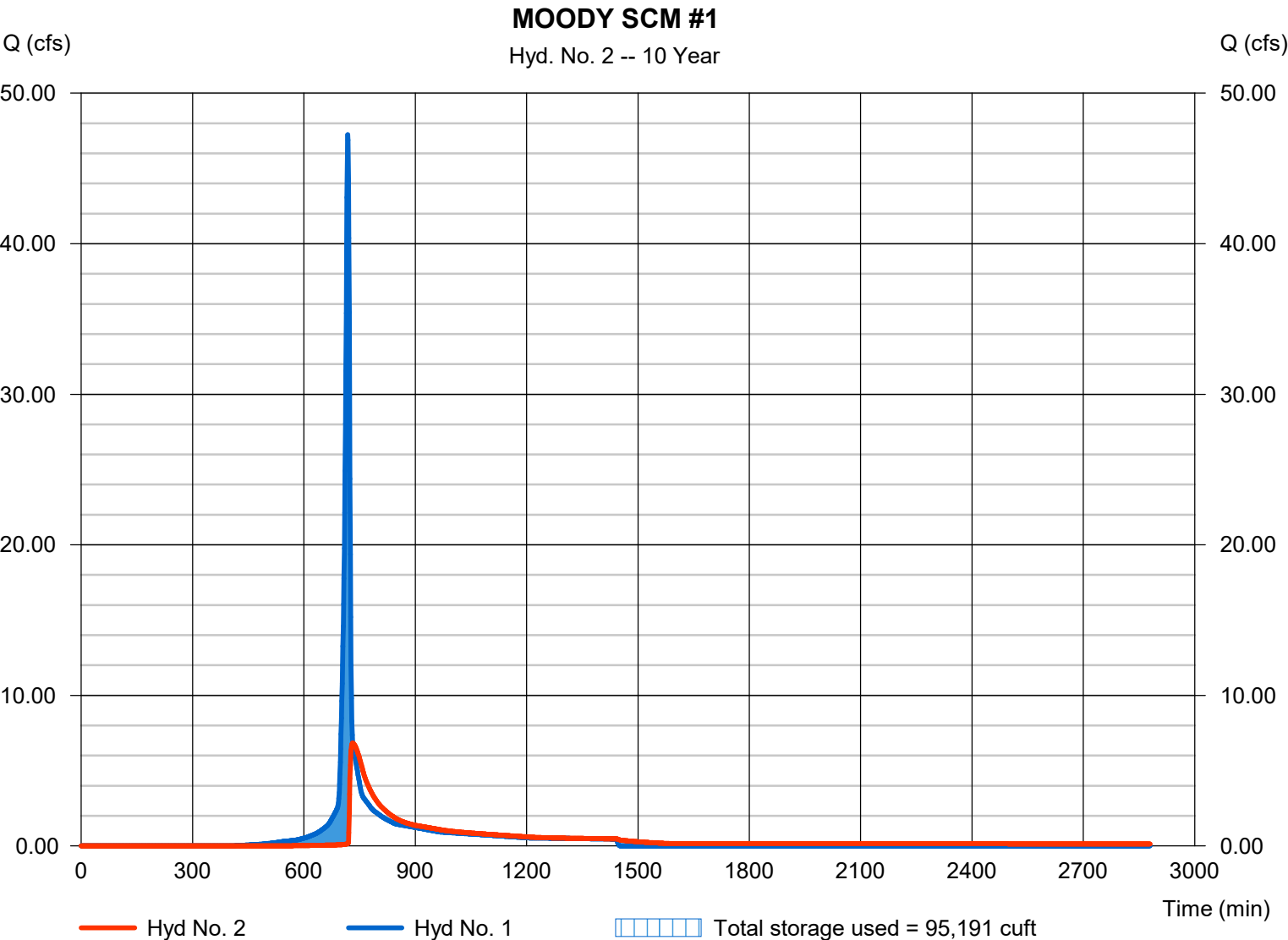
Hydrograph Report

Hyd. No. 2

MOODY SCM #1

Hydrograph type	= Reservoir	Peak discharge	= 6.829 cfs
Storm frequency	= 10 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 71,530 cuft
Inflow hyd. No.	= 1 - MOODY POD 2A #1 (to SCM #1)	Max. Elevation	= 366.22 ft
Reservoir name	= SCM #1	Max. Storage	= 95,191 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.

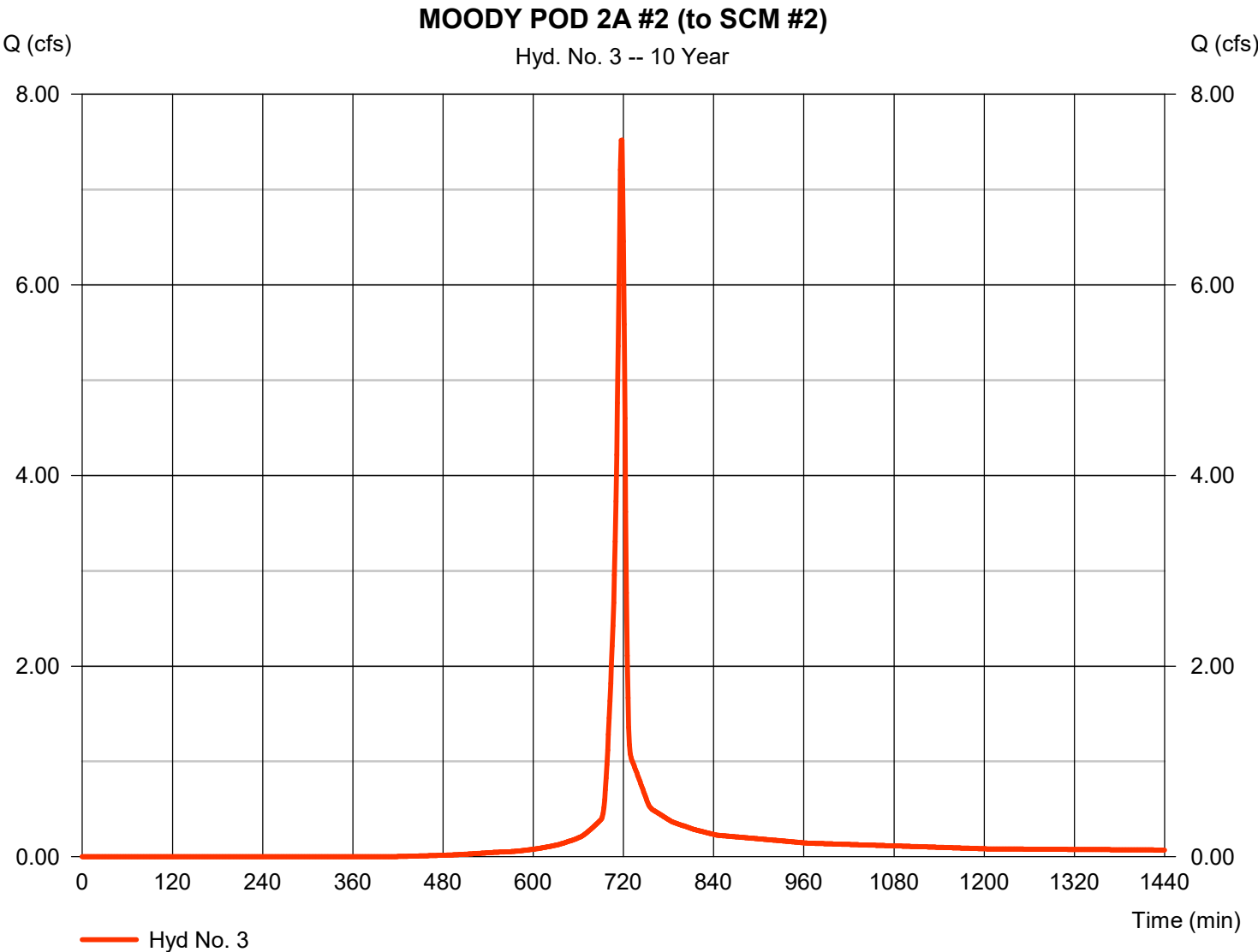


Hydrograph Report

Hyd. No. 3

MOODY POD 2A #2 (to SCM #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.521 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	15,465 cuft
Drainage area	=	1.380 ac	Curve number	=	80.9
Basin Slope	=	0.5 %	Hydraulic length	=	450 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



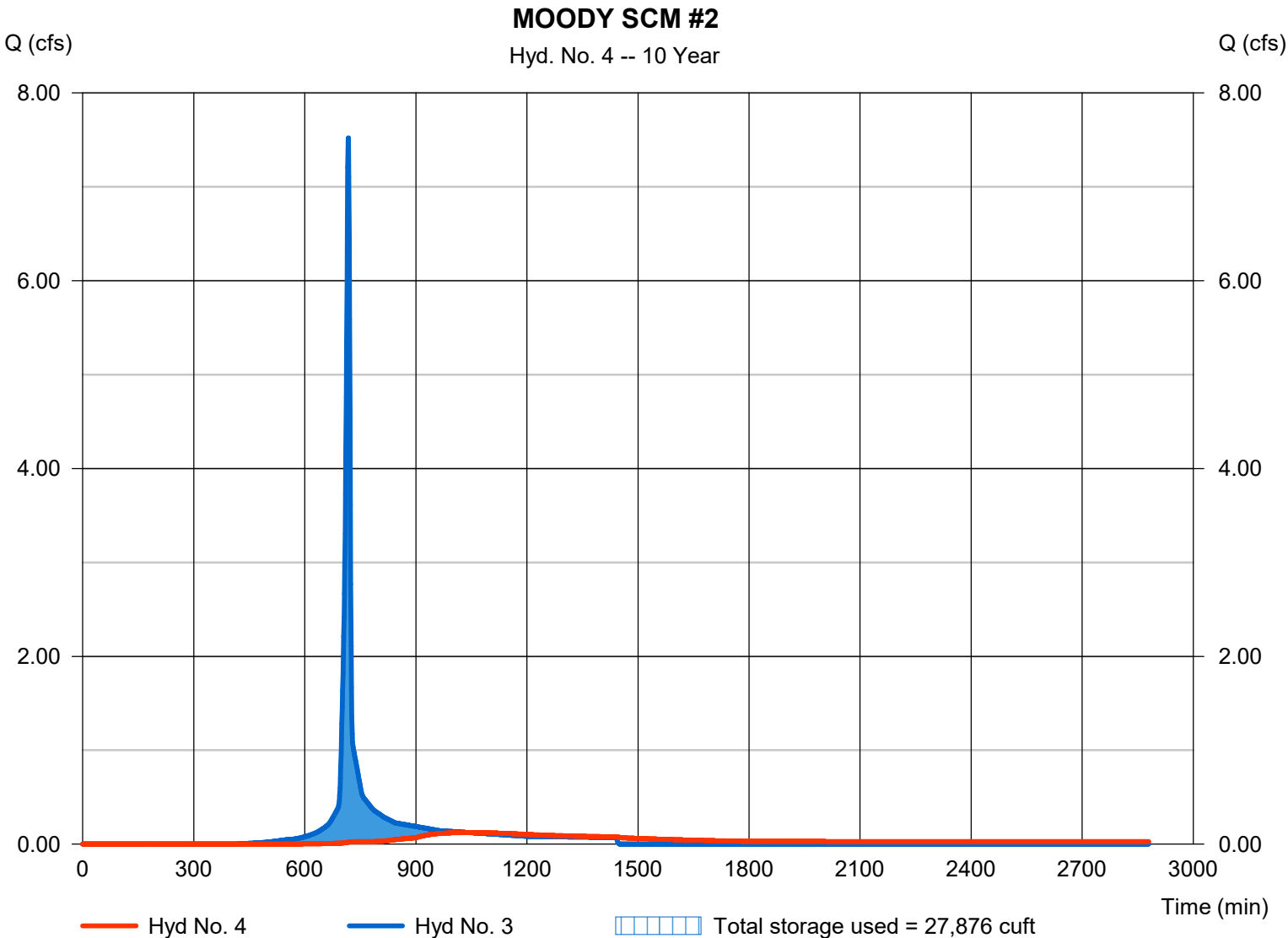
Hydrograph Report

Hyd. No. 4

MOODY SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 0.123 cfs
Storm frequency	= 10 yrs	Time to peak	= 1042 min
Time interval	= 1 min	Hyd. volume	= 6,526 cuft
Inflow hyd. No.	= 3 - MOODY POD 2A #2 (to SCM #2)	Max. Elevation	= 362.83 ft
Reservoir name	= SCM #2	Max. Storage	= 27,876 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.

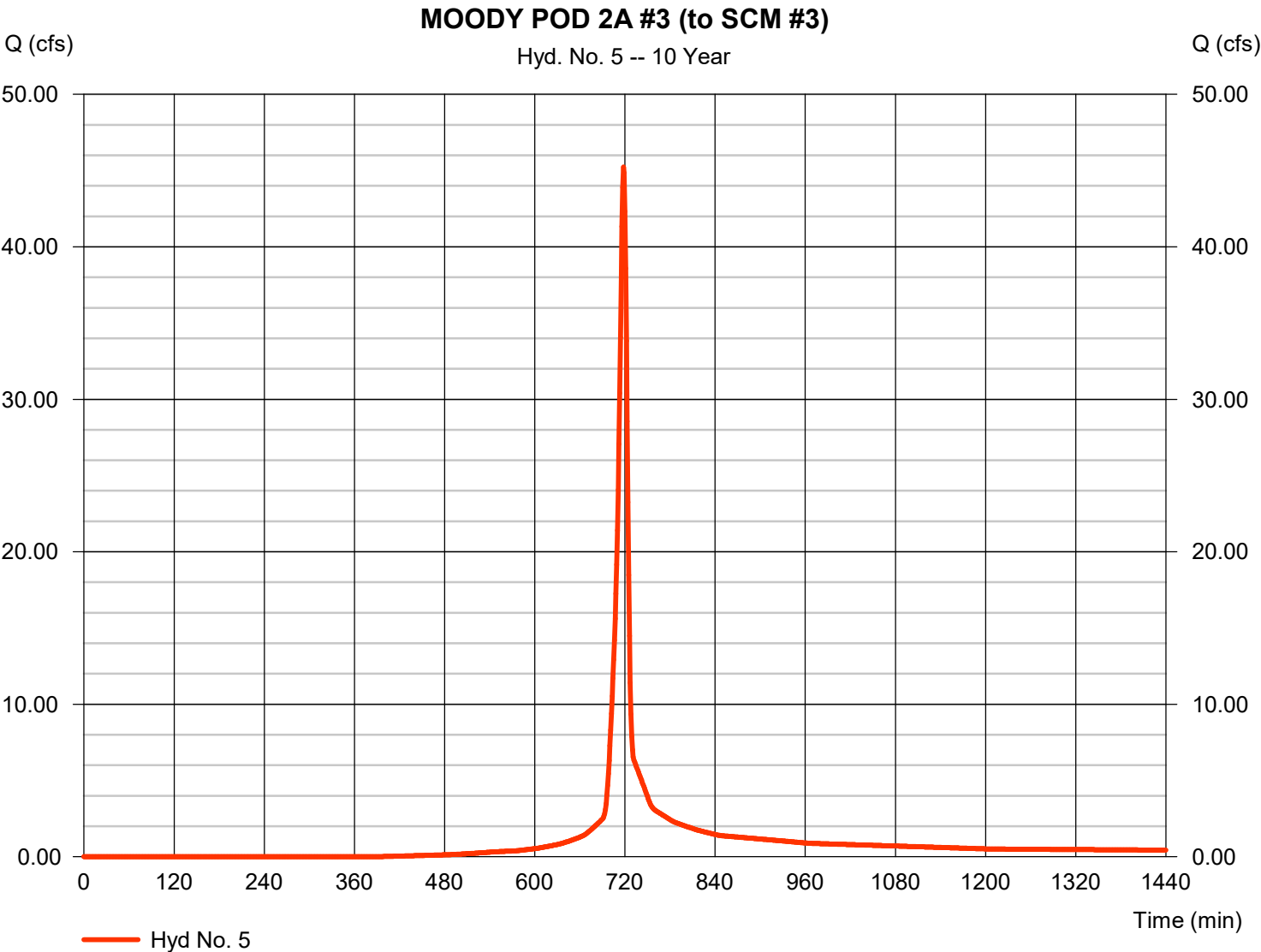


Hydrograph Report

Hyd. No. 5

MOODY POD 2A #3 (to SCM #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	45.23 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	97,191 cuft
Drainage area	=	8.840 ac	Curve number	=	82.1
Basin Slope	=	2.6 %	Hydraulic length	=	1120 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	7.08 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

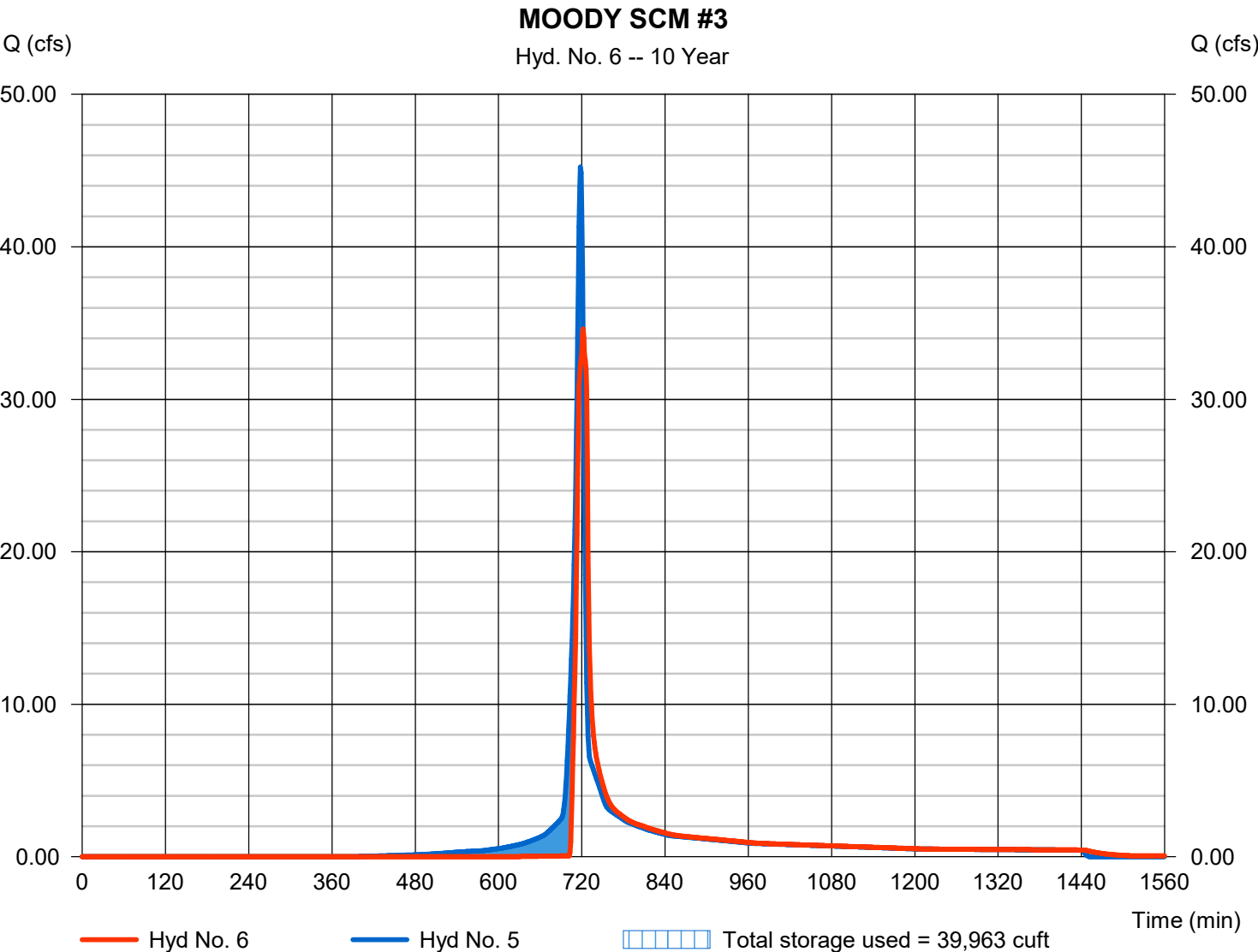
Monday, 03 / 31 / 2025

Hyd. No. 6

MOODY SCM #3

Hydrograph type	= Reservoir	Peak discharge	= 34.62 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 89,512 cuft
Inflow hyd. No.	= 5 - MOODY POD 2A #3 (to SCM #3)	Max. Elevation	= 363.95 ft
Reservoir name	= SCM #3	Max. Storage	= 39,963 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.



Hydrograph Report

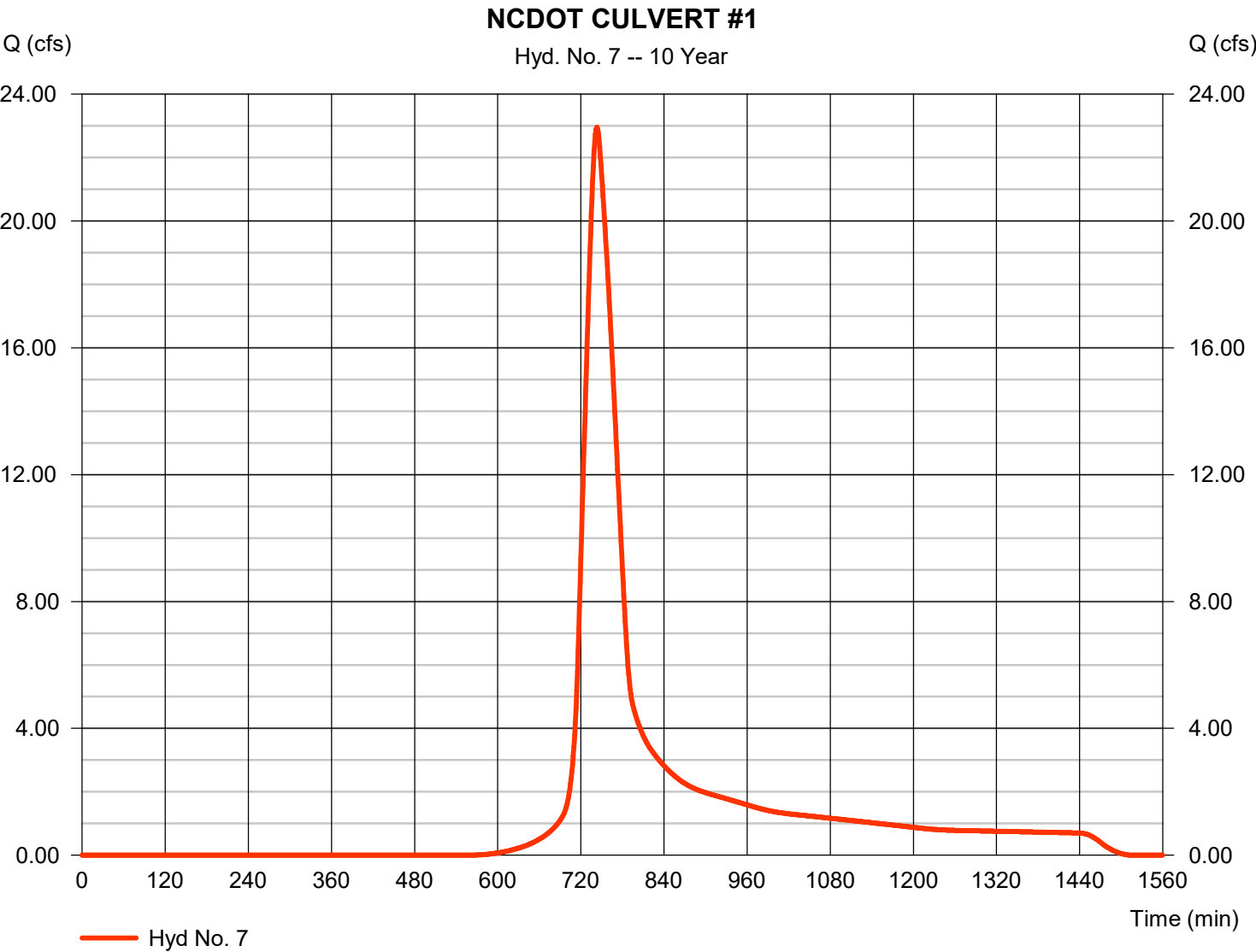
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 7

NCDOT CULVERT #1

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.96 cfs
Storm frequency	=	10 yrs	Time to peak	=	743 min
Time interval	=	1 min	Hyd. volume	=	128,914 cuft
Drainage area	=	15.820 ac	Curve number	=	72.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	49.03 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

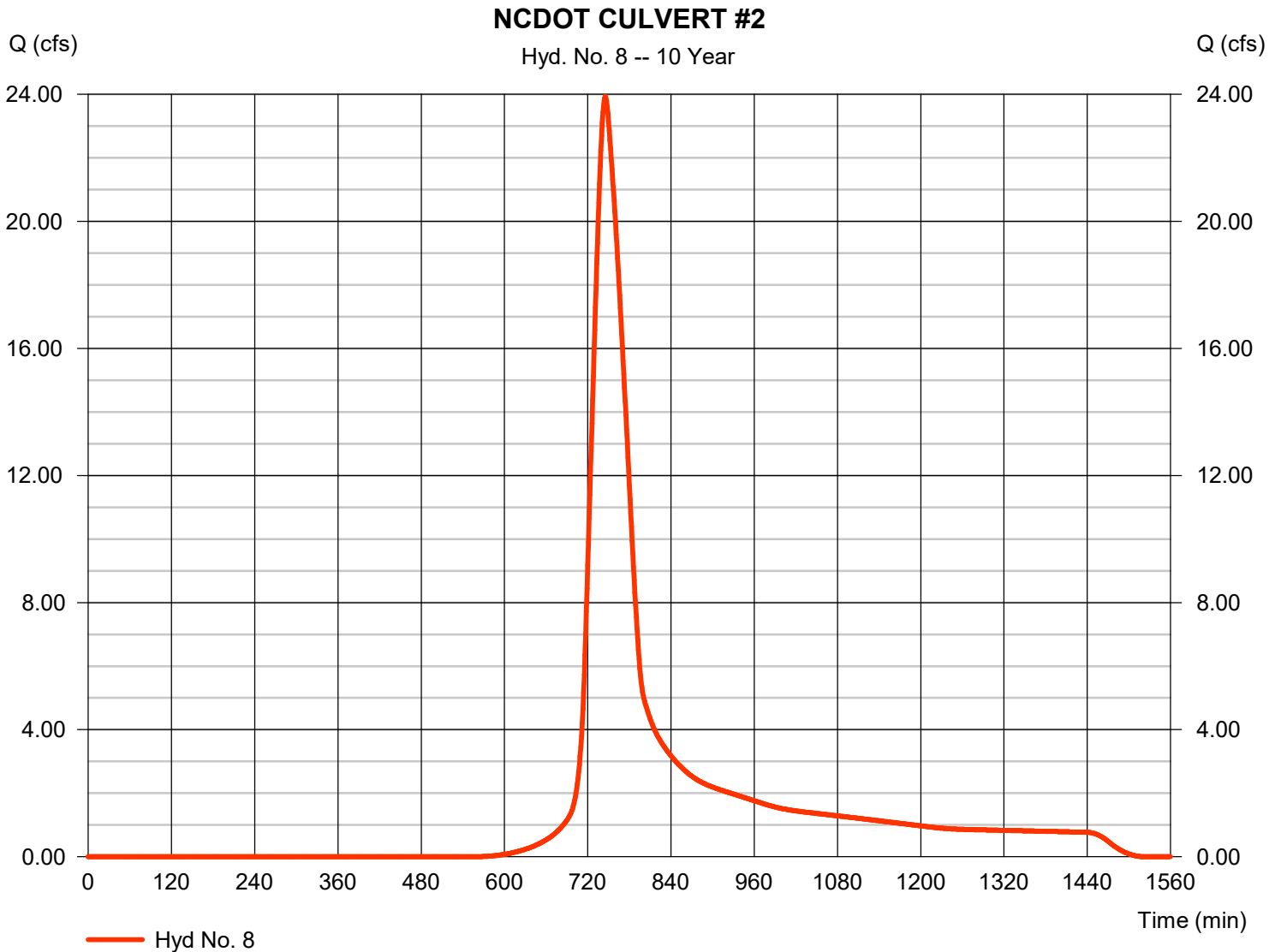
Monday, 03 / 31 / 2025

Hyd. No. 8

NCDOT CULVERT #2

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 17.200 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.02 in
 Storm duration = 24 hrs

Peak discharge = 23.94 cfs
 Time to peak = 745 min
 Hyd. volume = 141,854 cuft
 Curve number = 72.6
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 50.89 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

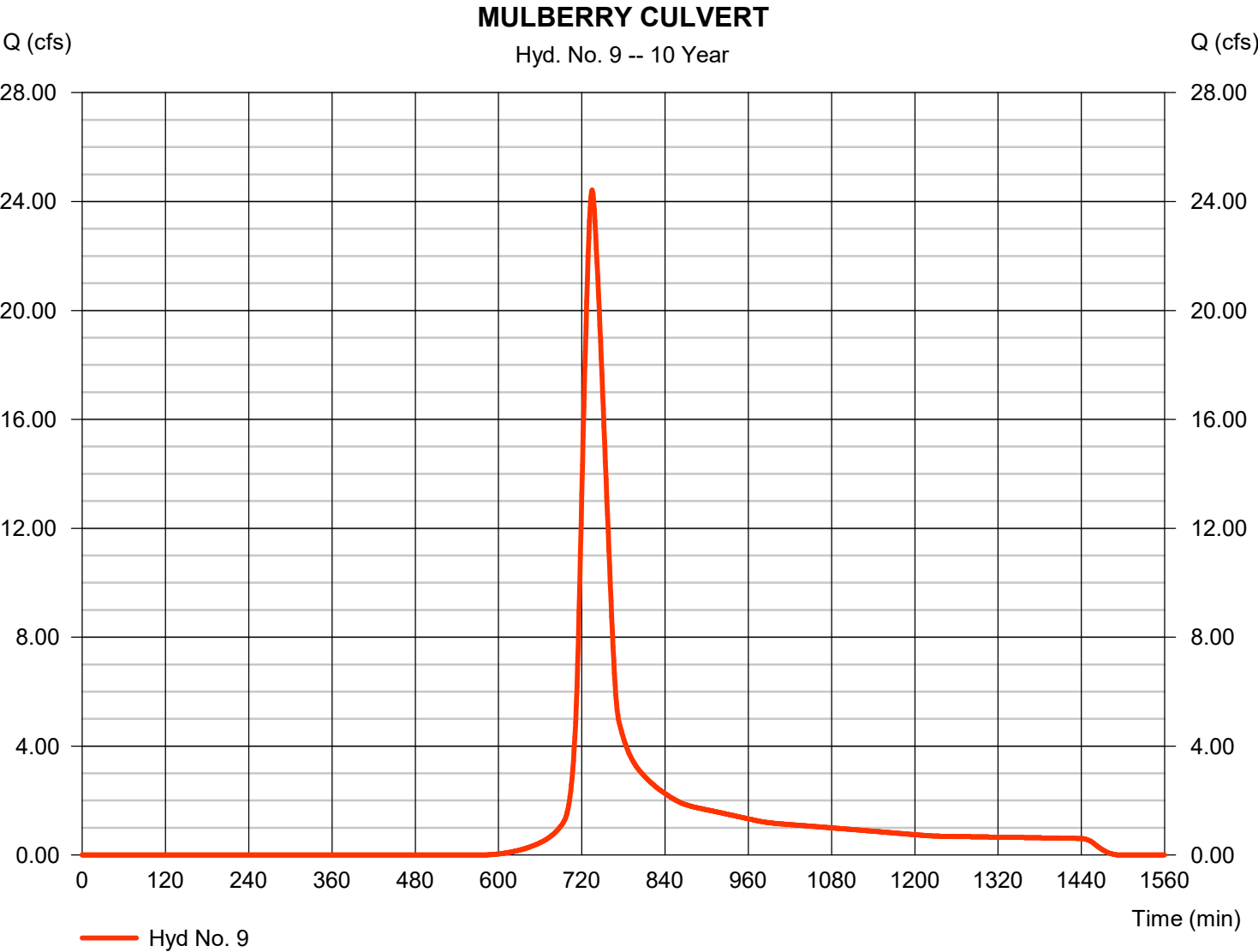
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 9

MULBERRY CULVERT

Hydrograph type	= SCS Runoff	Peak discharge	= 24.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 1 min	Hyd. volume	= 110,272 cuft
Drainage area	= 14.090 ac	Curve number	= 71.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.74 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

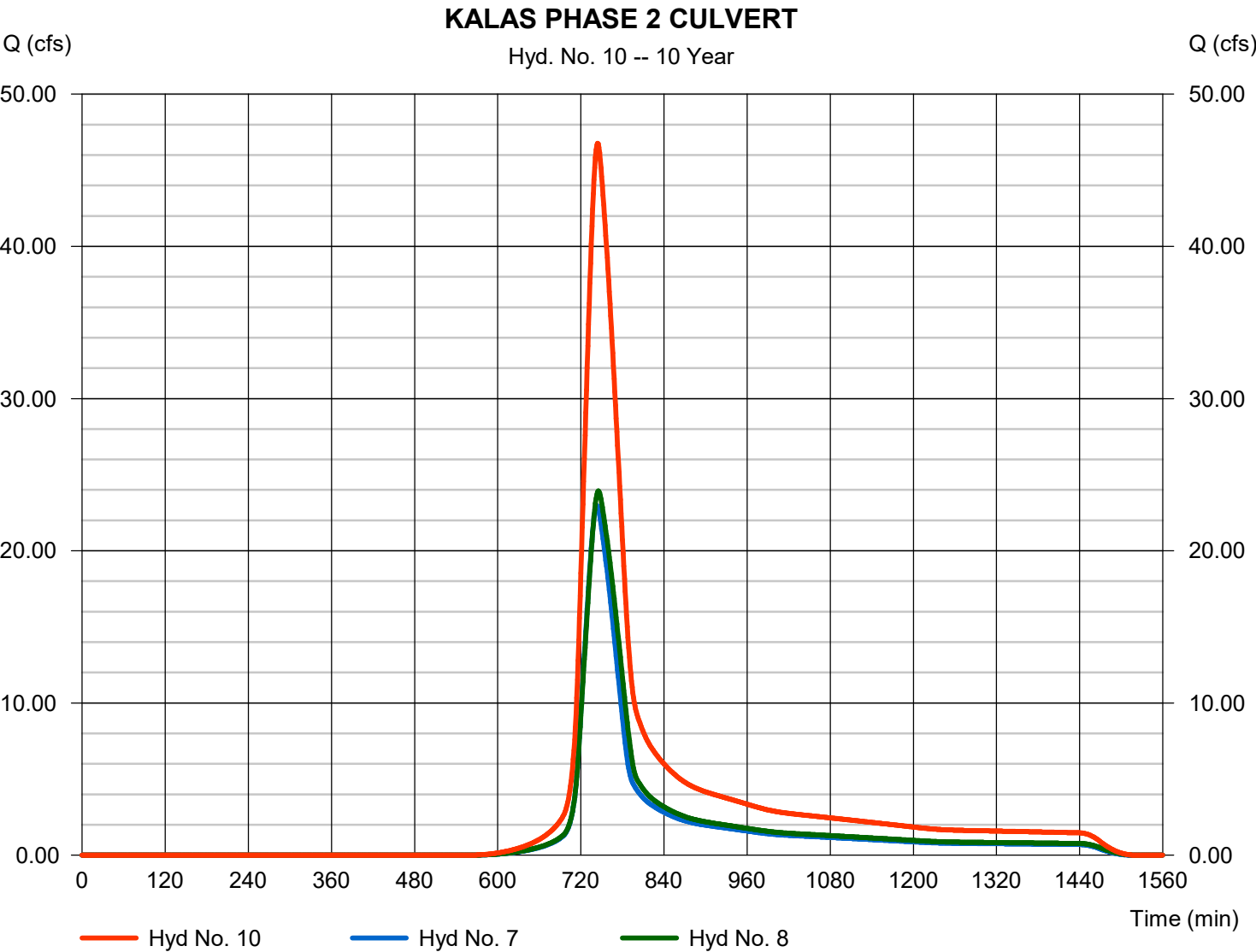


Hydrograph Report

Hyd. No. 10

KALAS PHASE 2 CULVERT

Hydrograph type	= Combine	Peak discharge	= 46.78 cfs
Storm frequency	= 10 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 270,767 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 33.020 ac



Hydrograph Report

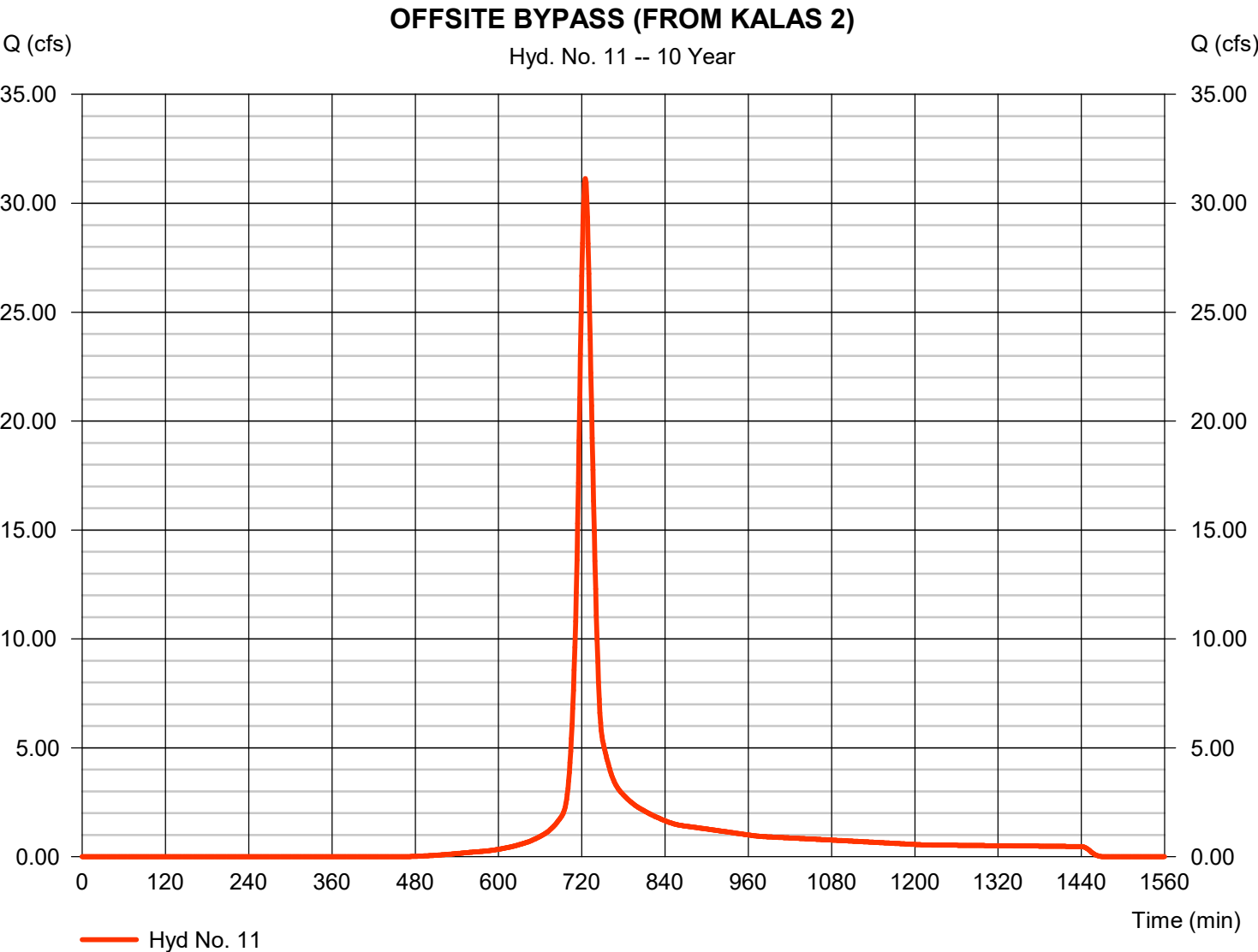
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 11

OFFSITE BYPASS (FROM KALAS 2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.14 cfs
Storm frequency	=	10 yrs	Time to peak	=	725 min
Time interval	=	1 min	Hyd. volume	=	97,228 cuft
Drainage area	=	9.720 ac	Curve number	=	78.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	19.90 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

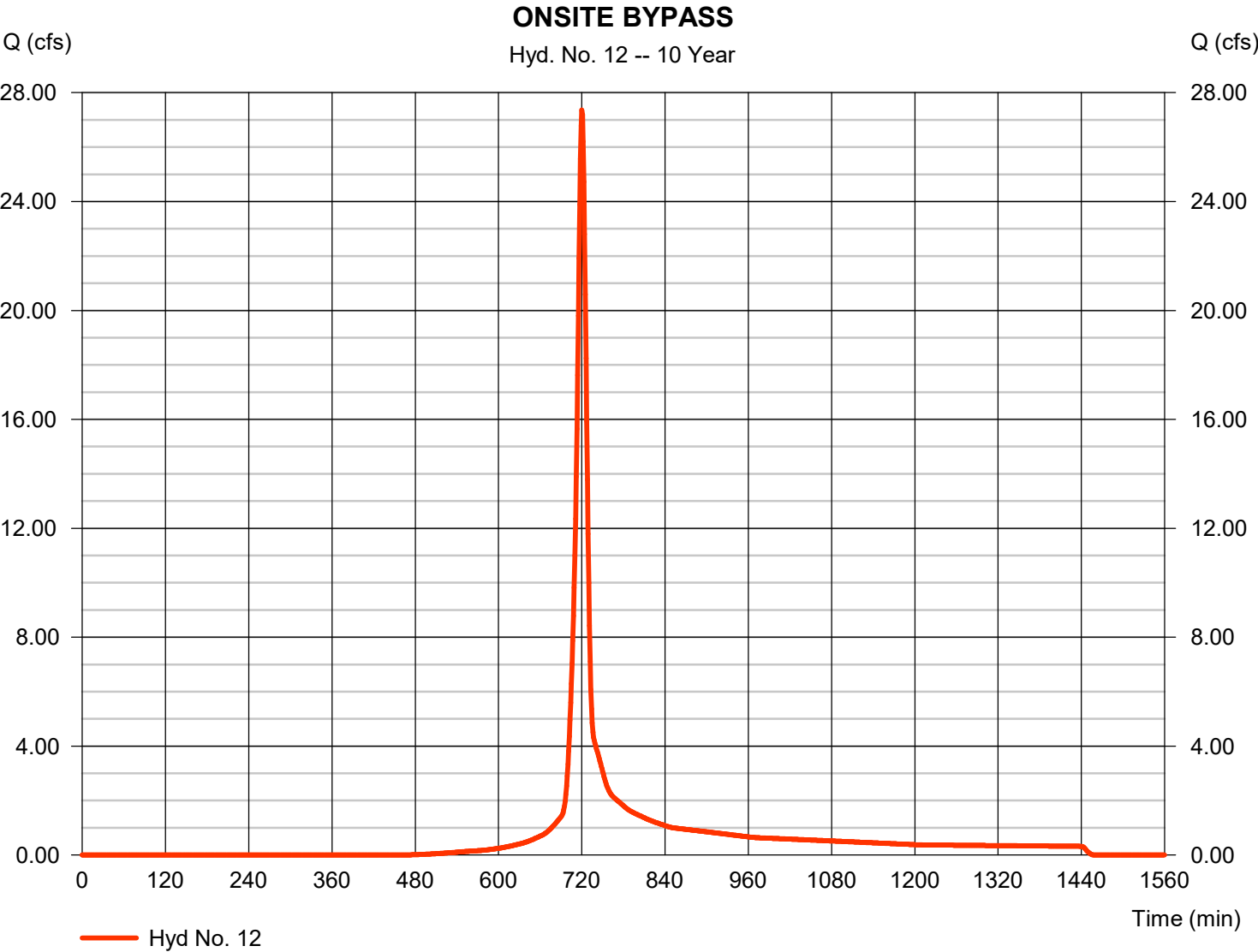
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 12

ONSITE BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 27.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 66,239 cuft
Drainage area	= 6.570 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.56 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

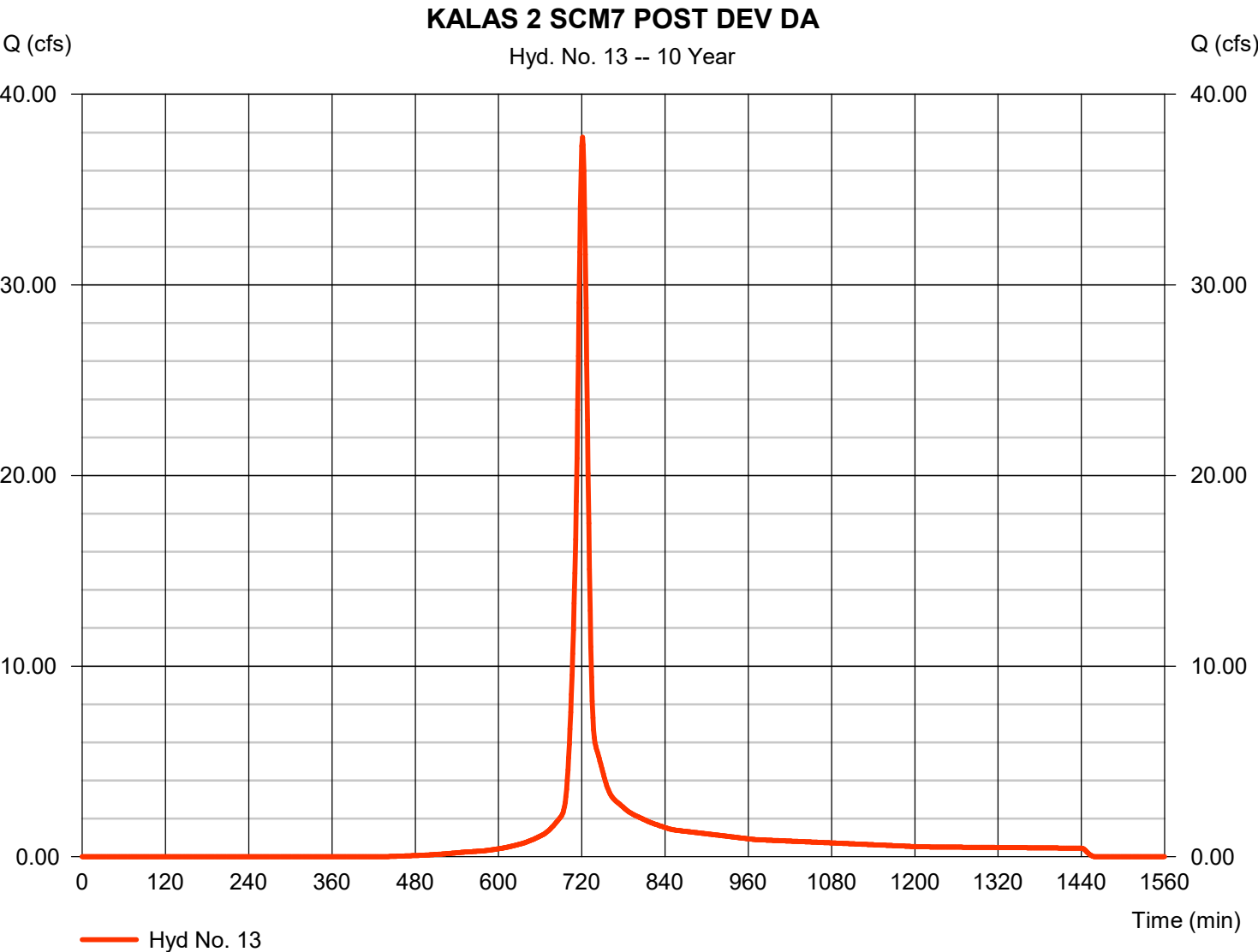
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 13

KALAS 2 SCM7 POST DEV DA

Hydrograph type	=	SCS Runoff	Peak discharge	=	37.75 cfs
Storm frequency	=	10 yrs	Time to peak	=	721 min
Time interval	=	1 min	Hyd. volume	=	95,690 cuft
Drainage area	=	9.260 ac	Curve number	=	79.8
Basin Slope	=	1.1 %	Hydraulic length	=	1505 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	12.38 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

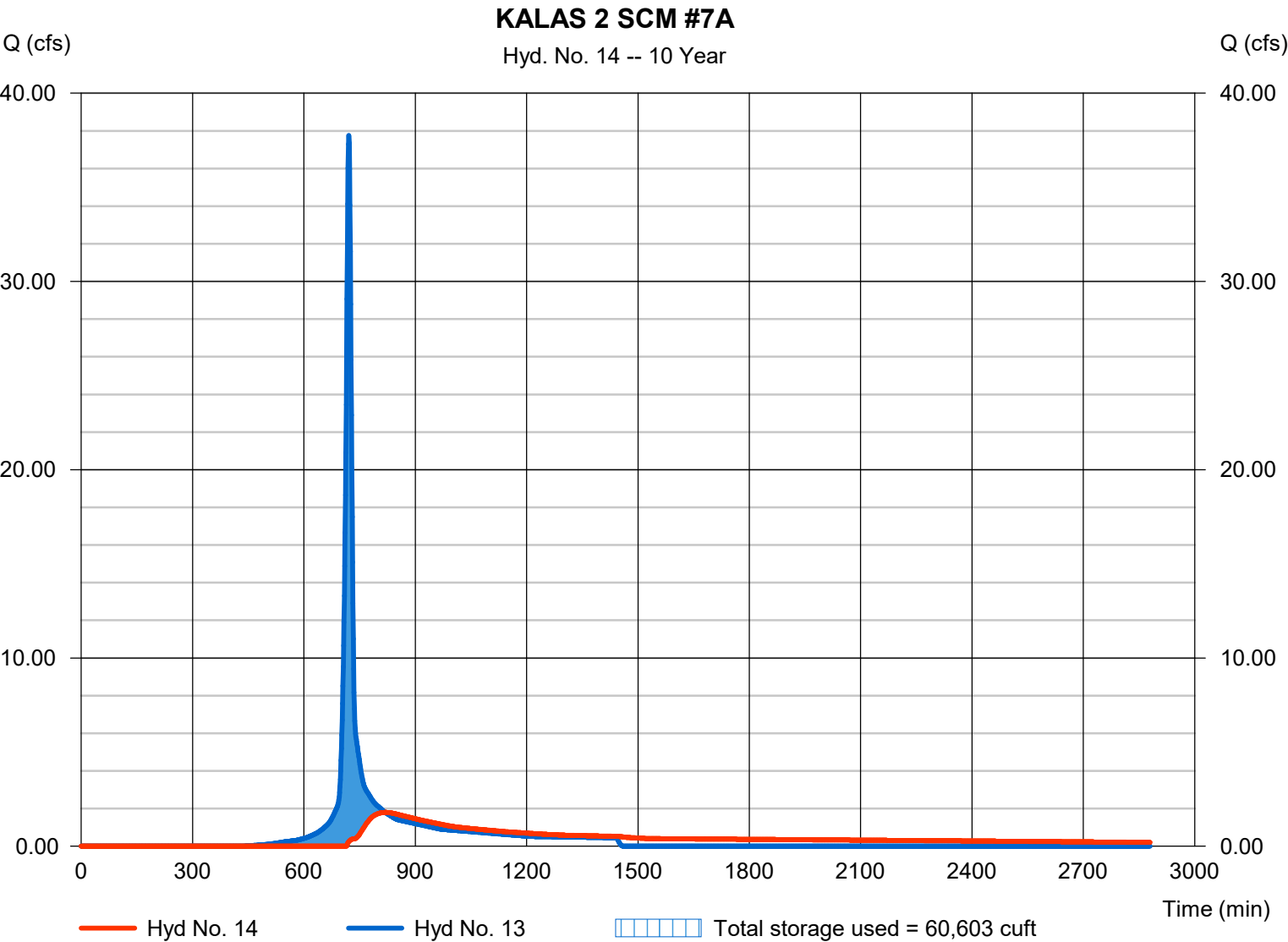
Monday, 03 / 31 / 2025

Hyd. No. 14

KALAS 2 SCM #7A

Hydrograph type	= Reservoir	Peak discharge	= 1.793 cfs
Storm frequency	= 10 yrs	Time to peak	= 819 min
Time interval	= 1 min	Hyd. volume	= 68,016 cuft
Inflow hyd. No.	= 13 - KALAS 2 SCM7 POST DWA	WDA Elevation	= 374.10 ft
Reservoir name	= SCM #7A	Max. Storage	= 60,603 cuft

Storage Indication method used.

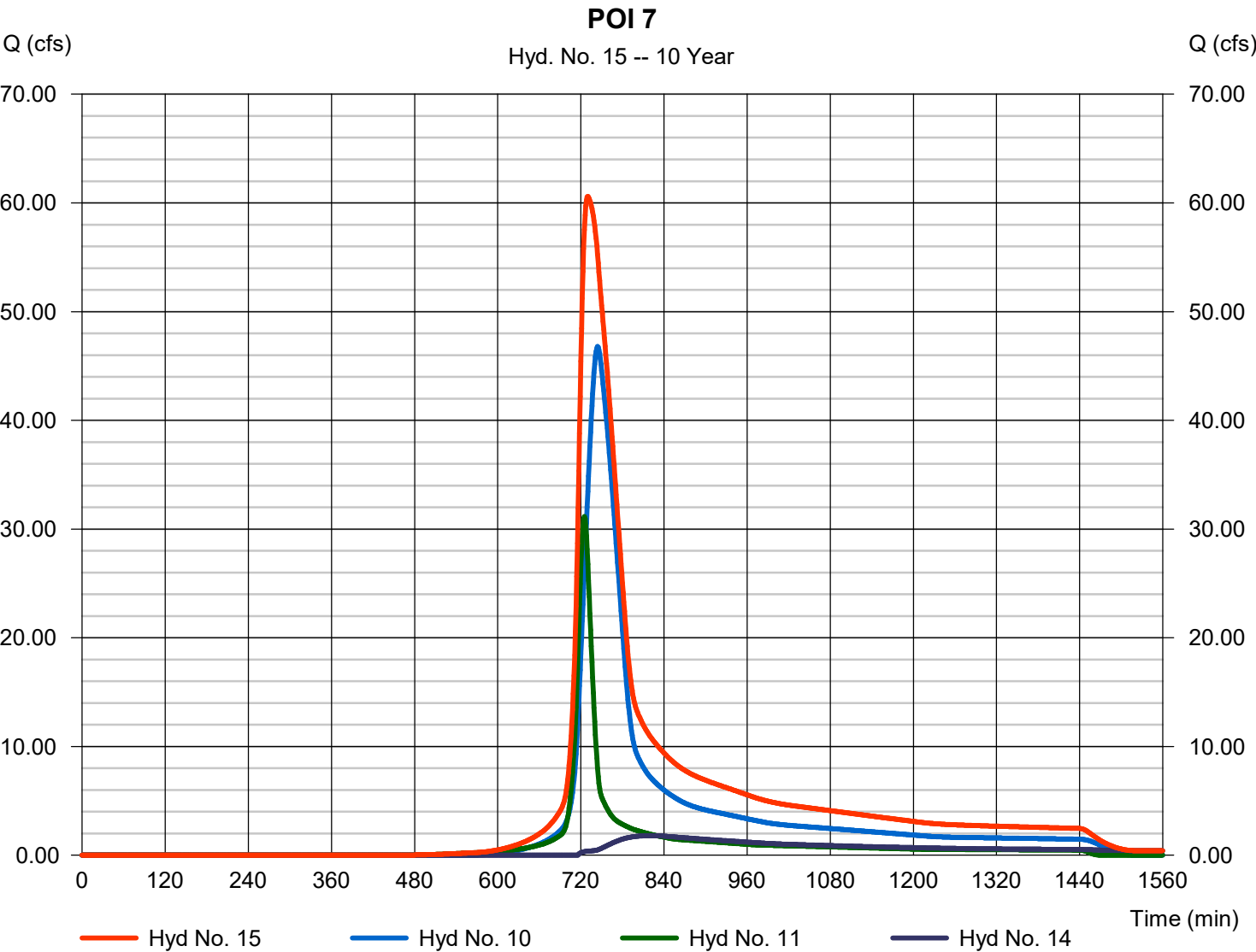


Hydrograph Report

Hyd. No. 15

POI 7

Hydrograph type	= Combine	Peak discharge	= 60.60 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 436,011 cuft
Inflow hyds.	= 10, 11, 14	Contrib. drain. area	= 9.720 ac

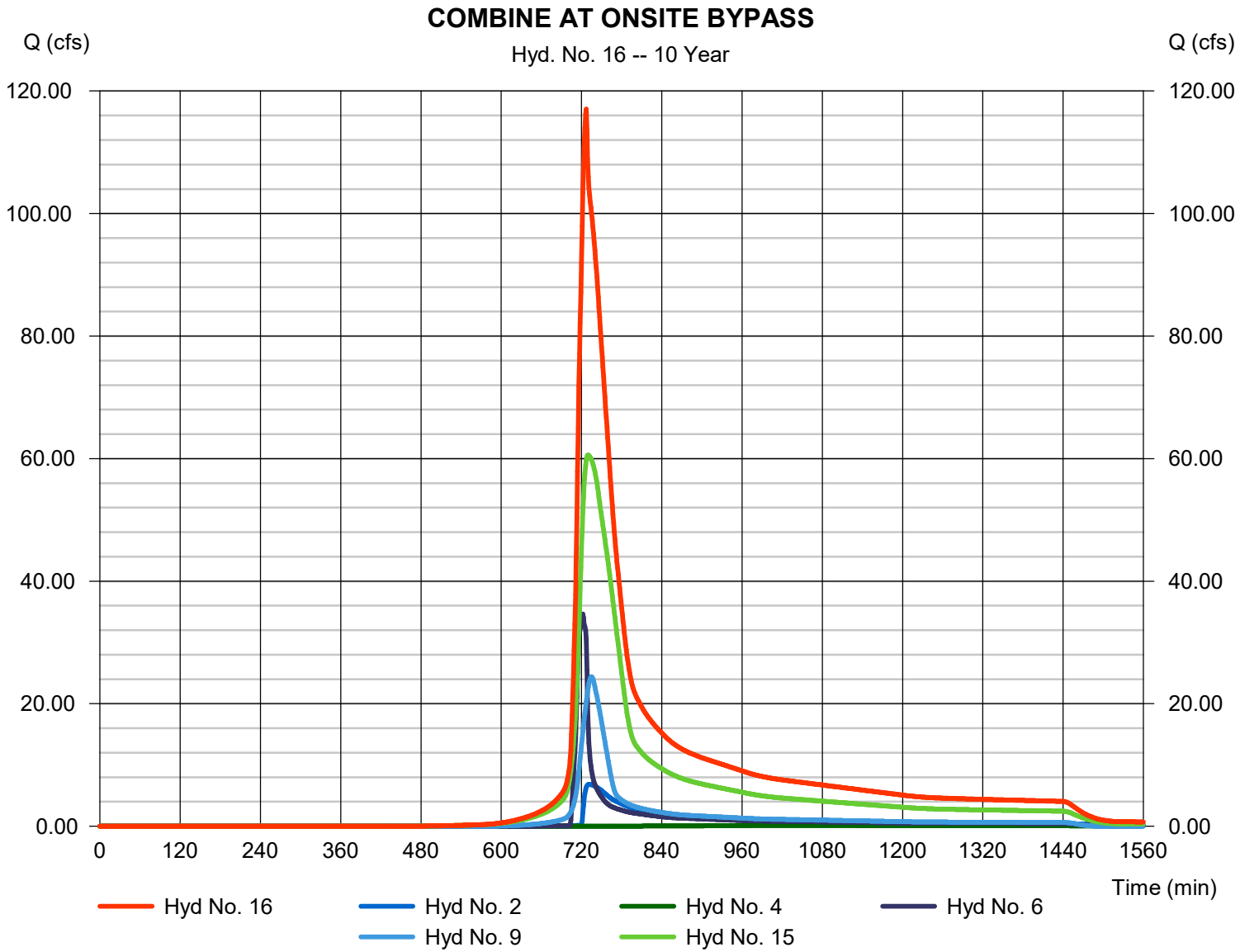


Hydrograph Report

Hyd. No. 16

COMBINE AT ONSITE BYPASS

Hydrograph type	= Combine	Peak discharge	= 117.04 cfs
Storm frequency	= 10 yrs	Time to peak	= 727 min
Time interval	= 1 min	Hyd. volume	= 713,852 cuft
Inflow hyds.	= 2, 4, 6, 9, 15	Contrib. drain. area	= 14.090 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

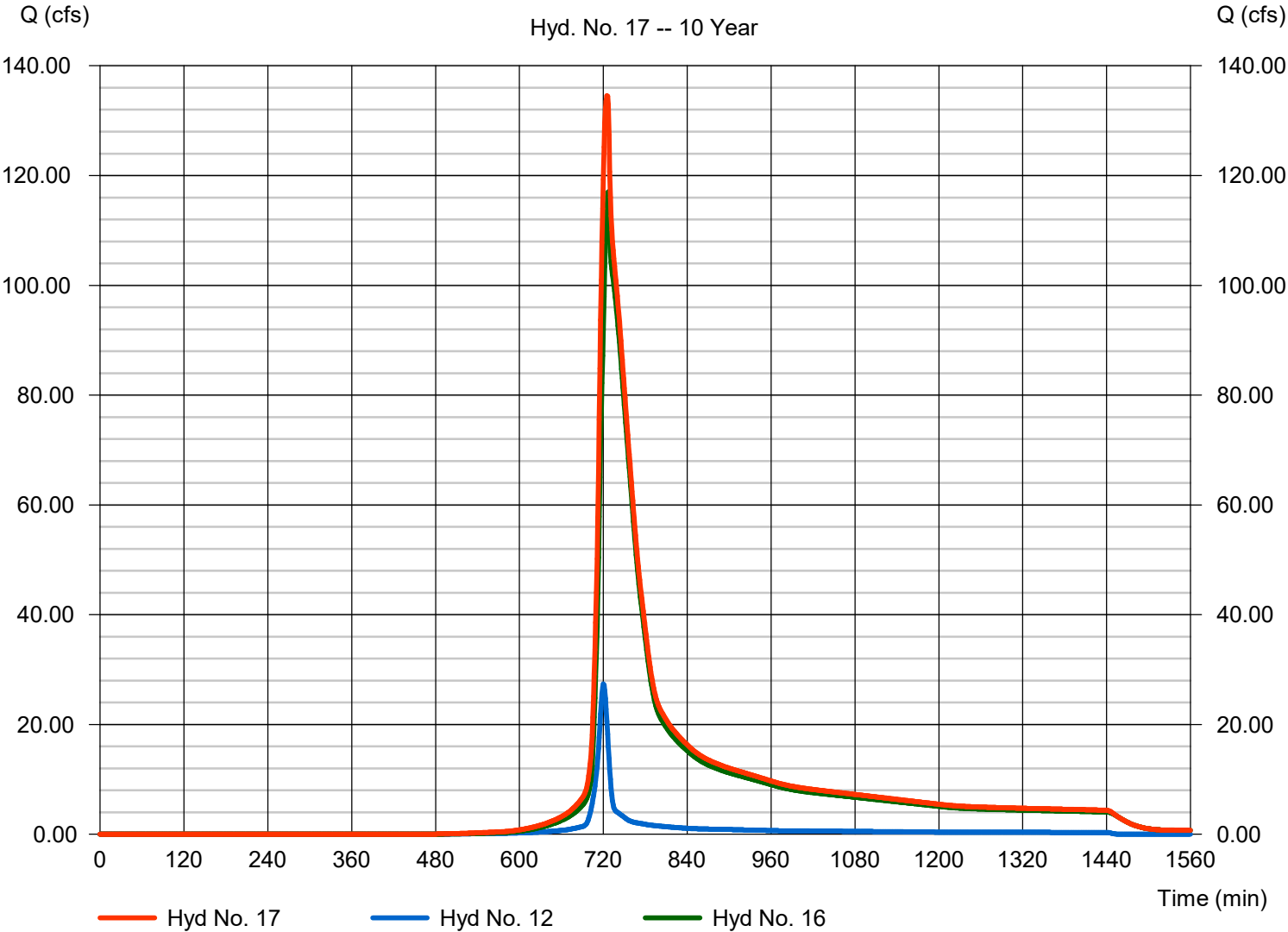
Hyd. No. 17

TANSLEY CULVERTS

Hydrograph type	= Combine	Peak discharge	= 134.54 cfs
Storm frequency	= 10 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 780,090 cuft
Inflow hyds.	= 12, 16	Contrib. drain. area	= 6.570 ac

TANSLEY CULVERTS

Hyd. No. 17 -- 10 Year



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

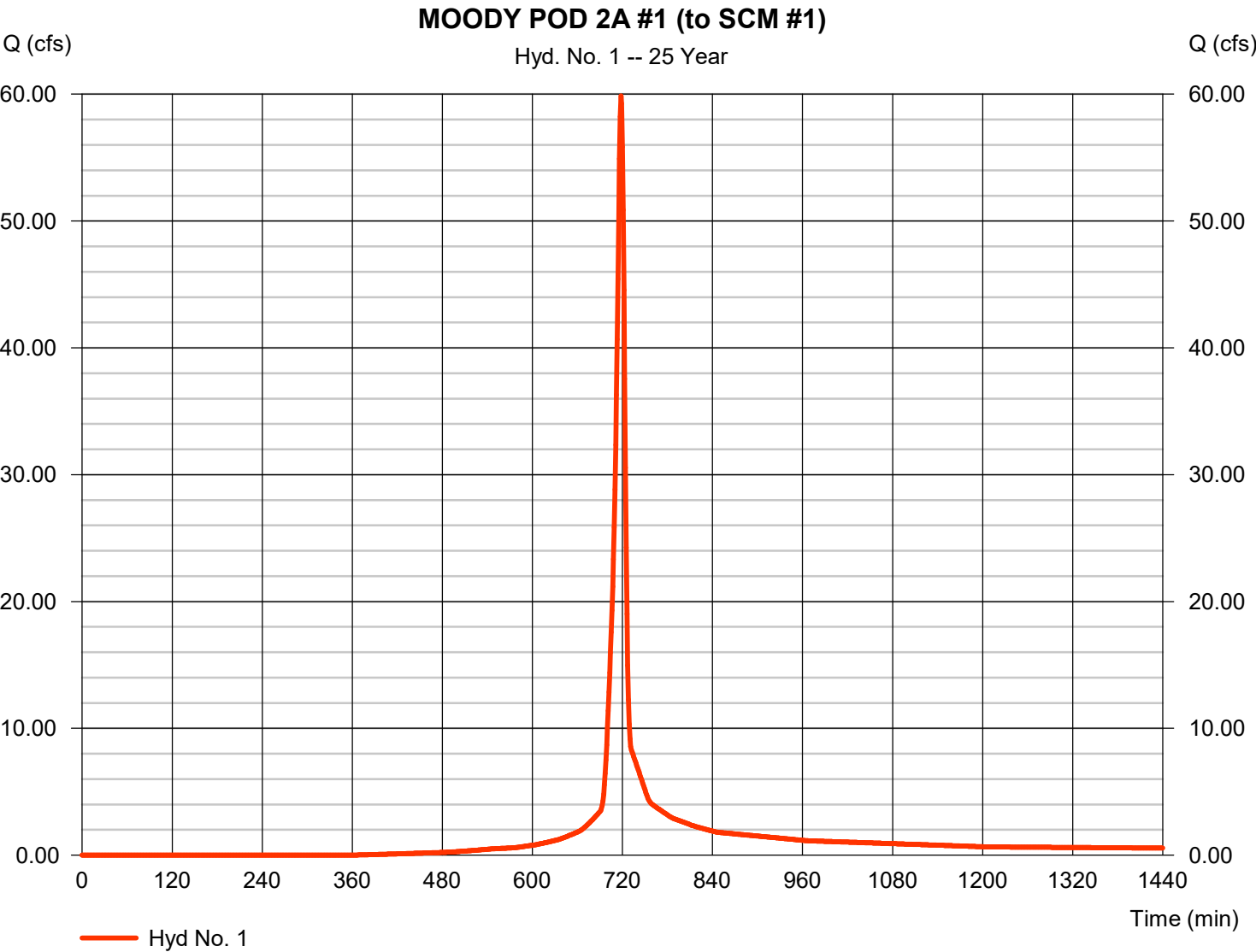
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	59.87	1	718	129,500	-----	-----	-----	MOODY POD 2A #1 (to SCM #1)
2	Reservoir	22.89	1	725	99,804	1	366.64	104,512	MOODY SCM #1
3	SCS Runoff	9.544	1	717	19,822	-----	-----	-----	MOODY POD 2A #2 (to SCM #2)
4	Reservoir	0.332	1	822	10,851	3	362.95	28,936	MOODY SCM #2
5	SCS Runoff	57.07	1	718	123,918	-----	-----	-----	MOODY POD 2A #3 (to SCM #3)
6	Reservoir	48.78	1	721	116,231	5	364.22	42,730	MOODY SCM #3
7	SCS Runoff	31.01	1	743	171,988	-----	-----	-----	NCDOT CULVERT #1
8	SCS Runoff	32.32	1	745	189,153	-----	-----	-----	NCDOT CULVERT #2
9	SCS Runoff	33.20	1	735	148,052	-----	-----	-----	MULBERRY CULVERT
10	Combine	63.17	1	744	361,141	7, 8,	-----	-----	KALAS PHASE 2 CULVERT
11	SCS Runoff	40.31	1	725	126,090	-----	-----	-----	OFFSITE BYPASS (FROM KALAS 2)
12	SCS Runoff	35.35	1	720	86,021	-----	-----	-----	ONSITE BYPASS
13	SCS Runoff	48.32	1	721	123,250	-----	-----	-----	KALAS 2 SCM7 POST DEV DA
14	Reservoir	5.755	1	749	95,254	13	374.60	68,006	KALAS 2 SCM #7A
15	Combine	84.27	1	734	582,485	10, 11, 14	-----	-----	POI 7
16	Combine	163.87	1	728	957,423	2, 4, 6, 9, 15	-----	-----	COMBINE AT ONSITE BYPASS
17	Combine	192.31	1	723	1,043,443	12, 16	-----	-----	TANSLEY CULVERTS
20241205 Tansley Culvert Modeling Revised.gpr					Return Period: 25 Year			Monday, 03 / 31 / 2025	

Hydrograph Report

Hyd. No. 1

MOODY POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	59.87 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	129,500 cuft
Drainage area	=	9.460 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	6.69 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



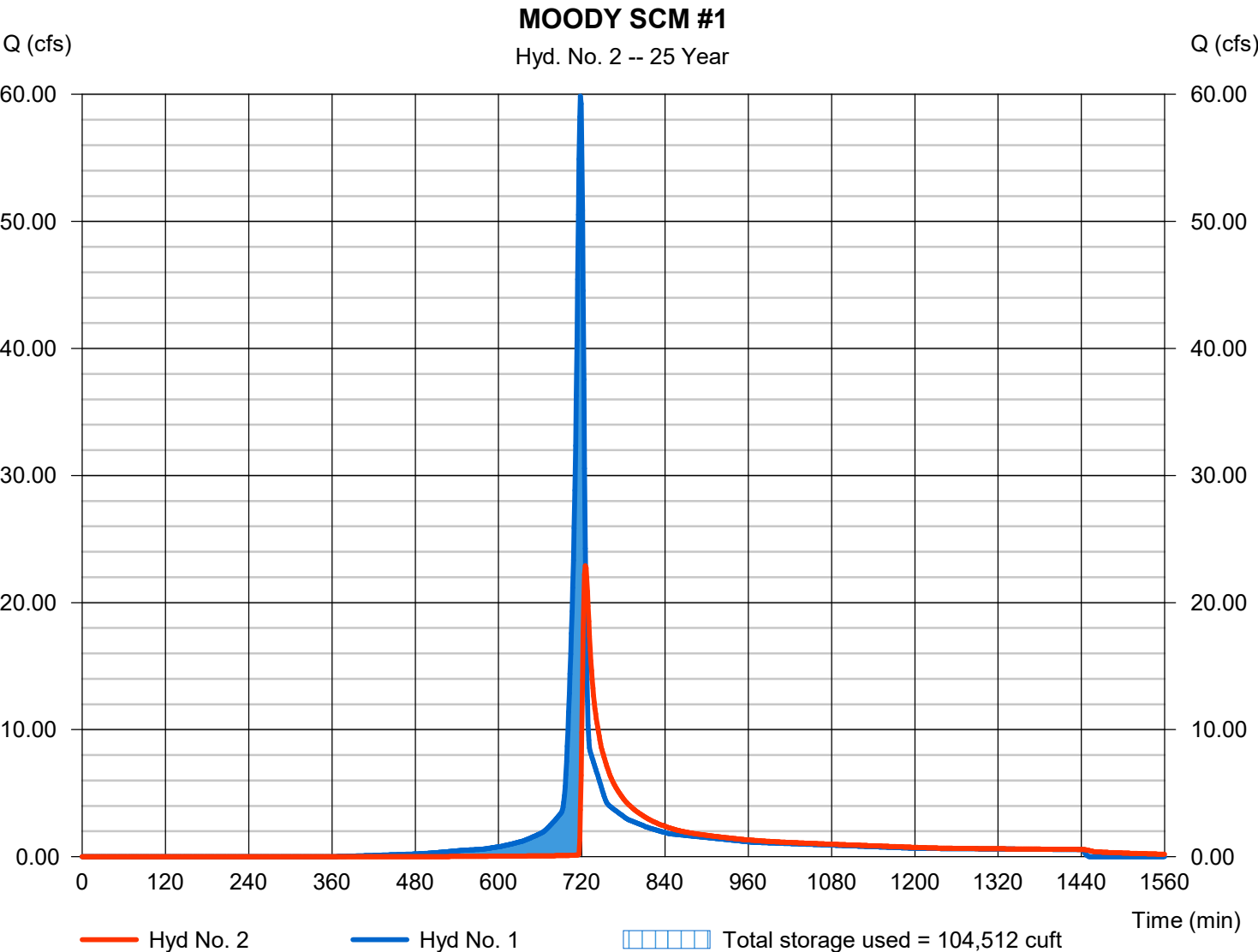
Hydrograph Report

Hyd. No. 2

MOODY SCM #1

Hydrograph type	= Reservoir	Peak discharge	= 22.89 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 99,804 cuft
Inflow hyd. No.	= 1 - MOODY POD 2A #1 (to SCM #1)	Max. Elevation	= 366.64 ft
Reservoir name	= SCM #1	Max. Storage	= 104,512 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.

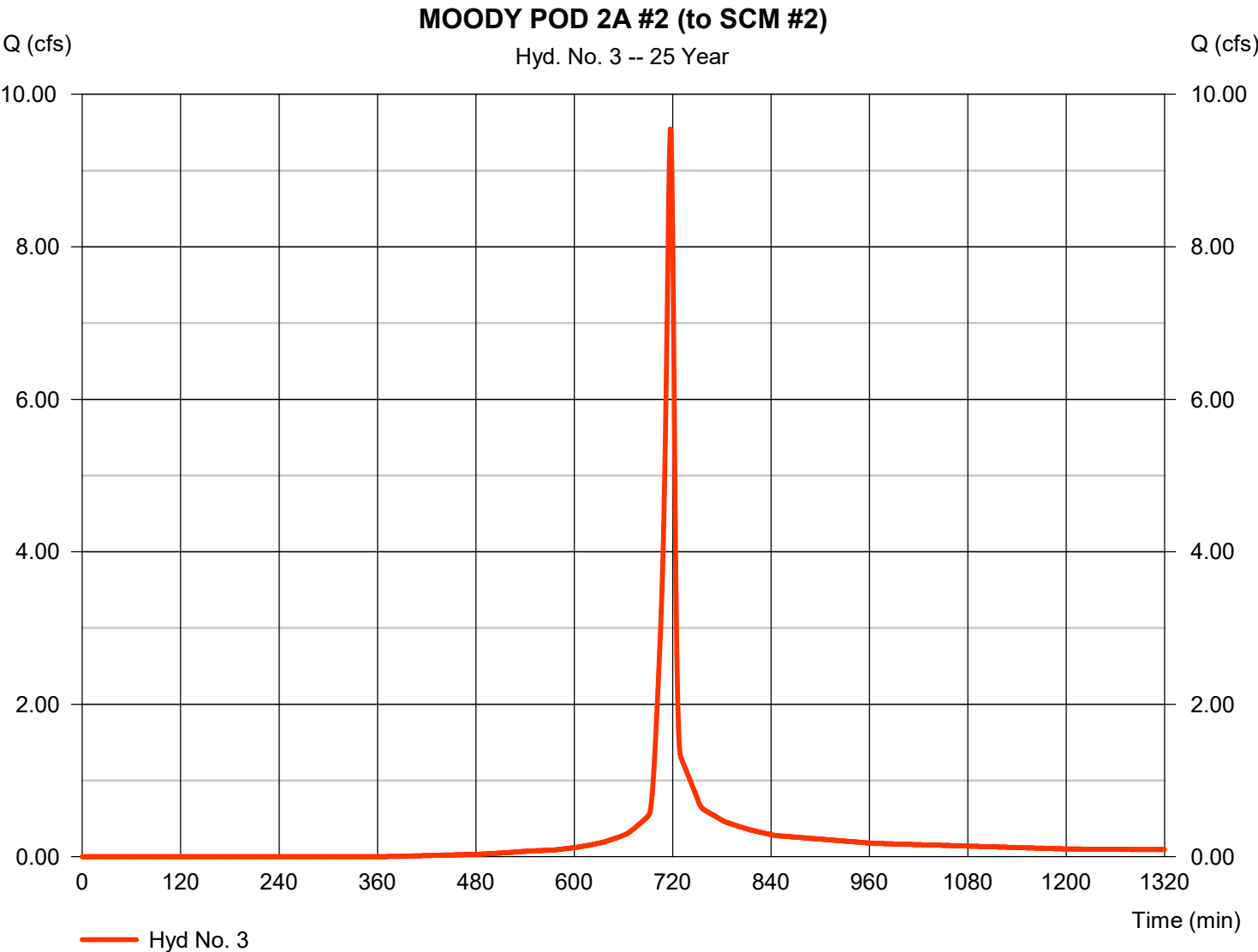


Hydrograph Report

Hyd. No. 3

MOODY POD 2A #2 (to SCM #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.544 cfs
Storm frequency	=	25 yrs	Time to peak	=	717 min
Time interval	=	1 min	Hyd. volume	=	19,822 cuft
Drainage area	=	1.380 ac	Curve number	=	80.9
Basin Slope	=	0.5 %	Hydraulic length	=	450 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

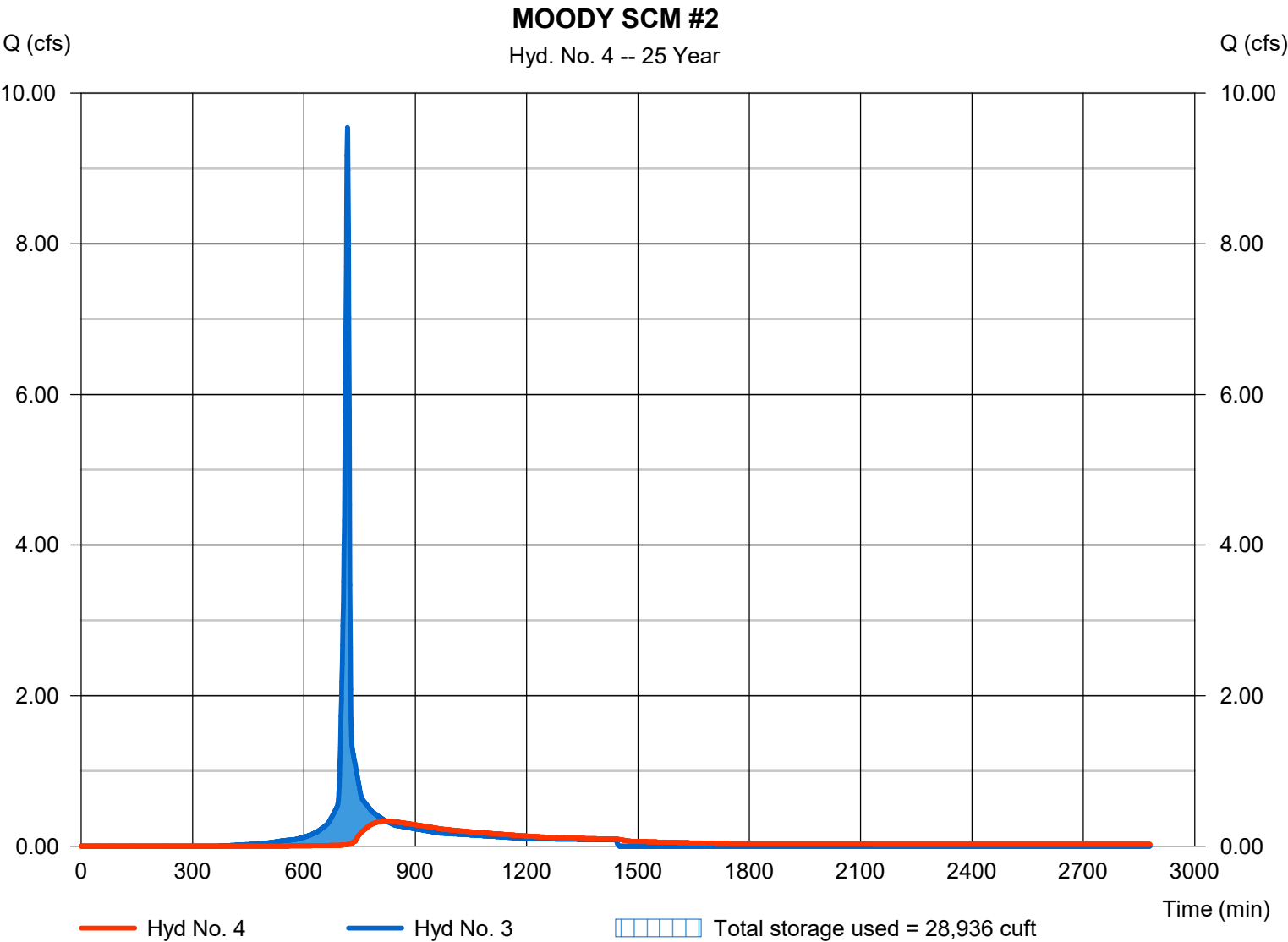
Monday, 03 / 31 / 2025

Hyd. No. 4

MOODY SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 0.332 cfs
Storm frequency	= 25 yrs	Time to peak	= 822 min
Time interval	= 1 min	Hyd. volume	= 10,851 cuft
Inflow hyd. No.	= 3 - MOODY POD 2A #2 (to SCM #2)	Max. Elevation	= 362.95 ft
Reservoir name	= SCM #2	Max. Storage	= 28,936 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.

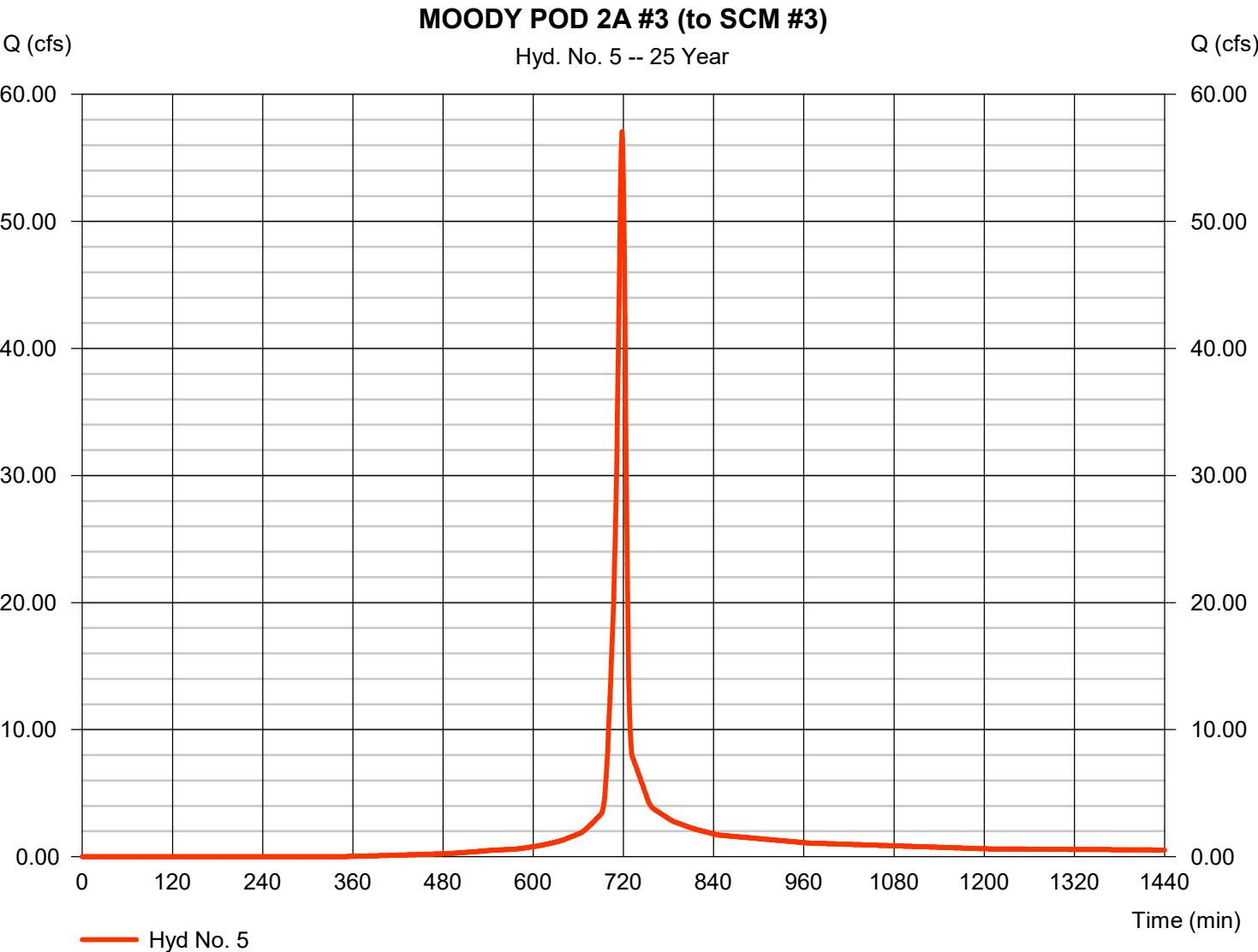


Hydrograph Report

Hyd. No. 5

MOODY POD 2A #3 (to SCM #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	57.07 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	123,918 cuft
Drainage area	=	8.840 ac	Curve number	=	82.1
Basin Slope	=	2.6 %	Hydraulic length	=	1120 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	7.08 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

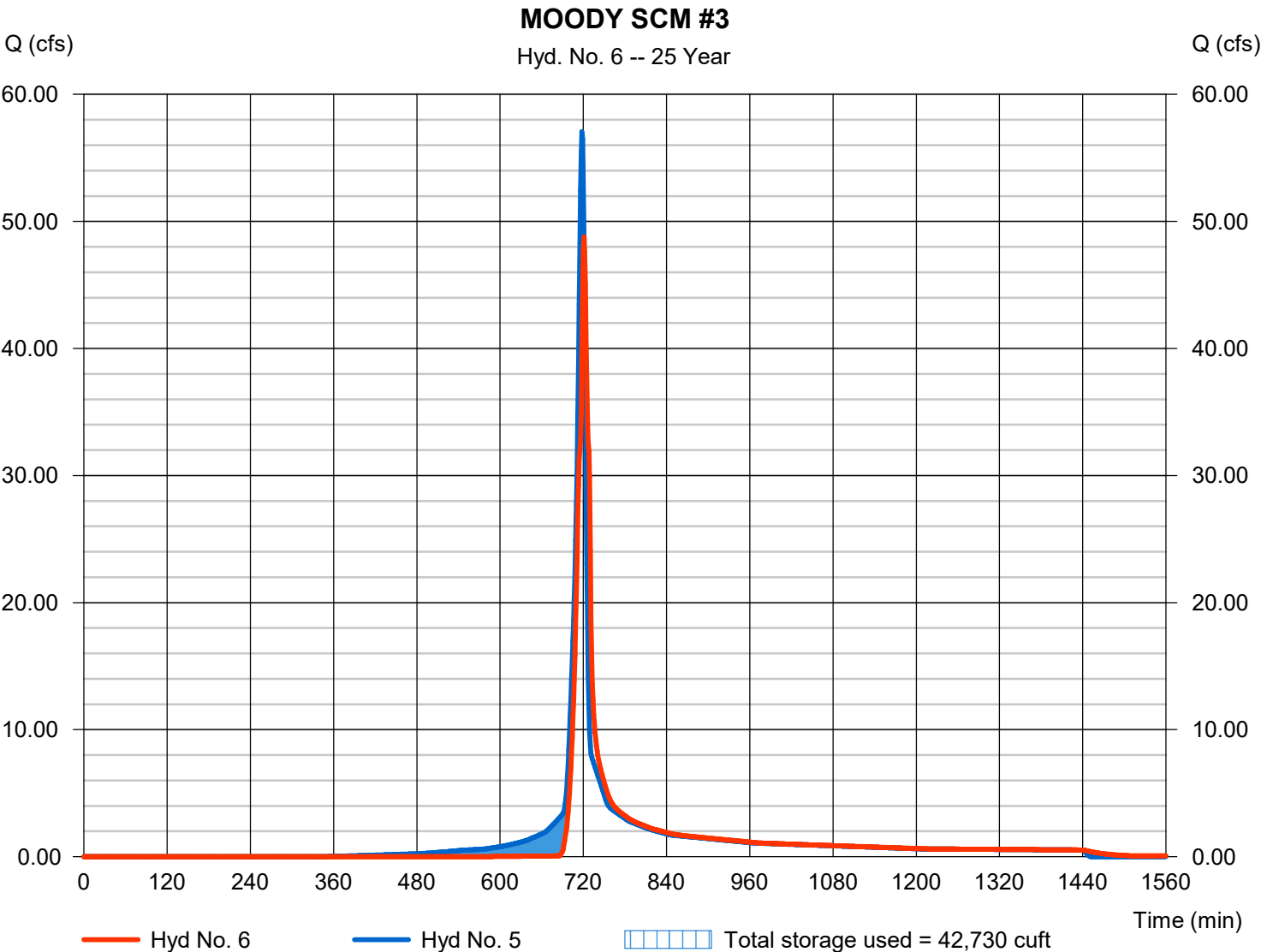
Monday, 03 / 31 / 2025

Hyd. No. 6

MOODY SCM #3

Hydrograph type	= Reservoir	Peak discharge	= 48.78 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 116,231 cuft
Inflow hyd. No.	= 5 - MOODY POD 2A #3 (to SCM #3)	Max. Elevation	= 364.22 ft
Reservoir name	= SCM #3	Max. Storage	= 42,730 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.

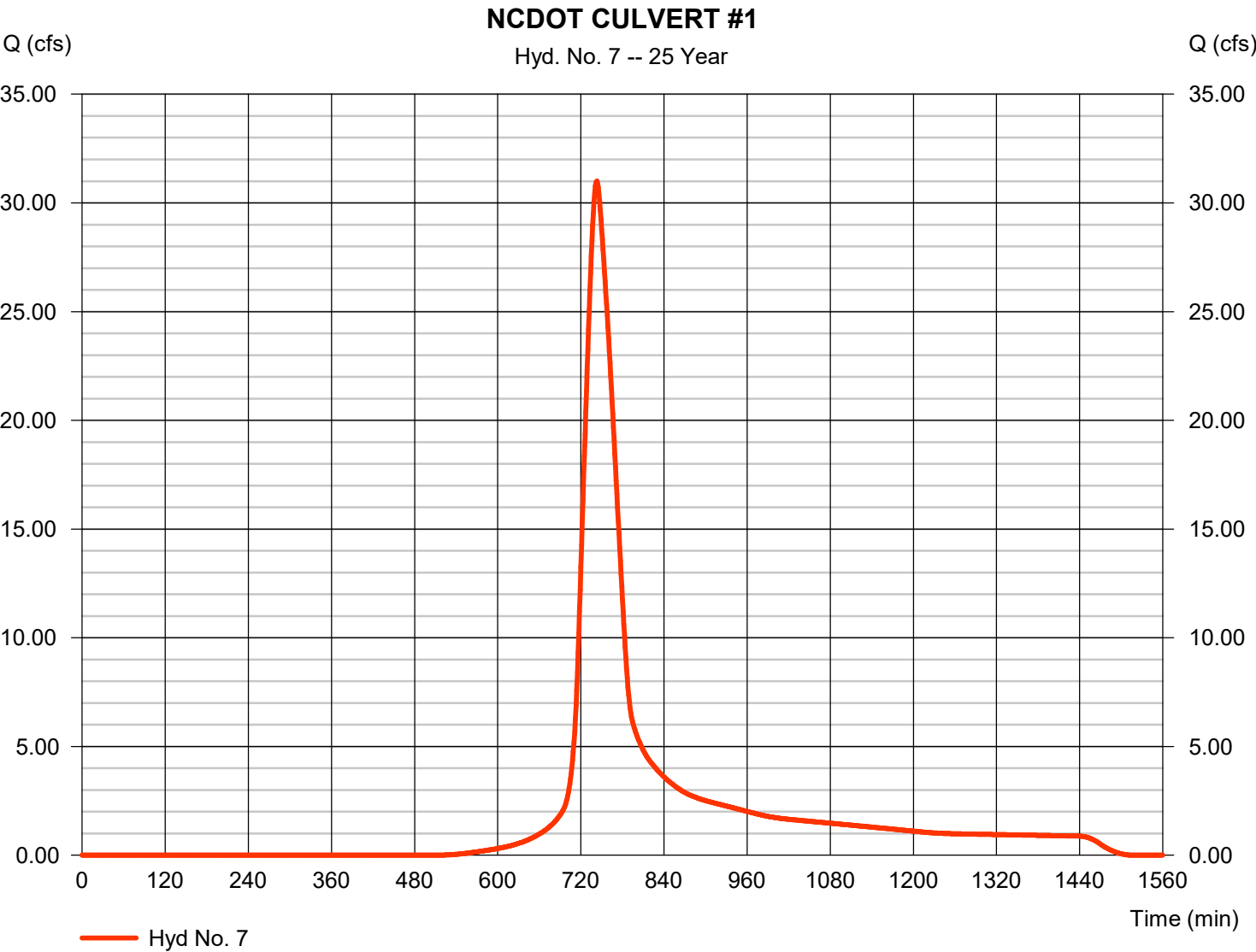


Hydrograph Report

Hyd. No. 7

NCDOT CULVERT #1

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.01 cfs
Storm frequency	=	25 yrs	Time to peak	=	743 min
Time interval	=	1 min	Hyd. volume	=	171,988 cuft
Drainage area	=	15.820 ac	Curve number	=	72.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	49.03 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

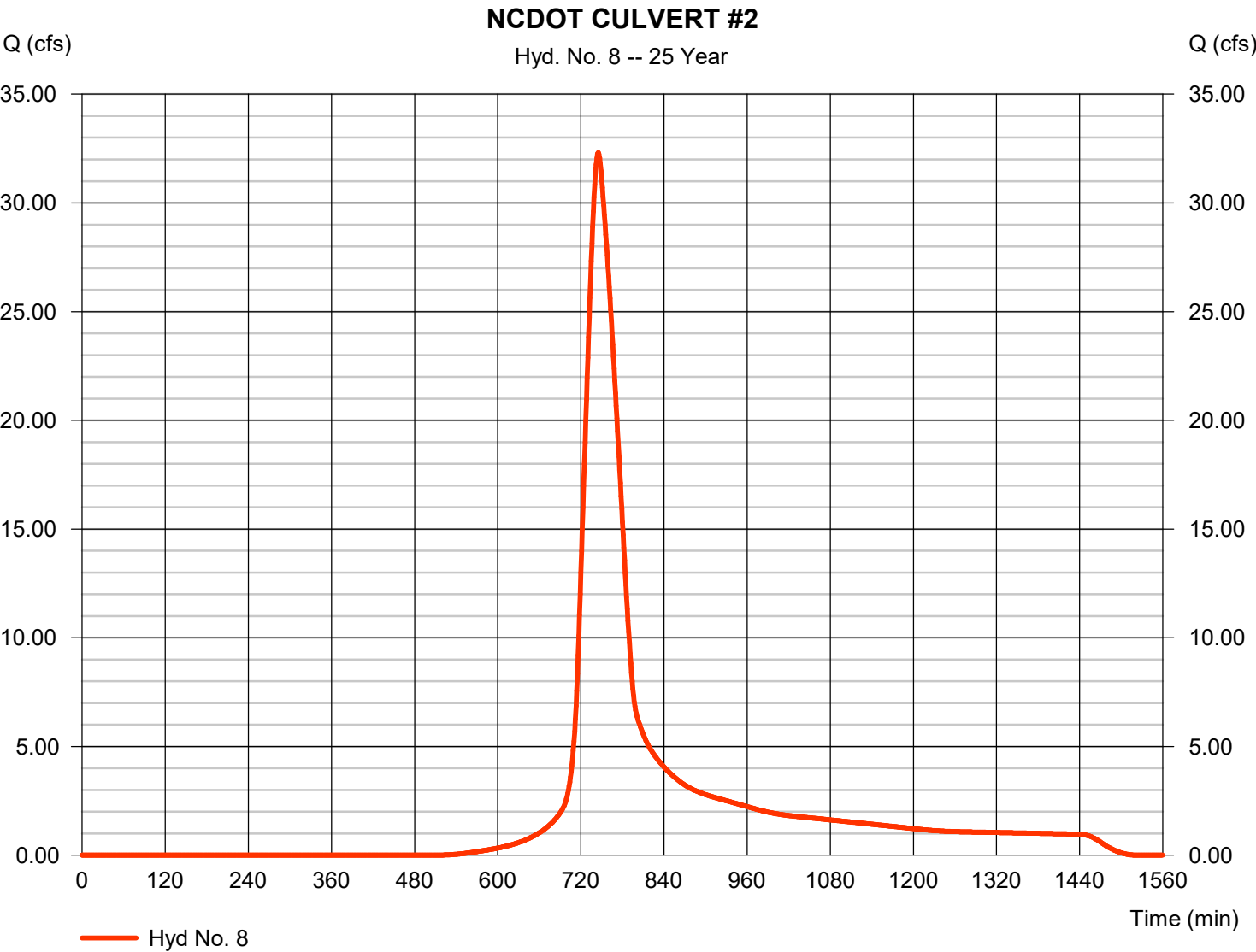


Hydrograph Report

Hyd. No. 8

NCDOT CULVERT #2

Hydrograph type	= SCS Runoff	Peak discharge	= 32.32 cfs
Storm frequency	= 25 yrs	Time to peak	= 745 min
Time interval	= 1 min	Hyd. volume	= 189,153 cuft
Drainage area	= 17.200 ac	Curve number	= 72.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 50.89 min
Total precip.	= 5.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

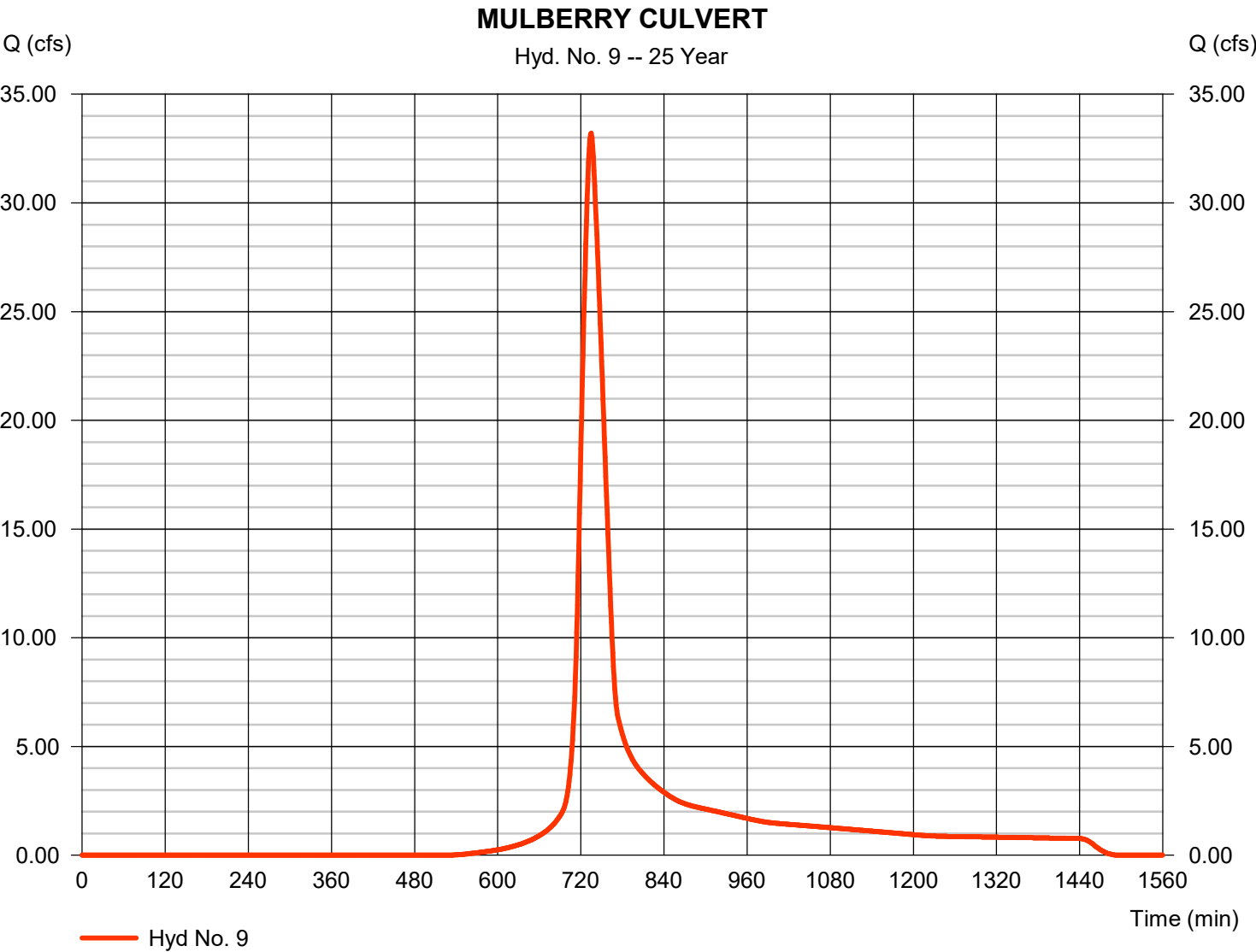
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 9

MULBERRY CULVERT

Hydrograph type	=	SCS Runoff	Peak discharge	=	33.20 cfs
Storm frequency	=	25 yrs	Time to peak	=	735 min
Time interval	=	1 min	Hyd. volume	=	148,052 cuft
Drainage area	=	14.090 ac	Curve number	=	71.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.74 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

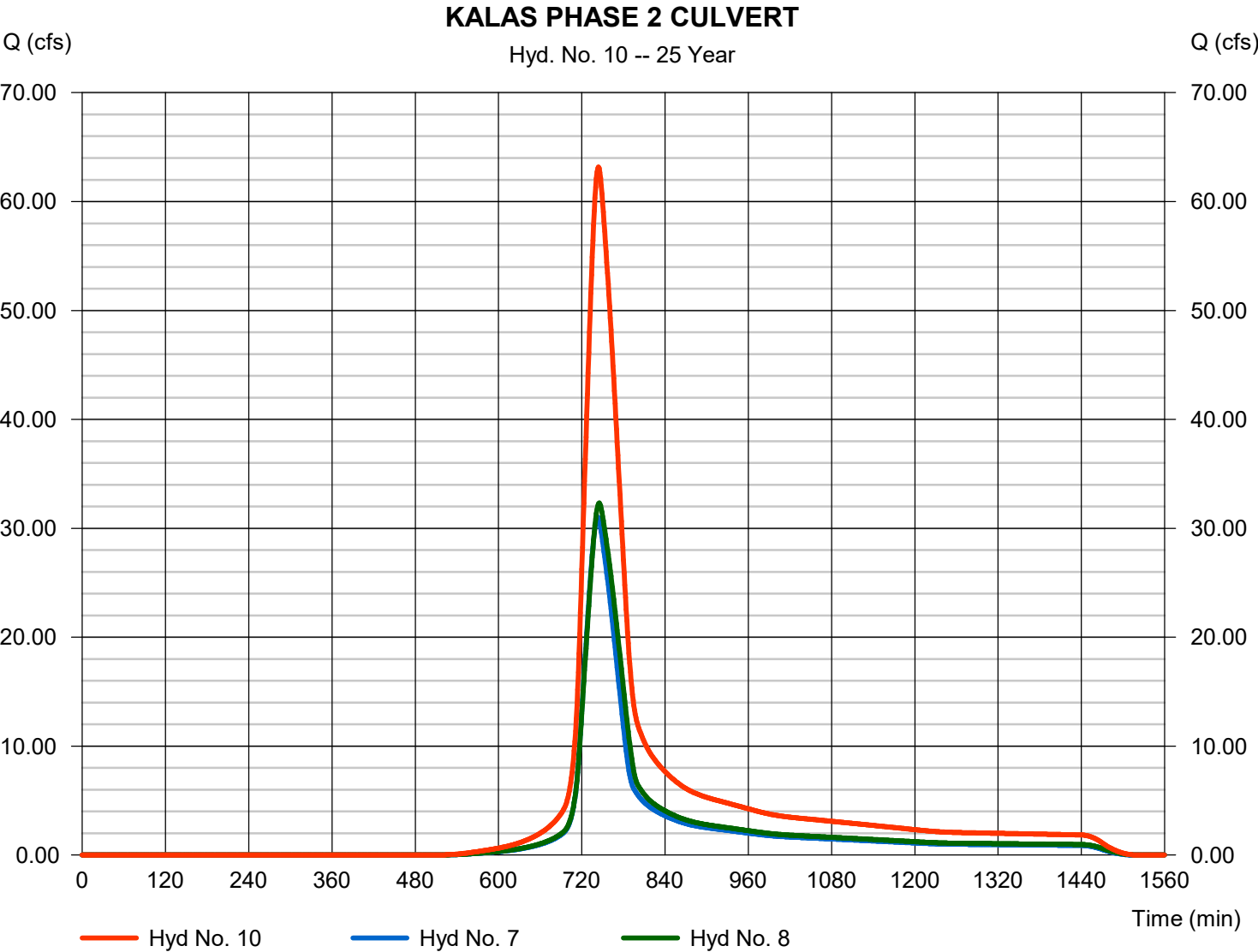


Hydrograph Report

Hyd. No. 10

KALAS PHASE 2 CULVERT

Hydrograph type	= Combine	Peak discharge	= 63.17 cfs
Storm frequency	= 25 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 361,141 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 33.020 ac

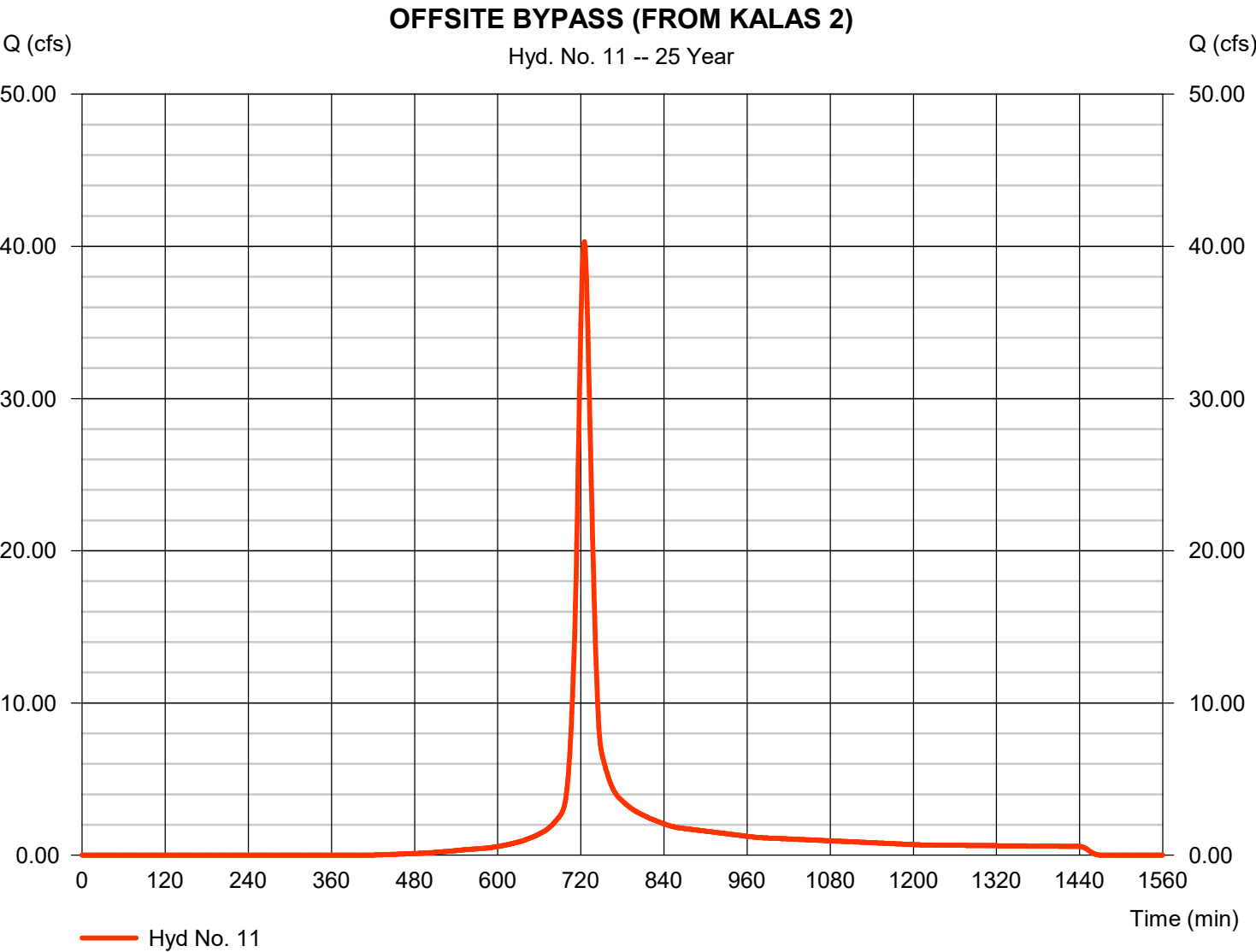


Hydrograph Report

Hyd. No. 11

OFFSITE BYPASS (FROM KALAS 2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	40.31 cfs
Storm frequency	=	25 yrs	Time to peak	=	725 min
Time interval	=	1 min	Hyd. volume	=	126,090 cuft
Drainage area	=	9.720 ac	Curve number	=	78.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	19.90 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

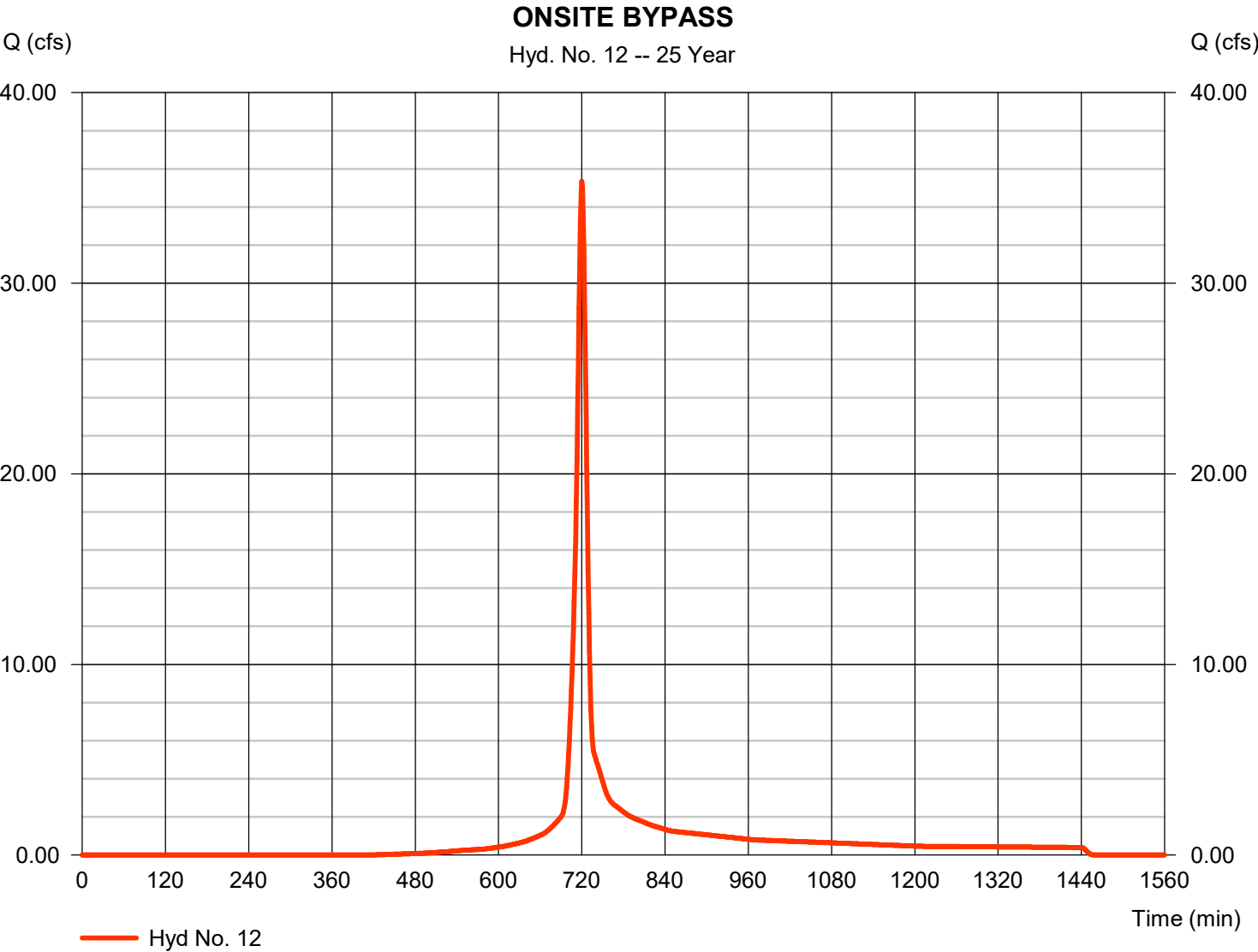


Hydrograph Report

Hyd. No. 12

ONSITE BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 35.35 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 86,021 cuft
Drainage area	= 6.570 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.56 min
Total precip.	= 5.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

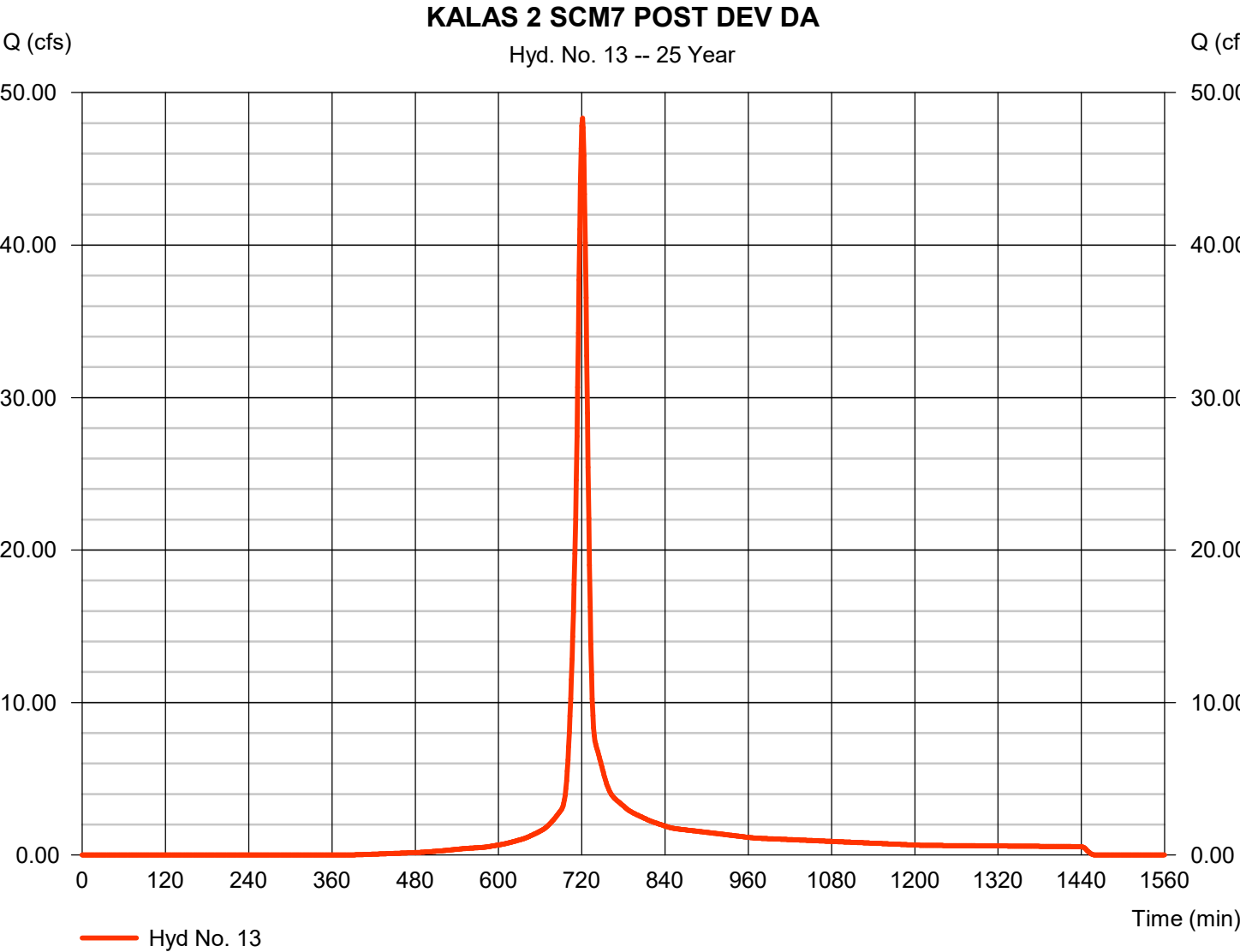


Hydrograph Report

Hyd. No. 13

KALAS 2 SCM7 POST DEV DA

Hydrograph type	=	SCS Runoff	Peak discharge	=	48.32 cfs
Storm frequency	=	25 yrs	Time to peak	=	721 min
Time interval	=	1 min	Hyd. volume	=	123,250 cuft
Drainage area	=	9.260 ac	Curve number	=	79.8
Basin Slope	=	1.1 %	Hydraulic length	=	1505 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	12.38 min
Total precip.	=	5.96 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

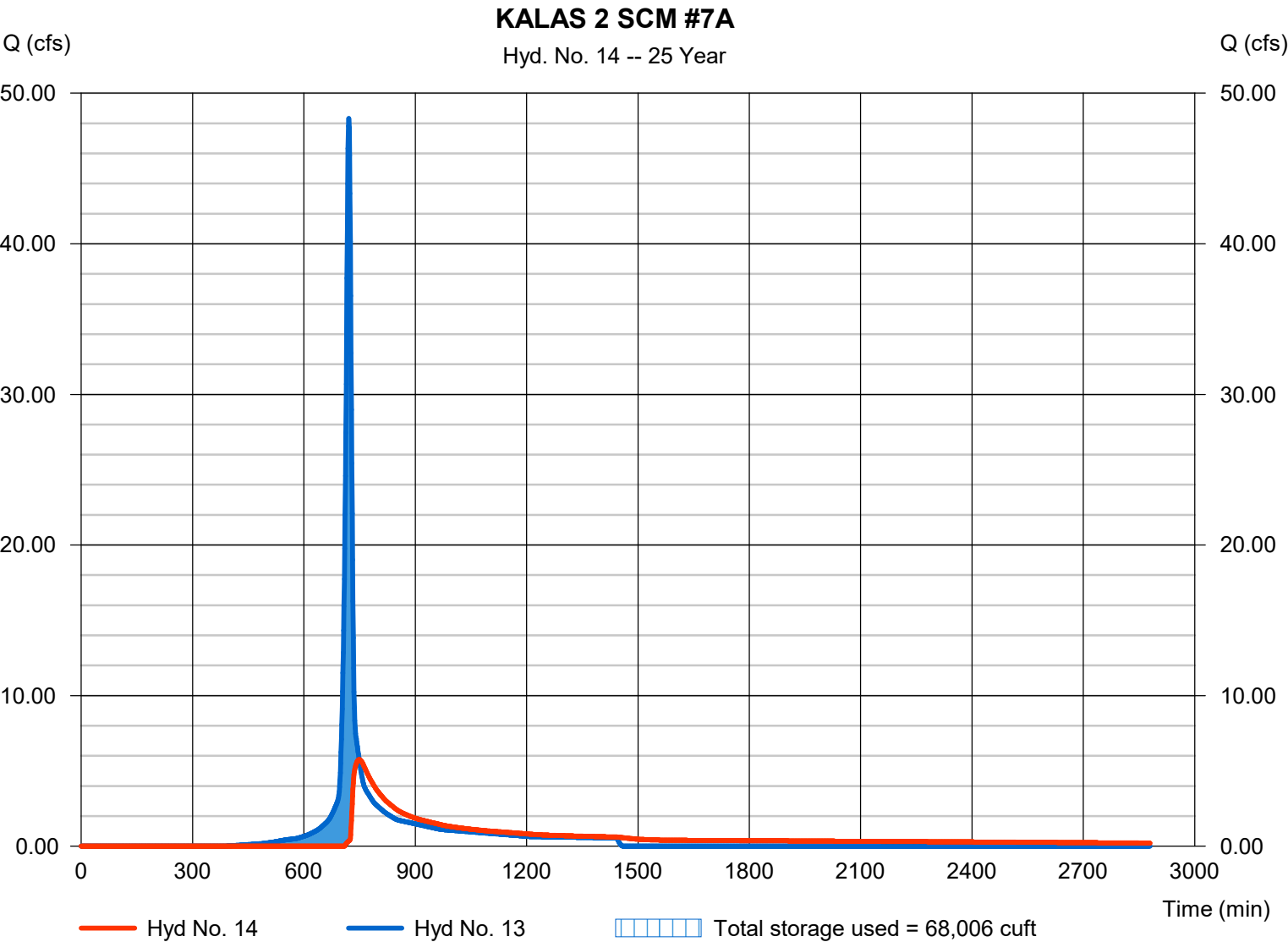
Monday, 03 / 31 / 2025

Hyd. No. 14

KALAS 2 SCM #7A

Hydrograph type	= Reservoir	Peak discharge	= 5.755 cfs
Storm frequency	= 25 yrs	Time to peak	= 749 min
Time interval	= 1 min	Hyd. volume	= 95,254 cuft
Inflow hyd. No.	= 13 - KALAS 2 SCM7 POST DEMO	WDAElevation	= 374.60 ft
Reservoir name	= SCM #7A	Max. Storage	= 68,006 cuft

Storage Indication method used.

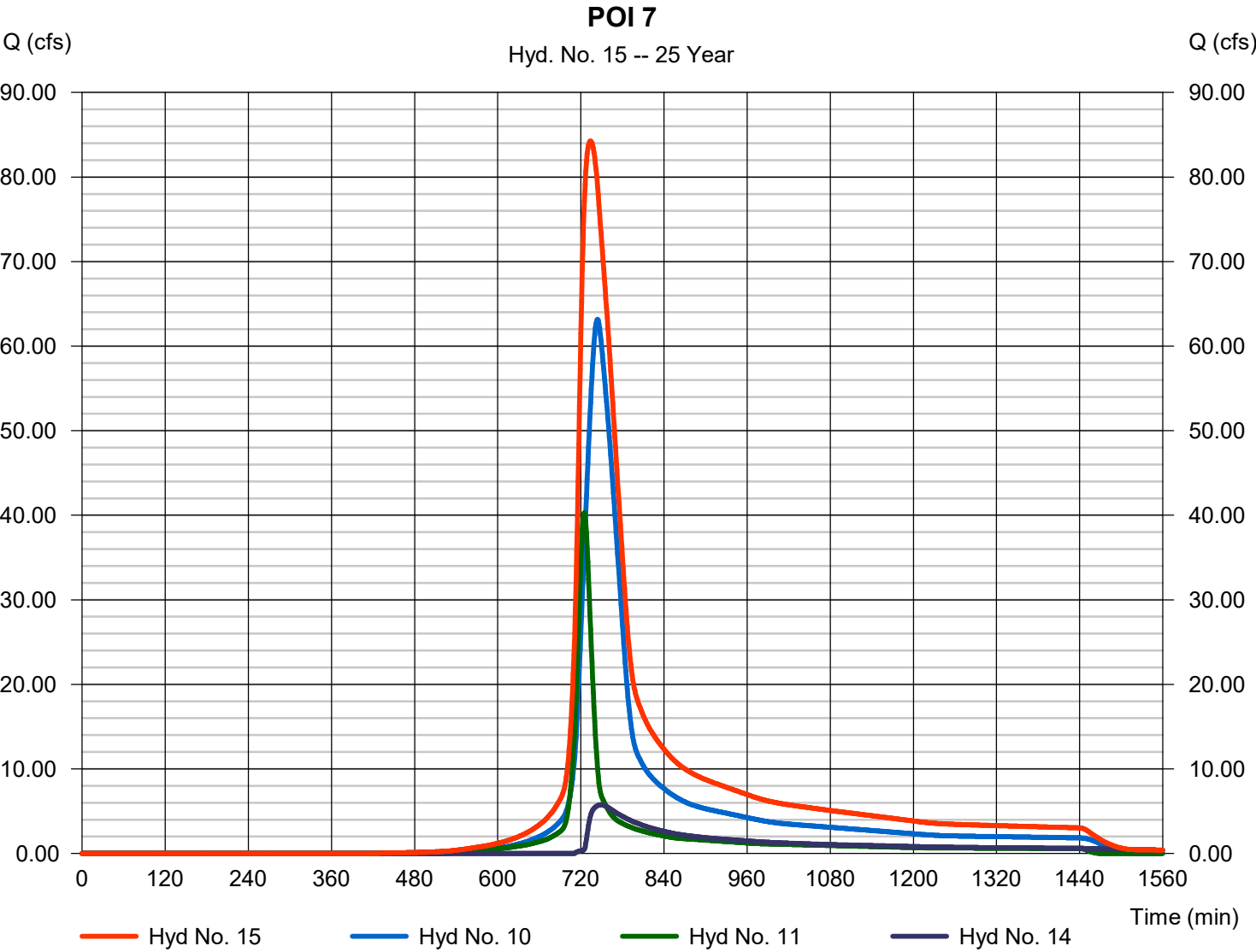


Hydrograph Report

Hyd. No. 15

POI 7

Hydrograph type	= Combine	Peak discharge	= 84.27 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 582,485 cuft
Inflow hyds.	= 10, 11, 14	Contrib. drain. area	= 9.720 ac

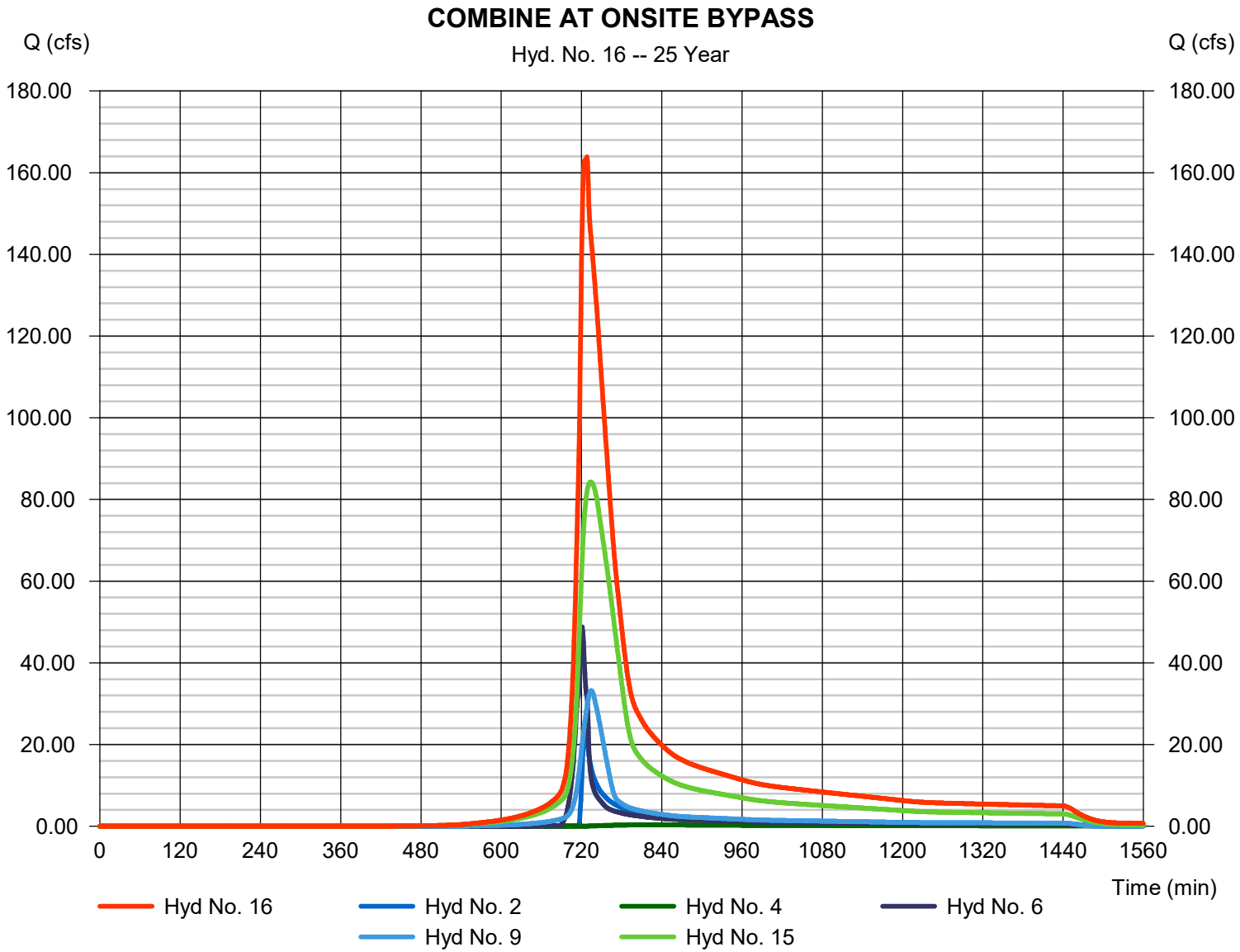


Hydrograph Report

Hyd. No. 16

COMBINE AT ONSITE BYPASS

Hydrograph type	= Combine	Peak discharge	= 163.87 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 957,423 cuft
Inflow hyds.	= 2, 4, 6, 9, 15	Contrib. drain. area	= 14.090 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

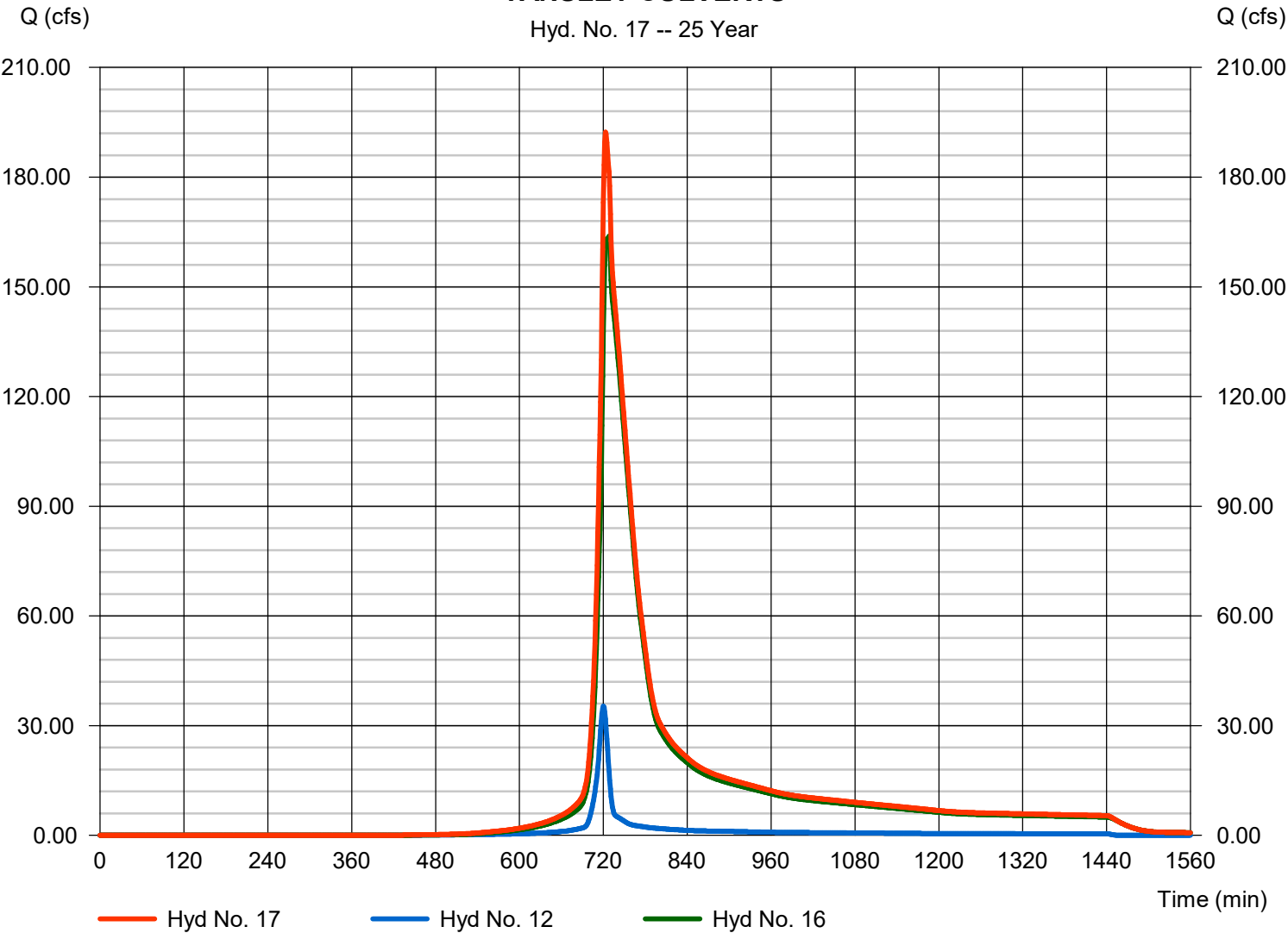
Hyd. No. 17

TANSLEY CULVERTS

Hydrograph type	= Combine	Peak discharge	= 192.31 cfs
Storm frequency	= 25 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 1,043,443 cuft
Inflow hyds.	= 12, 16	Contrib. drain. area	= 6.570 ac

TANSLEY CULVERTS

Hyd. No. 17 -- 25 Year



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

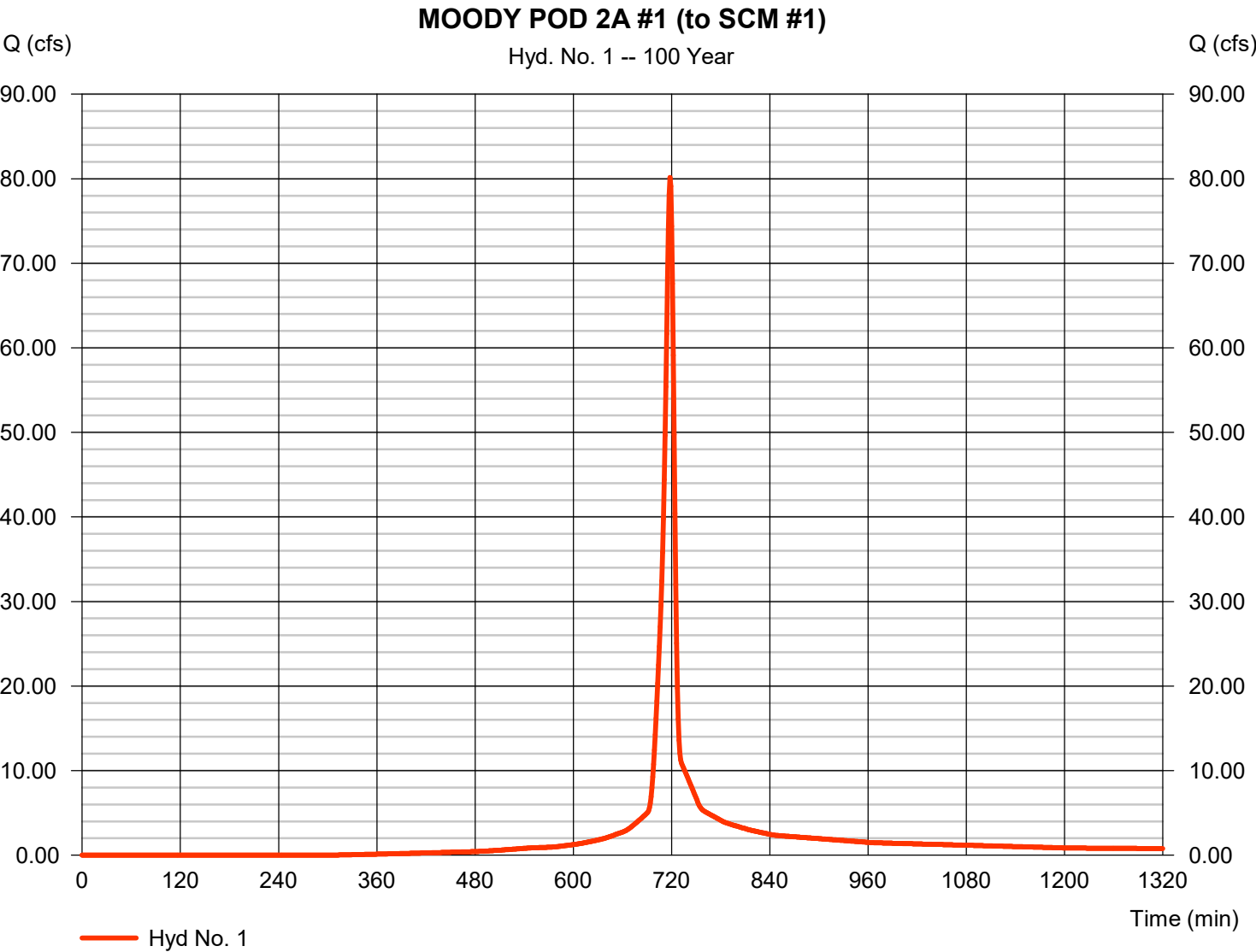
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	80.14	1	718	176,021	-----	-----	-----	MOODY POD 2A #1 (to SCM #1)
2	Reservoir	59.45	1	722	146,255	1	367.03	113,594	MOODY SCM #1
3	SCS Runoff	12.79	1	717	26,982	-----	-----	-----	MOODY POD 2A #2 (to SCM #2)
4	Reservoir	1.006	1	750	17,972	3	363.18	31,526	MOODY SCM #2
5	SCS Runoff	76.01	1	718	167,702	-----	-----	-----	MOODY POD 2A #3 (to SCM #3)
6	Reservoir	70.48	1	720	160,010	5	364.48	45,503	MOODY SCM #3
7	SCS Runoff	44.43	1	743	244,683	-----	-----	-----	NCDOT CULVERT #1
8	SCS Runoff	46.30	1	745	268,950	-----	-----	-----	NCDOT CULVERT #2
9	SCS Runoff	47.93	1	734	212,094	-----	-----	-----	MULBERRY CULVERT
10	Combine	90.50	1	744	513,634	7, 8,	-----	-----	KALAS PHASE 2 CULVERT
11	SCS Runoff	55.22	1	725	173,878	-----	-----	-----	OFFSITE BYPASS (FROM KALAS 2)
12	SCS Runoff	48.32	1	720	118,805	-----	-----	-----	ONSITE BYPASS
13	SCS Runoff	65.36	1	721	168,684	-----	-----	-----	KALAS 2 SCM7 POST DEV DA
14	Reservoir	24.08	1	731	140,354	13	375.56	82,868	KALAS 2 SCM #7A
15	Combine	138.29	1	731	827,866	10, 11, 14	-----	-----	POI 7
16	Combine	262.83	1	723	1,364,194	2, 4, 6, 9, 15	-----	-----	COMBINE AT ONSITE BYPASS
17	Combine	306.41	1	722	1,483,001	12, 16	-----	-----	TANSLEY CULVERTS
20241205 Tansley Culvert Modeling Revised.gpr					Return Period: 100 Year			Monday, 03 / 31 / 2025	

Hydrograph Report

Hyd. No. 1

MOODY POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	80.14 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	1 min	Hyd. volume	=	176,021 cuft
Drainage area	=	9.460 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	6.69 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

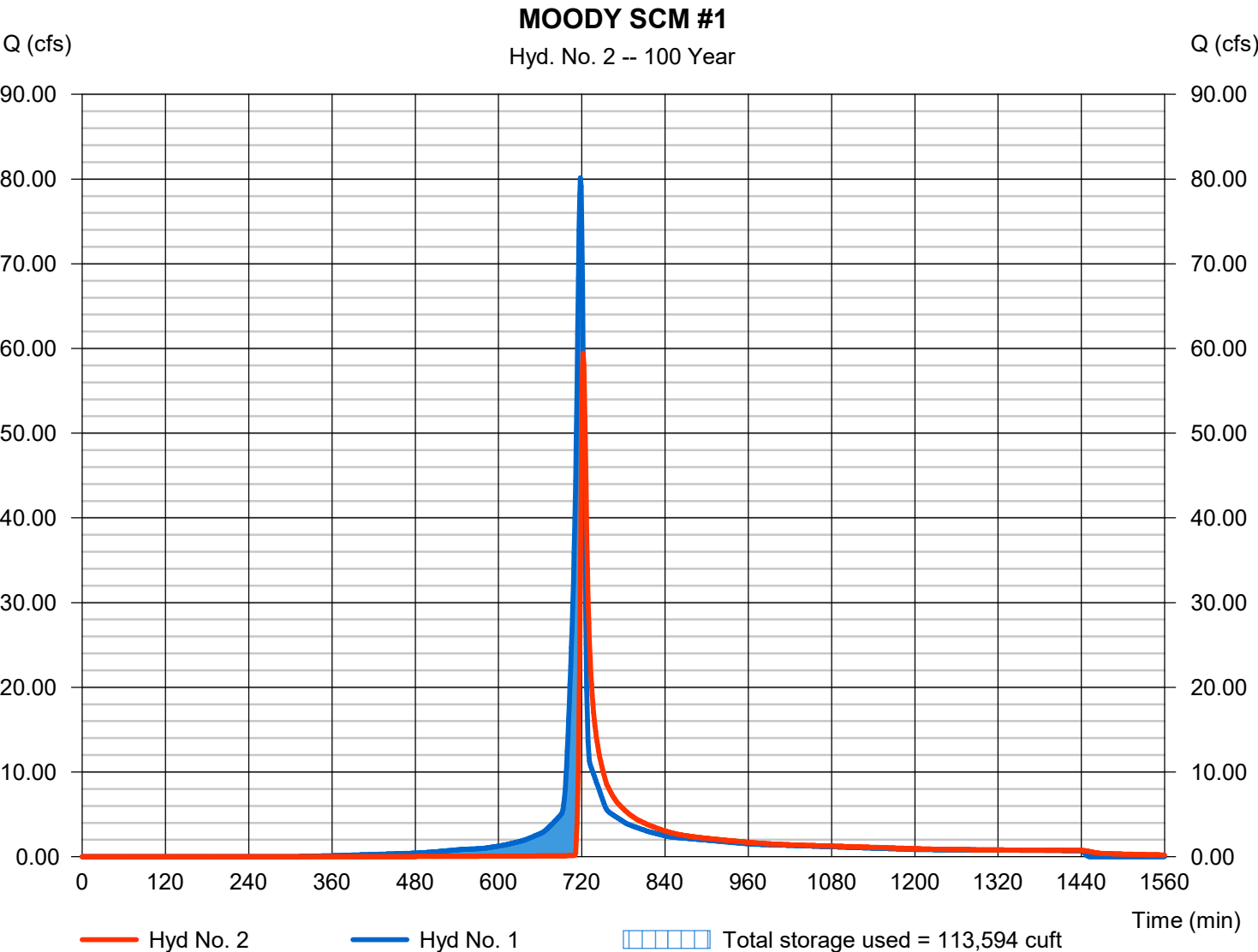
Monday, 03 / 31 / 2025

Hyd. No. 2

MOODY SCM #1

Hydrograph type	= Reservoir	Peak discharge	= 59.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 146,255 cuft
Inflow hyd. No.	= 1 - MOODY POD 2A #1 (to SCM #1)	Max. Elevation	= 367.03 ft
Reservoir name	= SCM #1	Max. Storage	= 113,594 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.



Hydrograph Report

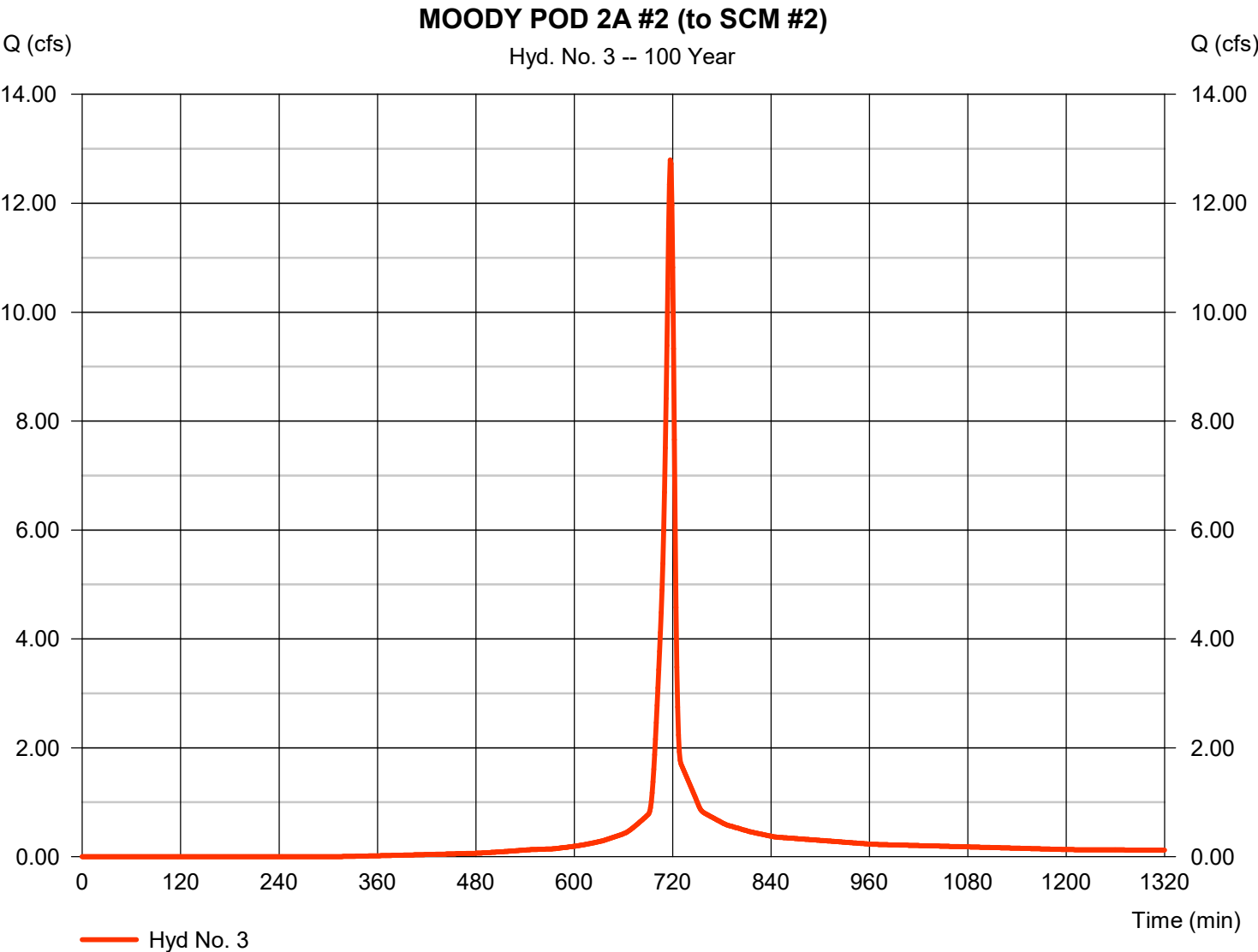
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 3

MOODY POD 2A #2 (to SCM #2)

Hydrograph type	= SCS Runoff	Peak discharge	= 12.79 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 26,982 cuft
Drainage area	= 1.380 ac	Curve number	= 80.9
Basin Slope	= 0.5 %	Hydraulic length	= 450 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

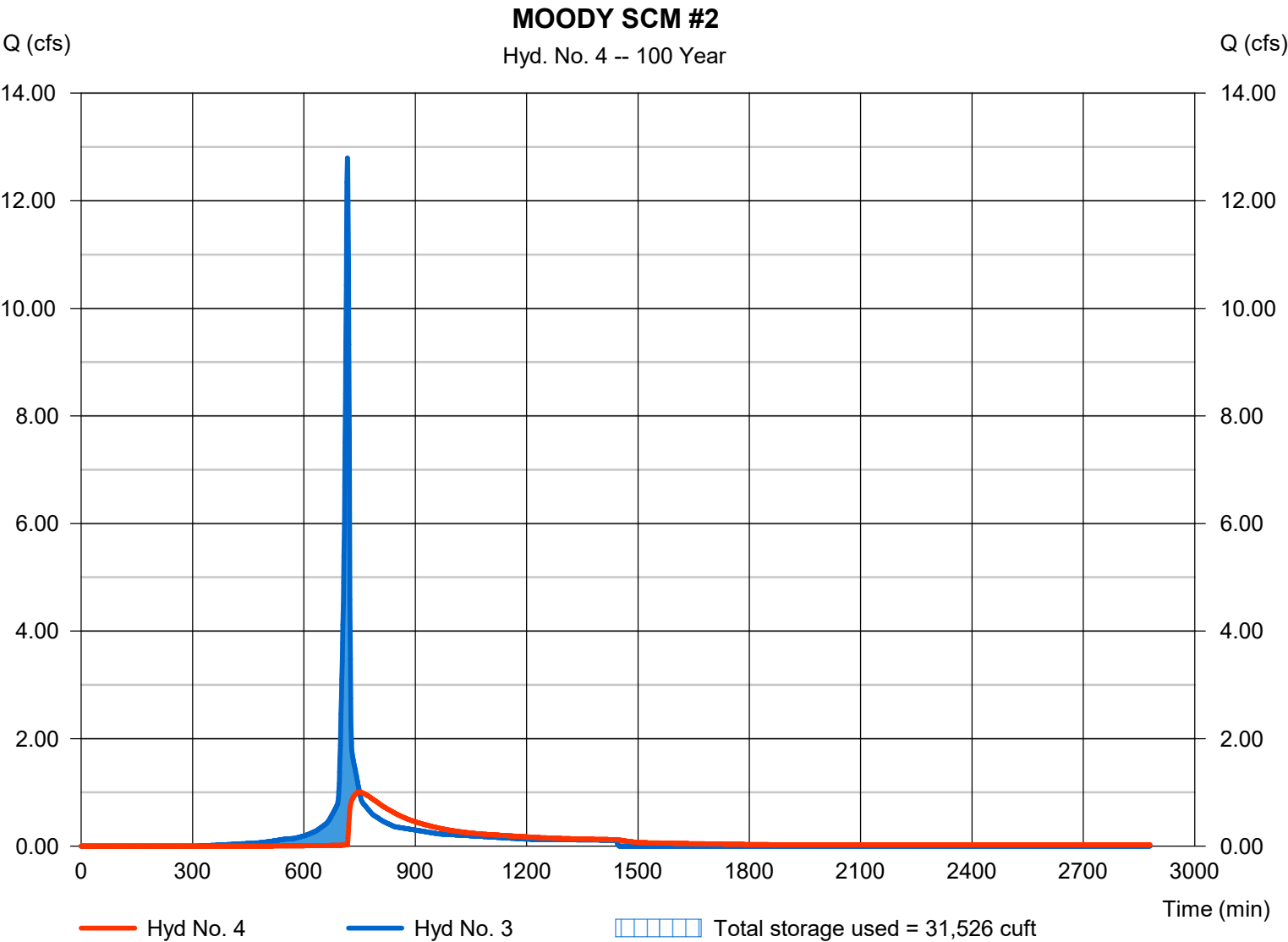
Monday, 03 / 31 / 2025

Hyd. No. 4

MOODY SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 1.006 cfs
Storm frequency	= 100 yrs	Time to peak	= 750 min
Time interval	= 1 min	Hyd. volume	= 17,972 cuft
Inflow hyd. No.	= 3 - MOODY POD 2A #2 (to SCM #2)	Max. Elevation	= 363.18 ft
Reservoir name	= SCM #2	Max. Storage	= 31,526 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.

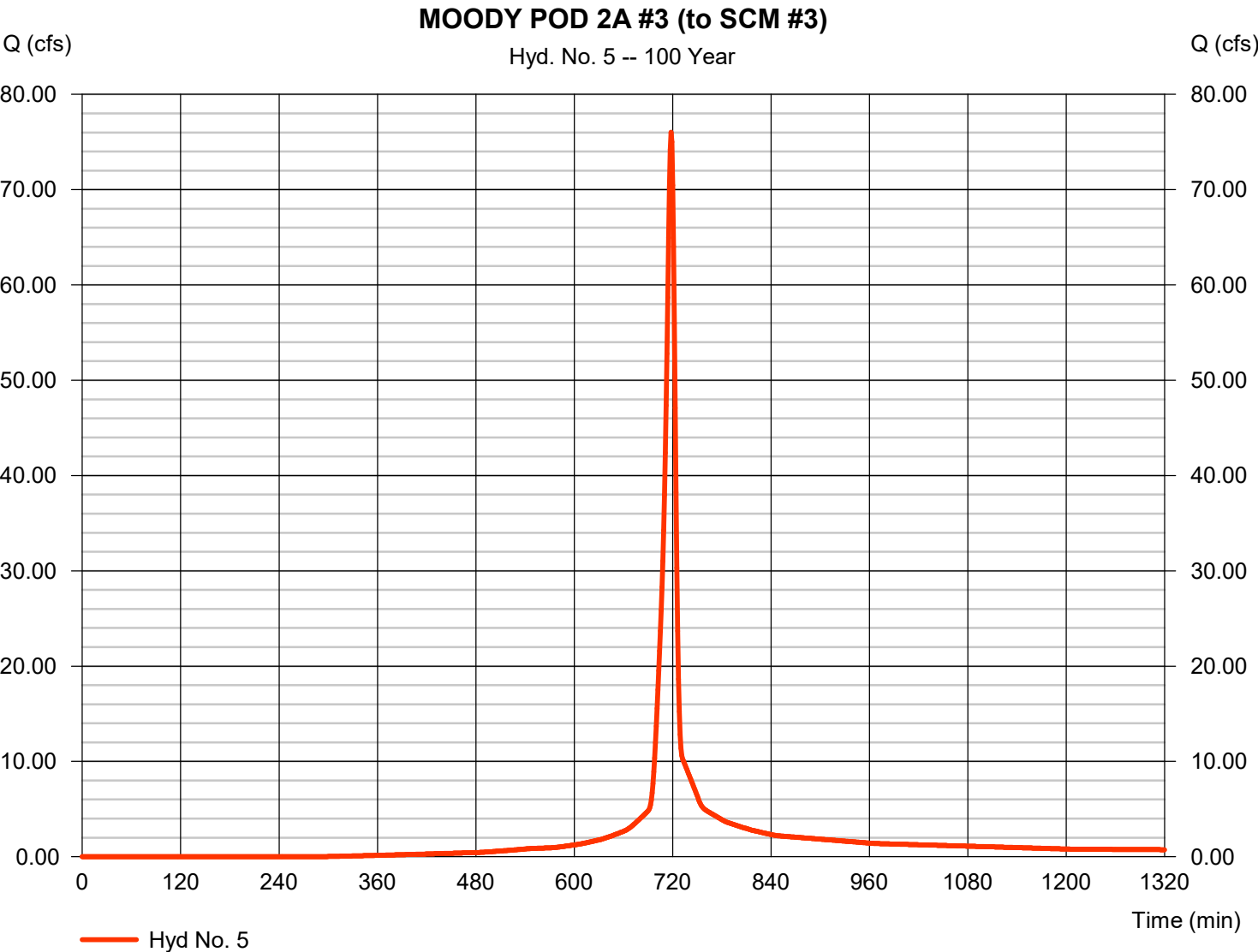


Hydrograph Report

Hyd. No. 5

MOODY POD 2A #3 (to SCM #3)

Hydrograph type	= SCS Runoff	Peak discharge	= 76.01 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 167,702 cuft
Drainage area	= 8.840 ac	Curve number	= 82.1
Basin Slope	= 2.6 %	Hydraulic length	= 1120 ft
Tc method	= KIRPICH	Time of conc. (Tc)	= 7.08 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

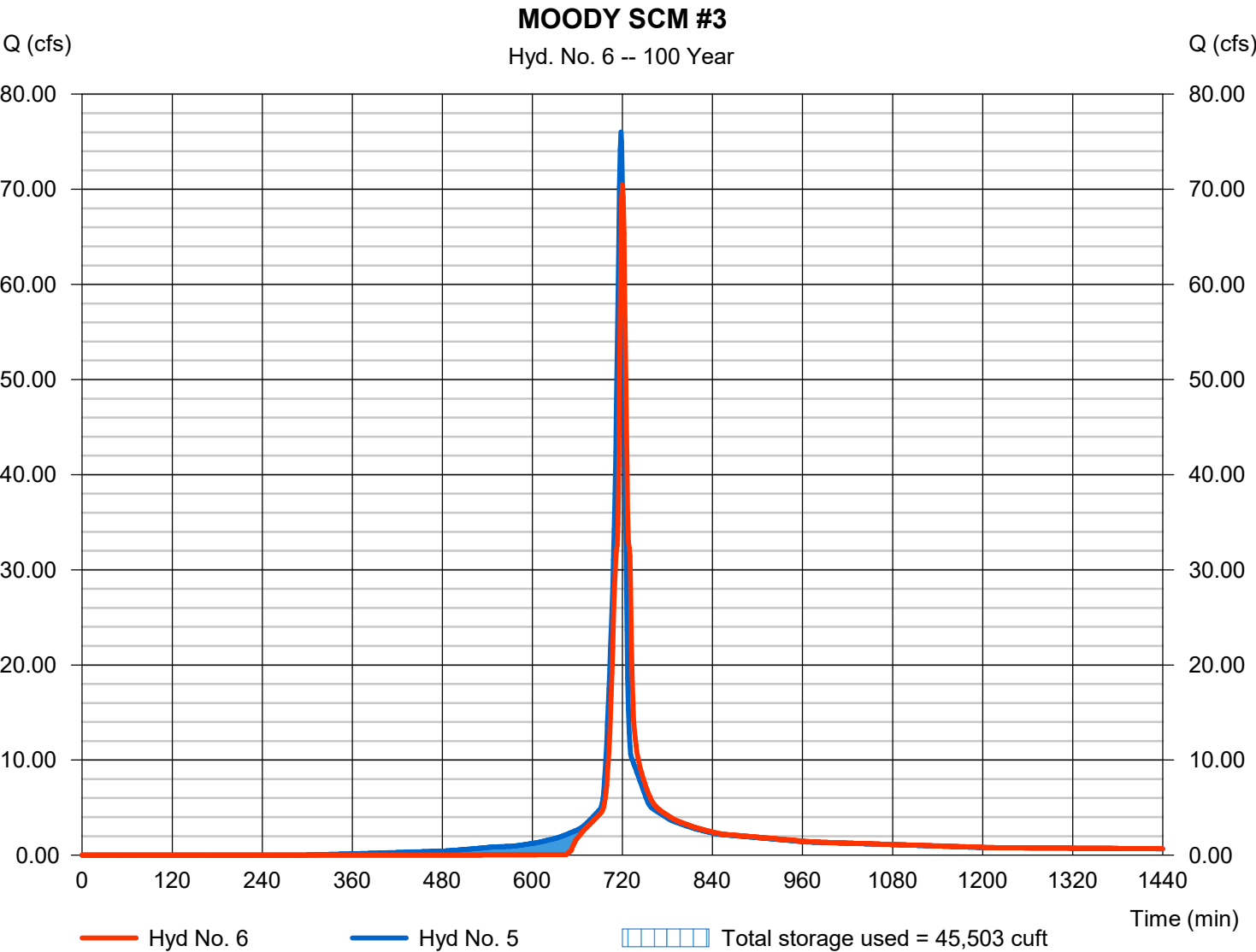
Monday, 03 / 31 / 2025

Hyd. No. 6

MOODY SCM #3

Hydrograph type	= Reservoir	Peak discharge	= 70.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 160,010 cuft
Inflow hyd. No.	= 5 - MOODY POD 2A #3 (to SCM #3)	Max. Elevation	= 364.48 ft
Reservoir name	= SCM #3	Max. Storage	= 45,503 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.

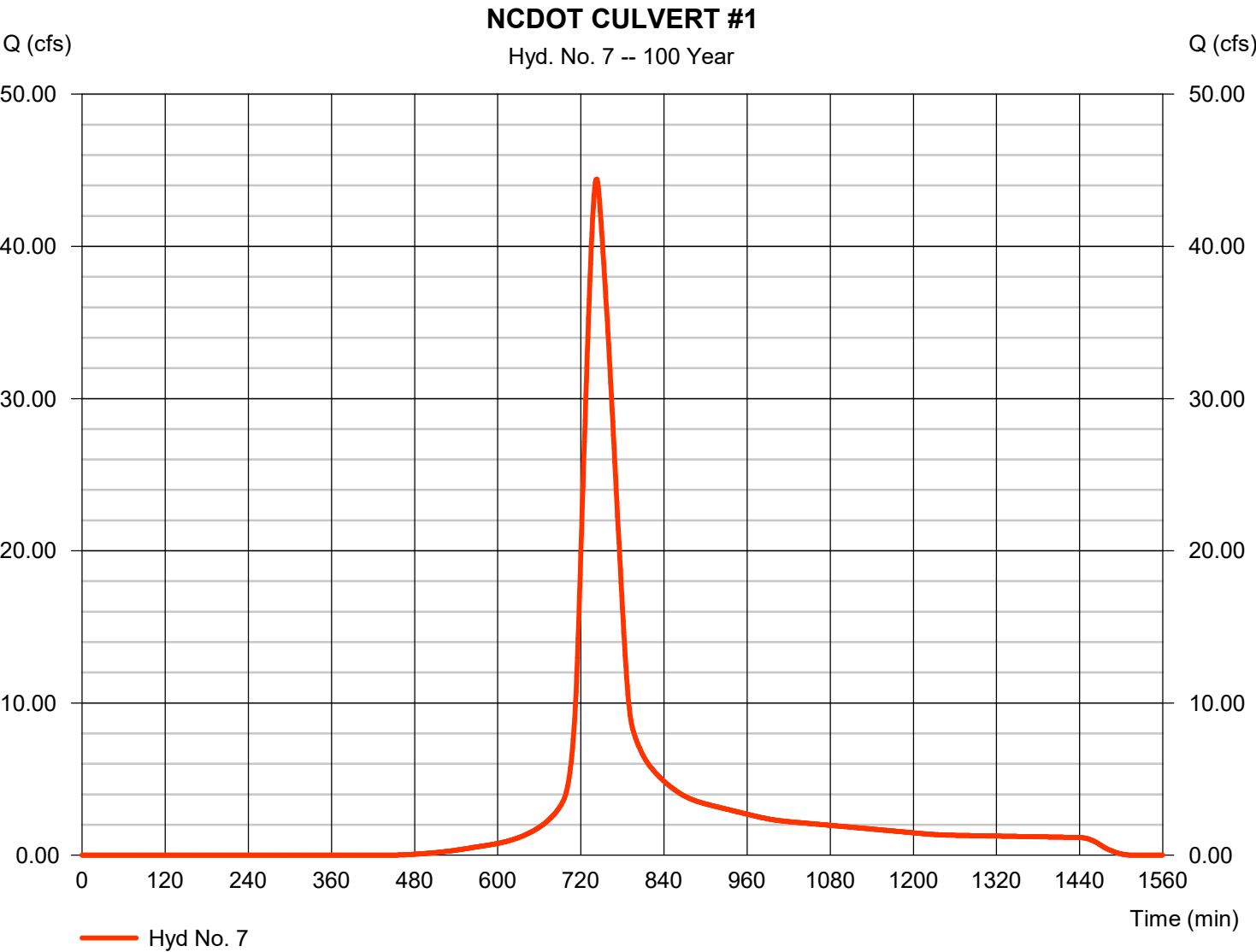


Hydrograph Report

Hyd. No. 7

NCDOT CULVERT #1

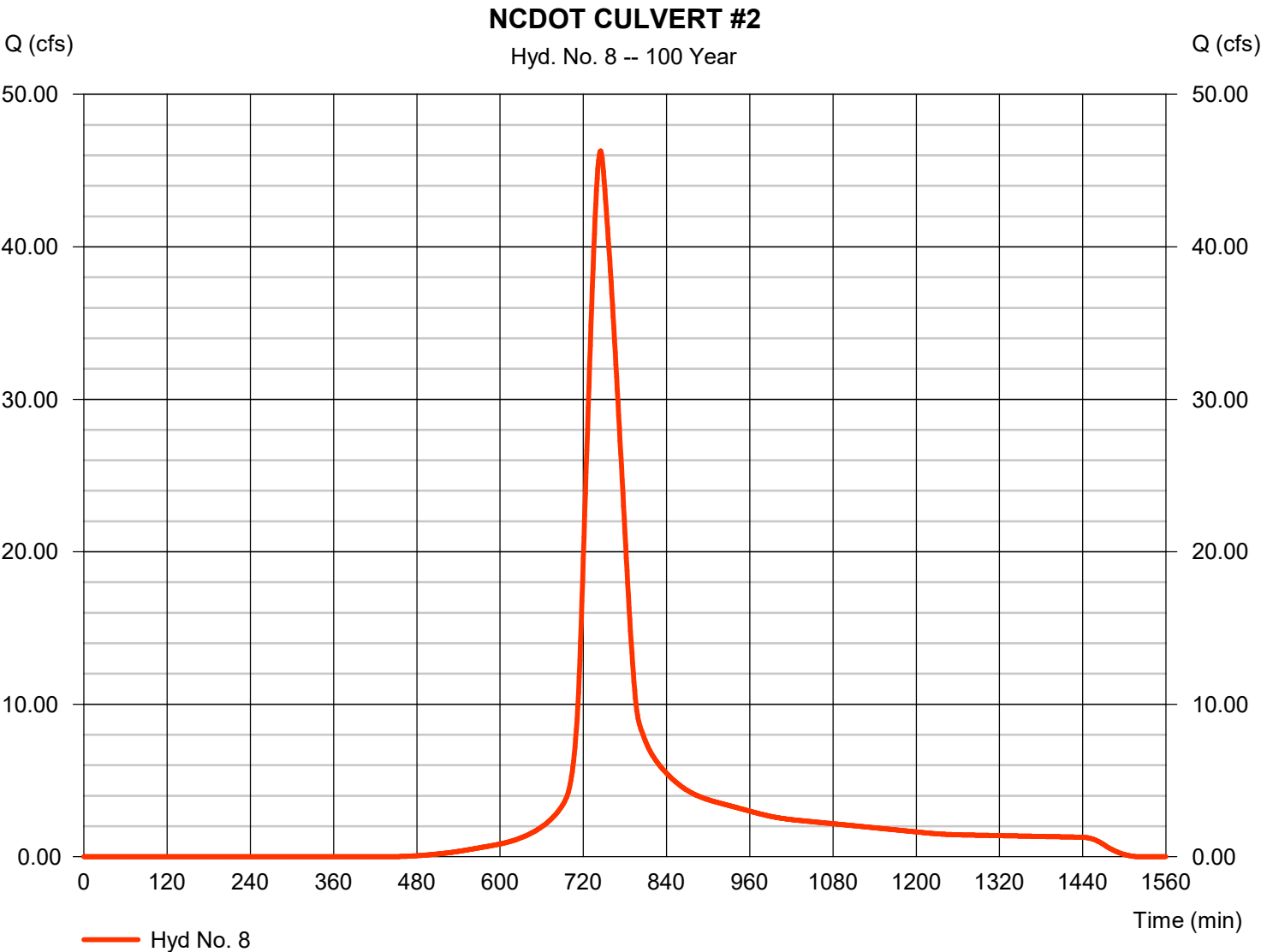
Hydrograph type	=	SCS Runoff	Peak discharge	=	44.43 cfs
Storm frequency	=	100 yrs	Time to peak	=	743 min
Time interval	=	1 min	Hyd. volume	=	244,683 cuft
Drainage area	=	15.820 ac	Curve number	=	72.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	49.03 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hyd. No. 8 NCDOT CULVERT #2

Hydrograph type	= SCS Runoff	Peak discharge	= 46.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 745 min
Time interval	= 1 min	Hyd. volume	= 268,950 cuft
Drainage area	= 17.200 ac	Curve number	= 72.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 50.89 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

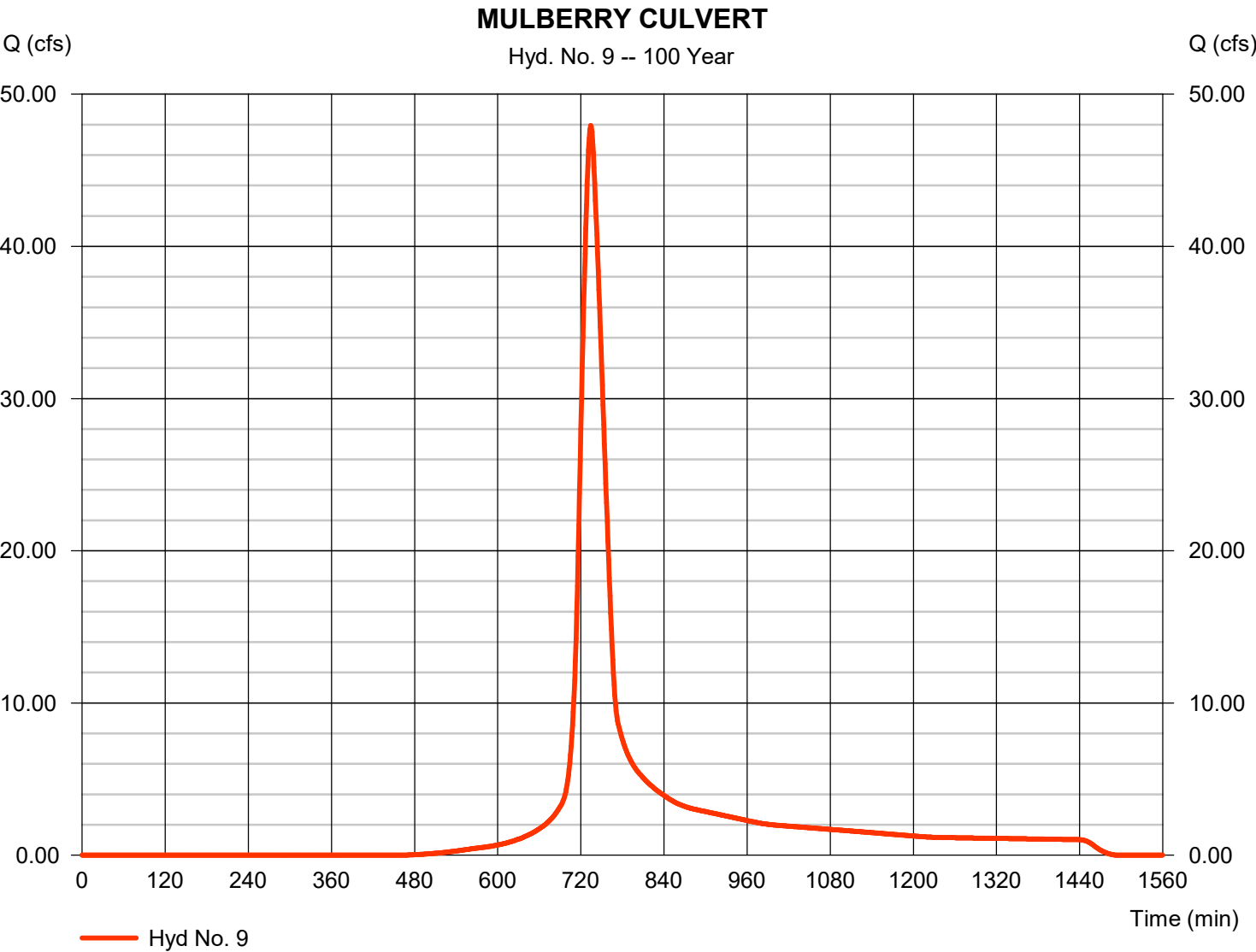


Hydrograph Report

Hyd. No. 9

MULBERRY CULVERT

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.93 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	1 min	Hyd. volume	=	212,094 cuft
Drainage area	=	14.090 ac	Curve number	=	71.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.74 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

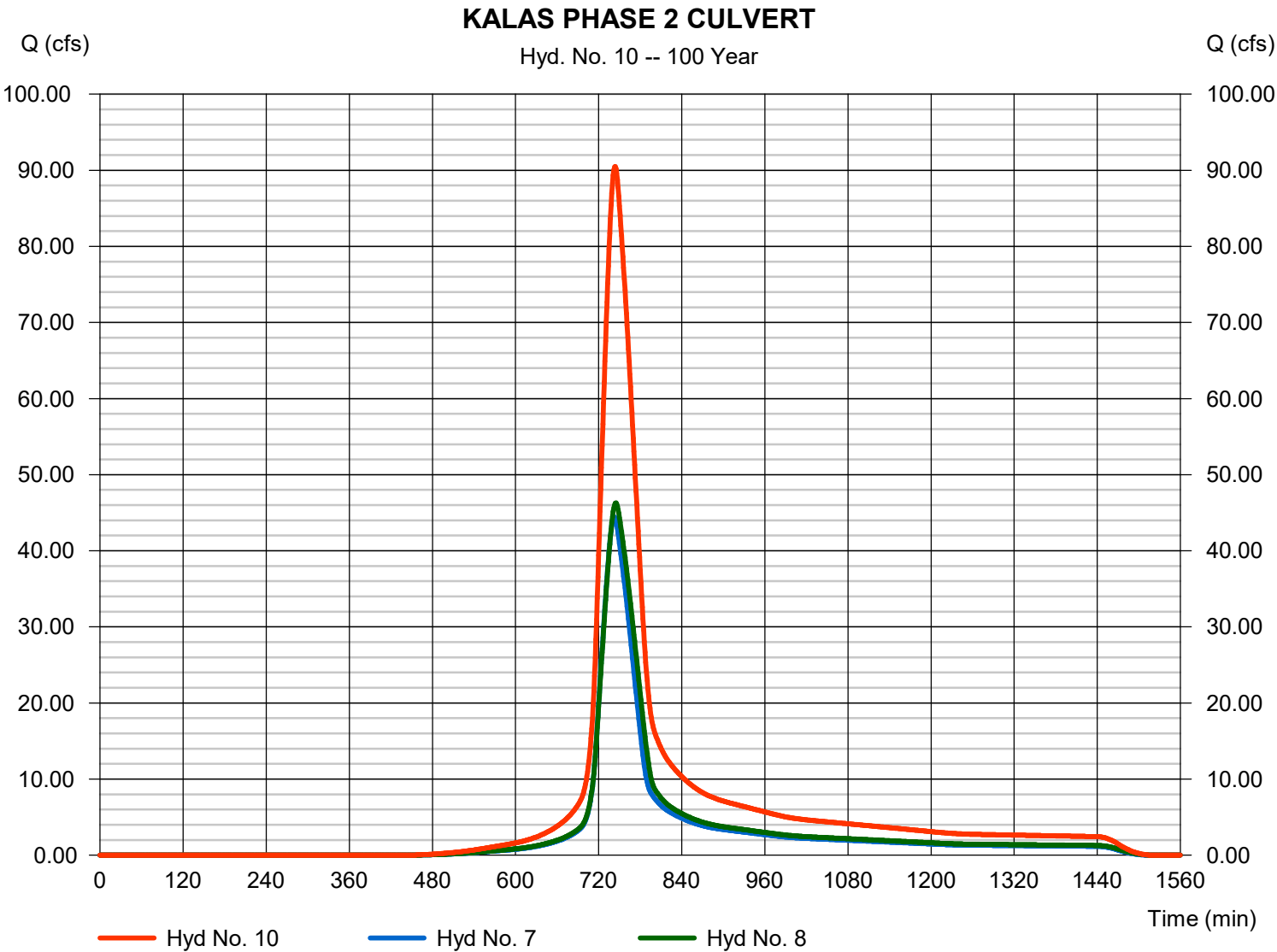


Hydrograph Report

Hyd. No. 10

KALAS PHASE 2 CULVERT

Hydrograph type	= Combine	Peak discharge	= 90.50 cfs
Storm frequency	= 100 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 513,634 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 33.020 ac



Hydrograph Report

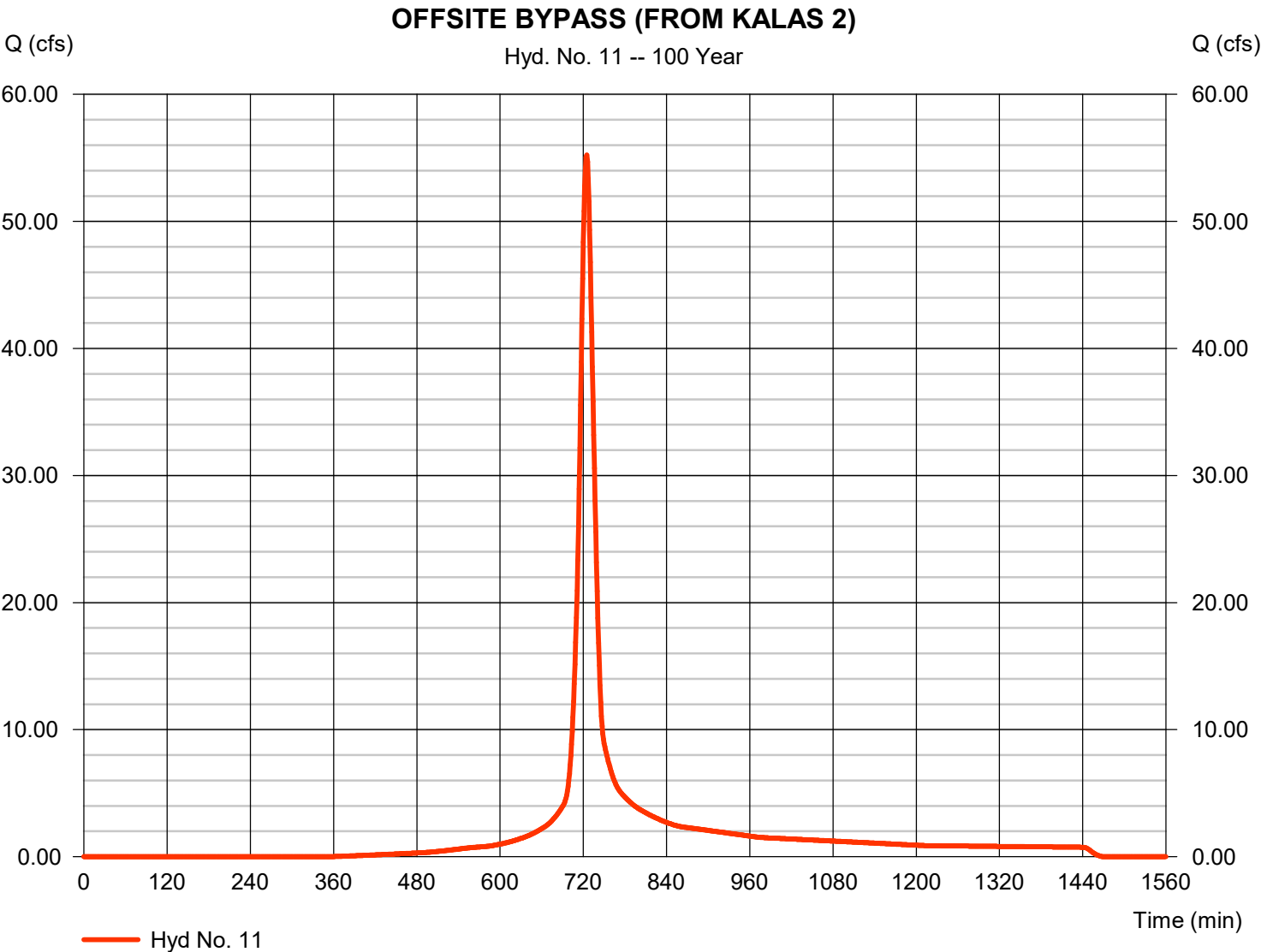
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 11

OFFSITE BYPASS (FROM KALAS 2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	55.22 cfs
Storm frequency	=	100 yrs	Time to peak	=	725 min
Time interval	=	1 min	Hyd. volume	=	173,878 cuft
Drainage area	=	9.720 ac	Curve number	=	78.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	19.90 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

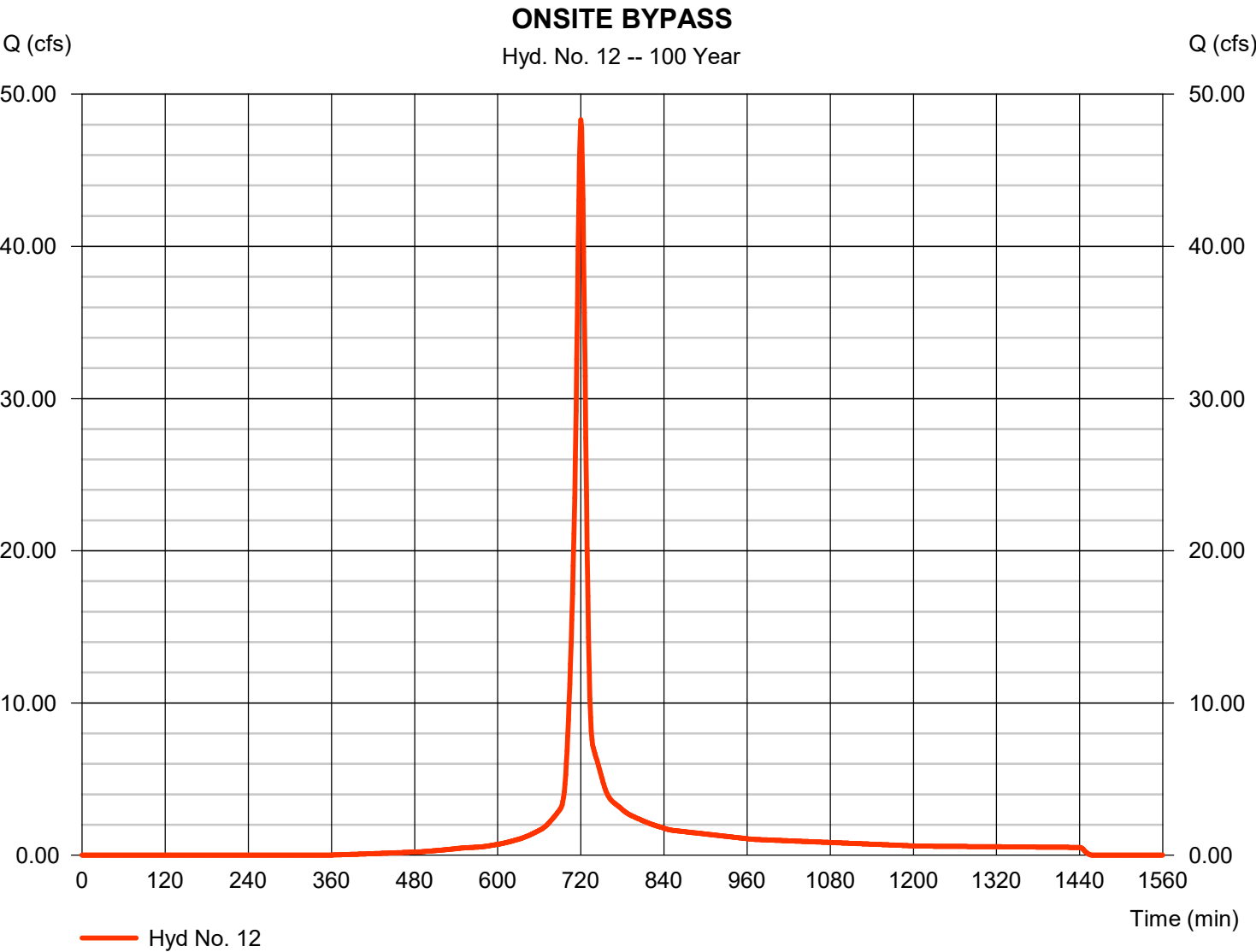
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 12

ONSITE BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 48.32 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 118,805 cuft
Drainage area	= 6.570 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.56 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

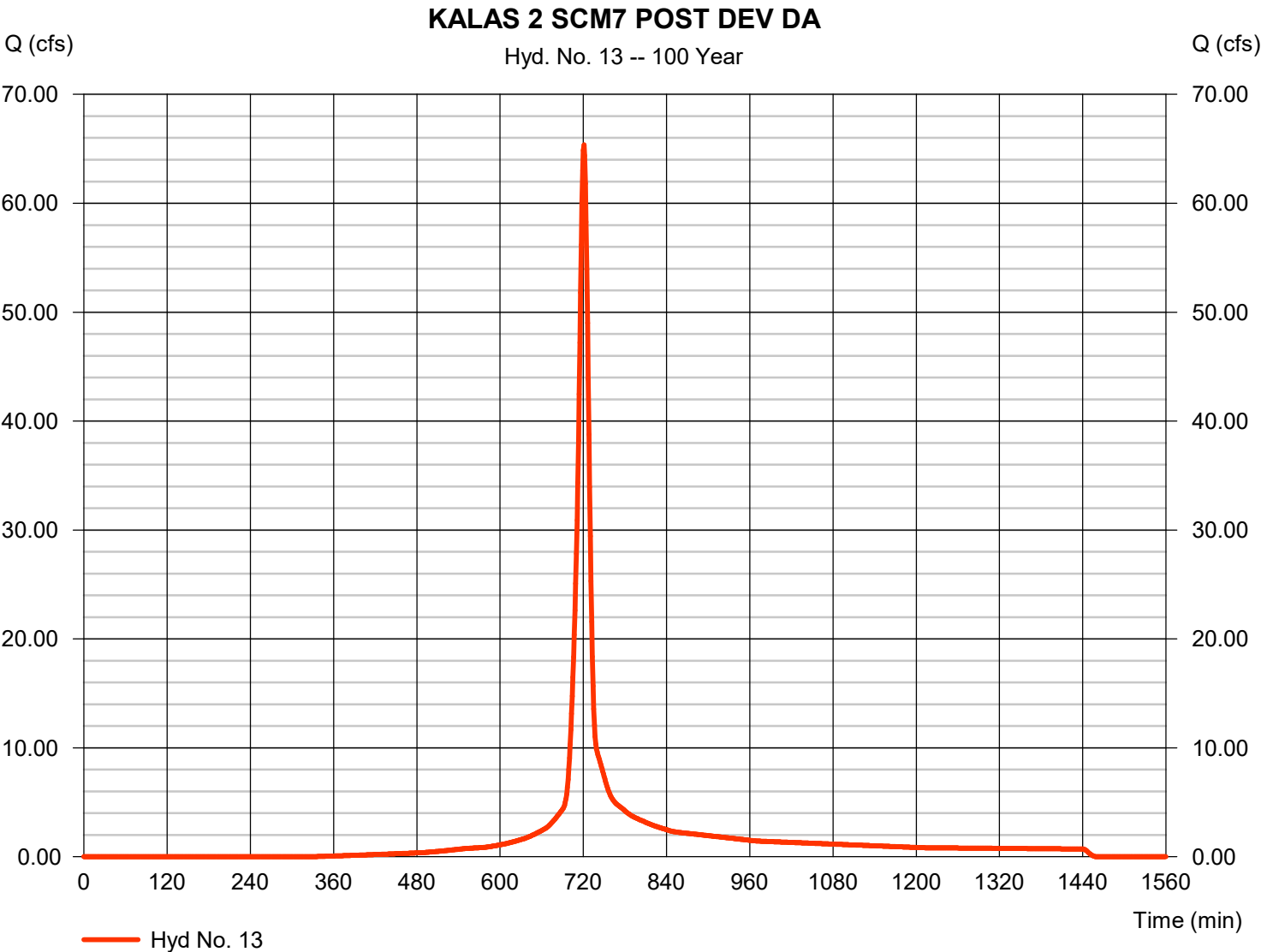
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

Hyd. No. 13

KALAS 2 SCM7 POST DEV DA

Hydrograph type	=	SCS Runoff	Peak discharge	=	65.36 cfs
Storm frequency	=	100 yrs	Time to peak	=	721 min
Time interval	=	1 min	Hyd. volume	=	168,684 cuft
Drainage area	=	9.260 ac	Curve number	=	79.8
Basin Slope	=	1.1 %	Hydraulic length	=	1505 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	12.38 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

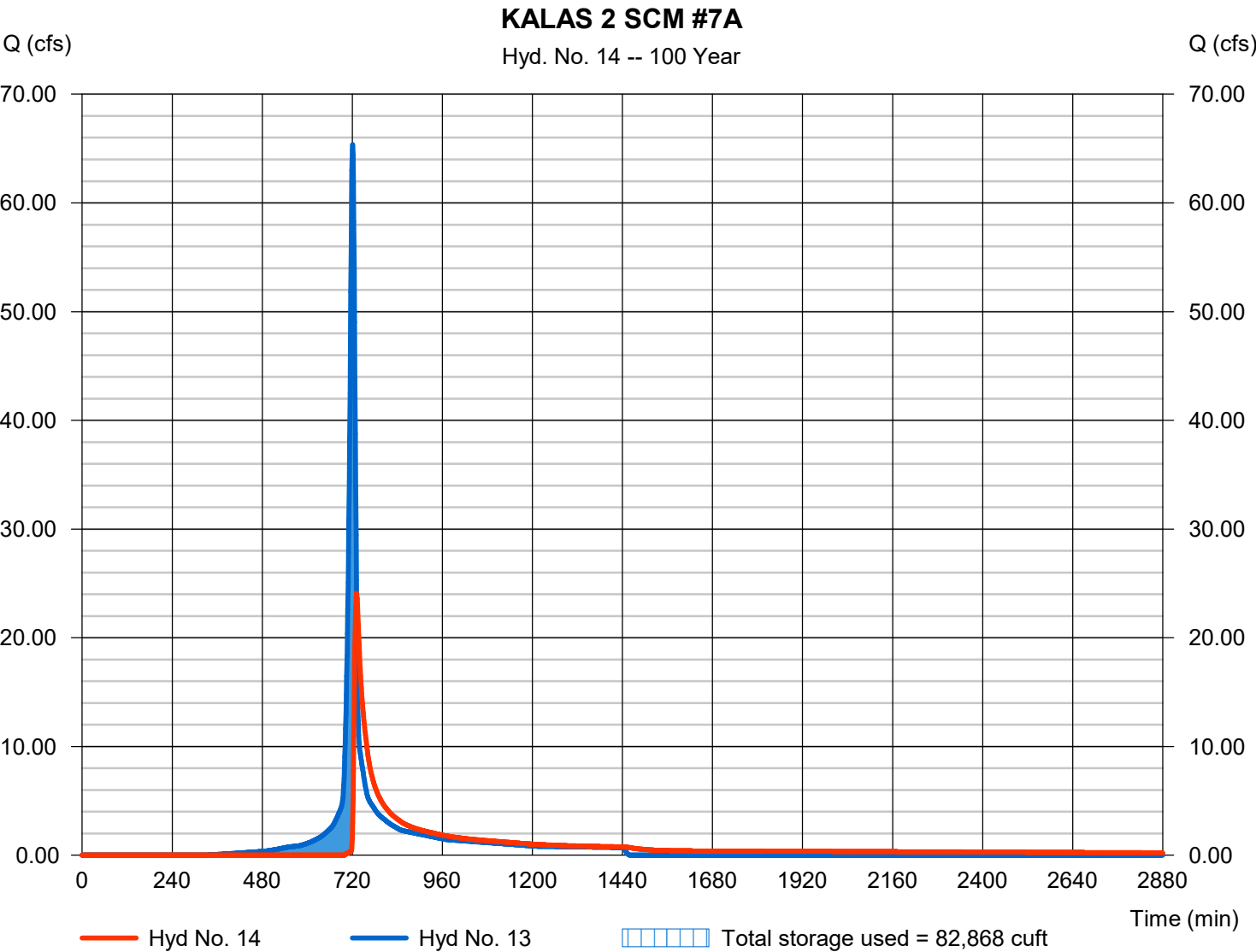
Monday, 03 / 31 / 2025

Hyd. No. 14

KALAS 2 SCM #7A

Hydrograph type	= Reservoir	Peak discharge	= 24.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 140,354 cuft
Inflow hyd. No.	= 13 - KALAS 2 SCM7 POST DEMO	WDAElevation	= 375.56 ft
Reservoir name	= SCM #7A	Max. Storage	= 82,868 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

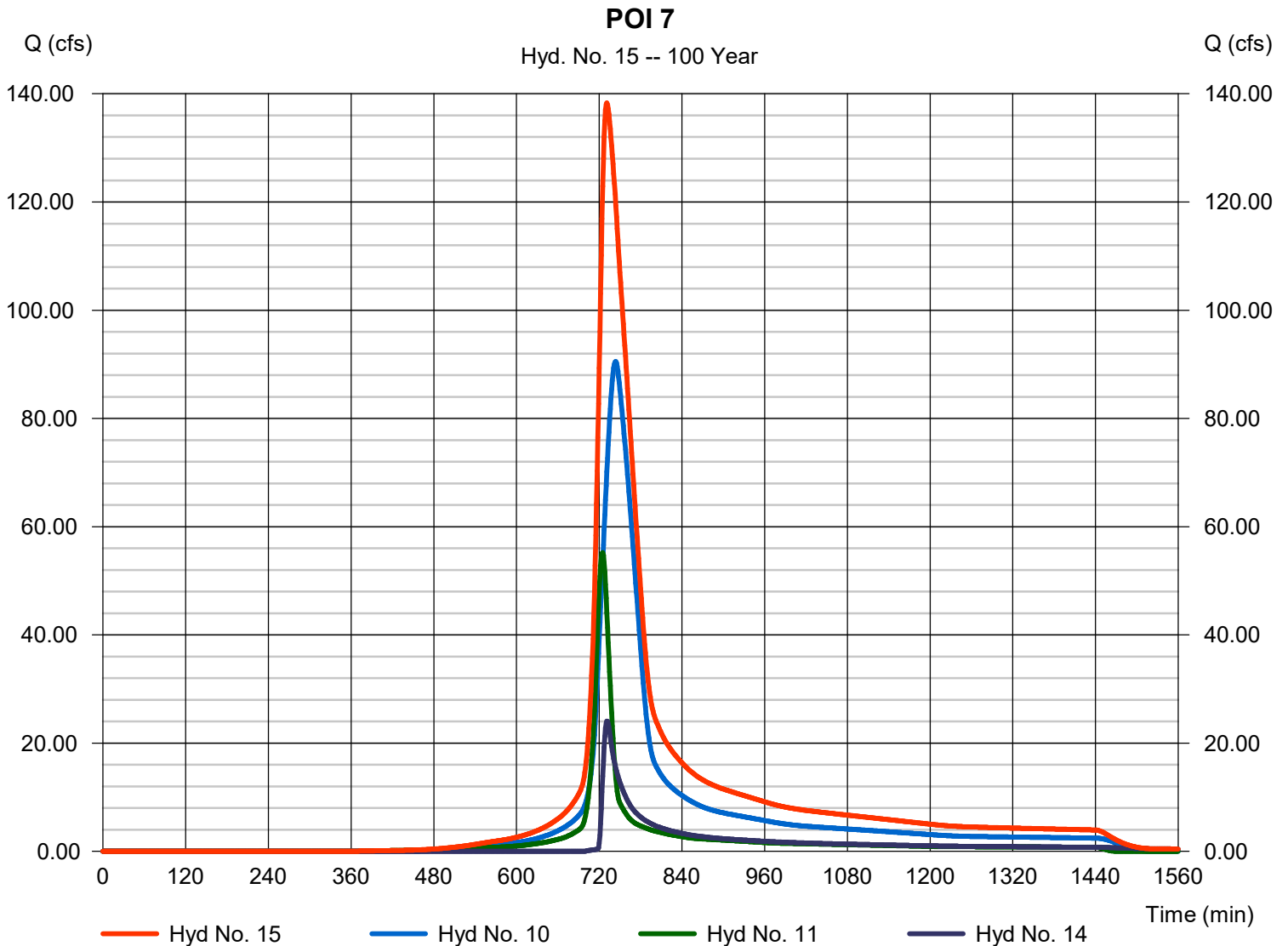
Monday, 03 / 31 / 2025

Hyd. No. 15

POI 7

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 10, 11, 14

Peak discharge = 138.29 cfs
Time to peak = 731 min
Hyd. volume = 827,866 cuft
Contrib. drain. area = 9.720 ac

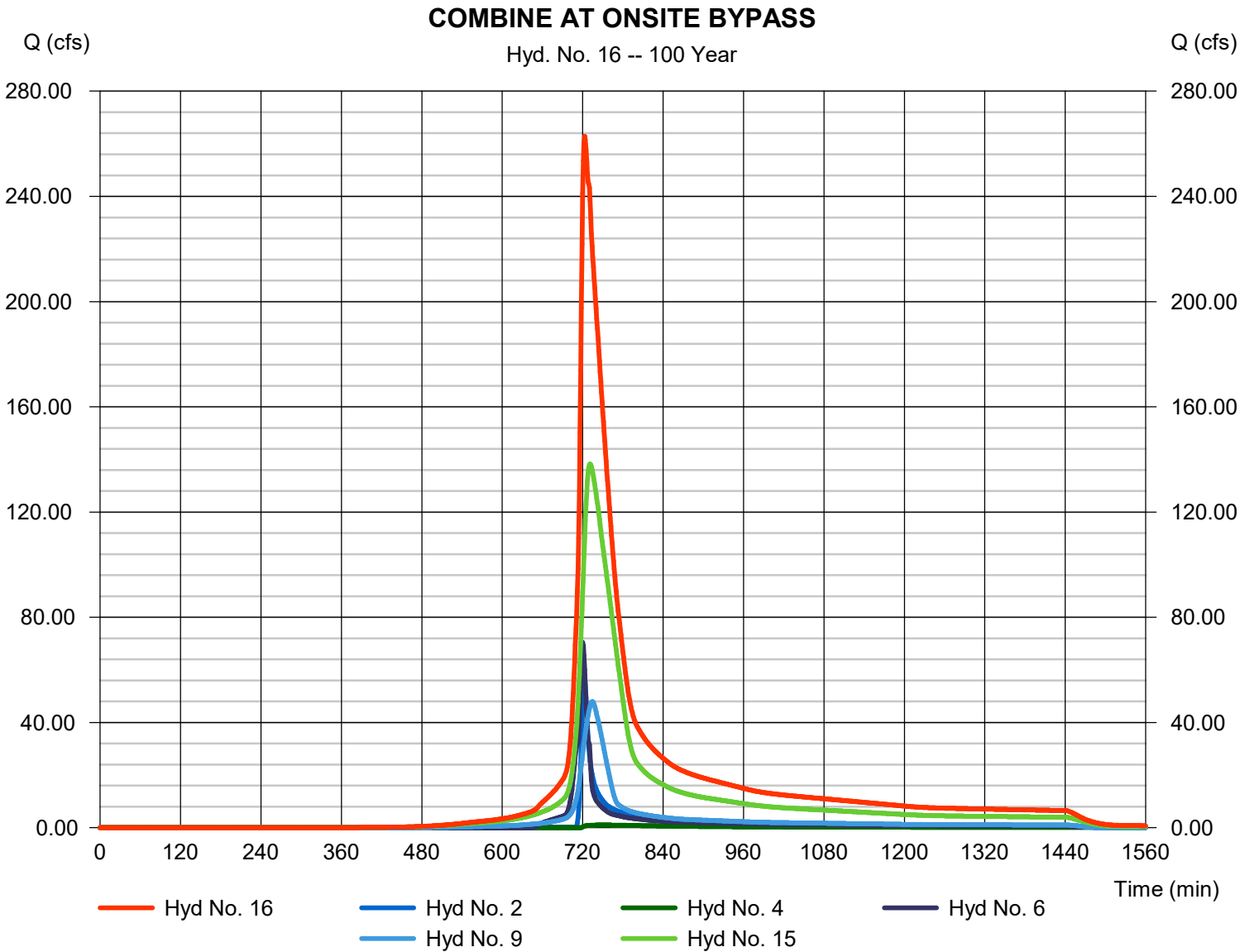


Hydrograph Report

Hyd. No. 16

COMBINE AT ONSITE BYPASS

Hydrograph type	= Combine	Peak discharge	= 262.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 1,364,194 cuft
Inflow hyds.	= 2, 4, 6, 9, 15	Contrib. drain. area	= 14.090 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 03 / 31 / 2025

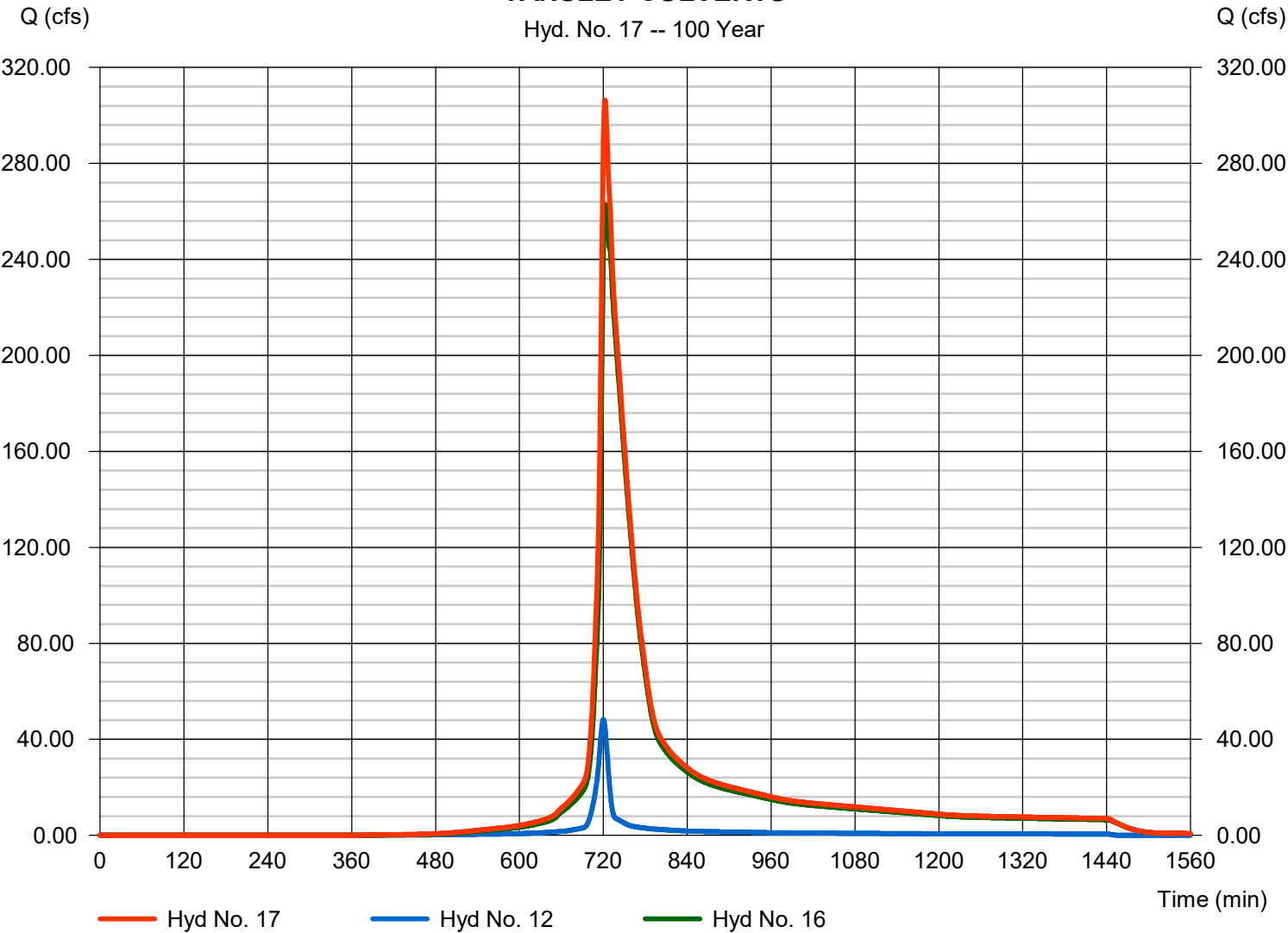
Hyd. No. 17

TANSLEY CULVERTS

Hydrograph type	= Combine	Peak discharge	= 306.41 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 1,483,001 cuft
Inflow hyds.	= 12, 16	Contrib. drain. area	= 6.570 ac

TANSLEY CULVERTS

Hyd. No. 17 -- 100 Year



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.0305	12.5000	0.8674	-----
3	0.0000	0.0000	0.0000	-----
5	0.0000	0.0000	0.0000	-----
10	74.0861	12.5000	0.8066	-----
25	62.8559	11.0000	0.7384	-----
50	56.0596	9.9000	0.6909	-----
100	53.0414	9.3000	0.6596	-----

File name: 20241113 Moody IDF.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.76	4.64	3.89	3.37	2.98	2.67	2.42	2.22	2.05	1.91	1.79	1.68
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.36	6.01	5.11	4.47	3.98	3.60	3.29	3.04	2.82	2.64	2.48	2.34
25	8.11	6.64	5.67	4.98	4.46	4.05	3.72	3.45	3.22	3.02	2.85	2.70
50	8.67	7.10	6.08	5.36	4.82	4.39	4.05	3.76	3.52	3.32	3.14	2.98
100	9.17	7.53	6.47	5.72	5.15	4.71	4.35	4.06	3.81	3.59	3.40	3.24

Tc = time in minutes. Values may exceed 60.

Precip. file name: F:\Kalas Assemblage\Raleigh-Wake County 24Hr Rain.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	3.00	3.45	0.00	4.33	5.02	5.96	6.80	7.46
SCS 6-Hr	2.05	2.46	0.00	3.04	3.55	0.00	0.00	5.32
Huff-1st	0.00	0.00	0.00	2.75	0.00	5.38	6.50	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	2.80	0.00	5.25	6.00	0.00

Watershed Model Schematic.....	1
---------------------------------------	----------

Hydrograph Return Period Recap.....	2
--	----------

10 - Year

Summary Report.....	3
----------------------------	----------

Hydrograph Reports.....	4
--------------------------------	----------

Hydrograph No. 1, SCS Runoff, MOODY POD 2A #1 (to SCM #1).....	4
Hydrograph No. 2, Reservoir, MOODY SCM #1.....	5
Hydrograph No. 3, SCS Runoff, MOODY POD 2A #2 (to SCM #2).....	6
Hydrograph No. 4, Reservoir, MOODY SCM #2.....	7
Hydrograph No. 5, SCS Runoff, MOODY POD 2A #3 (to SCM #3).....	8
Hydrograph No. 6, Reservoir, MOODY SCM #3.....	9
Hydrograph No. 7, SCS Runoff, NCDOT CULVERT #1.....	10
Hydrograph No. 8, SCS Runoff, NCDOT CULVERT #2.....	11
Hydrograph No. 9, SCS Runoff, MULBERRY CULVERT.....	12
Hydrograph No. 10, Combine, KALAS PHASE 2 CULVERT.....	13
Hydrograph No. 11, SCS Runoff, OFFSITE BYPASS (FROM KALAS 2).....	14
Hydrograph No. 12, SCS Runoff, ONSITE BYPASS.....	15
Hydrograph No. 13, SCS Runoff, KALAS 2 SCM7 POST DEV DA.....	16
Hydrograph No. 14, Reservoir, KALAS 2 SCM #7A.....	17
Hydrograph No. 15, Combine, POI 7.....	18
Hydrograph No. 16, Combine, COMBINE AT ONSITE BYPASS.....	19
Hydrograph No. 17, Combine, TANSLEY CULVERTS.....	20

25 - Year

Summary Report.....	21
----------------------------	-----------

Hydrograph Reports.....	22
--------------------------------	-----------

Hydrograph No. 1, SCS Runoff, MOODY POD 2A #1 (to SCM #1).....	22
Hydrograph No. 2, Reservoir, MOODY SCM #1.....	23
Hydrograph No. 3, SCS Runoff, MOODY POD 2A #2 (to SCM #2).....	24
Hydrograph No. 4, Reservoir, MOODY SCM #2.....	25
Hydrograph No. 5, SCS Runoff, MOODY POD 2A #3 (to SCM #3).....	26
Hydrograph No. 6, Reservoir, MOODY SCM #3.....	27
Hydrograph No. 7, SCS Runoff, NCDOT CULVERT #1.....	28
Hydrograph No. 8, SCS Runoff, NCDOT CULVERT #2.....	29
Hydrograph No. 9, SCS Runoff, MULBERRY CULVERT.....	30
Hydrograph No. 10, Combine, KALAS PHASE 2 CULVERT.....	31
Hydrograph No. 11, SCS Runoff, OFFSITE BYPASS (FROM KALAS 2).....	32
Hydrograph No. 12, SCS Runoff, ONSITE BYPASS.....	33
Hydrograph No. 13, SCS Runoff, KALAS 2 SCM7 POST DEV DA.....	34
Hydrograph No. 14, Reservoir, KALAS 2 SCM #7A.....	35
Hydrograph No. 15, Combine, POI 7.....	36
Hydrograph No. 16, Combine, COMBINE AT ONSITE BYPASS.....	37
Hydrograph No. 17, Combine, TANSLEY CULVERTS.....	38

100 - Year

Summary Report.....	39
----------------------------	-----------

Hydrograph Reports.....	40
Hydrograph No. 1, SCS Runoff, MOODY POD 2A #1 (to SCM #1).....	40
Hydrograph No. 2, Reservoir, MOODY SCM #1.....	41
Hydrograph No. 3, SCS Runoff, MOODY POD 2A #2 (to SCM #2).....	42
Hydrograph No. 4, Reservoir, MOODY SCM #2.....	43
Hydrograph No. 5, SCS Runoff, MOODY POD 2A #3 (to SCM #3).....	44
Hydrograph No. 6, Reservoir, MOODY SCM #3.....	45
Hydrograph No. 7, SCS Runoff, NCDOT CULVERT #1.....	46
Hydrograph No. 8, SCS Runoff, NCDOT CULVERT #2.....	47
Hydrograph No. 9, SCS Runoff, MULBERRY CULVERT.....	48
Hydrograph No. 10, Combine, KALAS PHASE 2 CULVERT.....	49
Hydrograph No. 11, SCS Runoff, OFFSITE BYPASS (FROM KALAS 2).....	50
Hydrograph No. 12, SCS Runoff, ONSITE BYPASS.....	51
Hydrograph No. 13, SCS Runoff, KALAS 2 SCM7 POST DEV DA.....	52
Hydrograph No. 14, Reservoir, KALAS 2 SCM #7A.....	53
Hydrograph No. 15, Combine, POI 7.....	54
Hydrograph No. 16, Combine, COMBINE AT ONSITE BYPASS.....	55
Hydrograph No. 17, Combine, TANSLEY CULVERTS.....	56
 IDF Report.....	 57

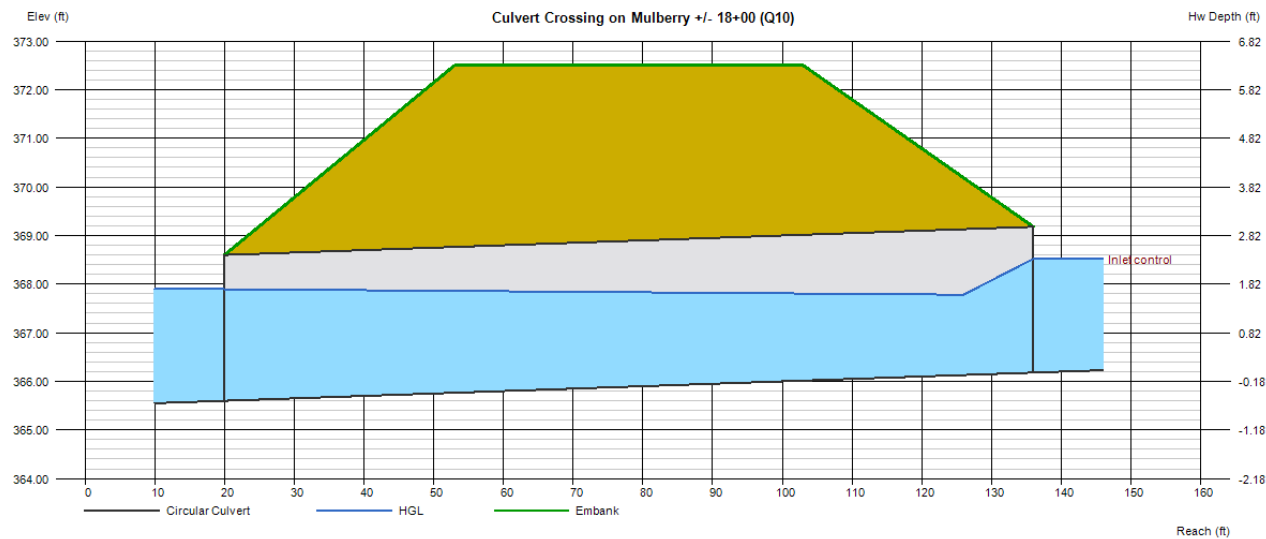
Culvert Report

Culvert Crossing on Mulberry +/- 18+00 (Q10)

Invert Elev Dn (ft)	=	365.60
Pipe Length (ft)	=	116.00
Slope (%)	=	0.50
Invert Elev Up (ft)	=	366.18
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 372.50
Top Width (ft)	= 50.00
Crest Width (ft)	= 100.00

Calculations	
Qmin (cfs)	= 24.42
Qmax (cfs)	= 24.42
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 24.42
Qpipe (cfs)	= 24.42
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 4.21
Veloc Up (ft/s)	= 6.41
HGL Dn (ft)	= 367.90
HGL Up (ft)	= 367.77
Hw Elev (ft)	= 368.52
Hw/D (ft)	= 0.78
Flow Regime	= Inlet Control



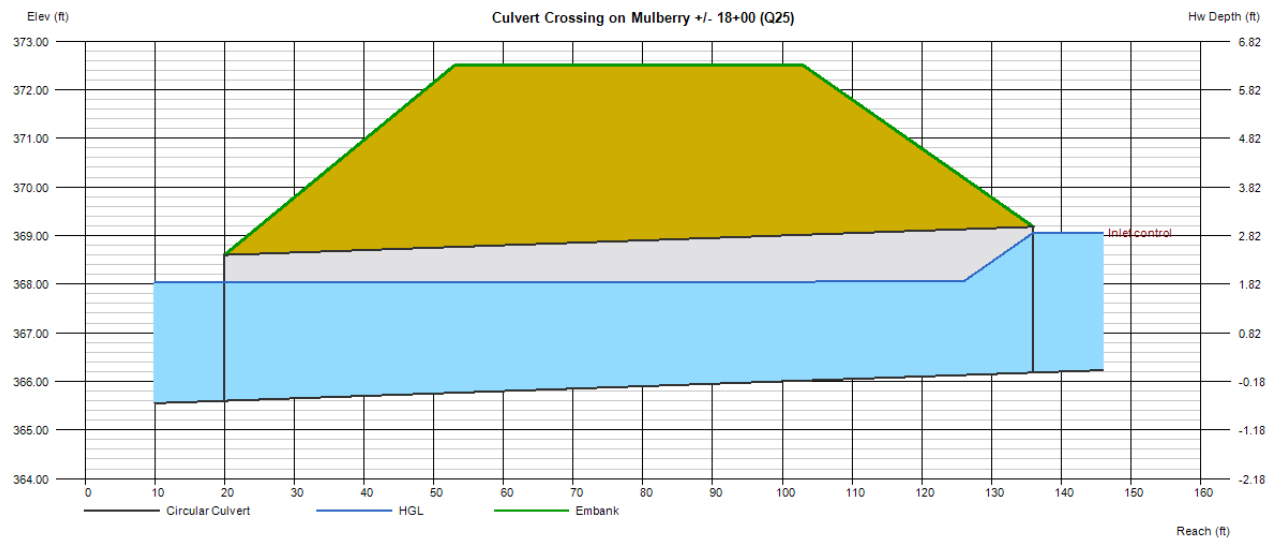
Culvert Report

Culvert Crossing on Mulberry +/- 18+00 (Q25)

Invert Elev Dn (ft)	= 365.60
Pipe Length (ft)	= 116.00
Slope (%)	= 0.50
Invert Elev Up (ft)	= 366.18
Rise (in)	= 36.0
Shape	= Circular
Span (in)	= 36.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 372.50
Top Width (ft)	= 50.00
Crest Width (ft)	= 100.00

Calculations	
Qmin (cfs)	= 33.20
Qmax (cfs)	= 33.20
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 33.20
Qpipe (cfs)	= 33.20
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 5.40
Veloc Up (ft/s)	= 7.14
HGL Dn (ft)	= 368.03
HGL Up (ft)	= 368.06
Hw Elev (ft)	= 369.06
Hw/D (ft)	= 0.96
Flow Regime	= Inlet Control



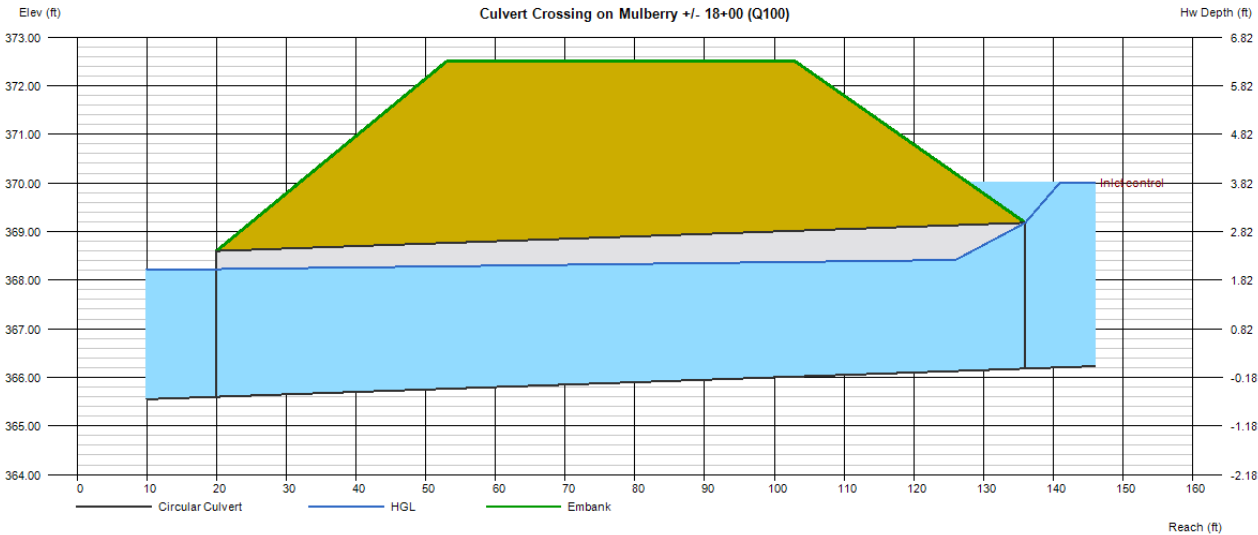
Culvert Report

Culvert Crossing on Mulberry +/- 18+00 (Q100)

Invert Elev Dn (ft)	=	365.60
Pipe Length (ft)	=	116.00
Slope (%)	=	0.50
Invert Elev Up (ft)	=	366.18
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 372.50
Top Width (ft)	= 50.00
Crest Width (ft)	= 100.00

Calculations	
Qmin (cfs)	= 47.93
Qmax (cfs)	= 47.93
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 47.93
Qpipe (cfs)	= 47.93
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 7.30
Veloc Up (ft/s)	= 8.42
HGL Dn (ft)	= 368.23
HGL Up (ft)	= 368.43
Hw Elev (ft)	= 370.01
Hw/D (ft)	= 1.28
Flow Regime	= Inlet Control



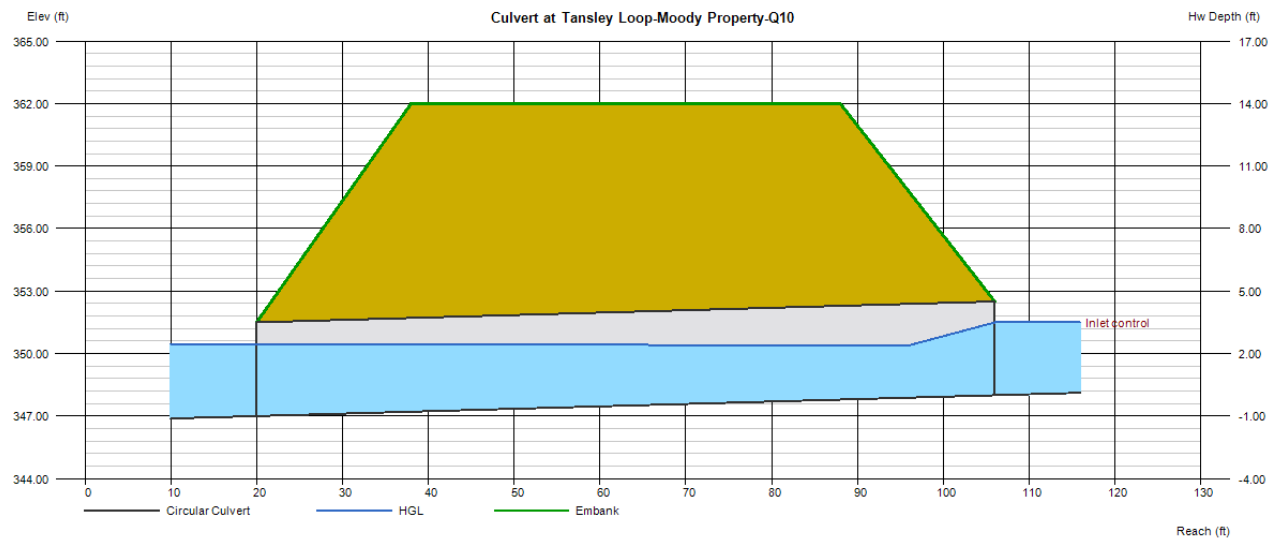
Culvert Report

Culvert at Tansley Loop-Moody Property-Q10

Invert Elev Dn (ft)	=	347.00
Pipe Length (ft)	=	86.00
Slope (%)	=	1.16
Invert Elev Up (ft)	=	348.00
Rise (in)	=	54.0
Shape	=	Circular
Span (in)	=	54.0
No. Barrels	=	2
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 362.00
Top Width (ft)	= 50.00
Crest Width (ft)	= 80.00

Calculations	
Qmin (cfs)	= 134.54
Qmax (cfs)	= 134.54
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 134.54
Qpipe (cfs)	= 134.54
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 5.15
Veloc Up (ft/s)	= 7.85
HGL Dn (ft)	= 350.44
HGL Up (ft)	= 350.39
Hw Elev (ft)	= 351.49
Hw/D (ft)	= 0.78
Flow Regime	= Inlet Control



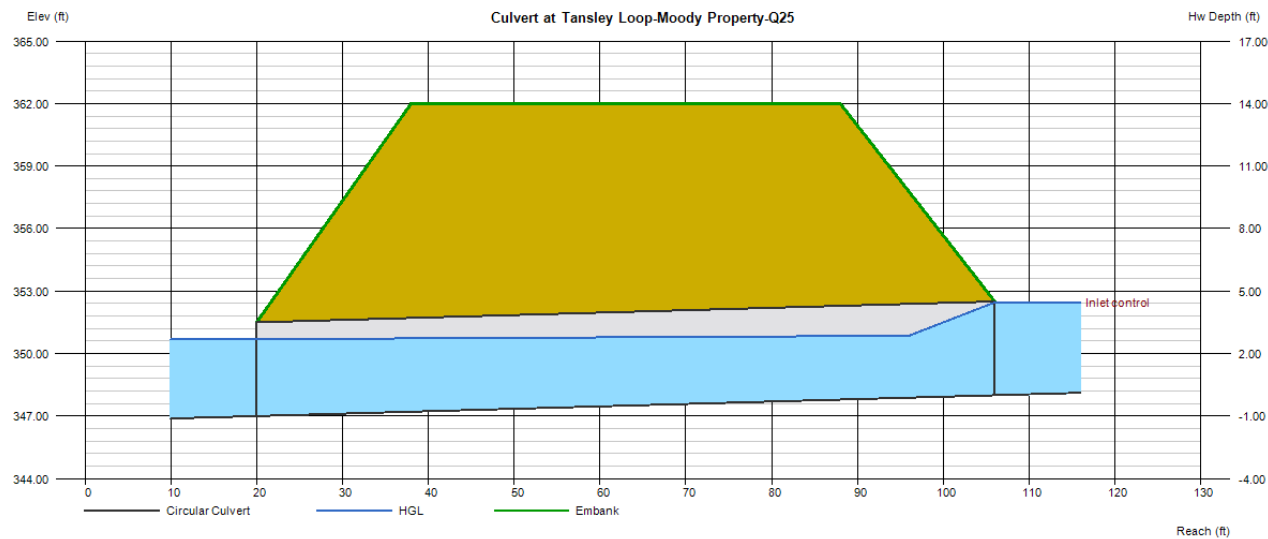
Culvert Report

Culvert at Tansley Loop-Moody Property-Q25

Invert Elev Dn (ft)	=	347.00
Pipe Length (ft)	=	86.00
Slope (%)	=	1.16
Invert Elev Up (ft)	=	348.00
Rise (in)	=	54.0
Shape	=	Circular
Span (in)	=	54.0
No. Barrels	=	2
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 362.00
Top Width (ft)	= 50.00
Crest Width (ft)	= 80.00

Calculations	
Qmin (cfs)	= 192.31
Qmax (cfs)	= 192.31
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 192.31
Qpipe (cfs)	= 192.31
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 6.89
Veloc Up (ft/s)	= 8.96
HGL Dn (ft)	= 350.69
HGL Up (ft)	= 350.88
Hw Elev (ft)	= 352.46
Hw/D (ft)	= 0.99
Flow Regime	= Inlet Control



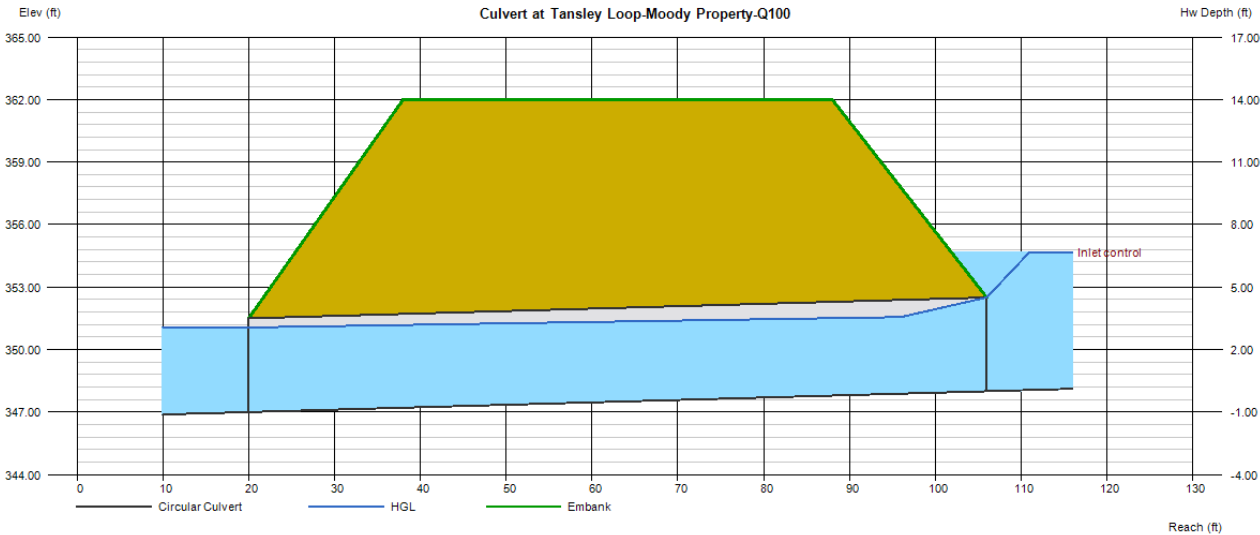
Culvert Report

Culvert at Tansley Loop-Moody Property-Q100

Invert Elev Dn (ft)	=	347.00
Pipe Length (ft)	=	86.00
Slope (%)	=	1.16
Invert Elev Up (ft)	=	348.00
Rise (in)	=	54.0
Shape	=	Circular
Span (in)	=	54.0
No. Barrels	=	2
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 362.00
Top Width (ft)	= 50.00
Crest Width (ft)	= 80.00

Calculations	
Qmin (cfs)	= 306.41
Qmax (cfs)	= 306.41
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 306.41
Qpipe (cfs)	= 306.41
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 10.14
Veloc Up (ft/s)	= 11.16
HGL Dn (ft)	= 351.06
HGL Up (ft)	= 351.63
Hw Elev (ft)	= 354.68
Hw/D (ft)	= 1.48
Flow Regime	= Inlet Control



Project Name: Moody Development
Project Number: R210002
Date: 3/31/2025
Calculated By: RC
Checked By: JK

CULVERT SIZING WORKSHEET (INLET CONTROL)- Mulberry

Step 1: Determine Q (cfs) by using Rational Equation or inputting Known Q

Enter Known Q_{25} (cfs): 34

Q value can be determined by using Hydrograph, Express, or Storm Sewers, etc...

Step 2: Q_{25} culvert sizing with a minimum HW/D = 1.20 (Inlet Control)

Culvert Invert Up Elevation (ft): 348

Nomenclature	Embedded?	Diameter (ft)	C-S A (sf)	Centroid Value (ft)
Culvert #1	yes	3	6.06	1.31
Culvert #2	n/a	0	0	0

HW (ft):	3.60	Head h_1 (ft):	1.91
		Head h_2 (ft):	0.60

Culvert #1 Capacity Q_1 (cfs):	40.33	$Q_1 = KeA(2gh_1)^{1/2}$
Culvert #2 Capacity Q_2 (cfs):	0.00	$Q_2 = KeA(2gh_2)^{1/2}$
Total Capacity Q_T (cfs):	40.33	ADEQUATE $Q_T = Q_1 + Q_2$

Step 3: Q_{100} culvert sizing to not overtop roadway

Culvert invert (ft elev.):	366.50
Top elevation of grade above culvert (ft elev.):	373.00
Enter Known Q_{100} (cfs):	48
Ke coefficient	0.60

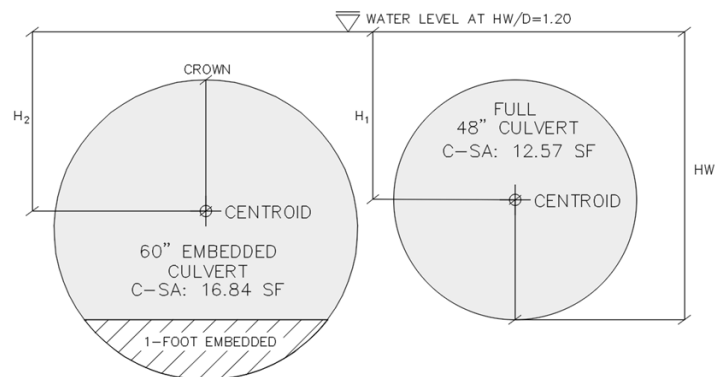
Note: The Ke coefficient of 0.60 is standard for a head wall-beveled inlet

Total C-S A (sf) available:	6.06
Q_{100} Head, H (ft)	2.71 $H = [(Q/KeA)^2]/2g$
Headwater Depth, HW (ft):	4.21 $HW = H + D/2$
Headwater Elevation (ft)	370.71
Q_{100} Overtopping Roadway?	NO

Pipe Characteristics Table				
Pipe Diameter (ft)	C-S A (sf)	Centroid of C-S A (ft)	C-S A (sf)	Centroid to Crown Distance (ft)
2	3.14	1.00	2.69	0.87
2.5	4.91	1.25	4.21	1.09
3	7.07	1.50	6.06	1.31
3.5	9.62	1.75	8.25	1.53
4	12.57	2.00	10.78	1.75
4.5	15.90	2.25	13.64	1.97
5	19.64	2.50	16.84	2.18
6	28.27	3.00	25.18	2.70

FIGURE BELOW IS FOR EXAMPLE PURPOSES ONLY (NOT PROJECT SPECIFIC)

PIPE CHARACTERISTIC FIGURE
(MATCH CROWN IF POSSIBLE)



Project Name: Moody Development
Project Number: R210002
Date: 3/31/2025
Calculated By: RC
Checked By: JK

CULVERT SIZING WORKSHEET (INLET CONTROL)- Tansley Loop

Step 1: Determine Q (cfs) by using Rational Equation or inputting Known Q

Enter Known Q_{25} (cfs): 193

Q value can be determined by using Hydrograph, Express, or Storm Sewers, etc...

Step 2: Q_{25} culvert sizing with a minimum HW/D = 1.20 (Inlet Control)

Culvert Invert Up Elevation (ft): 348

Nomenclature	Embedded?	Diameter (ft)	C-S A (sf)	Centroid Value (ft)
Culvert #1	yes	4.5	13.64	1.97
Culvert #2	yes	4.5	13.64	1.97

HW (ft): 5.40

Head h_1 (ft): 2.87
Head h_2 (ft): 2.87

Culvert #1 Capacity Q_1 (cfs):	111.26	$Q_1 = KeA(2gh_1)^{1/2}$
Culvert #2 Capacity Q_2 (cfs):	111.26	$Q_2 = KeA(2gh_2)^{1/2}$
Total Capacity Q_T (cfs):	222.53	ADEQUATE $QT=Q1+Q2$

Step 3: Q_{100} culvert sizing to not overtop roadway

Culvert invert (ft elev.):	348.00
Top elevation of grade above culvert (ft elev.):	362.00
Enter Known Q_{100} (cfs):	307
Ke coefficient	0.60

Note: The Ke coefficient of 0.60 is standard for a head wall-beveled inlet

Total C-S A (sf) available:	27.28
Q_{100} Head, H (ft)	5.46 $H = [(Q/KeA)^2]/2g$
Headwater Depth, HW (ft):	7.71 $HW = H + D/2$
Headwater Elevation (ft)	355.71
Q_{100} Overtopping Roadway?	NO

Pipe Characteristics Table				
Pipe Diameter (ft)	C-S A (sf)	Centroid of C-S A (ft)	C-S A (sf)	Centroid to Crown Distance (ft)
2	3.14	1.00	2.69	0.87
2.5	4.91	1.25	4.21	1.09
3	7.07	1.50	6.06	1.31
3.5	9.62	1.75	8.25	1.53
4	12.57	2.00	10.78	1.75
4.5	15.90	2.25	13.64	1.97
5	19.64	2.50	16.84	2.18
6	28.27	3.00	25.18	2.70

FIGURE BELOW IS FOR EXAMPLE PURPOSES ONLY (NOT PROJECT SPECIFIC)

PIPE CHARACTERISTIC FIGURE
(MATCH CROWN IF POSSIBLE)

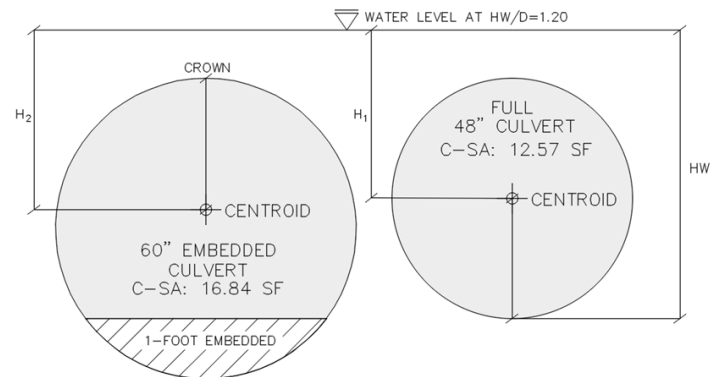
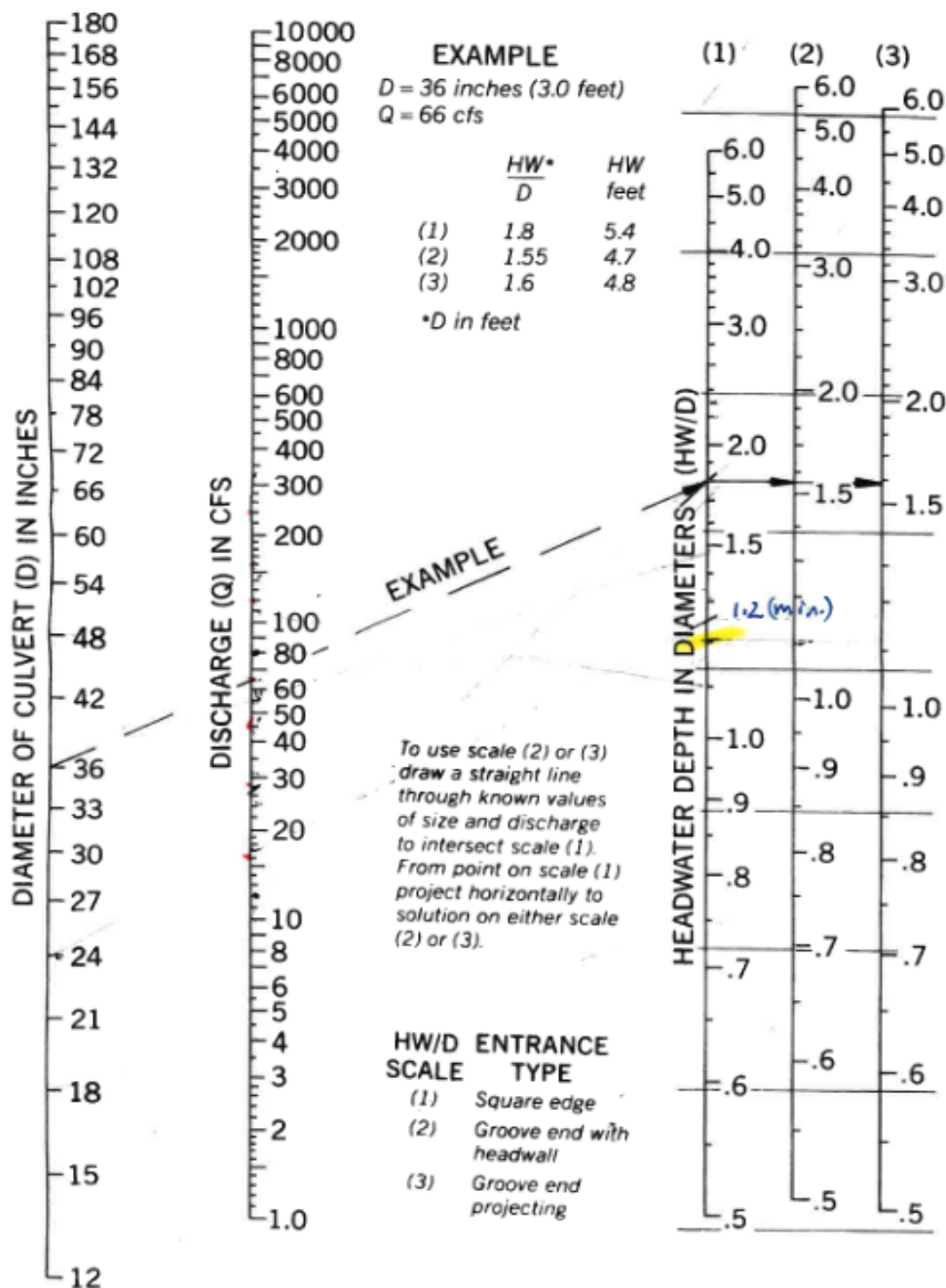


FIGURE 33

HEADWATER DEPTH FOR CIRCULAR CONCRETE PIPE CULVERTS WITH INLET CONTROL





TIME OF CONCENTRATION & TRAVEL TIME

CALCULATIONS BY: RC
CHECKED BY: JK
DATE: 1/27/2025
PROJECT: Moody
PROJECT #: R210002
AREA: NCDOT CULVERT #1

Calculate the Travel Time and/or Time of Concentration with Overland (Sheet) Flow, Shallow Concentrated Flow, and Channel Flow. Based on Chapter 3 of the NRCS TR-55 Method.

Sheet flow (Applicable to Tc only) using Manning's Kinematic Solution

$$T_t = 0.007 * \frac{(nL)^{0.8}}{(P_2^{0.5} * S^{0.4})}$$

Surface description (table 3-1)	Dense Grass
Manning's roughness coefficient, n (table 3-1)	0.240
Flow Length, L (Max. 300')*	300 ft
Two-year 24-hour rainfall, P2	3.46 in
Land slope, s	0.010 ft/ft

Travel Time, Tt **0.73 hr** **43.61 min**

*Once flow exceeds 300' it becomes shallow concentration flow (a maximum of 150' is typical)

Shallow concentrated flow using graphical method (see Figure 3-1)

$$T_t = \frac{L}{3600V}$$

Surface description (paved or unpaved)	Unpaved
Flow Length, L	500 ft
Watercourse slope, s	0.015 ft/ft
Average velocity, V (Figure 3-1)	2 ft/s

Travel Time, Tt **0.07 hr** **4.17 min**

Channel flow using Manning's Equation

$$T_t = \frac{L}{3600V} \quad V = \frac{1.49 * r^{\frac{2}{3}} * s^{\frac{1}{2}}}{n} \quad r = \frac{a}{p_w}$$

Cross sectional flow area, a	7.00 sf
Wetted perimeter, pw	9.50 ft
Hydraulic Radius, r	0.74 ft
Channel slope, s	0.005 ft/ft
Manning's roughness coefficient, n	0.011
Flow Length, L	590 ft
Velocity, V	7.81 ft/s

Travel Time, Tt **0.02 hr** **1.26 min**

Total Travel Time/Time of Concentration **0.82 hr** **49.03 min**



TIME OF CONCENTRATION & TRAVEL TIME

CALCULATIONS BY: RC
CHECKED BY: JK
DATE: 1/27/2025
PROJECT: Moody
PROJECT #: R210002
AREA: NCDOT CULVERT #2

Calculate the Travel Time and/or Time of Concentration with Overland (Sheet) Flow, Shallow Concentrated Flow, and Channel Flow. Based on Chapter 3 of the NRCS TR-55 Method.

Sheet flow (Applicable to Tc only) using Manning's Kinematic Solution

$$T_t = 0.007 * \frac{(nL)^{0.8}}{(P_2^{0.5} * S^{0.4})}$$

Surface description (table 3-1)	Dense Grass
Manning's roughness coefficient, n (table 3-1)	0.240
Flow Length, L (Max. 300')*	300 ft
Two-year 24-hour rainfall, P2	3.46 in
Land slope, s	0.010 ft/ft

Travel Time, Tt **0.73 hr** **43.61 min**

*Once flow exceeds 300' it becomes shallow concentration flow (a maximum of 150' is typical)

Shallow concentrated flow using graphical method (see Figure 3-1)

$$T_t = \frac{L}{3600V}$$

Surface description (paved or unpaved)	Unpaved
Flow Length, L	691 ft
Watercourse slope, s	0.015 ft/ft
Average velocity, V (Figure 3-1)	2 ft/s

Travel Time, Tt **0.10 hr** **5.76 min**

Channel flow using Manning's Equation

$$T_t = \frac{L}{3600V} \quad V = \frac{1.49 * r^{\frac{2}{3}} * s^{\frac{1}{2}}}{n} \quad r = \frac{a}{p_w}$$

Cross sectional flow area, a	7.00 sf
Wetted perimeter, pw	9.50 ft
Hydraulic Radius, r	0.74 ft
Channel slope, s	0.005 ft/ft
Manning's roughness coefficient, n	0.011
Flow Length, L	714 ft
Velocity, V	7.81 ft/s

Travel Time, Tt **0.03 hr** **1.52 min**

Total Travel Time/Time of Concentration **0.85 hr** **50.89 min**



TIME OF CONCENTRATION & TRAVEL TIME

CALCULATIONS BY: RC
CHECKED BY: JK
DATE: 1/27/2025
PROJECT: Moody
PROJECT #: R210002
AREA: OFFSITE BYPASS

Calculate the Travel Time and/or Time of Concentration with Overland (Sheet) Flow, Shallow Concentrated Flow, and Channel Flow. Based on Chapter 3 of the NRCS TR-55 Method.

Sheet flow (Applicable to Tc only) using Manning's Kinematic Solution

$$T_t = 0.007 * \frac{(nL)^{0.8}}{(P_2^{0.5} * S^{0.4})}$$

Surface description (table 3-1) DENSE GRASS
Manning's roughness coefficient, n (table 3-1) 0.240
Flow Length, L (Max. 300')* 50 ft
Two-year 24-hour rainfall, P2 3.46 in
Land slope, s 0.010 ft/ft

Travel Time, Tt 0.17 hr 10.40 min

*Once flow exceeds 300' it becomes shallow concentration flow (a maximum of 150' is typical)

Shallow concentrated flow using graphical method (see Figure 3-1)

$$T_t = \frac{L}{3600V}$$

Surface description (paved or unpaved) Unpaved
Flow Length, L 684 ft
Watercourse slope, s 0.005 ft/ft
Average velocity, V (Figure 3-1) 1.2 ft/s

Travel Time, Tt 0.16 hr 9.50 min

Channel flow using Manning's Equation

$$T_t = \frac{L}{3600V} \quad V = \frac{1.49 * r^{\frac{2}{3}} * s^{\frac{1}{2}}}{n} \quad r = \frac{a}{p_w}$$

Cross sectional flow area, a 7.00 sf
Wetted perimeter, pw 9.50 ft
Hydraulic Radius, r 0.74 ft
Channel slope, s 0.005 ft/ft
Manning's roughness coefficient, n 0.011
Flow Length, L 0 ft
Velocity, V 7.81 ft/s

Travel Time, Tt 0.00 hr 0.00 min

Total Travel Time/Time of Concentration 0.33 hr 19.90 min



TIME OF CONCENTRATION & TRAVEL TIME

CALCULATIONS BY: **RC**
 CHECKED BY: **JK**
 DATE: **3/31/2025**
 PROJECT: **Moody**
 PROJECT #: **R210002**
 AREA: **ONSITE BYPASS**

Calculate the Travel Time and/or Time of Concentration with Overland (Sheet) Flow, Shallow Concentrated Flow, and Channel Flow. Based on Chapter 3 of the NRCS TR-55 Method.

Sheet flow (Applicable to Tc only) using Manning's Kinematic Solution

$$T_t = 0.007 * \frac{(nL)^{0.8}}{(P_2^{0.5} * s^{0.4})}$$

Surface description (table 3-1) **N/A**
 Manning's roughness coefficient, n (table 3-1) **0.400**
 Flow Length, L (Max. 300')* **0 ft**
 Two-year 24-hour rainfall, P2 **3.46 in**
 Land slope, s **0.010 ft/ft**

Travel Time, Tt **0.00 hr** **0.00 min**

*Once flow exceeds 300' it becomes shallow concentration flow (a maximum of 150' is typical)

Shallow concentrated flow using graphical method (see Figure 3-1)

$$T_t = \frac{L}{3600V}$$

Surface description (paved or unpaved) **Unpaved**
 Flow Length, L **592 ft**
 Watercourse slope, s **0.013 ft/ft**
 Average velocity, V (Figure 3-1) **1.6 ft/s**

Travel Time, Tt **0.10 hr** **6.17 min**

Channel flow using Manning's Equation

$$T_t = \frac{L}{3600V} \quad V = \frac{1.49 * r^{\frac{2}{3}} * s^{\frac{1}{2}}}{n} \quad r = \frac{a}{p_w}$$

Cross sectional flow area, a **30.00 sf**
 Wetted perimeter, pw **12.00 ft**
 Hydraulic Radius, r **2.50 ft**
 Channel slope, s **0.015 ft/ft**
 Manning's roughness coefficient, n **0.011**
 Flow Length, L **518 ft**
 Velocity, V **30.57 ft/s**

Travel Time, Tt **0.00 hr** **0.28 min**

Total Travel Time/Time of Concentration **0.11 hr** **6.45 min**



TIME OF CONCENTRATION & TRAVEL TIME

CALCULATIONS BY: **RC**
CHECKED BY: **JK**
DATE: **1/27/2025**
PROJECT: **Moody**
PROJECT #: **R210002**
AREA: **MULBERRY CULVERT**

Calculate the Travel Time and/or Time of Concentration with Overland (Sheet) Flow, Shallow Concentrated Flow, and Channel Flow. Based on Chapter 3 of the NRCS TR-55 Method.

Sheet flow (Applicable to Tc only) using Manning's Kinematic Solution

$$T_t = 0.007 * \frac{(nL)^{0.8}}{(P_2^{0.5} * s^{0.4})}$$

Surface description (table 3-1)	Dense Grass
Manning's roughness coefficient, n (table 3-1)	0.240
Flow Length, L (Max. 300')*	175 ft
Two-year 24-hour rainfall, P2	3.46 in
Land slope, s	0.010 ft/ft

Travel Time, Tt **0.47 hr** **28.33 min**

*Once flow exceeds 300' it becomes shallow concentration flow (a maximum of 150' is typical)

Shallow concentrated flow using graphical method (see Figure 3-1)

$$T_t = \frac{L}{3600V}$$

Surface description (paved or unpaved)	Unpaved
Flow Length, L	1000 ft
Watercourse slope, s	0.025 ft/ft
Average velocity, V (Figure 3-1)	2.6 ft/s

Travel Time, Tt **0.11 hr** **6.41 min**

Channel flow using Manning's Equation

$$T_t = \frac{L}{3600V} \quad V = \frac{1.49 * r^{\frac{2}{3}} * s^{\frac{1}{2}}}{n} \quad r = \frac{a}{p_w}$$

Cross sectional flow area, a	7.00 sf
Wetted perimeter, pw	9.50 ft
Hydraulic Radius, r	0.74 ft
Channel slope, s	0.005 ft/ft
Manning's roughness coefficient, n	0.011
Flow Length, L	0 ft
Velocity, V	7.81 ft/s

Travel Time, Tt **0.00 hr** **0.00 min**

Total Travel Time/Time of Concentration **0.58 hr** **34.74 min**

Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow

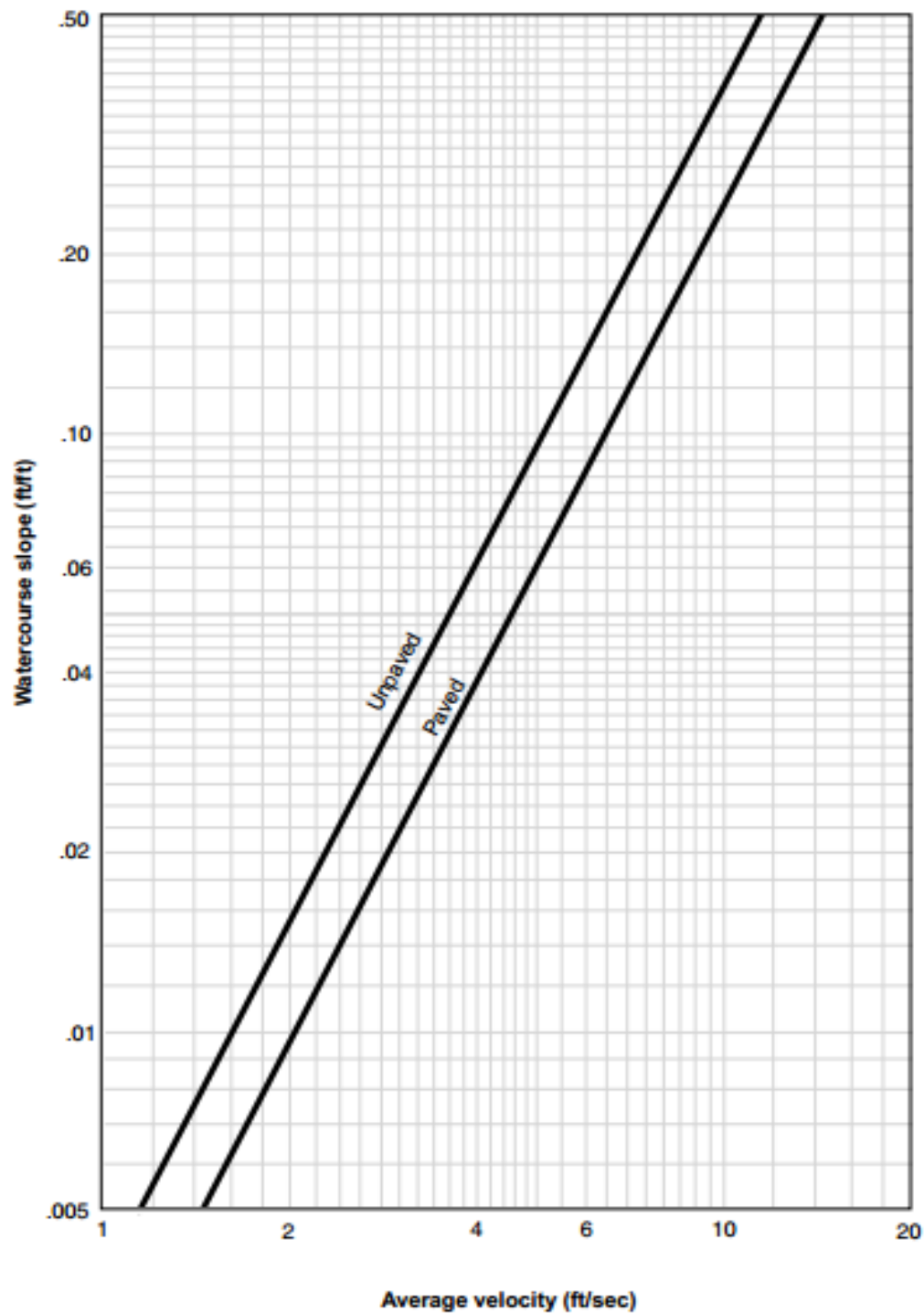


Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n ^{1/}
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses ^{2/}	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods: ^{3/}	
Light underbrush	0.40
Dense underbrush	0.80

¹ The n values are a composite of information compiled by Engman (1986).

² Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.

³ When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

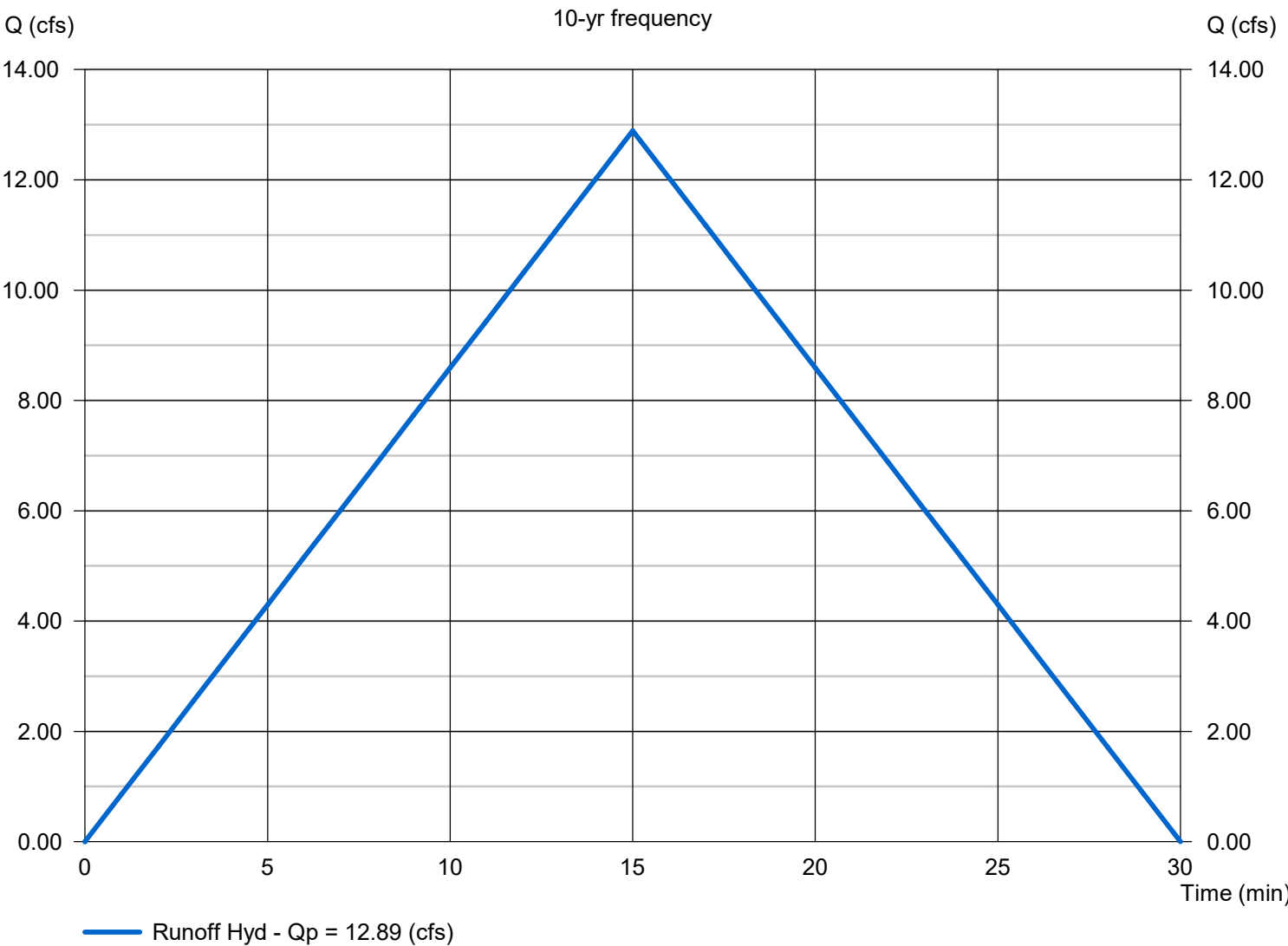
Hydrology Report

PDD #1A

Hydrograph type	= Rational	Peak discharge (cfs)	= 12.89
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 4.200	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 5.114	Tc by User (min)	= 15
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 11,599 (cuft); 0.266 (acft)

Runoff Hydrograph



Channel Report

PDD #1A

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 2.00

Invert Elev (ft) = 366.54
Slope (%) = 1.30
N-Value = 0.033

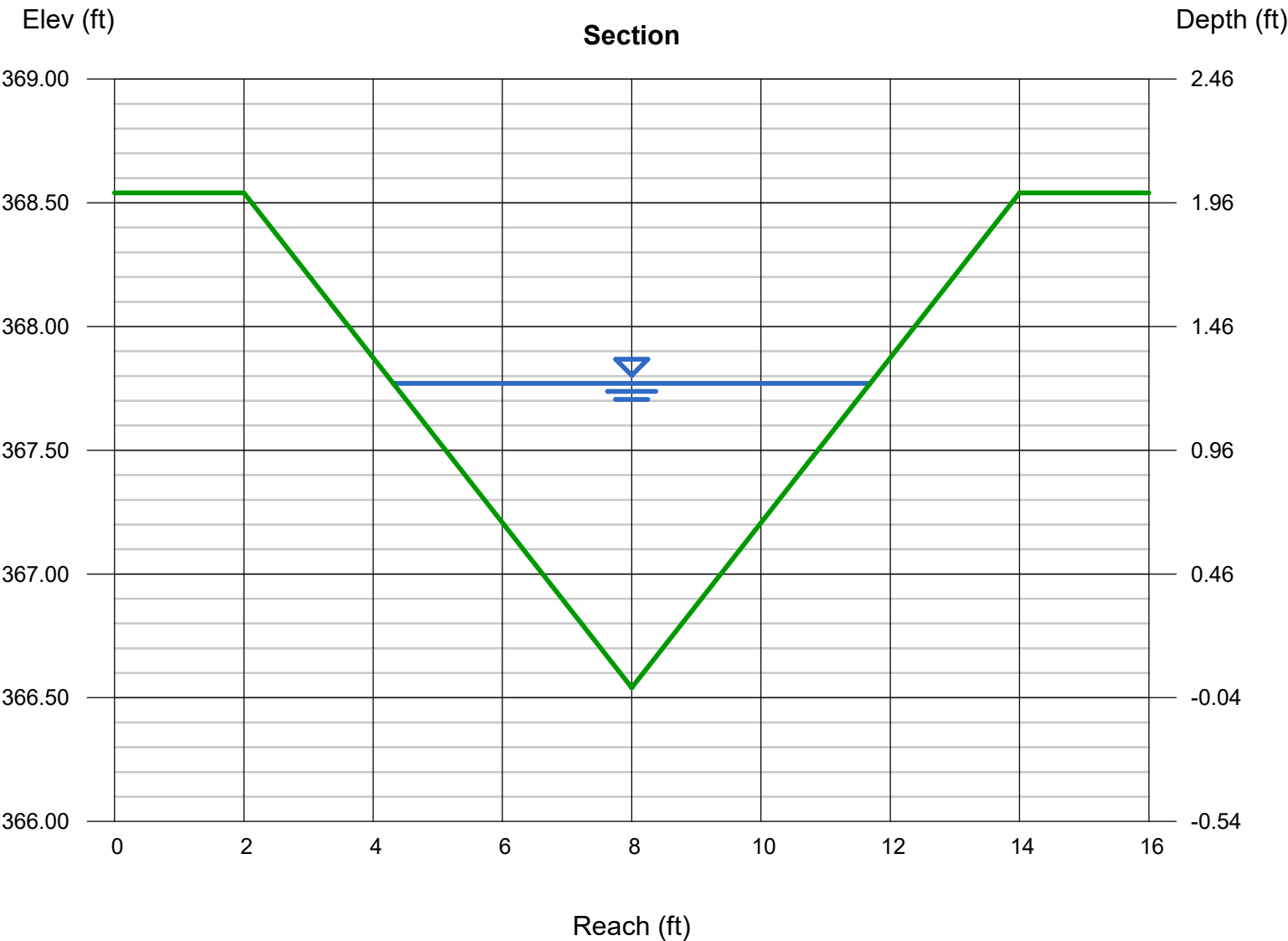
Calculations

Compute by: Known Q
Known Q (cfs) = 15.99

Highlighted

Depth (ft) = 1.23
Q (cfs) = 15.99
Area (sqft) = 4.54
Velocity (ft/s) = 3.52
Wetted Perim (ft) = 7.78
Crit Depth, Yc (ft) = 1.13
Top Width (ft) = 7.38
EGL (ft) = 1.42

Includes PDD #1B contribution



Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

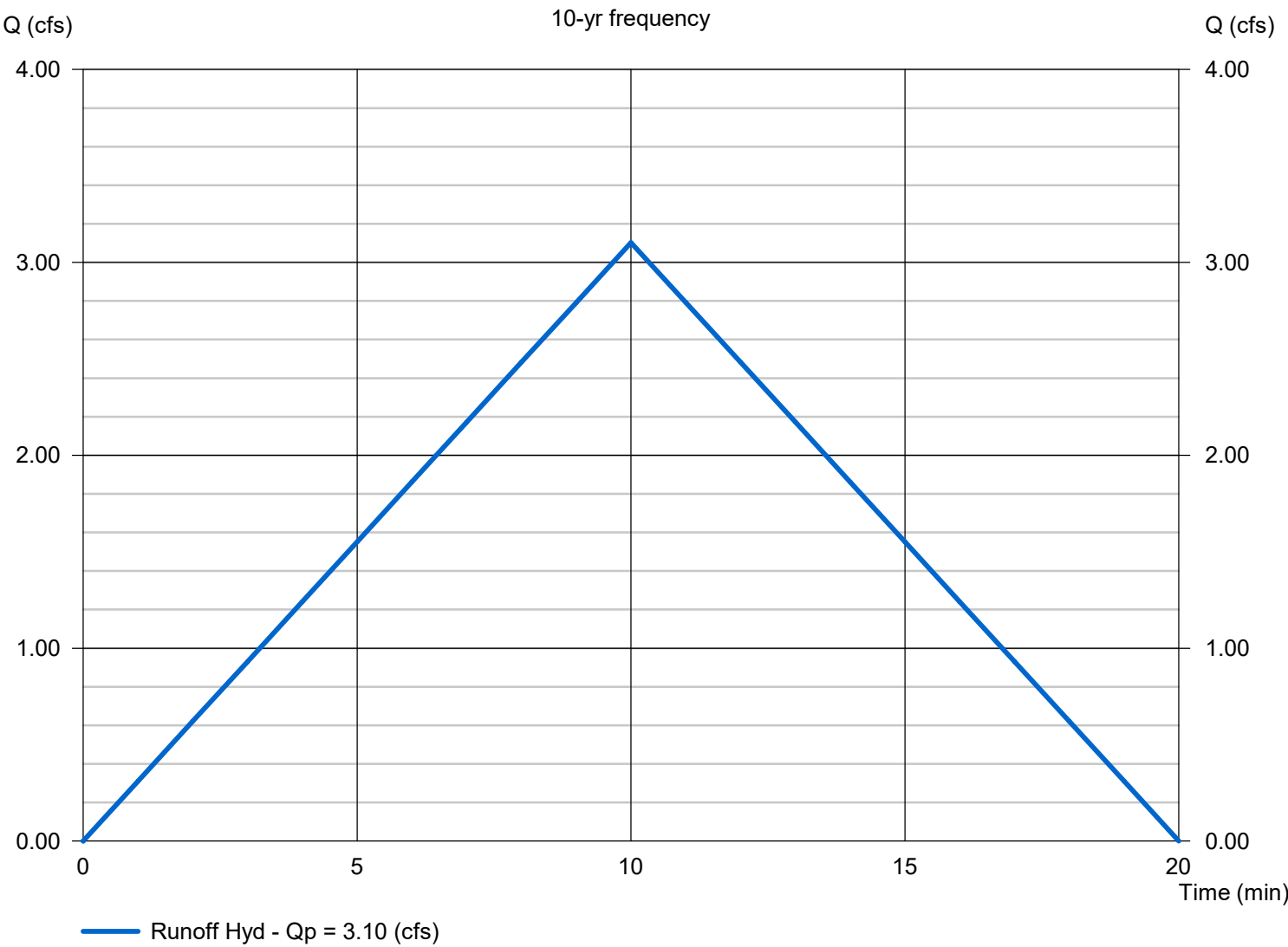
Friday, May 30 2025

PDD #1B

Hydrograph type	= Rational	Peak discharge (cfs)	= 3.103
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.860	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 6.013	Tc by User (min)	= 10
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 1,862 (cuft); 0.043 (acft)

Runoff Hydrograph



Channel Report

PDD #1B

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

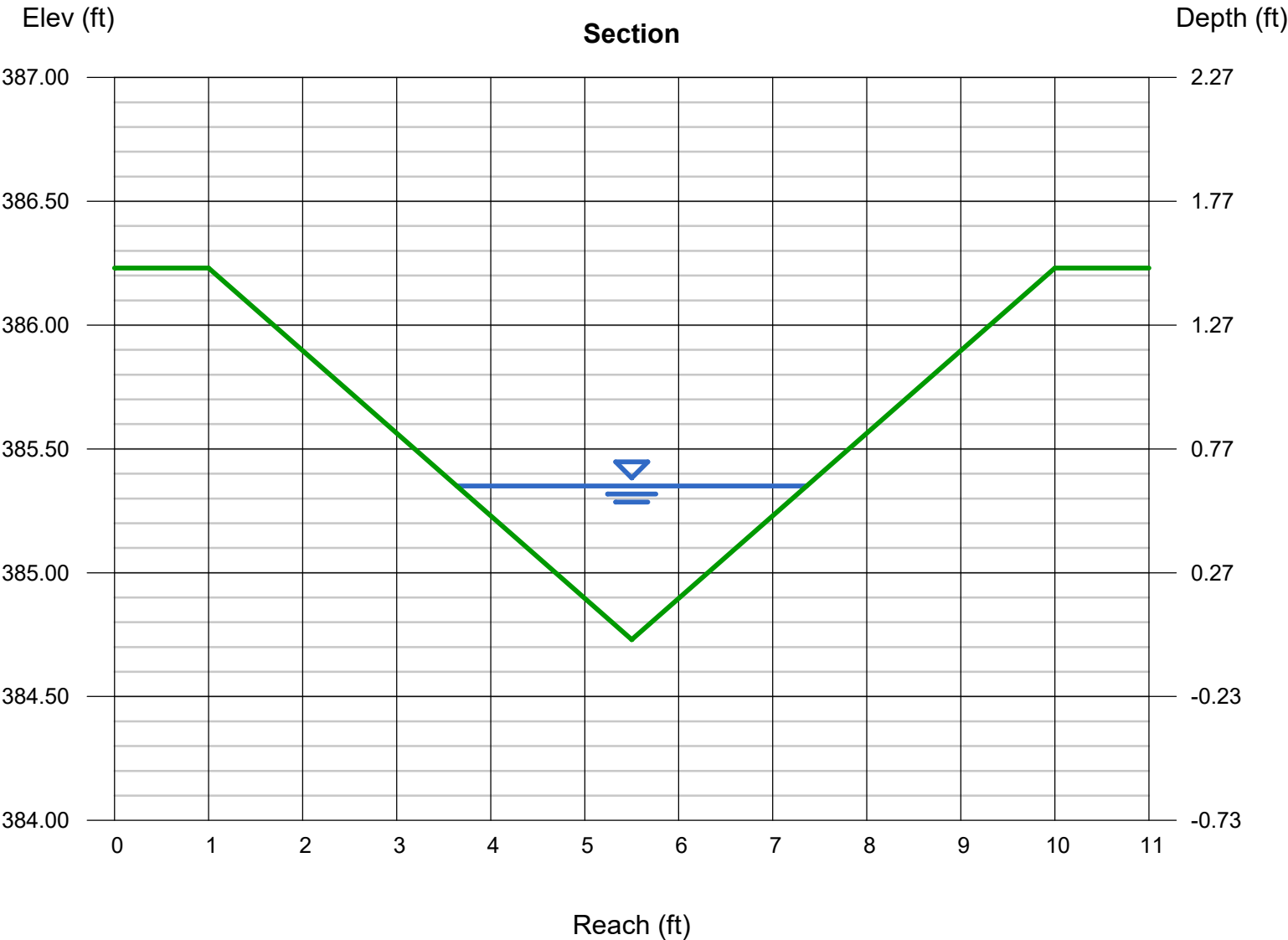
Invert Elev (ft) = 384.73
Slope (%) = 1.84
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 3.10

Highlighted

Depth (ft) = 0.62
Q (cfs) = 3.100
Area (sqft) = 1.15
Velocity (ft/s) = 2.69
Wetted Perim (ft) = 3.92
Crit Depth, Yc (ft) = 0.59
Top Width (ft) = 3.72
EGL (ft) = 0.73

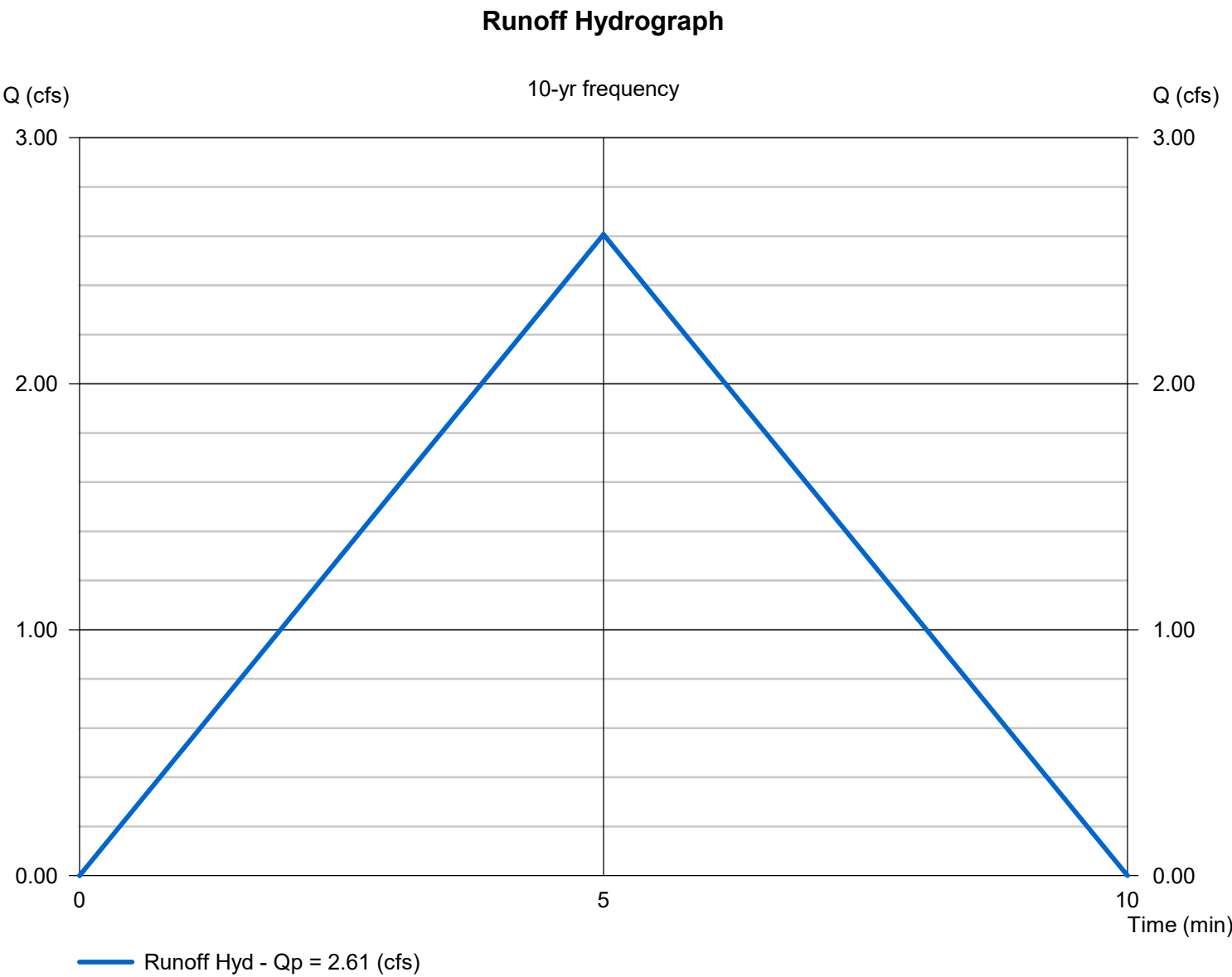


Hydrology Report

PDD #2

Hydrograph type	= Rational	Peak discharge (cfs)	= 2.607
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.590	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 782 (cuft); 0.018 (acft)



Channel Report

PDD #2

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

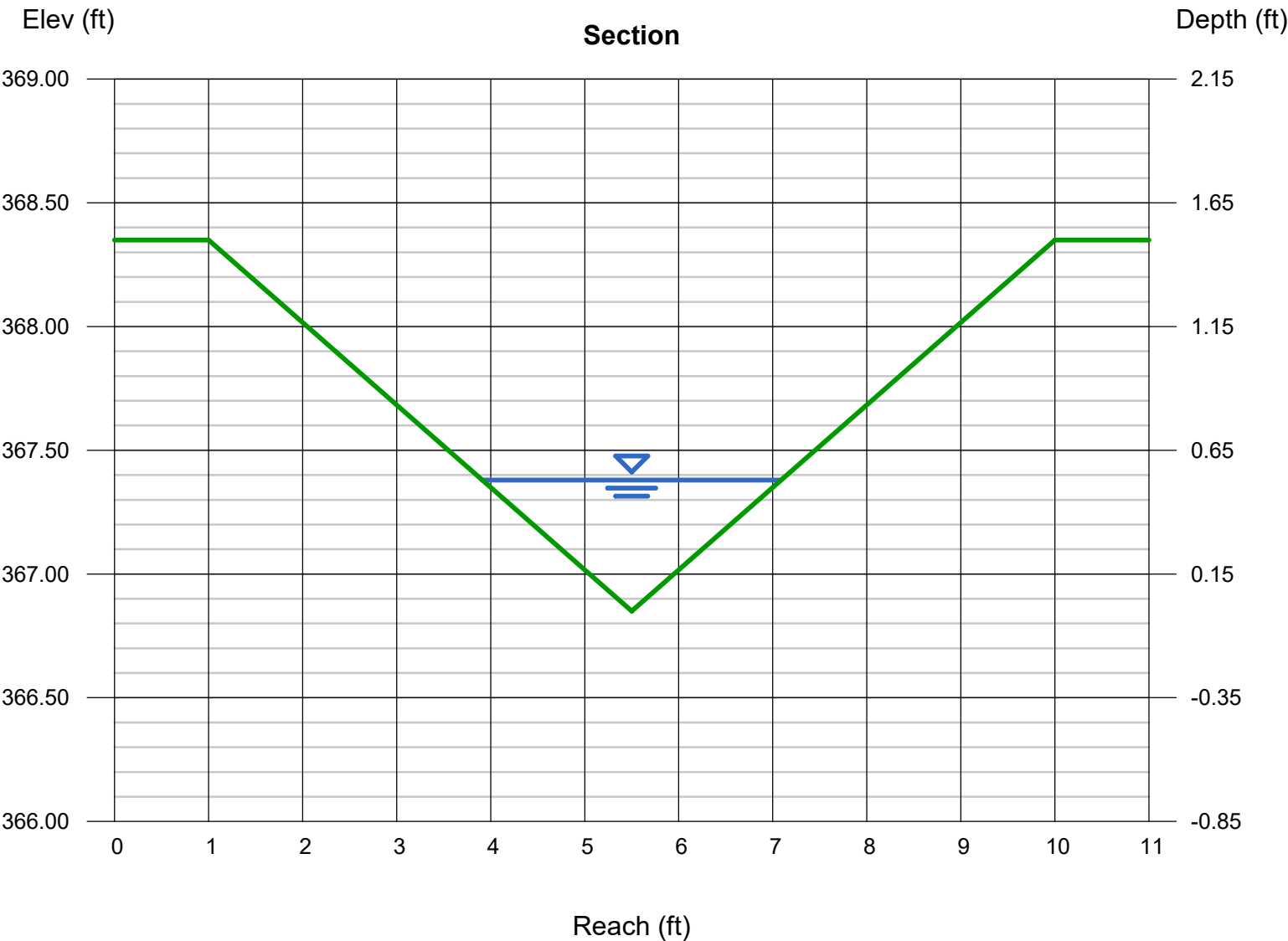
Invert Elev (ft) = 366.85
Slope (%) = 3.00
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 2.61

Highlighted

Depth (ft) = 0.53
Q (cfs) = 2.610
Area (sqft) = 0.84
Velocity (ft/s) = 3.10
Wetted Perim (ft) = 3.35
Crit Depth, Yc (ft) = 0.55
Top Width (ft) = 3.18
EGL (ft) = 0.68

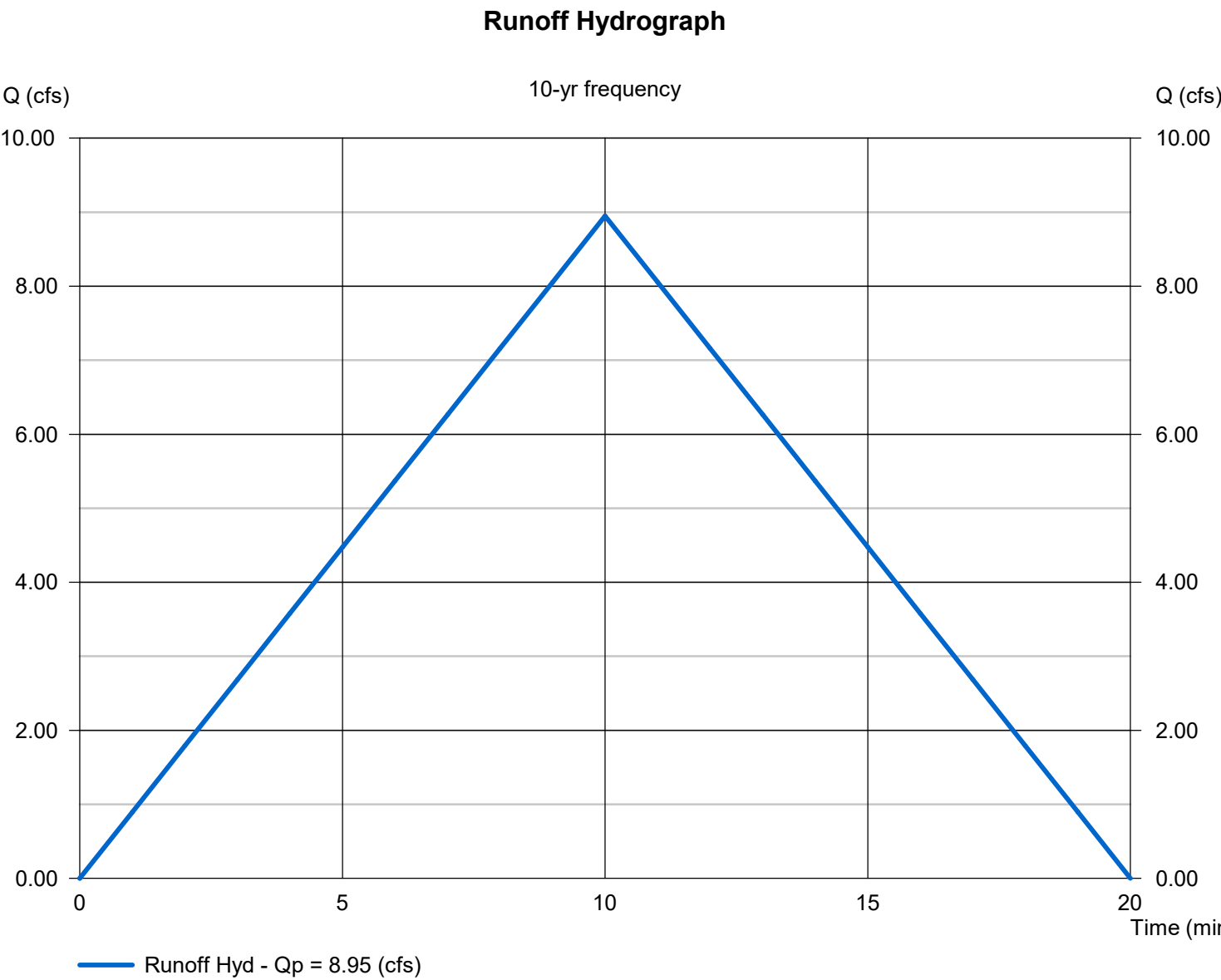


Hydrology Report

PDD #3A

Hydrograph type	= Rational	Peak discharge (cfs)	= 8.947
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 2.480	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 6.013	Tc by User (min)	= 10
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 5,368 (cuft); 0.123 (acft)



Channel Report

PDD #3A

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

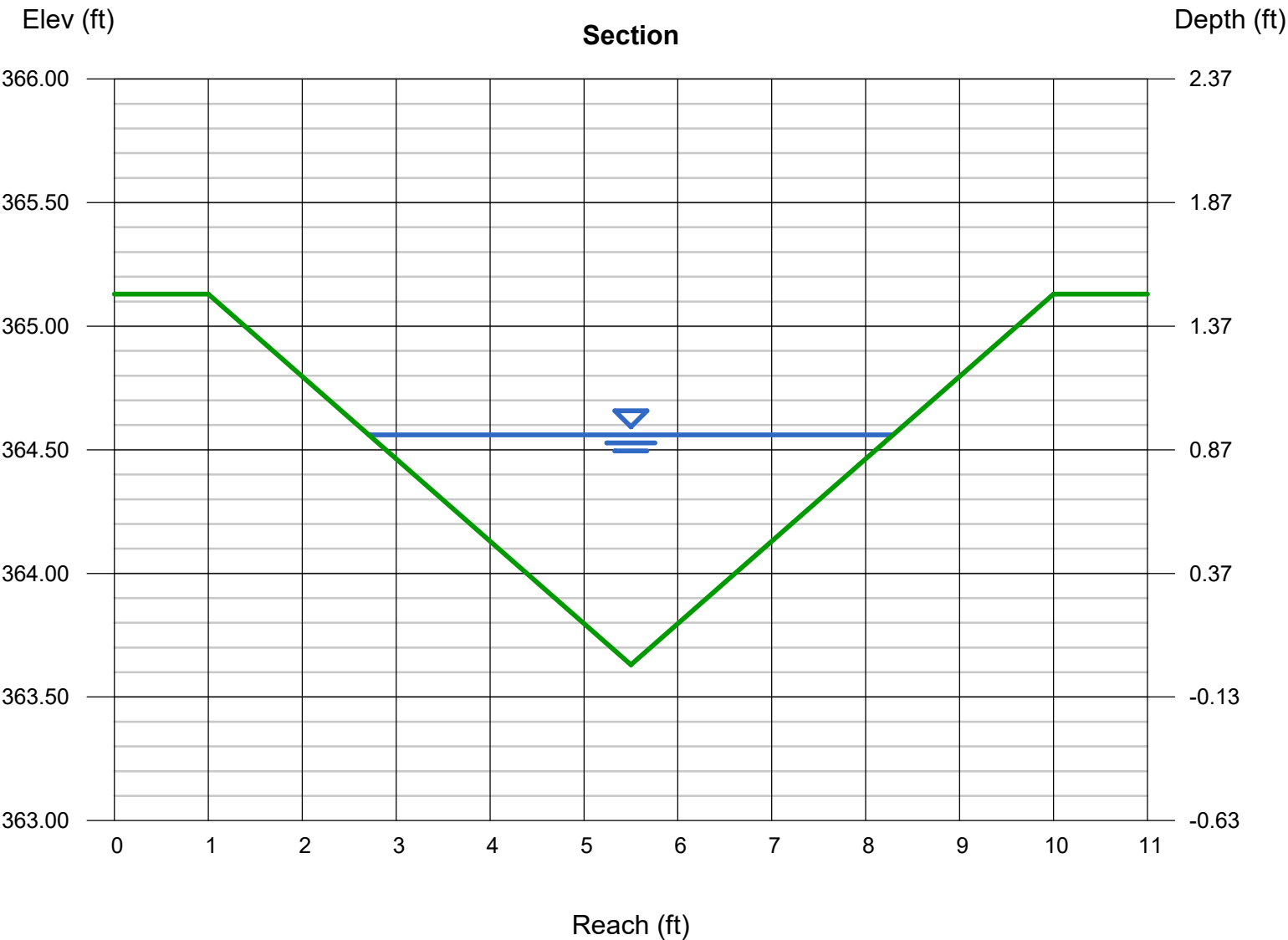
Invert Elev (ft) = 363.63
Slope (%) = 1.84
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 8.95

Highlighted

Depth (ft) = 0.93
Q (cfs) = 8.950
Area (sqft) = 2.59
Velocity (ft/s) = 3.45
Wetted Perim (ft) = 5.88
Crit Depth, Yc (ft) = 0.89
Top Width (ft) = 5.58
EGL (ft) = 1.11

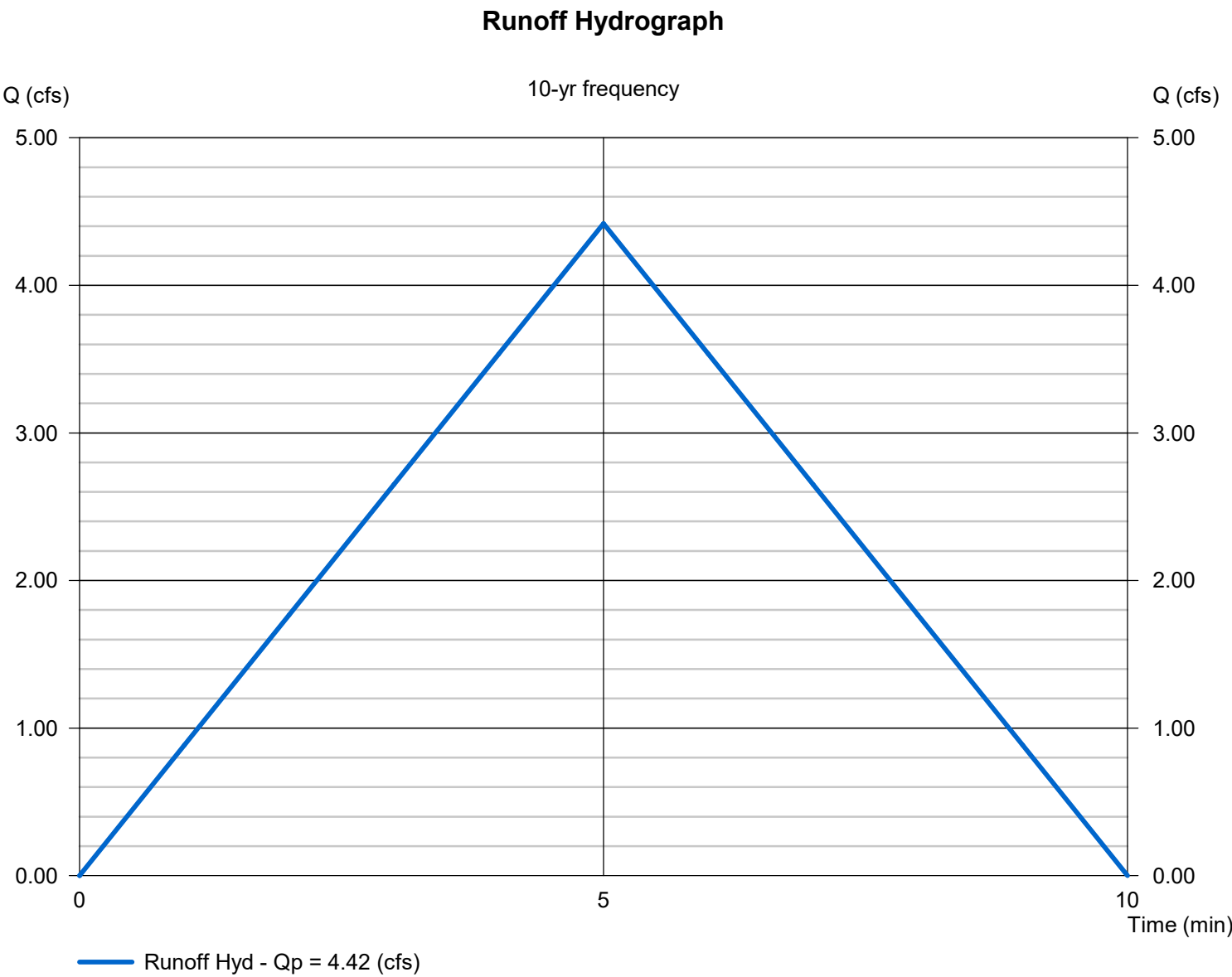


Hydrology Report

PDD #3B

Hydrograph type	= Rational	Peak discharge (cfs)	= 4.418
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 1.000	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 1,326 (cuft); 0.030 (acft)



Channel Report

PDD #3B

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

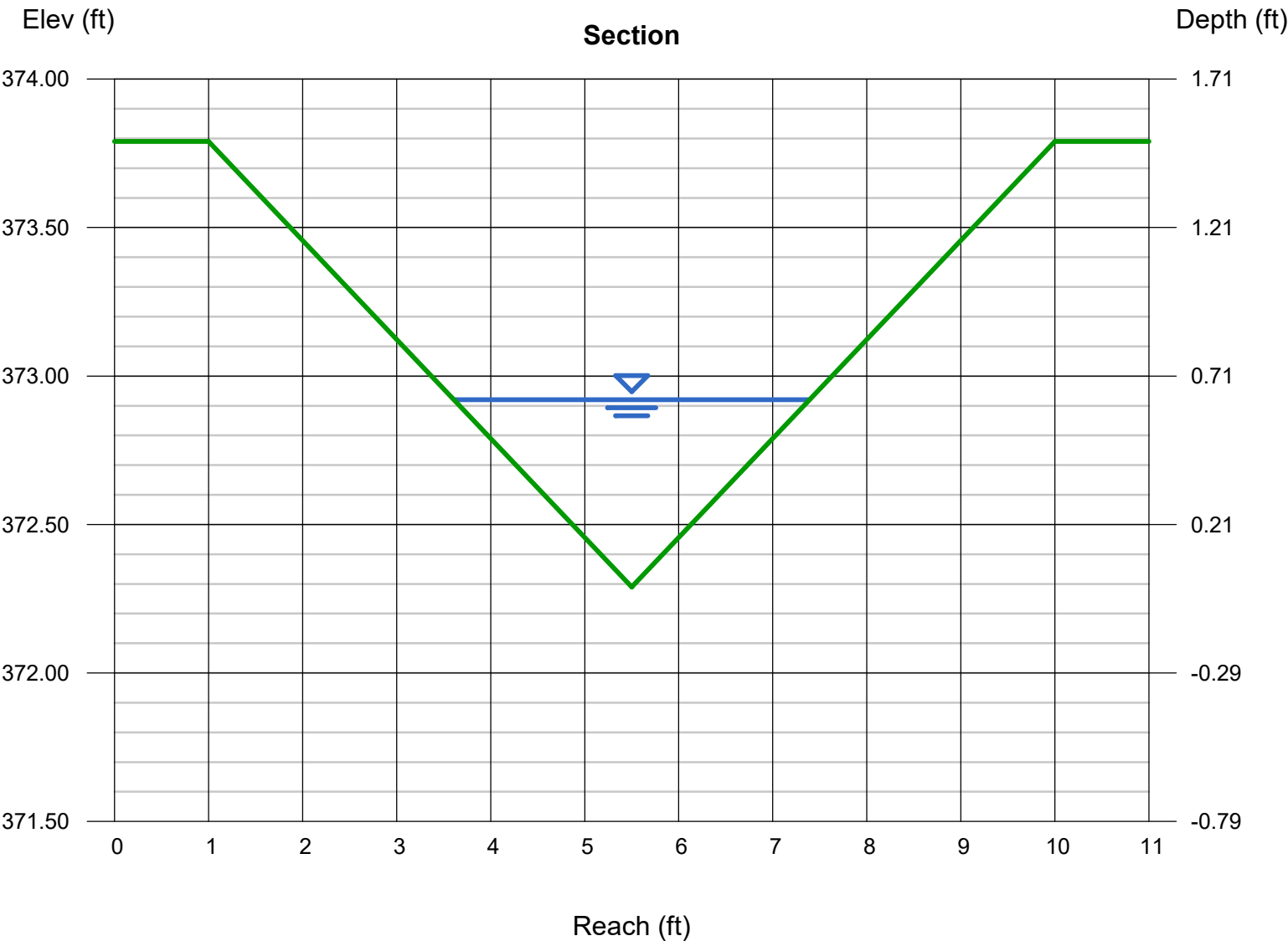
Invert Elev (ft) = 372.29
Slope (%) = 3.43
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 4.42

Highlighted

Depth (ft) = 0.63
Q (cfs) = 4.420
Area (sqft) = 1.19
Velocity (ft/s) = 3.71
Wetted Perim (ft) = 3.98
Crit Depth, Yc (ft) = 0.67
Top Width (ft) = 3.78
EGL (ft) = 0.84

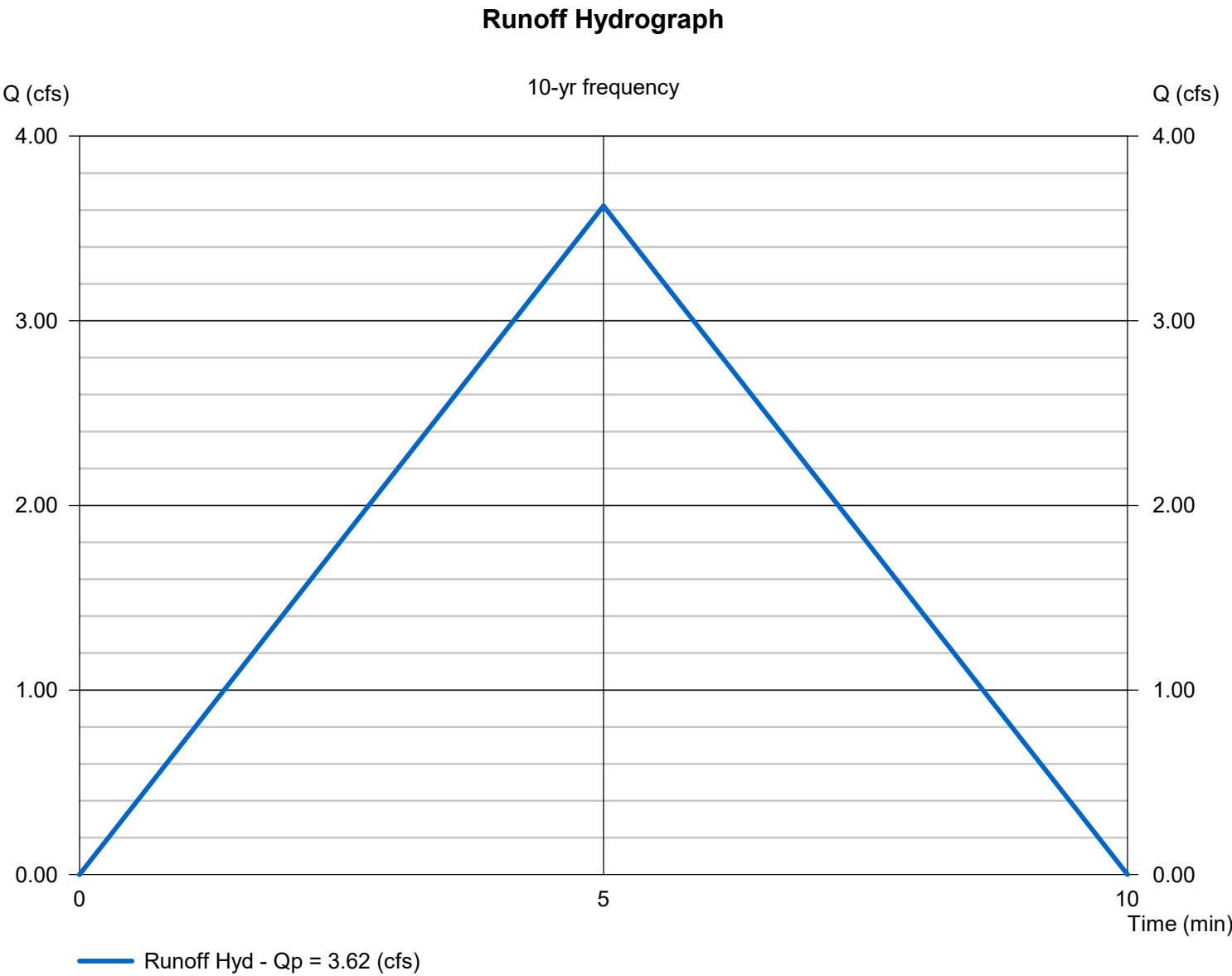


Hydrology Report

PDD #3C

Hydrograph type	= Rational	Peak discharge (cfs)	= 3.623
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.820	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 1,087 (cuft); 0.025 (acft)



Channel Report

PDD #3C

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

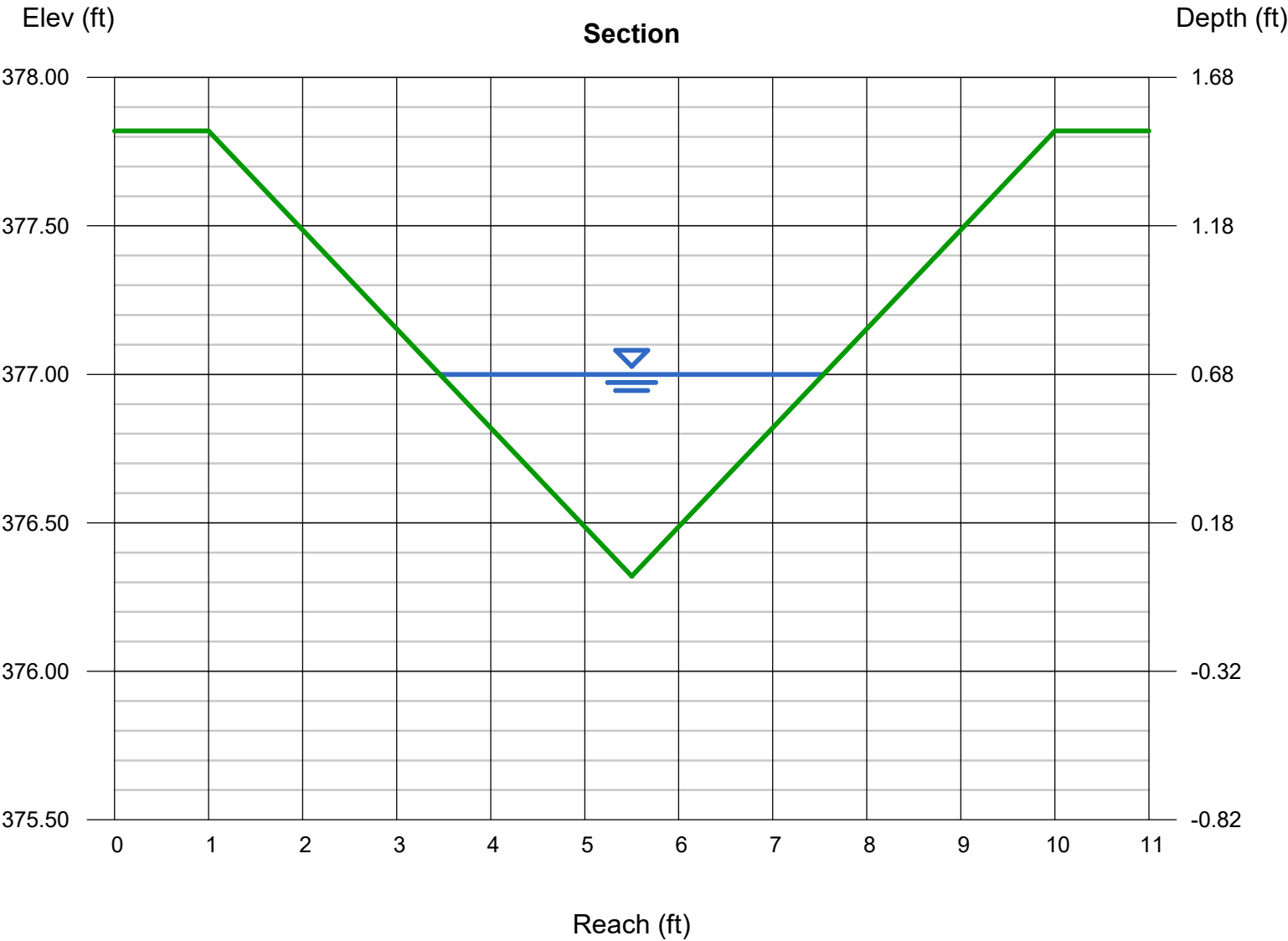
Invert Elev (ft) = 376.32
Slope (%) = 1.64
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 3.62

Highlighted

Depth (ft) = 0.68
Q (cfs) = 3.620
Area (sqft) = 1.39
Velocity (ft/s) = 2.61
Wetted Perim (ft) = 4.30
Crit Depth, Yc (ft) = 0.62
Top Width (ft) = 4.08
EGL (ft) = 0.79



Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

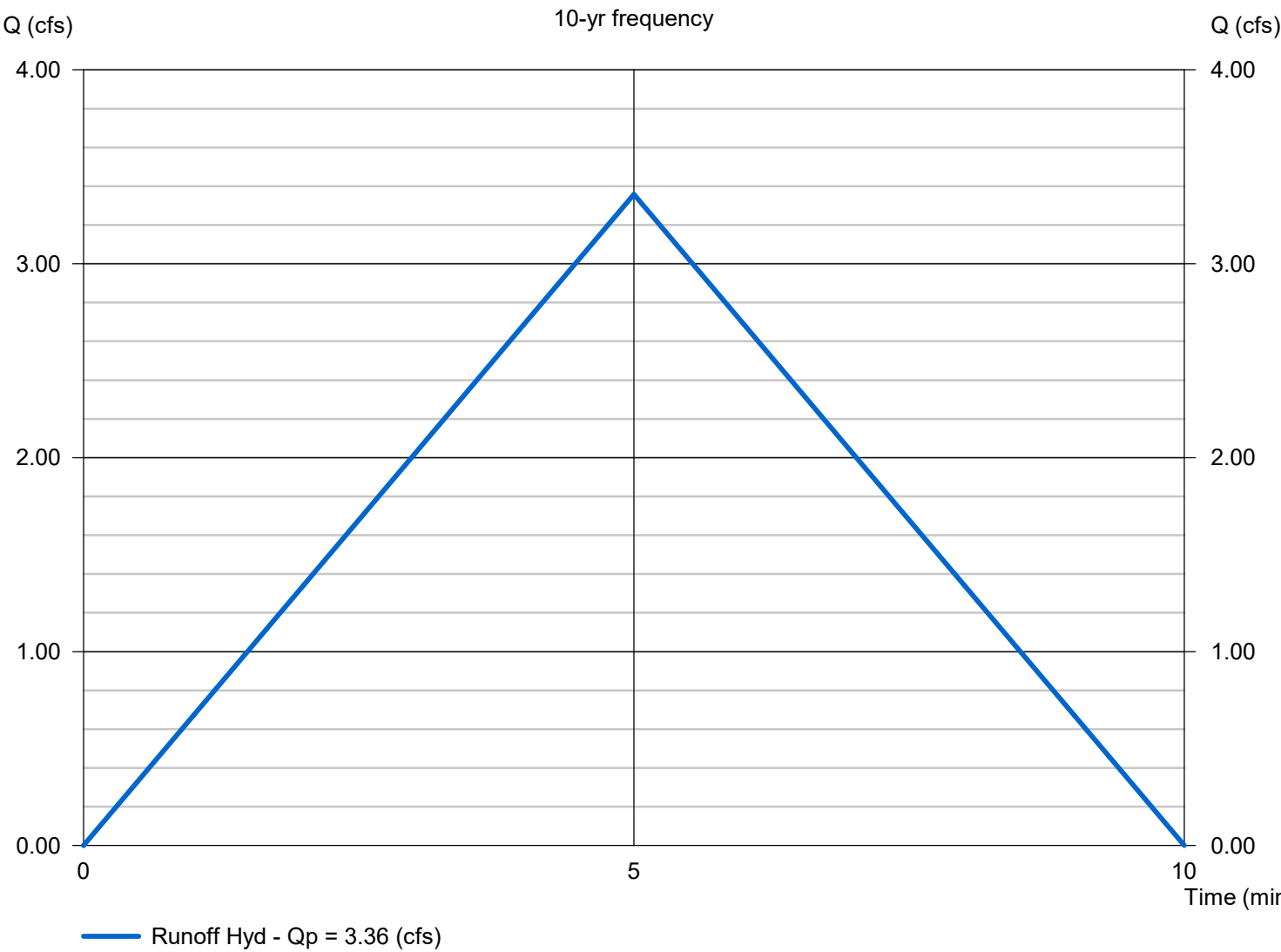
Friday, May 30 2025

PDD #3D

Hydrograph type	= Rational	Peak discharge (cfs)	= 3.358
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.760	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 1,007 (cuft); 0.023 (acft)

Runoff Hydrograph



Channel Report

PDD #3D

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

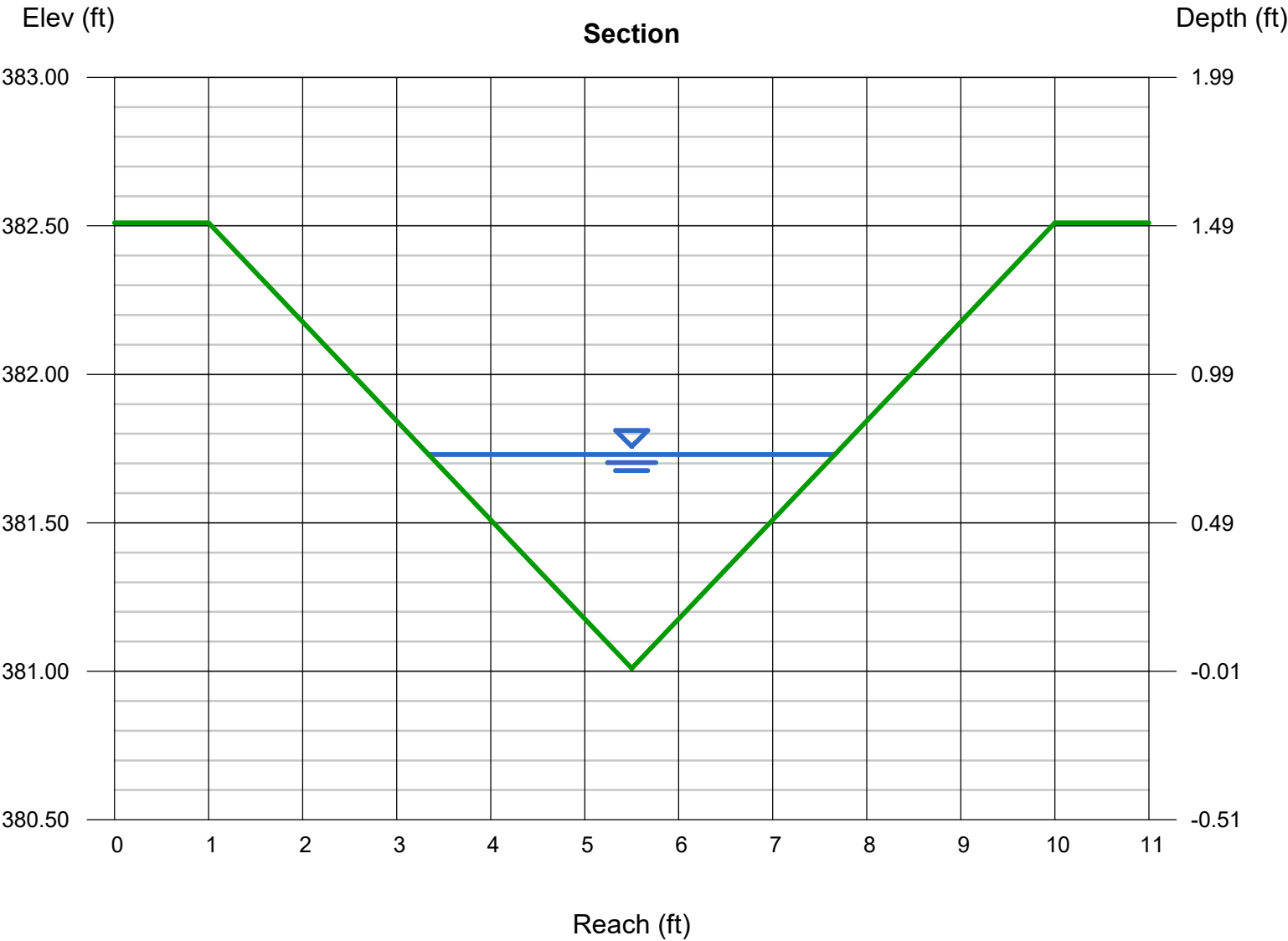
Invert Elev (ft) = 381.01
Slope (%) = 1.00
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 3.36

Highlighted

Depth (ft) = 0.72
Q (cfs) = 3.360
Area (sqft) = 1.56
Velocity (ft/s) = 2.16
Wetted Perim (ft) = 4.55
Crit Depth, Yc (ft) = 0.61
Top Width (ft) = 4.32
EGL (ft) = 0.79

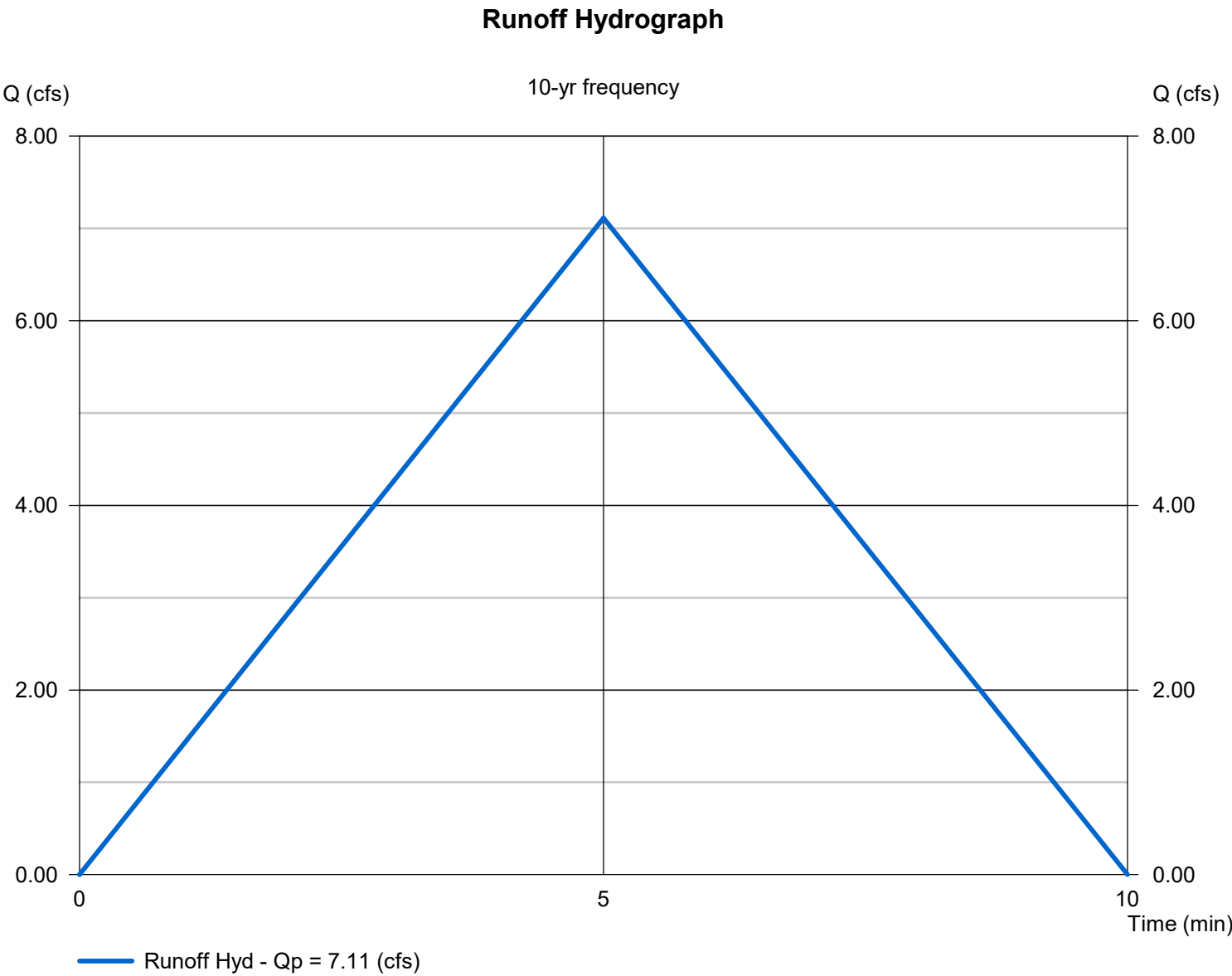


Hydrology Report

PDD #4A

Hydrograph type	= Rational	Peak discharge (cfs)	= 7.114
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 1.610	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 2,134 (cuft); 0.049 (acft)



Channel Report

PDD #4A

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

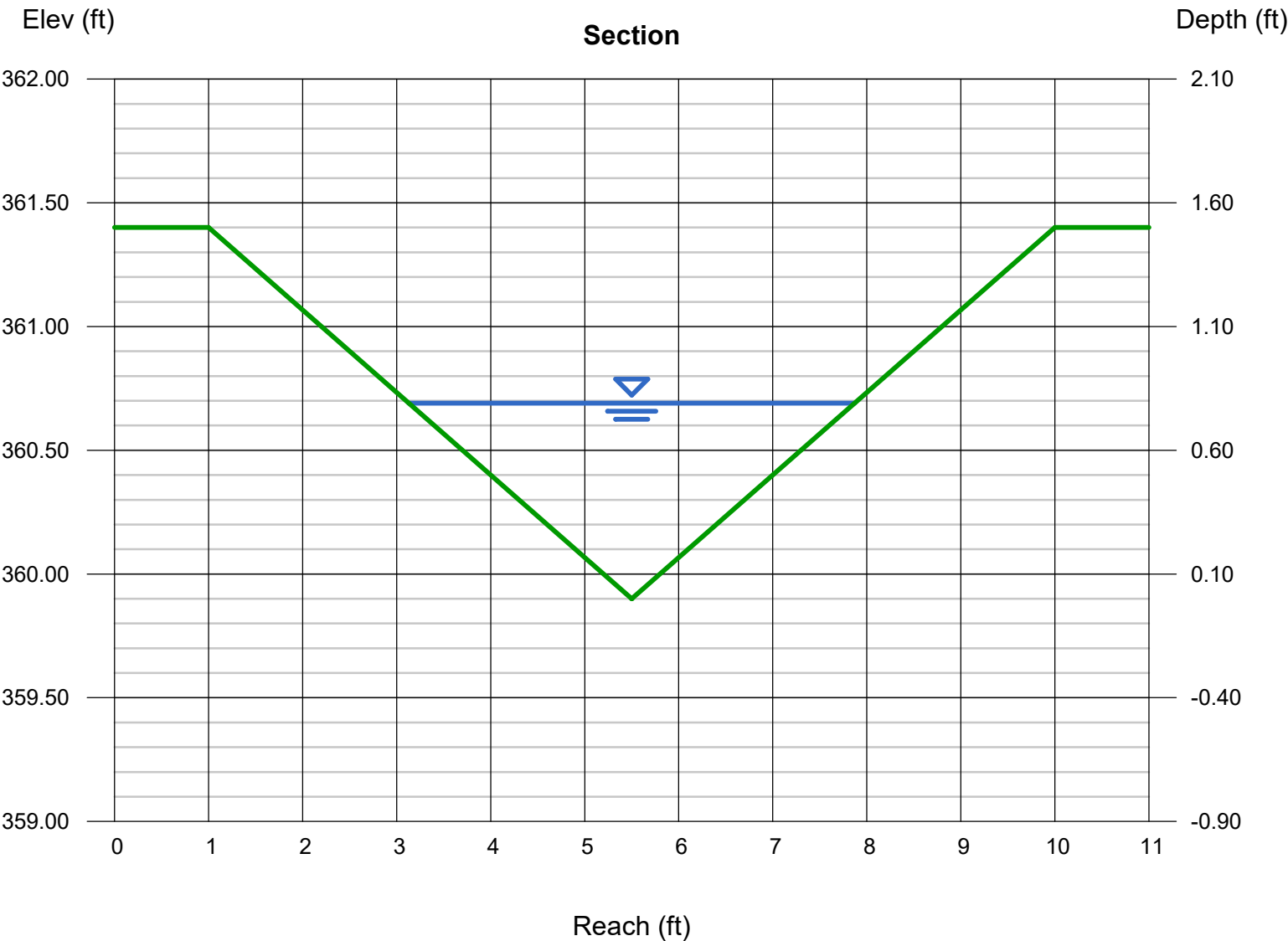
Invert Elev (ft) = 359.90
Slope (%) = 2.73
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 7.11

Highlighted

Depth (ft) = 0.79
Q (cfs) = 7.110
Area (sqft) = 1.87
Velocity (ft/s) = 3.80
Wetted Perim (ft) = 5.00
Crit Depth, Yc (ft) = 0.82
Top Width (ft) = 4.74
EGL (ft) = 1.01

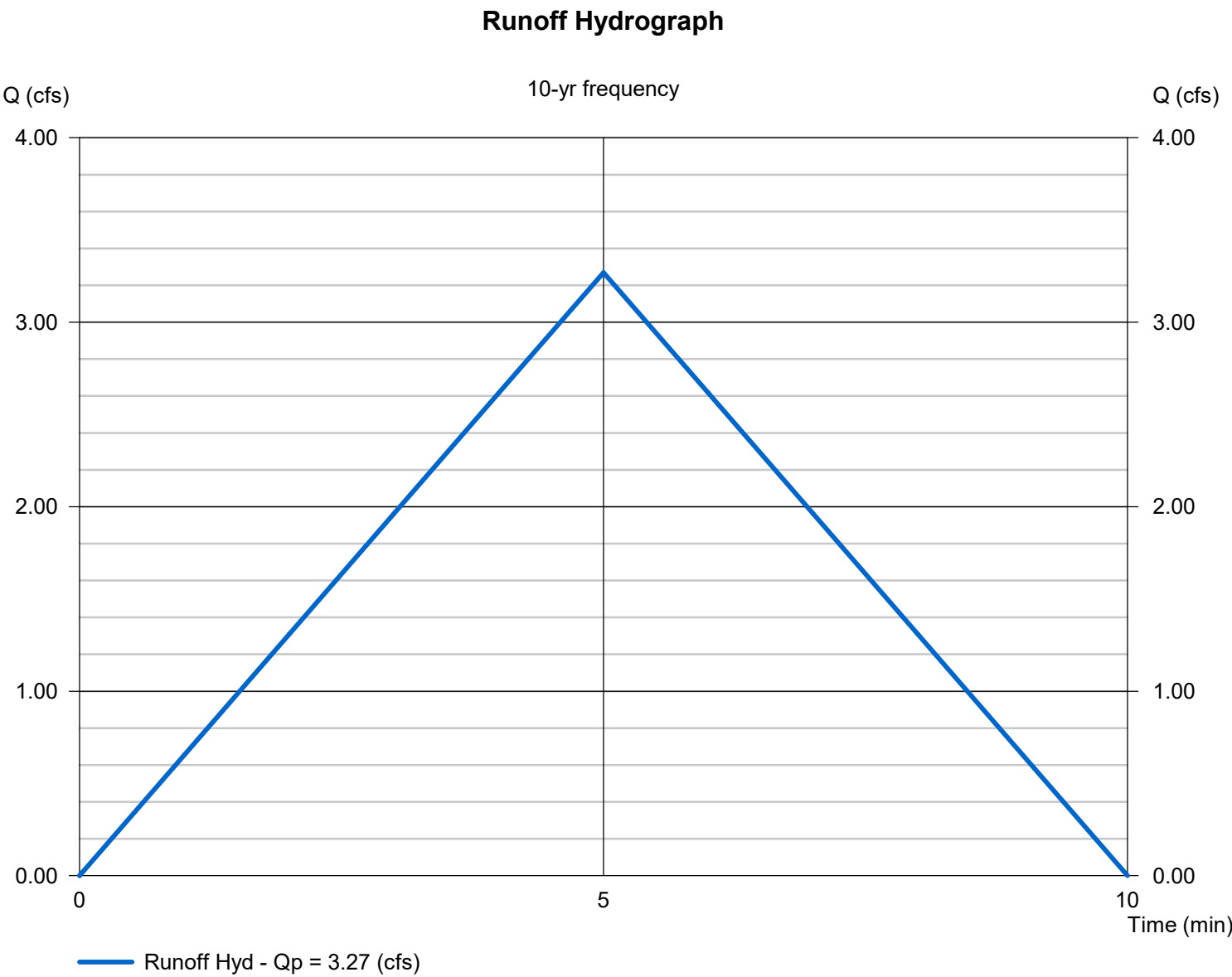


Hydrology Report

PDD #4B

Hydrograph type	= Rational	Peak discharge (cfs)	= 3.270
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.740	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 981 (cuft); 0.023 (acft)



Channel Report

PDD #4B

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

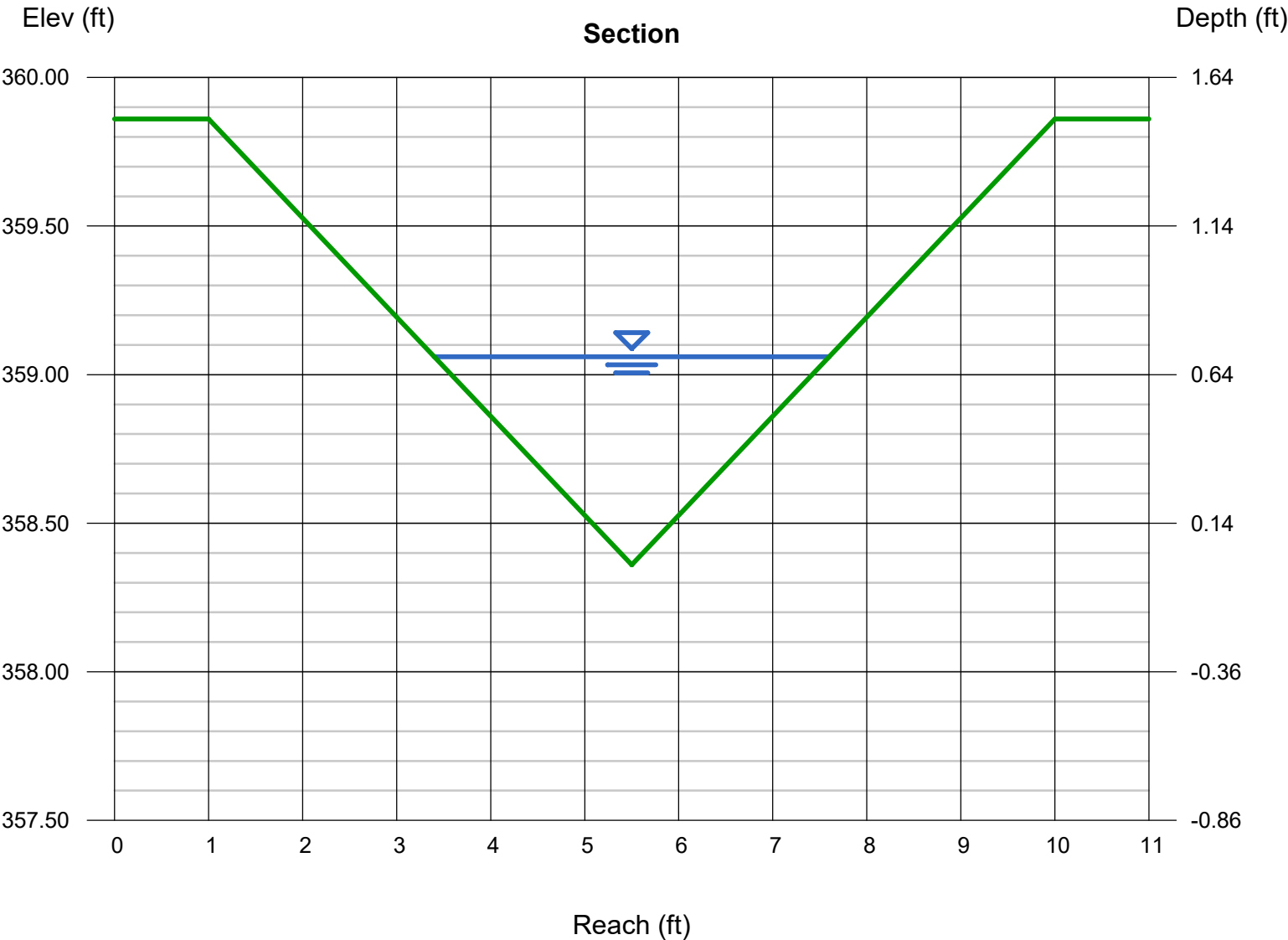
Invert Elev (ft) = 358.36
Slope (%) = 1.11
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 3.27

Highlighted

Depth (ft) = 0.70
Q (cfs) = 3.270
Area (sqft) = 1.47
Velocity (ft/s) = 2.22
Wetted Perim (ft) = 4.43
Crit Depth, Yc (ft) = 0.60
Top Width (ft) = 4.20
EGL (ft) = 0.78



Hydrology Report

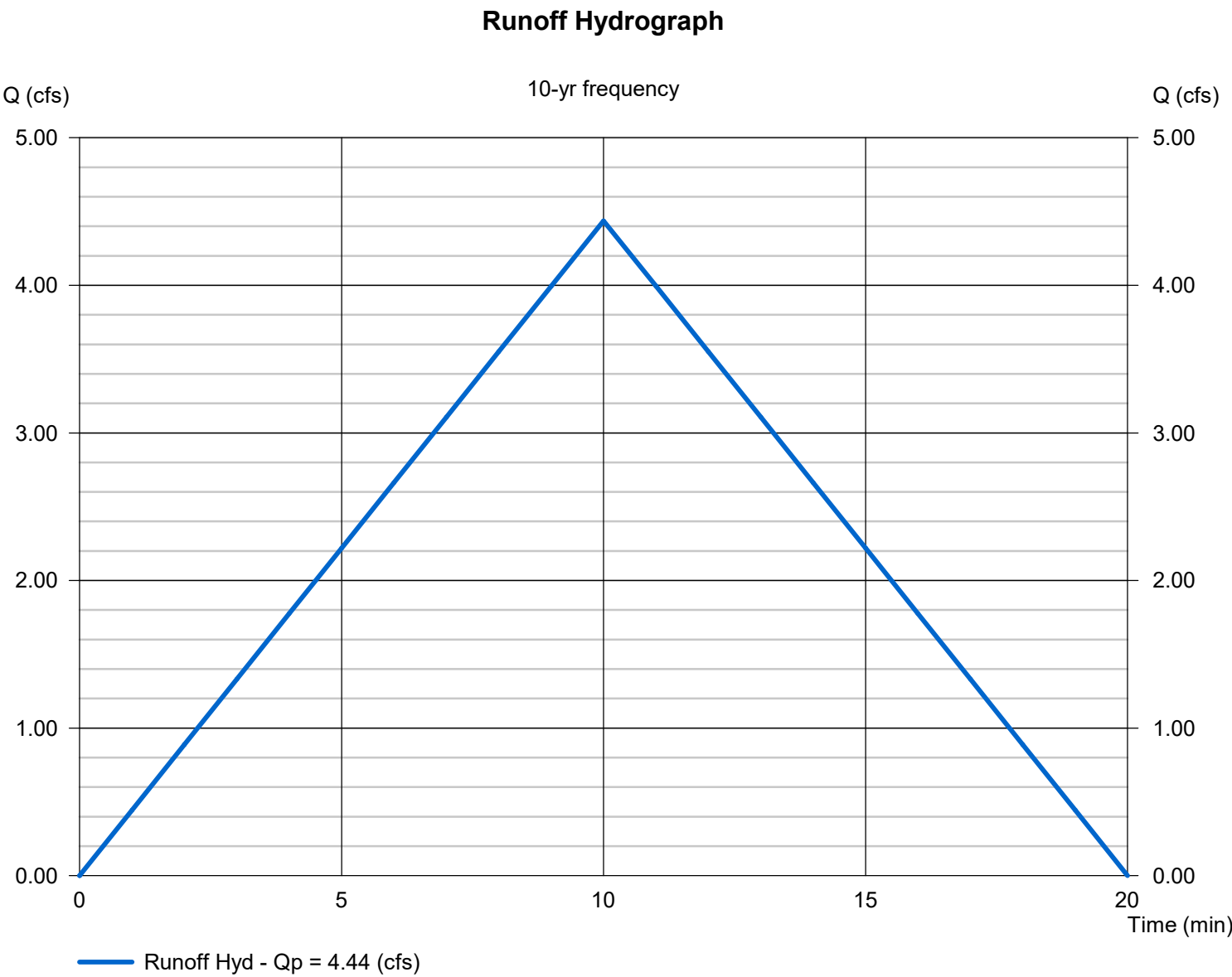
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Friday, May 30 2025

PDD #5A

Hydrograph type	= Rational	Peak discharge (cfs)	= 4.438
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 1.230	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 6.013	Tc by User (min)	= 10
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 2,663 (cuft); 0.061 (acft)



Channel Report

PDD #5A

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

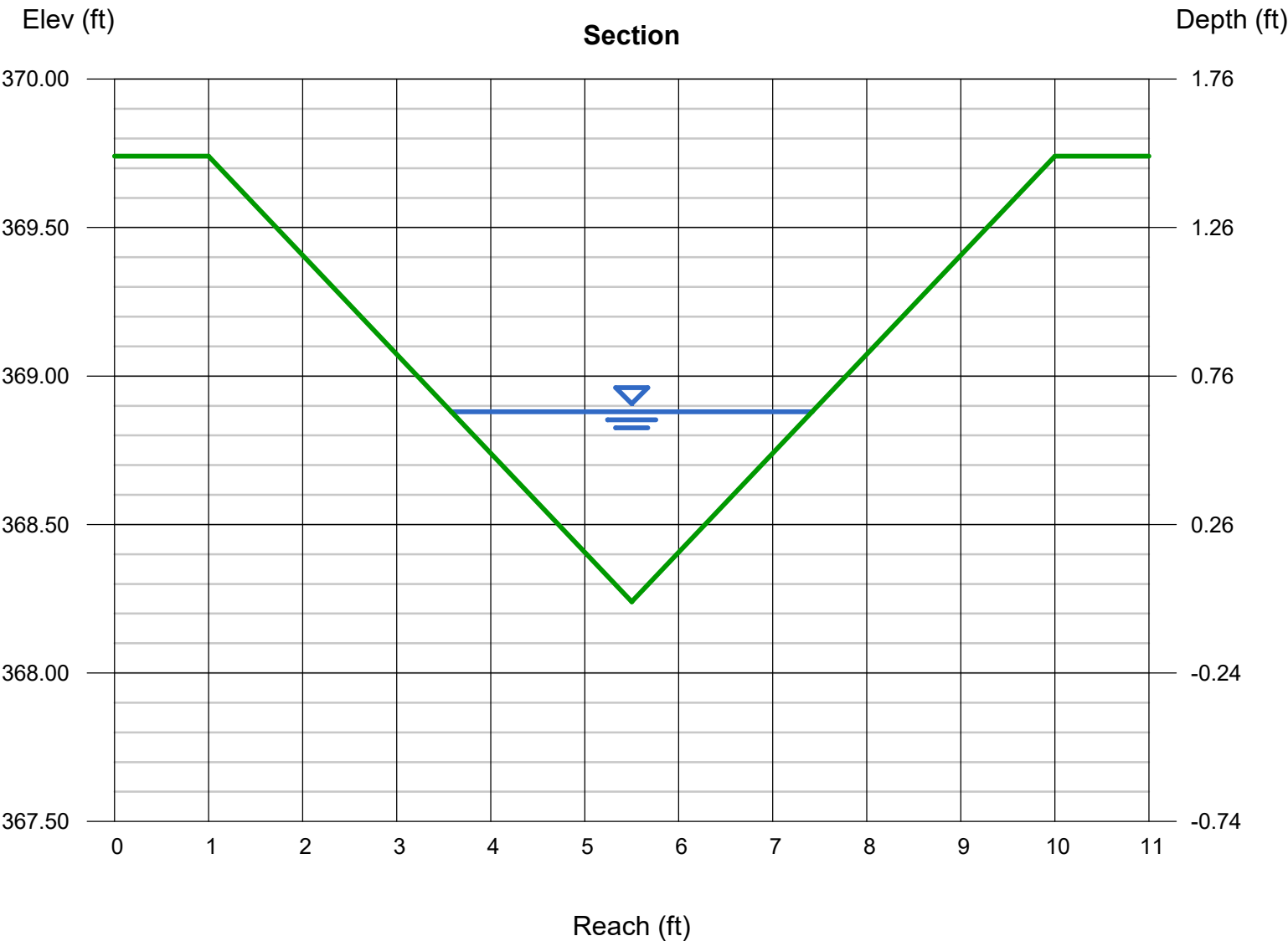
Invert Elev (ft) = 368.24
Slope (%) = 3.16
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 4.44

Highlighted

Depth (ft) = 0.64
Q (cfs) = 4.440
Area (sqft) = 1.23
Velocity (ft/s) = 3.61
Wetted Perim (ft) = 4.05
Crit Depth, Yc (ft) = 0.68
Top Width (ft) = 3.84
EGL (ft) = 0.84

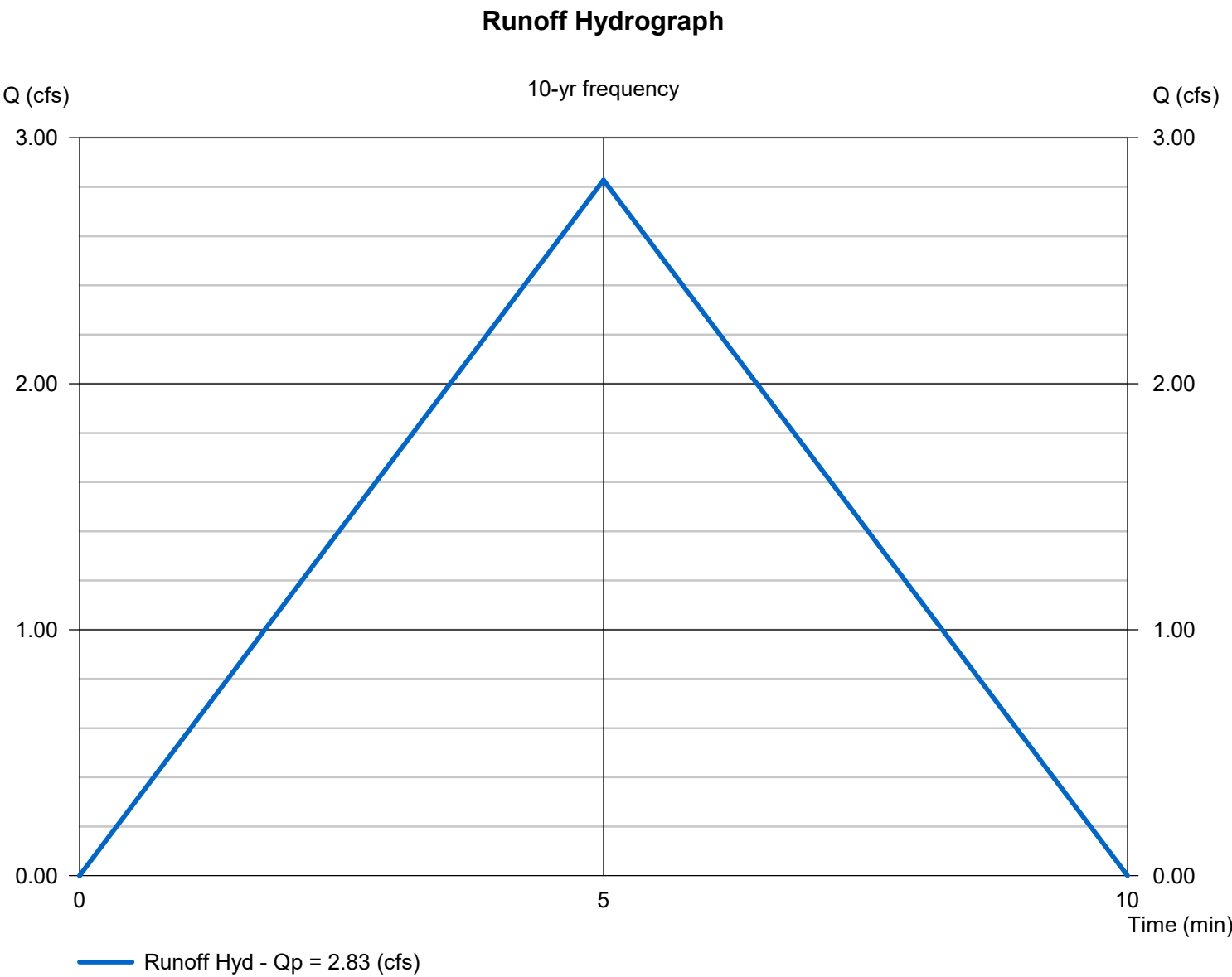


Hydrology Report

PDD #5B

Hydrograph type	= Rational	Peak discharge (cfs)	= 2.828
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.640	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 848 (cuft); 0.019 (acft)



Channel Report

PDD #5B

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

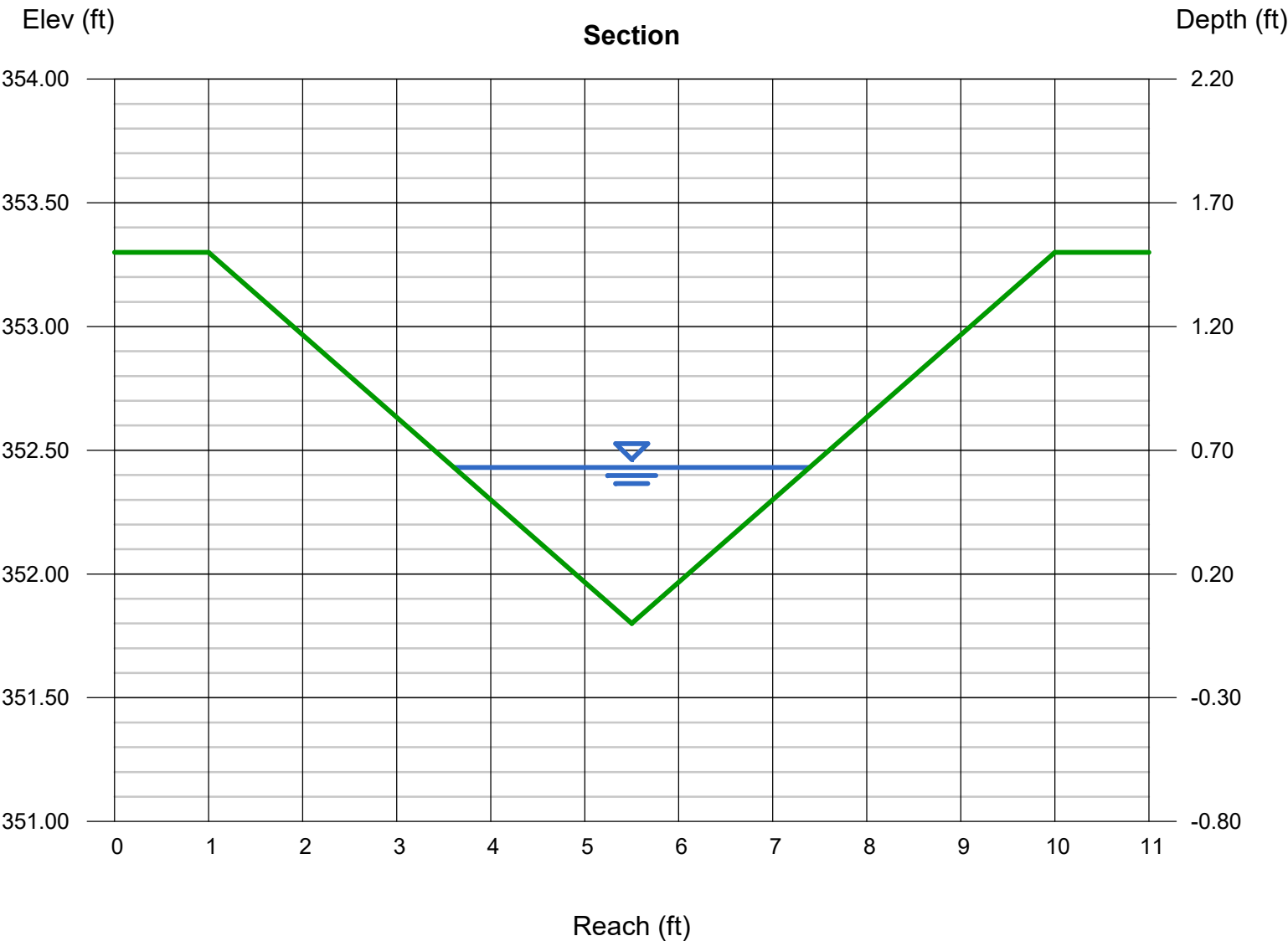
Invert Elev (ft) = 351.80
Slope (%) = 1.46
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 2.83

Highlighted

Depth (ft) = 0.63
Q (cfs) = 2.830
Area (sqft) = 1.19
Velocity (ft/s) = 2.38
Wetted Perim (ft) = 3.98
Crit Depth, Yc (ft) = 0.57
Top Width (ft) = 3.78
EGL (ft) = 0.72

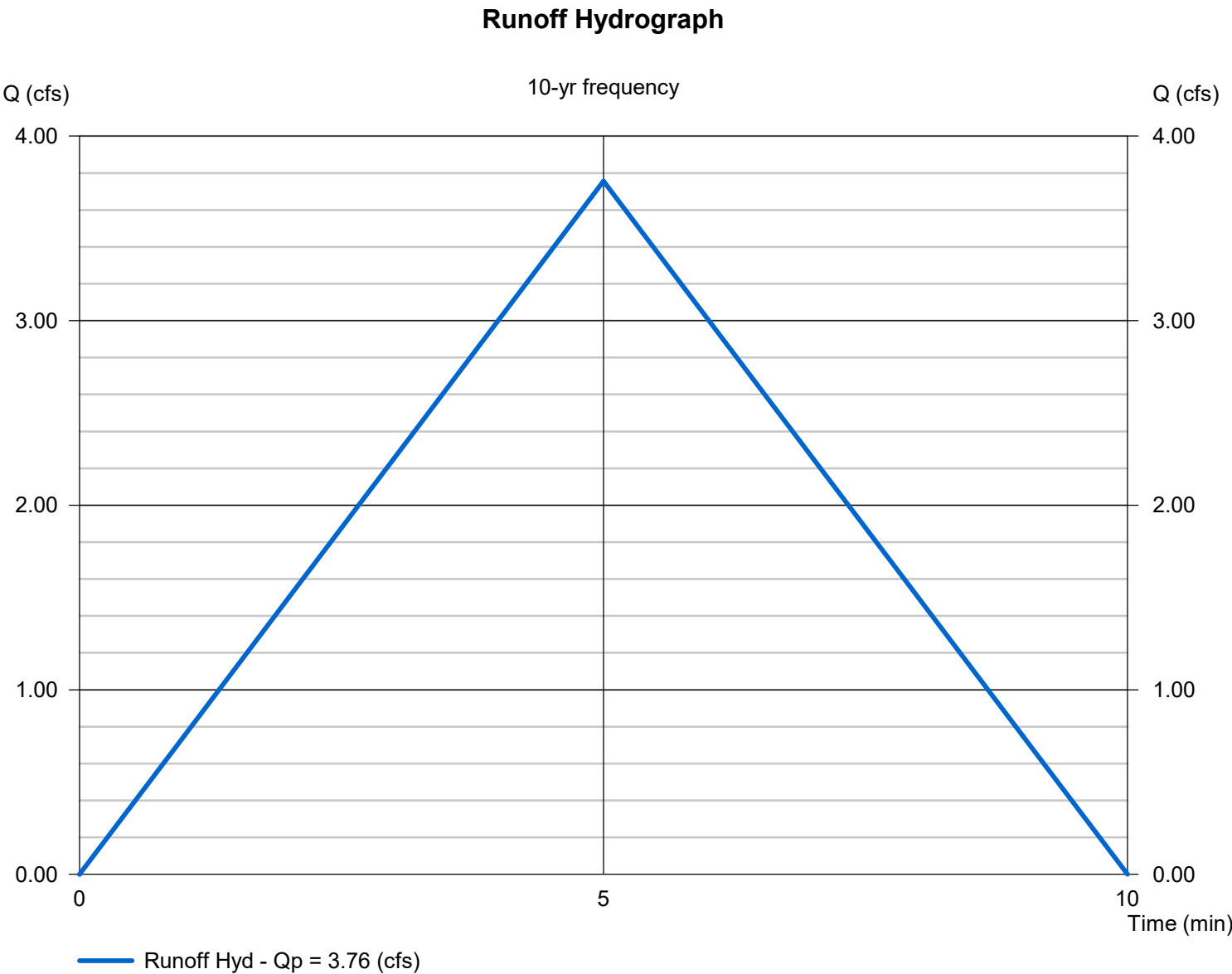


Hydrology Report

PDD #5C

Hydrograph type	= Rational	Peak discharge (cfs)	= 3.756
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.850	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 1,127 (cuft); 0.026 (acft)



Channel Report

PDD #5C

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

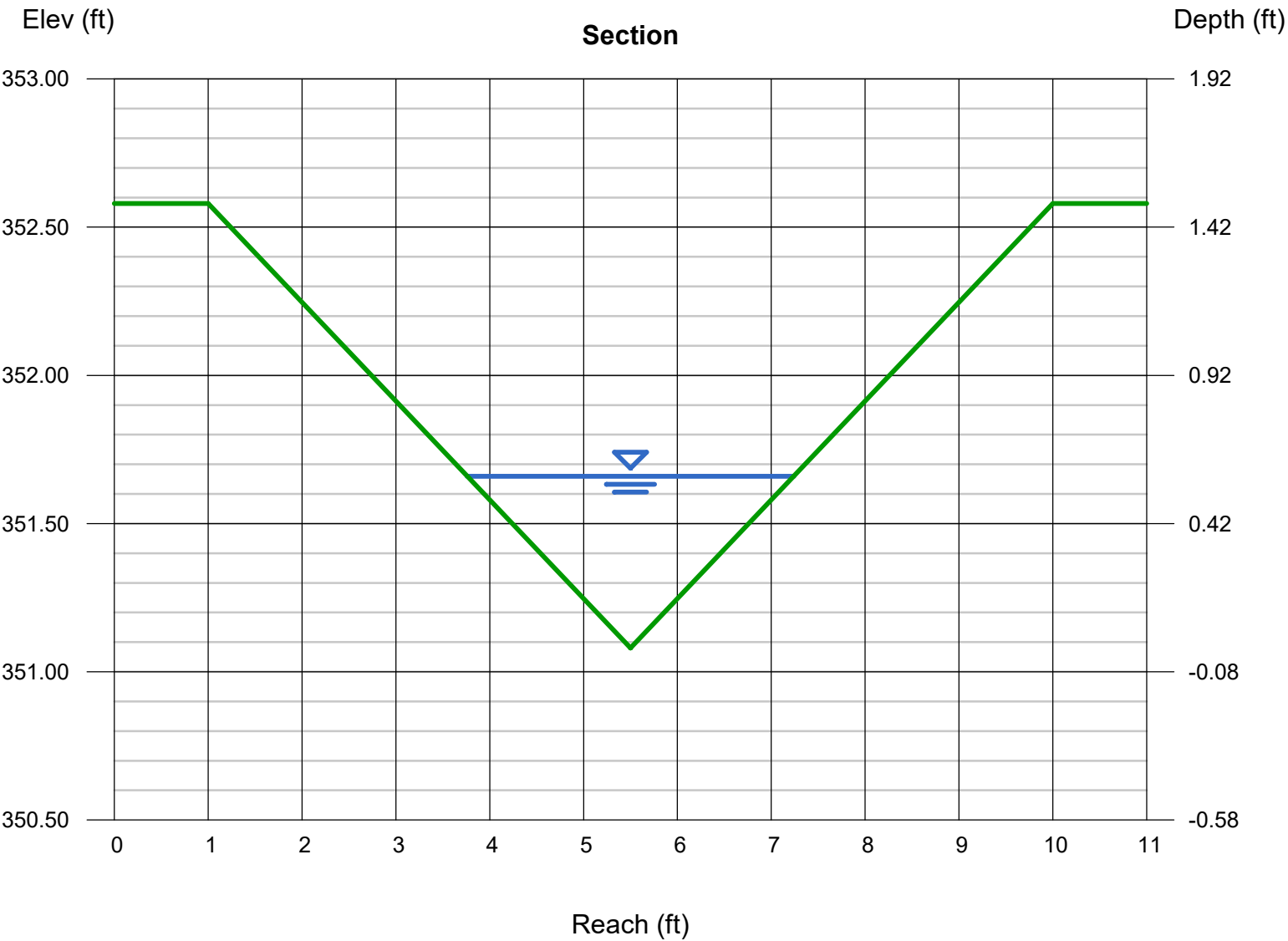
Invert Elev (ft) = 351.08
Slope (%) = 3.85
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 3.76

Highlighted

Depth (ft) = 0.58
Q (cfs) = 3.760
Area (sqft) = 1.01
Velocity (ft/s) = 3.73
Wetted Perim (ft) = 3.67
Crit Depth, Yc (ft) = 0.63
Top Width (ft) = 3.48
EGL (ft) = 0.80

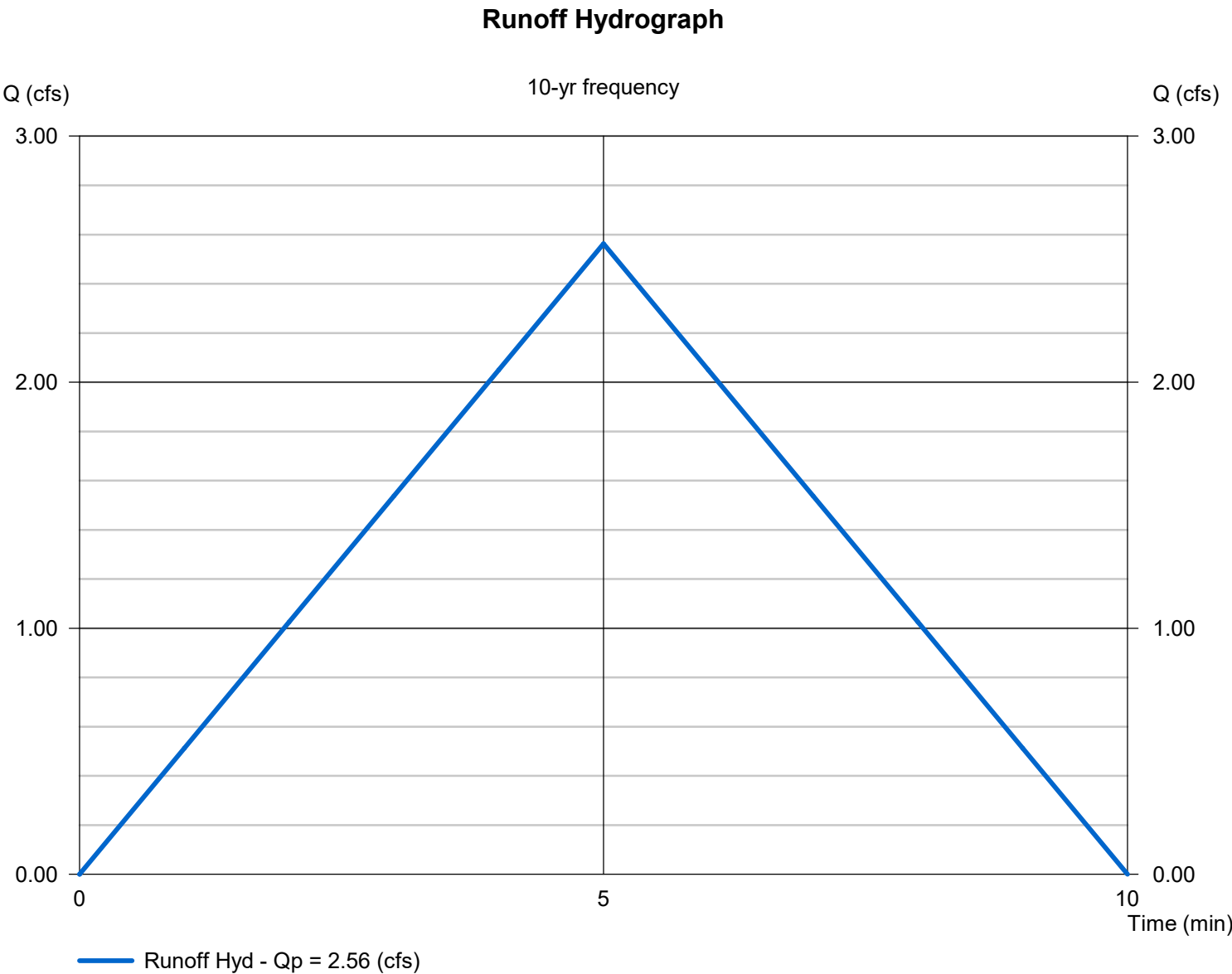


Hydrology Report

PDD #5D

Hydrograph type	= Rational	Peak discharge (cfs)	= 2.563
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.580	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 7.364	Tc by User (min)	= 5
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 769 (cuft); 0.018 (acft)



Channel Report

PDD #5D

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

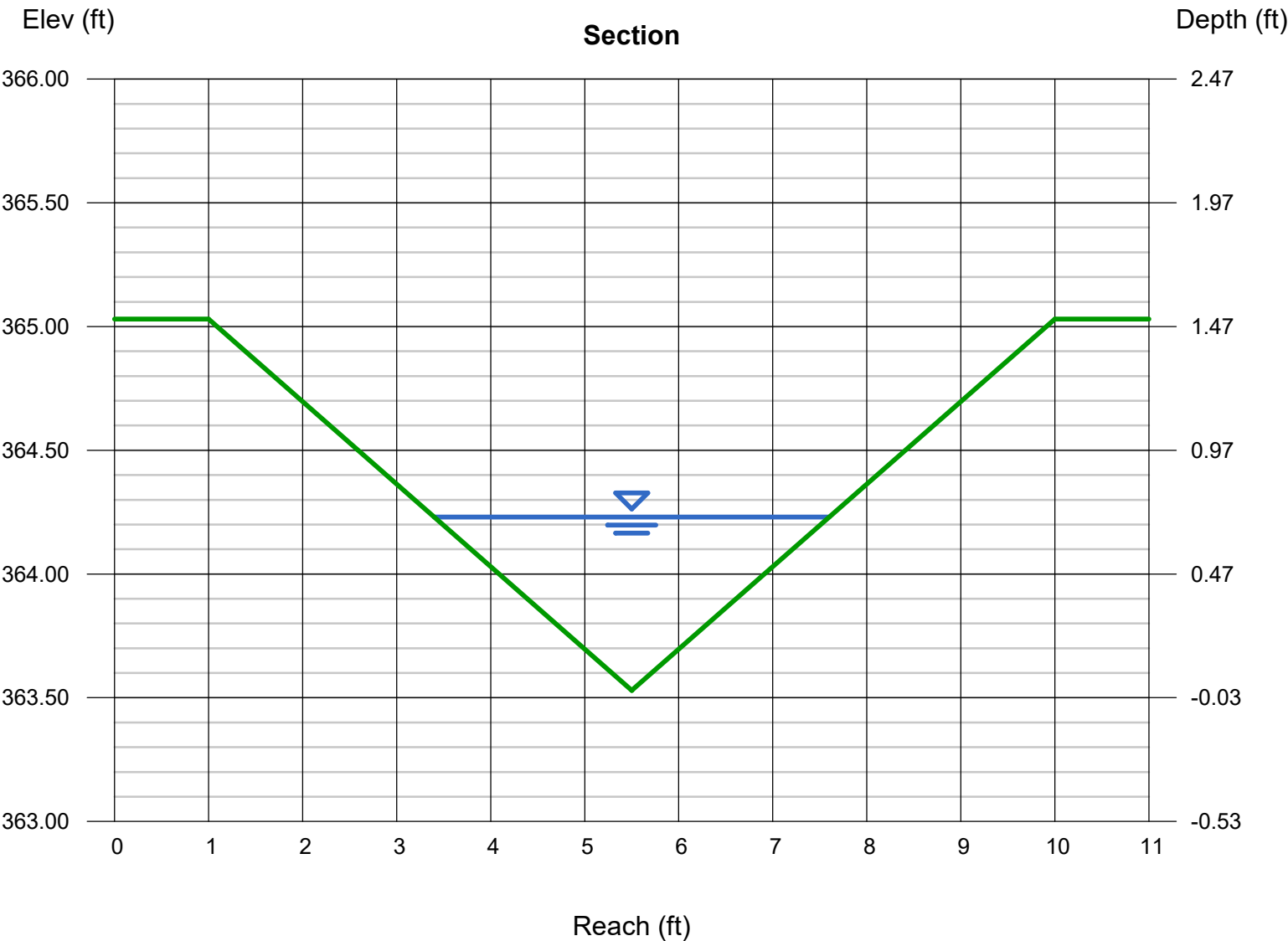
Invert Elev (ft) = 363.53
Slope (%) = 0.70
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 2.56

Highlighted

Depth (ft) = 0.70
Q (cfs) = 2.560
Area (sqft) = 1.47
Velocity (ft/s) = 1.74
Wetted Perim (ft) = 4.43
Crit Depth, Yc (ft) = 0.54
Top Width (ft) = 4.20
EGL (ft) = 0.75

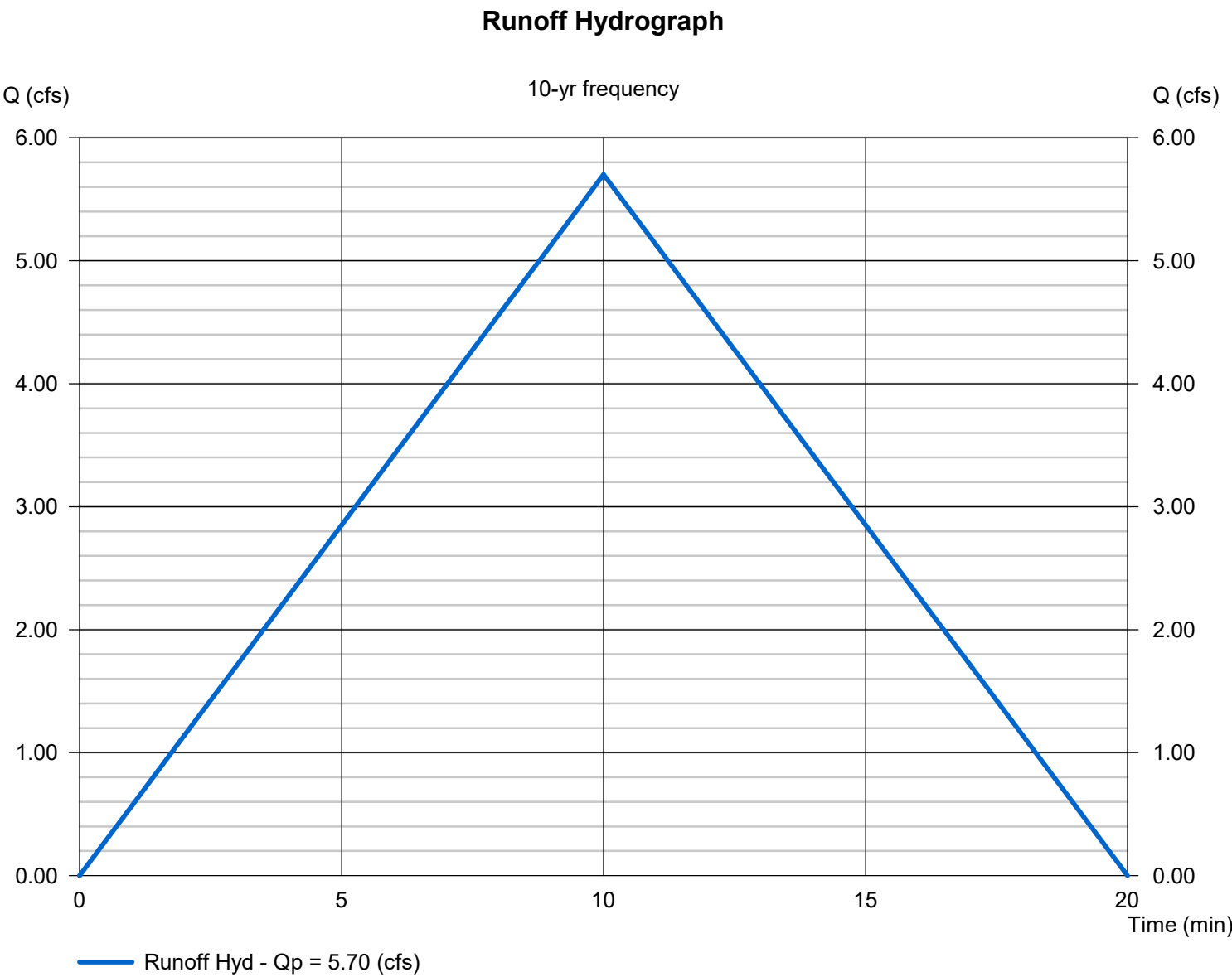


Hydrology Report

PDD #6

Hydrograph type	= Rational	Peak discharge (cfs)	= 5.700
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 1.580	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 6.013	Tc by User (min)	= 10
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 3,420 (cuft); 0.079 (acft)



Channel Report

PDD #6

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

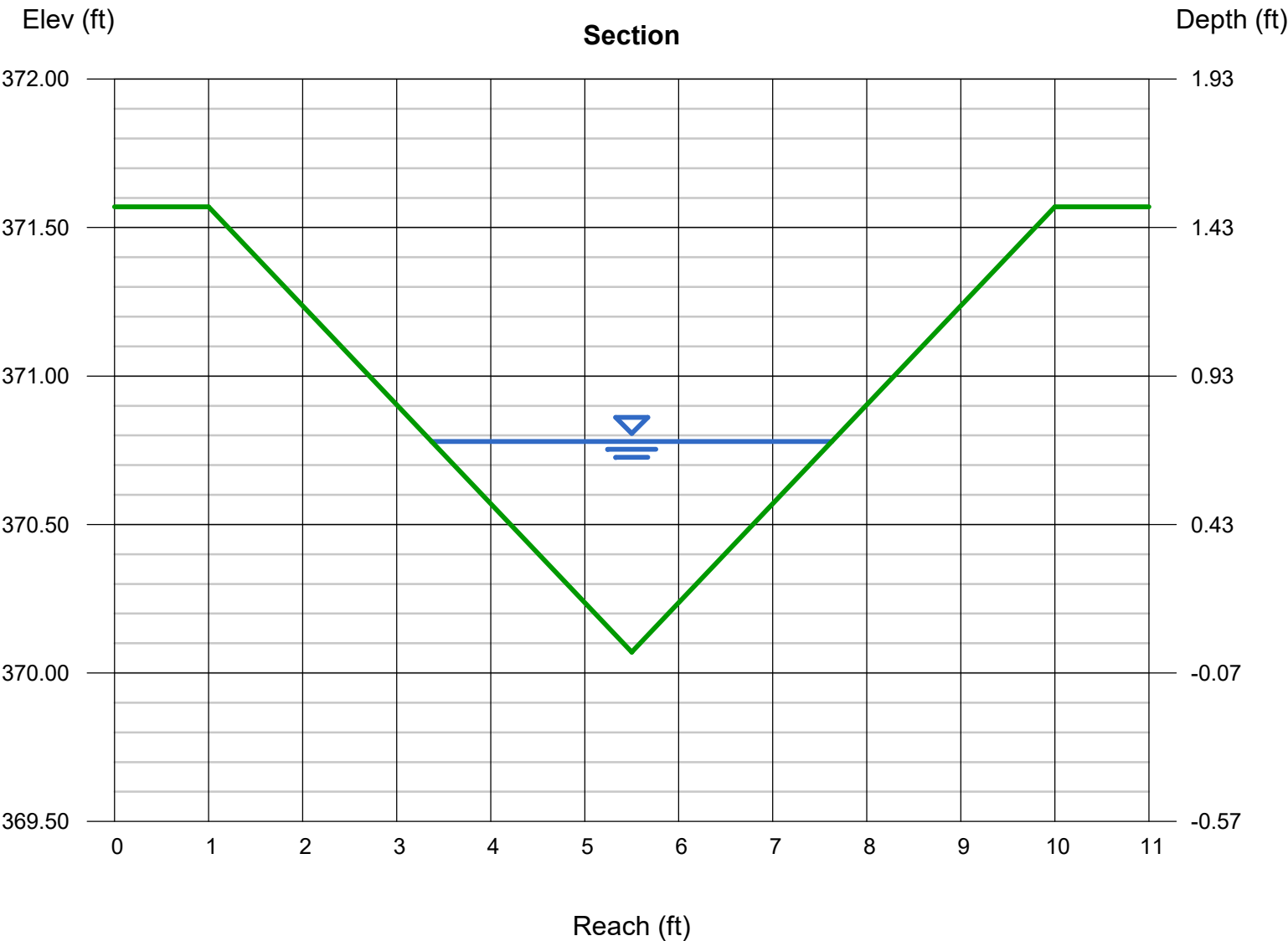
Invert Elev (ft) = 370.07
Slope (%) = 3.16
N-Value = 0.033

Calculations

Compute by: Known Q
Known Q (cfs) = 5.70

Highlighted

Depth (ft) = 0.71
Q (cfs) = 5.700
Area (sqft) = 1.51
Velocity (ft/s) = 3.77
Wetted Perim (ft) = 4.49
Crit Depth, Yc (ft) = 0.75
Top Width (ft) = 4.26
EGL (ft) = 0.93



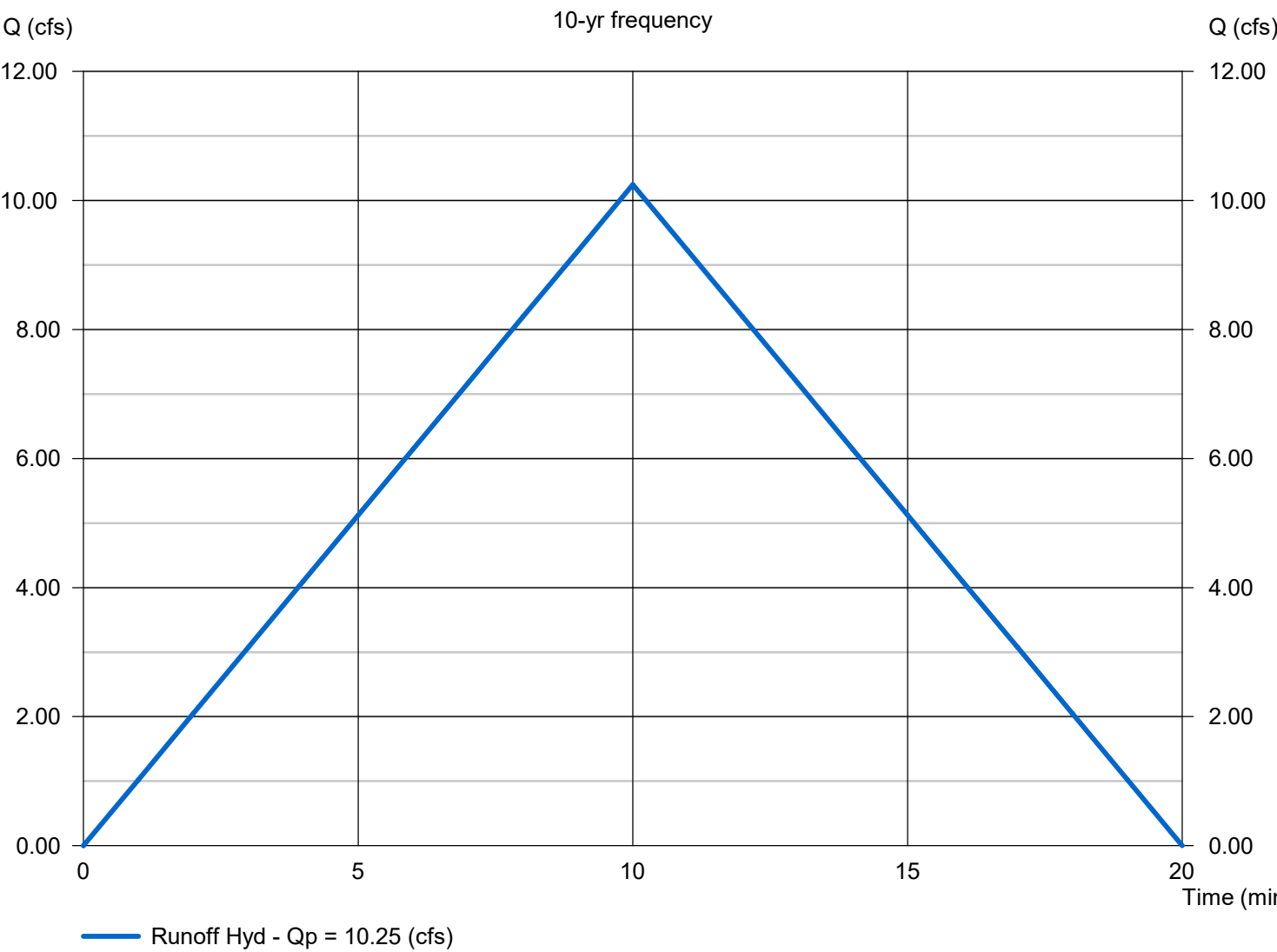
Hydrology Report

PDD #7

Hydrograph type	= Rational	Peak discharge (cfs)	= 10.25
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 2.840	Runoff coeff. (C)	= 0.6
Rainfall Inten (in/hr)	= 6.013	Tc by User (min)	= 10
IDF Curve	= 20241113 Moody IDF.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 6,148 (cuft); 0.141 (acft)

Runoff Hydrograph



Channel Report

PDD #7

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.50

Invert Elev (ft) = 340.70
Slope (%) = 5.00
N-Value = 0.033

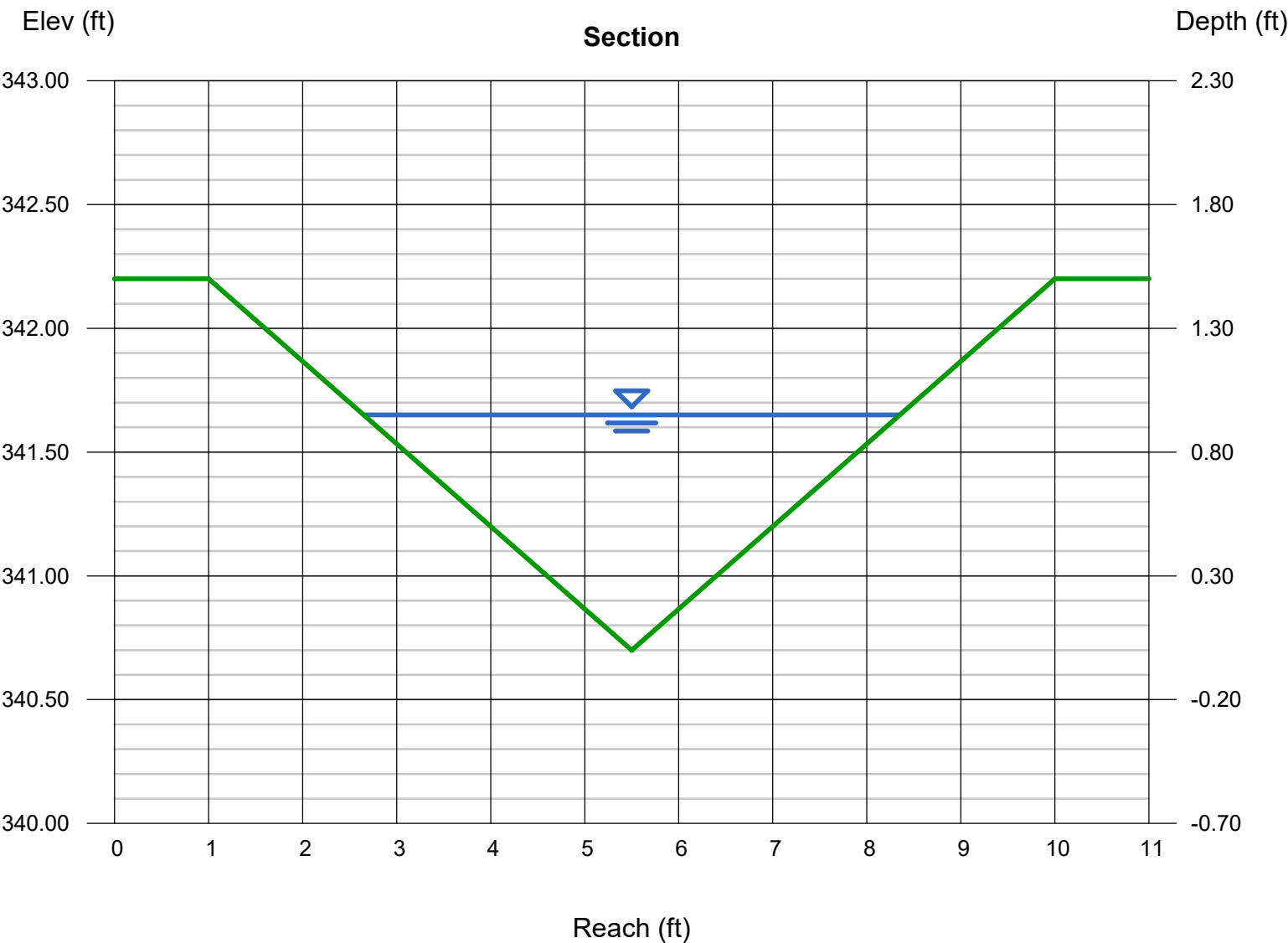
Calculations

Compute by: Known Q
Known Q (cfs) = 15.95

Highlighted

Depth (ft) = 0.95
Q (cfs) = 15.95
Area (sqft) = 2.71
Velocity (ft/s) = 5.89
Wetted Perim (ft) = 6.01
Crit Depth, Yc (ft) = 1.12
Top Width (ft) = 5.70
EGL (ft) = 1.49

Includes PDD #6 contribution



Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

Project: **Moody** Road: **Mulberry Tree Drive (27' B-B)** Date: 5/30/25

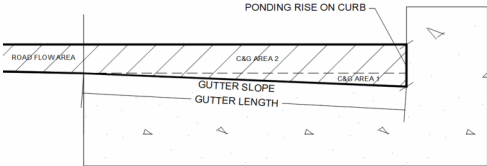
Inlet No. **1** Allowable Spread=Pvm't + Gutter Width: **7.5** ft
Compute "C" Factor: One Half R/W Width: **25** One Half B/B Width: **13.5** S/W Width: **5**
Paved Area "C": **0.95** Grass Area: **0.2**
0.70 0.05

Gutter Width= **2.00** ft.
Total Allow. Spread = **7.50** ft. Manning's n = 0.015 Weir C = 3.33

Inlet Type 1 Inlet Types 1 NCDOT Std. 840.03

Composite Rational C = **0.76** | (2yr.) = 4.00 iph

Roadway X-slope = **0.02** Varies Manual Input



Standard Curb and Gutter Profile (see diagram above)

Gutter Length (ft) **2**
Gutter Slope (ft/ft) **0.04**
Ponding Rise on Curb (ft) **0.19**

Max Flow for Limited Spread																	
C.B. NUMBER	Long.	ROAD	E. O. P.	Weir	C&G Flow	C&G Flow	C&G	Road	Road	Total	Total	MAX Q FOR	On-Grade	Max Drainage	Actual Drainage Area	al Drainage	Check
	Slope	X-SLOPE	Depth	Depth	Area 1	Area 2	WP	Flow Area	WP	Flow A	WP	SPREAD, CFS	Spread	Area (S.F.)	Area (S.F.)	Area (ACRE)	
CB 107	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	8712	0.20	GOOD
CB 105	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	8276	0.19	GOOD
CB 106	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	50872	32234	0.74	GOOD
CB 104	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	6534	0.15	GOOD
CB 103	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	8712	0.20	GOOD
CB 305	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	6534	0.15	GOOD
CB 306	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	5227	0.12	GOOD
CB 304	0.015	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.35	7.50	17986	3485	0.08	GOOD
CB 303	0.015	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.35	7.50	17986	3049	0.07	GOOD
CB 302	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	18295	0.42	GOOD
CB 301	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	5227	0.12	GOOD
CB 330	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	5663	0.13	GOOD
CB 332	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	11761	0.27	GOOD
CB 333	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	6970	0.16	GOOD
CB 334	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	18731	0.43	GOOD
CB 412	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	6534	0.15	GOOD
CB 413	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	21780	0.50	GOOD

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

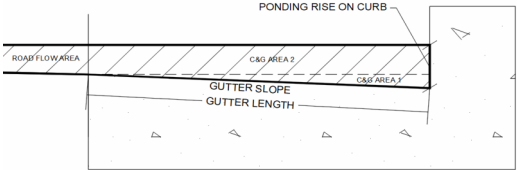
Project: **Moody** Road: **Tansley Crest Loop (27' B-B)** Date: 5/30/25

Inlet No. **1** Allowable Spread=Pvm't + Gutter Width: **7.5** ft
Compute "C" Factor: One Half R/W Width: **25** One Half B/B Width: **13.5** S/W Width: **5**
Paved Area "C": **0.95** Grass Area: **0.2**
0.70 0.05

Gutter Width= **2.00** ft.
Total Allow. Spread = **7.50** ft. Manning's n = 0.015 Weir C = 3.33
Inlet Type **1** Inlet Types **1** NCDOT Std. 840.03

Composite Rational C = **0.76** I (2yr.) = 4.00 iph

Roadway X-slope = **0.02** Varies Manual Input



Standard Curb and Gutter Profile (see diagram above)
Gutter Length (ft) **2**
Gutter Slope (ft/ft) **0.04**
Ponding Rise on Curb (ft) **0.19**

Max Flow for Limited Spread																	
C.B. NUMBER	Long.	ROAD	E. O. P.	Weir	C&G Flow	C&G Flow	C&G	Road	Road	Total	Total	MAX Q FOR	On-Grade	Max Drainage	ctual Drainage Ar	al Drainage	Check
	Slope	X-SLOPE	Depth	Depth	Area 1	Area 2	WP	Flow Area	WP	Flow A	WP	SPREAD, CFS	Spread	Area (S.F.)	Area (S.F.)	Area (ACRE)	
CB 421	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	5227	0.12	GOOD
CB 422	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	9583	0.22	GOOD
CB 401	0.012	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.21	7.50	16087	2178	0.05	GOOD
CB 402	0.012	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.21	7.50	16087	2178	0.05	GOOD
CB 407	0.012	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.21	7.50	16087	2614	0.06	GOOD
CB 408	0.012	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.21	7.50	16087	2614	0.06	GOOD
CB 408A	0.012	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.21	7.50	16087	3920	0.09	GOOD
CB 409	0.020	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.56	7.50	20769	3485	0.08	GOOD
CB 409A	0.020	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.56	7.50	20769	3485	0.08	GOOD
CB 410	0.036	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.09	7.50	27864	3485	0.08	GOOD
CB 410A	0.036	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.09	7.50	27864	9583	0.22	GOOD
CB 411	0.027	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.81	7.50	24131	2178	0.05	GOOD
CB 505	0.020	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.56	7.50	20769	2178	0.05	GOOD
CB 506	0.020	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.56	7.50	20769	17424	0.40	GOOD
CB 510	0.042	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.26	7.50	30097	3920	0.09	GOOD
CB 511	0.042	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.26	7.50	30097	2614	0.06	GOOD
CB 513	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	6098	0.14	GOOD
CB 516	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	5663	0.13	GOOD
CB 517	0.030	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.91	7.50	25436	5227	0.12	GOOD

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

Project: Moody Road: Vintage Vinery Court (27' B-B) Date: 5/30/25

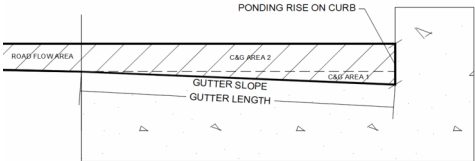
Inlet No. 1 Allowable Spread=Pvm't + Gutter Width: 7.5 ft
Compute "C" Factor: One Half R/W Width 25 One Half B/B Width: 13.5 S/W Width 5
Paved Area "C": 0.95 Grass Area 0.2
0.70 0.05

Gutter Width= 2.00 ft.
Total Allow. Spread = 7.50 ft. Manning's n = 0.015 Weir C = 3.33

Inlet Type 1 Inlet Types 1 NCDOT Std. 840.03

Composite Rational C = 0.76 I (2yr.) = 4.00 iph

Roadway X-slope = 0.02Varies Manual Input



Standard Curb and Gutter Profile (see diagram above)

Gutter Length (ft) 2
Gutter Slope (ft/ft) 0.04
Ponding Rise on Curb (ft) 0.19

Max Flow for Limited Spread																	
C.B. NUMBER	Long. Slope	ROAD X-SLOPE	E. O. P. Depth	Weir Depth	C&G Flow Area 1	C&G Flow Area 2	C&G WP	Road Flow Area	Road WP	Total Flow A	Total WP	MAX Q FOR SPREAD, CFS	On-Grade Spread	Max Drainage Area (S.F.)	Actual Drainage Area (S.F.)	Actual Drainage Area (ACRE)	Check
CB 307	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	5227	0.12	GOOD
CB 308	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	10890	0.25	GOOD
CB 309	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	3485	0.08	GOOD
CB 311	0.040	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.21	7.50	29371	3049	0.07	GOOD
CB 312	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	3920	0.09	GOOD
CB 313	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	7405	0.17	GOOD
CB 315	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	9583	0.22	GOOD
CB 317	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	14375	0.33	GOOD
CB 318	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	10454	0.24	GOOD
CB 319	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	4792	0.11	GOOD
CB 321	0.028	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.85	7.50	24574	7841	0.18	GOOD
CB 325	0.005	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	0.78	7.50	20769	3920	0.09	GOOD
CB 514	0.039	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.18	7.50	29002	10019	0.23	GOOD
CB 515	0.039	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.18	7.50	29002	9148	0.21	GOOD
CB 507	0.039	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.18	7.50	29002	12632	0.29	GOOD
CB 508	0.039	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.18	7.50	29002	13939	0.32	GOOD
CB 504	0.047	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.39	7.50	31838	1742	0.04	GOOD
CB 503	0.025	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.74	7.50	23220	23087	0.53	GOOD
CB 502	0.025	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.74	7.50	23220	20038	0.46	GOOD

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

Project: **Moody** Road: **Cranapple Lane (27' B-B)** Date: 5/30/25

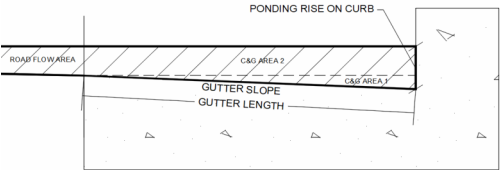
Inlet No. **1** Allowable Spread=Pvm't + Gutter Width: **7.5** ft
Compute "C" Factor: One Half R/W Width: **25** One Half B/B Width: **13.5** S/W Width: **5**
Paved Area "C": **0.95** Grass Area: **0.2**
0.70 0.05

Gutter Width= **2.00** ft.
Total Allow. Spread = **7.50** ft. Manning's n = 0.015 Weir C = 3.33

Inlet Type 1 Inlet Types 1 NCDOT Std. 840.03

Composite Rational C = **0.76** I (2yr.) = 4.00 iph

Roadway X-slope = **0.02**Varies Manual Input



Standard Curb and Gutter Profile (see diagram above)

Gutter Length (ft) **2**
Gutter Slope (ft/ft) **0.04**
Ponding Rise on Curb (ft) **0.19**

Max Flow for Limited Spread																	
C.B.	Long.	ROAD	E. O. P.	Weir	C&G Flow	C&G Flow	C&G	Road	Road	Total	Total	MAX Q FOR	On-Grade	Max Drainage	tual Drainage Ar	al Drainage	Check
NUMBER	Slope	X-SLOPE	Depth	Depth	Area 1	Area 2	WP	Flow Area	WP	Flow A	WP	SPREAD, CFS	Spread	Area (S.F.)	Area (S.F.)	Area (ACRE)	
CB 406	0.018	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.48	7.50	19703	10454	0.24	GOOD
CB 405	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	6534	0.15	GOOD
CB 404	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	10890	0.25	GOOD
CB 403	0.050	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	2.47	7.50	32838	25265	0.58	GOOD

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

Project: **Moody** Road: **Wineberry Bush Lane (27' B-B)** Date: 5/30/25

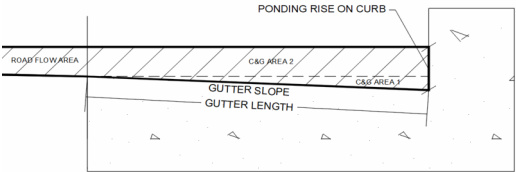
Inlet No. **1** Allowable Spread=Pvm't + Gutter Width: **7.5** ft
Compute "C" Factor: One Half R/W Width: **25** One Half B/B Width: **13.5** S/W Width: **5**
Paved Area "C": **0.95** Grass Area: **0.2**
0.70 0.05

Gutter Width= **2.00** ft.
Total Allow. Spread = **7.50** ft. Manning's n = 0.015 Weir C = 3.33

Inlet Type **1** Inlet Types **1** NCDOT Std. 840.03

Composite Rational C = **0.76** I (2yr.) = 4.00 iph

Roadway X-slope = **0.02**Varies Manual Input



Standard Curb and Gutter Profile (see diagram above)
Gutter Length (ft) **2**
Gutter Slope (ft/ft) **0.04**
Ponding Rise on Curb (ft) **0.19**

Max Flow for Limited Spread																	
C.B. NUMBER	Long.	ROAD	E. O. P.	Weir	C&G Flow	C&G Flow	C&G	Road	Road	Total	Total	MAX Q FOR	On-Grade	Max Drainage	ctual Drainage Ar	al Drainage	Check
	Slope	X-SLOPE	Depth	Depth	Area 1	Area 2	WP	Flow Area	WP	Flow A	WP	SPREAD, CFS	Spread	Area (S.F.)	Area (S.F.)	Area (ACRE)	
CB 101	0.025	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.74	7.50	23220	5663	0.13	GOOD
CB 102	0.025	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.74	7.50	23220	10454	0.24	GOOD
CB 121	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	18295	0.42	GOOD
CB 122	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	8276	0.19	GOOD

*dbl

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Gutter Spread by Limited Area

Determine maximum area to on-grade inlet using input factors as shown below.

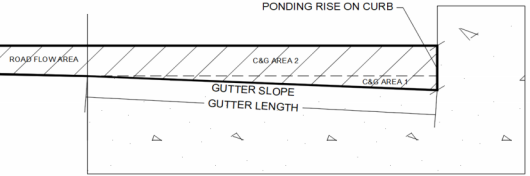
Project: **Moody** Road: **Clover Cottage Lane (27' B-B)** Date: 5/30/25

Inlet No. **1** Allowable Spread=Pvm't + Gutter Width: **7.5** ft
Compute "C" Factor: One Half R/W Width: **25** One Half B/B Width: **13.5** S/W Width: **5**
Paved Area "C": **0.95** Grass Area: **0.2**
0.70 0.05

Gutter Width= **2.00** ft.
Total Allow. Spread = **7.50** ft. Manning's n = 0.015 Weir C = 3.33
Inlet Type 1 Inlet Types 1 NCDOT Std. 840.03

Composite Rational C = **0.76** I (2yr.) = 4.00 iph

Roadway X-slope = **0.02**Varies Manual Input

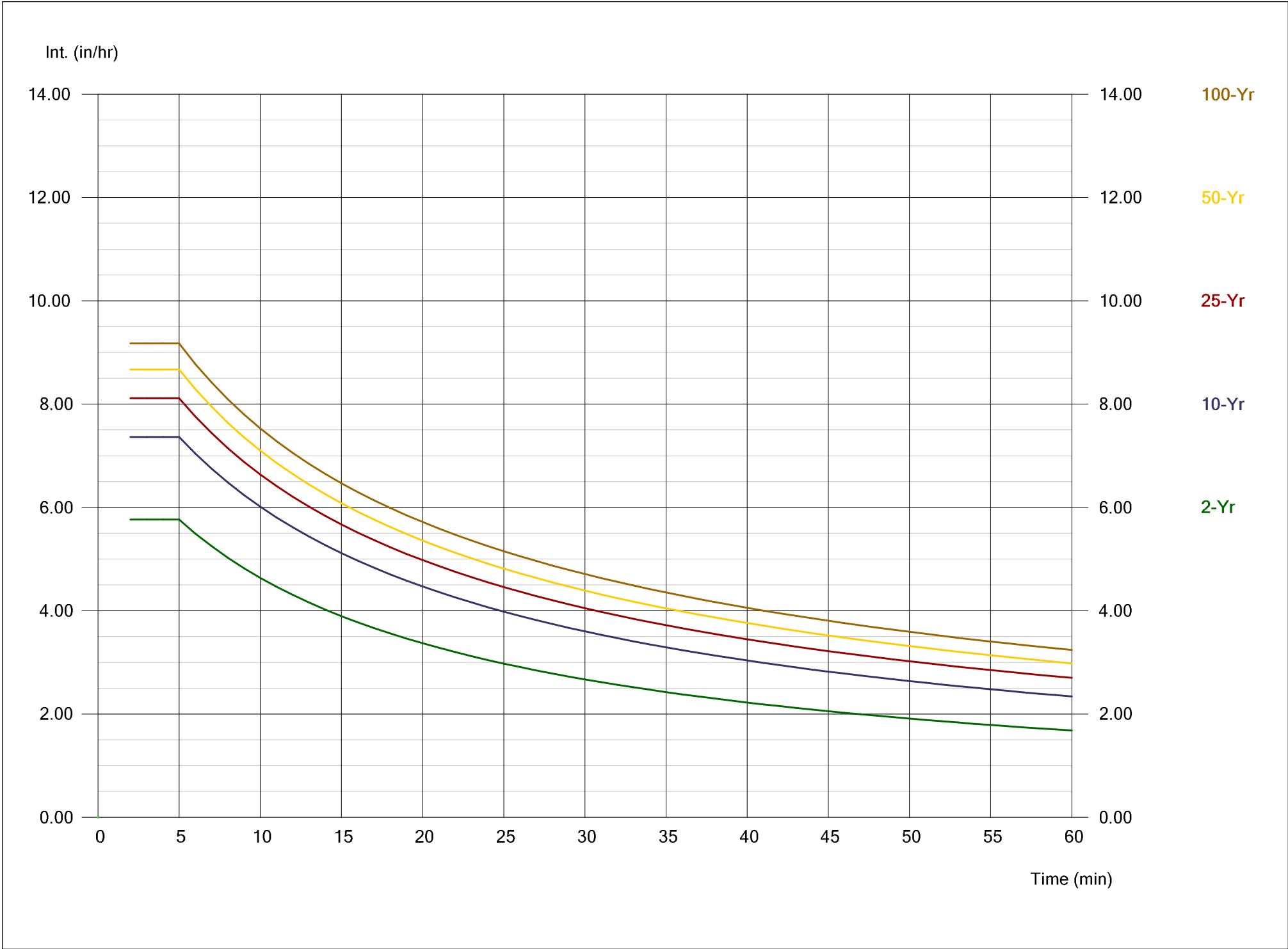


Standard Curb and Gutter Profile (see diagram above)
Gutter Length (ft) **2**
Gutter Slope (ft/ft) **0.04**
Ponding Rise on Curb (ft) **0.19**

Max Flow for Limited Spread																	
C.B. NUMBER	Long.	ROAD	E. O. P.	Weir	C&G Flow	C&G Flow	C&G	Road	Road	Total	Total	MAX Q FOR	On-Grade	Max Drainage	tual Drainage Ar	al Drainage	Check
	Slope	X-SLOPE	Depth	Depth	Area 1	Area 2	WP	Flow Area	WP	Flow A	WP	SPREAD, CFS	Spread	Area (S.F.)	Area (S.F.)	Area (ACRE)	
CB 111	0.020	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.56	7.50	41537	26136	0.60	GOOD
CB 114	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	14686	6534	0.15	GOOD
CB 115	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	4356	0.10	GOOD
CB 116	0.010	0.020	0.11	0.11	0.08	0.22	2.19	0.30	5.50	0.61	7.69	1.10	7.50	29371	7841	0.18	GOOD

E. O. P. - Edge of Pavement A - Area (s. f.) Note: Program uses Manning's formula for open channel flow.
C&G - Curb and gutter V - Velocity (fps)
WP - Wetted Perimeter (ft.)

Storm Sewer IDF Curves



Date: 5/29/2025

Storm Sewer Inventory Report

10-Year SCM #1 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	96.027	-10.617	Comb	0.00	0.60	0.57	10.0	380.50	0.58	381.06	18	Cir	0.013	1.03	385.25	Pipe - (97)
2	1	107.815	-39.453	Comb	0.00	0.15	0.57	10.0	381.26	1.00	382.34	15	Cir	0.013	1.46	387.03	Pipe - (95)
3	2	26.999	75.004	Comb	0.00	0.10	0.57	10.0	382.54	0.52	382.68	15	Cir	0.013	1.82	387.04	Pipe - (94)
4	3	59.003	-96.968	Comb	0.00	0.18	0.57	10.0	382.88	0.51	383.18	15	Cir	0.013	1.00	387.89	Pipe - (93)
5	3	139.352	-4.932	Hdwl	0.00	0.86	0.57	10.0	382.78	0.50	383.48	15	Cir	0.013	1.00	385.00	Pipe - (175)
6	End	229.120	-10.656	Comb	0.00	0.13	0.57	10.0	363.00	2.20	368.04	18	Cir	0.013	0.63	373.82	Pipe - (86)
7	6	27.000	21.423	Comb	0.00	0.24	0.57	10.0	368.14	0.52	368.28	18	Cir	0.013	1.22	373.87	Pipe - (85)
8	7	45.912	-51.157	Comb	0.00	0.20	0.57	10.0	368.48	3.27	369.98	18	Cir	0.013	1.62	375.04	Pipe - (84)
9	8	244.371	47.632	Comb	0.00	0.19	0.57	10.0	370.18	2.92	377.31	15	Cir	0.013	1.50	382.61	Pipe - (83)
10	9	27.044	-90.017	Comb	0.00	0.74	0.57	10.0	378.23	0.63	378.40	15	Cir	0.013	1.00	382.57	Pipe - (88)
11	9	252.428	1.235	Comb	0.00	0.20	0.57	10.0	377.41	2.98	384.92	15	Cir	0.013	1.00	390.04	Pipe - (82)
12	End	94.321	-74.896	Comb	0.00	0.42	0.57	10.0	369.84	0.50	370.31	15	Cir	0.013	1.00	374.00	Pipe - (92)
13	12	59.044	38.083	Comb	0.00	0.19	0.57	10.0	370.61	0.49	370.90	15	Cir	0.013	1.00	374.05	Pipe - (91)
14	8	27.000	-42.459	Comb	0.00	0.15	0.57	10.0	370.18	0.52	370.32	15	Cir	0.013	1.00	375.04	Pipe - (87)
15	End	41.513	27.855	DrGrt	0.00	4.20	0.57	10.0	363.50	0.51	363.71	24	Cir	0.013	1.00	366.55	Pipe - (89)
Project File: SCM#1.stm												Number of lines: 15				Date: 5/29/2025	

Structure Report

10-Year SCM #1 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 111	Combination	385.25	Rect	8.00	4.00	18	Cir	381.06	15	Cir	381.26
2	CB 114	Combination	387.03	Rect	4.00	4.00	15	Cir	382.34	15	Cir	382.54
3	CB 115	Combination	387.04	Rect	4.00	4.00	15	Cir	382.68	15 15	Cir Cir	382.88 382.78
4	CB 116	Combination	387.89	Rect	4.00	4.00	15	Cir	383.18			
5	FES 115	OpenHeadwall	385.00	n/a	n/a	n/a	15	Cir	383.48			
6	CB 101	Combination	373.82	Rect	4.00	4.00	18	Cir	368.04	18	Cir	368.14
7	CB 102	Combination	373.87	Rect	4.00	4.00	18	Cir	368.28	18	Cir	368.48
8	CB 103	Combination	375.04	Rect	4.00	4.00	18	Cir	369.98	15 15	Cir Cir	370.18 370.18
9	CB 105	Combination	382.61	Rect	4.00	4.00	15	Cir	377.31	15 15	Cir Cir	378.23 377.41
10	CB 106	Combination	382.57	Rect	8.00	4.00	15	Cir	378.40			
11	CB 107	Combination	390.04	Rect	4.00	4.00	15	Cir	384.92			
12	CB 121	Combination	374.00	Rect	8.00	4.00	15	Cir	370.31	15	Cir	370.61
13	CB 122	Combination	374.05	Rect	4.00	4.00	15	Cir	370.90			
14	CB 104	Combination	375.04	Rect	4.00	4.00	15	Cir	370.32			
15	DI 126	DropGrate	366.55	Rect	8.00	4.00	24	Cir	363.71			
Project File: SCM#1.stm							Number of Structures: 15			Run Date: 5/29/2025		

Storm Sewer Summary Report

10-Year SCM #1 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (97)	6.02	18	Cir	96.027	380.50	381.06	0.583	381.72	382.01	0.42	382.43	End	Combination
2	Pipe - (95)	4.17	15	Cir	107.815	381.26	382.34	1.002	382.43	383.17	n/a	383.17 j	1	Combination
3	Pipe - (94)	3.70	15	Cir	26.999	382.54	382.68	0.518	383.38	383.52	0.50	384.02	2	Combination
4	Pipe - (93)	0.62	15	Cir	59.003	382.88	383.18	0.508	384.02	384.03	0.01	384.03	3	Combination
5	Pipe - (175)	2.95	15	Cir	139.352	382.78	383.48	0.502	384.02	384.31	0.18	384.49	3	OpenHeadwall
6	Pipe - (86)	5.68	18	Cir	229.120	363.00	368.04	2.200	364.21	368.96	n/a	368.96 j	End	Combination
7	Pipe - (85)	5.29	18	Cir	27.000	368.14	368.28	0.518	369.07	369.21	0.41	369.61	6	Combination
8	Pipe - (84)	4.58	18	Cir	45.912	368.48	369.98	3.267	369.61	370.80	n/a	370.80 j	7	Combination
9	Pipe - (83)	3.59	15	Cir	244.371	370.18	377.31	2.918	370.80	378.07	0.49	378.07	8	Combination
10	Pipe - (88)	2.54	15	Cir	27.044	378.23	378.40	0.629	378.85	379.04	n/a	379.04	9	Combination
11	Pipe - (82)	0.69	15	Cir	252.428	377.41	384.92	2.975	378.07	385.24	n/a	385.24 j	9	Combination
12	Pipe - (92)	2.06	15	Cir	94.321	369.84	370.31	0.498	370.75	370.91	0.19	371.10	End	Combination
13	Pipe - (91)	0.65	15	Cir	59.044	370.61	370.90	0.491	371.10	371.22	0.11	371.33	12	Combination
14	Pipe - (87)	0.51	15	Cir	27.000	370.18	370.32	0.519	370.80	370.80	0.02	370.82	8	Combination
15	Pipe - (89)	14.39	24	Cir	41.513	363.50	363.71	0.506	365.18	365.31	0.44	365.75	End	DropGrate

Project File: SCM#1.stm

Number of lines: 15

Run Date: 5/29/2025

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

Inlet Report

10-Year SCM #1 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 111	2.06	0.02	2.08	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.22	6.93	0.22	6.93	0.0	Off
2	CB 114	0.51	0.00	0.49	0.02	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.15	3.74	0.05	0.78	0.0	1
3	CB 115	0.34	0.04	0.38	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.14	2.99	0.03	0.43	0.0	1
4	CB 116	0.62	0.00	0.58	0.04	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.16	4.22	0.06	0.99	0.0	3
5	FES 115	2.95	0.00	2.95	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	6.00	0.330	0.330	0.013	0.00	0.00	0.00	0.00	0.0	Off
6	CB 101	0.45	0.00	0.45	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	2.06	0.00	0.00	0.0	Off
7	CB 102	0.82	0.00	0.82	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.17	4.28	0.17	4.28	0.0	Off
8	CB 103	0.69	0.00	0.69	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.37	0.01	0.10	0.0	7
9	CB 105	0.65	0.00	0.65	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.25	0.00	0.00	0.0	8
10	CB 106	2.54	0.00	2.14	0.40	Comb	6.0	1.50	0.00	6.00	2.50	0.054	2.00	0.060	0.020	0.013	0.20	5.84	0.10	1.74	0.0	14
11	CB 107	0.69	0.00	0.69	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.37	0.01	0.10	0.0	9
12	CB 121	1.44	0.02	1.46	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.19	5.26	0.19	5.26	0.0	Off
13	CB 122	0.65	0.00	0.63	0.02	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.15	3.46	0.04	0.68	0.0	12
14	CB 104	0.51	0.40	0.90	0.02	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.14	3.07	0.03	0.51	0.0	Off
15	DI 126	14.39	0.00	14.39	0.00	DrGrt	0.0	0.00	8.00	4.00	2.00	Sag	4.00	0.330	0.330	0.013	0.54	7.29	0.54	7.29	0.0	Off

Project File: SCM#1.stm

Number of lines: 15

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Hydraulic Grade Line Computations

10-Year SCM #1 Report

Page 1

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	18	6.02	380.50	381.72	1.22	1.18	3.91	0.24	381.96	0.333	96.027	381.06	382.01	0.95**	1.18	5.10	0.40	382.41	0.618	0.476	0.457	1.03	0.42
2	15	4.17	381.26	382.43	1.17	0.86	3.50	0.36	382.79	0.000	107.81	382.34	383.17 j	0.83**	0.86	4.84	0.36	383.53	0.000	0.000	n/a	1.46	n/a
3	15	3.70	382.54	383.38	0.84*	0.88	4.20	0.27	383.66	0.518	26.999	382.68	383.52	0.84	0.88	4.20	0.27	383.80	0.518	0.518	0.140	1.82	0.50
4	15	0.62	382.88	384.02	1.14	1.18	0.52	0.00	384.03	0.008	59.003	383.18	384.03	0.85	0.88	0.70	0.01	384.03	0.014	0.011	0.007	1.00	0.01
5	15	2.95	382.78	384.02	1.24	1.23	2.40	0.09	384.11	0.195	139.352	383.48	384.31	0.83	0.86	3.42	0.18	384.49	0.347	0.271	0.377	1.00	0.18
6	18	5.68	363.00	364.21	1.21	1.13	3.72	0.39	364.60	0.000	229.120	368.04	368.96 j	0.92**	1.13	5.01	0.39	369.35	0.000	0.000	n/a	0.63	0.25
7	18	5.29	368.14	369.07	0.93*	1.14	4.63	0.33	369.40	0.518	27.000	368.28	369.21	0.93	1.14	4.62	0.33	369.54	0.517	0.517	0.140	1.22	0.41
8	18	4.58	368.48	369.61	1.13	0.99	3.21	0.33	369.94	0.000	45.912	369.98	370.80 j	0.82**	0.99	4.63	0.33	371.13	0.000	0.000	n/a	1.62	n/a
9	15	3.59	370.18	370.80	0.62	0.61	5.89	0.32	371.13	0.000	244.371	377.31	378.07	0.76**	0.79	4.56	0.32	378.40	0.000	0.000	n/a	1.50	0.49
10	15	2.54	378.23	378.85	0.62*	0.61	4.16	0.25	379.10	0.000	27.044	378.40	379.04	0.64**	0.63	4.03	0.25	379.29	0.000	0.000	n/a	1.00	n/a
11	15	0.69	377.41	378.07	0.66	0.25	1.03	0.12	378.19	0.000	252.428	384.92	385.24 j	0.32**	0.25	2.72	0.12	385.36	0.000	0.000	n/a	1.00	n/a
12	15	2.06	369.84	370.75	0.91	0.96	2.15	0.07	370.82	0.131	94.321	370.31	370.91	0.60	0.58	3.54	0.19	371.10	0.468	0.300	0.283	1.00	0.19
13	15	0.65	370.61	371.10	0.49	0.24	1.45	0.03	371.14	0.094	59.044	370.90	371.22	0.32**	0.25	2.65	0.11	371.33	0.509	0.301	0.178	1.00	0.11
14	15	0.51	370.18	370.80	0.62	0.61	0.84	0.01	370.81	0.026	27.000	370.32	370.80	0.48	0.44	1.18	0.02	370.82	0.064	0.045	0.012	1.00	0.02
15	24	14.39	363.50	365.18	1.68	2.82	5.11	0.41	365.59	0.388	41.513	363.71	365.31	1.60	2.70	5.34	0.44	365.75	0.423	0.406	0.169	1.00	0.44

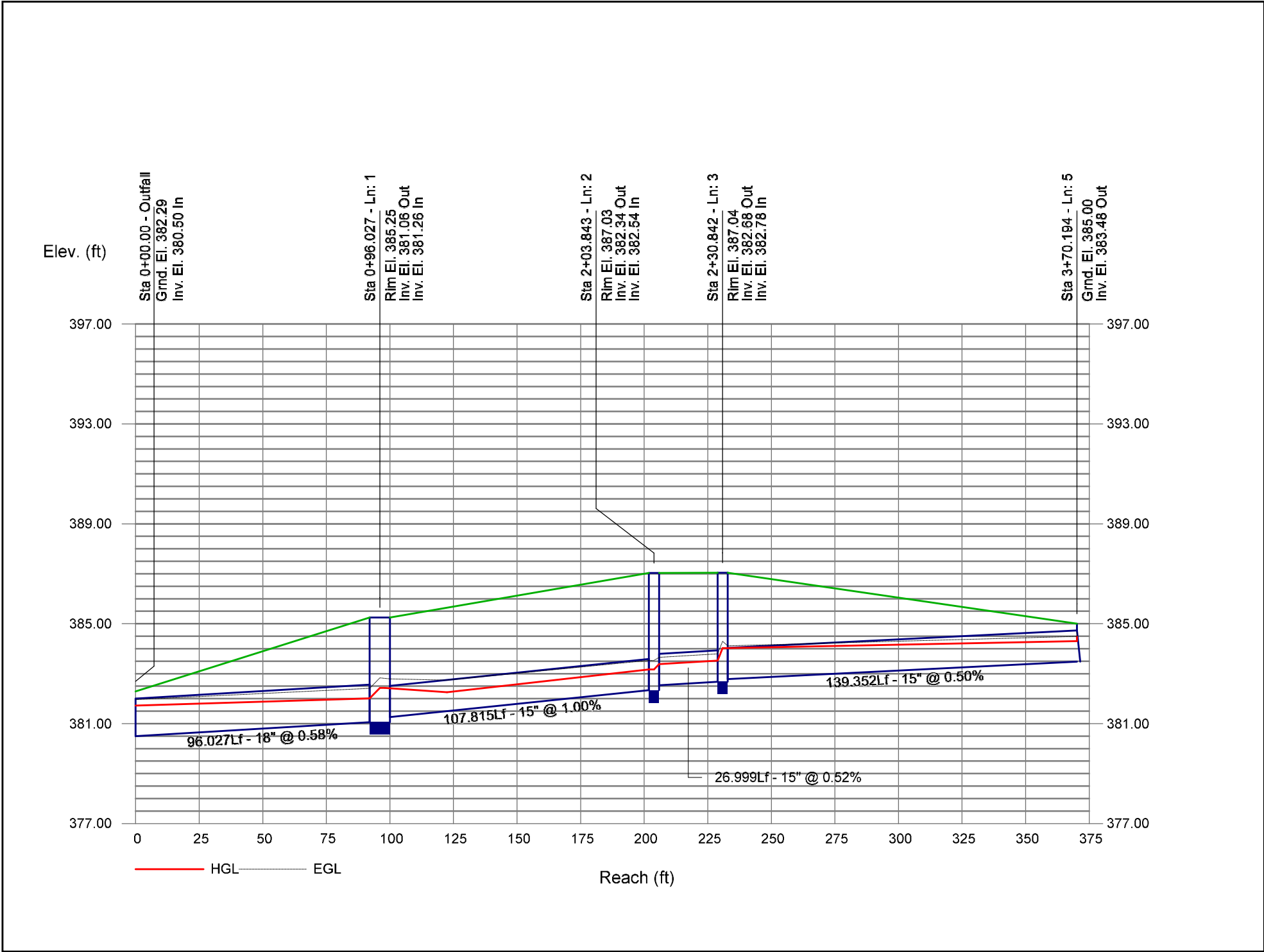
Project File: SCM#1.stm

Number of lines: 15

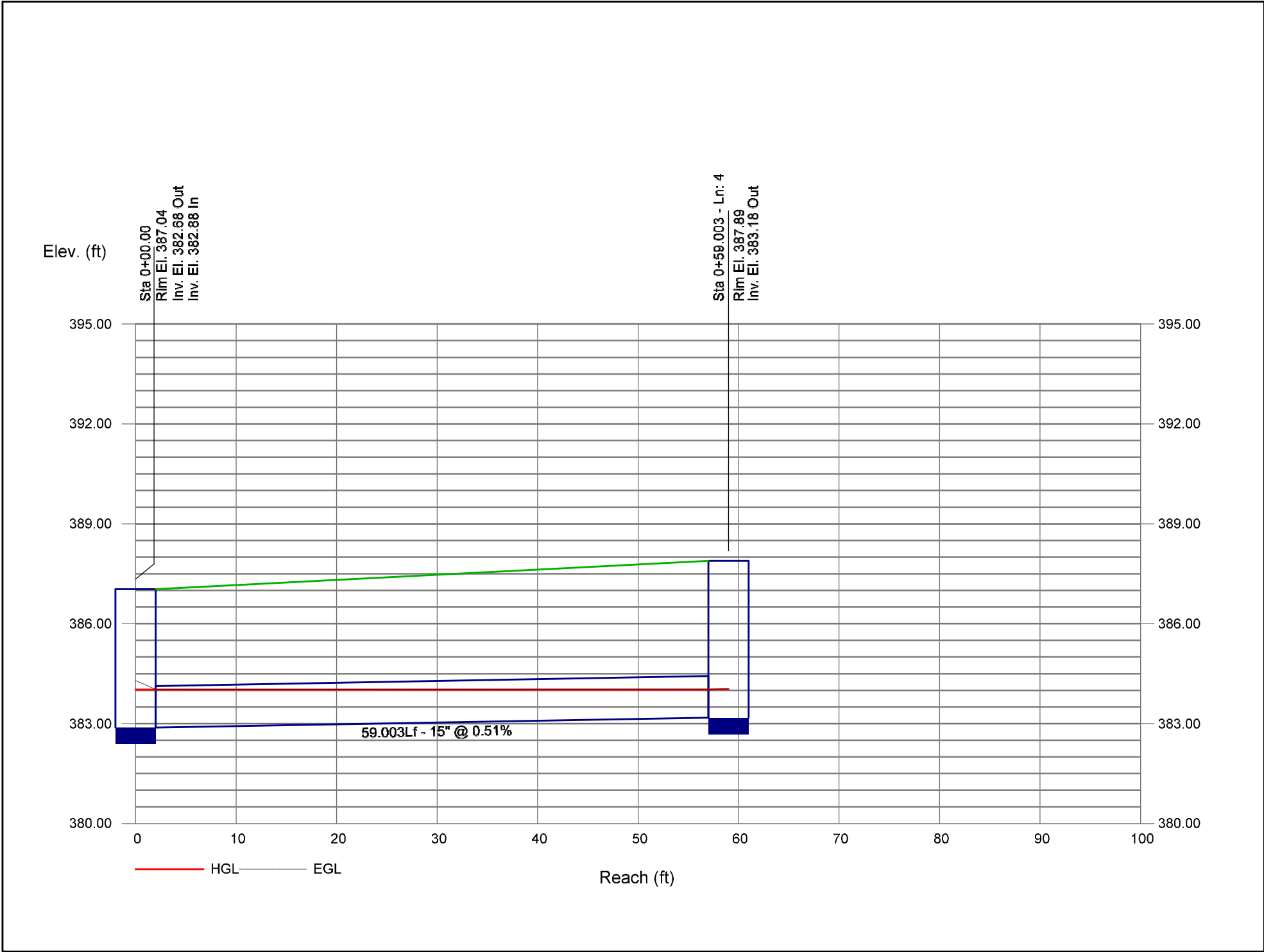
Run Date: 5/29/2025

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

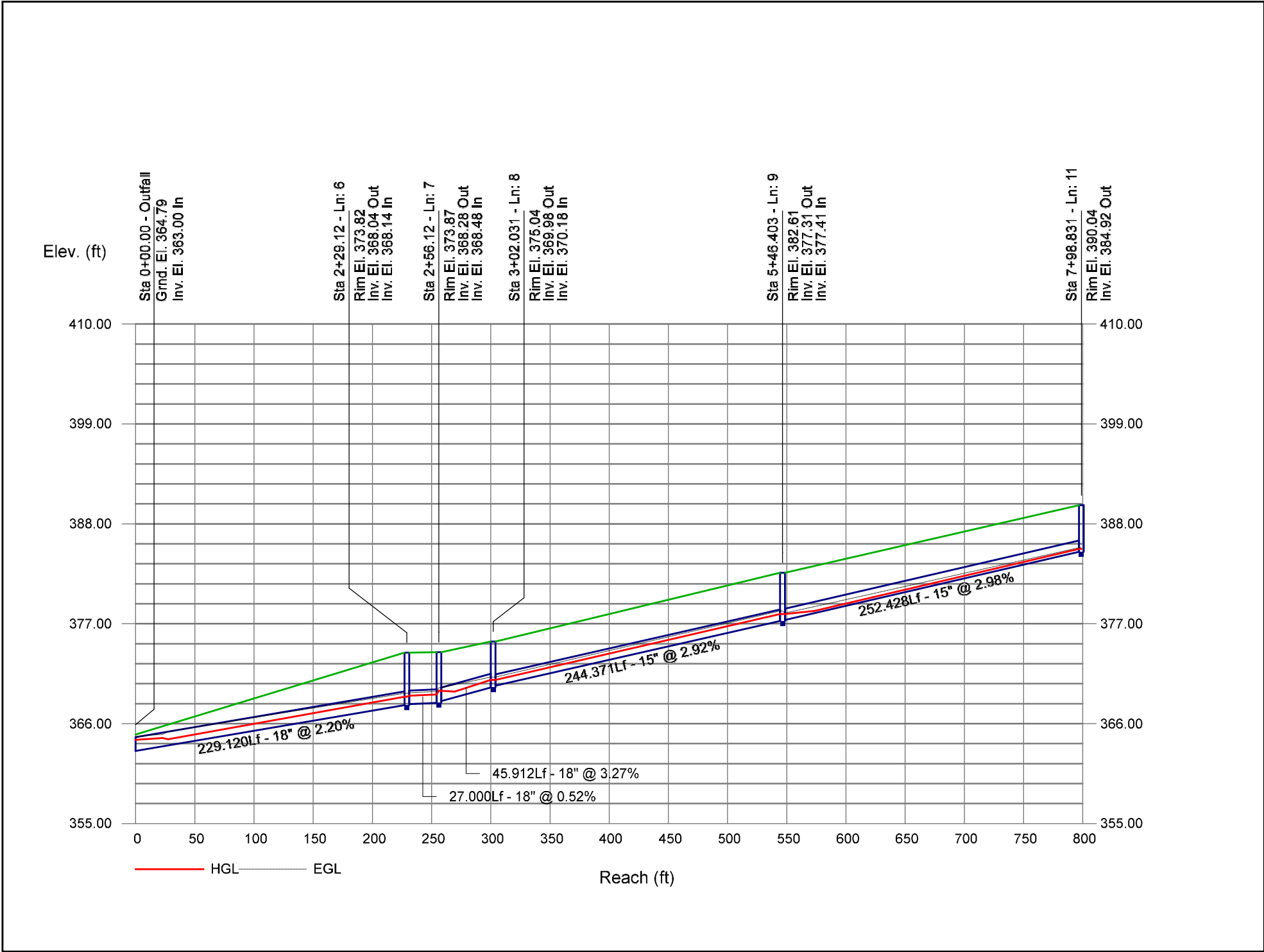
Storm Sewer Profile



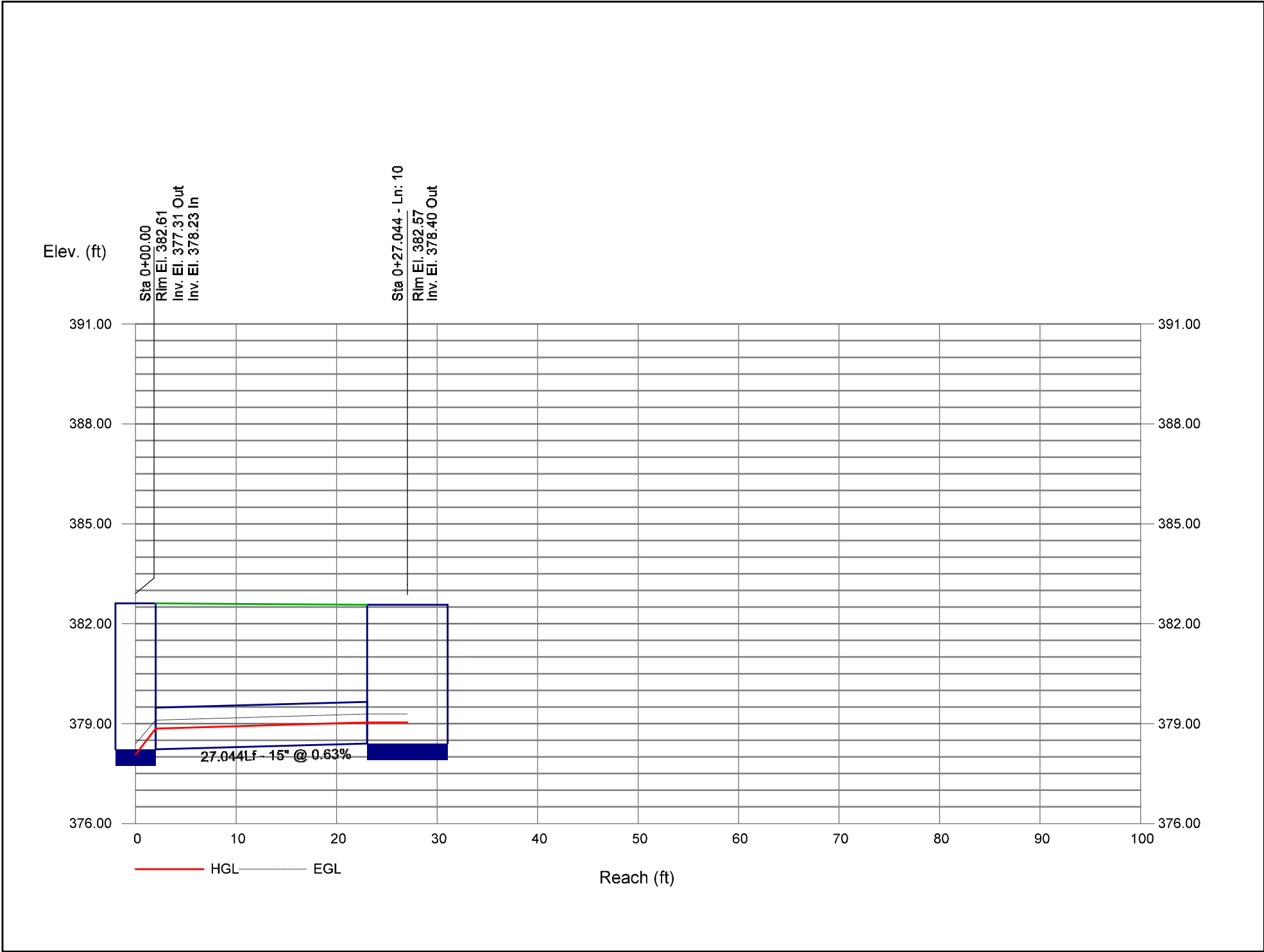
Storm Sewer Profile



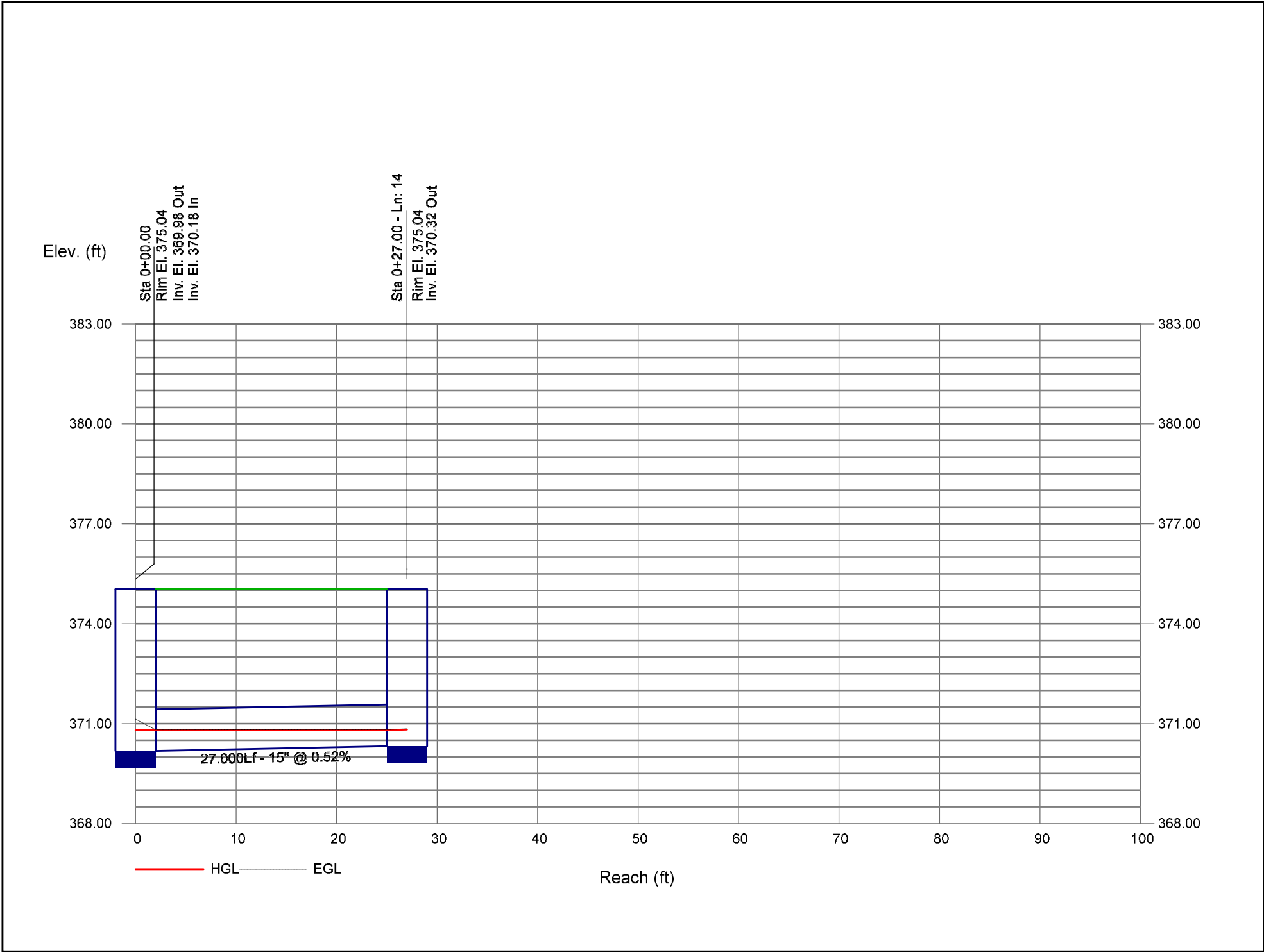
Storm Sewer Profile



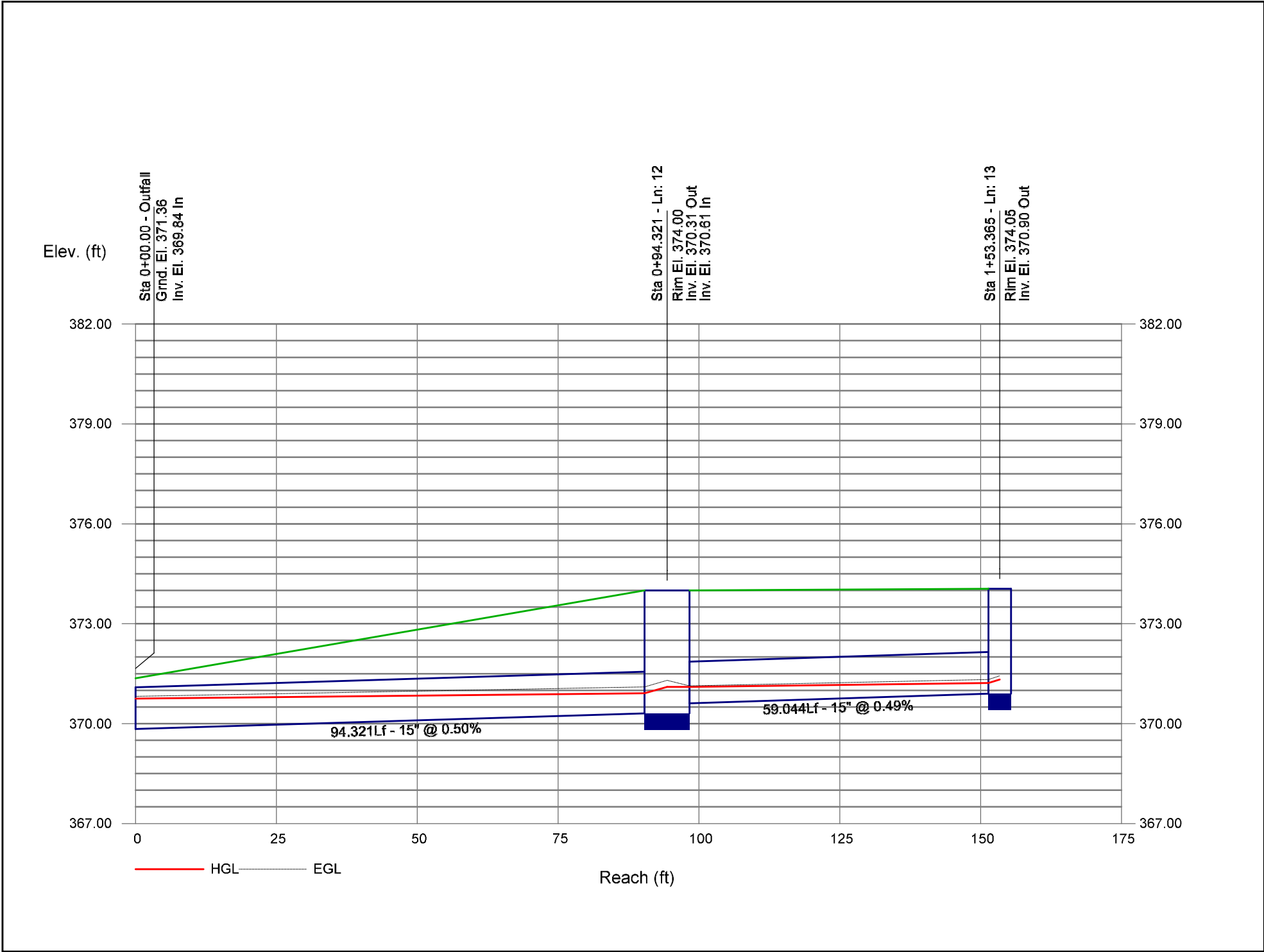
Storm Sewer Profile



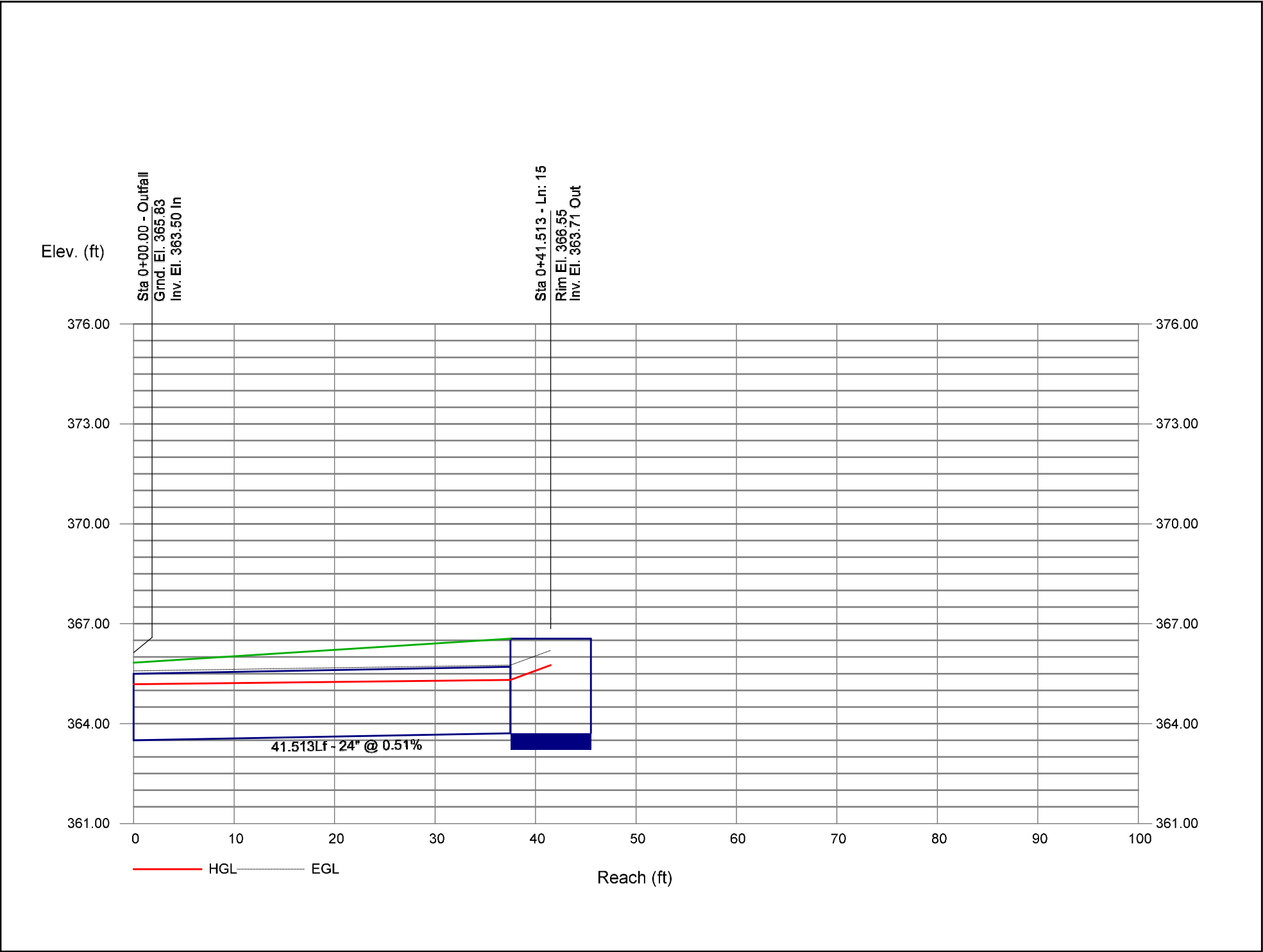
Storm Sewer Profile

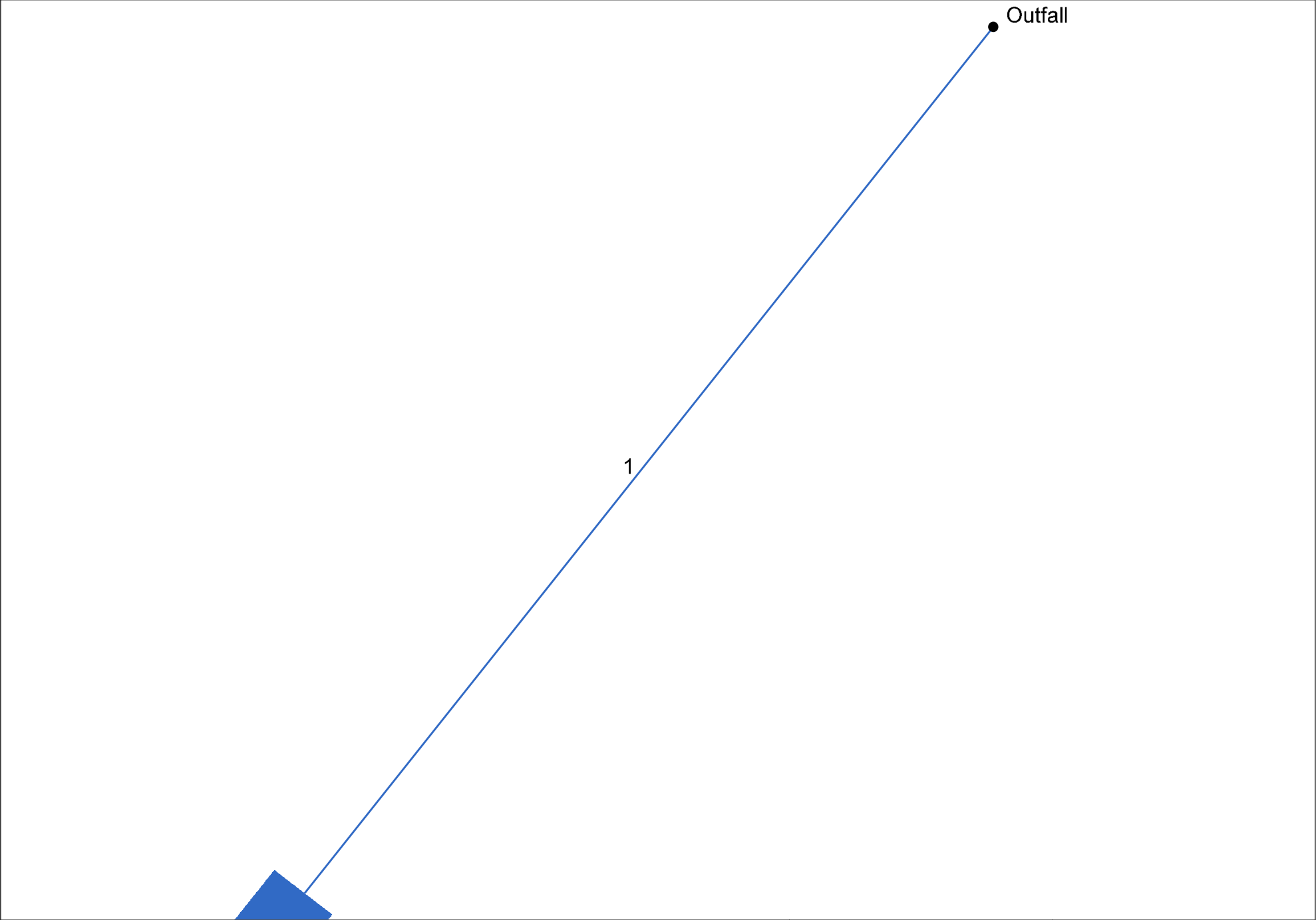


Storm Sewer Profile



Storm Sewer Profile





Project File: SCM#2.stm	Number of lines: 1	Date: 5/29/2025
-------------------------	--------------------	-----------------

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	64.790	128.444	DrGrt	0.00	0.59	0.57	10.0	361.50	1.16	362.25	18	Cir	0.013	1.00	366.26	Pipe - (164)
Project File: SCM#2.stm												Number of lines: 1			Date: 5/29/2025		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	YI 204	DropGrate	366.26	Rect	4.00	4.00	18	Cir	362.25			
Project File: SCM#2.stm							Number of Structures: 1			Run Date: 5/29/2025		

Storm Sewer Summary Report

10-Year SCM #2 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (164)	2.02	18	Cir	64.790	361.50	362.25	1.158	362.52	362.79	n/a	362.79 j	End	DropGrate
Project File: SCM#2.stm									Number of lines: 1			Run Date: 5/29/2025		
NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

10-Year SCM #2 Report

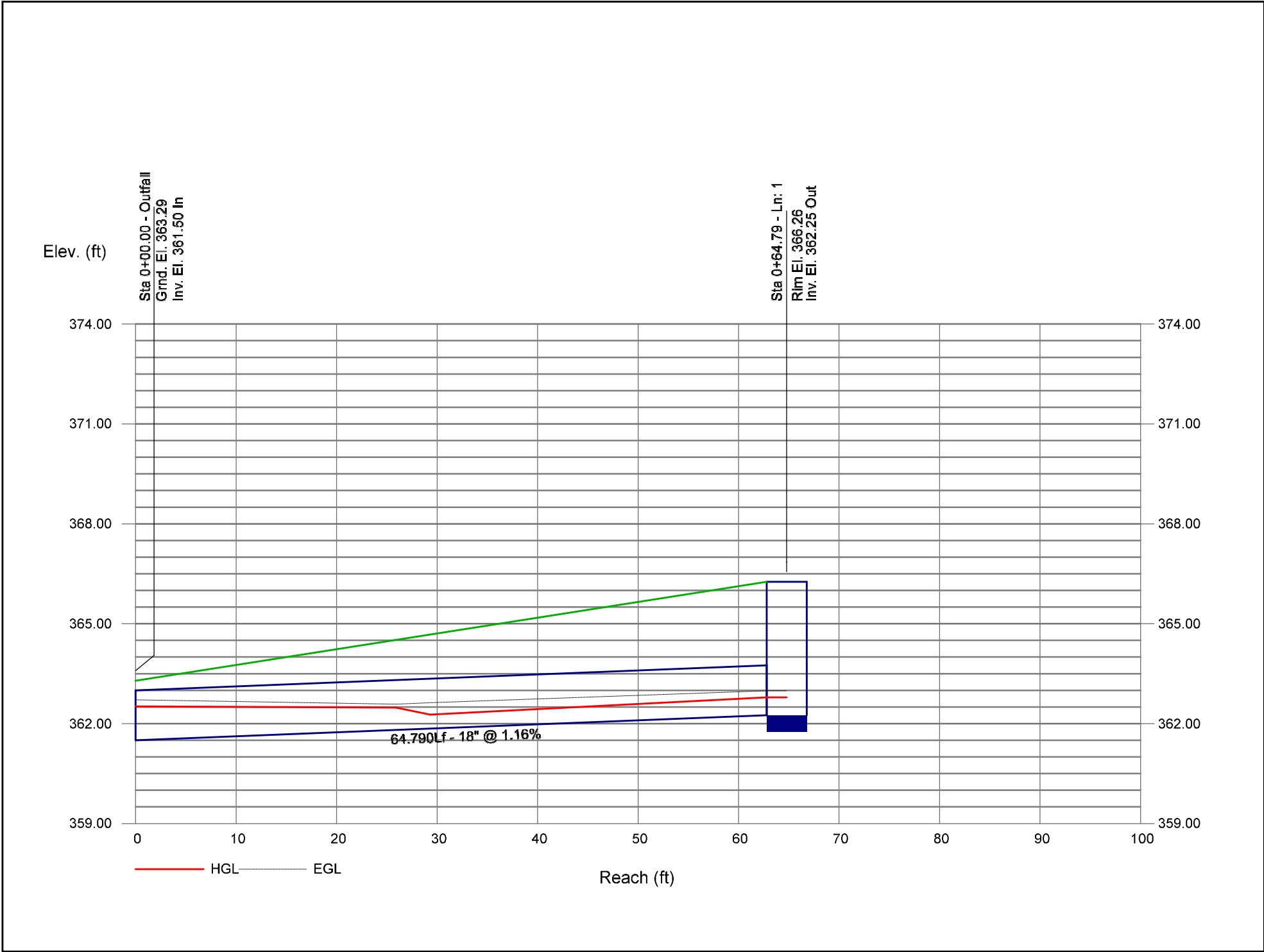
Page 1

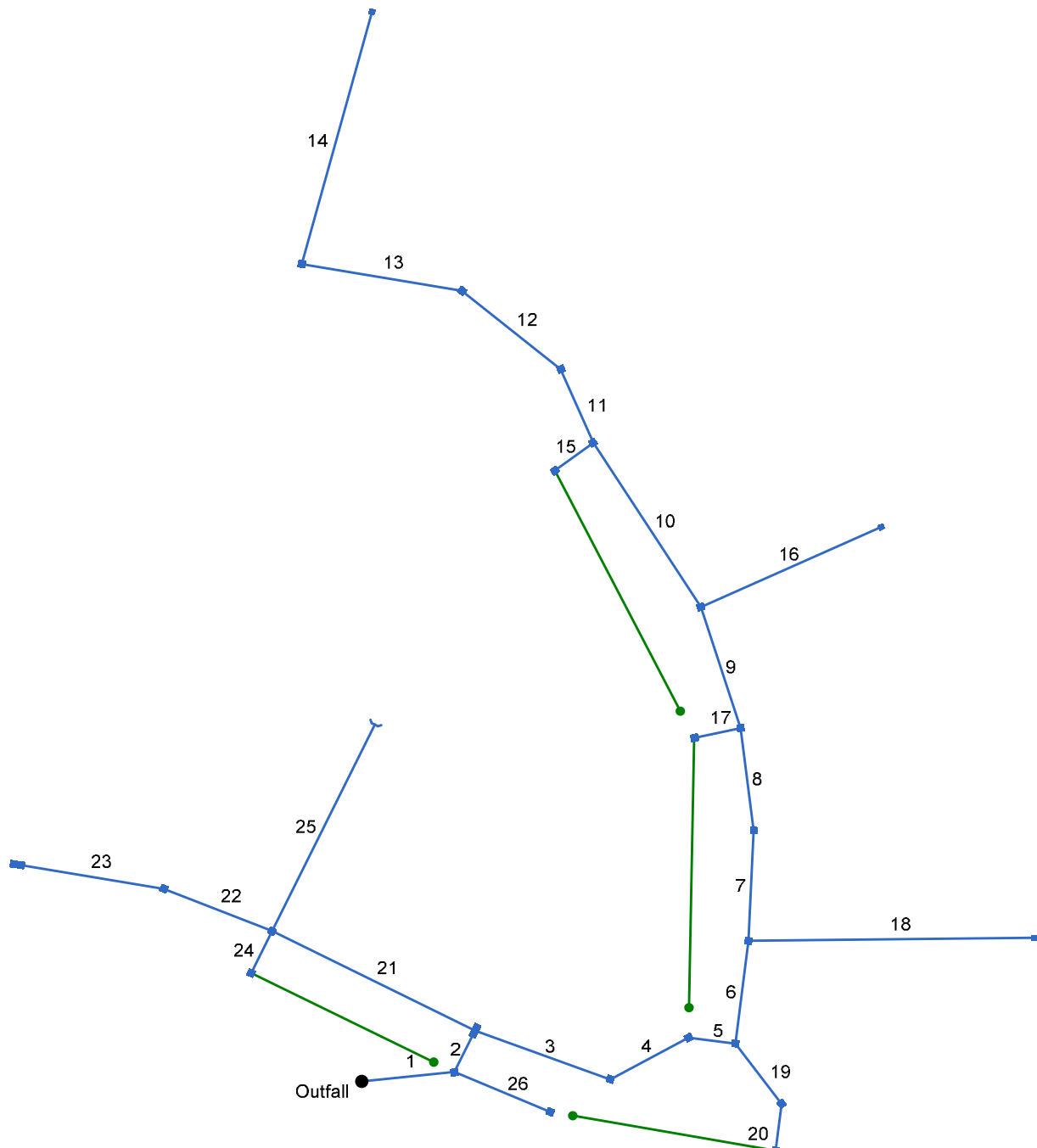
Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YI 204	2.02	0.00	2.02	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.19	7.16	0.19	7.16	0.0	Off
Project File: SCM#2.stm														Number of lines: 1					Run Date: 5/29/2025			
NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.																						

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream									Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)			
1	18	2.02	361.50	362.52	1.02	0.57	1.58	0.20	362.72	0.000	64.790	362.25	362.79 j	0.54**	0.57	3.57	0.20	362.98	0.000	0.000	n/a	1.00	0.20	
Project File: SCM#2.stm														Number of lines: 1					Run Date: 5/29/2025					
Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box																								

Storm Sewer Profile





Storm Sewer Inventory Report

10-Year SCM #3 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	53.315	-5.817	Comb	0.00	0.12	0.57	10.0	360.94	0.51	361.21	36	Cir	0.013	1.31	366.14	Pipe - (51)
2	1	26.578	-57.823	Comb	0.00	0.42	0.57	10.0	361.31	0.49	361.44	36	Cir	0.013	1.50	366.04	Pipe - (50)
3	2	82.337	83.564	Comb	0.00	0.08	0.57	10.0	361.64	0.50	362.05	30	Cir	0.013	1.17	366.98	Pipe - (49) (1)
4	3	50.862	-48.069	Comb	0.00	0.12	0.57	10.0	362.25	0.49	362.50	24	Cir	0.013	0.95	367.04	Pipe - (68)
5	4	27.000	35.381	Comb	0.00	0.25	0.57	10.0	362.70	0.52	362.84	24	Cir	0.013	1.70	367.09	Pipe - (67)
6	5	59.521	-90.000	Comb	0.00	0.08	0.57	10.0	363.34	2.74	364.97	24	Cir	0.013	1.49	370.01	Pipe - (66)
7	6	63.410	-4.578	Comb	0.00	0.07	0.57	10.0	365.17	2.96	367.05	18	Cir	0.013	0.50	373.03	Pipe - (65)
8	7	59.348	-9.943	Comb	0.00	0.09	0.57	10.0	367.25	2.66	368.83	18	Cir	0.013	1.50	374.74	Pipe - (64)
9	8	73.131	-10.753	Comb	0.00	0.22	0.57	10.0	369.03	1.55	370.16	18	Cir	0.013	1.49	375.97	Pipe - (63)
10	9	112.661	-15.106	Comb	0.00	0.33	0.57	10.0	370.66	1.00	371.79	18	Cir	0.013	1.50	376.53	Pipe - (61) (2)
11	10	46.249	9.310	Comb	0.00	0.11	0.57	10.0	371.99	0.99	372.45	18	Cir	0.013	0.78	377.02	Pipe - (61)
12	11	72.180	-27.640	Comb	0.00	0.18	0.57	10.0	373.45	0.76	374.00	15	Cir	0.013	0.81	378.02	Pipe - (60) (1)
13	12	92.962	-29.001	Comb	0.00	0.09	0.57	10.0	374.60	0.49	375.06	15	Cir	0.013	1.50	378.78	Pipe - (59)
14	13	150.515	95.984	DrGrt	0.00	0.82	0.57	10.0	375.27	0.50	376.02	15	Cir	0.013	1.00	379.46	Pipe - (177)
15	10	27.184	-92.768	Comb	0.00	0.24	0.57	10.0	372.86	0.52	373.00	15	Cir	0.013	1.00	377.00	Pipe - (193)
16	9	112.849	84.063	DrGrt	0.00	0.82	0.57	10.0	371.88	1.18	373.21	15	Cir	0.013	1.00	376.09	Pipe - (178)
17	8	27.000	-94.816	Comb	0.00	0.17	0.57	10.0	369.94	0.67	370.12	15	Cir	0.013	1.00	374.73	Pipe - (71)
18	6	163.438	82.157	DrGrt	0.00	1.00	0.57	10.0	365.80	1.00	367.43	15	Cir	0.013	1.00	370.35	Pipe - (70)
19	5	43.537	45.555	Comb	0.00	0.12	0.57	10.0	363.44	0.51	363.66	24	Cir	0.013	1.12	368.91	Pipe - (56) (1)
20	19	27.000	44.445	Comb	0.00	0.15	0.57	10.0	364.58	1.15	364.89	15	Cir	0.013	1.00	368.93	Pipe - (56)
21	2	129.465	-90.137	Comb	0.00	0.13	0.57	10.0	361.78	0.50	362.43	24	Cir	0.013	2.25	367.00	Pipe - (49)
22	21	66.365	-4.879	Comb	0.00	0.16	0.57	10.0	363.00	0.50	363.33	24	Cir	0.013	0.50	367.90	Pipe - (48)
23	22	85.141	-11.831	Comb	0.00	0.43	0.57	10.0	363.53	0.51	363.96	18	Cir	0.013	1.00	368.63	Pipe - (47)
Project File: SCM#3.stm												Number of lines: 26				Date: 5/29/2025	

Storm Sewer Inventory Report

10-Year SCM #3 Report

Page 2

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	21	27.000	-90.000	Comb	0.00	0.27	0.57	10.0	363.50	0.52	363.64	18	Cir	0.013	1.00	367.03	Pipe - (54)
25	21	132.305	90.159	Hdwl	0.00	2.48	0.57	10.0	363.12	0.50	363.78	24	Cir	0.013	1.00	366.12	Pipe - (53)
26	1	59.390	28.452	Comb	0.00	0.07	0.57	10.0	362.30	0.51	362.60	24	Cir	0.013	1.00	366.75	Pipe - (58)
Project File: SCM#3.stm Number of lines: 26 Date: 5/29/2025																	

Structure Report

10-Year SCM #3 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 301	Combination	366.14	Rect	4.00	4.00	36	Cir	361.21	36 24	Cir Cir	361.31 362.30
2	CB 302	Combination	366.04	Rect	8.00	4.00	36	Cir	361.44	30 24	Cir Cir	361.64 361.78
3	CB 304	Combination	366.98	Rect	4.00	4.00	30	Cir	362.05	24	Cir	362.25
4	CB 307	Combination	367.04	Rect	4.00	4.00	24	Cir	362.50	24	Cir	362.70
5	CB 308	Combination	367.09	Rect	4.00	4.00	24	Cir	362.84	24 24	Cir Cir	363.34 363.44
6	CB 309	Combination	370.01	Rect	4.00	4.00	24	Cir	364.97	18 15	Cir Cir	365.17 365.80
7	CB 311	Combination	373.03	Rect	4.00	4.00	18	Cir	367.05	18	Cir	367.25
8	CB 312	Combination	374.74	Rect	4.00	4.00	18	Cir	368.83	18 15	Cir Cir	369.03 369.94
9	CB 315	Combination	375.97	Rect	4.00	4.00	18	Cir	370.16	18 15	Cir Cir	370.66 371.88
10	CB 317	Combination	376.53	Rect	4.00	4.00	18	Cir	371.79	18 15	Cir Cir	371.99 372.86
11	CB 319	Combination	377.02	Rect	4.00	4.00	18	Cir	372.45	15	Cir	373.45
12	CB 321	Combination	378.02	Rect	4.00	4.00	15	Cir	374.00	15	Cir	374.60
13	CB 325	Combination	378.78	Rect	4.00	4.00	15	Cir	375.06	15	Cir	375.27
14	YI 325A	DropGrate	379.46	Rect	3.00	3.00	15	Cir	376.02			
15	CB 318	Combination	377.00	Rect	4.00	4.00	15	Cir	373.00			
16	YI 316B	DropGrate	376.09	Rect	3.00	3.00	15	Cir	373.21			
17	CB 313	Combination	374.73	Rect	4.00	4.00	15	Cir	370.12			
18	YI 310	DropGrate	370.35	Rect	3.00	3.00	15	Cir	367.43			
19	CB 306	Combination	368.91	Rect	4.00	4.00	24	Cir	363.66	15	Cir	364.58
Project File: SCM#3.stm							Number of Structures: 26			Run Date: 5/29/2025		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
20	CB 305	Combination	368.93	Rect	4.00	4.00	15	Cir	364.89			
21	CB 330	Combination	367.00	Rect	4.00	4.00	24	Cir	362.43	24 18 24	Cir Cir Cir	363.00 363.50 363.12
22	CB 333	Combination	367.90	Rect	4.00	4.00	24	Cir	363.33	18	Cir	363.53
23	CB 334	Combination	368.63	Rect	8.00	4.00	18	Cir	363.96			
24	CB 332	Combination	367.03	Rect	4.00	4.00	18	Cir	363.64			
25	FES 331	OpenHeadwall	366.12	n/a	n/a	n/a	24	Cir	363.78			
26	CB 303	Combination	366.75	Rect	4.00	4.00	24	Cir	362.60			
Project File: SCM#3.stm							Number of Structures: 26			Run Date: 5/29/2025		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (51)	27.87	36	Cir	53.315	360.94	361.21	0.506	363.29	362.92	n/a	362.92	End	Combination
2	Pipe - (50)	27.34	36	Cir	26.578	361.31	361.44	0.489	362.96	363.13	n/a	363.13	1	Combination
3	Pipe - (49) (1)	15.42	30	Cir	82.337	361.64	362.05	0.498	363.13	363.37	n/a	363.37 j	2	Combination
4	Pipe - (68)	15.24	24	Cir	50.862	362.25	362.50	0.492	363.82	364.08	0.49	364.56	3	Combination
5	Pipe - (67)	14.91	24	Cir	27.000	362.70	362.84	0.518	364.56	364.65	0.66	365.31	4	Combination
6	Pipe - (66)	13.35	24	Cir	59.521	363.34	364.97	2.739	365.31	366.28	n/a	366.28 j	5	Combination
7	Pipe - (65)	9.99	18	Cir	63.410	365.17	367.05	2.965	366.28	368.27	n/a	368.27	6	Combination
8	Pipe - (64)	9.81	18	Cir	59.348	367.25	368.83	2.662	368.27	370.04	n/a	370.04	7	Combination
9	Pipe - (63)	9.03	18	Cir	73.131	369.03	370.16	1.545	370.04	371.32	0.88	371.32	8	Combination
10	Pipe - (61) (2)	5.75	18	Cir	112.661	370.66	371.79	1.003	371.45	372.71	n/a	372.71	9	Combination
11	Pipe - (61)	3.92	18	Cir	46.249	371.99	372.45	0.995	372.71	373.21	0.23	373.21	10	Combination
12	Pipe - (60) (1)	3.60	15	Cir	72.180	373.45	374.00	0.762	374.18	374.76	n/a	374.76	11	Combination
13	Pipe - (59)	3.04	15	Cir	92.962	374.60	375.06	0.495	375.35	375.81	0.37	376.18	12	Combination
14	Pipe - (177)	2.81	15	Cir	150.515	375.27	376.02	0.498	376.18	376.70	0.27	376.96	13	DropGrate
15	Pipe - (193)	0.82	15	Cir	27.184	372.86	373.00	0.515	373.22	373.36	0.13	373.48	10	Combination
16	Pipe - (178)	2.81	15	Cir	112.849	371.88	373.21	1.179	372.43	373.88	0.27	373.88	9	DropGrate
17	Pipe - (71)	0.58	15	Cir	27.000	369.94	370.12	0.667	370.22	370.42	n/a	370.42	8	Combination
18	Pipe - (70)	3.43	15	Cir	163.438	365.80	367.43	0.997	366.45	368.18	0.31	368.18	6	DropGrate
19	Pipe - (56) (1)	0.92	24	Cir	43.537	363.44	363.66	0.505	365.31	363.99	0.13	363.99	5	Combination
20	Pipe - (56)	0.51	15	Cir	27.000	364.58	364.89	1.148	364.81	365.17	0.10	365.17	19	Combination
21	Pipe - (49)	11.49	24	Cir	129.465	361.78	362.43	0.502	363.13	363.65	1.15	364.80	2	Combination
22	Pipe - (48)	1.99	24	Cir	66.365	363.00	363.33	0.497	364.80	363.82	n/a	363.82	21	Combination
23	Pipe - (47)	1.47	18	Cir	85.141	363.53	363.96	0.505	363.98	364.42	0.16	364.42	22	Combination
24	Pipe - (54)	0.93	18	Cir	27.000	363.50	363.64	0.519	364.80	364.00	n/a	364.00	21	Combination

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

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

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - (53)	8.50	24	Cir	132.305	363.12	363.78	0.499	364.80	364.82	0.41	364.82	21	OpenHeadwall
26	Pipe - (58)	0.24	24	Cir	59.390	362.30	362.60	0.505	362.92	362.92	0.01	362.93	1	Combination
Project File: SCM#3.stm									Number of lines: 26			Run Date: 5/29/2025		
NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

10-Year SCM #3 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 301	0.41	0.15	0.56	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	3.10	0.14	3.10	0.0	Off
2	CB 302	1.44	0.00	1.44	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.18	5.20	0.18	5.20	0.0	Off
3	CB 304	0.27	0.00	0.27	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.12	2.20	0.00	0.00	0.0	2
4	CB 307	0.41	0.01	0.42	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	2.75	0.14	2.75	0.0	Off
5	CB 308	0.86	0.00	0.86	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.17	4.43	0.17	4.43	0.0	Off
6	CB 309	0.27	0.00	0.27	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.10	1.63	0.00	0.00	0.0	Off
7	CB 311	0.24	0.00	0.24	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.09	1.56	0.00	0.00	0.0	6
8	CB 312	0.31	0.13	0.43	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.12	1.94	0.00	0.00	0.0	7
9	CB 315	0.75	0.19	0.82	0.13	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.19	5.40	0.09	1.55	0.0	8
10	CB 317	1.13	0.00	0.94	0.19	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.20	5.95	0.11	1.80	0.0	9
11	CB 319	0.38	0.00	0.38	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.070	2.00	0.060	0.020	0.013	0.10	1.62	0.00	0.00	0.0	10
12	CB 321	0.62	0.00	0.62	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.070	2.00	0.060	0.020	0.013	0.12	1.95	0.00	0.00	0.0	11
13	CB 325	0.31	0.00	0.31	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.11	1.90	0.00	0.00	0.0	12
14	YI 325A	2.81	0.00	2.81	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.24	7.45	0.24	7.45	0.0	Off
15	CB 318	0.82	0.00	0.73	0.09	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.18	5.01	0.08	1.36	0.0	17
16	YI 316B	2.81	0.00	2.81	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.24	7.45	0.24	7.45	0.0	Off
17	CB 313	0.58	0.09	0.67	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.14	2.84	0.02	0.40	0.0	4
18	YI 310	3.43	0.00	3.43	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.27	7.65	0.27	7.65	0.0	Off
19	CB 306	0.41	0.00	0.41	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	1.96	0.00	0.00	0.0	5
20	CB 305	0.51	0.00	0.51	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.13	2.39	0.01	0.09	0.0	26
21	CB 330	0.45	0.09	0.49	0.04	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.18	4.76	0.07	1.16	0.0	Off
22	CB 333	0.55	0.16	0.63	0.09	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.19	5.59	0.09	1.52	0.0	21
23	CB 334	1.47	0.00	1.31	0.16	Comb	6.0	1.50	0.00	6.00	2.50	0.005	2.00	0.060	0.020	0.013	0.24	7.98	0.12	1.94	0.0	22

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	CB 332	0.93	0.00	0.77	0.15	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.21	6.40	0.11	1.89	0.0	1
25	FES 331	8.50	0.00	8.50	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
26	CB 303	0.24	0.00	0.24	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.12	1.97	0.00	0.00	0.0	Off
Project File: SCM#3.stm														Number of lines: 26					Run Date: 5/29/2025			
NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added.All curb inlets are throat.																						

Hydraulic Grade Line Computations

10-Year SCM #3 Report

Page 1

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	36	27.87	360.94	363.29	2.35	4.15	4.69	0.70	363.99	0.000	53.315	361.21	362.92	1.71**	4.15	6.72	0.70	363.62	0.000	0.000	n/a	1.31	n/a
2	36	27.34	361.31	362.96	1.65*	3.99	6.86	0.69	363.65	0.000	26.578	361.44	363.13	1.69**	4.10	6.67	0.69	363.82	0.000	0.000	n/a	1.50	n/a
3	30	15.42	361.64	363.13	1.49	2.64	5.06	0.53	363.66	0.000	82.337	362.05	363.37 j	1.32**	2.64	5.84	0.53	363.90	0.000	0.000	n/a	1.17	n/a
4	24	15.24	362.25	363.82	1.57*	2.65	5.75	0.51	364.34	0.492	50.862	362.50	364.08	1.58	2.65	5.74	0.51	364.59	0.490	0.491	0.250	0.95	0.49
5	24	14.91	362.70	364.56	1.86	3.05	4.89	0.37	364.93	0.376	27.000	362.84	364.65	1.81	2.99	4.98	0.39	365.04	0.381	0.378	0.102	1.70	0.66
6	24	13.35	363.34	365.31	1.97	2.19	4.27	0.58	365.89	0.000	59.521	364.97	366.28 j	1.31**	2.19	6.10	0.58	366.86	0.000	0.000	n/a	1.49	n/a
7	18	9.99	365.17	366.28	1.11	1.41	7.10	0.66	366.94	0.000	63.410	367.05	368.27	1.22**	1.54	6.50	0.66	368.92	0.000	0.000	n/a	0.50	n/a
8	18	9.81	367.25	368.27	1.02	1.28	7.69	0.64	368.91	0.000	59.348	368.83	370.04	1.21**	1.52	6.44	0.64	370.68	0.000	0.000	n/a	1.50	n/a
9	18	9.03	369.03	370.04	1.01	1.26	7.16	0.59	370.63	0.000	73.131	370.16	371.32	1.16**	1.47	6.15	0.59	371.91	0.000	0.000	n/a	1.49	0.88
10	18	5.75	370.66	371.45	0.79*	0.95	6.08	0.39	371.85	0.000	112.661	371.79	372.71	0.92**	1.14	5.03	0.39	373.11	0.000	0.000	n/a	1.50	n/a
11	18	3.92	371.99	372.71	0.72	0.85	4.64	0.30	373.01	0.000	46.249	372.45	373.21	0.76**	0.89	4.39	0.30	373.51	0.000	0.000	n/a	0.78	0.23
12	15	3.60	373.45	374.18	0.73*	0.74	4.87	0.32	374.50	0.000	72.180	374.00	374.76	0.76**	0.79	4.57	0.32	375.09	0.000	0.000	n/a	0.81	n/a
13	15	3.04	374.60	375.35	0.75*	0.77	3.97	0.24	375.59	0.494	92.962	375.06	375.81	0.75	0.77	3.97	0.25	376.05	0.497	0.496	0.461	1.50	0.37
14	15	2.81	375.27	376.18	0.91	0.67	2.95	0.14	376.31	0.248	150.515	376.02	376.70	0.68**	0.68	4.15	0.27	376.96	0.584	0.416	0.626	1.00	0.27
15	15	0.82	372.86	373.22	0.36*	0.29	2.85	0.13	373.34	0.514	27.184	373.00	373.36	0.36**	0.29	2.84	0.13	373.48	0.508	0.511	0.139	1.00	0.13
16	15	2.81	371.88	372.43	0.55*	0.52	5.40	0.27	372.70	0.000	112.849	373.21	373.88	0.67**	0.67	4.18	0.27	374.15	0.000	0.000	n/a	1.00	0.27
17	15	0.58	369.94	370.22	0.28*	0.21	2.83	0.11	370.33	0.000	27.000	370.12	370.42	0.30**	0.22	2.61	0.11	370.52	0.000	0.000	n/a	1.00	n/a
18	15	3.43	365.80	366.45	0.65*	0.64	5.33	0.31	366.76	0.000	163.438	367.43	368.18	0.75**	0.76	4.49	0.31	368.49	0.000	0.000	n/a	1.00	0.31
19	24	0.92	363.44	365.31	1.87	0.34	0.30	0.11	365.42	0.000	43.537	363.66	363.99	0.33**	0.34	2.71	0.11	364.10	0.000	0.000	n/a	1.12	0.13
20	15	0.51	364.58	364.81	0.23*	0.16	3.30	0.10	364.91	0.000	27.000	364.89	365.17	0.28**	0.20	2.52	0.10	365.27	0.000	0.000	n/a	1.00	0.10
21	24	11.49	361.78	363.13	1.35	2.00	5.10	0.40	363.53	0.407	129.465	362.43	363.65	1.22**	2.01	5.72	0.51	364.16	0.543	0.475	0.615	2.25	1.15
22	24	1.99	363.00	364.80	1.80	0.60	0.67	0.17	364.97	0.000	66.365	363.33	363.82	0.49**	0.60	3.35	0.17	363.99	0.000	0.000	n/a	0.50	n/a

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

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

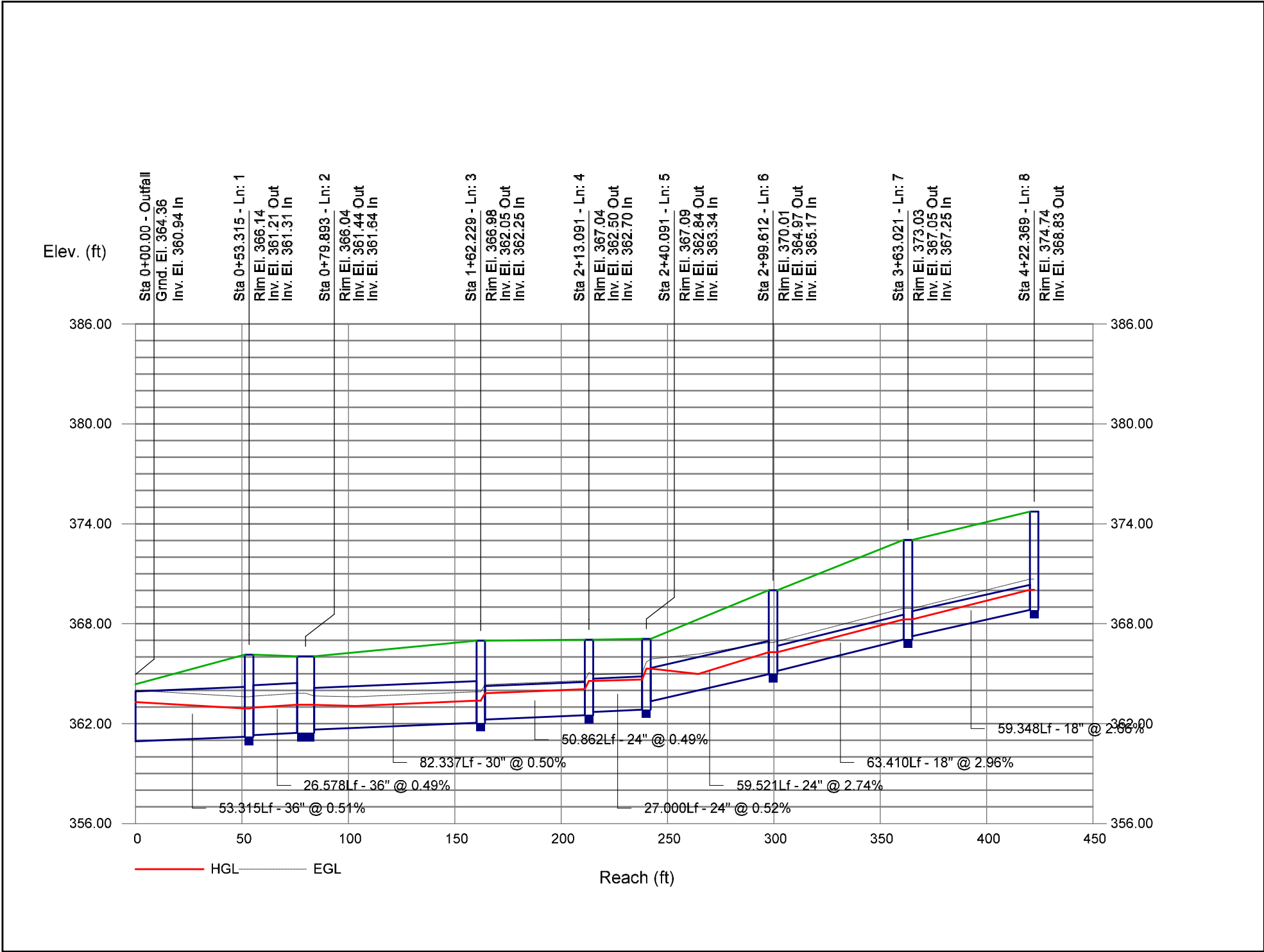
Hydraulic Grade Line Computations

10-Year SCM #3 Report

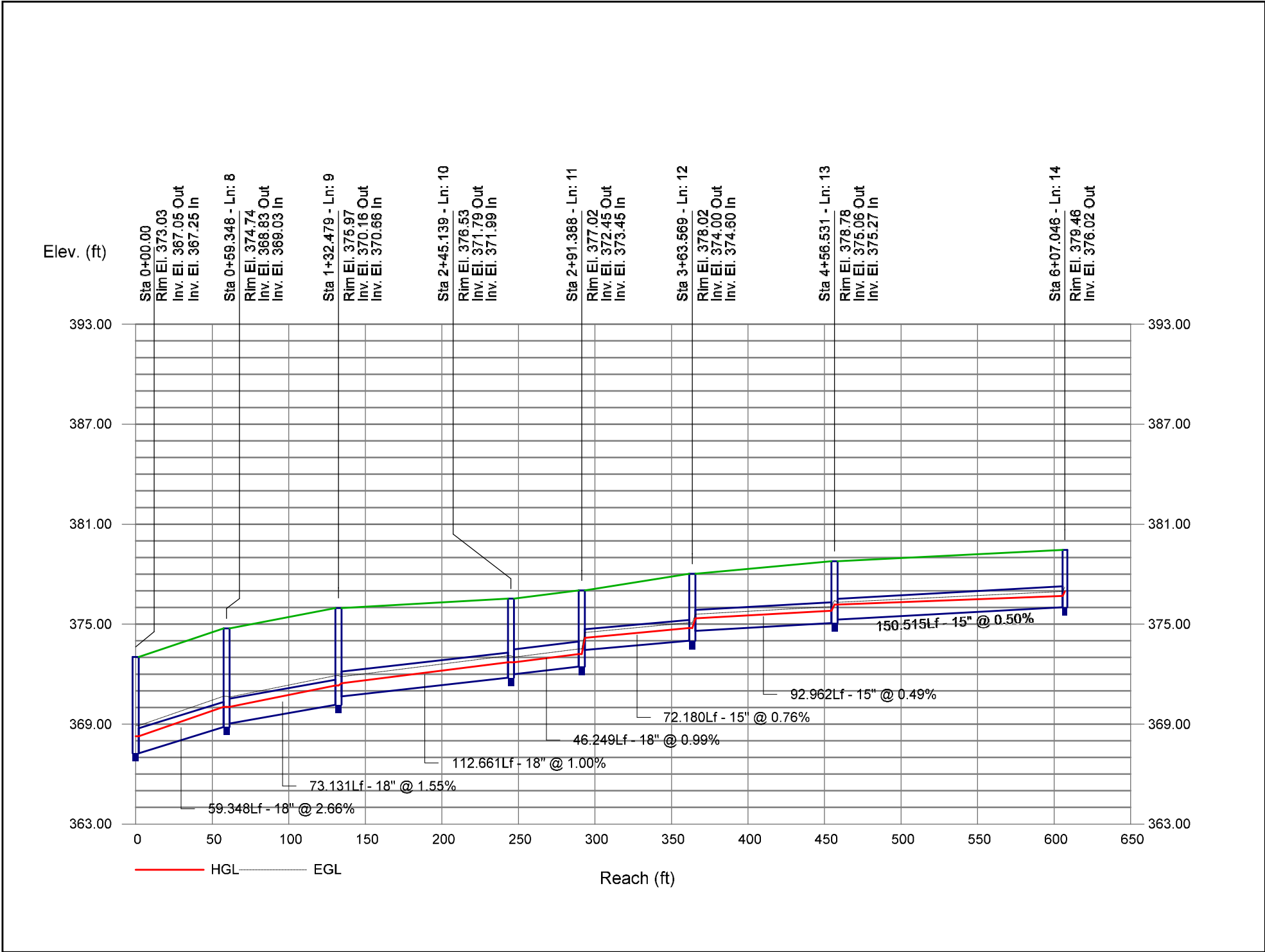
Page 2

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
23	18	1.47	363.53	363.98	0.45*	0.45	3.28	0.16	364.15	0.000	85.141	363.96	364.42	0.45**	0.45	3.26	0.16	364.58	0.000	0.000	n/a	1.00	0.16
24	18	0.93	363.50	364.80	1.30	0.32	0.57	0.13	364.92	0.000	27.000	363.64	364.00	0.36**	0.32	2.86	0.13	364.13	0.000	0.000	n/a	1.00	n/a
25	24	8.50	363.12	364.80	1.68	1.65	3.02	0.41	365.21	0.000	132.305	363.78	364.82	1.04**	1.65	5.16	0.41	365.23	0.000	0.000	n/a	1.00	0.41
26	24	0.24	362.30	362.92	0.62	0.82	0.29	0.00	362.92	0.003	59.390	362.60	362.92	0.32	0.32	0.74	0.01	362.93	0.037	0.020	0.012	1.00	0.01
Project File: SCM#3.stm														Number of lines: 26					Run Date: 5/29/2025				
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box																							

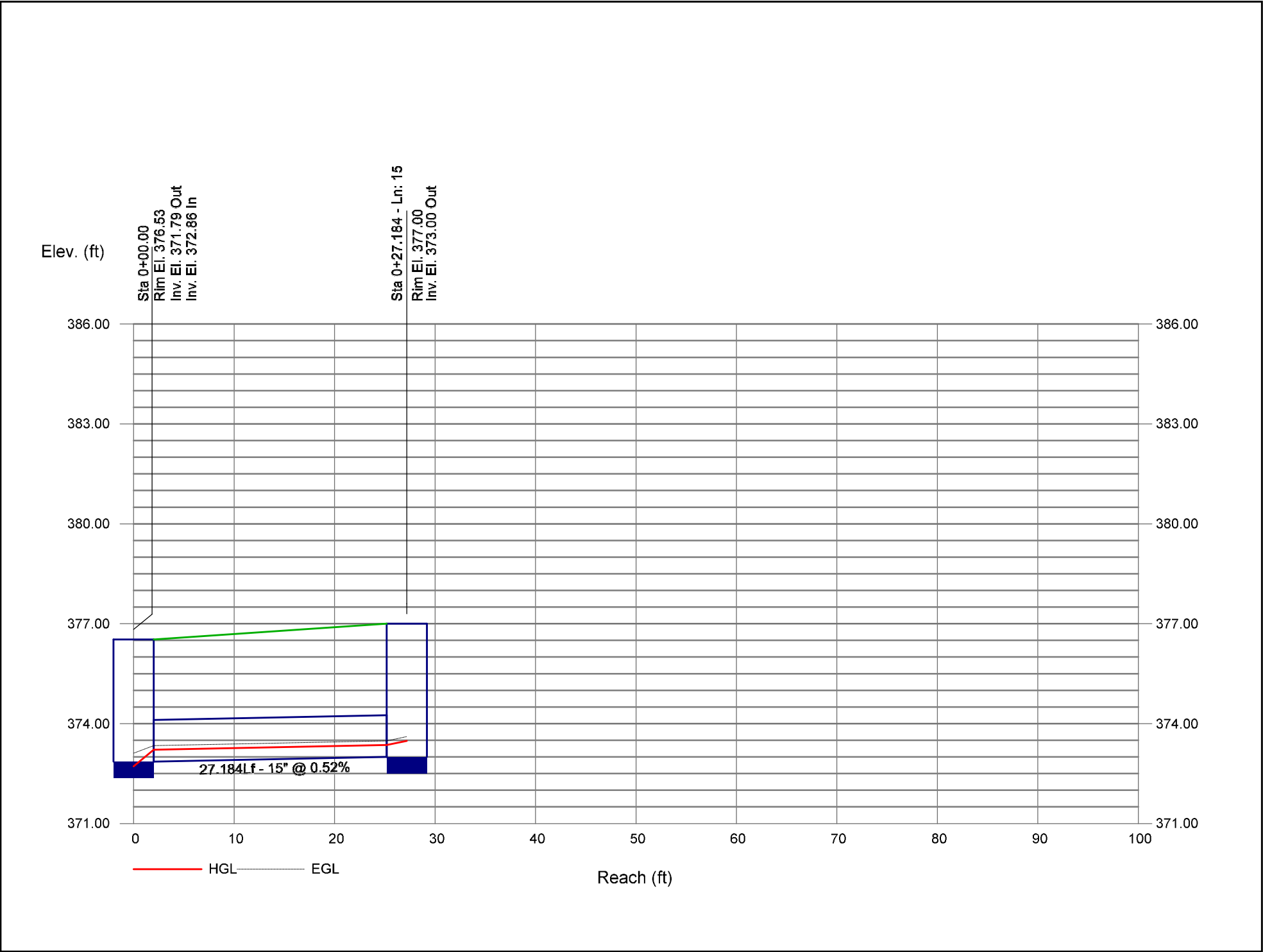
Storm Sewer Profile



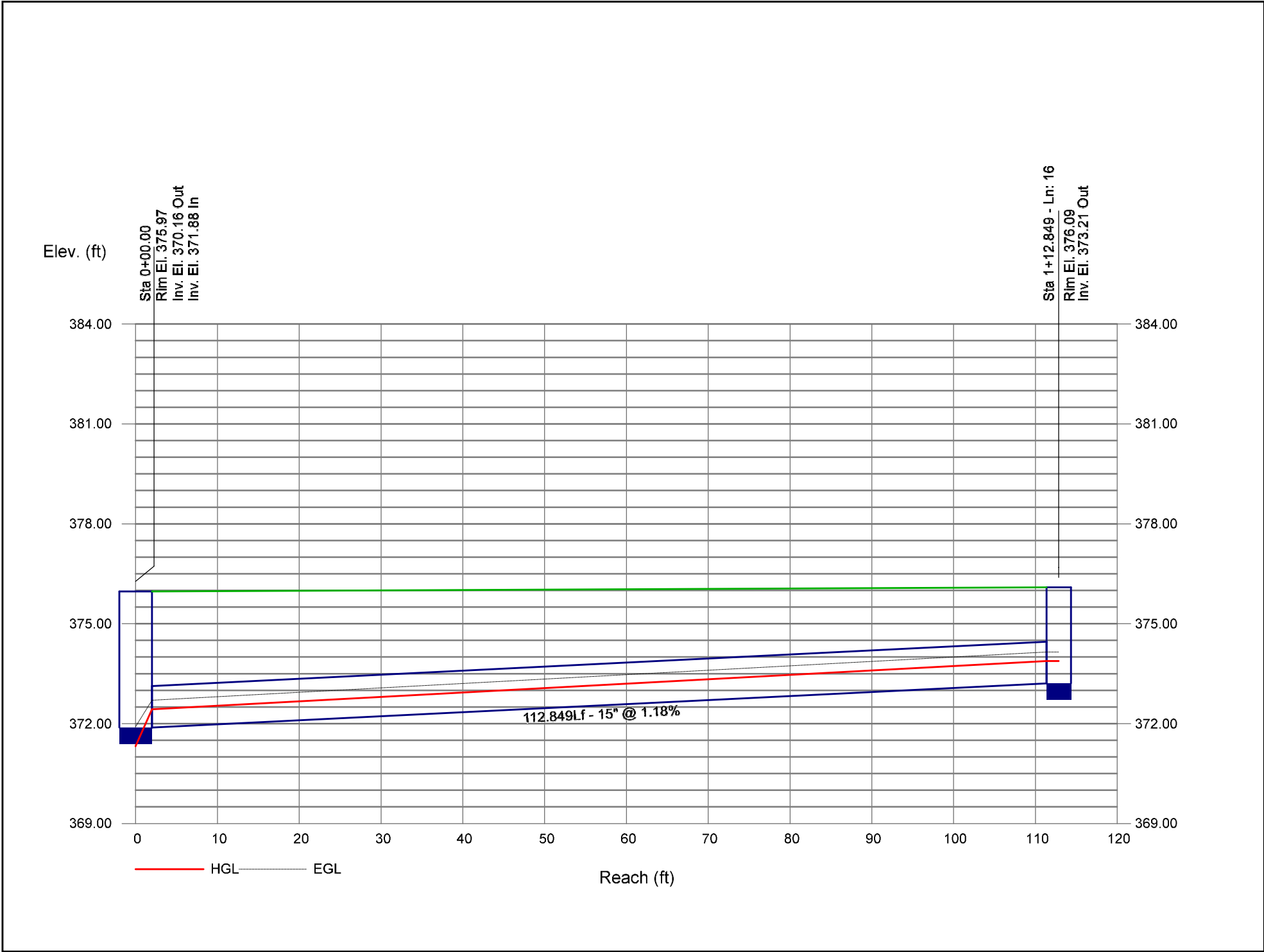
Storm Sewer Profile



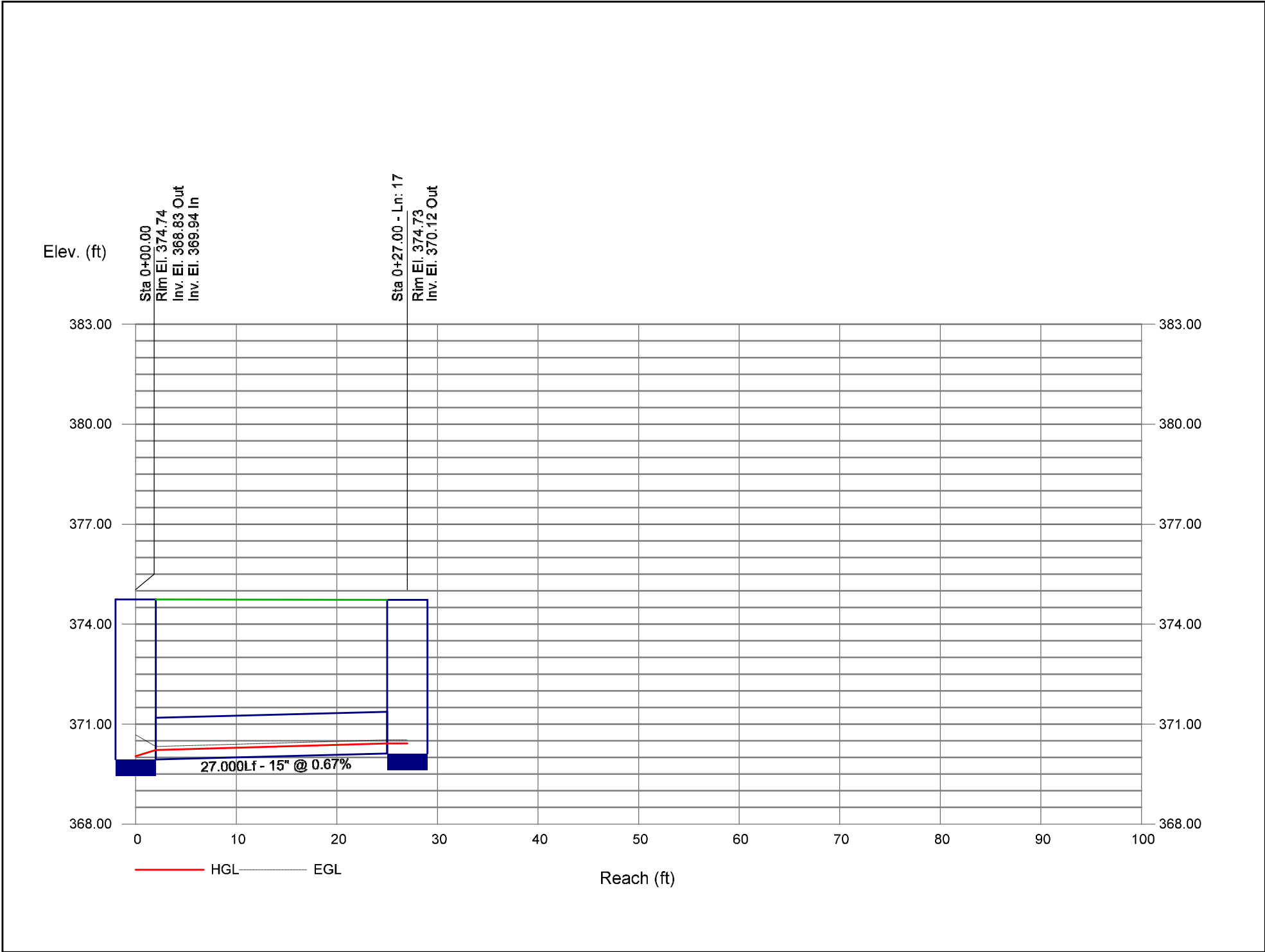
Storm Sewer Profile



Storm Sewer Profile

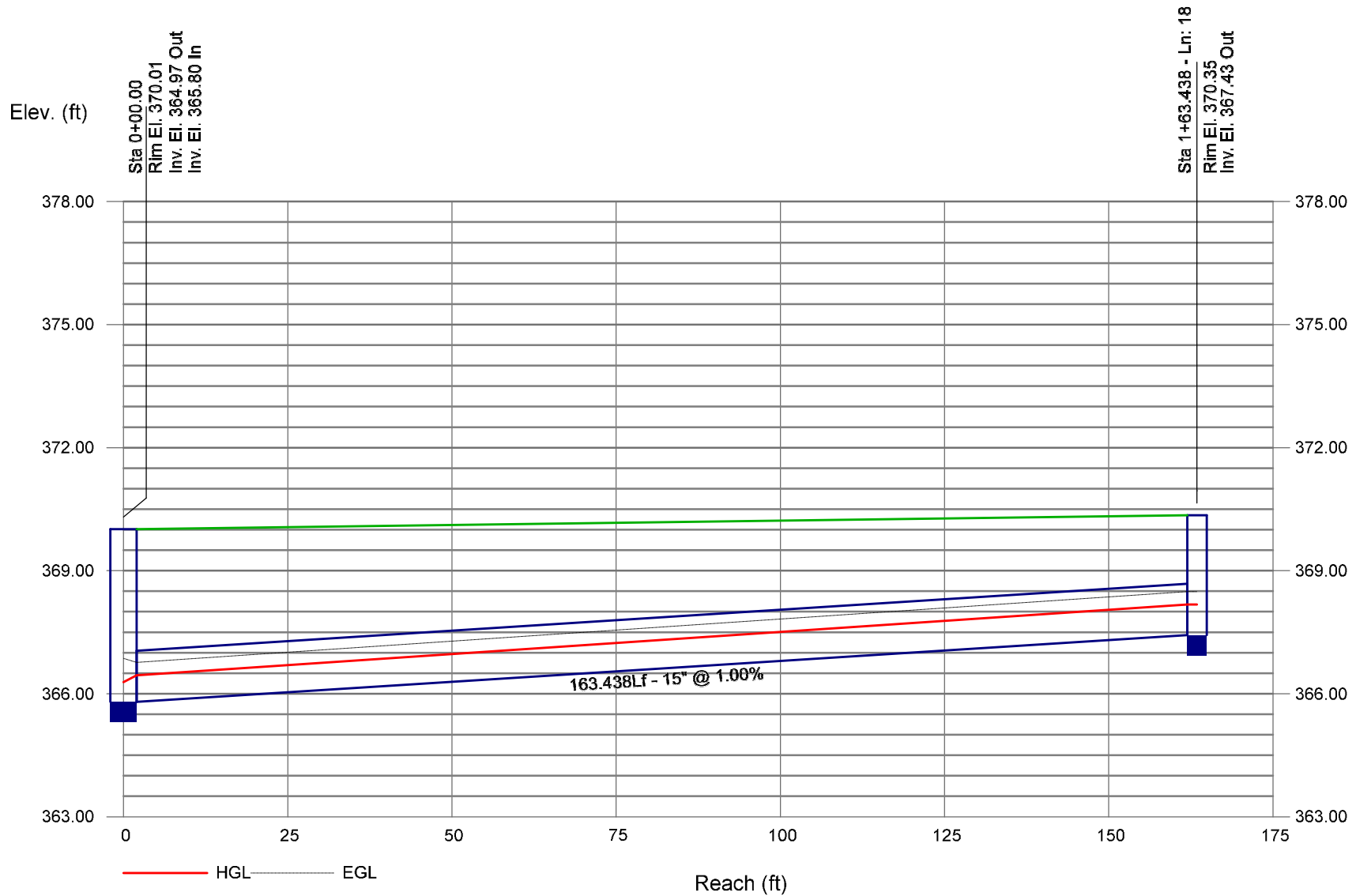


Storm Sewer Profile

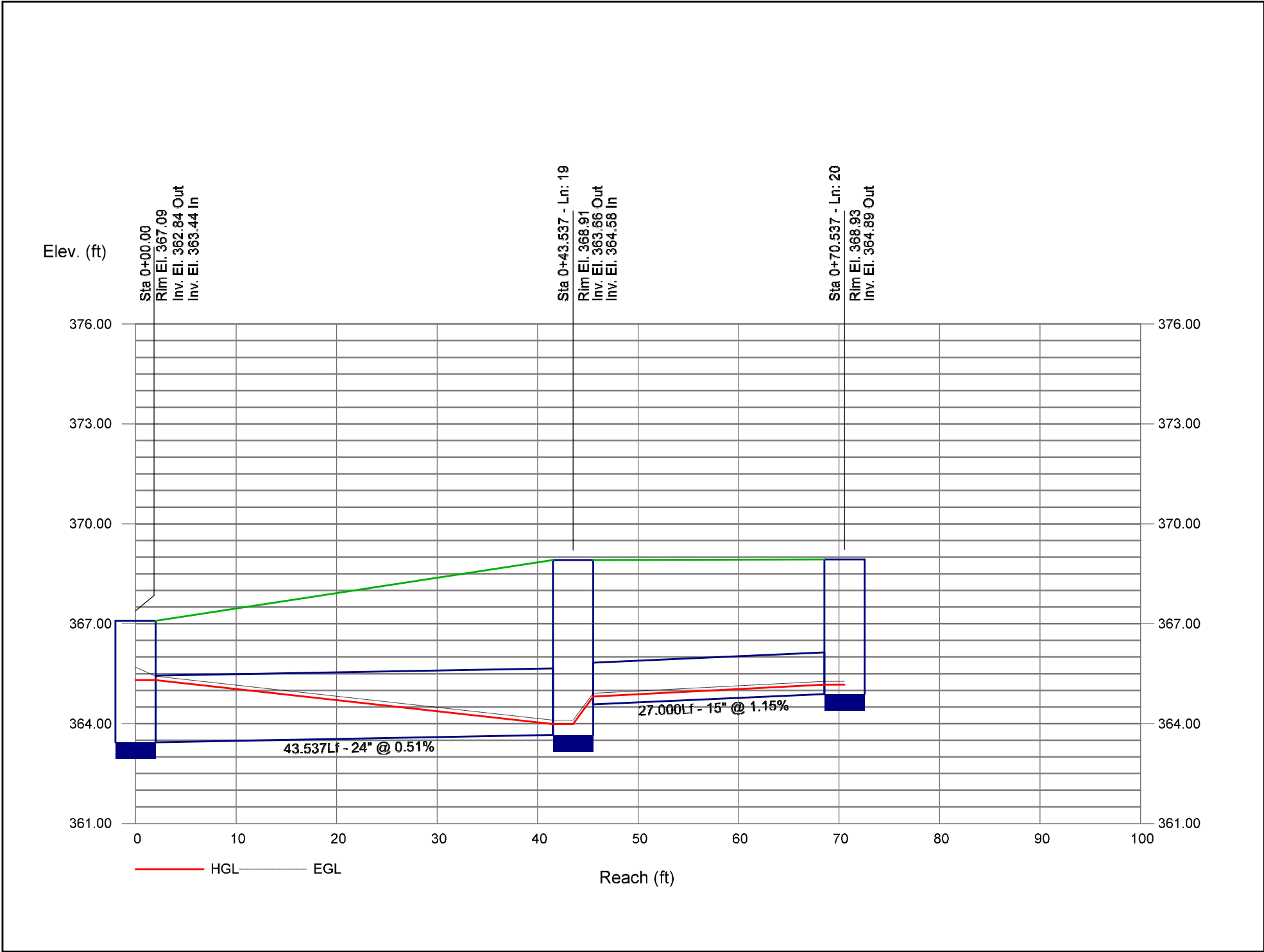


Storm Sewer Profile

10-Year SCM #3 Profile 18-18 Proj. file: SCM#3.stm

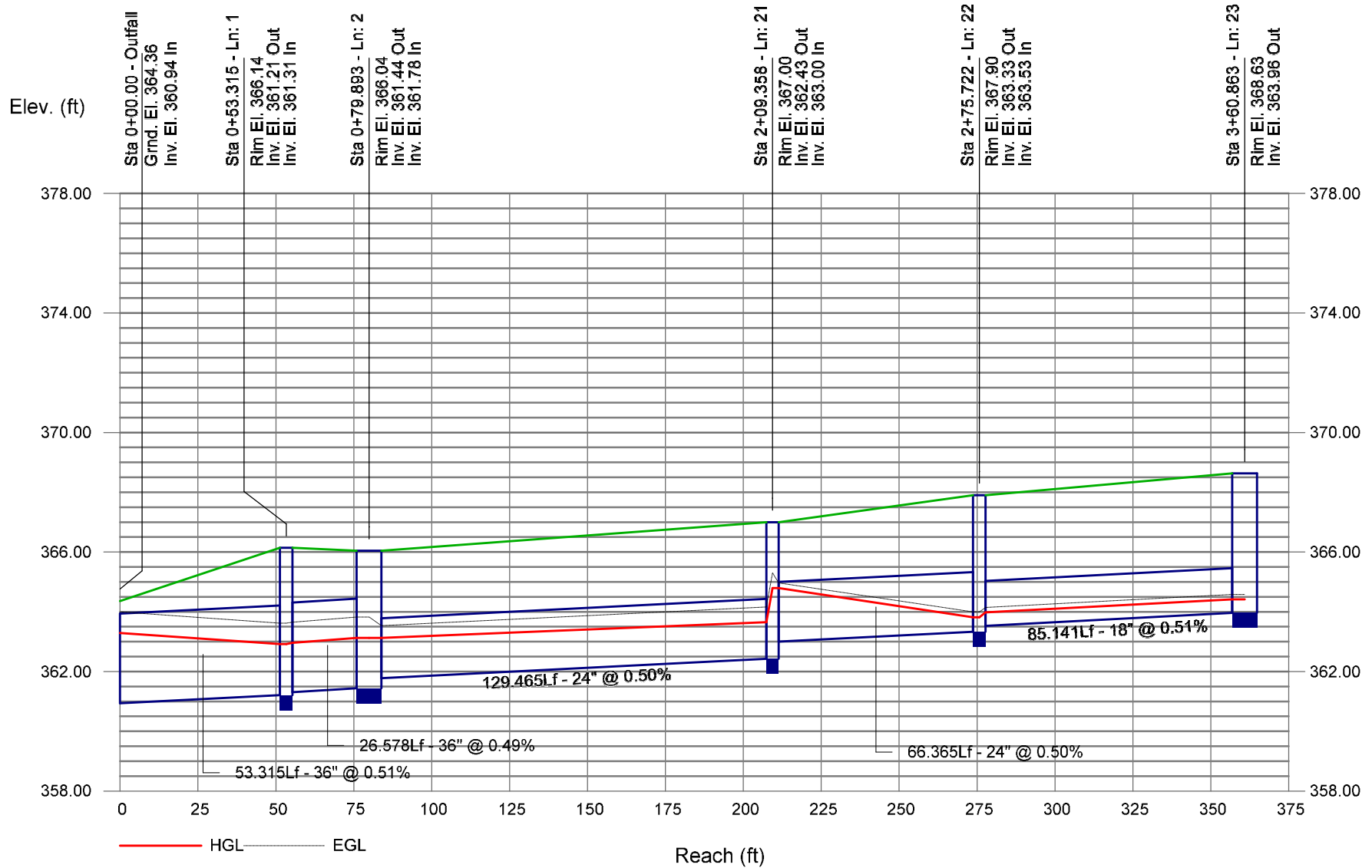


Storm Sewer Profile

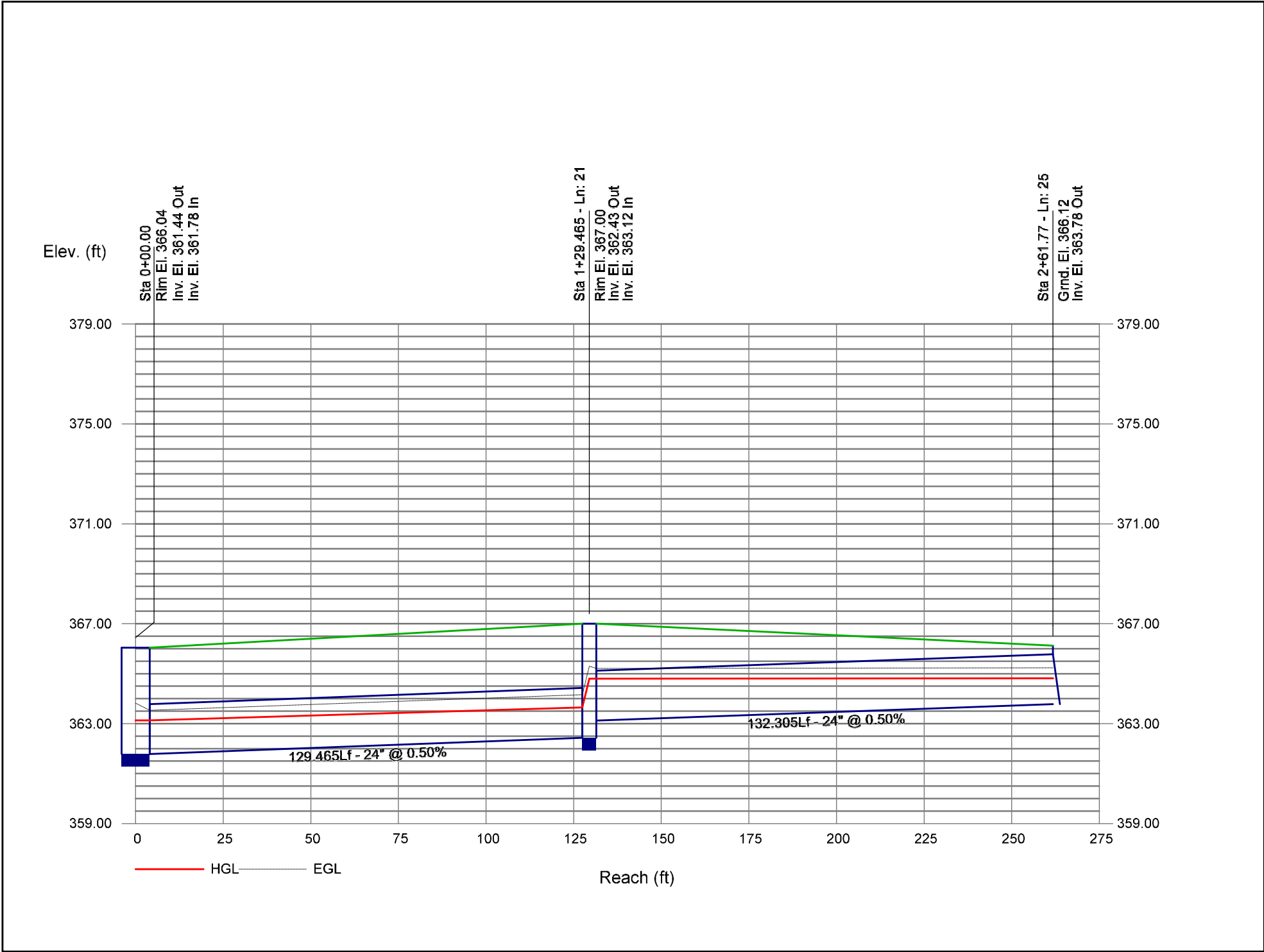


Storm Sewer Profile

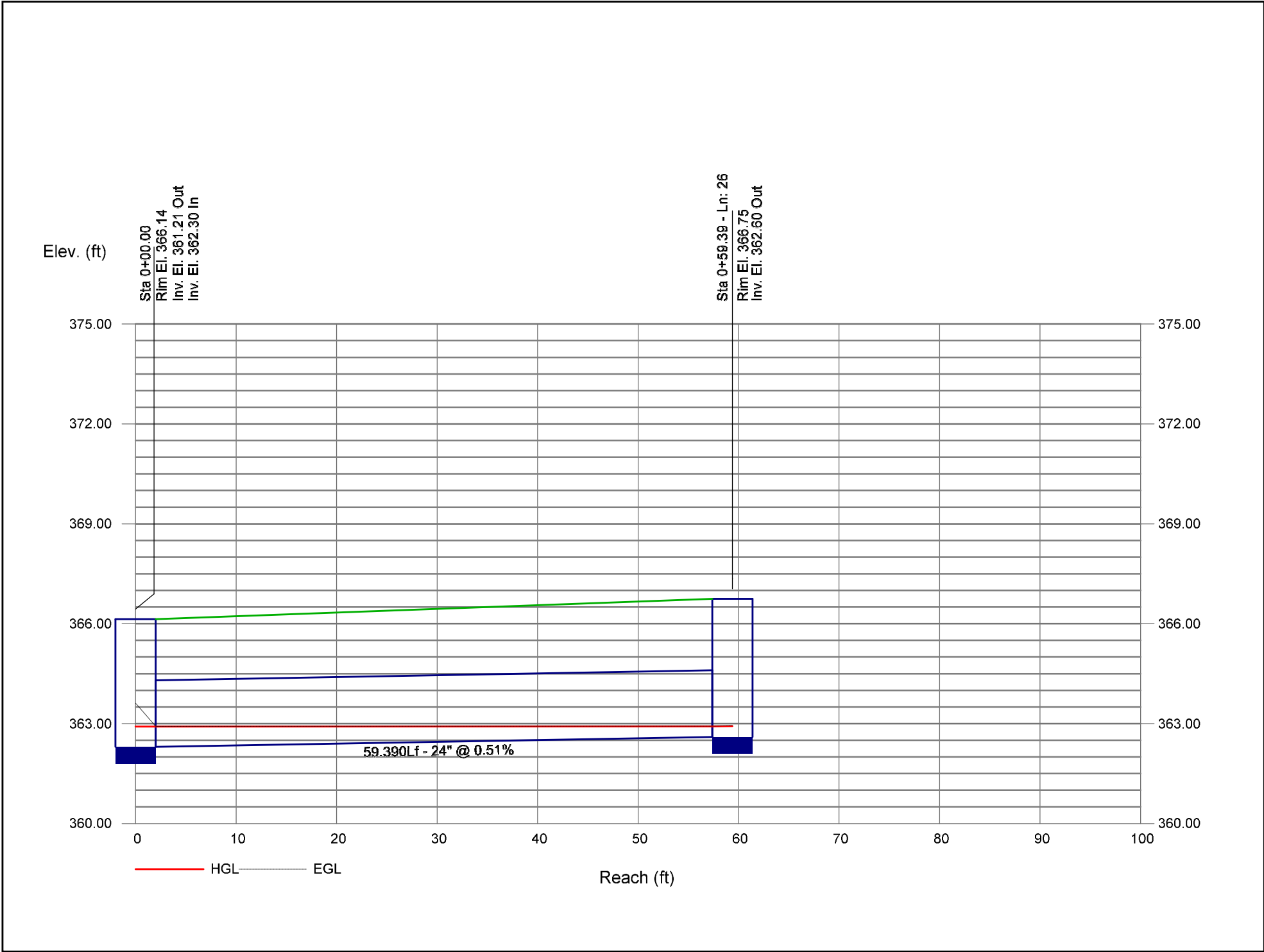
10-Year SCM #3 Profile 1-23 Proj. file: SCM#3.stm



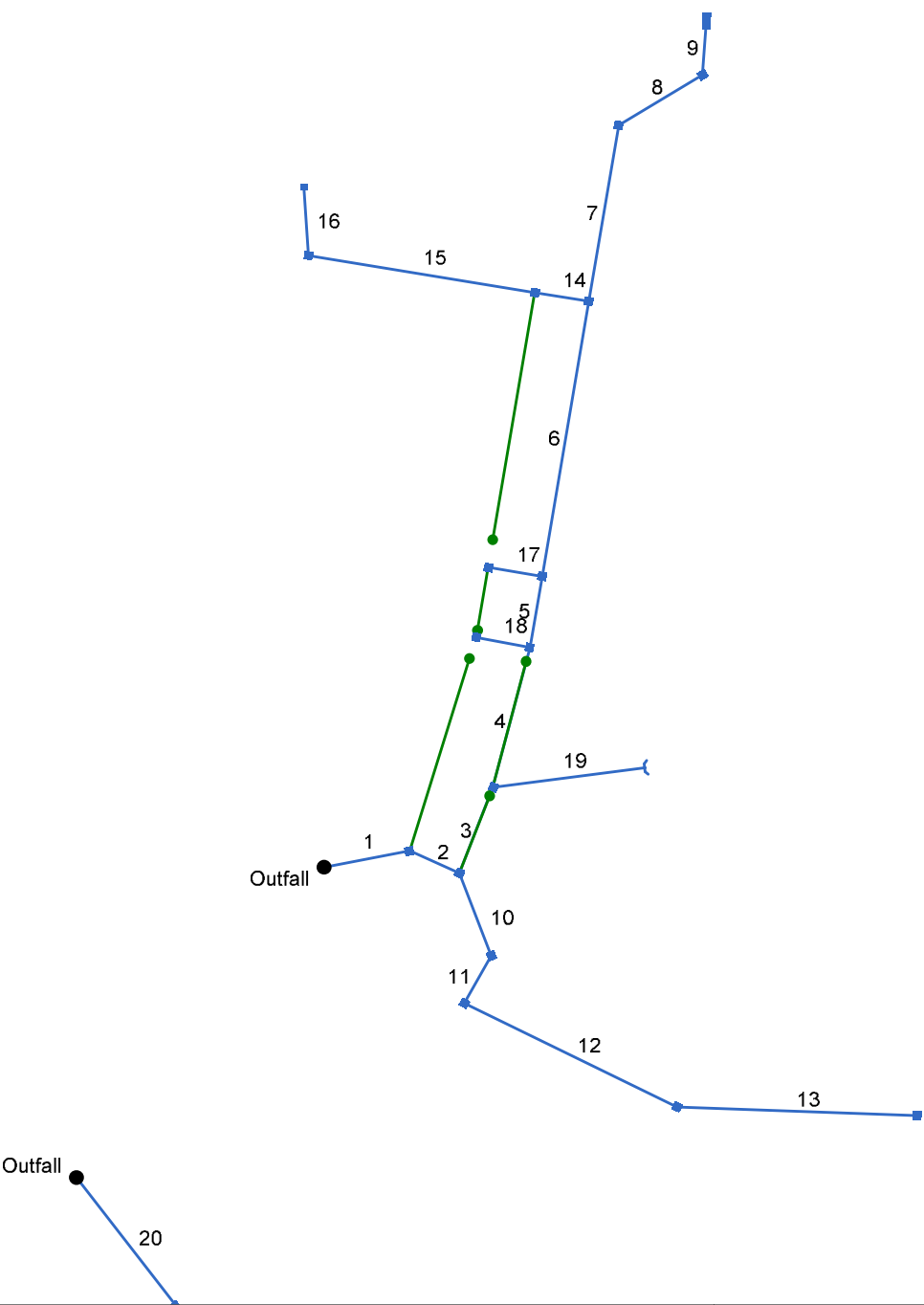
Storm Sewer Profile



Storm Sewer Profile



Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan 10-Year SCM #4 Report



Project File: SCM#4.stm	Number of lines: 20	Date: 5/29/2025
-------------------------	---------------------	-----------------

Storm Sewer Inventory Report

10-Year SCM #4 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	42.886	-10.921	Comb	0.00	0.05	0.57	10.0	356.86	0.49	357.07	30	Cir	0.013	0.94	363.04	Pipe - (14)
2	1	27.000	35.054	Comb	0.00	0.05	0.57	10.0	357.27	0.48	357.40	24	Cir	0.013	1.68	363.02	Pipe - (19)
3	2	45.598	-92.825	Comb	0.00	0.06	0.57	10.0	357.60	0.50	357.83	24	Cir	0.013	1.35	362.81	Pipe - (13) (1)
4	3	71.733	-6.548	Comb	0.00	0.06	0.57	10.0	357.93	0.50	358.29	24	Cir	0.013	1.50	362.39	Pipe - (13)
5	4	35.770	-5.010	Comb	0.00	0.08	0.57	10.0	358.49	0.50	358.67	18	Cir	0.013	1.50	362.56	Pipe - (12)
6	5	138.243	-0.182	Comb	0.00	0.08	0.57	10.0	358.87	1.00	360.25	18	Cir	0.013	1.50	365.52	Pipe - (11)
7	6	88.557	0.022	Comb	0.00	0.05	0.57	10.0	360.58	4.21	364.31	15	Cir	0.013	1.19	368.85	Pipe - (9)
8	7	48.252	49.402	Comb	0.00	0.15	0.57	10.0	364.51	0.50	364.75	15	Cir	0.013	1.27	369.03	Pipe - (8)
9	8	26.989	-54.988	Comb	0.00	0.50	0.57	10.0	364.95	0.52	365.09	15	Cir	0.013	1.00	369.03	Pipe - (7)
10	2	43.911	44.750	Comb	0.00	0.58	0.57	10.0	357.60	0.50	357.82	24	Cir	0.013	1.21	362.71	Pipe - (18)
11	10	27.000	50.538	Comb	0.00	0.25	0.57	10.0	358.02	1.00	358.29	18	Cir	0.013	1.50	362.73	Pipe - (17)
12	11	116.822	-93.303	Comb	0.00	0.15	0.57	10.0	358.79	3.00	362.29	15	Cir	0.013	0.69	368.09	Pipe - (16)
13	12	118.495	-24.005	Comb	0.00	0.24	0.57	10.0	363.30	3.00	366.85	15	Cir	0.013	1.00	372.03	Pipe - (15)
14	6	26.980	-90.285	Comb	0.00	0.22	0.57	10.0	360.45	0.48	360.58	15	Cir	0.013	0.50	365.51	Pipe - (10)
15	14	113.243	0.000	MH	0.00	0.00	0.57	10.0	360.69	0.50	361.26	15	Cir	0.013	0.98	366.18	Pipe - (181)
16	15	34.087	76.970	DrGrt	0.00	0.58	0.57	10.0	361.46	0.50	361.63	15	Cir	0.013	1.00	363.50	Pipe - (180)
17	5	27.000	-90.174	Comb	0.00	0.08	0.57	10.0	358.97	0.52	359.11	15	Cir	0.013	1.00	362.04	Pipe - (20)
18	4	27.000	-94.006	Comb	0.00	0.09	0.57	10.0	358.68	0.74	358.88	15	Cir	0.013	1.00	361.81	Pipe - (21)
19	3	75.640	61.294	Hdwl	0.00	0.74	0.57	10.0	358.53	0.50	358.91	18	Cir	0.013	1.00	360.70	Pipe - (163)
20	End	79.656	52.362	DrGrt	0.00	1.61	0.57	10.0	356.95	0.50	357.35	18	Cir	0.013	1.00	359.68	Pipe - (24)(0)
Project File: SCM#4.stm												Number of lines: 20				Date: 5/29/2025	

Structure Report

10-Year SCM #4 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 401	Combination	363.04	Rect	4.00	4.00	30	Cir	357.07	24	Cir	357.27
2	CB 402	Combination	363.02	Rect	4.00	4.00	24	Cir	357.40	24 24	Cir Cir	357.60 357.60
3	CB 407	Combination	362.81	Rect	4.00	4.00	24	Cir	357.83	24 18	Cir Cir	357.93 358.53
4	CB 408	Combination	362.39	Rect	4.00	4.00	24	Cir	358.29	18 15	Cir Cir	358.49 358.68
5	CB 409	Combination	362.56	Rect	4.00	4.00	18	Cir	358.67	18 15	Cir Cir	358.87 358.97
6	CB 410	Combination	365.52	Rect	4.00	4.00	18	Cir	360.25	15 15	Cir Cir	360.58 360.45
7	CB 411	Combination	368.85	Rect	4.00	4.00	15	Cir	364.31	15	Cir	364.51
8	CB 412	Combination	369.03	Rect	4.00	4.00	15	Cir	364.75	15	Cir	364.95
9	CB 413	Combination	369.03	Rect	8.00	4.00	15	Cir	365.09			
10	CB 403	Combination	362.71	Rect	4.00	4.00	24	Cir	357.82	18	Cir	358.02
11	CB 404	Combination	362.73	Rect	4.00	4.00	18	Cir	358.29	15	Cir	358.79
12	CB 405	Combination	368.09	Rect	4.00	4.00	15	Cir	362.29	15	Cir	363.30
13	CB 406	Combination	372.03	Rect	4.00	4.00	15	Cir	366.85			
14	CB 410A	Combination	365.51	Rect	4.00	4.00	15	Cir	360.58	15	Cir	360.69
15	JB 410B	Manhole	366.18	Rect	4.00	4.00	15	Cir	361.26	15	Cir	361.46
16	YI 410C	DropGrate	363.50	Rect	3.00	3.00	15	Cir	361.63			
17	CB 409A	Combination	362.04	Rect	4.00	4.00	15	Cir	359.11			
18	CB 408A	Combination	361.81	Rect	4.00	4.00	15	Cir	358.88			
19	FES 407A	OpenHeadwall	360.70	n/a	n/a	n/a	18	Cir	358.91			
20	YI 421	DropGrate	359.68	Rect	3.00	3.00	18	Cir	357.35			
Project File: SCM#4.stm							Number of Structures: 20			Run Date: 5/29/2025		

Storm Sewer Summary Report

10-Year SCM #4 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (14)	12.61	30	Cir	42.886	356.86	357.07	0.490	358.71	358.26	n/a	358.26	End	Combination
2	Pipe - (19)	12.48	24	Cir	27.000	357.27	357.40	0.481	358.62	358.75	0.81	359.55	1	Combination
3	Pipe - (13) (1)	8.53	24	Cir	45.598	357.60	357.83	0.504	359.55	358.87	0.56	358.87	2	Combination
4	Pipe - (13)	6.05	24	Cir	71.733	357.93	358.29	0.502	358.87	359.16	0.50	359.16	3	Combination
5	Pipe - (12)	5.59	18	Cir	35.770	358.49	358.67	0.503	359.46	359.64	0.50	360.14	4	Combination
6	Pipe - (11)	5.25	18	Cir	138.243	358.87	360.25	0.998	360.14	361.13	n/a	361.13 j	5	Combination
7	Pipe - (9)	2.37	15	Cir	88.557	360.58	364.31	4.212	361.13	364.92	0.29	364.92	6	Combination
8	Pipe - (8)	2.22	15	Cir	48.252	364.51	364.75	0.497	365.13	365.37	0.27	365.63	7	Combination
9	Pipe - (7)	1.71	15	Cir	26.989	364.95	365.09	0.519	365.63	365.66	0.16	365.81	8	Combination
10	Pipe - (18)	4.04	24	Cir	43.911	357.60	357.82	0.501	359.55	358.52	n/a	358.52	2	Combination
11	Pipe - (17)	2.13	18	Cir	27.000	358.02	358.29	1.000	358.52	358.84	0.31	358.84	10	Combination
12	Pipe - (16)	1.31	15	Cir	116.822	358.79	362.29	2.996	359.08	362.74	n/a	362.74	11	Combination
13	Pipe - (15)	0.82	15	Cir	118.495	363.30	366.85	2.996	363.53	367.21	n/a	367.21	12	Combination
14	Pipe - (10)	2.67	15	Cir	26.980	360.45	360.58	0.482	361.15	361.28	0.11	361.39	6	Combination
15	Pipe - (181)	1.98	15	Cir	113.243	360.69	361.26	0.503	361.39	361.82	n/a	361.82	14	Manhole
16	Pipe - (180)	1.99	15	Cir	34.087	361.46	361.63	0.499	362.04	362.21	0.20	362.41	15	DropGrate
17	Pipe - (20)	0.27	15	Cir	27.000	358.97	359.11	0.518	360.14	360.14	0.00	360.14	5	Combination
18	Pipe - (21)	0.31	15	Cir	27.000	358.68	358.88	0.741	359.16	359.09	0.07	359.09	4	Combination
19	Pipe - (163)	2.54	18	Cir	75.640	358.53	358.91	0.502	359.13	359.52	0.22	359.74	3	OpenHeadwall
20	Pipe - (24)(0)	5.52	18	Cir	79.656	356.95	357.35	0.502	358.15	358.35	0.30	358.65	End	DropGrate

Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

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

Inlet Report

10-Year SCM #4 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 401	0.17	0.00	0.17	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.09	1.52	0.00	0.00	0.0	18
2	CB 402	0.17	0.00	0.17	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.09	1.52	0.00	0.00	0.0	3
3	CB 407	0.21	0.00	0.21	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.11	1.86	0.00	0.00	0.0	4
4	CB 408	0.21	0.00	0.21	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.12	1.93	0.12	1.93	0.0	Off
5	CB 409	0.27	0.00	0.27	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.12	2.20	0.00	0.00	0.0	4
6	CB 410	0.27	0.00	0.27	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.10	1.64	0.00	0.00	0.0	5
7	CB 411	0.17	0.00	0.17	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.08	1.38	0.00	0.00	0.0	6
8	CB 412	0.51	0.00	0.51	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	2.86	0.14	2.86	0.0	Off
9	CB 413	1.71	0.00	1.71	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.20	5.96	0.20	5.96	0.0	Off
10	CB 403	1.99	0.00	1.99	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.25	8.51	0.25	8.51	0.0	Off
11	CB 404	0.86	0.00	0.86	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.17	4.43	0.17	4.43	0.0	Off
12	CB 405	0.51	0.05	0.57	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.050	2.00	0.060	0.020	0.013	0.12	2.02	0.00	0.00	0.0	11
13	CB 406	0.82	0.00	0.77	0.05	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.16	4.06	0.06	0.97	0.0	12
14	CB 410A	0.75	0.00	0.74	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.14	3.16	0.03	0.55	0.0	17
15	JB 410B	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
16	YI 410C	1.99	0.00	1.99	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.19	7.15	0.19	7.15	0.0	Off
17	CB 409A	0.27	0.01	0.29	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.13	2.32	0.01	0.13	0.0	18
18	CB 408A	0.31	0.00	0.31	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.13	2.58	0.13	2.58	0.0	Off
19	FES 407A	2.54	0.00	2.54	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
20	YI 421	5.52	0.00	5.52	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.38	8.27	0.38	8.27	0.0	Off

Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Hydraulic Grade Line Computations

10-Year SCM #4 Report

Page 1

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	30	12.61	356.86	358.71	1.85	2.31	3.25	0.46	359.17	0.000	42.886	357.07	358.26	1.19**	2.31	5.46	0.46	358.73	0.000	0.000	n/a	0.94	n/a
2	24	12.48	357.27	358.62	1.35*	2.25	5.54	0.48	359.10	0.481	27.000	357.40	358.75	1.35	2.25	5.55	0.48	359.23	0.484	0.482	0.130	1.68	0.81
3	24	8.53	357.60	359.55	1.95	1.65	2.73	0.41	359.97	0.000	45.598	357.83	358.87	1.04**	1.65	5.17	0.41	359.29	0.000	0.000	n/a	1.35	0.56
4	24	6.05	357.93	358.87	0.94	1.31	4.17	0.33	359.20	0.000	71.733	358.29	359.16	0.87**	1.31	4.62	0.33	359.49	0.000	0.000	n/a	1.50	0.50
5	18	5.59	358.49	359.46	0.97*	1.21	4.63	0.33	359.79	0.503	35.770	358.67	359.64	0.97	1.21	4.63	0.33	359.97	0.504	0.504	0.180	1.50	0.50
6	18	5.25	358.87	360.14	1.27	1.08	3.29	0.37	360.51	0.000	138.243	360.25	361.13 j	0.88**	1.08	4.86	0.37	361.50	0.000	0.000	n/a	1.50	n/a
7	15	2.37	360.58	361.13	0.55	0.52	4.53	0.24	361.37	0.000	88.557	364.31	364.92	0.61**	0.60	3.94	0.24	365.17	0.000	0.000	n/a	1.19	0.29
8	15	2.22	364.51	365.13	0.62*	0.60	3.68	0.21	365.34	0.497	48.252	364.75	365.37	0.62	0.60	3.68	0.21	365.58	0.495	0.496	0.239	1.27	0.27
9	15	1.71	364.95	365.63	0.68	0.69	2.50	0.10	365.73	0.210	26.989	365.09	365.66	0.57	0.54	3.17	0.16	365.81	0.398	0.304	0.082	1.00	0.16
10	24	4.04	357.60	359.55	1.95	0.99	1.29	0.26	359.81	0.000	43.911	357.82	358.52	0.70**	0.99	4.08	0.26	358.78	0.000	0.000	n/a	1.21	n/a
11	18	2.13	358.02	358.52	0.50	0.52	4.07	0.20	358.73	0.000	27.000	358.29	358.84	0.55**	0.59	3.62	0.20	359.04	0.000	0.000	n/a	1.50	0.31
12	15	1.31	358.79	359.08	0.29*	0.22	6.10	0.17	359.25	0.000	116.822	362.29	362.74	0.45**	0.40	3.28	0.17	362.91	0.000	0.000	n/a	0.69	n/a
13	15	0.82	363.30	363.53	0.23*	0.15	5.32	0.13	363.66	0.000	118.495	366.85	367.21	0.35**	0.29	2.87	0.13	367.33	0.000	0.000	n/a	1.00	n/a
14	15	2.67	360.45	361.15	0.70*	0.70	3.81	0.23	361.37	0.481	26.980	360.58	361.28	0.70	0.70	3.81	0.23	361.50	0.480	0.481	0.130	0.50	0.11
15	15	1.98	360.69	361.39	0.70	0.53	2.80	0.12	361.51	0.260	113.243	361.26	361.82	0.56**	0.53	3.72	0.21	362.03	0.550	0.405	n/a	0.98	n/a
16	15	1.99	361.46	362.04	0.58*	0.55	3.59	0.20	362.24	0.498	34.087	361.63	362.21	0.58	0.55	3.59	0.20	362.41	0.500	0.499	0.170	1.00	0.20
17	15	0.27	358.97	360.14	1.17	1.19	0.23	0.00	360.14	0.002	27.000	359.11	360.14	1.03	1.08	0.25	0.00	360.14	0.002	0.002	0.000	1.00	0.00
18	15	0.31	358.68	359.16	0.48	0.14	0.71	0.07	359.23	0.000	27.000	358.88	359.09	0.21**	0.14	2.19	0.07	359.17	0.000	0.000	n/a	1.00	0.07
19	18	2.54	358.53	359.13	0.60*	0.67	3.81	0.23	359.36	0.502	75.640	358.91	359.52	0.61**	0.67	3.79	0.22	359.74	0.493	0.498	0.377	1.00	0.22
20	18	5.52	356.95	358.15	1.20	1.52	3.64	0.21	358.36	0.288	79.656	357.35	358.35	1.00	1.25	4.42	0.30	358.65	0.451	0.369	0.294	1.00	0.30

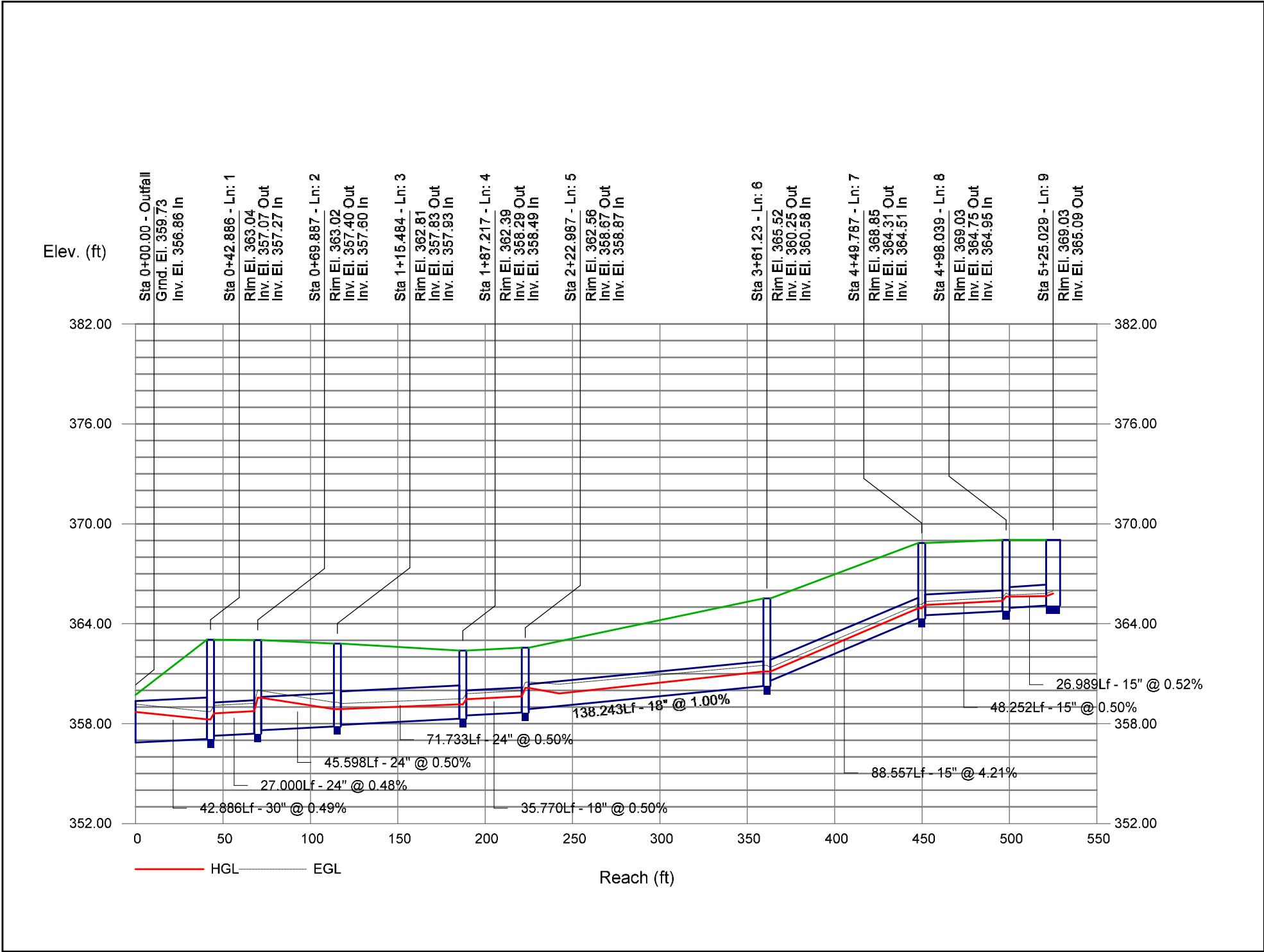
Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

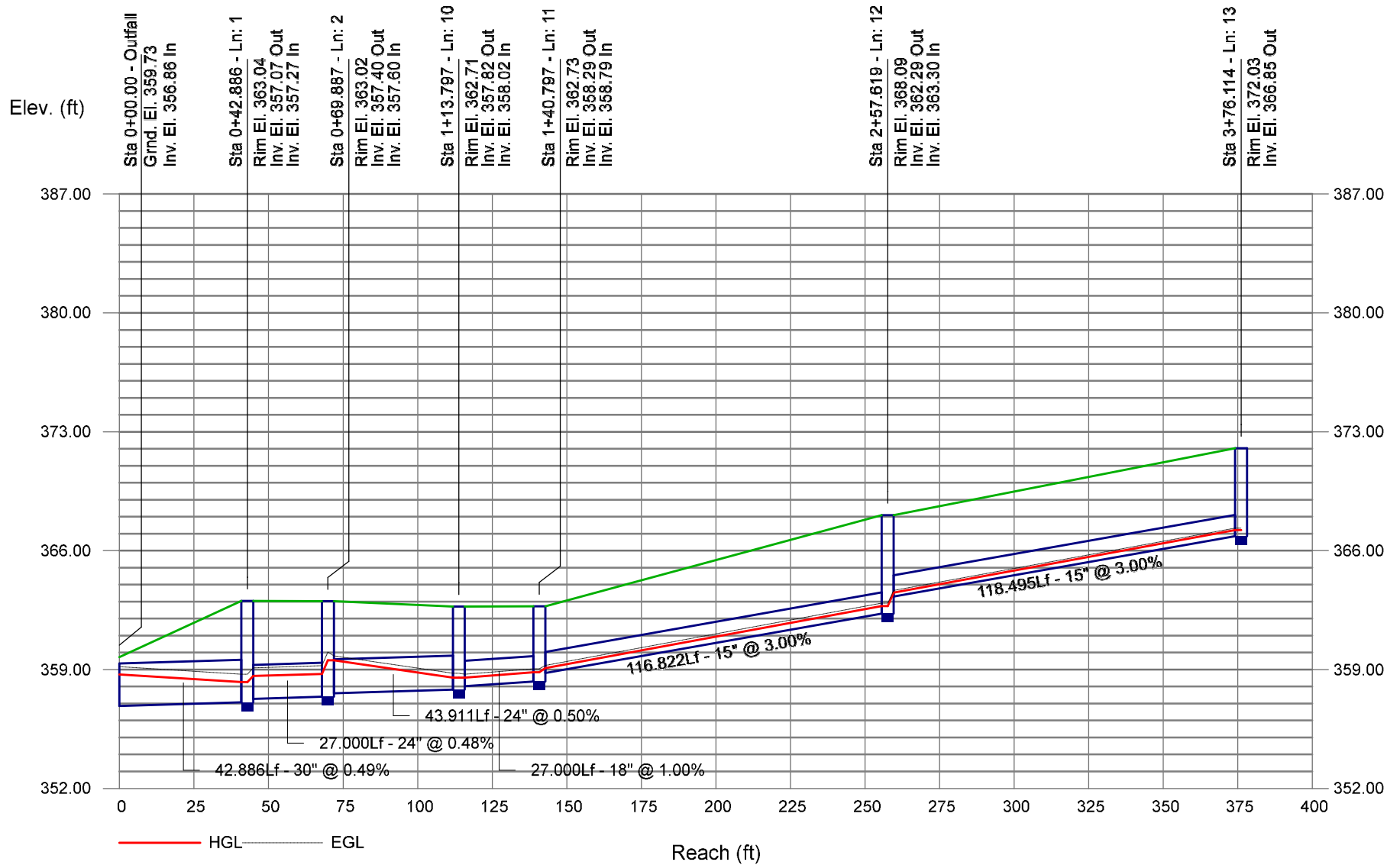
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewer Profile

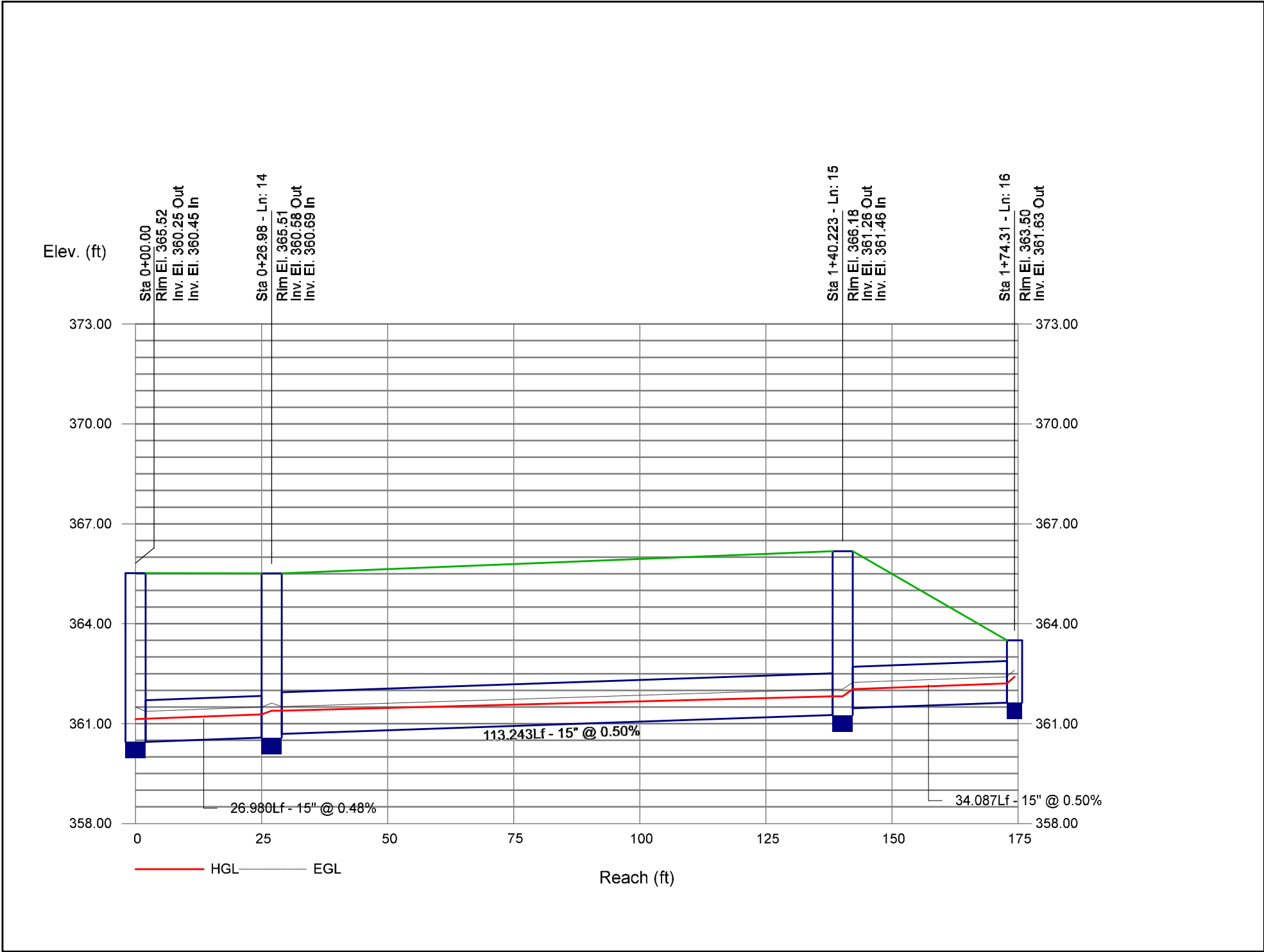


Storm Sewer Profile

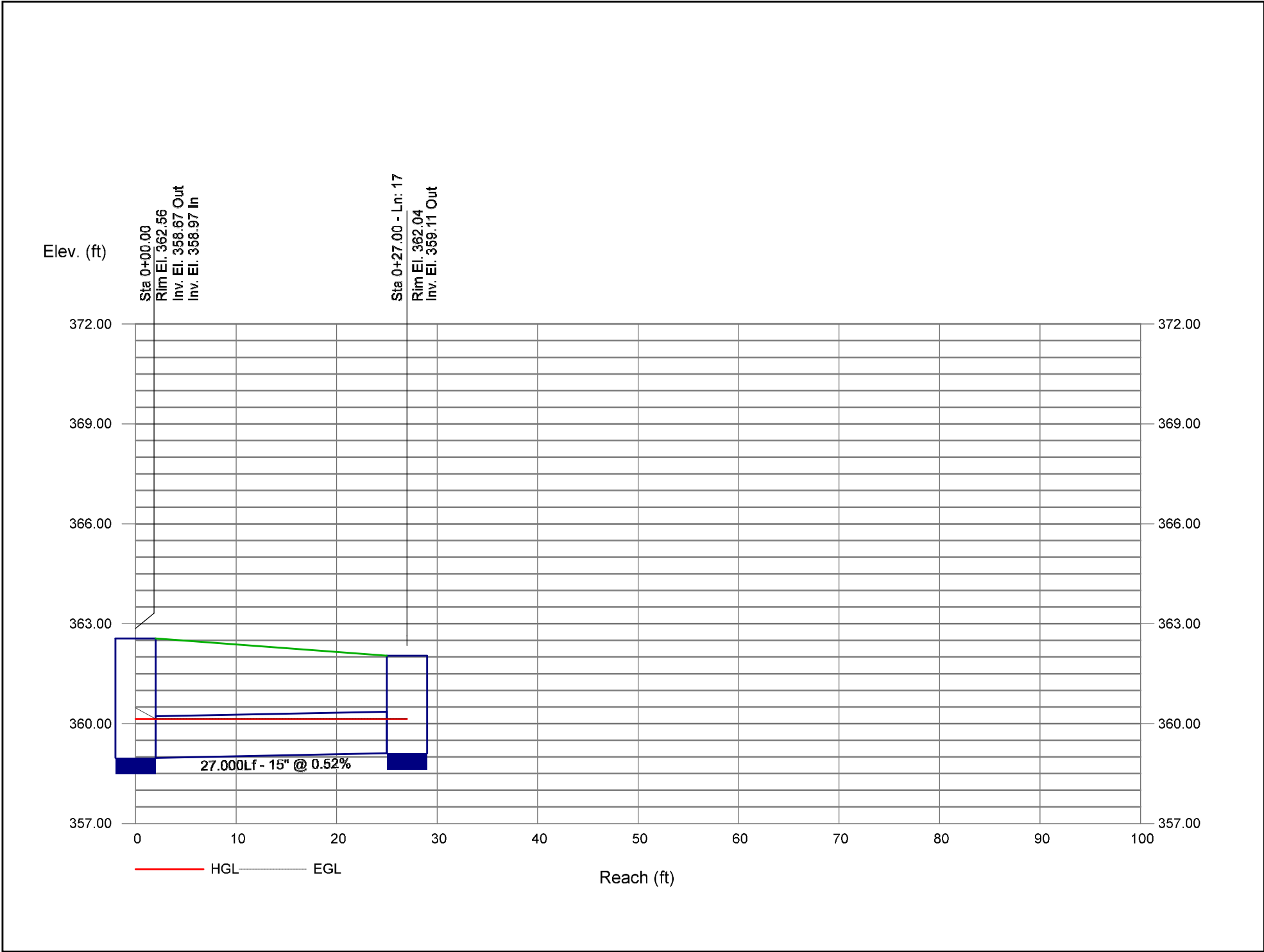
10-Year SCM #4 Profile 1-13 Proj. file: SCM#4.stm



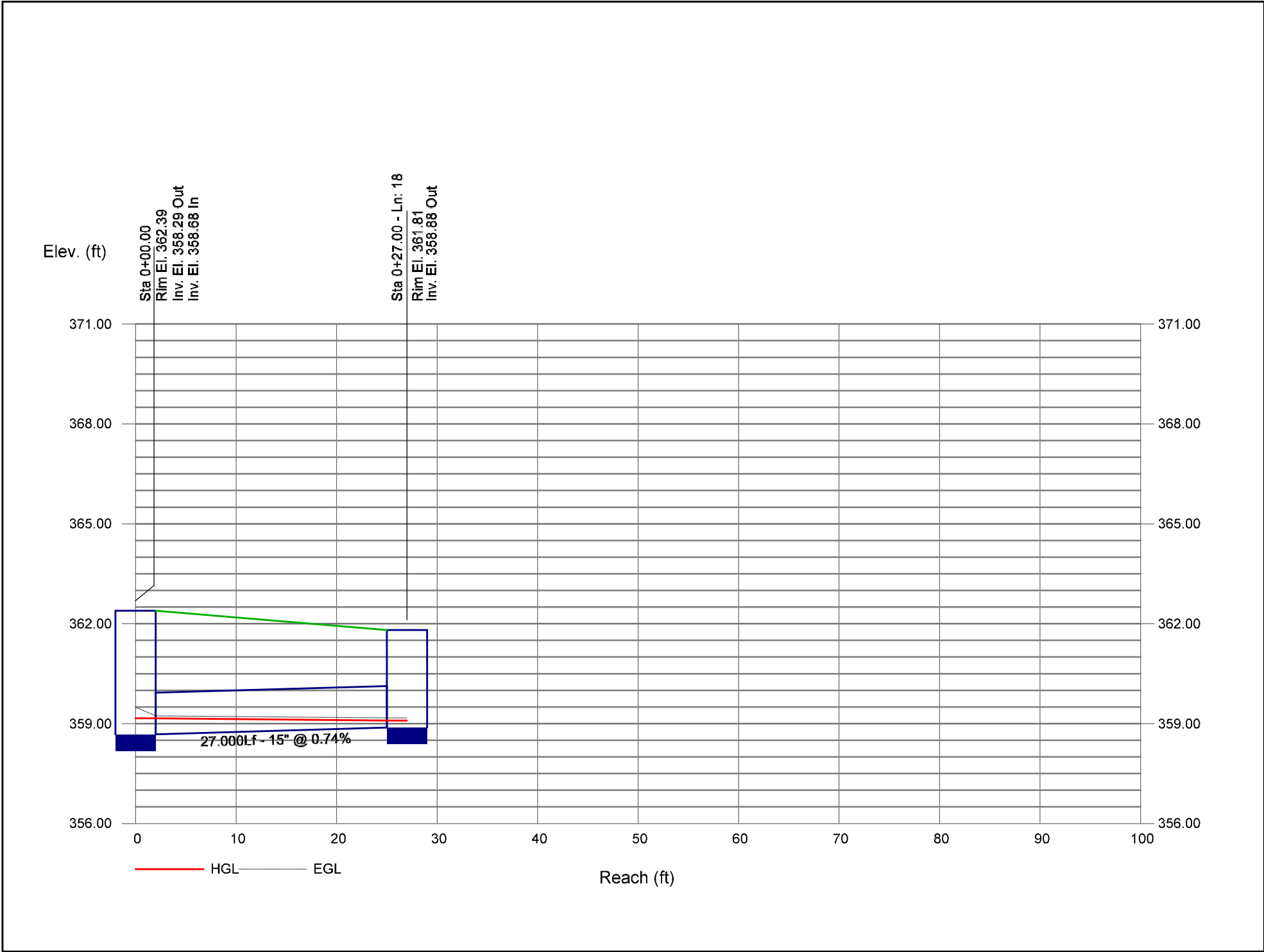
Storm Sewer Profile



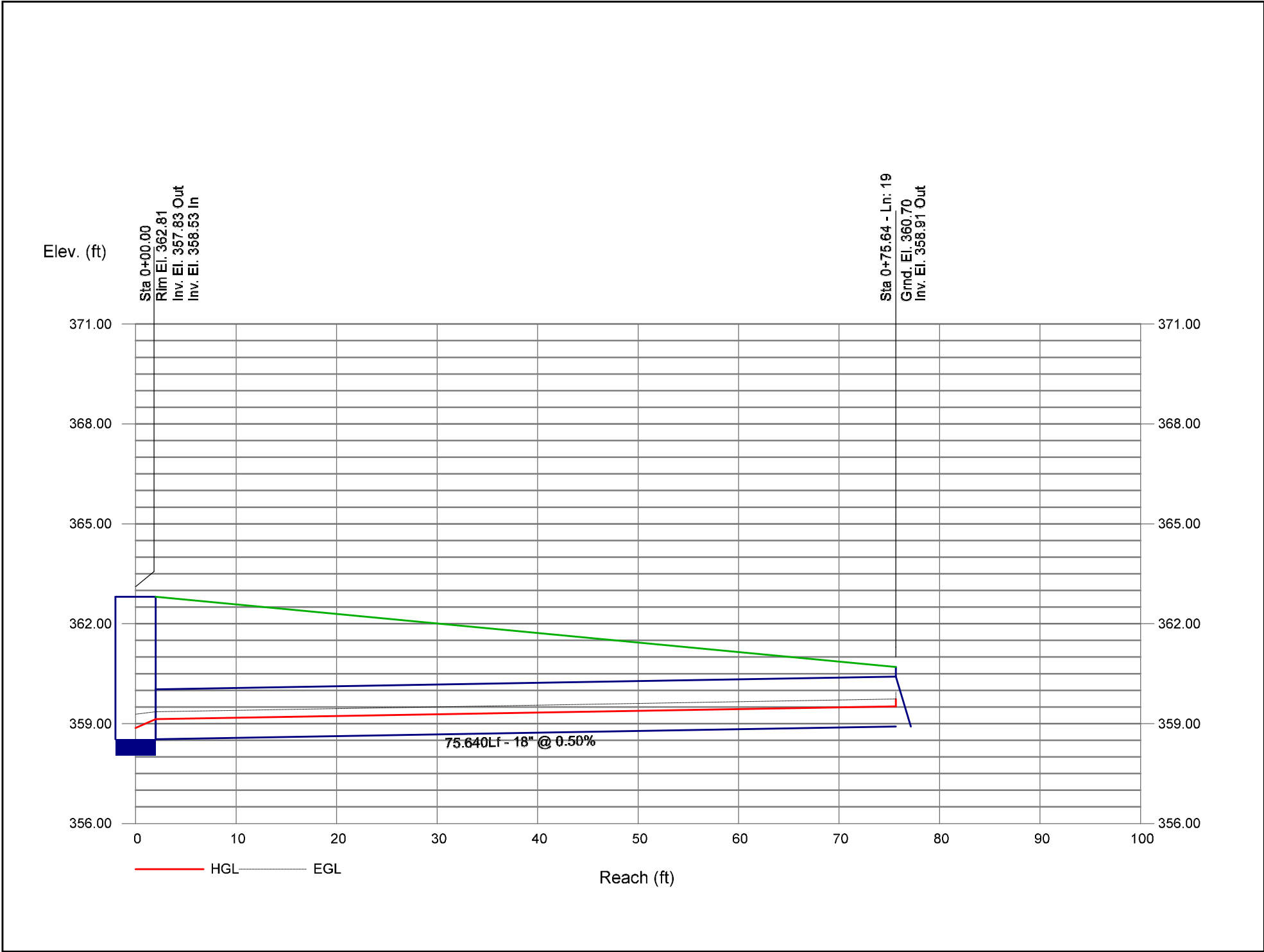
Storm Sewer Profile



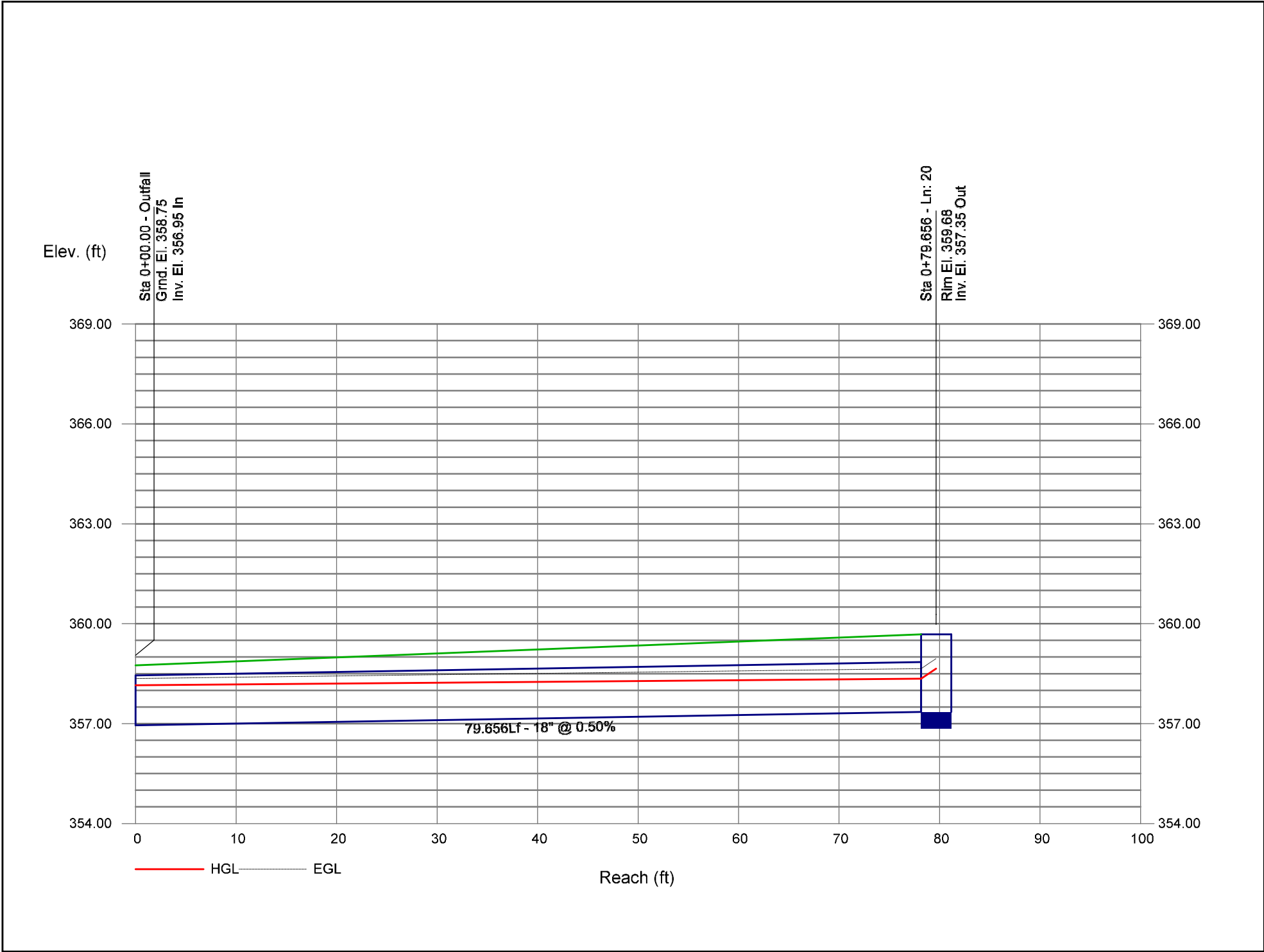
Storm Sewer Profile



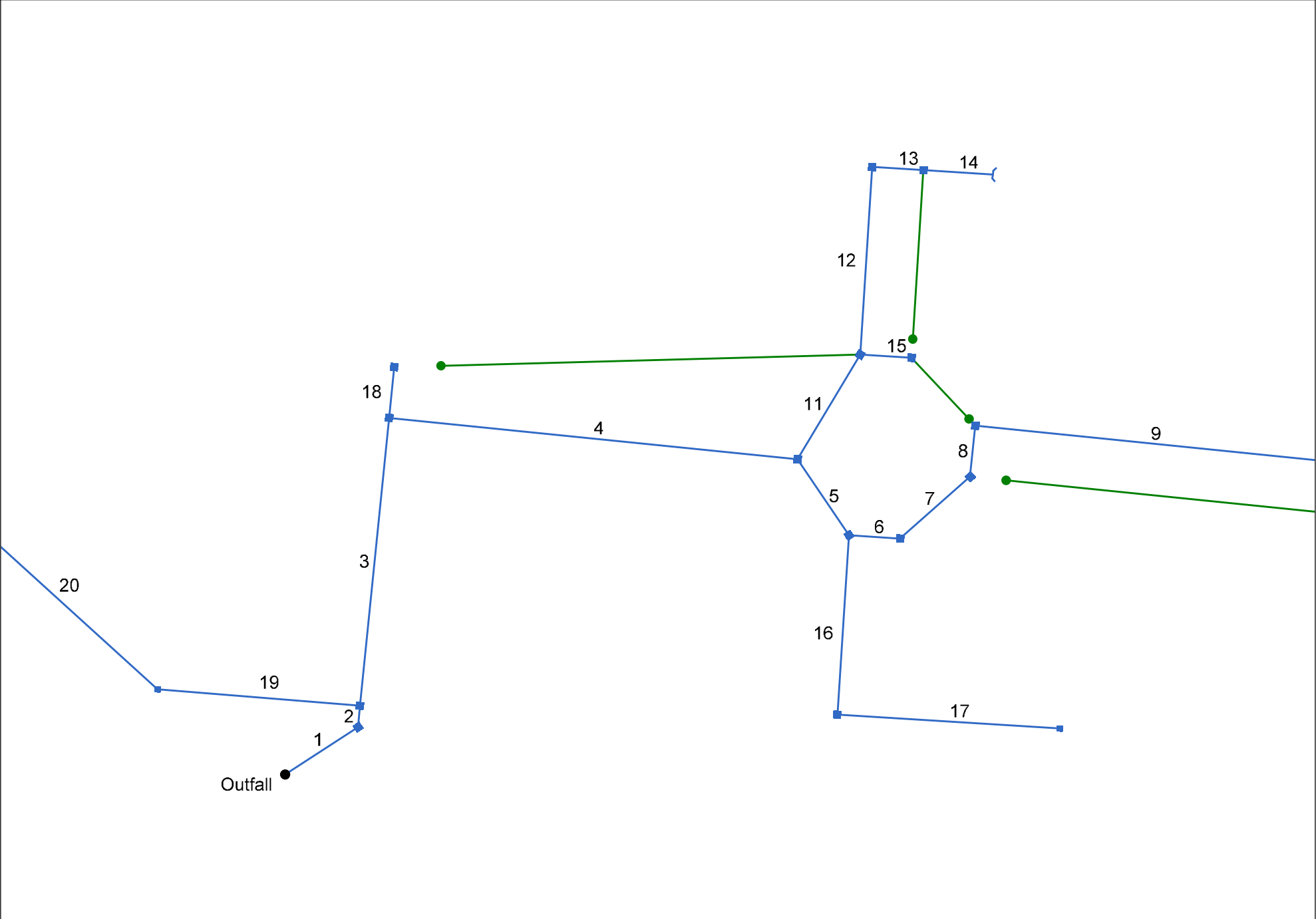
Storm Sewer Profile



Storm Sewer Profile



Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan 10-Year SCM #5 Report



Project File: SCM#5.stm	Number of lines: 20	Date: 5/29/2025
-------------------------	---------------------	-----------------

Storm Sewer Inventory Report

10-Year SCM #5 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	45.553	-33.168	DrGrt	0.00	0.85	0.57	10.0	346.92	0.50	347.15	30	Cir	0.013	1.22	350.87	Pipe - (39)
2	1	11.310	-51.139	DrGrt	0.00	0.19	0.57	10.0	347.35	0.53	347.41	30	Cir	0.013	1.50	352.03	Pipe - (38) (1)
3	2	152.248	0.000	Comb	0.00	0.46	0.57	10.0	347.61	2.00	350.66	30	Cir	0.013	1.50	357.04	Pipe - (38)
4	3	215.399	90.101	Comb	0.00	0.04	0.57	10.0	351.06	4.69	361.17	24	Cir	0.013	1.38	366.04	Pipe - (37)
5	4	48.260	50.241	Comb	0.00	0.05	0.57	10.0	361.37	0.99	361.85	18	Cir	0.013	1.49	367.77	Pipe - (36)
6	5	27.000	-52.412	Comb	0.00	0.40	0.57	10.0	362.35	0.52	362.49	18	Cir	0.013	1.13	367.48	Pipe - (35)
7	6	49.032	-45.200	Comb	0.00	0.29	0.57	10.0	362.69	0.51	362.94	15	Cir	0.013	1.08	367.00	Pipe - (34)
8	7	27.000	-42.628	Comb	0.00	0.32	0.57	10.0	363.14	0.52	363.28	15	Cir	0.013	1.50	367.00	Pipe - (33)
9	8	184.905	90.000	Comb	0.00	0.23	0.57	10.0	363.48	3.50	369.95	15	Cir	0.013	1.48	374.03	Pipe - (31)
10	9	27.526	78.789	Comb	0.00	0.21	0.57	10.0	370.15	1.02	370.43	15	Cir	0.013	1.00	374.10	Pipe - (30)
11	4	64.208	-64.883	Comb	0.00	0.06	0.57	10.0	362.27	1.32	363.12	15	Cir	0.013	1.36	368.61	Pipe - (44)
12	11	98.954	-27.289	Comb	0.00	0.12	0.57	10.0	363.62	3.00	366.59	15	Cir	0.013	1.50	371.62	Pipe - (150)
13	12	27.000	90.000	Comb	0.00	0.13	0.57	10.0	367.09	1.52	367.50	15	Cir	0.013	0.50	371.63	Pipe - (28)
14	13	36.500	0.000	Hdwl	0.00	1.23	0.57	10.0	367.70	1.62	368.29	15	Cir	0.013	1.00	369.81	Pipe - (176)
15	11	27.000	62.711	Comb	0.00	0.09	0.57	10.0	364.00	0.89	364.24	15	Cir	0.013	1.00	368.57	Pipe - (43)
16	5	94.508	37.588	Comb	0.00	0.14	0.57	10.0	362.69	0.50	363.16	15	Cir	0.013	1.50	368.66	Pipe - (42)
17	16	117.135	-90.000	DrGrt	0.00	0.62	0.57	10.0	363.36	0.50	363.95	15	Cir	0.013	1.00	367.63	Pipe - (168)
18	3	27.001	0.467	Comb	0.00	0.53	0.57	10.0	353.30	0.52	353.44	15	Cir	0.013	1.00	357.04	Pipe - (40)
19	2	106.739	-91.019	DrGrt	0.00	0.25	0.57	10.0	347.82	0.50	348.35	15	Cir	0.013	0.99	351.82	Pipe - (183)
20	19	148.226	37.714	DrGrt	0.00	0.39	0.57	10.0	348.45	0.50	349.19	15	Cir	0.013	1.00	353.32	Pipe - (182)
Project File: SCM#5.stm												Number of lines: 20				Date: 5/29/2025	

Structure Report

10-Year SCM #5 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	YI 501	DropGrate	350.87	Rect	4.00	4.00	30	Cir	347.15	30	Cir	347.35
2	YI 501A	DropGrate	352.03	Rect	4.00	4.00	30	Cir	347.41	30 15	Cir Cir	347.61 347.82
3	CB 502	Combination	357.04	Rect	4.00	4.00	30	Cir	350.66	24 15	Cir Cir	351.06 353.30
4	CB 504	Combination	366.04	Rect	4.00	4.00	24	Cir	361.17	18 15	Cir Cir	361.37 362.27
5	CB 505	Combination	367.77	Rect	4.00	4.00	18	Cir	361.85	18 15	Cir Cir	362.35 362.69
6	CB 506	Combination	367.48	Rect	4.00	4.00	18	Cir	362.49	15	Cir	362.69
7	CB 507	Combination	367.00	Rect	4.00	4.00	15	Cir	362.94	15	Cir	363.14
8	CB 508	Combination	367.00	Rect	4.00	4.00	15	Cir	363.28	15	Cir	363.48
9	CB 514	Combination	374.03	Rect	4.00	4.00	15	Cir	369.95	15	Cir	370.15
10	CB 515	Combination	374.10	Rect	4.00	4.00	15	Cir	370.43			
11	CB 511	Combination	368.61	Rect	4.00	4.00	15	Cir	363.12	15 15	Cir Cir	363.62 364.00
12	CB 517	Combination	371.62	Rect	4.00	4.00	15	Cir	366.59	15	Cir	367.09
13	CB 516	Combination	371.63	Rect	4.00	4.00	15	Cir	367.50	15	Cir	367.70
14	FES 516A	OpenHeadwall	369.81	n/a	n/a	n/a	15	Cir	368.29			
15	CB 510	Combination	368.57	Rect	4.00	4.00	15	Cir	364.24			
16	CB 513	Combination	368.66	Rect	4.00	4.00	15	Cir	363.16	15	Cir	363.36
17	YI 513A	DropGrate	367.63	Rect	3.00	3.00	15	Cir	363.95			
18	CB 503	Combination	357.04	Rect	4.00	4.00	15	Cir	353.44			
19	YI 501B	DropGrate	351.82	Rect	3.00	3.00	15	Cir	348.35	15	Cir	348.45
20	YI 501C	DropGrate	353.32	Rect	3.00	3.00	15	Cir	349.19			
Project File: SCM#5.stm							Number of Structures: 20			Run Date: 5/29/2025		

Storm Sewer Summary Report

10-Year SCM #5 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (39)	20.51	30	Cir	45.553	346.92	347.15	0.505	348.94	349.00	0.53	349.53	End	DropGrate
2	Pipe - (38) (1)	17.89	30	Cir	11.310	347.35	347.41	0.530	349.53	348.84	n/a	348.84	1	DropGrate
3	Pipe - (38)	15.51	30	Cir	152.248	347.61	350.66	2.003	348.84	351.99	n/a	351.99	2	Combination
4	Pipe - (37)	12.59	24	Cir	215.399	351.06	361.17	4.694	351.99	362.44	0.76	362.44	3	Combination
5	Pipe - (36)	7.27	18	Cir	48.260	361.37	361.85	0.995	362.44	362.89	n/a	362.89 j	4	Combination
6	Pipe - (35)	4.68	18	Cir	27.000	362.35	362.49	0.518	363.20	363.34	0.36	363.70	5	Combination
7	Pipe - (34)	3.42	15	Cir	49.032	362.69	362.94	0.510	363.70	363.81	0.23	364.05	6	Combination
8	Pipe - (33)	2.49	15	Cir	27.000	363.14	363.28	0.518	364.05	364.07	0.21	364.29	7	Combination
9	Pipe - (31)	1.50	15	Cir	184.905	363.48	369.95	3.499	364.29	370.43	n/a	370.43 j	8	Combination
10	Pipe - (30)	0.72	15	Cir	27.526	370.15	370.43	1.017	370.43	370.76	0.12	370.76	9	Combination
11	Pipe - (44)	5.50	15	Cir	64.208	362.27	363.12	1.324	363.07	364.07	0.64	364.07	4	Combination
12	Pipe - (150)	5.04	15	Cir	98.954	363.62	366.59	3.001	364.21	367.50	n/a	367.50	11	Combination
13	Pipe - (28)	4.64	15	Cir	27.000	367.09	367.50	1.519	367.78	368.37	n/a	368.37	12	Combination
14	Pipe - (176)	4.22	15	Cir	36.500	367.70	368.29	1.616	368.37	369.12	n/a	369.12	13	OpenHeadwall
15	Pipe - (43)	0.31	15	Cir	27.000	364.00	364.24	0.889	364.19	364.45	0.07	364.45	11	Combination
16	Pipe - (42)	2.55	15	Cir	94.508	362.69	363.16	0.497	363.36	363.83	0.34	364.17	5	Combination
17	Pipe - (168)	2.12	15	Cir	117.135	363.36	363.95	0.504	364.17	364.53	n/a	364.53	16	DropGrate
18	Pipe - (40)	1.82	15	Cir	27.001	353.30	353.44	0.519	353.84	353.98	0.20	354.18	3	Combination
19	Pipe - (183)	2.12	15	Cir	106.739	347.82	348.35	0.497	348.84	349.00	0.17	349.17	2	DropGrate
20	Pipe - (182)	1.34	15	Cir	148.226	348.45	349.19	0.499	349.17	349.65	n/a	349.65 j	19	DropGrate
Project File: SCM#5.stm									Number of lines: 20			Run Date: 5/29/2025		
NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

10-Year SCM #5 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YI 501	2.91	0.00	2.91	0.00	DrGrt	0.0	0.00	9.00	3.00	3.00	Sag	6.00	0.330	0.330	0.013	0.19	7.13	0.19	7.13	0.0	Off
2	YI 501A	0.65	0.00	0.65	0.00	DrGrt	0.0	0.00	9.00	3.00	3.00	Sag	6.00	0.330	0.330	0.013	0.07	6.42	0.07	6.42	0.0	Off
3	CB 502	1.58	0.00	1.58	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.22	7.15	0.22	7.15	0.0	Off
4	CB 504	0.14	0.00	0.14	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.08	1.40	0.00	0.00	0.0	3
5	CB 505	0.17	0.00	0.17	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.11	1.76	0.11	1.76	0.0	Off
6	CB 506	1.37	0.00	1.37	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.21	6.42	0.21	6.42	0.0	Off
7	CB 507	0.99	0.01	1.00	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.18	5.02	0.18	5.02	0.0	Off
8	CB 508	1.10	0.01	1.11	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.19	5.45	0.19	5.45	0.0	Off
9	CB 514	0.79	0.00	0.78	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.040	2.00	0.060	0.020	0.013	0.14	3.07	0.03	0.50	0.0	8
10	CB 515	0.72	0.00	0.71	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.040	2.00	0.060	0.020	0.013	0.14	2.85	0.02	0.40	0.0	7
11	CB 511	0.21	0.00	0.21	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.09	1.51	0.00	0.00	0.0	18
12	CB 517	0.41	0.00	0.41	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	1.96	0.00	0.00	0.0	11
13	CB 516	0.45	0.00	0.45	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	2.06	0.00	0.00	0.0	15
14	FES 516A	4.22	0.00	4.22	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
15	CB 510	0.31	0.00	0.31	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.11	1.76	0.00	0.00	0.0	8
16	CB 513	0.48	0.00	0.48	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.13	2.71	0.02	0.30	0.0	5
17	YI 513A	2.12	0.00	2.12	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.20	7.20	0.20	7.20	0.0	Off
18	CB 503	1.82	0.00	1.82	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.24	7.95	0.24	7.95	0.0	Off
19	YI 501B	0.86	0.00	0.86	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.11	6.66	0.11	6.66	0.0	Off
20	YI 501C	1.34	0.00	1.34	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.15	6.88	0.15	6.88	0.0	Off

Project File: SCM#5.stm

Number of lines: 20

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Hydraulic Grade Line Computations

10-Year SCM #5 Report

Page 1

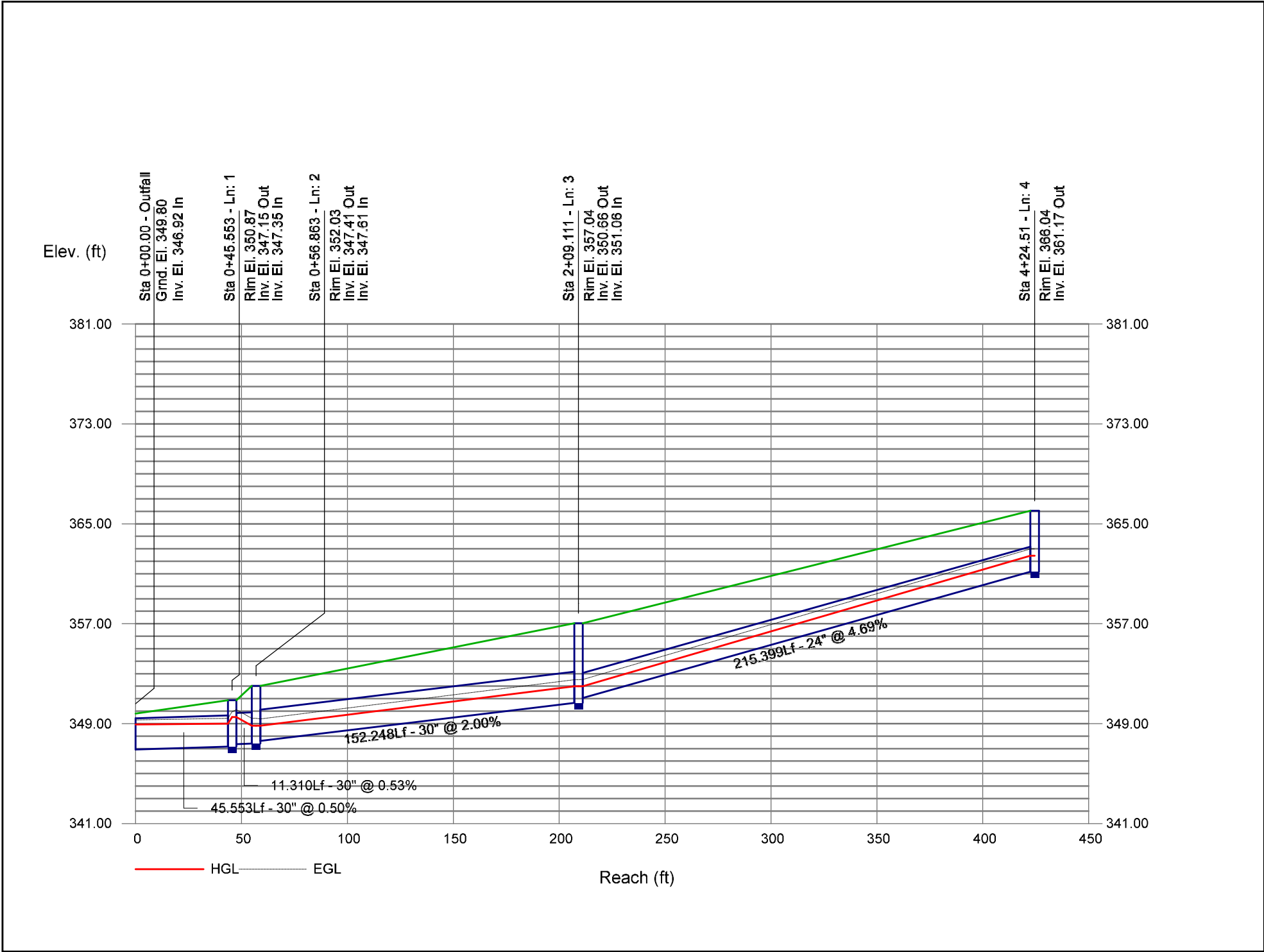
Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	30	20.51	346.92	348.94	2.02	4.25	4.83	0.36	349.30	0.257	45.553	347.15	349.00	1.85	3.90	5.26	0.43	349.43	0.310	0.284	0.129	1.22	0.53
2	30	17.89	347.35	349.53	2.18	2.90	3.94	0.59	350.12	0.000	11.310	347.41	348.84	1.43**	2.90	6.16	0.59	349.43	0.000	0.000	n/a	1.50	n/a
3	30	15.51	347.61	348.84	1.23	2.41	6.44	0.53	349.37	0.000	152.248	350.66	351.99	1.33**	2.65	5.86	0.53	352.52	0.000	0.000	n/a	1.50	n/a
4	24	12.59	351.06	351.99	0.93	1.43	8.82	0.55	352.54	0.000	215.399	361.17	362.44	1.27**	2.11	5.96	0.55	363.00	0.000	0.000	n/a	1.38	0.76
5	18	7.27	361.37	362.44	1.07	1.31	5.37	0.48	362.92	0.000	48.260	361.85	362.89 j	1.04**	1.31	5.54	0.48	363.37	0.000	0.000	n/a	1.49	n/a
6	18	4.68	362.35	363.20	0.85*	1.04	4.50	0.32	363.52	0.518	27.000	362.49	363.34	0.85	1.04	4.51	0.32	363.66	0.521	0.519	0.140	1.13	0.36
7	15	3.42	362.69	363.70	1.01	1.06	3.21	0.16	363.86	0.287	49.032	362.94	363.81	0.87	0.92	3.73	0.22	364.03	0.402	0.344	0.169	1.08	0.23
8	15	2.49	363.14	364.05	0.91	0.95	2.61	0.11	364.15	0.193	27.000	363.28	364.07	0.79	0.82	3.02	0.14	364.22	0.277	0.235	0.063	1.50	0.21
9	15	1.50	363.48	364.29	0.81	0.44	1.79	0.18	364.47	0.000	184.905	369.95	370.43 j	0.48**	0.44	3.41	0.18	370.62	0.000	0.000	n/a	1.48	0.27
10	15	0.72	370.15	370.43	0.28	0.21	3.43	0.12	370.55	0.000	27.526	370.43	370.76	0.33**	0.26	2.76	0.12	370.88	0.000	0.000	n/a	1.00	0.12
11	15	5.50	362.27	363.07	0.80*	0.83	6.63	0.47	363.54	0.000	64.208	363.12	364.07	0.95**	1.00	5.50	0.47	364.54	0.000	0.000	n/a	1.36	0.64
12	15	5.04	363.62	364.21	0.59*	0.57	8.88	0.43	364.64	0.000	98.954	366.59	367.50	0.91**	0.96	5.27	0.43	367.93	0.000	0.000	n/a	1.50	n/a
13	15	4.64	367.09	367.78	0.69*	0.69	6.73	0.40	368.18	0.000	27.000	367.50	368.37	0.87**	0.91	5.07	0.40	368.77	0.000	0.000	n/a	0.50	n/a
14	15	4.22	367.70	368.37	0.67	0.67	6.26	0.37	368.74	0.000	36.500	368.29	369.12	0.83**	0.87	4.87	0.37	369.49	0.000	0.000	n/a	1.00	n/a
15	15	0.31	364.00	364.19	0.19*	0.12	2.59	0.07	364.27	0.000	27.000	364.24	364.45	0.21**	0.14	2.19	0.07	364.53	0.000	0.000	n/a	1.00	0.07
16	15	2.55	362.69	363.36	0.67*	0.67	3.81	0.23	363.58	0.497	94.508	363.16	363.83	0.67	0.67	3.82	0.23	364.05	0.501	0.499	0.471	1.50	0.34
17	15	2.12	363.36	364.17	0.81	0.56	2.53	0.10	364.27	0.192	117.135	363.95	364.53	0.58**	0.56	3.80	0.22	364.76	0.557	0.374	n/a	1.00	n/a
18	15	1.82	353.30	353.84	0.54*	0.50	3.55	0.20	354.04	0.518	27.001	353.44	353.98	0.54**	0.51	3.56	0.20	354.18	0.522	0.520	0.140	1.00	0.20
19	15	2.12	347.82	348.84	1.02	1.07	1.98	0.06	348.90	0.109	106.739	348.35	349.00	0.65	0.64	3.31	0.17	349.17	0.386	0.247	0.264	0.99	0.17
20	15	1.34	348.45	349.17	0.72	0.41	1.84	0.05	349.22	0.110	148.226	349.19	349.65 j	0.46**	0.41	3.30	0.17	349.82	0.529	0.320	n/a	1.00	n/a

Project File: SCM#5.stm

Number of lines: 20

Run Date: 5/29/2025

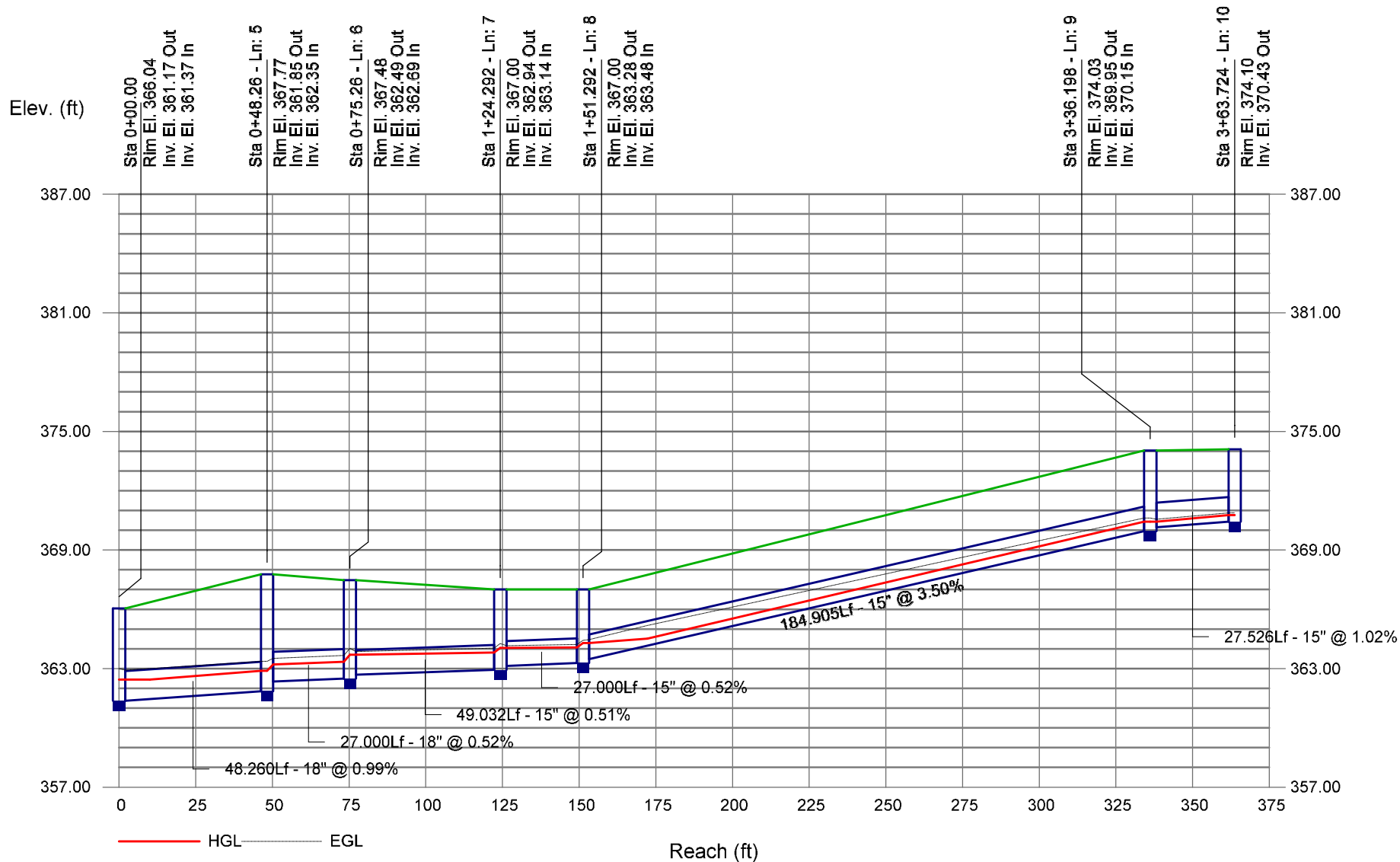
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box



Storm Sewer Profile

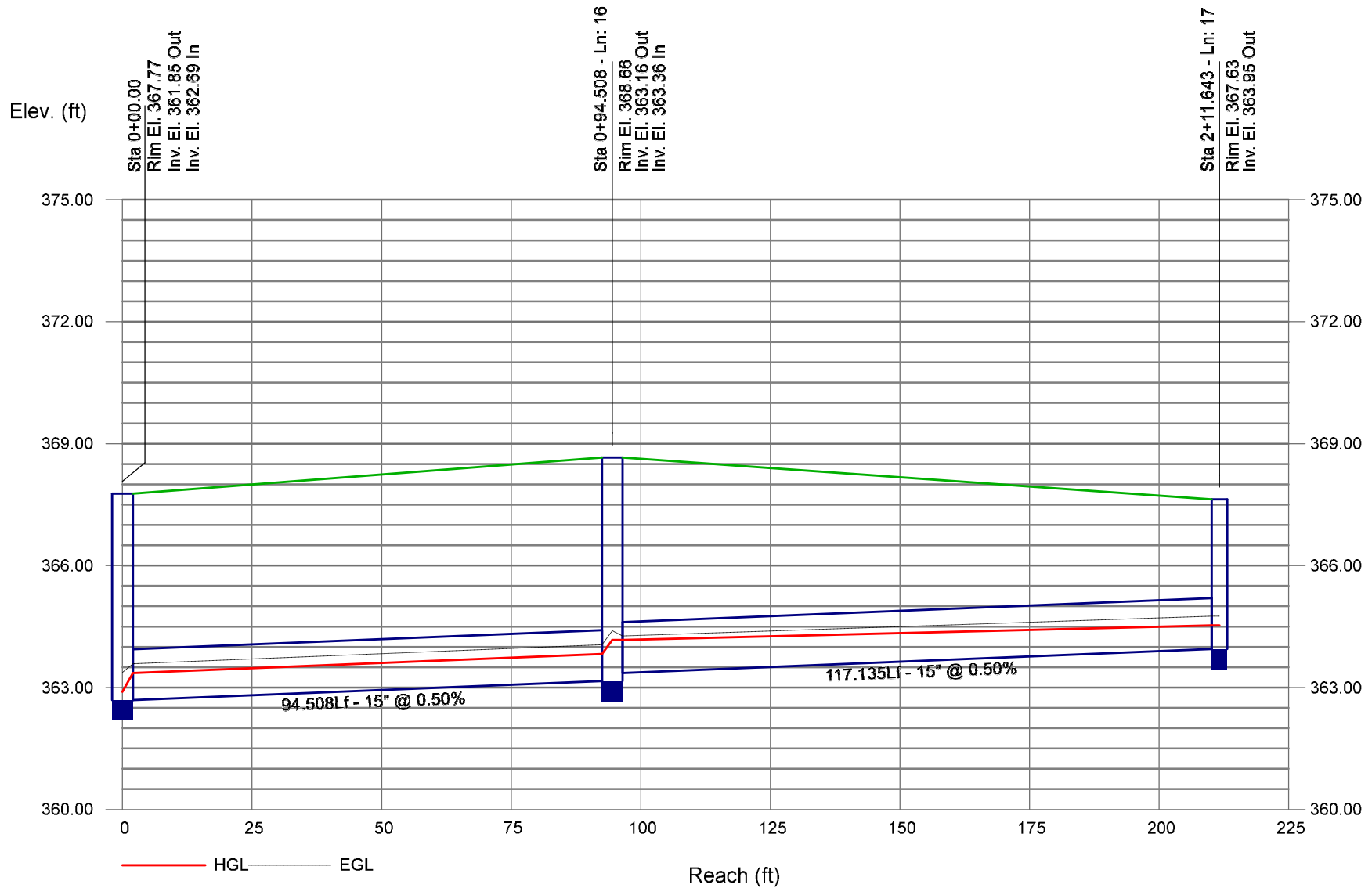
10-Year SCM #5 Profile 5-10

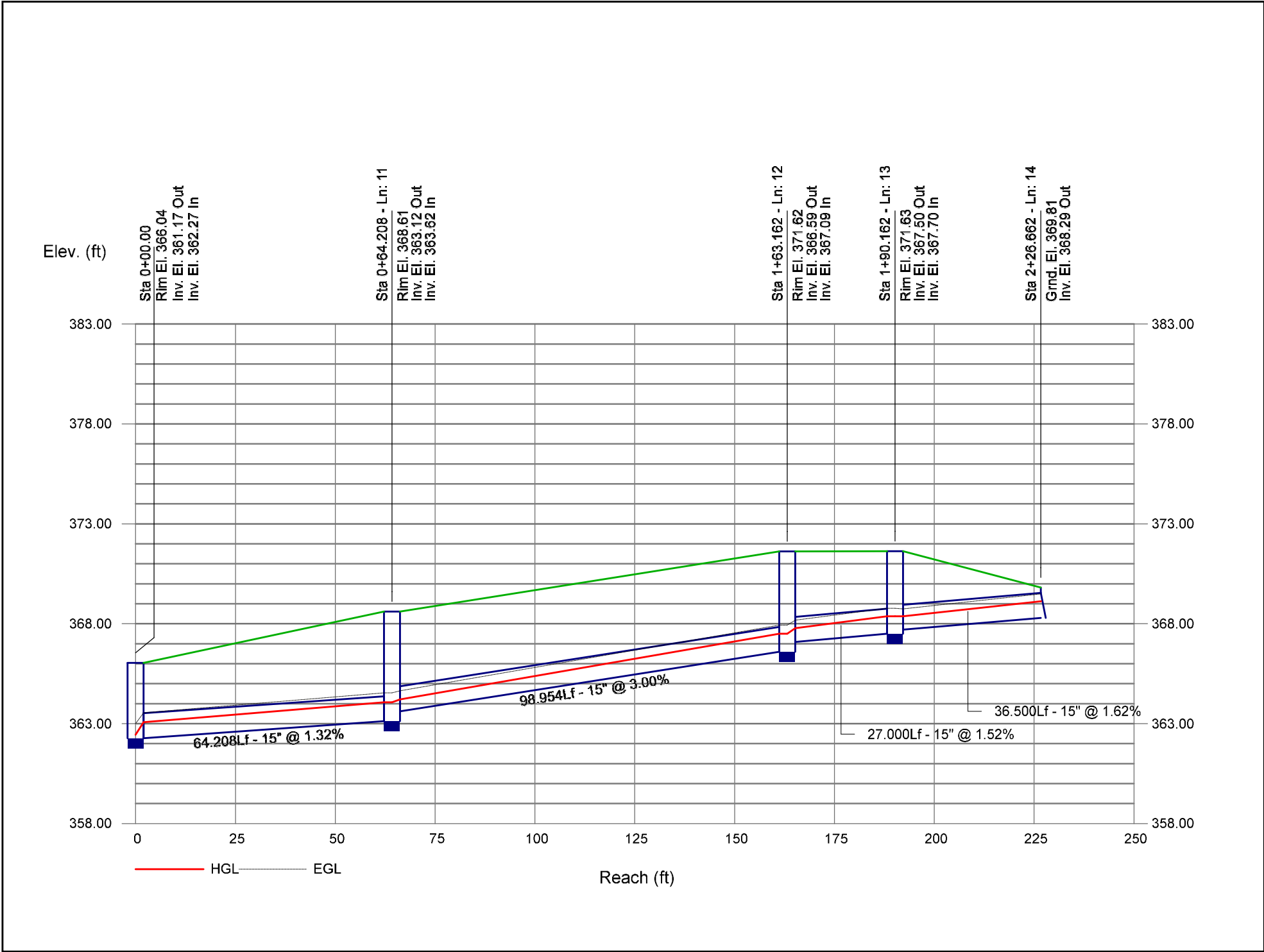
Proj. file: SCM#5.stm



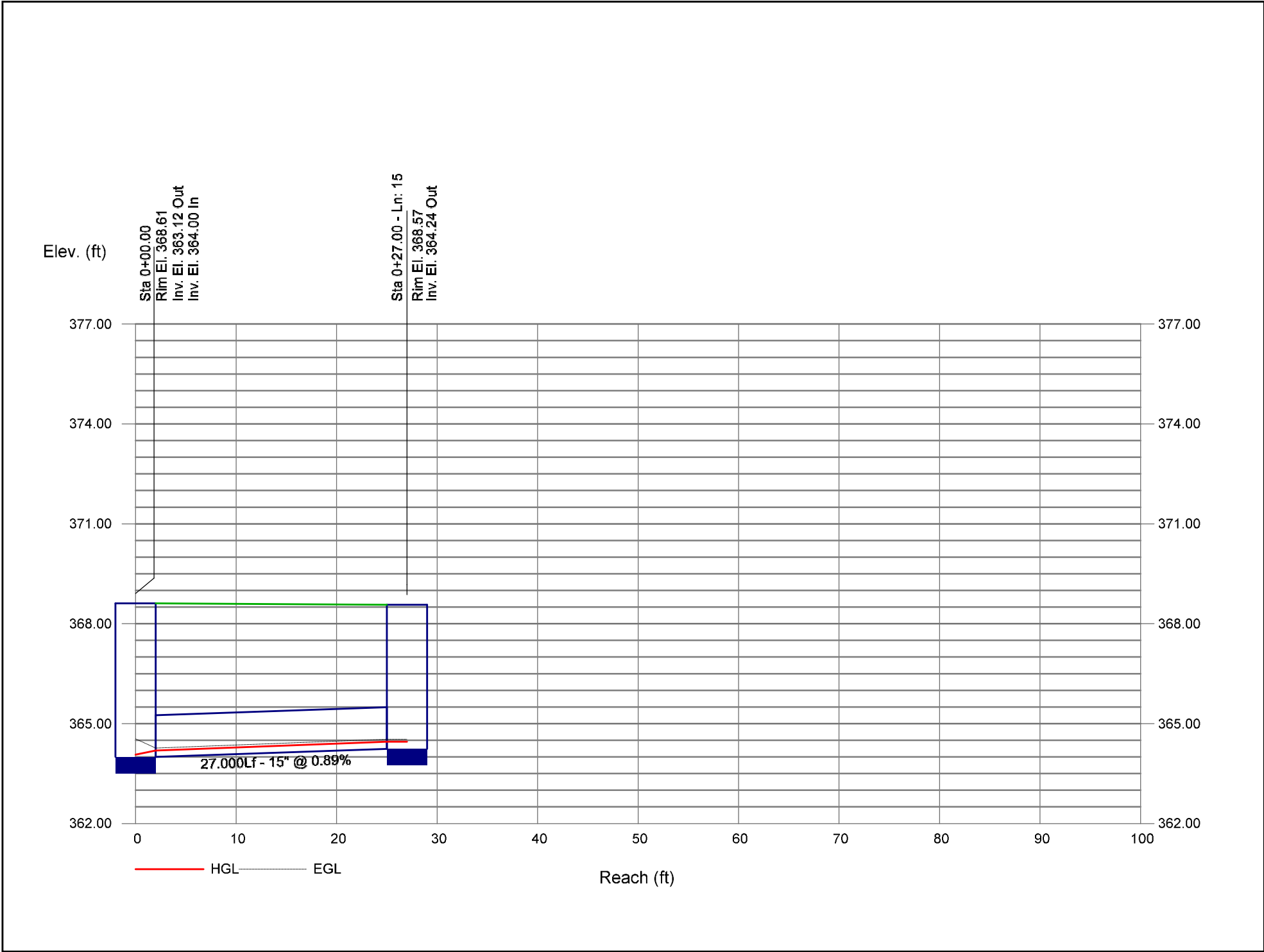
Storm Sewer Profile

10-Year SCM #5 Profile 16-17 Proj. file: SCM#5.stm

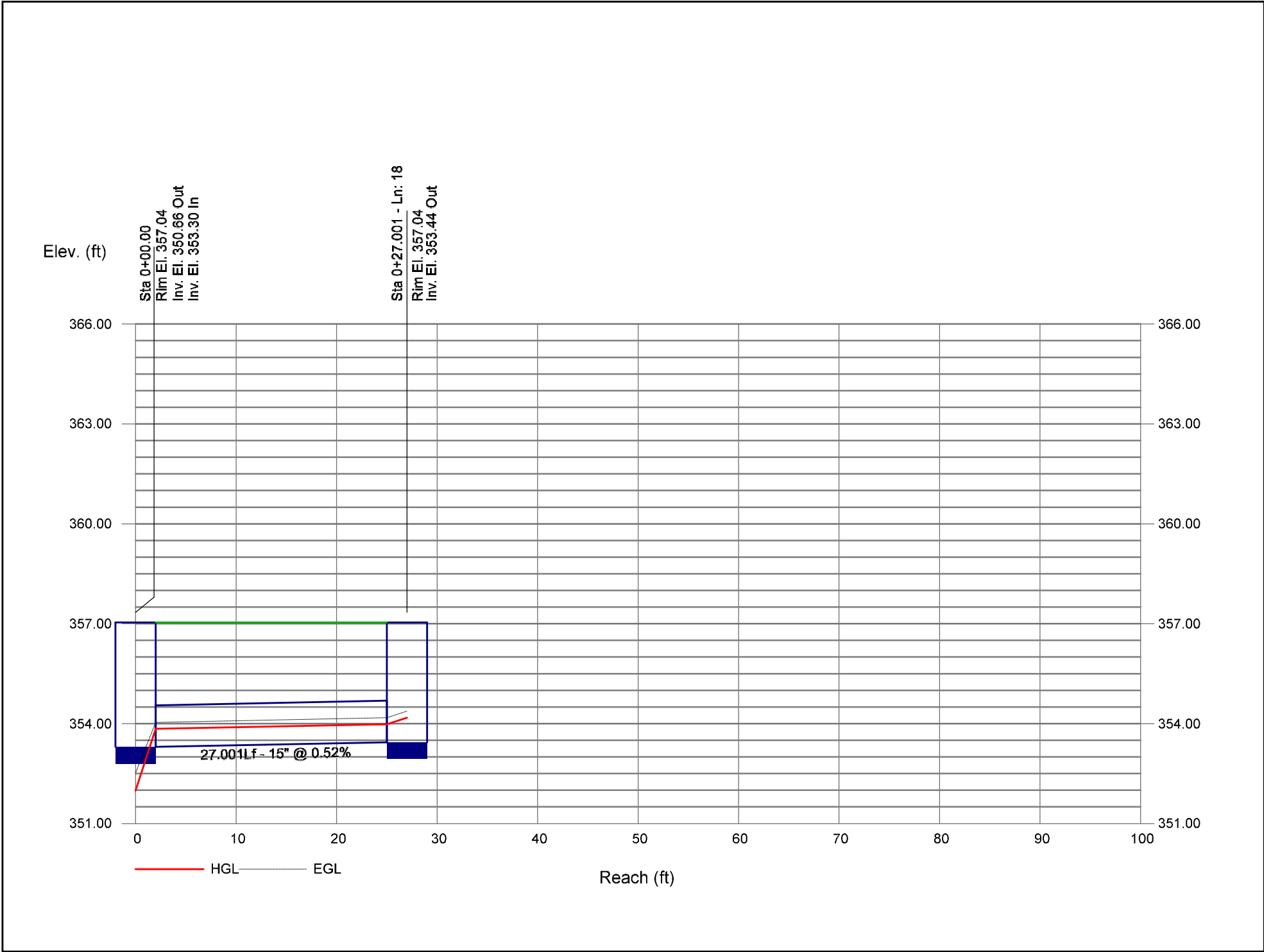




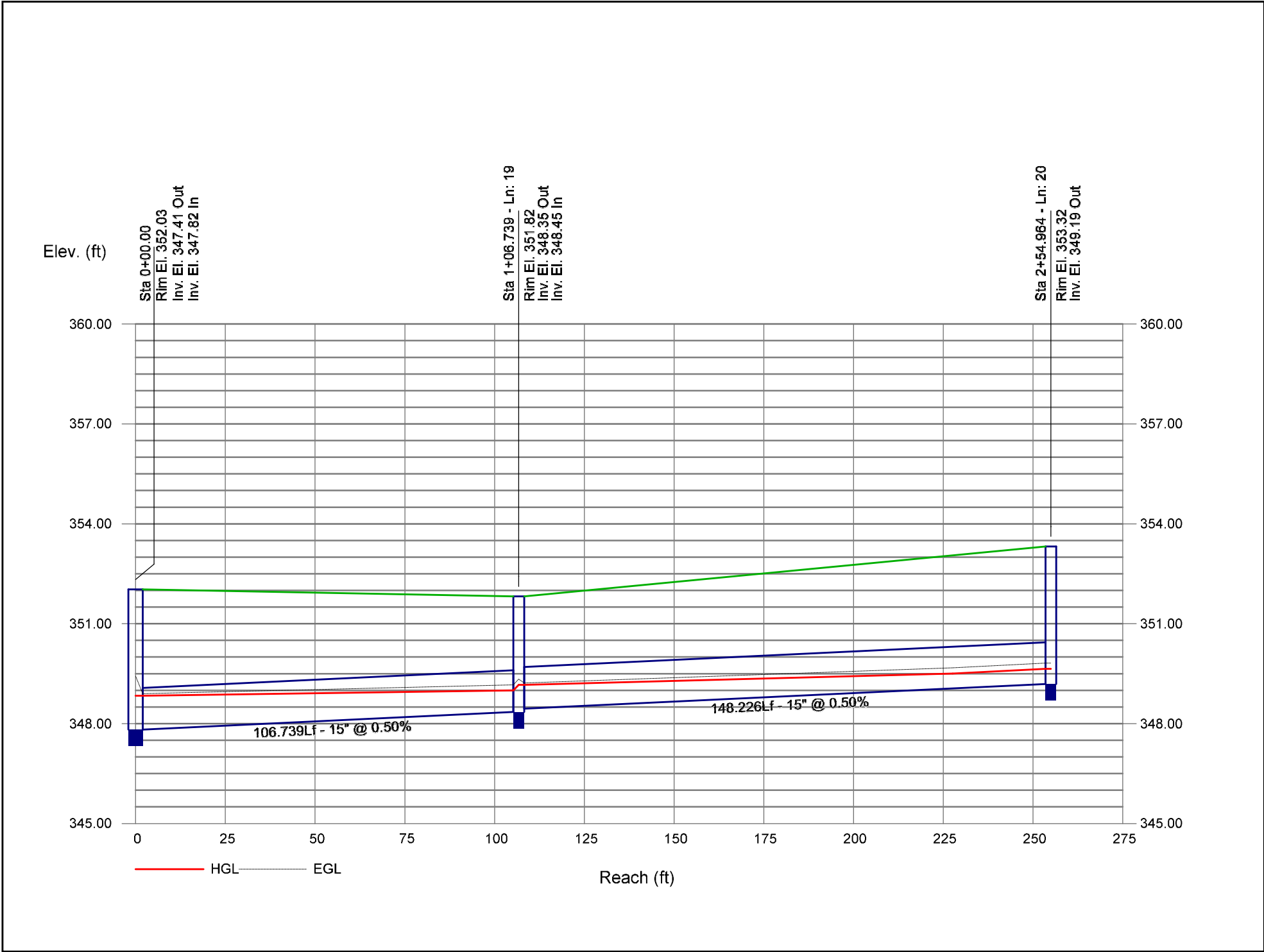
Storm Sewer Profile

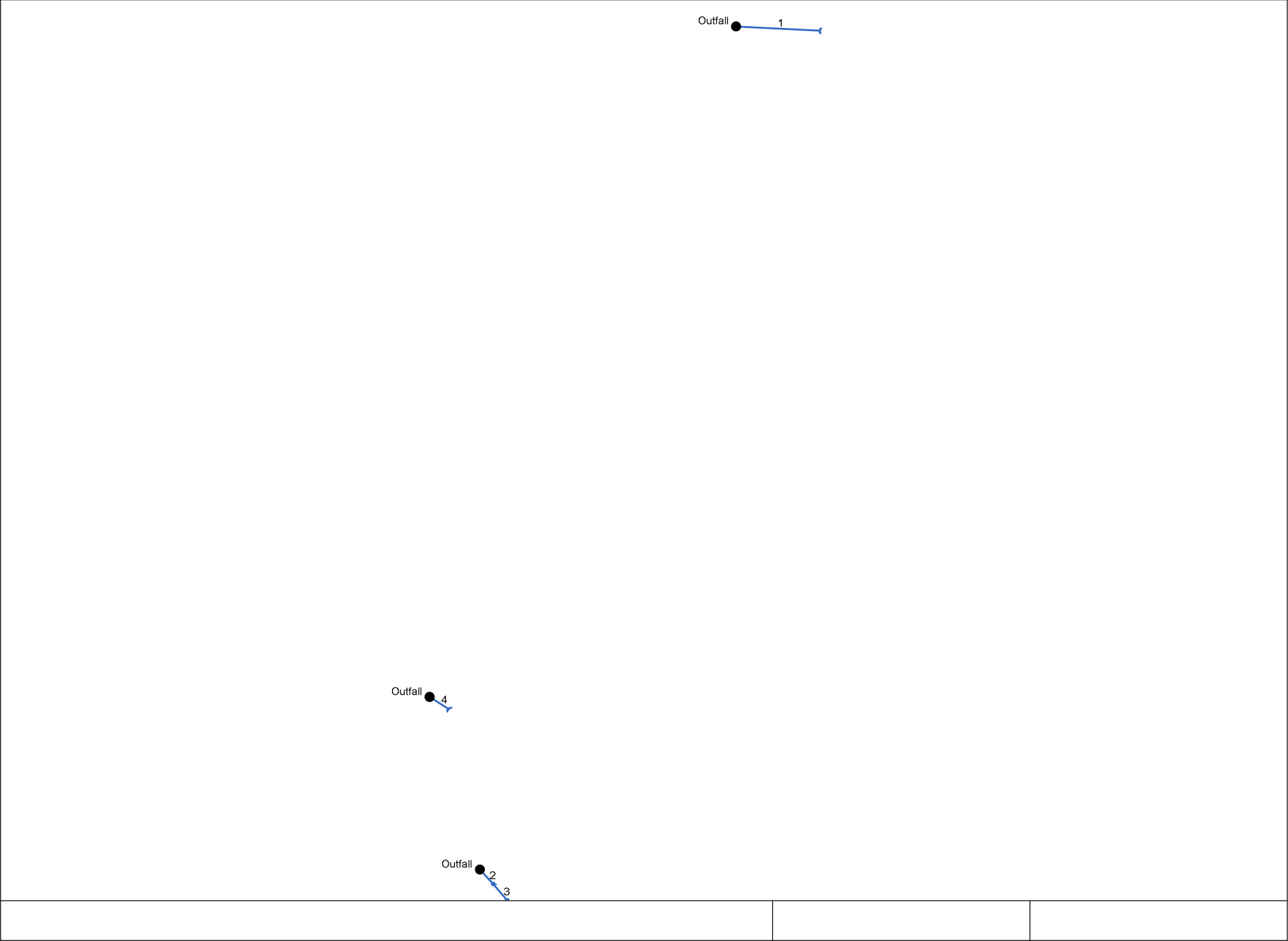


Storm Sewer Profile



Storm Sewer Profile





Storm Sewer Inventory Report

10-Year Bypass Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	93.000	3.619	Hdwl	0.00	1.58	0.57	10.0	364.86	5.53	370.00	18	Cir	0.013	1.00	371.79	Pipe - (27)
2	End	25.000	52.575	Comb	0.00	0.12	0.57	10.0	356.16	0.48	356.28	15	Cir	0.013	0.50	360.04	Pipe - (26)
3	2	27.005	3.159	Comb	0.00	0.22	0.57	10.0	356.41	0.52	356.55	15	Cir	0.013	1.00	360.04	Pipe - (25)
4	End	26.595	38.202	Hdwl	0.00	0.90	0.57	10.0	350.75	3.76	351.75	15	Cir	0.013	1.00	353.27	Pipe - (192)
Project File: Bypass.stm												Number of lines: 4				Date: 5/29/2025	

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	FES 601	OpenHeadwall	371.79	n/a	n/a	n/a	18	Cir	370.00	15	Cir	356.41
2	CB 421	Combination	360.04	Rect	4.00	4.00	15	Cir	356.28			
3	CB 422	Combination	360.04	Rect	4.00	4.00	15	Cir	356.55			
4	FES 700	OpenHeadwall	353.27	n/a	n/a	n/a	15	Cir	351.75			
Project File: Bypass.stm							Number of Structures: 4			Run Date: 5/29/2025		

Storm Sewer Summary Report

10-Year Bypass Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (27)	5.40	18	Cir	93.000	364.86	370.00	5.527	366.06	370.90	n/a	370.90 j	End	OpenHeadwall
2	Pipe - (26)	1.15	15	Cir	25.000	356.16	356.28	0.480	357.00	357.00	0.02	357.02	End	Combination
3	Pipe - (25)	0.75	15	Cir	27.005	356.41	356.55	0.518	357.02	357.02	0.05	357.07	2	Combination
4	Pipe - (192)	3.10	15	Cir	26.595	350.75	351.75	3.760	351.73	352.46	n/a	352.46 j	End	OpenHeadwall
Project File: Bypass.stm									Number of lines: 4			Run Date: 5/29/2025		
NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

10-Year Bypass Report

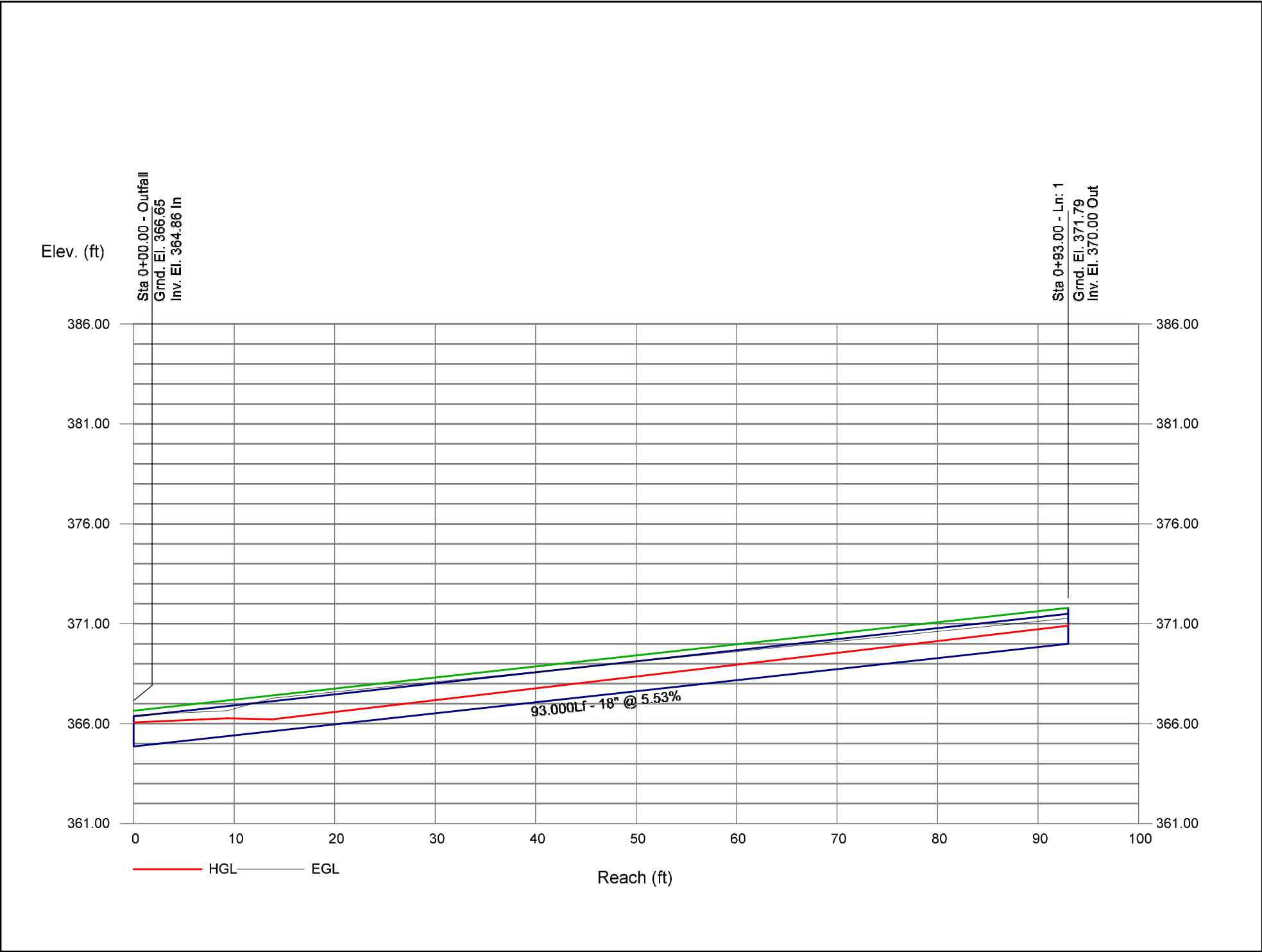
Page 1

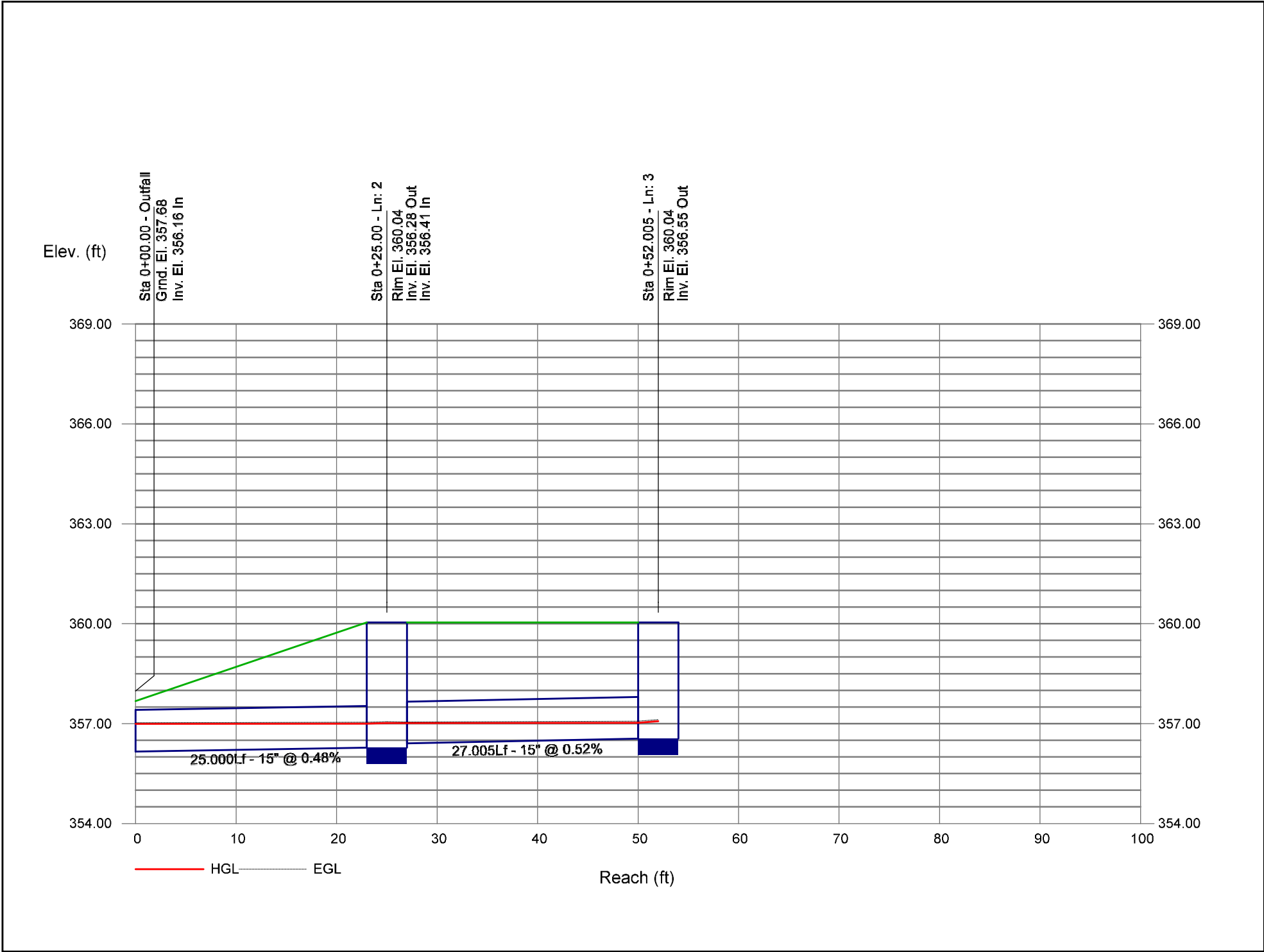
Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	FES 601	5.40	0.00	5.40	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CB 421	0.41	0.00	0.41	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.13	2.34	0.01	0.13	0.0	Off
3	CB 422	0.75	0.00	0.72	0.04	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.16	3.84	0.05	0.86	0.0	Off
4	FES 700	3.10	0.00	3.10	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Project File: Bypass.stm														Number of lines: 4				Run Date: 5/29/2025				
NOTES: Inlet N-Values = 0.016; Intensity = 74.09 / (Inlet time + 12.50) ^ 0.81; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.																						

Hydraulic Grade Line Computations

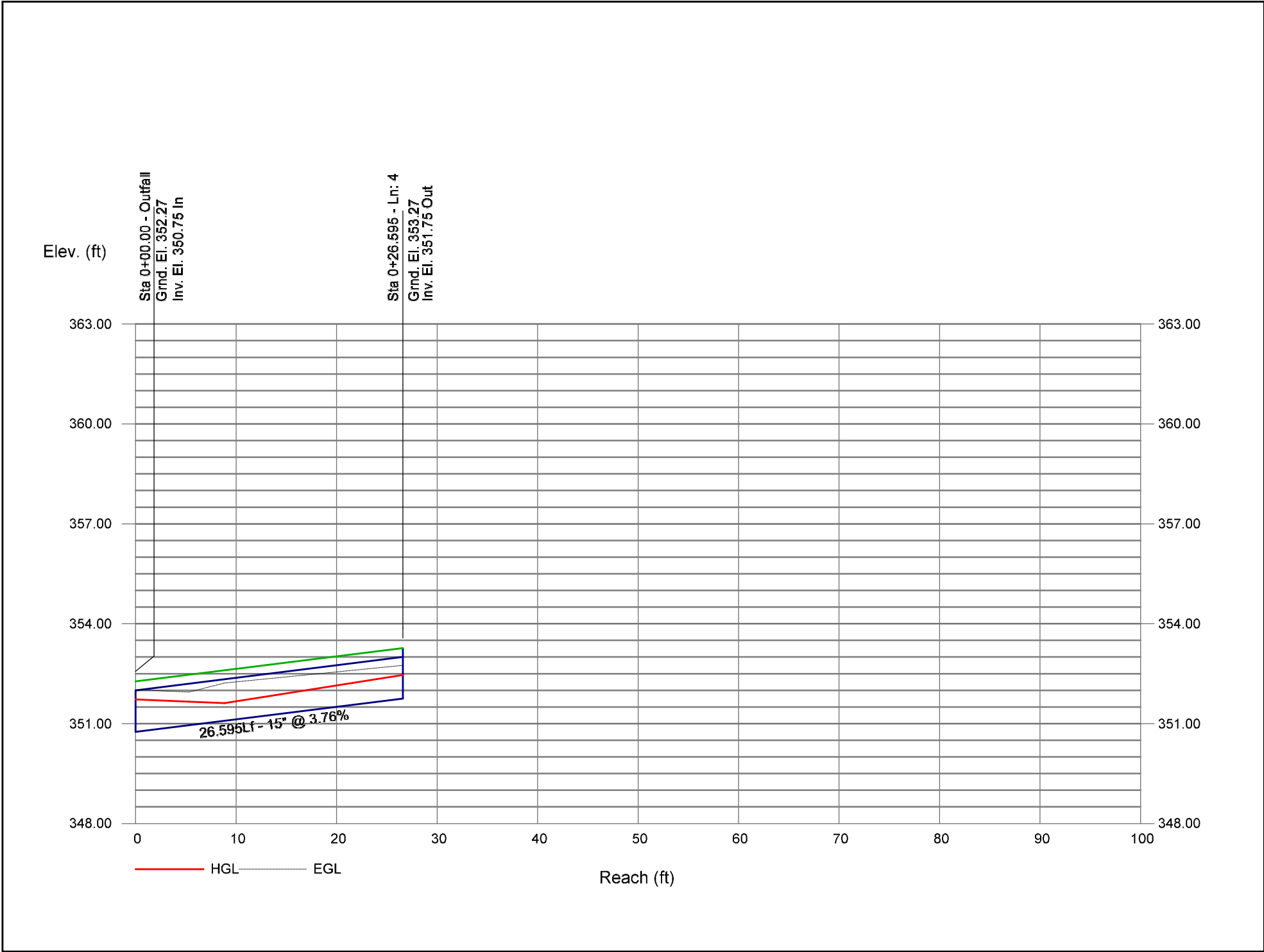
Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream									Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)			
1	18	5.40	364.86	366.06	1.20	1.10	3.57	0.38	366.43	0.000	93.000	370.00	370.90 j	0.90**	1.10	4.91	0.38	371.27	0.000	0.000	n/a	1.00	0.38	
2	15	1.15	356.16	357.00	0.84	0.87	1.32	0.03	357.02	0.051	25.000	356.28	357.00	0.72	0.73	1.57	0.04	357.04	0.080	0.066	0.016	0.50	0.02	
3	15	0.75	356.41	357.02	0.61	0.60	1.27	0.02	357.05	0.059	27.005	356.55	357.02	0.47	0.43	1.77	0.05	357.07	0.146	0.103	0.028	1.00	0.05	
4	15	3.10	350.75	351.73	0.98	0.72	3.01	0.29	352.02	0.000	26.595	351.75	352.46 j	0.71**	0.72	4.32	0.29	352.75	0.000	0.000	n/a	1.00	n/a	

Storm Sewer Profile





Storm Sewer Profile



Date: 5/29/2025

Storm Sewer Inventory Report

25-Year SCM #1 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	96.027	-10.617	Comb	0.00	0.60	0.57	10.0	380.50	0.58	381.06	18	Cir	0.013	1.03	385.25	Pipe - (97)
2	1	107.815	-39.453	Comb	0.00	0.15	0.57	10.0	381.26	1.00	382.34	15	Cir	0.013	1.46	387.03	Pipe - (95)
3	2	26.999	75.004	Comb	0.00	0.10	0.57	10.0	382.54	0.52	382.68	15	Cir	0.013	1.82	387.04	Pipe - (94)
4	3	59.003	-96.968	Comb	0.00	0.18	0.57	10.0	382.88	0.51	383.18	15	Cir	0.013	1.00	387.89	Pipe - (93)
5	3	139.352	-4.932	Hdwl	0.00	0.86	0.57	10.0	382.78	0.50	383.48	15	Cir	0.013	1.00	385.00	Pipe - (175)
6	End	229.120	-10.656	Comb	0.00	0.13	0.57	10.0	363.00	2.20	368.04	18	Cir	0.013	0.63	373.82	Pipe - (86)
7	6	27.000	21.423	Comb	0.00	0.24	0.57	10.0	368.14	0.52	368.28	18	Cir	0.013	1.22	373.87	Pipe - (85)
8	7	45.912	-51.157	Comb	0.00	0.20	0.57	10.0	368.48	3.27	369.98	18	Cir	0.013	1.62	375.04	Pipe - (84)
9	8	244.371	47.632	Comb	0.00	0.19	0.57	10.0	370.18	2.92	377.31	15	Cir	0.013	1.50	382.61	Pipe - (83)
10	9	27.044	-90.017	Comb	0.00	0.74	0.57	10.0	378.23	0.63	378.40	15	Cir	0.013	1.00	382.57	Pipe - (88)
11	9	252.428	1.235	Comb	0.00	0.20	0.57	10.0	377.41	2.98	384.92	15	Cir	0.013	1.00	390.04	Pipe - (82)
12	End	94.321	-74.896	Comb	0.00	0.42	0.57	10.0	369.84	0.50	370.31	15	Cir	0.013	1.00	374.00	Pipe - (92)
13	12	59.044	38.083	Comb	0.00	0.19	0.57	10.0	370.61	0.49	370.90	15	Cir	0.013	1.00	374.05	Pipe - (91)
14	8	27.000	-42.459	Comb	0.00	0.15	0.57	10.0	370.18	0.52	370.32	15	Cir	0.013	1.00	375.04	Pipe - (87)
15	End	41.513	27.855	DrGrt	0.00	4.20	0.57	10.0	363.50	0.51	363.71	24	Cir	0.013	1.00	366.55	Pipe - (89)
Project File: SCM#1.stm												Number of lines: 15				Date: 5/29/2025	

Structure Report

25-Year SCM #1 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 111	Combination	385.25	Rect	8.00	4.00	18	Cir	381.06	15	Cir	381.26
2	CB 114	Combination	387.03	Rect	4.00	4.00	15	Cir	382.34	15	Cir	382.54
3	CB 115	Combination	387.04	Rect	4.00	4.00	15	Cir	382.68	15 15	Cir Cir	382.88 382.78
4	CB 116	Combination	387.89	Rect	4.00	4.00	15	Cir	383.18			
5	FES 115	OpenHeadwall	385.00	n/a	n/a	n/a	15	Cir	383.48			
6	CB 101	Combination	373.82	Rect	4.00	4.00	18	Cir	368.04	18	Cir	368.14
7	CB 102	Combination	373.87	Rect	4.00	4.00	18	Cir	368.28	18	Cir	368.48
8	CB 103	Combination	375.04	Rect	4.00	4.00	18	Cir	369.98	15 15	Cir Cir	370.18 370.18
9	CB 105	Combination	382.61	Rect	4.00	4.00	15	Cir	377.31	15 15	Cir Cir	378.23 377.41
10	CB 106	Combination	382.57	Rect	8.00	4.00	15	Cir	378.40			
11	CB 107	Combination	390.04	Rect	4.00	4.00	15	Cir	384.92			
12	CB 121	Combination	374.00	Rect	8.00	4.00	15	Cir	370.31	15	Cir	370.61
13	CB 122	Combination	374.05	Rect	4.00	4.00	15	Cir	370.90			
14	CB 104	Combination	375.04	Rect	4.00	4.00	15	Cir	370.32			
15	DI 126	DropGrate	366.55	Rect	8.00	4.00	24	Cir	363.71			
Project File: SCM#1.stm							Number of Structures: 15			Run Date: 5/29/2025		

Storm Sewer Summary Report

25-Year SCM #1 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (97)	6.67	18	Cir	96.027	380.50	381.06	0.583	381.72	382.09	0.43	382.52	End	Combination
2	Pipe - (95)	4.61	15	Cir	107.815	381.26	382.34	1.002	382.52	383.21	n/a	383.21 j	1	Combination
3	Pipe - (94)	4.09	15	Cir	26.999	382.54	382.68	0.518	383.45	383.59	0.52	384.11	2	Combination
4	Pipe - (93)	0.68	15	Cir	59.003	382.88	383.18	0.508	384.11	384.11	0.01	384.12	3	Combination
5	Pipe - (175)	3.25	15	Cir	139.352	382.78	383.48	0.502	384.11	384.43	0.16	384.60	3	OpenHeadwall
6	Pipe - (86)	6.30	18	Cir	229.120	363.00	368.04	2.200	364.21	369.01	n/a	369.01 j	End	Combination
7	Pipe - (85)	5.87	18	Cir	27.000	368.14	368.28	0.518	369.13	369.27	0.42	369.70	6	Combination
8	Pipe - (84)	5.08	18	Cir	45.912	368.48	369.98	3.267	369.70	370.85	n/a	370.85 j	7	Combination
9	Pipe - (83)	3.97	15	Cir	244.371	370.18	377.31	2.918	370.85	378.12	n/a	378.12	8	Combination
10	Pipe - (88)	2.80	15	Cir	27.044	378.23	378.40	0.629	378.89	379.07	0.27	379.07	9	Combination
11	Pipe - (82)	0.76	15	Cir	252.428	377.41	384.92	2.975	378.12	385.26	n/a	385.26 j	9	Combination
12	Pipe - (92)	2.27	15	Cir	94.321	369.84	370.31	0.498	370.75	370.93	0.21	371.15	End	Combination
13	Pipe - (91)	0.72	15	Cir	59.044	370.61	370.90	0.491	371.15	371.24	0.11	371.35	12	Combination
14	Pipe - (87)	0.57	15	Cir	27.000	370.18	370.32	0.519	370.85	370.85	0.02	370.87	8	Combination
15	Pipe - (89)	15.89	24	Cir	41.513	363.50	363.71	0.506	365.18	365.37	0.51	365.87	End	DropGrate

Project File: SCM#1.stm

Number of lines: 15

Run Date: 5/29/2025

NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.

Inlet Report

25-Year SCM #1 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 111	2.27	0.04	2.31	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.23	7.49	0.23	7.49	0.0	Off
2	CB 114	0.57	0.00	0.54	0.03	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.16	4.00	0.05	0.89	0.0	1
3	CB 115	0.38	0.05	0.42	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.15	3.30	0.03	0.57	0.0	1
4	CB 116	0.68	0.00	0.63	0.05	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.17	4.49	0.07	1.12	0.0	3
5	FES 115	3.25	0.00	3.25	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	6.00	0.330	0.330	0.013	0.00	0.00	0.00	0.00	0.0	Off
6	CB 101	0.49	0.00	0.49	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.13	2.28	0.00	0.00	0.0	Off
7	CB 102	0.91	0.00	0.91	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.17	4.65	0.17	4.65	0.0	Off
8	CB 103	0.76	0.00	0.76	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.61	0.02	0.26	0.0	7
9	CB 105	0.72	0.00	0.72	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.49	0.01	0.21	0.0	8
10	CB 106	2.80	0.00	2.31	0.49	Comb	6.0	1.50	0.00	6.00	2.50	0.054	2.00	0.060	0.020	0.013	0.20	6.14	0.11	1.88	0.0	14
11	CB 107	0.76	0.00	0.75	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.13	2.61	0.02	0.26	0.0	9
12	CB 121	1.59	0.03	1.62	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.19	5.71	0.19	5.71	0.0	Off
13	CB 122	0.72	0.00	0.69	0.03	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.15	3.71	0.05	0.80	0.0	12
14	CB 104	0.57	0.49	1.03	0.04	Comb	6.0	1.50	0.00	3.00	2.50	0.054	2.00	0.060	0.020	0.013	0.15	3.44	0.04	0.70	0.0	Off
15	DI 126	15.89	0.00	15.89	0.00	DrGrt	0.0	0.00	8.00	4.00	2.00	Sag	4.00	0.330	0.330	0.013	0.58	7.51	0.58	7.51	0.0	Off

Project File: SCM#1.stm

Number of lines: 15

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Hydraulic Grade Line Computations

25-Year SCM #1 Report

Page 1

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	18	6.67	380.50	381.72	1.22	1.54	4.33	0.29	382.01	0.409	96.027	381.06	382.09	1.03	1.29	5.18	0.42	382.50	0.611	0.510	0.490	1.03	0.43
2	15	4.61	381.26	382.52	1.25	0.91	3.76	0.22	382.73	0.510	107.815	382.34	383.21 j	0.87**	0.91	5.06	0.40	383.61	0.739	0.625	n/a	1.46	0.58
3	15	4.09	382.54	383.45	0.91*	0.96	4.27	0.28	383.73	0.518	26.999	382.68	383.59	0.91	0.96	4.27	0.28	383.87	0.518	0.518	0.140	1.82	0.52
4	15	0.68	382.88	384.11	1.23	1.22	0.56	0.00	384.11	0.010	59.003	383.18	384.11	0.93	0.98	0.70	0.01	384.12	0.014	0.012	0.007	1.00	0.01
5	15	3.25	382.78	384.11	1.25	1.23	2.65	0.11	384.22	0.254	139.352	383.48	384.43	0.95	1.00	3.24	0.16	384.60	0.294	0.274	0.382	1.00	0.16
6	18	6.30	363.00	364.21	1.21	1.21	4.12	0.42	364.63	0.000	229.120	368.04	369.01 j	0.97**	1.21	5.22	0.42	369.43	0.000	0.000	n/a	0.63	n/a
7	18	5.87	368.14	369.13	0.99*	1.24	4.73	0.35	369.48	0.518	27.000	368.28	369.27	0.99	1.24	4.73	0.35	369.62	0.520	0.519	0.140	1.22	0.42
8	18	5.08	368.48	369.70	1.22	1.06	3.31	0.36	370.06	0.000	45.912	369.98	370.85 j	0.87**	1.06	4.80	0.36	371.21	0.000	0.000	n/a	1.62	0.58
9	15	3.97	370.18	370.85	0.67	0.67	5.97	0.35	371.20	0.000	244.371	377.31	378.12	0.81**	0.84	4.75	0.35	378.47	0.000	0.000	n/a	1.50	n/a
10	15	2.80	378.23	378.89	0.66*	0.66	4.26	0.27	379.16	0.000	27.044	378.40	379.07	0.67**	0.67	4.17	0.27	379.34	0.000	0.000	n/a	1.00	0.27
11	15	0.76	377.41	378.12	0.71	0.27	1.06	0.12	378.24	0.000	252.428	384.92	385.26 j	0.34**	0.27	2.80	0.12	385.38	0.000	0.000	n/a	1.00	0.12
12	15	2.27	369.84	370.75	0.91	0.96	2.37	0.09	370.84	0.160	94.321	370.31	370.93	0.62	0.61	3.71	0.21	371.15	0.499	0.329	0.311	1.00	0.21
13	15	0.72	370.61	371.15	0.54	0.26	1.42	0.03	371.18	0.084	59.044	370.90	371.24	0.34**	0.27	2.70	0.11	371.35	0.492	0.288	0.170	1.00	0.11
14	15	0.57	370.18	370.85	0.67	0.67	0.85	0.01	370.86	0.025	27.000	370.32	370.85	0.53	0.49	1.15	0.02	370.87	0.055	0.040	0.011	1.00	0.02
15	24	15.89	363.50	365.18	1.68	2.82	5.64	0.49	365.67	0.473	41.513	363.71	365.37	1.66	2.78	5.71	0.51	365.87	0.485	0.479	0.199	1.00	0.51

Project File: SCM#1.stm

Number of lines: 15

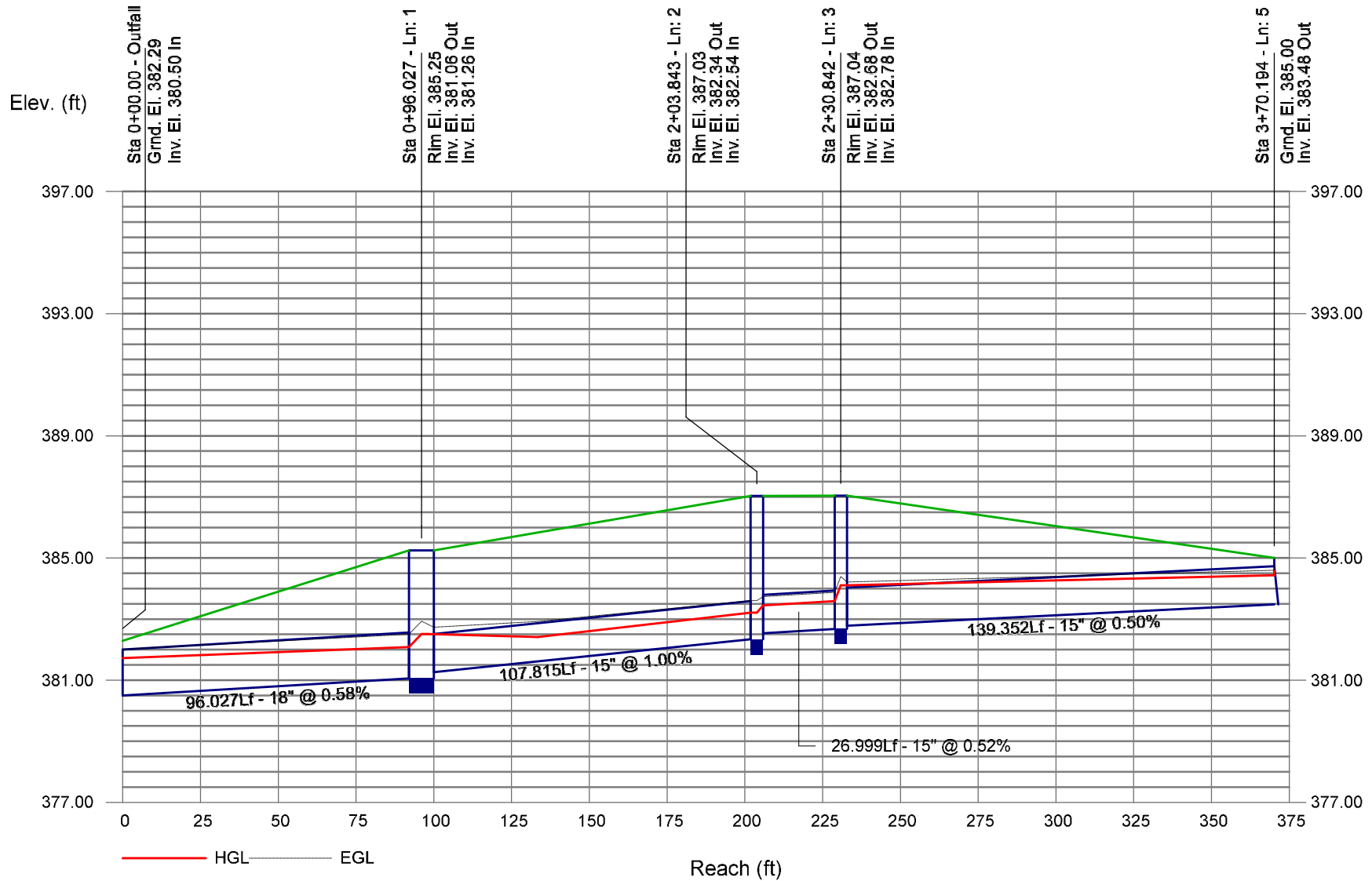
Run Date: 5/29/2025

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

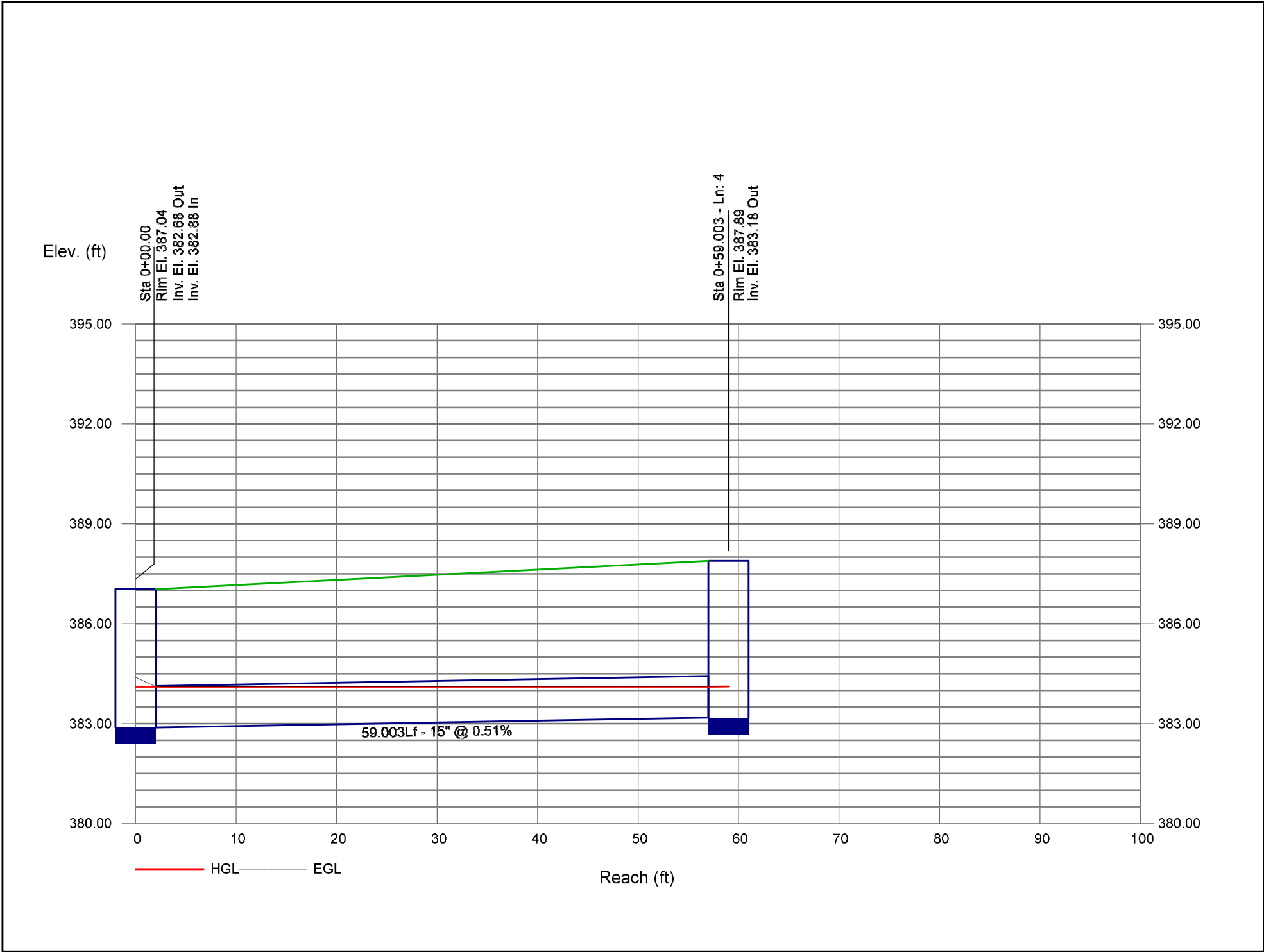
Storm Sewer Profile

25-Year SCM #1 Profile 1-5

Proj. file: SCM#1.stm

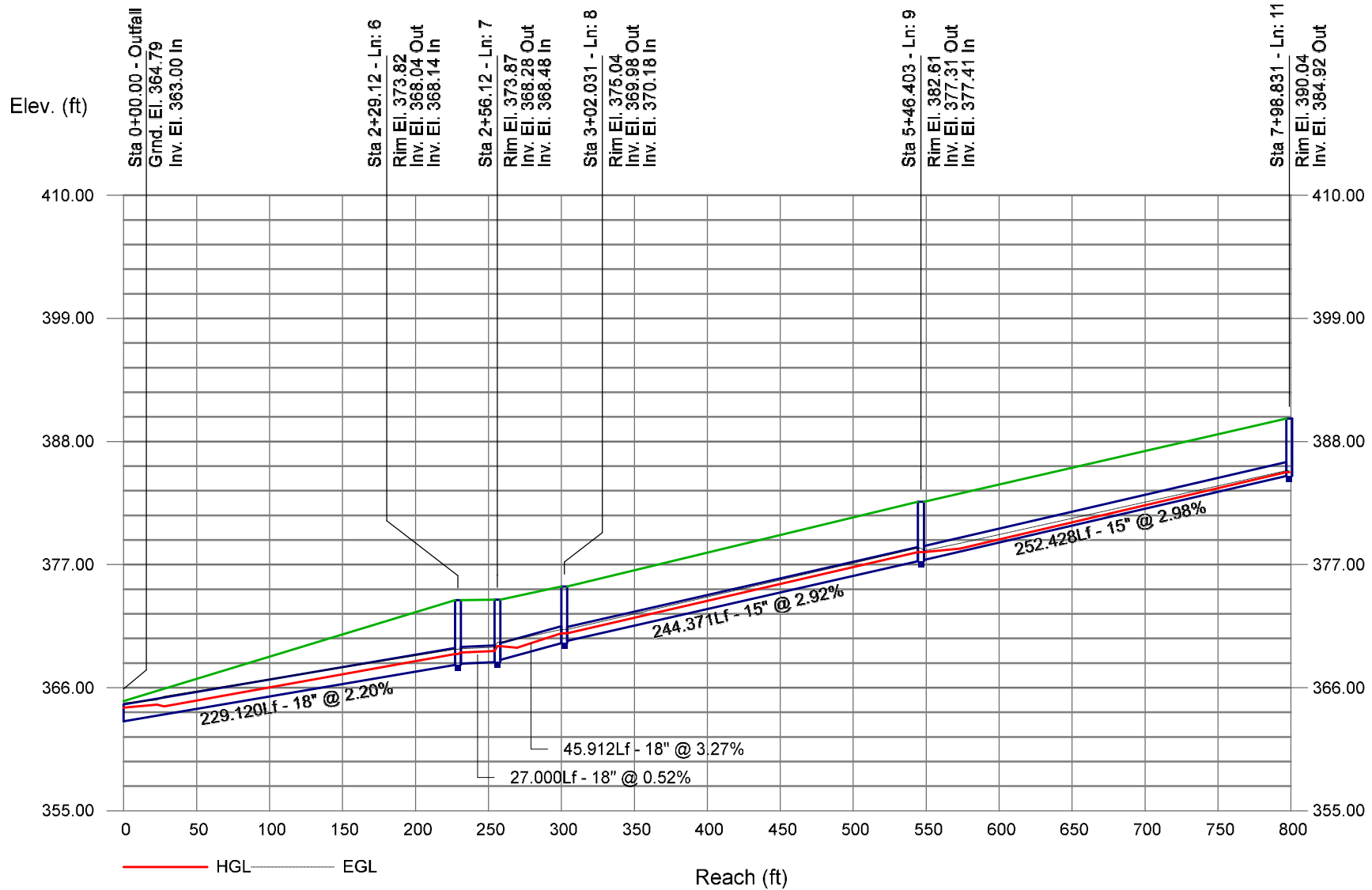


Storm Sewer Profile

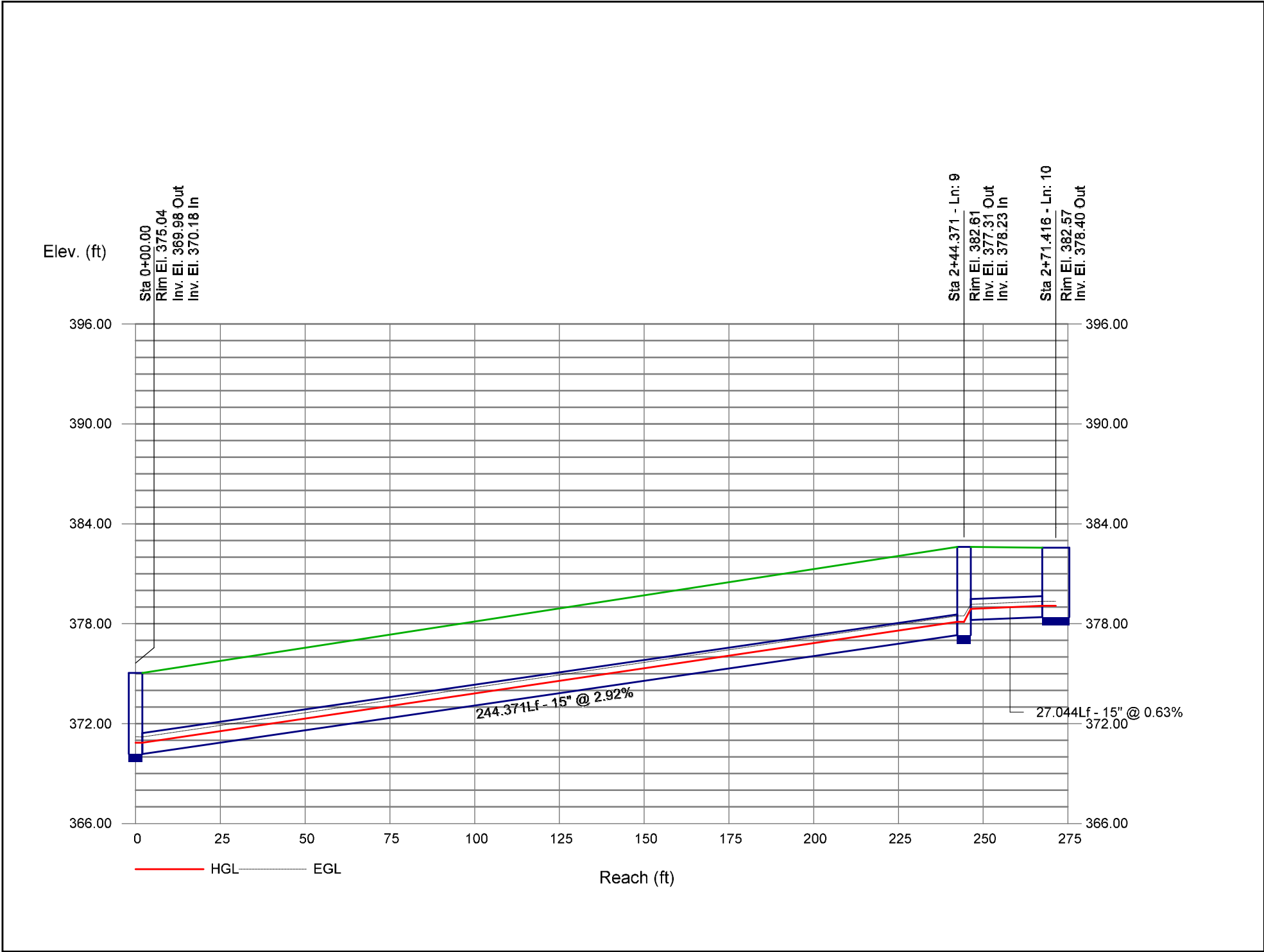


Storm Sewer Profile

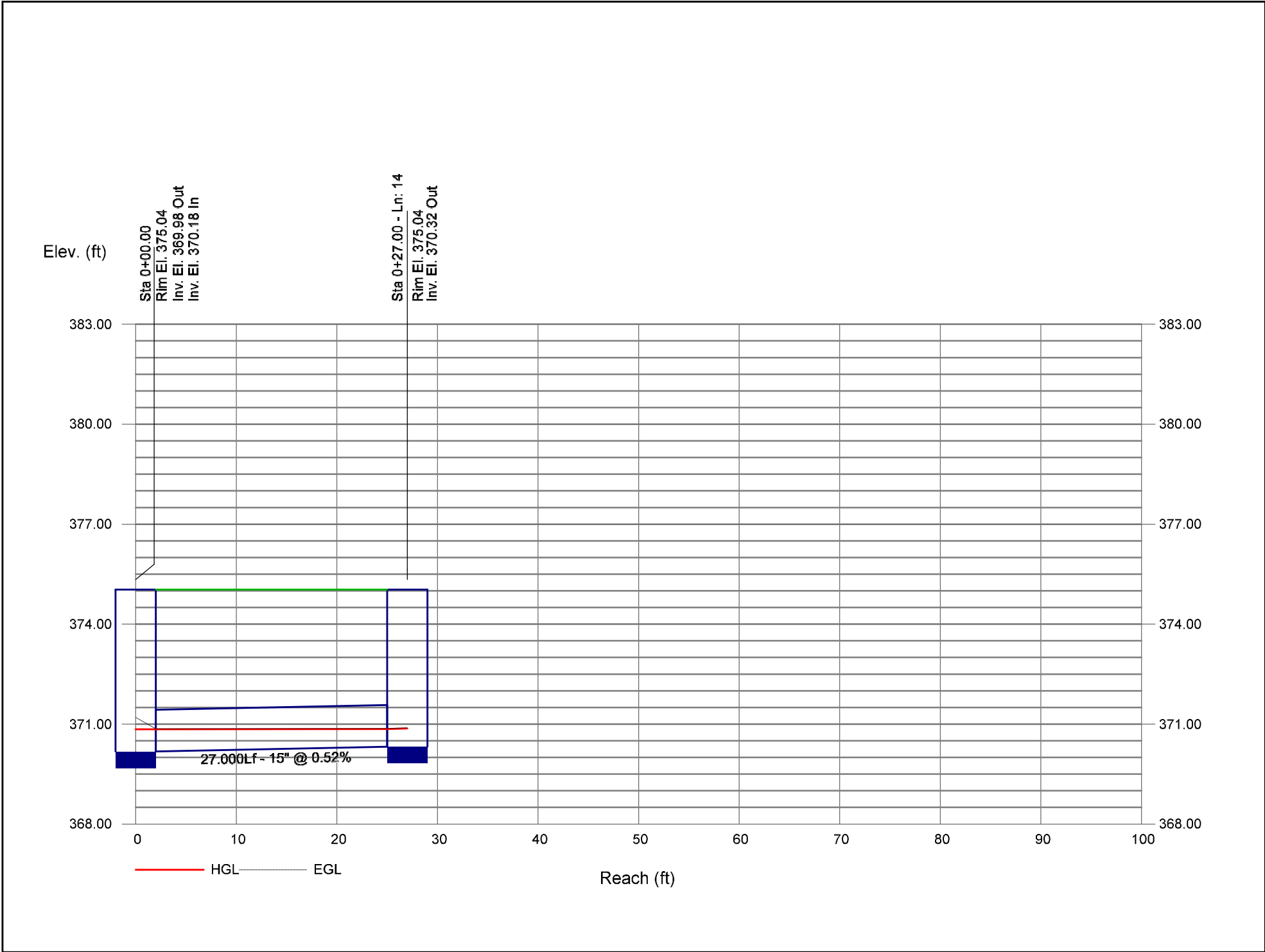
25-Year SCM #1 Profile 6-11 Proj. file: SCM#1.stm



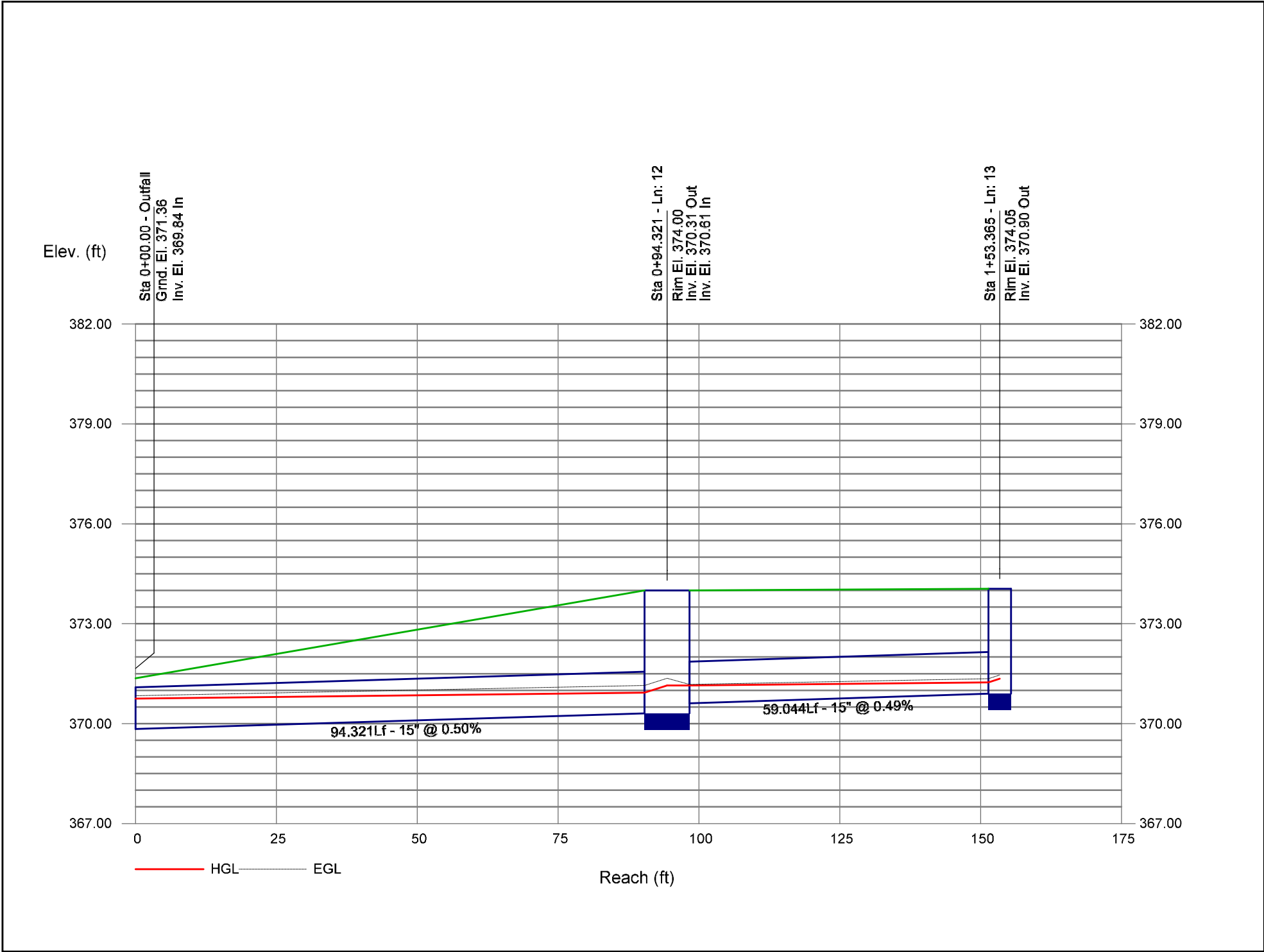
Storm Sewer Profile



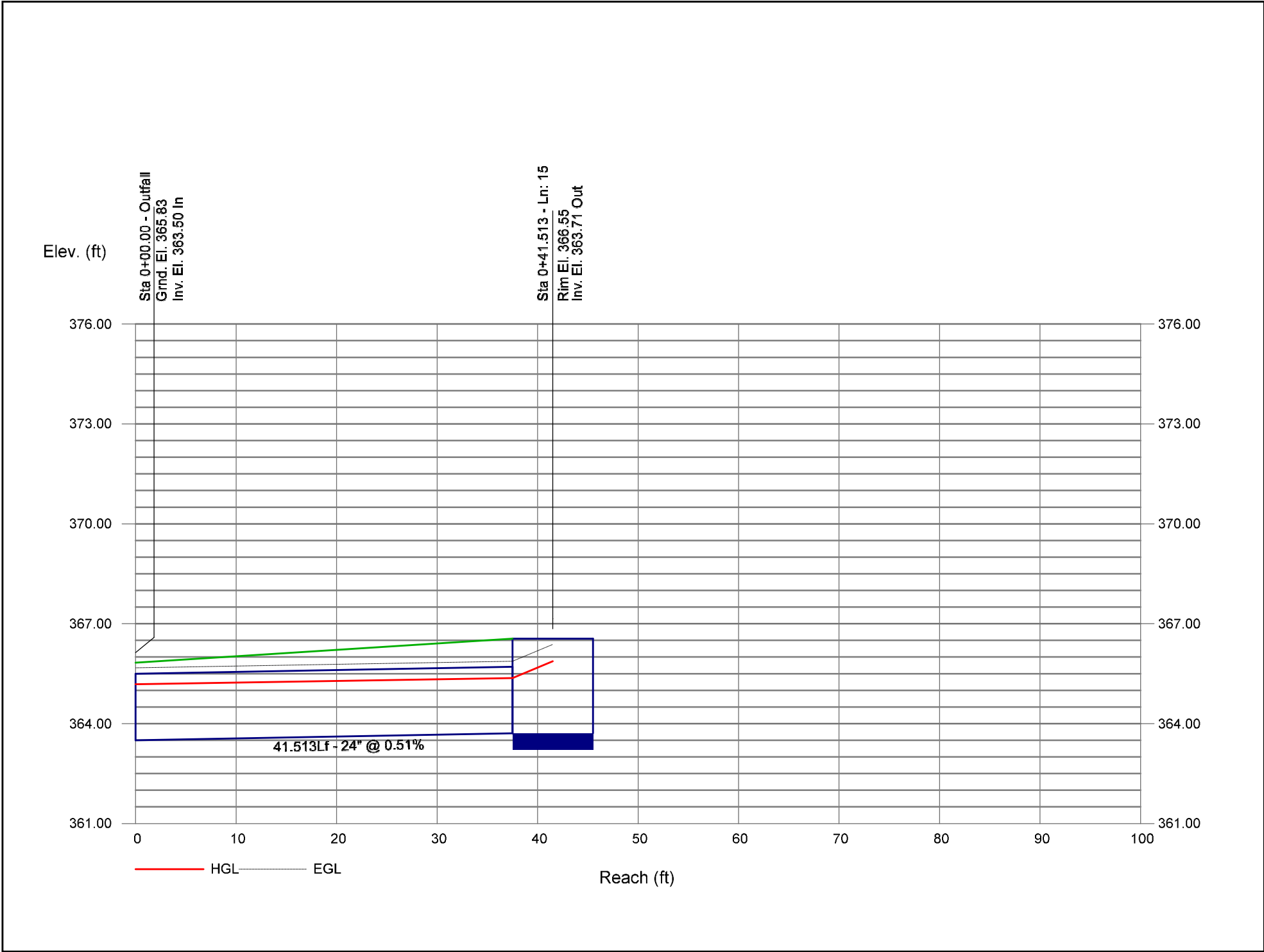
Storm Sewer Profile



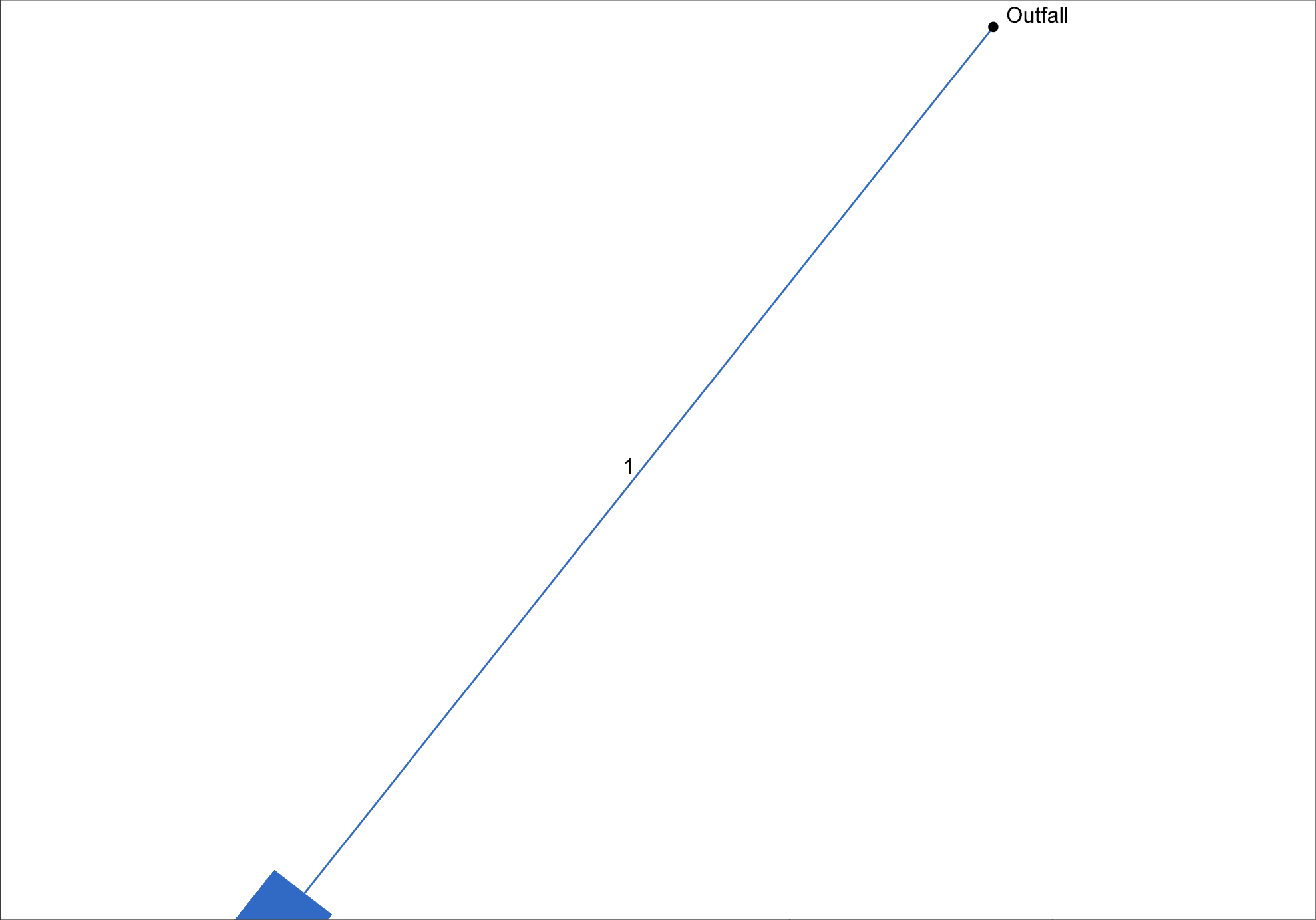
Storm Sewer Profile



Storm Sewer Profile



Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan 25-Year SCM #2 Report



Project File: SCM#2.stm	Number of lines: 1	Date: 5/29/2025
-------------------------	--------------------	-----------------

Storm Sewer Inventory Report

25-Year SCM #2 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	64.790	128.444	DrGrt	0.00	0.59	0.57	10.0	361.50	1.16	362.25	18	Cir	0.013	1.00	366.26	Pipe - (164)
Project File: SCM#2.stm												Number of lines: 1			Date: 5/29/2025		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	YI 204	DropGrate	366.26	Rect	4.00	4.00	18	Cir	362.25			
Project File: SCM#2.stm							Number of Structures: 1			Run Date: 5/29/2025		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (164)	2.23	18	Cir	64.790	361.50	362.25	1.158	362.52	362.81	n/a	362.81 j	End	DropGrate
Project File: SCM#2.stm									Number of lines: 1			Run Date: 5/29/2025		
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

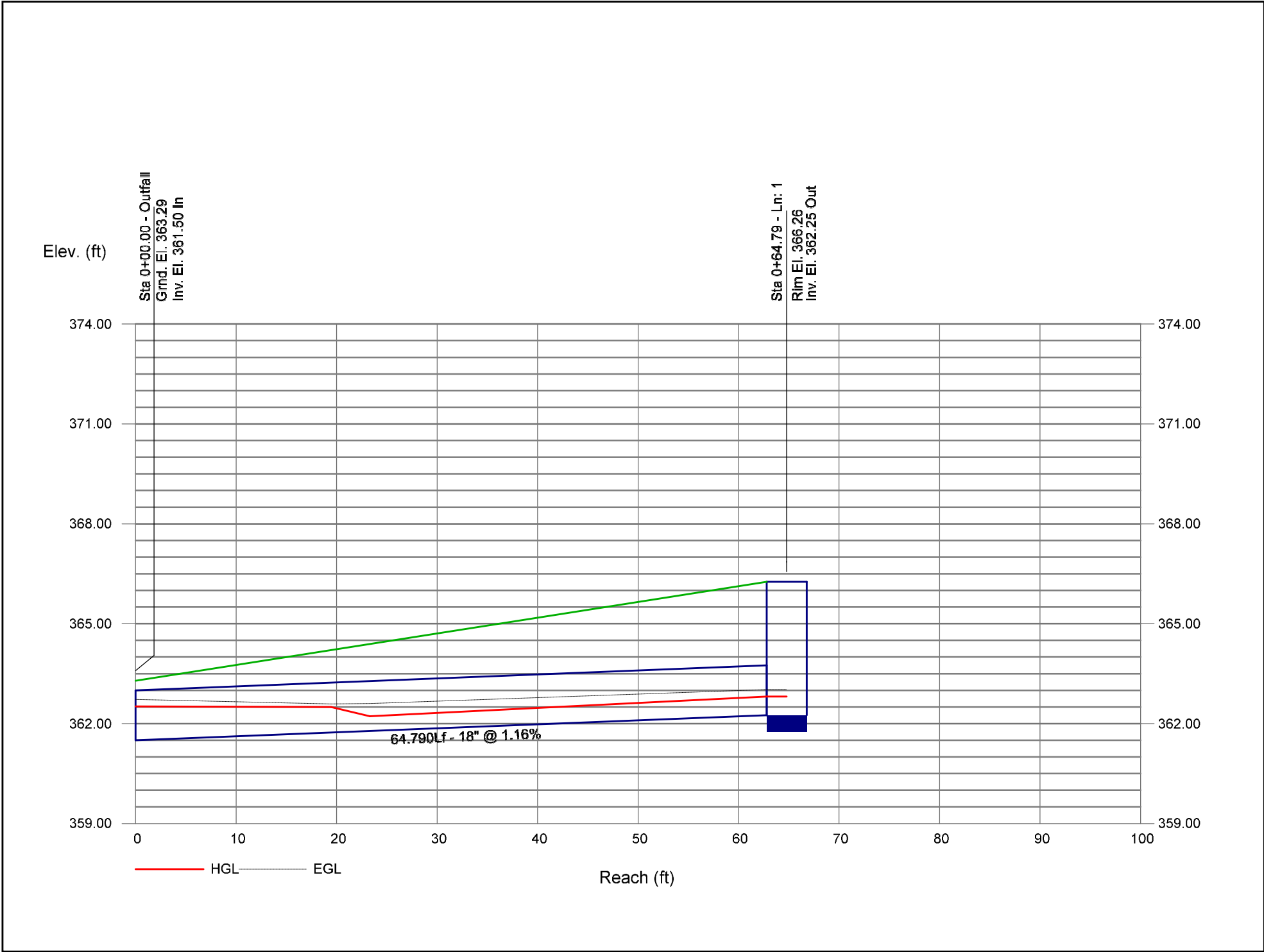
25-Year SCM #2 Report

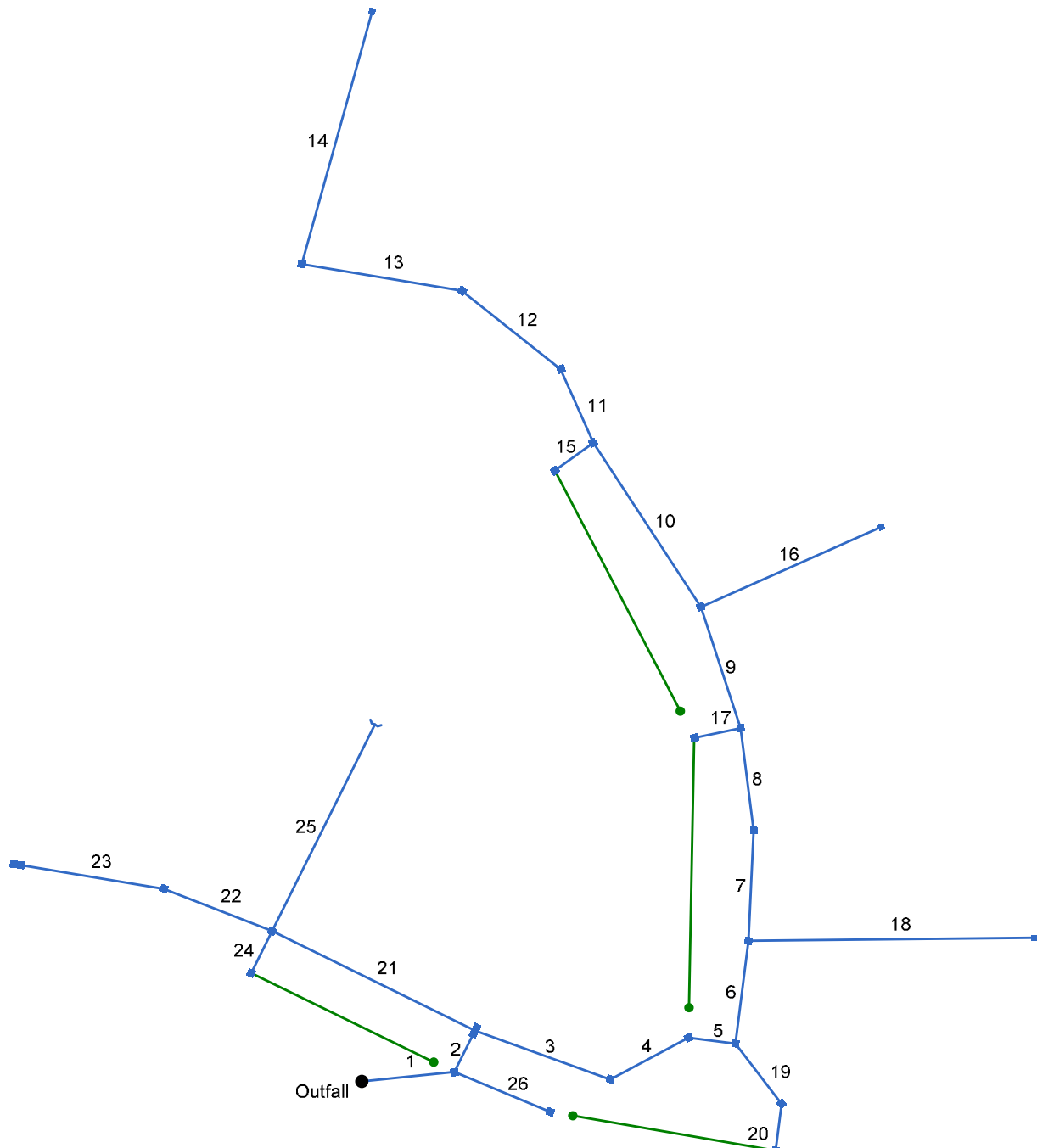
Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YI 204	2.23	0.00	2.23	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.21	7.24	0.21	7.24	0.0	Off
Project File: SCM#2.stm														Number of lines: 1				Run Date: 5/29/2025				
NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.																						

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	18	2.23	361.50	362.52	1.02	0.61	1.74	0.21	362.73	0.000	64.790	362.25	362.81 j	0.56**	0.61	3.67	0.21	363.02	0.000	0.000	n/a	1.00	0.21
Project File: SCM#2.stm														Number of lines: 1					Run Date: 5/29/2025				
Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box																							





Storm Sewer Inventory Report

25-Year SCM #3 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	53.315	-5.817	Comb	0.00	0.12	0.57	10.0	360.94	0.51	361.21	36	Cir	0.013	1.31	366.14	Pipe - (51)
2	1	26.578	-57.823	Comb	0.00	0.42	0.57	10.0	361.31	0.49	361.44	36	Cir	0.013	1.50	366.04	Pipe - (50)
3	2	82.337	83.564	Comb	0.00	0.08	0.57	10.0	361.64	0.50	362.05	30	Cir	0.013	1.17	366.98	Pipe - (49) (1)
4	3	50.862	-48.069	Comb	0.00	0.12	0.57	10.0	362.25	0.49	362.50	24	Cir	0.013	0.95	367.04	Pipe - (68)
5	4	27.000	35.381	Comb	0.00	0.25	0.57	10.0	362.70	0.52	362.84	24	Cir	0.013	1.70	367.09	Pipe - (67)
6	5	59.521	-90.000	Comb	0.00	0.08	0.57	10.0	363.34	2.74	364.97	24	Cir	0.013	1.49	370.01	Pipe - (66)
7	6	63.410	-4.578	Comb	0.00	0.07	0.57	10.0	365.17	2.96	367.05	18	Cir	0.013	0.50	373.03	Pipe - (65)
8	7	59.348	-9.943	Comb	0.00	0.09	0.57	10.0	367.25	2.66	368.83	18	Cir	0.013	1.50	374.74	Pipe - (64)
9	8	73.131	-10.753	Comb	0.00	0.22	0.57	10.0	369.03	1.55	370.16	18	Cir	0.013	1.49	375.97	Pipe - (63)
10	9	112.661	-15.106	Comb	0.00	0.33	0.57	10.0	370.66	1.00	371.79	18	Cir	0.013	1.50	376.53	Pipe - (61) (2)
11	10	46.249	9.310	Comb	0.00	0.11	0.57	10.0	371.99	0.99	372.45	18	Cir	0.013	0.78	377.02	Pipe - (61)
12	11	72.180	-27.640	Comb	0.00	0.18	0.57	10.0	373.45	0.76	374.00	15	Cir	0.013	0.81	378.02	Pipe - (60) (1)
13	12	92.962	-29.001	Comb	0.00	0.09	0.57	10.0	374.60	0.49	375.06	15	Cir	0.013	1.50	378.78	Pipe - (59)
14	13	150.515	95.984	DrGrt	0.00	0.82	0.57	10.0	375.27	0.50	376.02	15	Cir	0.013	1.00	379.46	Pipe - (177)
15	10	27.184	-92.768	Comb	0.00	0.24	0.57	10.0	372.86	0.52	373.00	15	Cir	0.013	1.00	377.00	Pipe - (193)
16	9	112.849	84.063	DrGrt	0.00	0.82	0.57	10.0	371.88	1.18	373.21	15	Cir	0.013	1.00	376.09	Pipe - (178)
17	8	27.000	-94.816	Comb	0.00	0.17	0.57	10.0	369.94	0.67	370.12	15	Cir	0.013	1.00	374.73	Pipe - (71)
18	6	163.438	82.157	DrGrt	0.00	1.00	0.57	10.0	365.80	1.00	367.43	15	Cir	0.013	1.00	370.35	Pipe - (70)
19	5	43.537	45.555	Comb	0.00	0.12	0.57	10.0	363.44	0.51	363.66	24	Cir	0.013	1.12	368.91	Pipe - (56) (1)
20	19	27.000	44.445	Comb	0.00	0.15	0.57	10.0	364.58	1.15	364.89	15	Cir	0.013	1.00	368.93	Pipe - (56)
21	2	129.465	-90.137	Comb	0.00	0.13	0.57	10.0	361.78	0.50	362.43	24	Cir	0.013	2.25	367.00	Pipe - (49)
22	21	66.365	-4.879	Comb	0.00	0.16	0.57	10.0	363.00	0.50	363.33	24	Cir	0.013	0.50	367.90	Pipe - (48)
23	22	85.141	-11.831	Comb	0.00	0.43	0.57	10.0	363.53	0.51	363.96	18	Cir	0.013	1.00	368.63	Pipe - (47)
Project File: SCM#3.stm												Number of lines: 26				Date: 5/29/2025	

Storm Sewer Inventory Report

25-Year SCM #3 Report

Page 2

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	21	27.000	-90.000	Comb	0.00	0.27	0.57	10.0	363.50	0.52	363.64	18	Cir	0.013	1.00	367.03	Pipe - (54)
25	21	132.305	90.159	Hdwl	0.00	2.48	0.57	10.0	363.12	0.50	363.78	24	Cir	0.013	1.00	366.12	Pipe - (53)
26	1	59.390	28.452	Comb	0.00	0.07	0.57	10.0	362.30	0.51	362.60	24	Cir	0.013	1.00	366.75	Pipe - (58)
Project File: SCM#3.stm												Number of lines: 26				Date: 5/29/2025	

Structure Report

25-Year SCM #3 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 301	Combination	366.14	Rect	4.00	4.00	36	Cir	361.21	36 24	Cir Cir	361.31 362.30
2	CB 302	Combination	366.04	Rect	8.00	4.00	36	Cir	361.44	30 24	Cir Cir	361.64 361.78
3	CB 304	Combination	366.98	Rect	4.00	4.00	30	Cir	362.05	24	Cir	362.25
4	CB 307	Combination	367.04	Rect	4.00	4.00	24	Cir	362.50	24	Cir	362.70
5	CB 308	Combination	367.09	Rect	4.00	4.00	24	Cir	362.84	24 24	Cir Cir	363.34 363.44
6	CB 309	Combination	370.01	Rect	4.00	4.00	24	Cir	364.97	18 15	Cir Cir	365.17 365.80
7	CB 311	Combination	373.03	Rect	4.00	4.00	18	Cir	367.05	18	Cir	367.25
8	CB 312	Combination	374.74	Rect	4.00	4.00	18	Cir	368.83	18 15	Cir Cir	369.03 369.94
9	CB 315	Combination	375.97	Rect	4.00	4.00	18	Cir	370.16	18 15	Cir Cir	370.66 371.88
10	CB 317	Combination	376.53	Rect	4.00	4.00	18	Cir	371.79	18 15	Cir Cir	371.99 372.86
11	CB 319	Combination	377.02	Rect	4.00	4.00	18	Cir	372.45	15	Cir	373.45
12	CB 321	Combination	378.02	Rect	4.00	4.00	15	Cir	374.00	15	Cir	374.60
13	CB 325	Combination	378.78	Rect	4.00	4.00	15	Cir	375.06	15	Cir	375.27
14	YI 325A	DropGrate	379.46	Rect	3.00	3.00	15	Cir	376.02			
15	CB 318	Combination	377.00	Rect	4.00	4.00	15	Cir	373.00			
16	YI 316B	DropGrate	376.09	Rect	3.00	3.00	15	Cir	373.21			
17	CB 313	Combination	374.73	Rect	4.00	4.00	15	Cir	370.12			
18	YI 310	DropGrate	370.35	Rect	3.00	3.00	15	Cir	367.43			
19	CB 306	Combination	368.91	Rect	4.00	4.00	24	Cir	363.66	15	Cir	364.58
Project File: SCM#3.stm							Number of Structures: 26			Run Date: 5/29/2025		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
20	CB 305	Combination	368.93	Rect	4.00	4.00	15	Cir	364.89			
21	CB 330	Combination	367.00	Rect	4.00	4.00	24	Cir	362.43	24 18 24	Cir Cir Cir	363.00 363.50 363.12
22	CB 333	Combination	367.90	Rect	4.00	4.00	24	Cir	363.33	18	Cir	363.53
23	CB 334	Combination	368.63	Rect	8.00	4.00	18	Cir	363.96			
24	CB 332	Combination	367.03	Rect	4.00	4.00	18	Cir	363.64			
25	FES 331	OpenHeadwall	366.12	n/a	n/a	n/a	24	Cir	363.78			
26	CB 303	Combination	366.75	Rect	4.00	4.00	24	Cir	362.60			
Project File: SCM#3.stm							Number of Structures: 26			Run Date: 5/29/2025		

Storm Sewer Summary Report

25-Year SCM #3 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (51)	30.84	36	Cir	53.315	360.94	361.21	0.506	363.29	363.01	n/a	363.01	End	Combination
2	Pipe - (50)	30.25	36	Cir	26.578	361.31	361.44	0.489	363.07	363.22	n/a	363.22	1	Combination
3	Pipe - (49) (1)	17.05	30	Cir	82.337	361.64	362.05	0.498	363.22	363.45	n/a	363.45	2	Combination
4	Pipe - (68)	16.85	24	Cir	50.862	362.25	362.50	0.492	364.04	364.29	0.48	364.77	3	Combination
5	Pipe - (67)	16.48	24	Cir	27.000	362.70	362.84	0.518	364.77*	364.91*	0.73	365.64	4	Combination
6	Pipe - (66)	14.80	24	Cir	59.521	363.34	364.97	2.739	365.64	366.36	n/a	366.36 j	5	Combination
7	Pipe - (65)	11.07	18	Cir	63.410	365.17	367.05	2.965	366.36	368.32	n/a	368.32	6	Combination
8	Pipe - (64)	10.87	18	Cir	59.348	367.25	368.83	2.662	368.32	370.09	n/a	370.09	7	Combination
9	Pipe - (63)	10.00	18	Cir	73.131	369.03	370.16	1.545	370.09	371.38	n/a	371.38	8	Combination
10	Pipe - (61) (2)	6.37	18	Cir	112.661	370.66	371.79	1.003	371.50	372.76	n/a	372.76	9	Combination
11	Pipe - (61)	4.34	18	Cir	46.249	371.99	372.45	0.995	372.76	373.25	n/a	373.25	10	Combination
12	Pipe - (60) (1)	3.98	15	Cir	72.180	373.45	374.00	0.762	374.22	374.81	n/a	374.81	11	Combination
13	Pipe - (59)	3.36	15	Cir	92.962	374.60	375.06	0.495	375.40	375.86	0.38	376.24	12	Combination
14	Pipe - (177)	3.10	15	Cir	150.515	375.27	376.02	0.498	376.24	376.74	0.28	377.02	13	DropGrate
15	Pipe - (193)	0.91	15	Cir	27.184	372.86	373.00	0.515	373.24	373.38	n/a	373.51 j	10	Combination
16	Pipe - (178)	3.10	15	Cir	112.849	371.88	373.21	1.179	372.46	373.92	n/a	373.92	9	DropGrate
17	Pipe - (71)	0.64	15	Cir	27.000	369.94	370.12	0.667	370.24	370.43	0.11	370.43	8	Combination
18	Pipe - (70)	3.78	15	Cir	163.438	365.80	367.43	0.997	366.49	368.22	n/a	368.22	6	DropGrate
19	Pipe - (56) (1)	1.01	24	Cir	43.537	363.44	363.66	0.505	365.64	365.64	0.00	365.64	5	Combination
20	Pipe - (56)	0.57	15	Cir	27.000	364.58	364.89	1.148	365.64	365.18	0.10	365.18	19	Combination
21	Pipe - (49)	12.70	24	Cir	129.465	361.78	362.43	0.502	363.22	363.74	1.19	364.93	2	Combination
22	Pipe - (48)	2.20	24	Cir	66.365	363.00	363.33	0.497	364.93	363.85	0.09	363.85	21	Combination
23	Pipe - (47)	1.63	18	Cir	85.141	363.53	363.96	0.505	364.01	364.44	0.17	364.44	22	Combination
24	Pipe - (54)	1.02	18	Cir	27.000	363.50	363.64	0.519	364.93	364.02	n/a	364.02	21	Combination

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

25-Year SCM #3 Report

Page 2

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - (53)	9.38	24	Cir	132.305	363.12	363.78	0.499	364.93	365.09	0.29	365.38	21	OpenHeadwall
26	Pipe - (58)	0.26	24	Cir	59.390	362.30	362.60	0.505	363.01	363.01	0.01	363.02	1	Combination
Project File: SCM#3.stm									Number of lines: 26			Run Date: 5/29/2025		
NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.														

Inlet Report

25-Year SCM #3 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 301	0.45	0.19	0.64	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.15	3.46	0.15	3.46	0.0	Off
2	CB 302	1.59	0.00	1.59	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.19	5.62	0.19	5.62	0.0	Off
3	CB 304	0.30	0.00	0.30	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.13	2.43	0.01	0.15	0.0	2
4	CB 307	0.45	0.01	0.47	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	2.75	0.14	2.75	0.0	Off
5	CB 308	0.95	0.00	0.95	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.18	4.80	0.18	4.80	0.0	Off
6	CB 309	0.30	0.00	0.30	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.10	1.70	0.00	0.00	0.0	Off
7	CB 311	0.26	0.00	0.26	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.10	1.61	0.00	0.00	0.0	6
8	CB 312	0.34	0.17	0.51	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.12	2.18	0.00	0.00	0.0	7
9	CB 315	0.83	0.23	0.90	0.17	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.20	5.76	0.10	1.72	0.0	8
10	CB 317	1.25	0.00	1.02	0.23	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.21	6.25	0.12	1.94	0.0	9
11	CB 319	0.42	0.00	0.42	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.070	2.00	0.060	0.020	0.013	0.10	1.68	0.00	0.00	0.0	10
12	CB 321	0.68	0.00	0.68	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.070	2.00	0.060	0.020	0.013	0.12	2.06	0.00	0.00	0.0	11
13	CB 325	0.34	0.00	0.34	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.12	1.97	0.00	0.00	0.0	12
14	YI 325A	3.10	0.00	3.10	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.26	7.55	0.26	7.55	0.0	Off
15	CB 318	0.91	0.00	0.79	0.12	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.19	5.29	0.09	1.49	0.0	17
16	YI 316B	3.10	0.00	3.10	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.26	7.55	0.26	7.55	0.0	Off
17	CB 313	0.64	0.12	0.74	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.035	2.00	0.060	0.020	0.013	0.14	3.14	0.03	0.54	0.0	4
18	YI 310	3.78	0.00	3.78	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.29	7.77	0.29	7.77	0.0	Off
19	CB 306	0.45	0.00	0.45	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	2.10	0.00	0.00	0.0	5
20	CB 305	0.57	0.00	0.57	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.13	2.62	0.02	0.26	0.0	26
21	CB 330	0.49	0.11	0.55	0.06	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.18	5.12	0.08	1.31	0.0	Off
22	CB 333	0.61	0.19	0.69	0.11	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.20	5.95	0.10	1.68	0.0	21
23	CB 334	1.63	0.00	1.43	0.19	Comb	6.0	1.50	0.00	6.00	2.50	0.005	2.00	0.060	0.020	0.013	0.25	8.34	0.12	2.21	0.0	22

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Inlet Report

25-Year SCM #3 Report

Page 2

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	CB 332	1.02	0.00	0.84	0.19	Comb	6.0	1.50	0.00	3.00	2.50	0.005	2.00	0.060	0.020	0.013	0.21	6.72	0.12	2.09	0.0	1
25	FES 331	9.38	0.00	9.38	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
26	CB 303	0.26	0.00	0.27	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.12	2.14	0.00	0.00	0.0	Off

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Hydraulic Grade Line Computations

25-Year SCM #3 Report

Page 1

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	36	30.84	360.94	363.29	2.35	4.42	5.19	0.76	364.05	0.000	53.315	361.21	363.01	1.80**	4.42	6.97	0.76	363.76	0.000	0.000	n/a	1.31	n/a
2	36	30.25	361.31	363.07	1.76*	4.31	7.02	0.74	363.81	0.000	26.578	361.44	363.22	1.78**	4.37	6.92	0.74	363.97	0.000	0.000	n/a	1.50	n/a
3	30	17.05	361.64	363.22	1.58	2.82	5.21	0.57	363.79	0.000	82.337	362.05	363.45	1.40**	2.82	6.05	0.57	364.02	0.000	0.000	n/a	1.17	n/a
4	24	16.85	362.25	364.04	1.79*	2.96	5.69	0.50	364.54	0.492	50.862	362.50	364.29	1.79	2.96	5.68	0.50	364.79	0.491	0.491	0.250	0.95	0.48
5	24	16.48	362.70	364.77	2.00	3.14	5.25	0.43	365.19	0.531	27.000	362.84	364.91	2.00	3.14	5.25	0.43	365.34	0.531	0.531	0.143	1.70	0.73
6	24	14.80	363.34	365.64	2.00	2.32	4.71	0.35	365.98	0.428	59.521	364.97	366.36 j	1.39**	2.32	6.37	0.63	366.99	0.628	0.528	n/a	1.49	n/a
7	18	11.07	365.17	366.36	1.19	1.50	7.39	0.75	367.10	0.000	63.410	367.05	368.32	1.27**	1.60	6.93	0.75	369.07	0.000	0.000	n/a	0.50	n/a
8	18	10.87	367.25	368.32	1.07	1.35	8.04	0.73	369.05	0.000	59.348	368.83	370.09	1.26**	1.59	6.84	0.73	370.82	0.000	0.000	n/a	1.50	n/a
9	18	10.00	369.03	370.09	1.06	1.34	7.47	0.66	370.75	0.000	73.131	370.16	371.38	1.22**	1.54	6.51	0.66	372.04	0.000	0.000	n/a	1.49	n/a
10	18	6.37	370.66	371.50	0.84*	1.02	6.23	0.43	371.93	0.000	112.661	371.79	372.76	0.97**	1.22	5.24	0.43	373.19	0.000	0.000	n/a	1.50	n/a
11	18	4.34	371.99	372.76	0.77	0.92	4.72	0.32	373.09	0.000	46.249	372.45	373.25	0.80**	0.96	4.54	0.32	373.57	0.000	0.000	n/a	0.78	n/a
12	15	3.98	373.45	374.22	0.77*	0.80	4.98	0.35	374.58	0.000	72.180	374.00	374.81	0.81**	0.84	4.75	0.35	375.16	0.000	0.000	n/a	0.81	n/a
13	15	3.36	374.60	375.40	0.80*	0.83	4.05	0.26	375.66	0.494	92.962	375.06	375.86	0.80	0.83	4.06	0.26	376.12	0.497	0.495	0.461	1.50	0.38
14	15	3.10	375.27	376.24	0.97	0.72	3.03	0.14	376.39	0.255	150.515	376.02	376.74	0.72**	0.73	4.26	0.28	377.02	0.587	0.421	0.634	1.00	0.28
15	15	0.91	372.86	373.24	0.38*	0.31	2.93	0.13	373.37	0.515	27.184	373.00	373.38 j	0.38**	0.31	2.92	0.13	373.51	0.508	0.511	0.139	1.00	0.13
16	15	3.10	371.88	372.46	0.58*	0.56	5.54	0.29	372.75	0.000	112.849	373.21	373.92	0.71**	0.72	4.32	0.29	374.21	0.000	0.000	n/a	1.00	n/a
17	15	0.64	369.94	370.24	0.29*	0.22	2.91	0.11	370.35	0.000	27.000	370.12	370.43	0.31**	0.24	2.68	0.11	370.54	0.000	0.000	n/a	1.00	0.11
18	15	3.78	365.80	366.49	0.69*	0.69	5.46	0.34	366.83	0.000	163.438	367.43	368.22	0.79**	0.81	4.66	0.34	368.55	0.000	0.000	n/a	1.00	n/a
19	24	1.01	363.44	365.64	2.00	3.14	0.32	0.00	365.64	0.002	43.537	363.66	365.64	1.98	3.14	0.32	0.00	365.64	0.002	0.002	0.001	1.12	0.00
20	15	0.57	364.58	365.64	1.06	0.22	0.51	0.10	365.74	0.000	27.000	364.89	365.18	0.29**	0.22	2.59	0.10	365.29	0.000	0.000	n/a	1.00	0.10
21	24	12.70	361.78	363.22	1.44	2.42	5.24	0.43	363.65	0.418	129.465	362.43	363.74	1.31	2.18	5.83	0.53	364.27	0.540	0.479	0.620	2.25	1.19
22	24	2.20	363.00	364.93	1.93	0.64	0.71	0.18	365.11	0.000	66.365	363.33	363.85	0.52**	0.64	3.43	0.18	364.03	0.000	0.000	n/a	0.50	0.09

Project File: SCM#3.stm

Number of lines: 26

Run Date: 5/29/2025

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

Hydraulic Grade Line Computations

25-Year SCM #3 Report

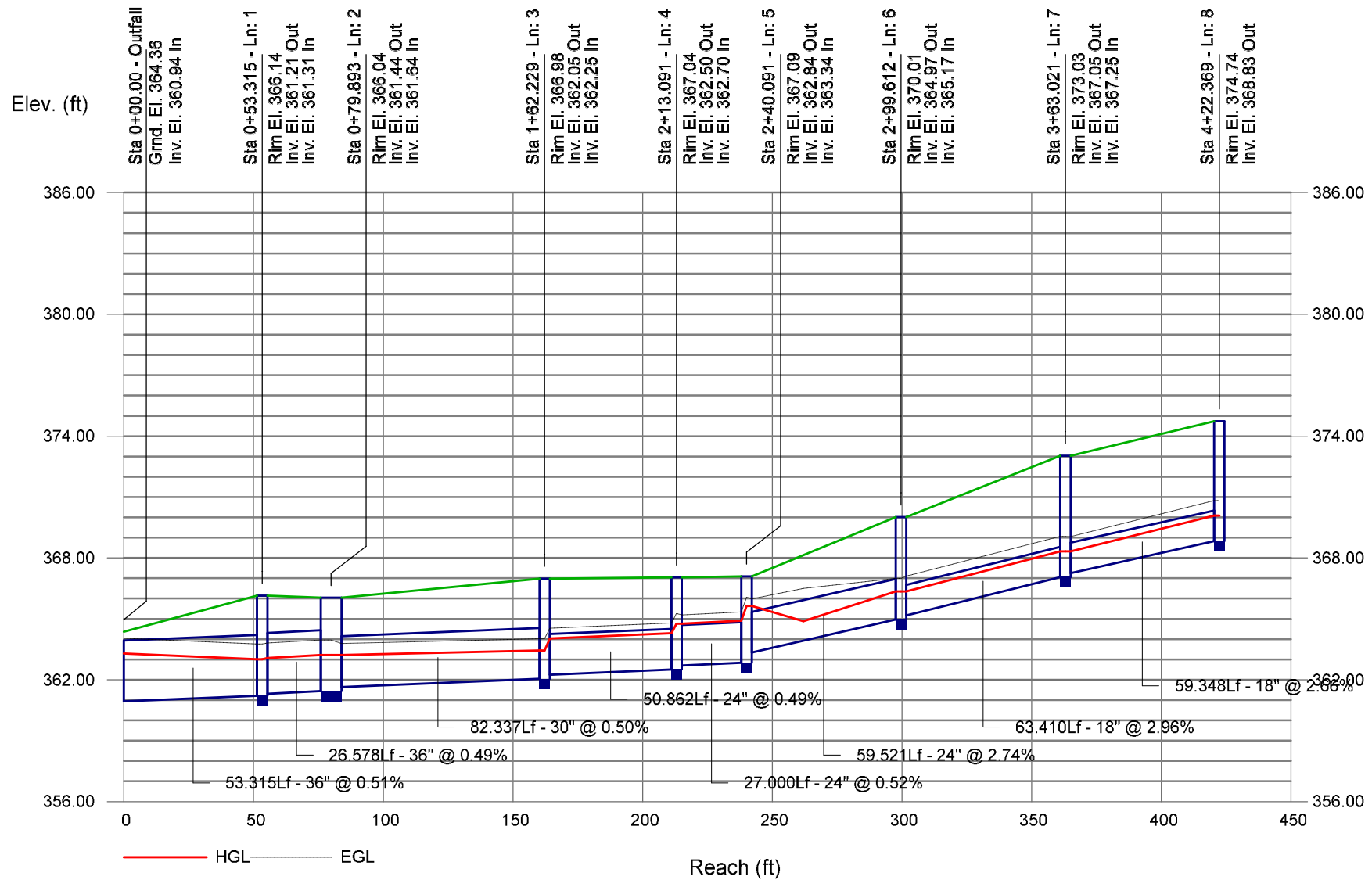
Page 2

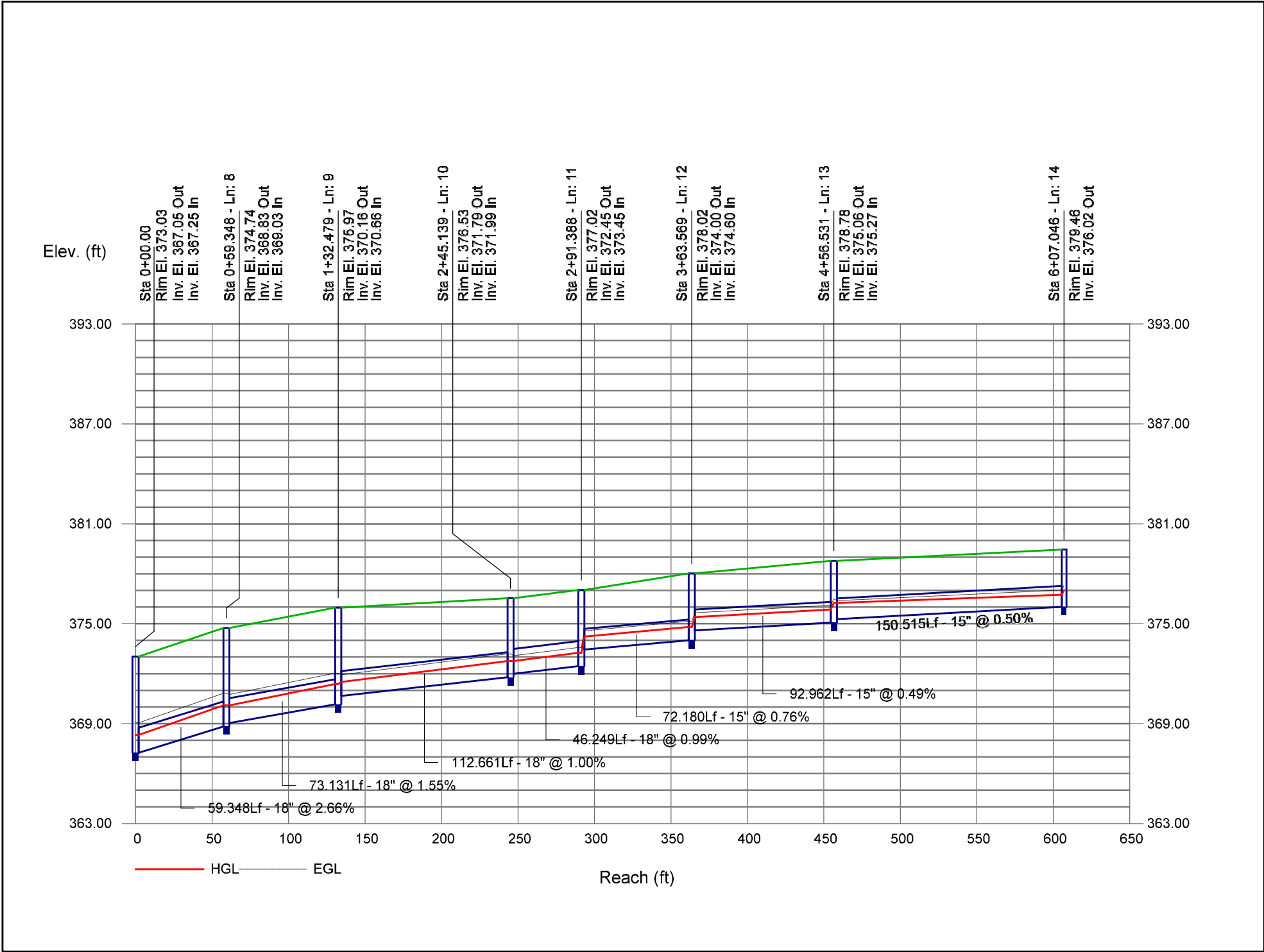
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
23	18	1.63	363.53	364.01	0.48*	0.48	3.38	0.17	364.18	0.000	85.141	363.96	364.44	0.48**	0.49	3.35	0.17	364.61	0.000	0.000	n/a	1.00	0.17
24	18	1.02	363.50	364.93	1.43	0.35	0.59	0.13	365.06	0.000	27.000	363.64	364.02	0.38**	0.35	2.94	0.13	364.15	0.000	0.000	n/a	1.00	n/a
25	24	9.38	363.12	364.93	1.81	2.99	3.14	0.15	365.08	0.151	132.305	363.78	365.09	1.31	2.18	4.31	0.29	365.38	0.295	0.223	0.295	1.00	0.29
26	24	0.26	362.30	363.01	0.71	1.00	0.27	0.00	363.01	0.002	59.390	362.60	363.01	0.41	0.47	0.57	0.01	363.02	0.016	0.009	0.005	1.00	0.01
Project File: SCM#3.stm														Number of lines: 26					Run Date: 5/29/2025				
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box																							

Storm Sewer Profile

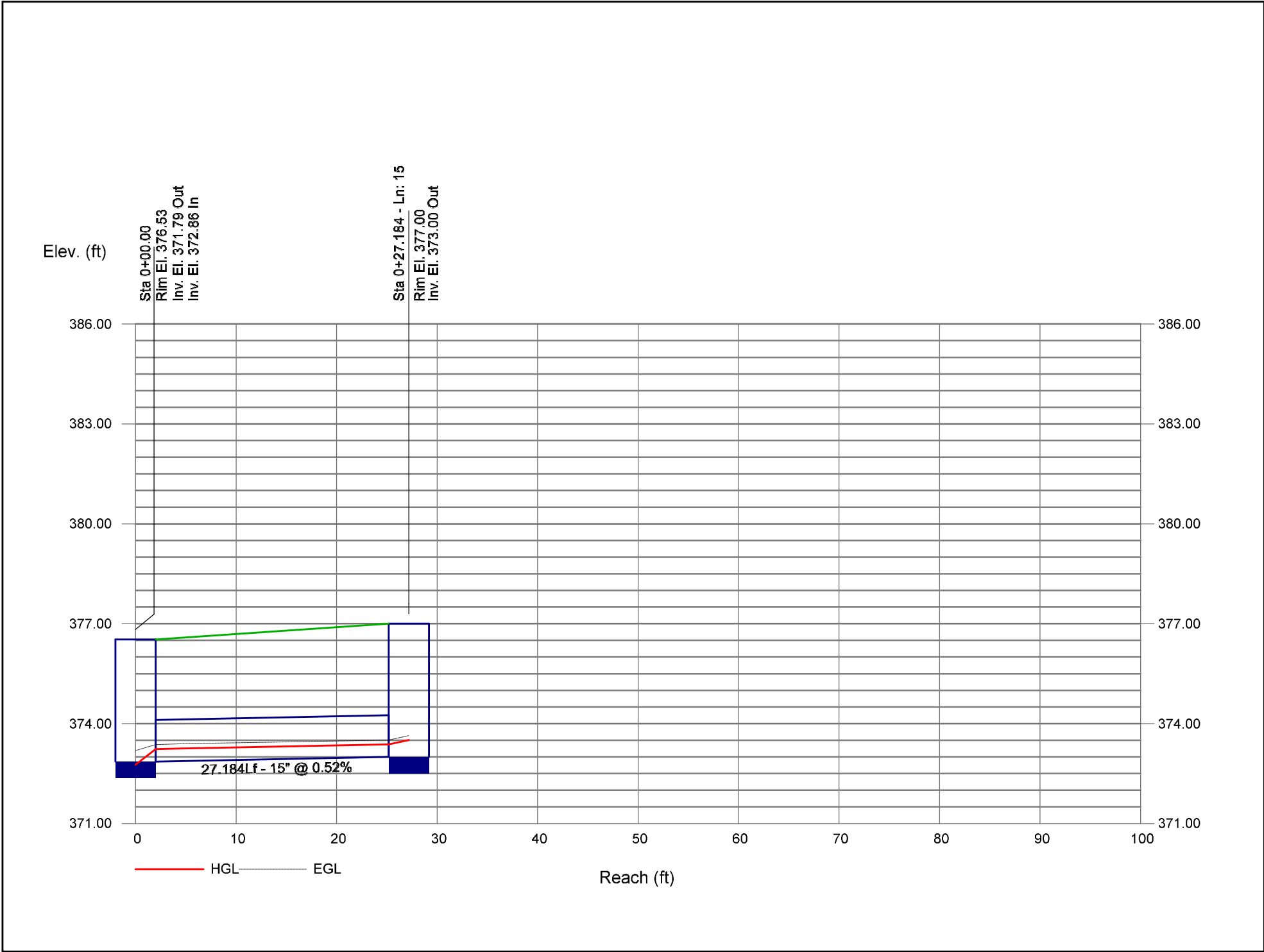
25-Year SCM #3 Profile 1-8

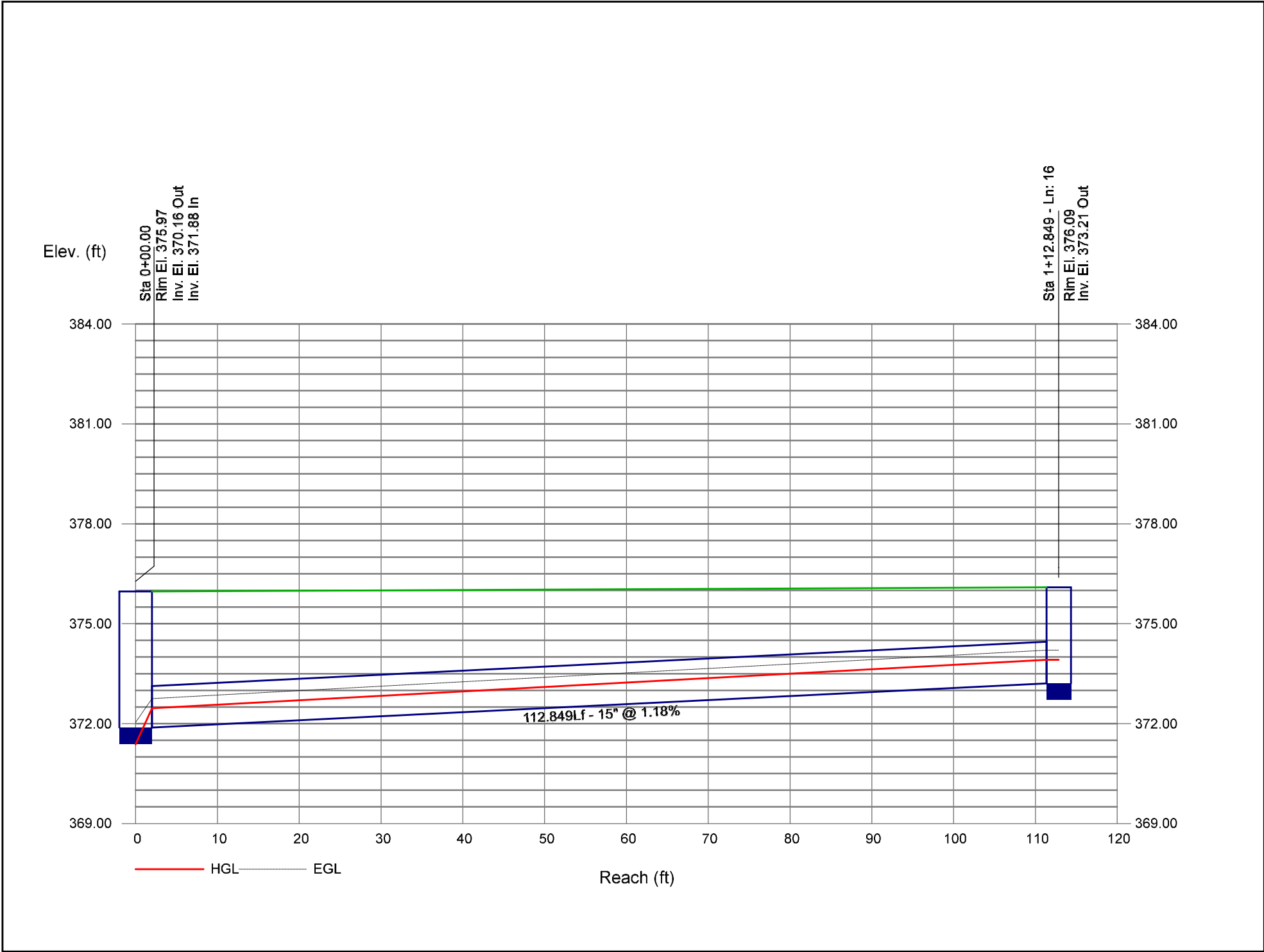
Proj. file: SCM#3.stm



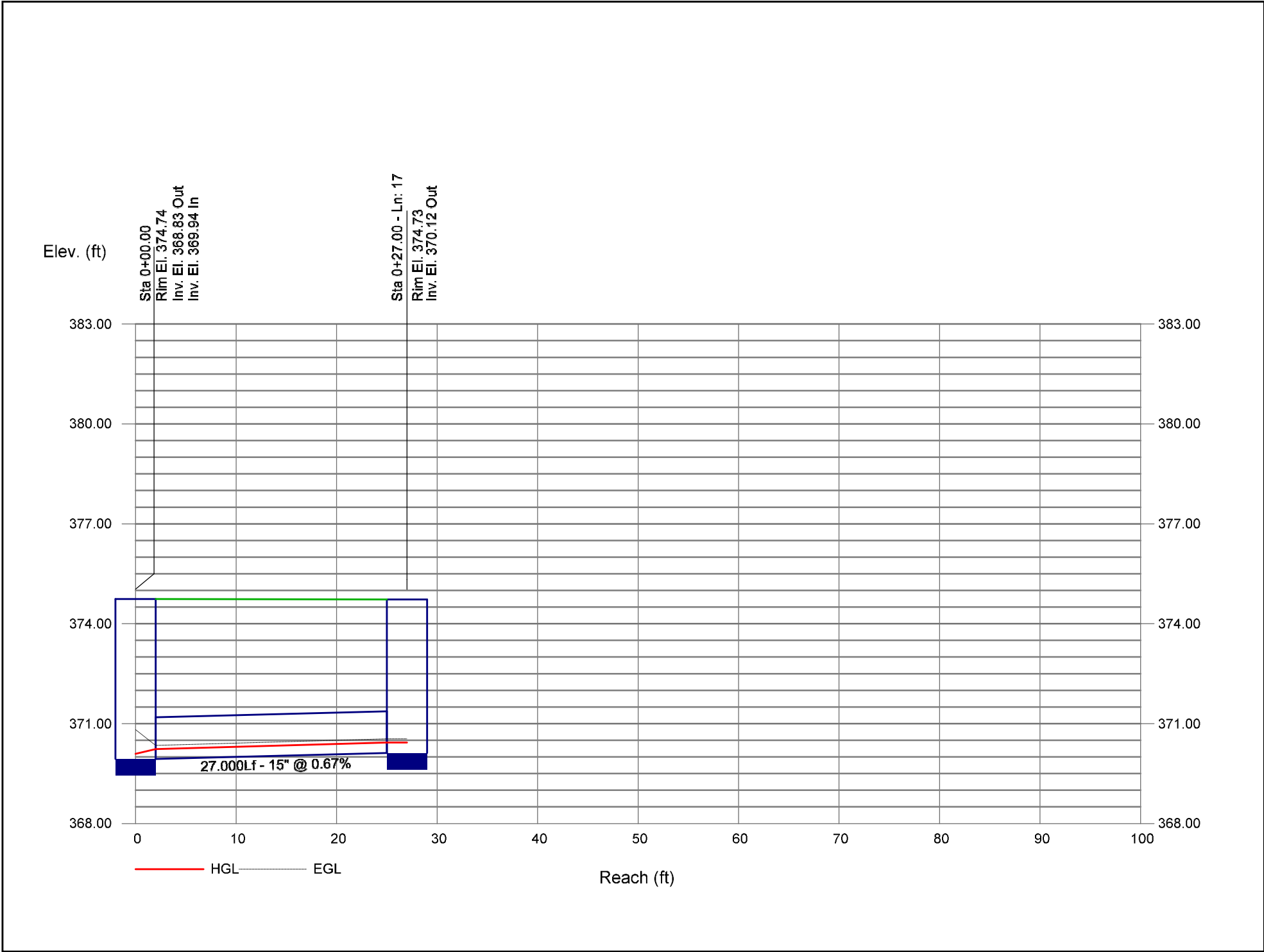


Storm Sewer Profile

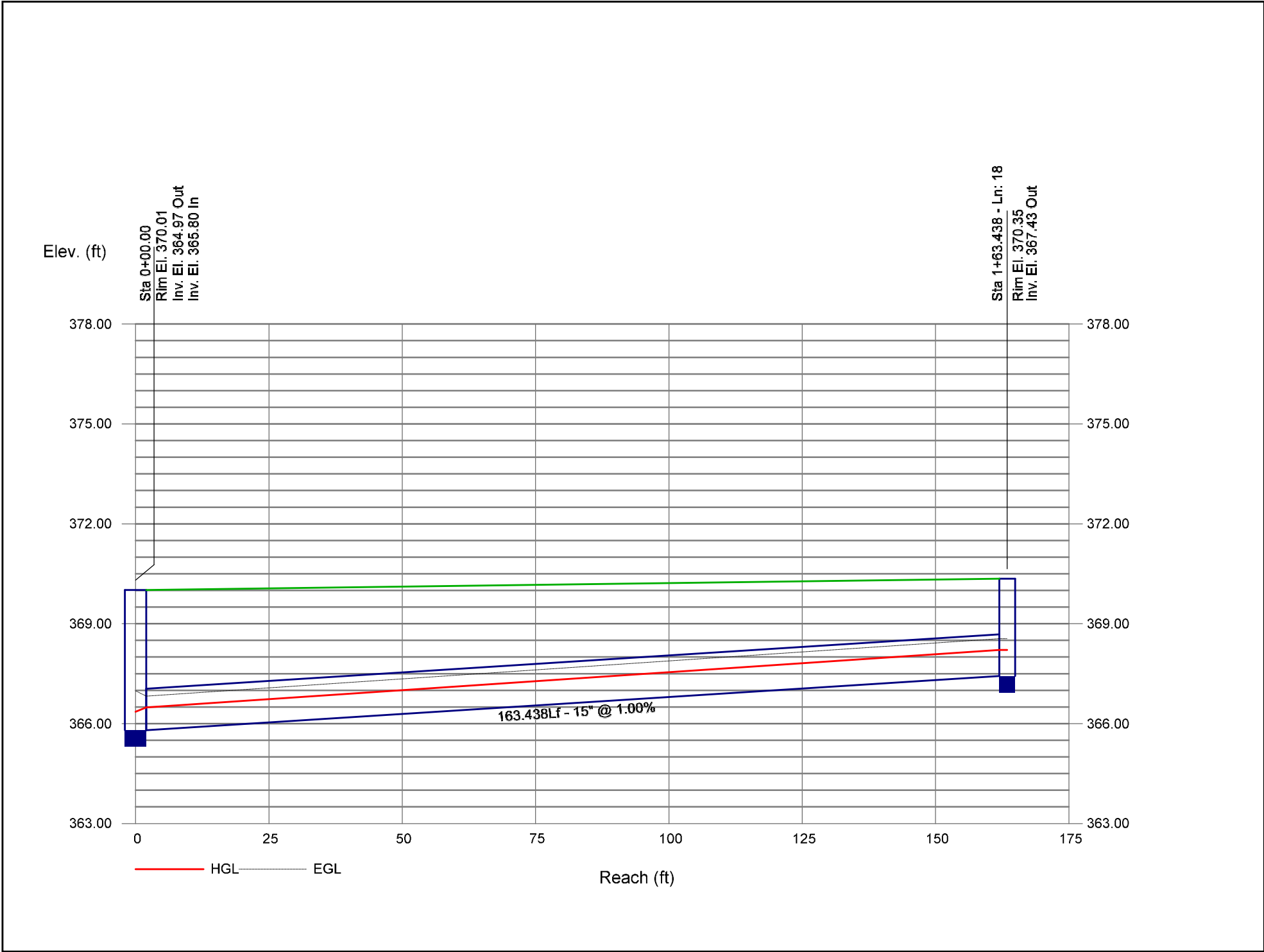


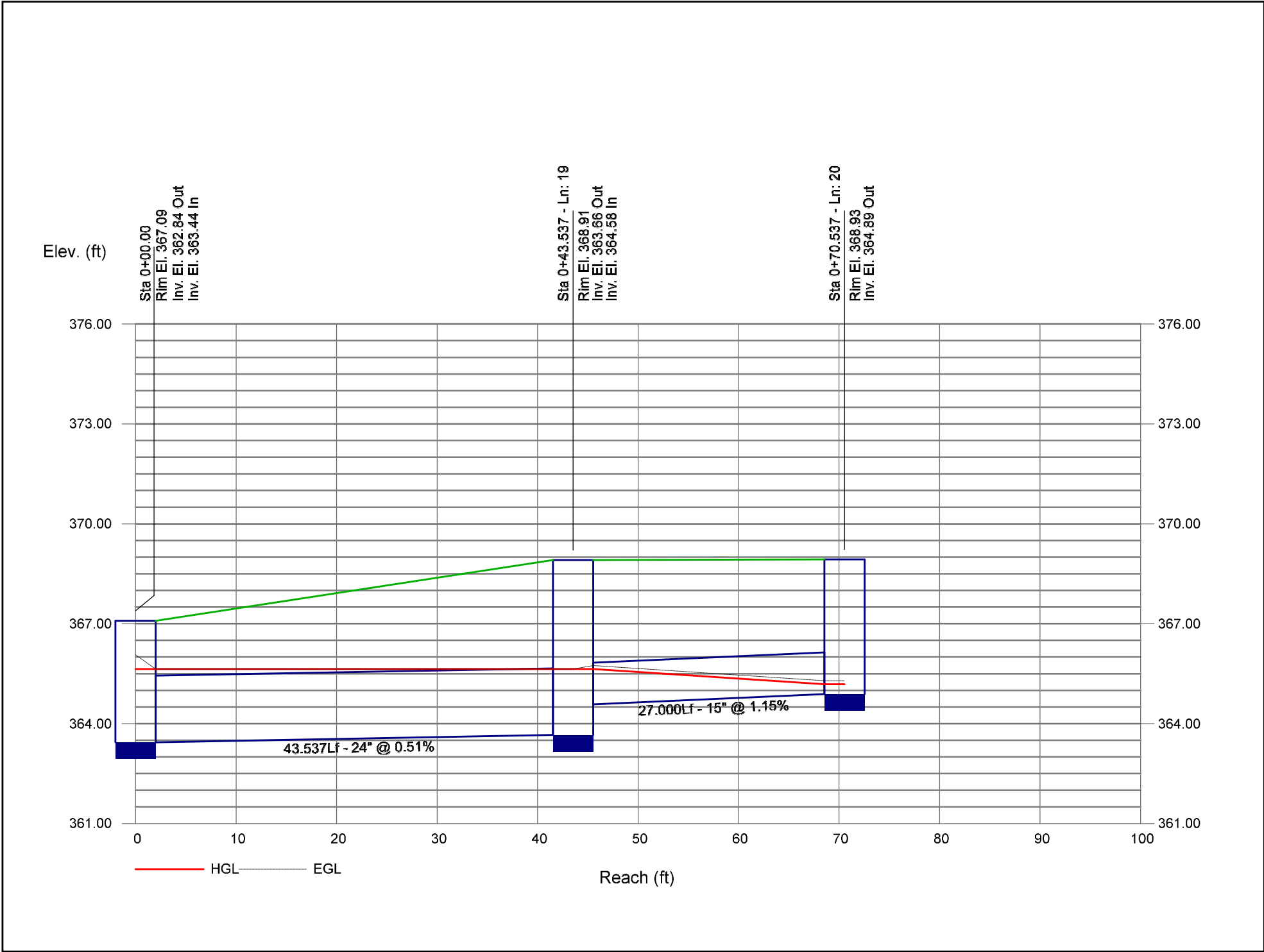


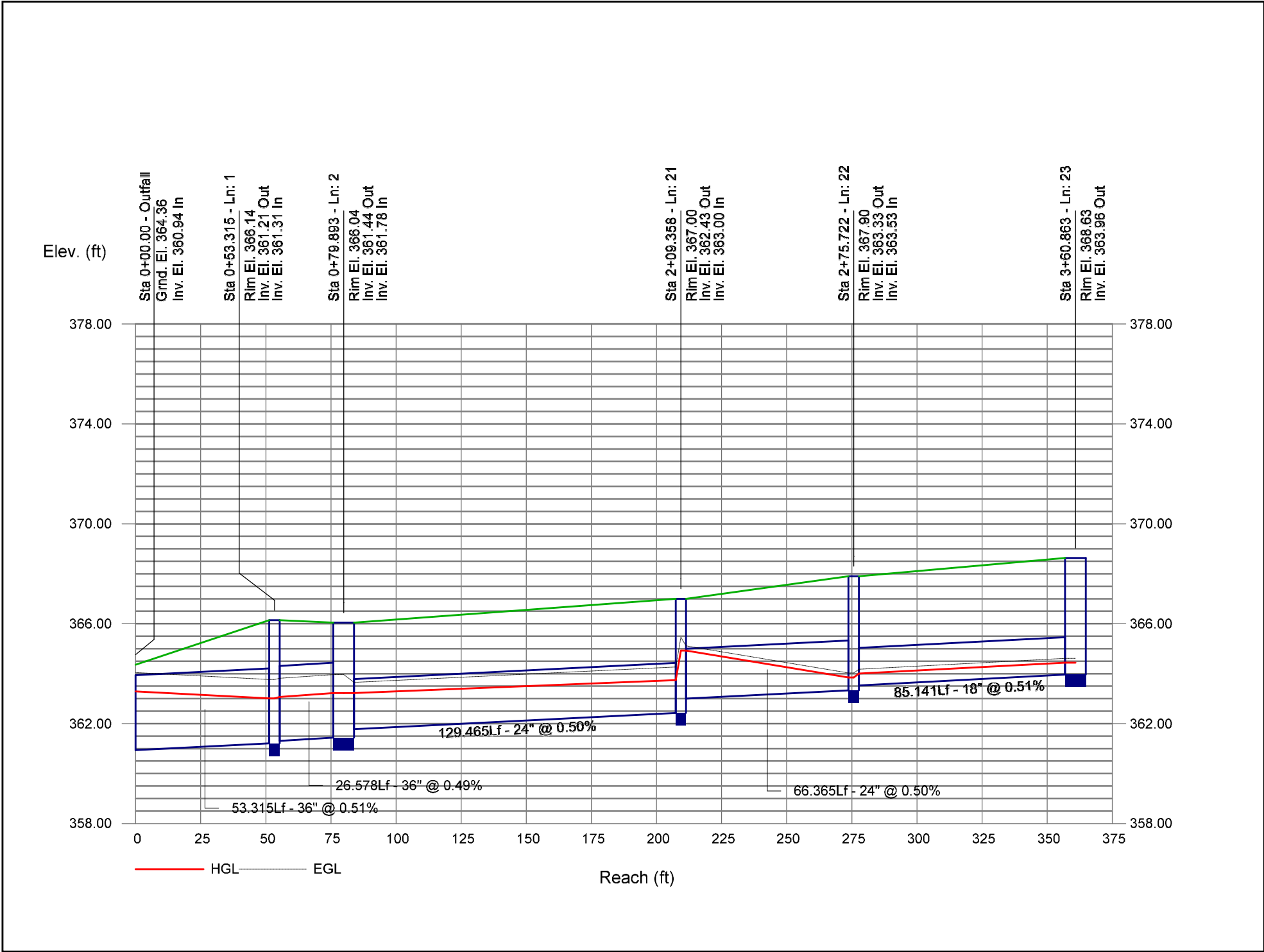
Storm Sewer Profile

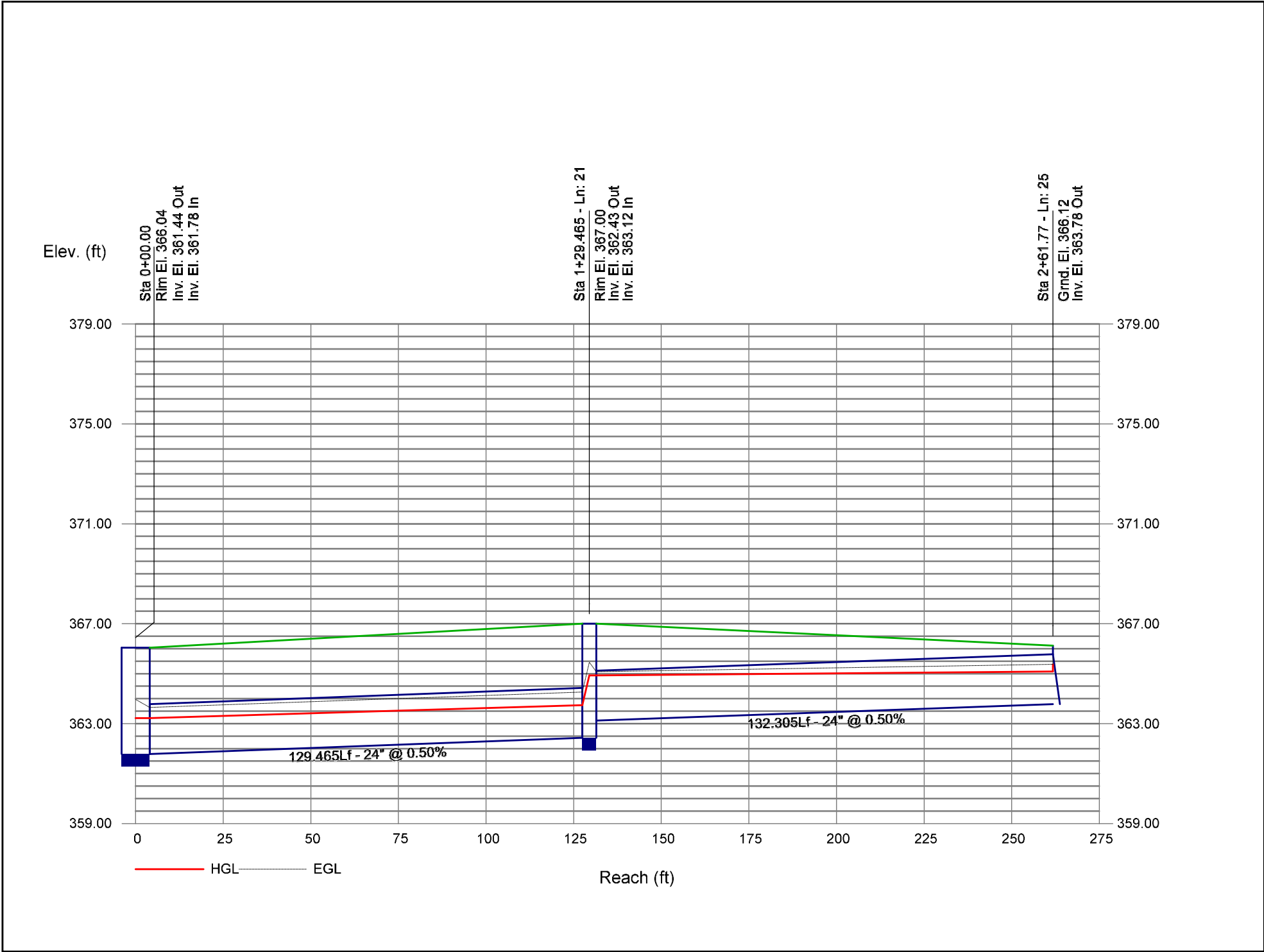


Storm Sewer Profile

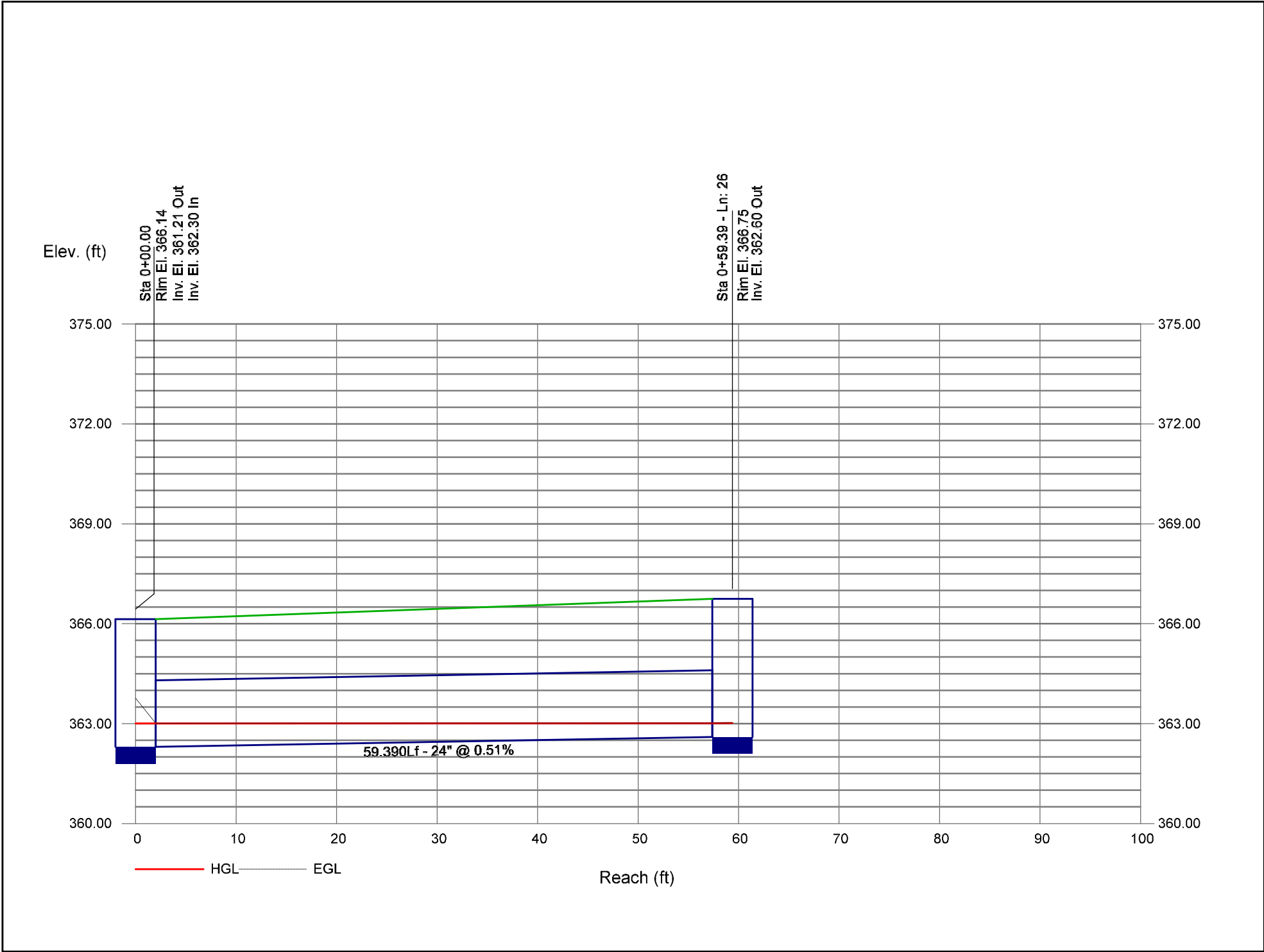


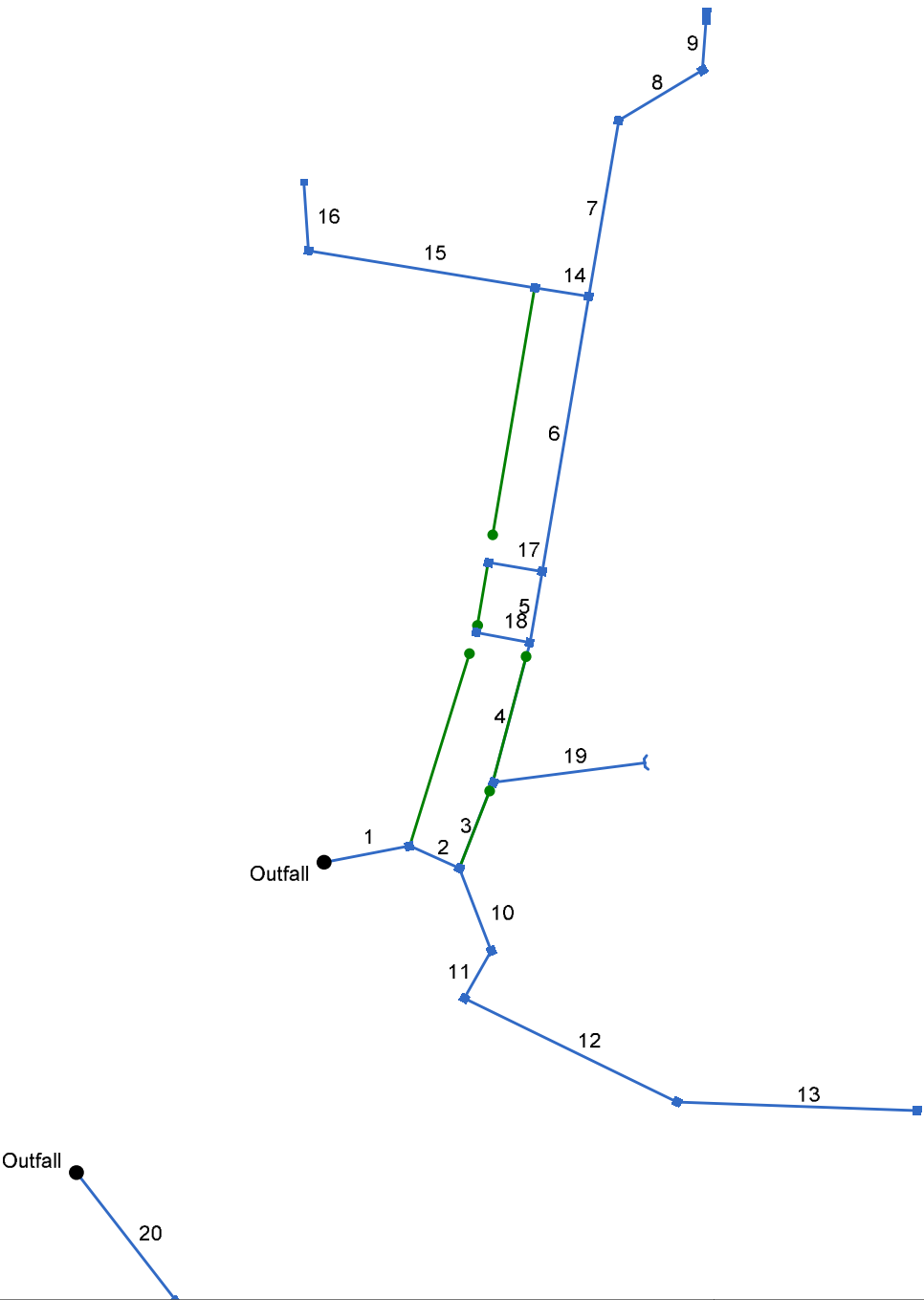






Storm Sewer Profile





Storm Sewer Inventory Report

25-Year SCM #4 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	42.886	-10.921	Comb	0.00	0.05	0.57	10.0	356.86	0.49	357.07	30	Cir	0.013	0.94	363.04	Pipe - (14)
2	1	27.000	35.054	Comb	0.00	0.05	0.57	10.0	357.27	0.48	357.40	24	Cir	0.013	1.68	363.02	Pipe - (19)
3	2	45.598	-92.825	Comb	0.00	0.06	0.57	10.0	357.60	0.50	357.83	24	Cir	0.013	1.35	362.81	Pipe - (13) (1)
4	3	71.733	-6.548	Comb	0.00	0.06	0.57	10.0	357.93	0.50	358.29	24	Cir	0.013	1.50	362.39	Pipe - (13)
5	4	35.770	-5.010	Comb	0.00	0.08	0.57	10.0	358.49	0.50	358.67	18	Cir	0.013	1.50	362.56	Pipe - (12)
6	5	138.243	-0.182	Comb	0.00	0.08	0.57	10.0	358.87	1.00	360.25	18	Cir	0.013	1.50	365.52	Pipe - (11)
7	6	88.557	0.022	Comb	0.00	0.05	0.57	10.0	360.58	4.21	364.31	15	Cir	0.013	1.19	368.85	Pipe - (9)
8	7	48.252	49.402	Comb	0.00	0.15	0.57	10.0	364.51	0.50	364.75	15	Cir	0.013	1.27	369.03	Pipe - (8)
9	8	26.989	-54.988	Comb	0.00	0.50	0.57	10.0	364.95	0.52	365.09	15	Cir	0.013	1.00	369.03	Pipe - (7)
10	2	43.911	44.750	Comb	0.00	0.58	0.57	10.0	357.60	0.50	357.82	24	Cir	0.013	1.21	362.71	Pipe - (18)
11	10	27.000	50.538	Comb	0.00	0.25	0.57	10.0	358.02	1.00	358.29	18	Cir	0.013	1.50	362.73	Pipe - (17)
12	11	116.822	-93.303	Comb	0.00	0.15	0.57	10.0	358.79	3.00	362.29	15	Cir	0.013	0.69	368.09	Pipe - (16)
13	12	118.495	-24.005	Comb	0.00	0.24	0.57	10.0	363.30	3.00	366.85	15	Cir	0.013	1.00	372.03	Pipe - (15)
14	6	26.980	-90.285	Comb	0.00	0.22	0.57	10.0	360.45	0.48	360.58	15	Cir	0.013	0.50	365.51	Pipe - (10)
15	14	113.243	0.000	MH	0.00	0.00	0.57	10.0	360.69	0.50	361.26	15	Cir	0.013	0.98	366.18	Pipe - (181)
16	15	34.087	76.970	DrGrt	0.00	0.58	0.57	10.0	361.46	0.50	361.63	15	Cir	0.013	1.00	363.50	Pipe - (180)
17	5	27.000	-90.174	Comb	0.00	0.08	0.57	10.0	358.97	0.52	359.11	15	Cir	0.013	1.00	362.04	Pipe - (20)
18	4	27.000	-94.006	Comb	0.00	0.09	0.57	10.0	358.68	0.74	358.88	15	Cir	0.013	1.00	361.81	Pipe - (21)
19	3	75.640	61.294	Hdwl	0.00	0.74	0.57	10.0	358.53	0.50	358.91	18	Cir	0.013	1.00	360.70	Pipe - (163)
20	End	79.656	52.362	DrGrt	0.00	1.61	0.57	10.0	356.95	0.50	357.35	18	Cir	0.013	1.00	359.68	Pipe - (24)(0)
Project File: SCM#4.stm												Number of lines: 20				Date: 5/29/2025	

Structure Report

25-Year SCM #4 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 401	Combination	363.04	Rect	4.00	4.00	30	Cir	357.07	24	Cir	357.27
2	CB 402	Combination	363.02	Rect	4.00	4.00	24	Cir	357.40	24 24	Cir Cir	357.60 357.60
3	CB 407	Combination	362.81	Rect	4.00	4.00	24	Cir	357.83	24 18	Cir Cir	357.93 358.53
4	CB 408	Combination	362.39	Rect	4.00	4.00	24	Cir	358.29	18 15	Cir Cir	358.49 358.68
5	CB 409	Combination	362.56	Rect	4.00	4.00	18	Cir	358.67	18 15	Cir Cir	358.87 358.97
6	CB 410	Combination	365.52	Rect	4.00	4.00	18	Cir	360.25	15 15	Cir Cir	360.58 360.45
7	CB 411	Combination	368.85	Rect	4.00	4.00	15	Cir	364.31	15	Cir	364.51
8	CB 412	Combination	369.03	Rect	4.00	4.00	15	Cir	364.75	15	Cir	364.95
9	CB 413	Combination	369.03	Rect	8.00	4.00	15	Cir	365.09			
10	CB 403	Combination	362.71	Rect	4.00	4.00	24	Cir	357.82	18	Cir	358.02
11	CB 404	Combination	362.73	Rect	4.00	4.00	18	Cir	358.29	15	Cir	358.79
12	CB 405	Combination	368.09	Rect	4.00	4.00	15	Cir	362.29	15	Cir	363.30
13	CB 406	Combination	372.03	Rect	4.00	4.00	15	Cir	366.85			
14	CB 410A	Combination	365.51	Rect	4.00	4.00	15	Cir	360.58	15	Cir	360.69
15	JB 410B	Manhole	366.18	Rect	4.00	4.00	15	Cir	361.26	15	Cir	361.46
16	YI 410C	DropGrate	363.50	Rect	3.00	3.00	15	Cir	361.63			
17	CB 409A	Combination	362.04	Rect	4.00	4.00	15	Cir	359.11			
18	CB 408A	Combination	361.81	Rect	4.00	4.00	15	Cir	358.88			
19	FES 407A	OpenHeadwall	360.70	n/a	n/a	n/a	18	Cir	358.91			
20	YI 421	DropGrate	359.68	Rect	3.00	3.00	18	Cir	357.35			
Project File: SCM#4.stm							Number of Structures: 20			Run Date: 5/29/2025		

Storm Sewer Summary Report

25-Year SCM #4 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (14)	13.81	30	Cir	42.886	356.86	357.07	0.490	358.71	358.32	0.46	358.32	End	Combination
2	Pipe - (19)	13.67	24	Cir	27.000	357.27	357.40	0.481	358.71	358.85	0.83	359.67	1	Combination
3	Pipe - (13) (1)	9.36	24	Cir	45.598	357.60	357.83	0.504	359.67	359.74	0.19	359.93	2	Combination
4	Pipe - (13)	6.69	24	Cir	71.733	357.93	358.29	0.502	359.93	359.98	0.13	360.11	3	Combination
5	Pipe - (12)	6.19	18	Cir	35.770	358.49	358.67	0.503	360.11*	360.23*	0.29	360.52	4	Combination
6	Pipe - (11)	5.81	18	Cir	138.243	358.87	360.25	0.998	360.52	361.18	n/a	361.18 j	5	Combination
7	Pipe - (9)	2.61	15	Cir	88.557	360.58	364.31	4.212	361.18	364.96	0.31	364.96	6	Combination
8	Pipe - (8)	2.45	15	Cir	48.252	364.51	364.75	0.497	365.16	365.40	0.28	365.68	7	Combination
9	Pipe - (7)	1.89	15	Cir	26.989	364.95	365.09	0.519	365.68	365.71	0.15	365.86	8	Combination
10	Pipe - (18)	4.37	24	Cir	43.911	357.60	357.82	0.501	359.67	359.69	0.04	359.72	2	Combination
11	Pipe - (17)	2.32	18	Cir	27.000	358.02	358.29	1.000	359.72	359.73	0.04	359.78	10	Combination
12	Pipe - (16)	1.45	15	Cir	116.822	358.79	362.29	2.996	359.78	362.77	n/a	362.77 j	11	Combination
13	Pipe - (15)	0.91	15	Cir	118.495	363.30	366.85	2.996	363.54	367.22	n/a	367.22	12	Combination
14	Pipe - (10)	2.95	15	Cir	26.980	360.45	360.58	0.482	361.19	361.32	0.12	361.44	6	Combination
15	Pipe - (181)	2.18	15	Cir	113.243	360.69	361.26	0.503	361.44	361.85	0.22	361.85	14	Manhole
16	Pipe - (180)	2.19	15	Cir	34.087	361.46	361.63	0.499	362.07	362.24	0.21	362.45	15	DropGrate
17	Pipe - (20)	0.30	15	Cir	27.000	358.97	359.11	0.518	360.52*	360.52*	0.00	360.52	5	Combination
18	Pipe - (21)	0.34	15	Cir	27.000	358.68	358.88	0.741	360.11	360.11	0.00	360.11	4	Combination
19	Pipe - (163)	2.80	18	Cir	75.640	358.53	358.91	0.502	359.93	359.97	0.07	360.04	3	OpenHeadwall
20	Pipe - (24)(0)	6.09	18	Cir	79.656	356.95	357.35	0.502	358.15	358.40	0.33	358.73	End	DropGrate

Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Inlet Report

25-Year SCM #4 Report

Page 1

Line No	Inlet ID	Q = CIA	Q carry	Q capt	Q Byp	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
		(cfs)	(cfs)	(cfs)	(cfs)		Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 401	0.19	0.00	0.19	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.09	1.58	0.00	0.00	0.0	18
2	CB 402	0.19	0.00	0.19	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.09	1.58	0.00	0.00	0.0	3
3	CB 407	0.23	0.00	0.23	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.12	1.93	0.00	0.00	0.0	4
4	CB 408	0.23	0.00	0.23	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.12	2.05	0.12	2.05	0.0	Off
5	CB 409	0.30	0.00	0.30	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.13	2.43	0.01	0.15	0.0	4
6	CB 410	0.30	0.00	0.30	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.10	1.71	0.00	0.00	0.0	5
7	CB 411	0.19	0.00	0.19	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.09	1.43	0.00	0.00	0.0	6
8	CB 412	0.57	0.00	0.57	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	3.12	0.14	3.12	0.0	Off
9	CB 413	1.89	0.00	1.89	0.00	Comb	6.0	6.00	15.00	6.00	2.50	Sag	2.00	0.060	0.020	0.013	0.21	6.44	0.21	6.44	0.0	Off
10	CB 403	2.19	0.00	2.19	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.26	9.15	0.26	9.15	0.0	Off
11	CB 404	0.95	0.00	0.95	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.18	4.80	0.18	4.80	0.0	Off
12	CB 405	0.57	0.07	0.64	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.050	2.00	0.060	0.020	0.013	0.13	2.30	0.00	0.00	0.0	11
13	CB 406	0.91	0.00	0.84	0.07	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.17	4.33	0.07	1.10	0.0	12
14	CB 410A	0.83	0.00	0.81	0.02	Comb	6.0	1.50	0.00	3.00	2.50	0.034	2.00	0.060	0.020	0.013	0.15	3.41	0.04	0.67	0.0	17
15	JB 410B	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
16	YI 410C	2.19	0.00	2.19	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.20	7.23	0.20	7.23	0.0	Off
17	CB 409A	0.30	0.02	0.33	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.010	2.00	0.060	0.020	0.013	0.13	2.62	0.02	0.27	0.0	18
18	CB 408A	0.34	0.00	0.34	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.14	2.75	0.14	2.75	0.0	Off
19	FES 407A	2.80	0.00	2.80	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
20	YI 421	6.09	0.00	6.09	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.40	8.43	0.40	8.43	0.0	Off

Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Hydraulic Grade Line Computations

25-Year SCM #4 Report

Page 1

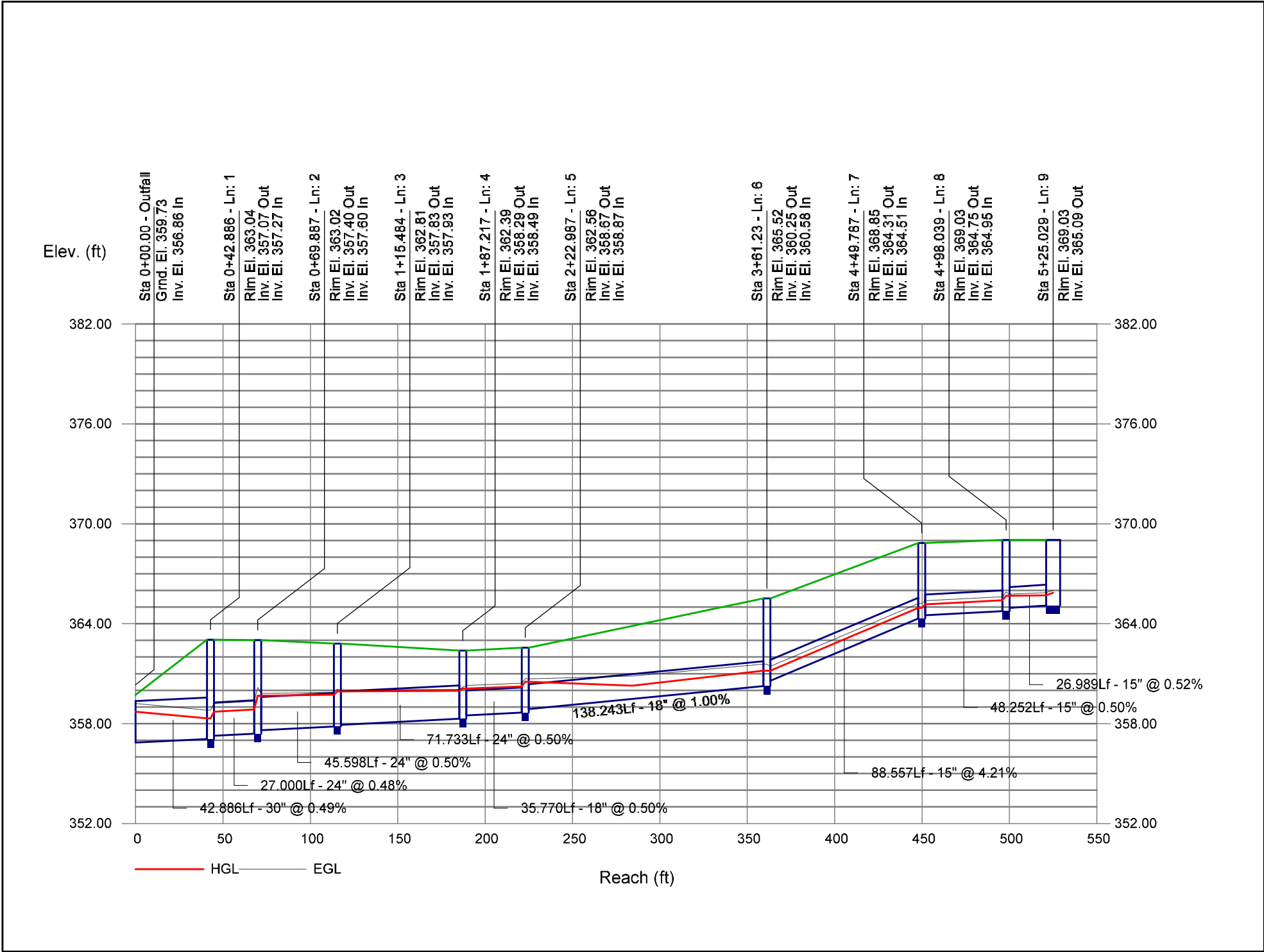
Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	30	13.81	356.86	358.71	1.85	2.45	3.55	0.49	359.20	0.000	42.886	357.07	358.32	1.25**	2.45	5.63	0.49	358.81	0.000	0.000	n/a	0.94	0.46
2	24	13.67	357.27	358.71	1.44*	2.43	5.63	0.49	359.21	0.481	27.000	357.40	358.85	1.44	2.43	5.62	0.49	359.34	0.481	0.481	0.130	1.68	0.83
3	24	9.36	357.60	359.67	2.00	3.14	2.98	0.14	359.81	0.171	45.598	357.83	359.74	1.91	3.09	3.03	0.14	359.88	0.149	0.160	0.073	1.35	0.19
4	24	6.69	357.93	359.93	2.00	3.14	2.13	0.07	360.00	0.087	71.733	358.29	359.98	1.69	2.83	2.37	0.09	360.06	0.083	0.085	0.061	1.50	0.13
5	18	6.19	358.49	360.11	1.50	1.77	3.50	0.19	360.30	0.348	35.770	358.67	360.23	1.50	1.77	3.50	0.19	360.42	0.348	0.348	0.124	1.50	0.29
6	18	5.81	358.87	360.52	1.50	1.15	3.29	0.17	360.69	0.306	138.243	360.25	361.18 j	0.93**	1.15	5.05	0.40	361.58	0.615	0.460	n/a	1.50	n/a
7	15	2.61	360.58	361.18	0.60	0.58	4.49	0.26	361.44	0.000	88.557	364.31	364.96	0.65**	0.64	4.07	0.26	365.22	0.000	0.000	n/a	1.19	0.31
8	15	2.45	364.51	365.16	0.65*	0.65	3.78	0.22	365.38	0.497	48.252	364.75	365.40	0.65	0.65	3.77	0.22	365.62	0.494	0.495	0.239	1.27	0.28
9	15	1.89	364.95	365.68	0.73	0.75	2.53	0.10	365.78	0.203	26.989	365.09	365.71	0.62	0.60	3.14	0.15	365.86	0.362	0.283	0.076	1.00	0.15
10	24	4.37	357.60	359.67	2.00	3.14	1.39	0.03	359.70	0.037	43.911	357.82	359.69	1.87	3.05	1.43	0.03	359.72	0.032	0.035	0.015	1.21	0.04
11	18	2.32	358.02	359.72	1.50	1.77	1.31	0.03	359.75	0.049	27.000	358.29	359.73	1.44	1.75	1.33	0.03	359.76	0.043	0.046	0.012	1.50	0.04
12	15	1.45	358.79	359.78	0.99	0.43	1.40	0.18	359.95	0.000	116.822	362.29	362.77 j	0.48**	0.43	3.38	0.18	362.94	0.000	0.000	n/a	0.69	0.12
13	15	0.91	363.30	363.54	0.24*	0.17	5.47	0.14	363.68	0.000	118.495	366.85	367.22	0.37**	0.31	2.95	0.14	367.36	0.000	0.000	n/a	1.00	n/a
14	15	2.95	360.45	361.19	0.74*	0.76	3.90	0.24	361.43	0.481	26.980	360.58	361.32	0.74	0.76	3.90	0.24	361.56	0.483	0.482	0.130	0.50	0.12
15	15	2.18	360.69	361.44	0.75	0.57	2.85	0.13	361.56	0.255	113.243	361.26	361.85	0.59**	0.57	3.84	0.23	362.08	0.560	0.407	n/a	0.98	0.22
16	15	2.19	361.46	362.07	0.61*	0.60	3.68	0.21	362.28	0.498	34.087	361.63	362.24	0.61	0.59	3.69	0.21	362.45	0.503	0.501	0.171	1.00	0.21
17	15	0.30	358.97	360.52	1.25	1.23	0.25	0.00	360.52	0.002	27.000	359.11	360.52	1.25	1.23	0.25	0.00	360.52	0.002	0.002	0.001	1.00	0.00
18	15	0.34	358.68	360.11	1.25	1.23	0.28	0.00	360.11	0.003	27.000	358.88	360.11	1.23	1.22	0.28	0.00	360.11	0.002	0.003	0.001	1.00	0.00
19	18	2.80	358.53	359.93	1.40	1.72	1.63	0.04	359.97	0.061	75.640	358.91	359.97	1.06	1.33	2.11	0.07	360.04	0.100	0.081	0.061	1.00	0.07
20	18	6.09	356.95	358.15	1.20	1.52	4.02	0.25	358.40	0.352	79.656	357.35	358.40	1.05	1.32	4.60	0.33	358.73	0.478	0.415	0.331	1.00	0.33

Project File: SCM#4.stm

Number of lines: 20

Run Date: 5/29/2025

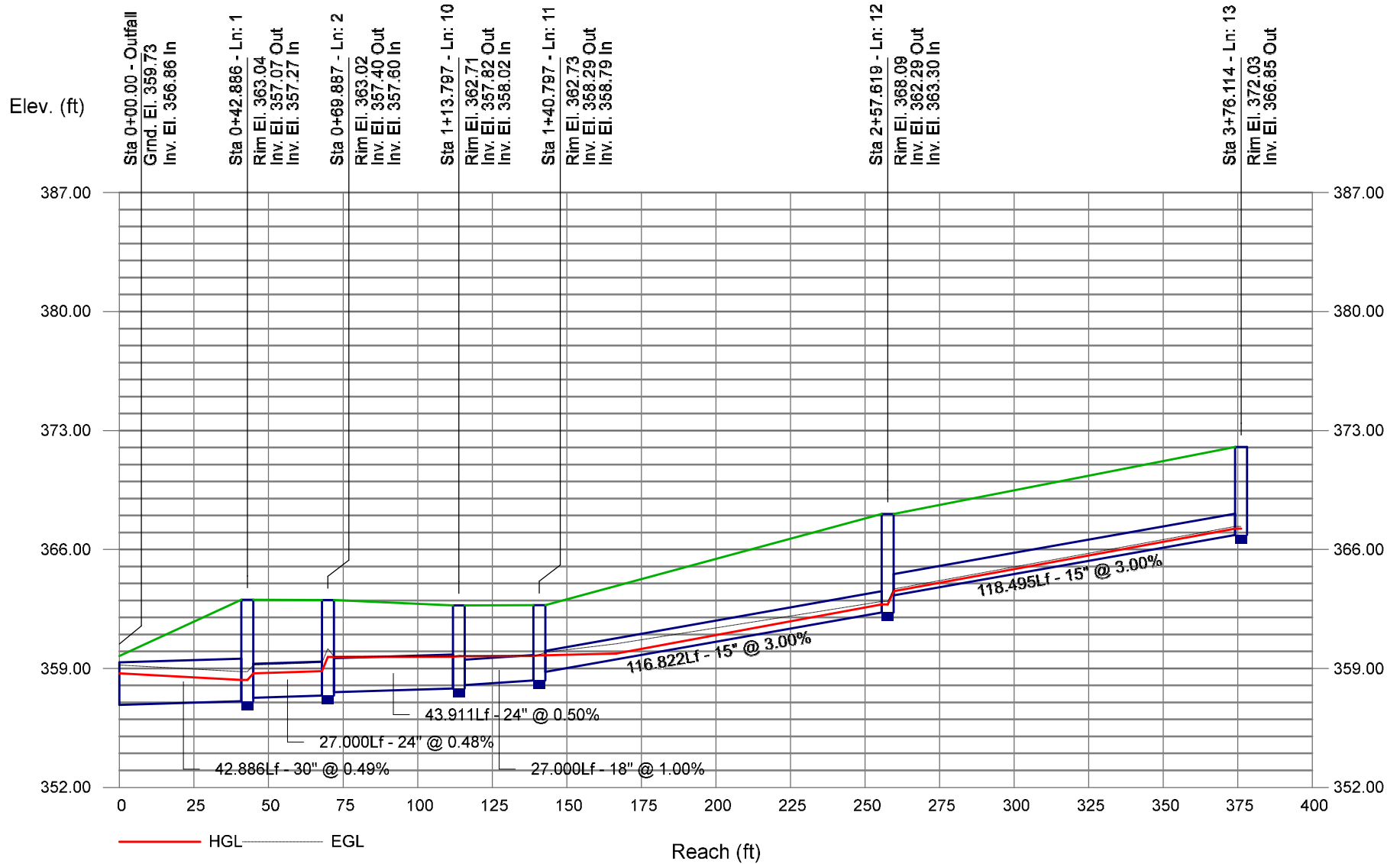
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

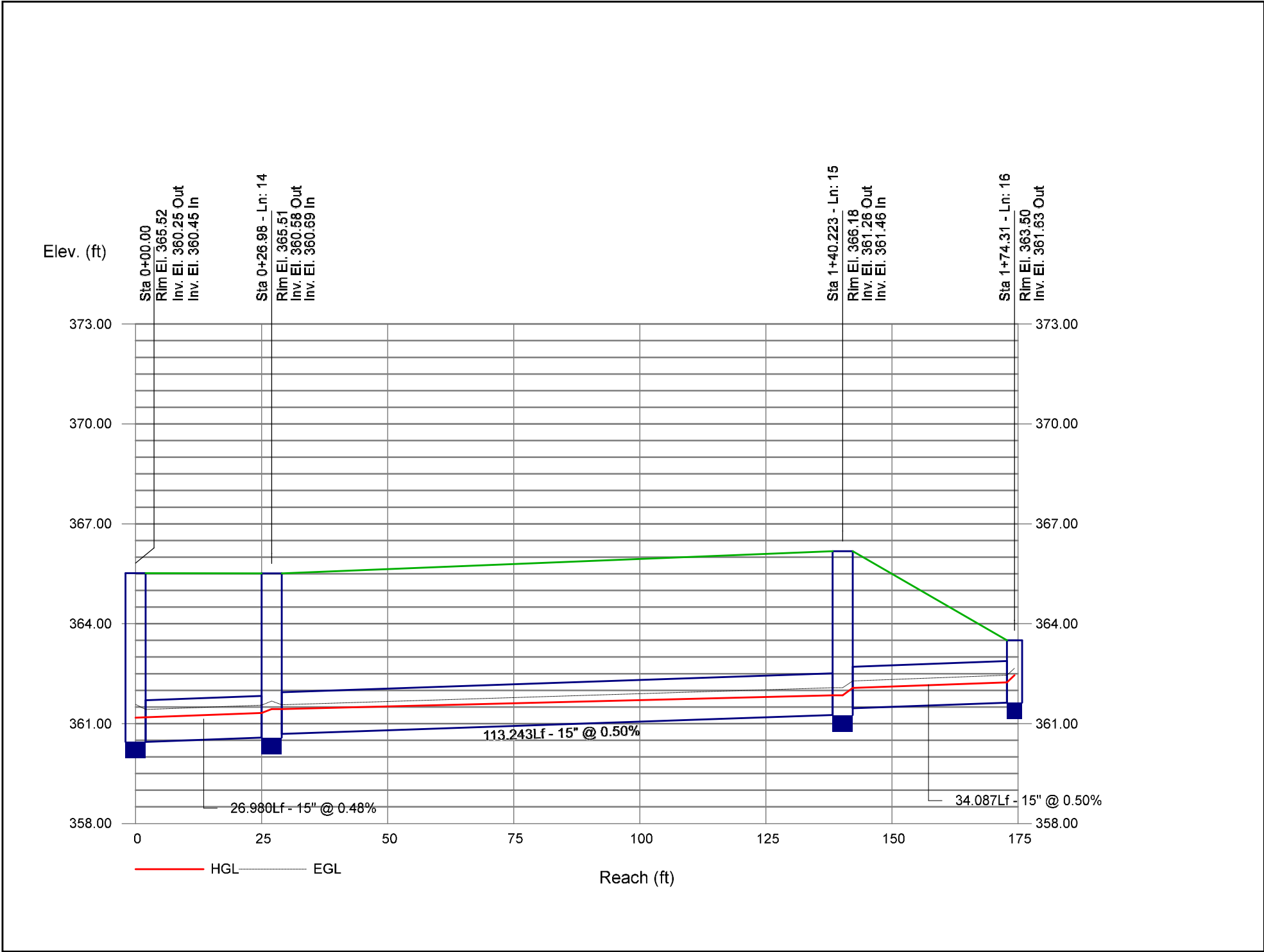


Storm Sewer Profile

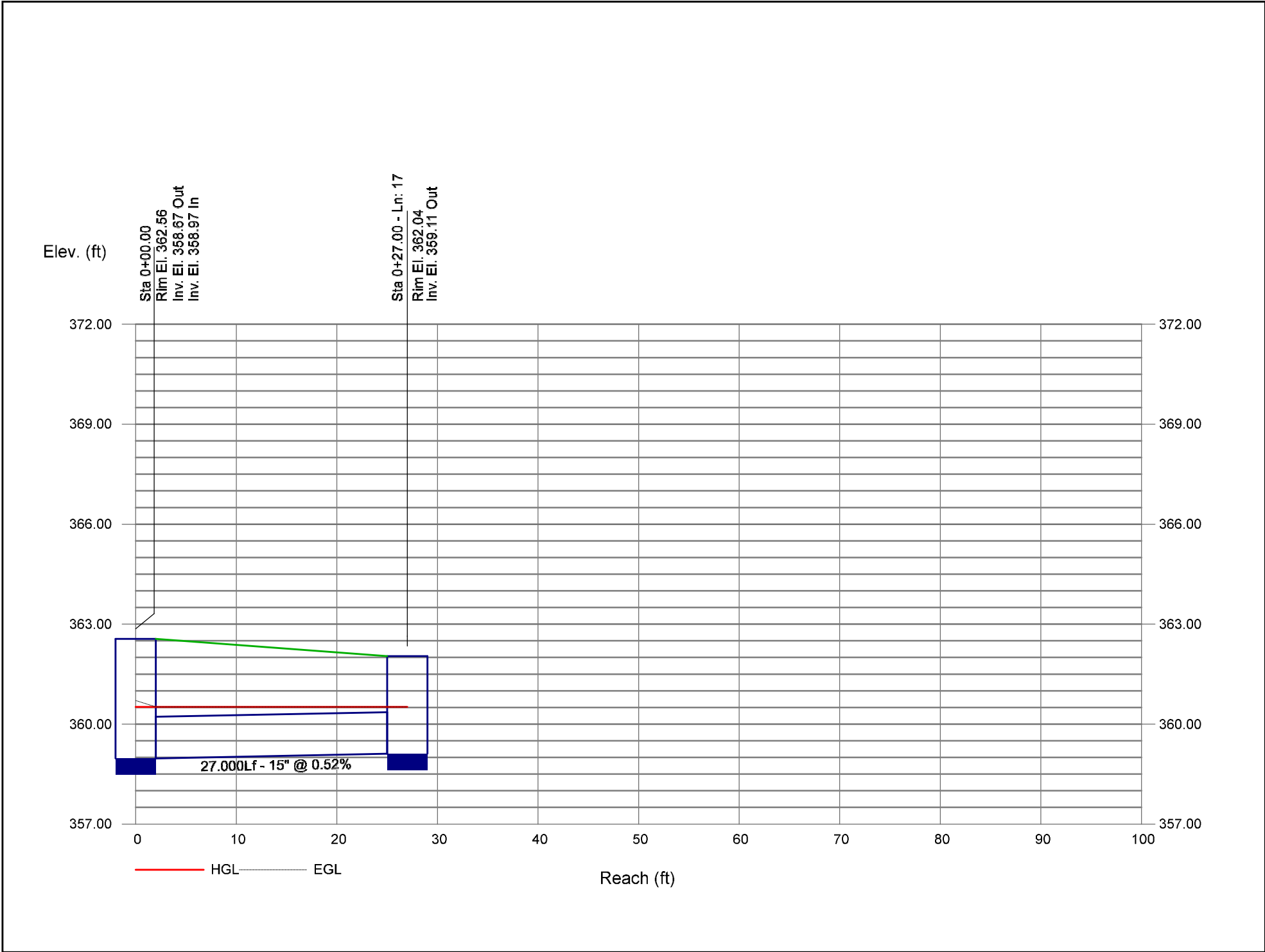
25-Year SCM #4 Profile 1-13

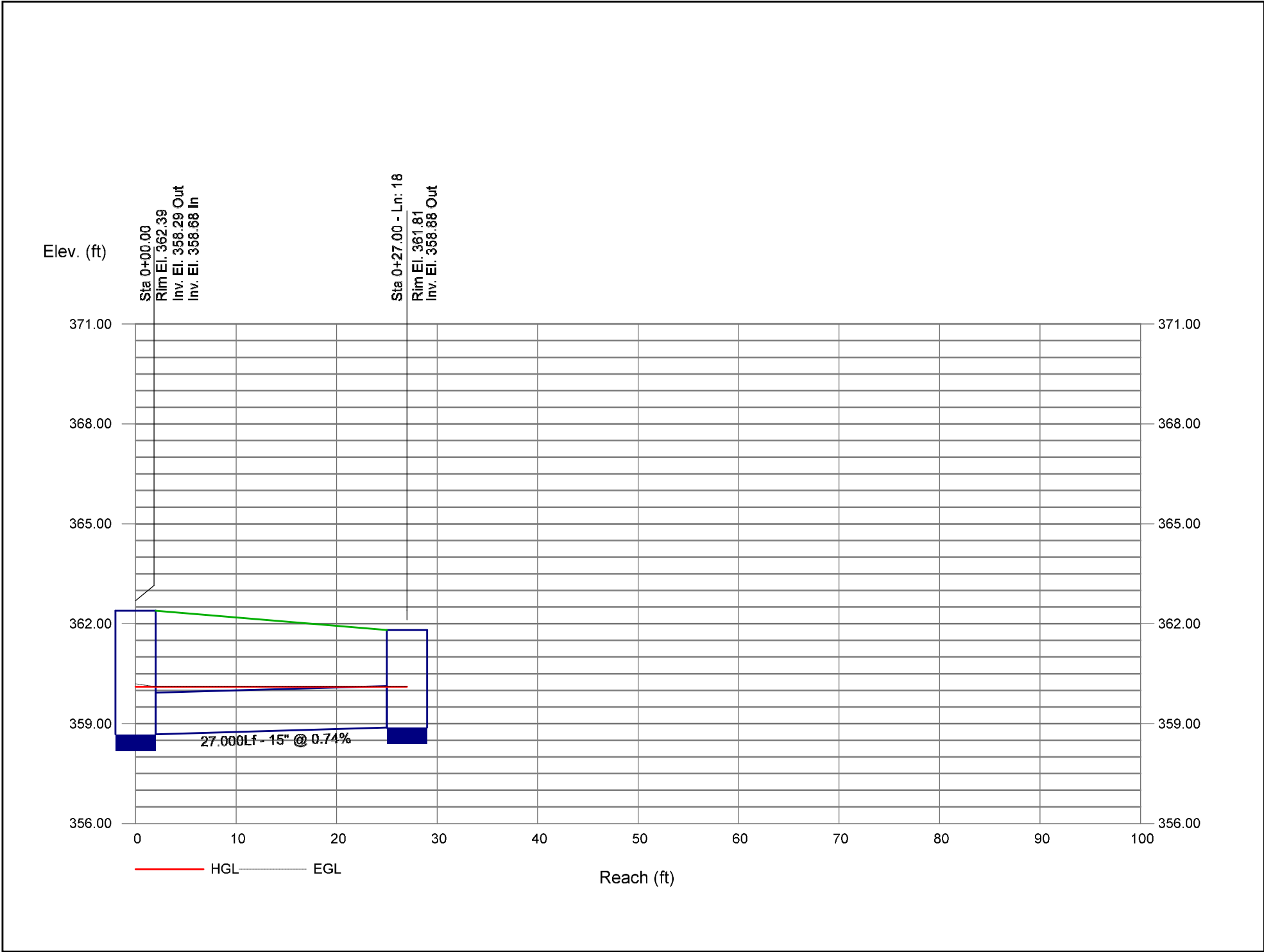
Proj. file: SCM#4.stm



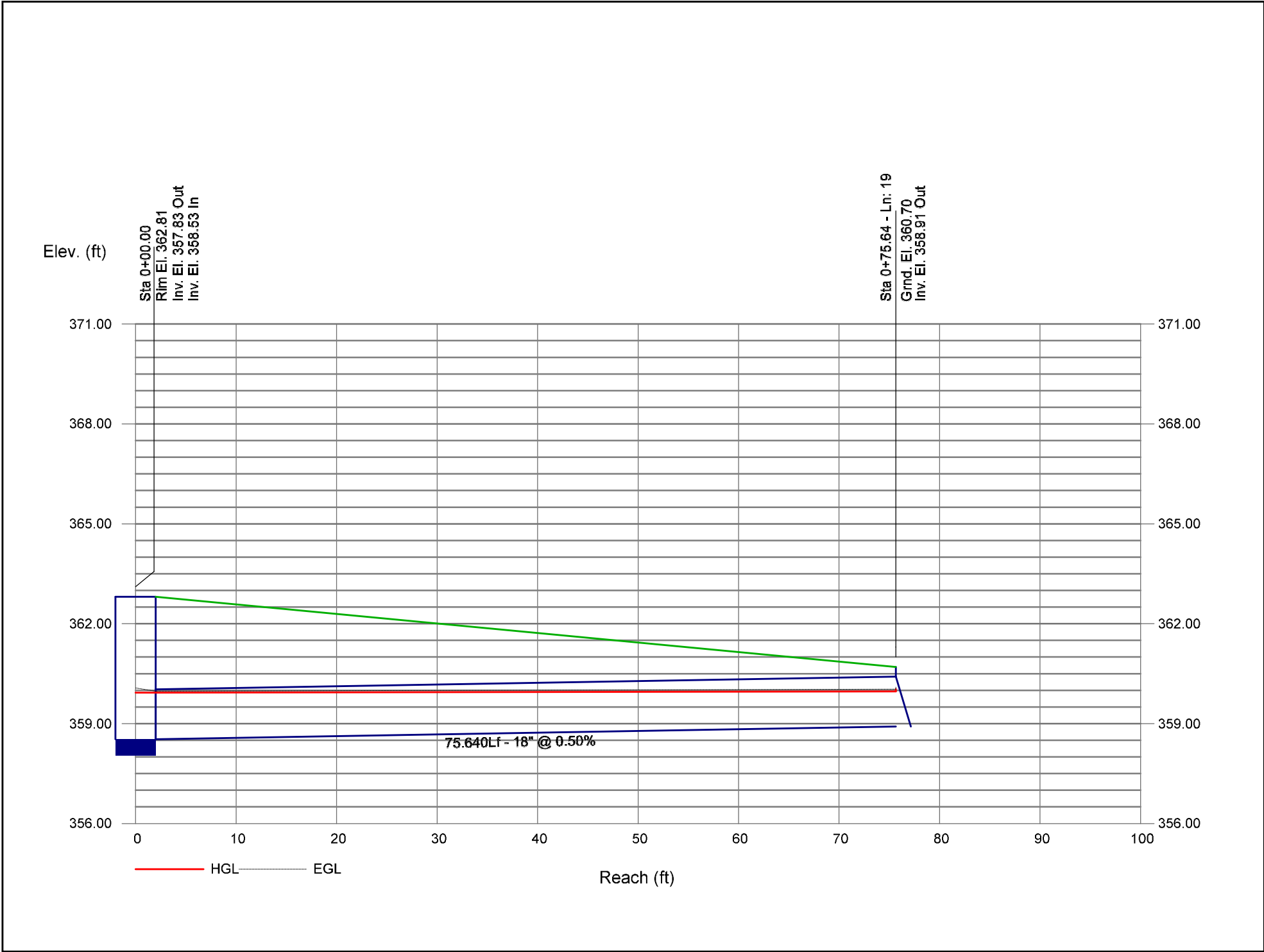


Storm Sewer Profile

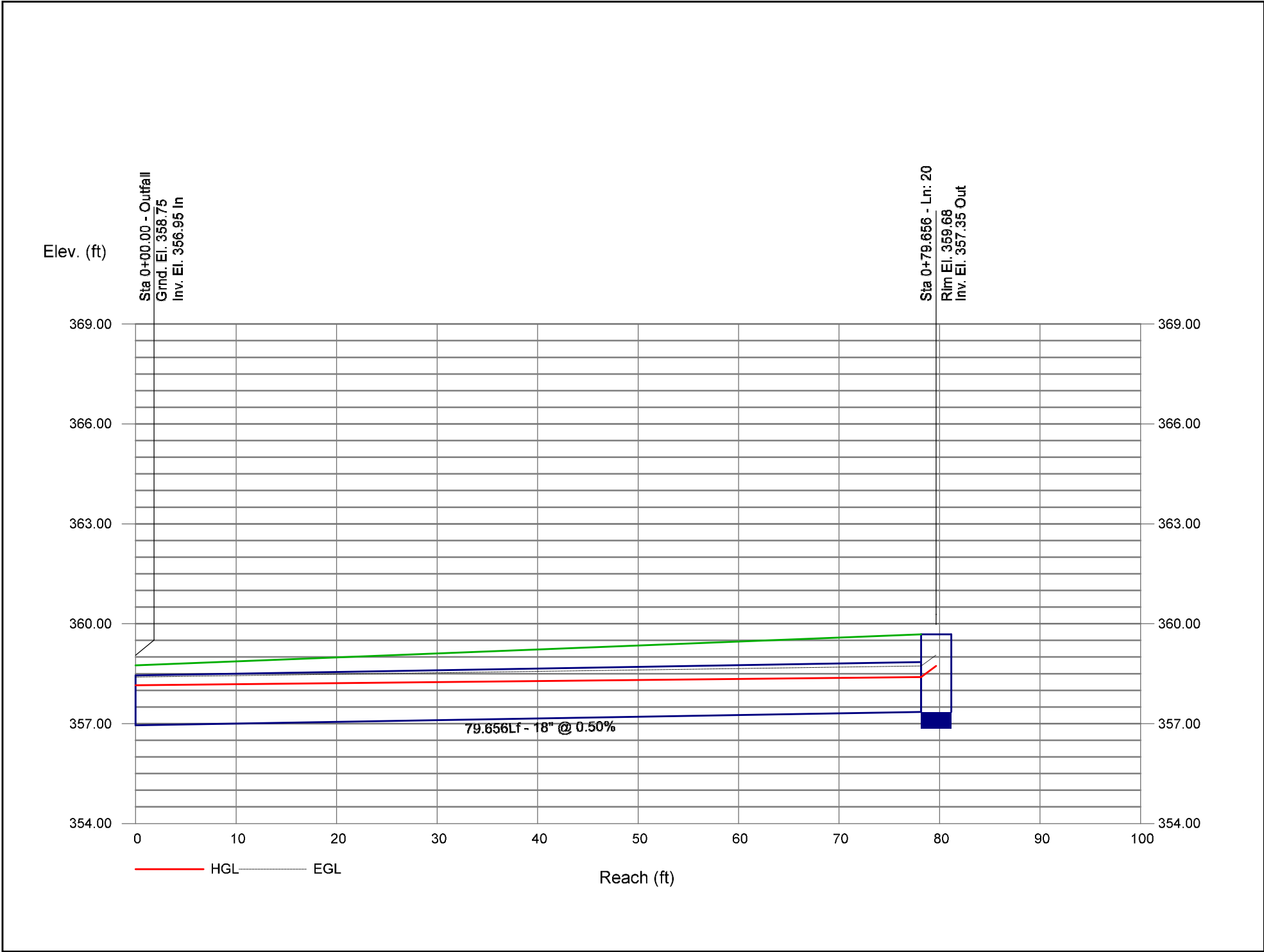


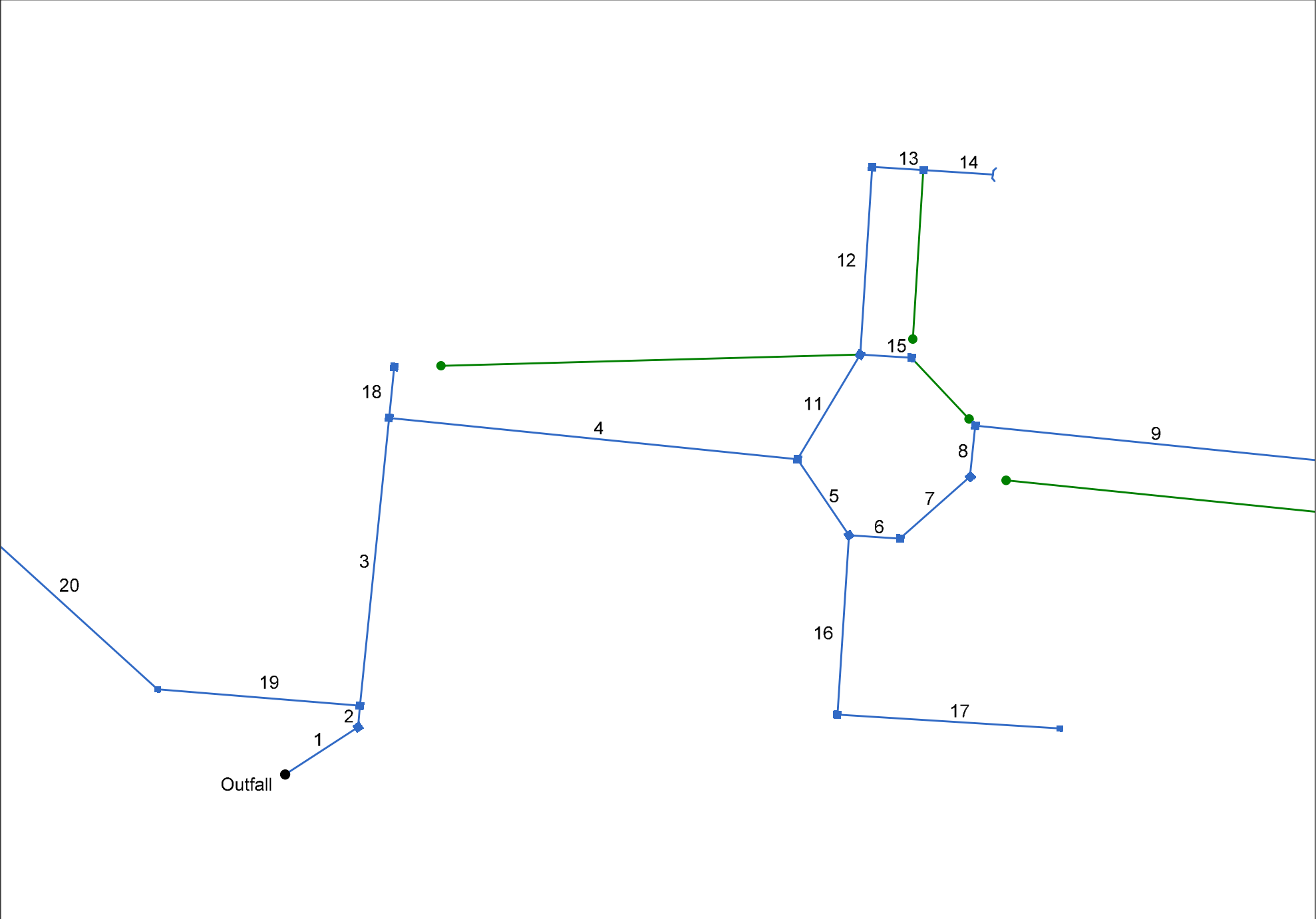


Storm Sewer Profile



Storm Sewer Profile





Project File: SCM#5.stm	Number of lines: 20	Date: 5/29/2025
-------------------------	---------------------	-----------------

Storm Sewer Inventory Report

25-Year SCM #5 Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert EI Dn (ft)	Line Slope (%)	Invert EI Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim EI (ft)	
1	End	45.553	-33.168	DrGrt	0.00	0.85	0.57	10.0	346.92	0.50	347.15	30	Cir	0.013	1.22	350.87	Pipe - (39)
2	1	11.310	-51.139	DrGrt	0.00	0.19	0.57	10.0	347.35	0.53	347.41	30	Cir	0.013	1.50	352.03	Pipe - (38) (1)
3	2	152.248	0.000	Comb	0.00	0.46	0.57	10.0	347.61	2.00	350.66	30	Cir	0.013	1.50	357.04	Pipe - (38)
4	3	215.399	90.101	Comb	0.00	0.04	0.57	10.0	351.06	4.69	361.17	24	Cir	0.013	1.38	366.04	Pipe - (37)
5	4	48.260	50.241	Comb	0.00	0.05	0.57	10.0	361.37	0.99	361.85	18	Cir	0.013	1.49	367.77	Pipe - (36)
6	5	27.000	-52.412	Comb	0.00	0.40	0.57	10.0	362.35	0.52	362.49	18	Cir	0.013	1.13	367.48	Pipe - (35)
7	6	49.032	-45.200	Comb	0.00	0.29	0.57	10.0	362.69	0.51	362.94	15	Cir	0.013	1.08	367.00	Pipe - (34)
8	7	27.000	-42.628	Comb	0.00	0.32	0.57	10.0	363.14	0.52	363.28	15	Cir	0.013	1.50	367.00	Pipe - (33)
9	8	184.905	90.000	Comb	0.00	0.23	0.57	10.0	363.48	3.50	369.95	15	Cir	0.013	1.48	374.03	Pipe - (31)
10	9	27.526	78.789	Comb	0.00	0.21	0.57	10.0	370.15	1.02	370.43	15	Cir	0.013	1.00	374.10	Pipe - (30)
11	4	64.208	-64.883	Comb	0.00	0.06	0.57	10.0	362.27	1.32	363.12	15	Cir	0.013	1.36	368.61	Pipe - (44)
12	11	98.954	-27.289	Comb	0.00	0.12	0.57	10.0	363.62	3.00	366.59	15	Cir	0.013	1.50	371.62	Pipe - (150)
13	12	27.000	90.000	Comb	0.00	0.13	0.57	10.0	367.09	1.52	367.50	15	Cir	0.013	0.50	371.63	Pipe - (28)
14	13	36.500	0.000	Hdwl	0.00	1.23	0.57	10.0	367.70	1.62	368.29	15	Cir	0.013	1.00	369.81	Pipe - (176)
15	11	27.000	62.711	Comb	0.00	0.09	0.57	10.0	364.00	0.89	364.24	15	Cir	0.013	1.00	368.57	Pipe - (43)
16	5	94.508	37.588	Comb	0.00	0.14	0.57	10.0	362.69	0.50	363.16	15	Cir	0.013	1.50	368.66	Pipe - (42)
17	16	117.135	-90.000	DrGrt	0.00	0.62	0.57	10.0	363.36	0.50	363.95	15	Cir	0.013	1.00	367.63	Pipe - (168)
18	3	27.001	0.467	Comb	0.00	0.53	0.57	10.0	353.30	0.52	353.44	15	Cir	0.013	1.00	357.04	Pipe - (40)
19	2	106.739	-91.019	DrGrt	0.00	0.25	0.57	10.0	347.82	0.50	348.35	15	Cir	0.013	0.99	351.82	Pipe - (183)
20	19	148.226	37.714	DrGrt	0.00	0.39	0.57	10.0	348.45	0.50	349.19	15	Cir	0.013	1.00	353.32	Pipe - (182)
Project File: SCM#5.stm												Number of lines: 20				Date: 5/29/2025	

Structure Report

25-Year SCM #5 Report

Page 1

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	YI 501	DropGrate	350.87	Rect	4.00	4.00	30	Cir	347.15	30	Cir	347.35
2	YI 501A	DropGrate	352.03	Rect	4.00	4.00	30	Cir	347.41	30 15	Cir Cir	347.61 347.82
3	CB 502	Combination	357.04	Rect	4.00	4.00	30	Cir	350.66	24 15	Cir Cir	351.06 353.30
4	CB 504	Combination	366.04	Rect	4.00	4.00	24	Cir	361.17	18 15	Cir Cir	361.37 362.27
5	CB 505	Combination	367.77	Rect	4.00	4.00	18	Cir	361.85	18 15	Cir Cir	362.35 362.69
6	CB 506	Combination	367.48	Rect	4.00	4.00	18	Cir	362.49	15	Cir	362.69
7	CB 507	Combination	367.00	Rect	4.00	4.00	15	Cir	362.94	15	Cir	363.14
8	CB 508	Combination	367.00	Rect	4.00	4.00	15	Cir	363.28	15	Cir	363.48
9	CB 514	Combination	374.03	Rect	4.00	4.00	15	Cir	369.95	15	Cir	370.15
10	CB 515	Combination	374.10	Rect	4.00	4.00	15	Cir	370.43			
11	CB 511	Combination	368.61	Rect	4.00	4.00	15	Cir	363.12	15 15	Cir Cir	363.62 364.00
12	CB 517	Combination	371.62	Rect	4.00	4.00	15	Cir	366.59	15	Cir	367.09
13	CB 516	Combination	371.63	Rect	4.00	4.00	15	Cir	367.50	15	Cir	367.70
14	FES 516A	OpenHeadwall	369.81	n/a	n/a	n/a	15	Cir	368.29			
15	CB 510	Combination	368.57	Rect	4.00	4.00	15	Cir	364.24			
16	CB 513	Combination	368.66	Rect	4.00	4.00	15	Cir	363.16	15	Cir	363.36
17	YI 513A	DropGrate	367.63	Rect	3.00	3.00	15	Cir	363.95			
18	CB 503	Combination	357.04	Rect	4.00	4.00	15	Cir	353.44			
19	YI 501B	DropGrate	351.82	Rect	3.00	3.00	15	Cir	348.35	15	Cir	348.45
20	YI 501C	DropGrate	353.32	Rect	3.00	3.00	15	Cir	349.19			
Project File: SCM#5.stm							Number of Structures: 20			Run Date: 5/29/2025		

Storm Sewer Summary Report

25-Year SCM #5 Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (39)	22.72	30	Cir	45.553	346.92	347.15	0.505	348.94	349.03	0.63	349.65	End	DropGrate
2	Pipe - (38) (1)	19.82	30	Cir	11.310	347.35	347.41	0.530	349.65	348.92	n/a	348.92	1	DropGrate
3	Pipe - (38)	17.17	30	Cir	152.248	347.61	350.66	2.003	348.92	352.06	0.86	352.06	2	Combination
4	Pipe - (37)	13.93	24	Cir	215.399	351.06	361.17	4.694	352.06	362.51	0.83	362.51	3	Combination
5	Pipe - (36)	8.05	18	Cir	48.260	361.37	361.85	0.995	362.51	362.95	n/a	362.95 j	4	Combination
6	Pipe - (35)	5.18	18	Cir	27.000	362.35	362.49	0.518	363.26	363.40	0.37	363.77	5	Combination
7	Pipe - (34)	3.78	15	Cir	49.032	362.69	362.94	0.510	363.77	363.90	0.23	364.14	6	Combination
8	Pipe - (33)	2.75	15	Cir	27.000	363.14	363.28	0.518	364.14	364.17	0.20	364.37	7	Combination
9	Pipe - (31)	1.66	15	Cir	184.905	363.48	369.95	3.499	364.37	370.46	n/a	370.46 j	8	Combination
10	Pipe - (30)	0.79	15	Cir	27.526	370.15	370.43	1.017	370.46	370.78	0.13	370.78	9	Combination
11	Pipe - (44)	6.08	15	Cir	64.208	362.27	363.12	1.324	363.13	364.12	n/a	364.12	4	Combination
12	Pipe - (150)	5.56	15	Cir	98.954	363.62	366.59	3.001	364.24	367.55	0.71	367.55	11	Combination
13	Pipe - (28)	5.13	15	Cir	27.000	367.09	367.50	1.519	367.82	368.42	0.22	368.42	12	Combination
14	Pipe - (176)	4.65	15	Cir	36.500	367.70	368.29	1.616	368.42	369.16	0.40	369.16	13	OpenHeadwall
15	Pipe - (43)	0.34	15	Cir	27.000	364.00	364.24	0.889	364.20	364.47	0.08	364.47	11	Combination
16	Pipe - (42)	2.82	15	Cir	94.508	362.69	363.16	0.497	363.40	363.87	0.36	364.23	5	Combination
17	Pipe - (168)	2.35	15	Cir	117.135	363.36	363.95	0.504	364.23	364.57	0.24	364.80	16	DropGrate
18	Pipe - (40)	2.01	15	Cir	27.001	353.30	353.44	0.519	353.87	354.01	0.21	354.22	3	Combination
19	Pipe - (183)	2.34	15	Cir	106.739	347.82	348.35	0.497	348.92	349.07	0.16	349.23	2	DropGrate
20	Pipe - (182)	1.48	15	Cir	148.226	348.45	349.19	0.499	349.23	349.67	n/a	349.67	19	DropGrate
Project File: SCM#5.stm									Number of lines: 20				Run Date: 5/29/2025	
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

25-Year SCM #5 Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YI 501	3.22	0.00	3.22	0.00	DrGrt	0.0	0.00	9.00	3.00	3.00	Sag	6.00	0.330	0.330	0.013	0.20	7.21	0.20	7.21	0.0	Off
2	YI 501A	0.72	0.00	0.72	0.00	DrGrt	0.0	0.00	9.00	3.00	3.00	Sag	6.00	0.330	0.330	0.013	0.07	6.45	0.07	6.45	0.0	Off
3	CB 502	1.74	0.00	1.74	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.23	7.70	0.23	7.70	0.0	Off
4	CB 504	0.15	0.00	0.15	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.09	1.45	0.00	0.00	0.0	3
5	CB 505	0.19	0.01	0.19	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.11	1.88	0.11	1.88	0.0	Off
6	CB 506	1.51	0.00	1.51	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.22	6.93	0.22	6.93	0.0	Off
7	CB 507	1.10	0.01	1.11	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.19	5.45	0.19	5.45	0.0	Off
8	CB 508	1.21	0.02	1.23	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.20	5.92	0.20	5.92	0.0	Off
9	CB 514	0.87	0.00	0.85	0.02	Comb	6.0	1.50	0.00	3.00	2.50	0.040	2.00	0.060	0.020	0.013	0.15	3.32	0.04	0.63	0.0	8
10	CB 515	0.79	0.00	0.78	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.040	2.00	0.060	0.020	0.013	0.14	3.09	0.03	0.51	0.0	7
11	CB 511	0.23	0.00	0.23	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.09	1.57	0.00	0.00	0.0	18
12	CB 517	0.45	0.00	0.45	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.12	2.10	0.00	0.00	0.0	11
13	CB 516	0.49	0.00	0.49	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.13	2.28	0.00	0.00	0.0	15
14	FES 516A	4.65	0.00	4.65	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.060	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
15	CB 510	0.34	0.00	0.34	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.030	2.00	0.060	0.020	0.013	0.11	1.83	0.00	0.00	0.0	8
16	CB 513	0.53	0.00	0.52	0.01	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.14	2.95	0.03	0.42	0.0	5
17	YI 513A	2.35	0.00	2.35	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.21	7.28	0.21	7.28	0.0	Off
18	CB 503	2.01	0.00	2.01	0.00	Comb	6.0	3.00	7.50	3.00	2.50	Sag	2.00	0.060	0.020	0.013	0.25	8.56	0.25	8.56	0.0	Off
19	YI 501B	0.95	0.00	0.95	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.12	6.70	0.12	6.70	0.0	Off
20	YI 501C	1.48	0.00	1.48	0.00	DrGrt	0.0	0.00	4.00	2.00	2.00	Sag	6.00	0.330	0.330	0.013	0.16	6.94	0.16	6.94	0.0	Off

Project File: SCM#5.stm

Number of lines: 20

Run Date: 5/29/2025

NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Hydraulic Grade Line Computations

25-Year SCM #5 Report

Page 1

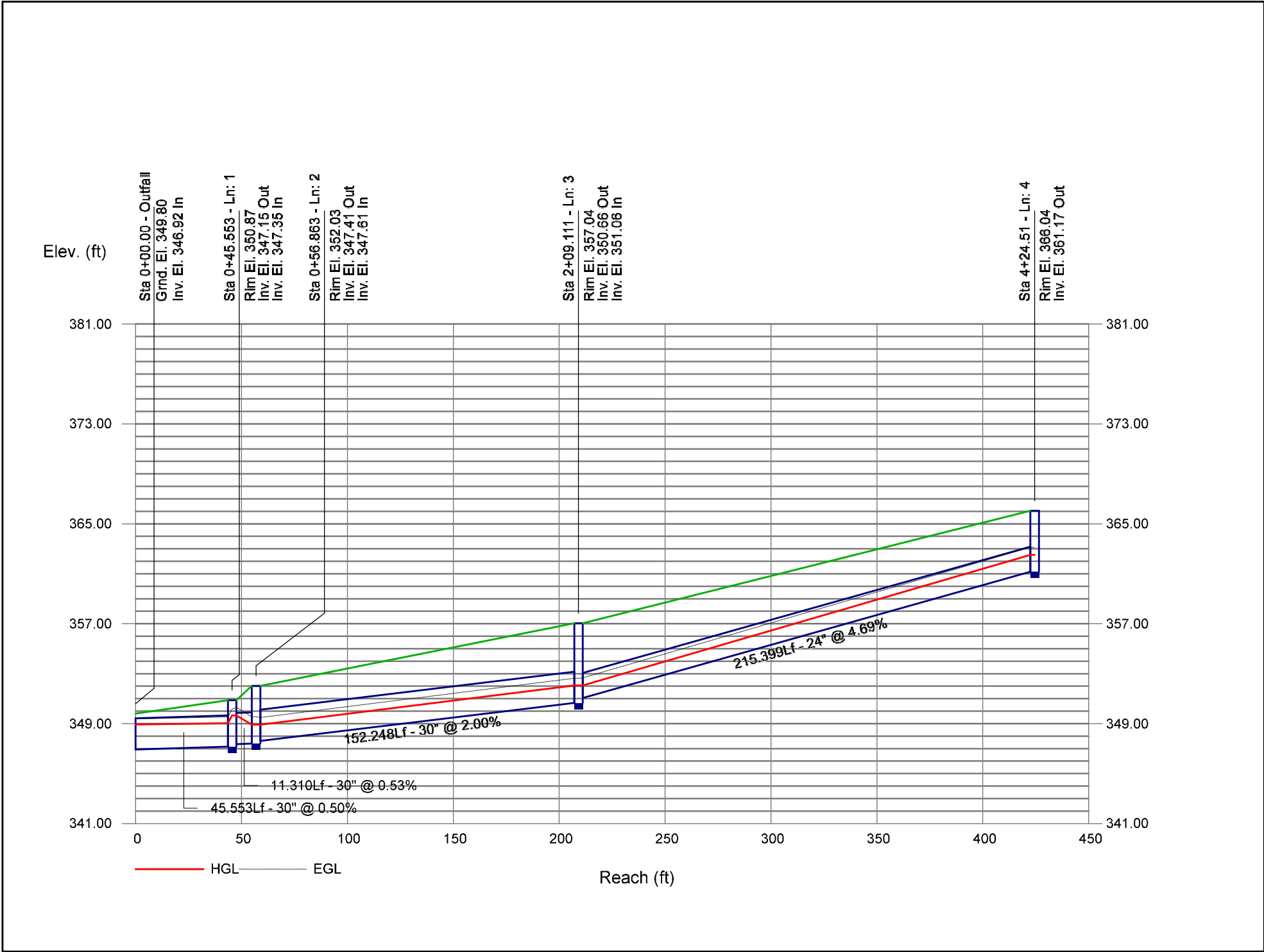
Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	30	22.72	346.92	348.94	2.02	4.25	5.35	0.44	349.38	0.315	45.553	347.15	349.03	1.88	3.96	5.75	0.51	349.54	0.368	0.342	0.156	1.22	0.63
2	30	19.82	347.35	349.65	2.30	3.10	4.19	0.64	350.29	0.000	11.310	347.41	348.92	1.51**	3.10	6.40	0.64	349.56	0.000	0.000	n/a	1.50	n/a
3	30	17.17	347.61	348.92	1.31	2.60	6.60	0.57	349.49	0.000	152.248	350.66	352.06	1.40**	2.83	6.07	0.57	352.63	0.000	0.000	n/a	1.50	0.86
4	24	13.93	351.06	352.06	1.00	1.57	8.86	0.60	352.66	0.000	215.399	361.17	362.51	1.34**	2.24	6.21	0.60	363.11	0.000	0.000	n/a	1.38	0.83
5	18	8.05	361.37	362.51	1.14	1.39	5.57	0.52	363.04	0.000	48.260	361.85	362.95 j	1.10**	1.39	5.81	0.52	363.47	0.000	0.000	n/a	1.49	n/a
6	18	5.18	362.35	363.26	0.91*	1.12	4.61	0.33	363.59	0.518	27.000	362.49	363.40	0.91	1.13	4.60	0.33	363.73	0.517	0.517	0.140	1.13	0.37
7	15	3.78	362.69	363.77	1.08	1.13	3.34	0.17	363.95	0.313	49.032	362.94	363.90	0.96	1.02	3.72	0.22	364.12	0.386	0.350	0.172	1.08	0.23
8	15	2.75	363.14	364.14	1.00	1.05	2.62	0.11	364.24	0.191	27.000	363.28	364.17	0.89	0.93	2.95	0.14	364.30	0.249	0.220	0.059	1.50	0.20
9	15	1.66	363.48	364.37	0.89	0.47	1.77	0.19	364.56	0.000	184.905	369.95	370.46 j	0.51**	0.47	3.52	0.19	370.65	0.000	0.000	n/a	1.48	0.28
10	15	0.79	370.15	370.46	0.31	0.24	3.35	0.13	370.59	0.000	27.526	370.43	370.78	0.35**	0.28	2.84	0.13	370.90	0.000	0.000	n/a	1.00	0.13
11	15	6.08	362.27	363.13	0.86*	0.90	6.75	0.52	363.65	0.000	64.208	363.12	364.12	1.00**	1.05	5.80	0.52	364.64	0.000	0.000	n/a	1.36	n/a
12	15	5.56	363.62	364.24	0.62*	0.61	9.10	0.48	364.72	0.000	98.954	366.59	367.55	0.95**	1.01	5.53	0.48	368.02	0.000	0.000	n/a	1.50	0.71
13	15	5.13	367.09	367.82	0.73*	0.74	6.89	0.44	368.26	0.000	27.000	367.50	368.42	0.92**	0.97	5.31	0.44	368.86	0.000	0.000	n/a	0.50	0.22
14	15	4.65	367.70	368.42	0.72	0.73	6.39	0.40	368.82	0.000	36.500	368.29	369.16	0.87**	0.92	5.08	0.40	369.56	0.000	0.000	n/a	1.00	0.40
15	15	0.34	364.00	364.20	0.20*	0.13	2.67	0.08	364.28	0.000	27.000	364.24	364.47	0.23**	0.15	2.25	0.08	364.54	0.000	0.000	n/a	1.00	0.08
16	15	2.82	362.69	363.40	0.71*	0.72	3.90	0.24	363.64	0.497	94.508	363.16	363.87	0.71	0.72	3.91	0.24	364.11	0.499	0.498	0.470	1.50	0.36
17	15	2.35	363.36	364.23	0.87	0.60	2.58	0.10	364.33	0.193	117.135	363.95	364.57	0.62**	0.60	3.90	0.24	364.80	0.557	0.375	0.439	1.00	0.24
18	15	2.01	353.30	353.87	0.57*	0.54	3.65	0.21	354.08	0.518	27.001	353.44	354.01	0.57**	0.55	3.65	0.21	354.22	0.521	0.519	0.140	1.00	0.21
19	15	2.34	347.82	348.92	1.10	1.14	2.05	0.07	348.98	0.119	106.739	348.35	349.07	0.72	0.73	3.22	0.16	349.23	0.335	0.227	0.242	0.99	0.16
20	15	1.48	348.45	349.23	0.78	0.43	1.84	0.05	349.28	0.104	148.226	349.19	349.67	0.48**	0.43	3.40	0.18	349.85	0.532	0.318	n/a	1.00	n/a

Project File: SCM#5.stm

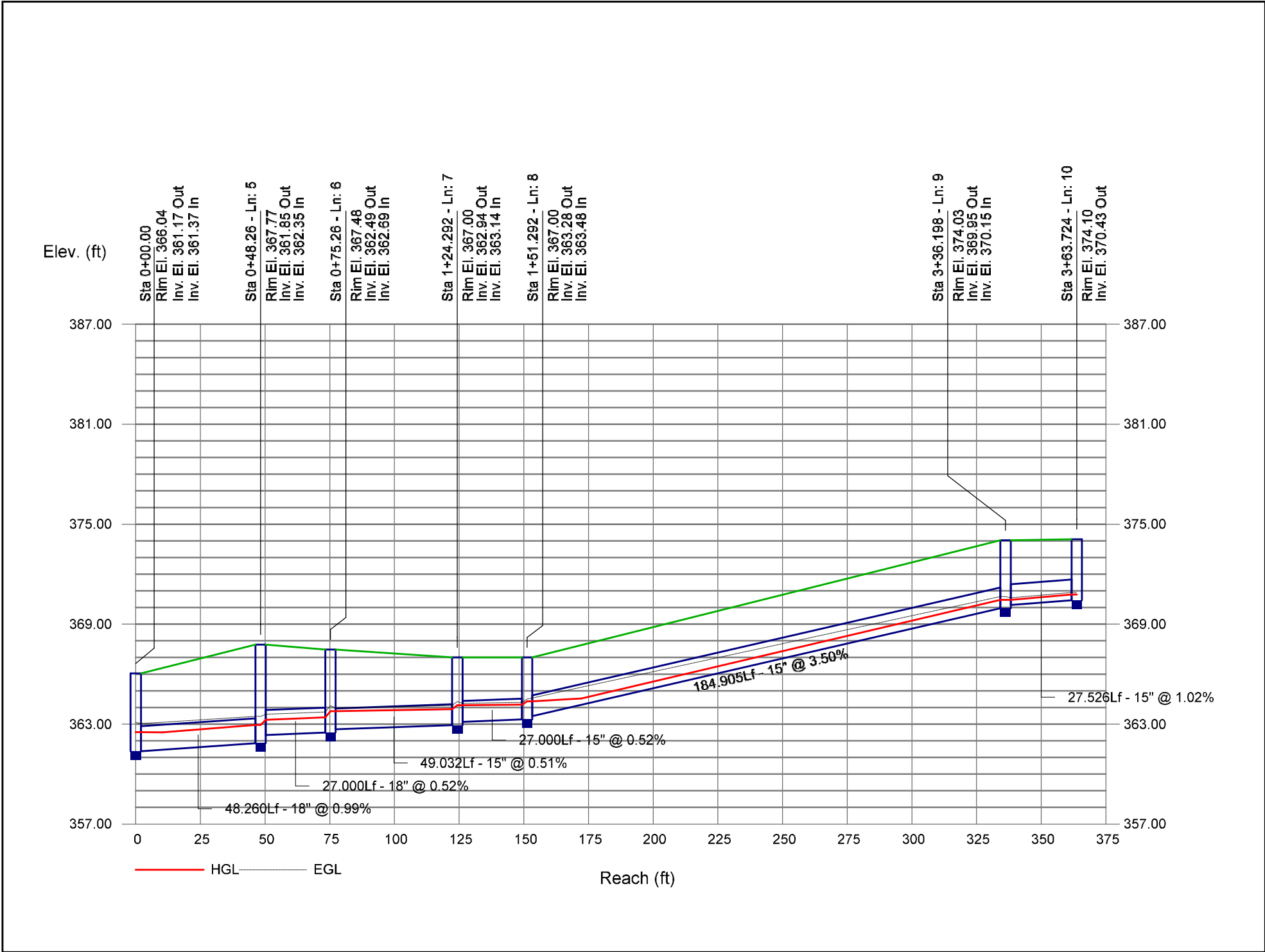
Number of lines: 20

Run Date: 5/29/2025

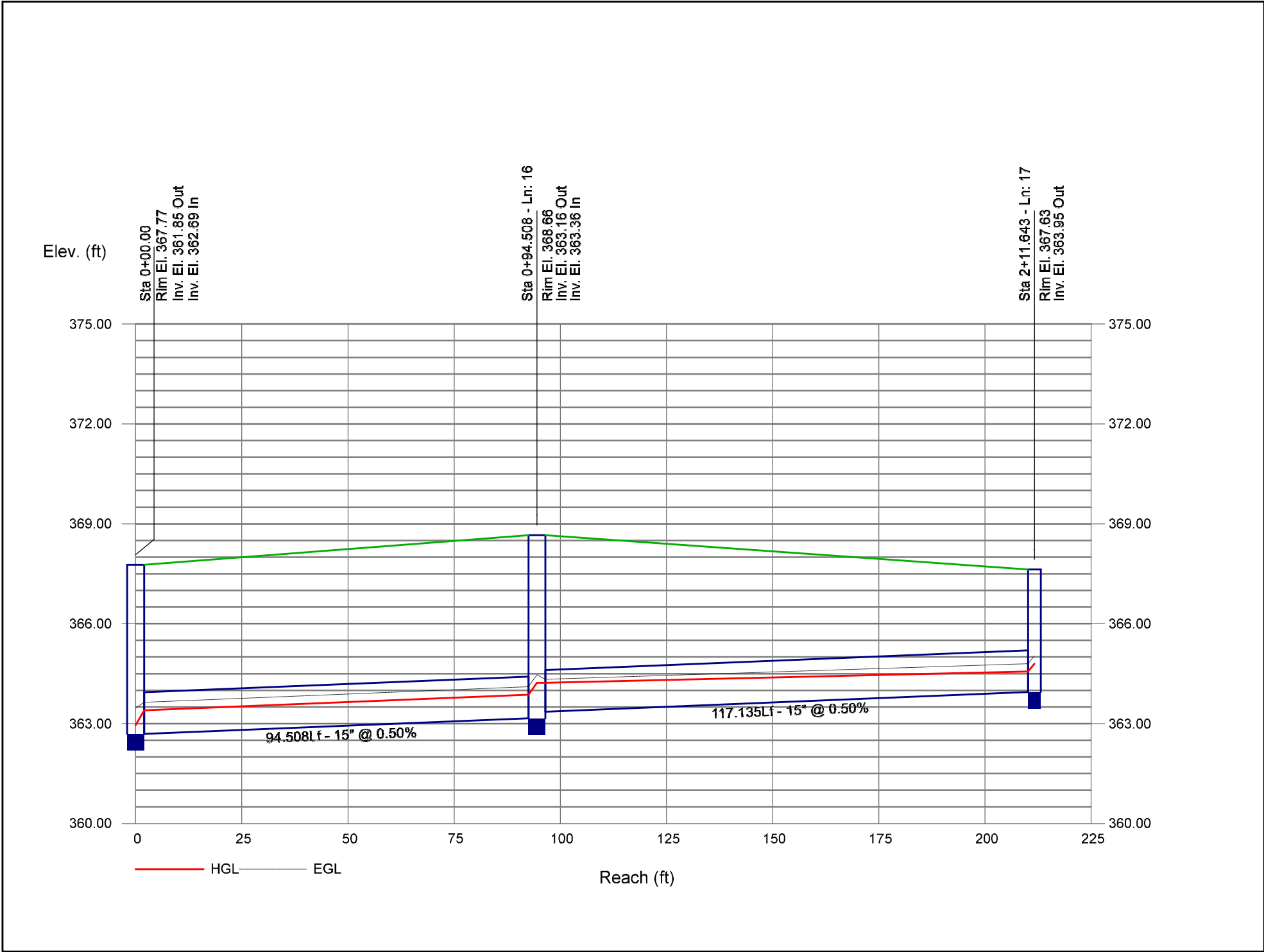
Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box



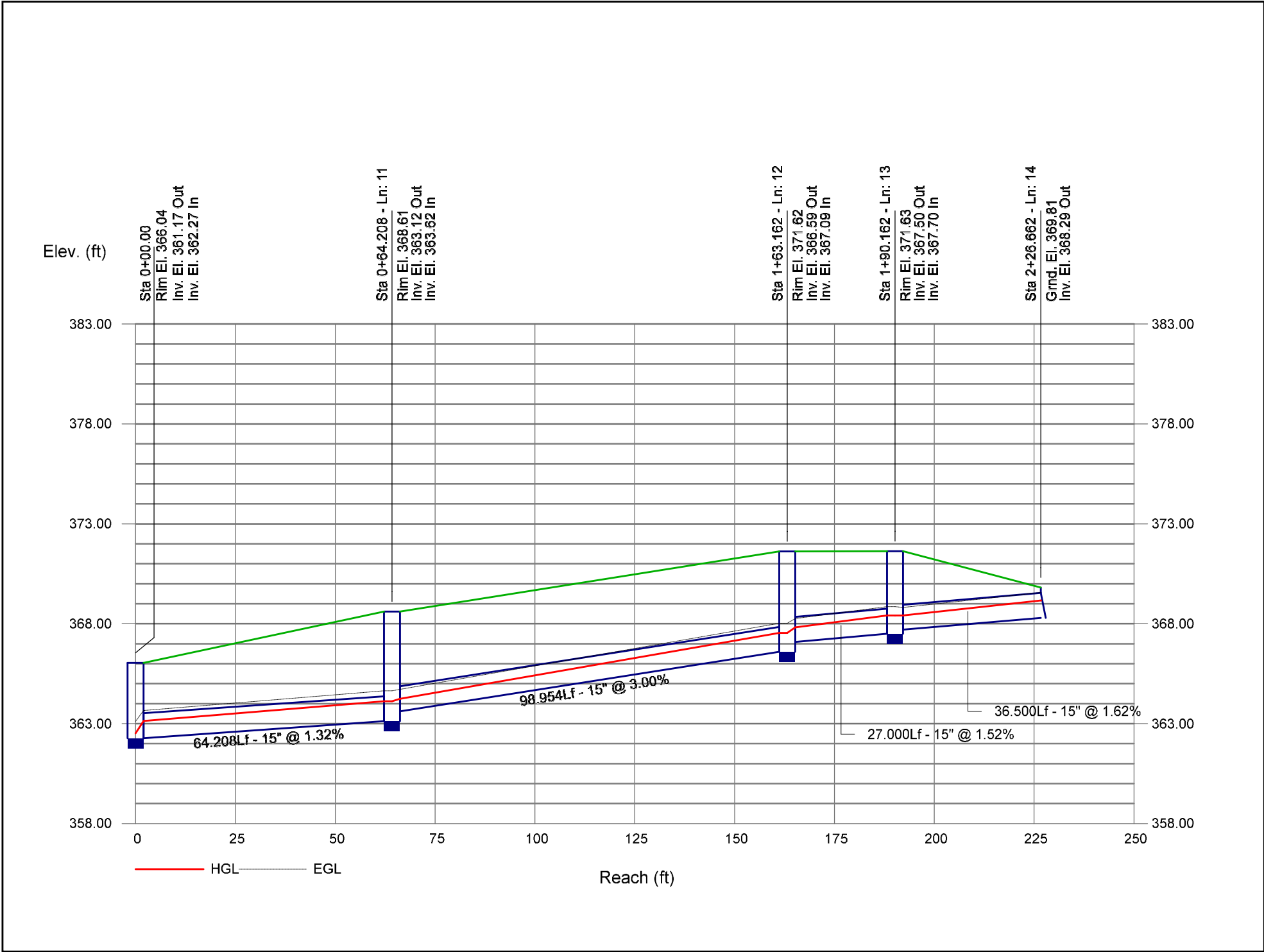
Storm Sewer Profile



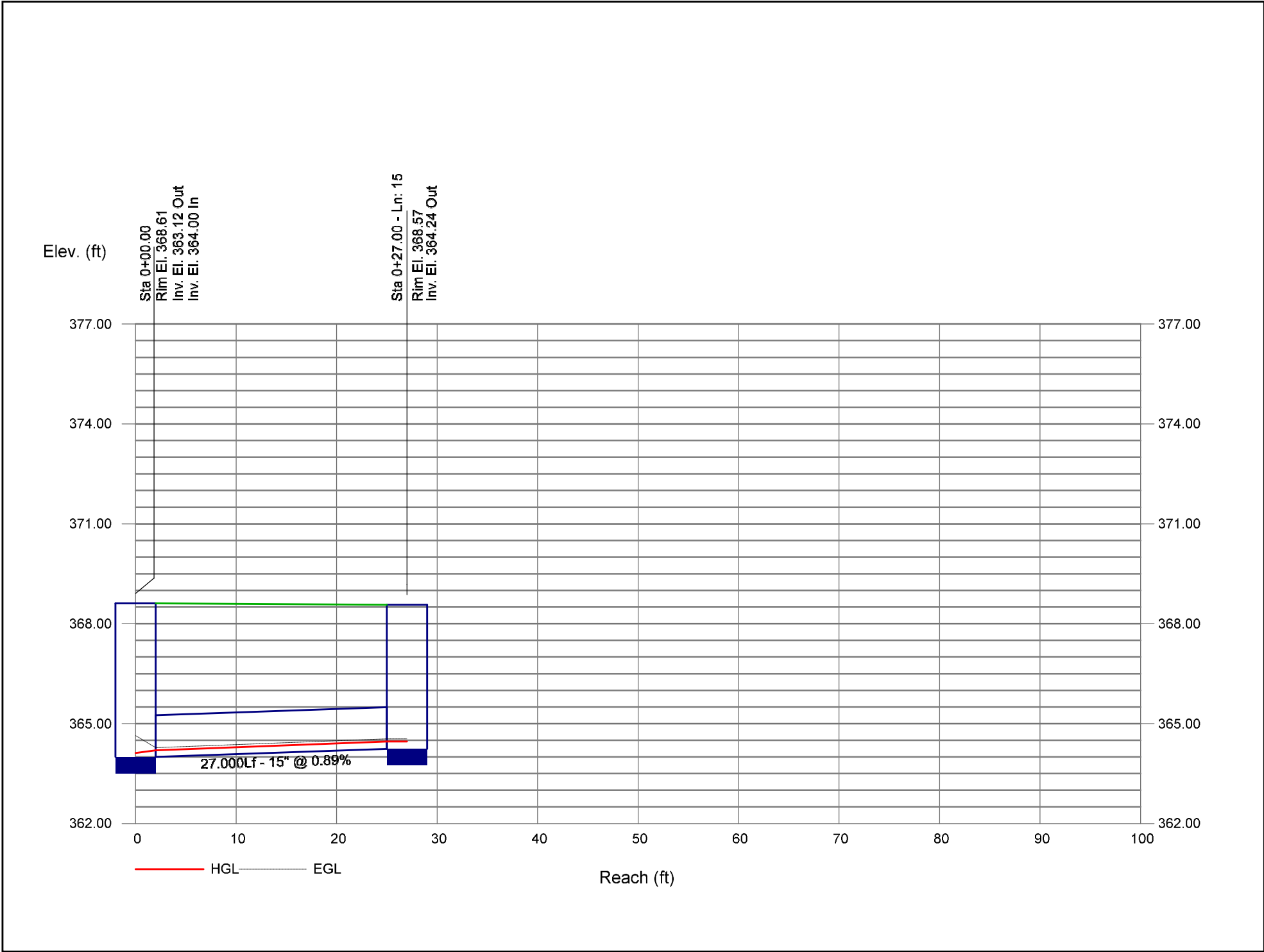
Storm Sewer Profile



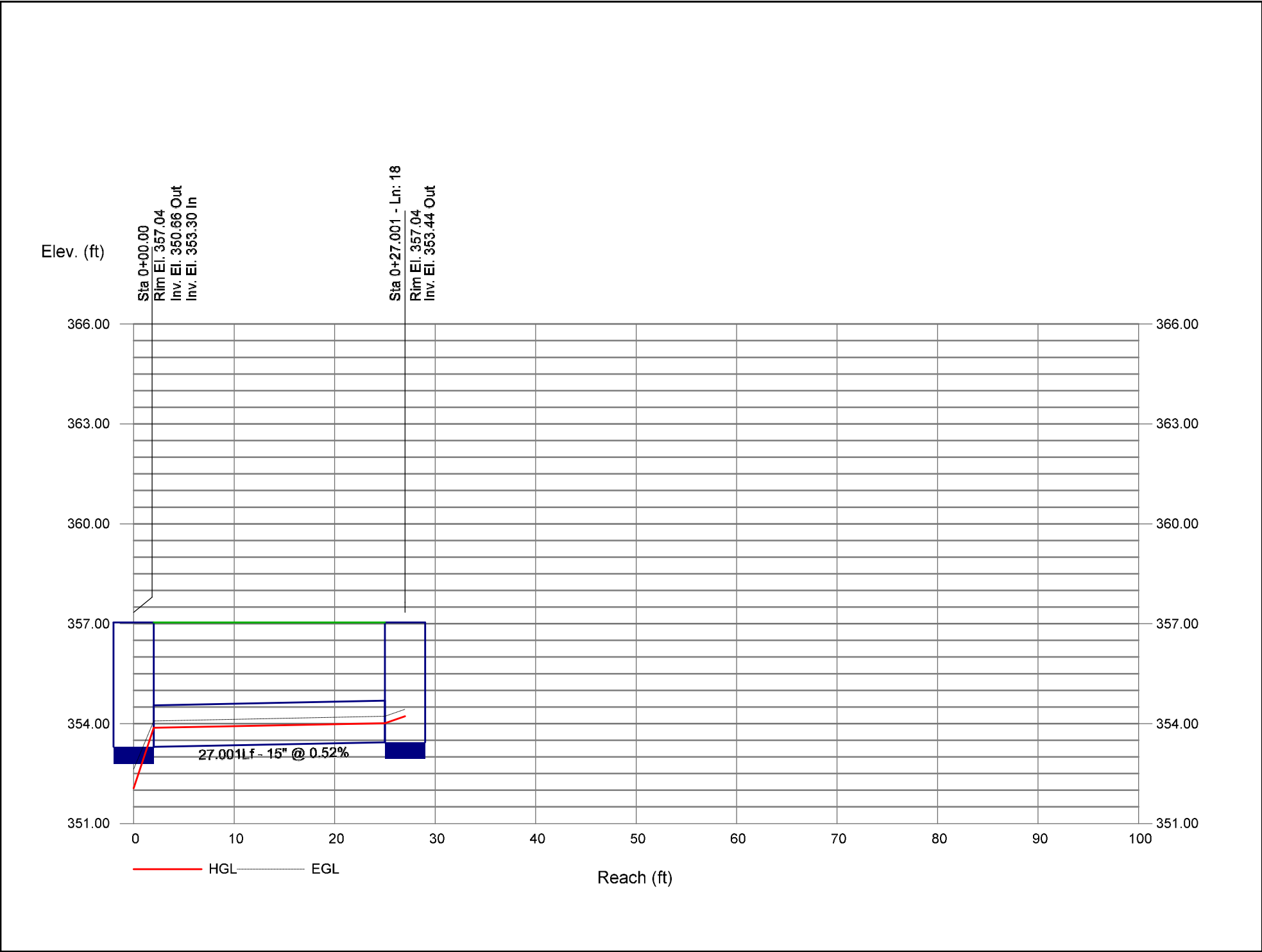
Storm Sewer Profile



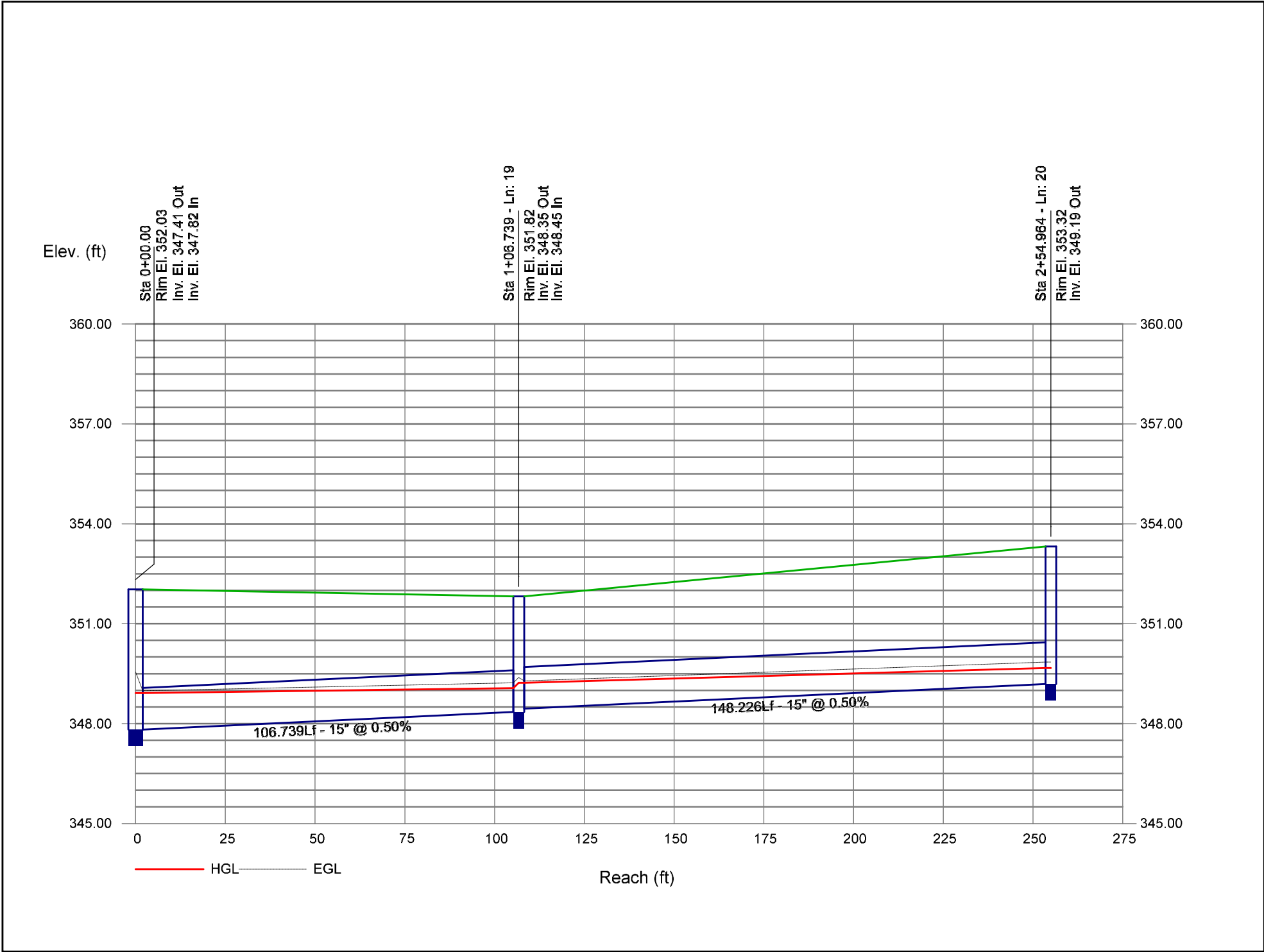
Storm Sewer Profile



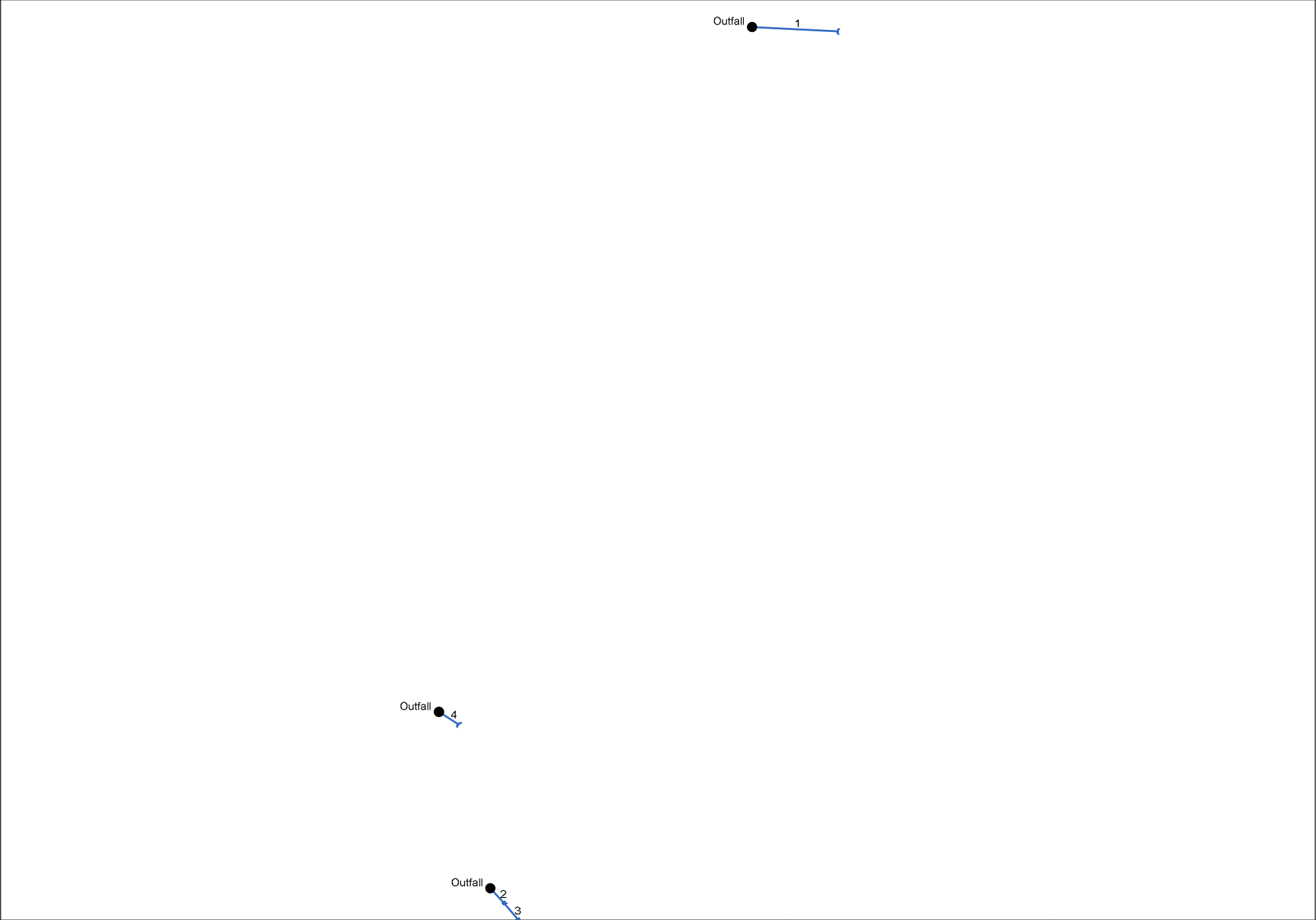
Storm Sewer Profile



Storm Sewer Profile



Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan 25-Year Bypass Report



Project File: Bypass.stm	Number of lines: 4	Date: 5/29/2025
--------------------------	--------------------	-----------------

Storm Sewer Inventory Report

25-Year Bypass Report

Page 1

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	93.000	3.619	Hdwl	0.00	1.58	0.57	10.0	364.86	5.53	370.00	18	Cir	0.013	1.00	371.79	Pipe - (27)
2	End	25.000	52.575	Comb	0.00	0.12	0.57	10.0	356.16	0.48	356.28	15	Cir	0.013	0.50	360.04	Pipe - (26)
3	2	27.005	3.159	Comb	0.00	0.22	0.57	10.0	356.41	0.52	356.55	15	Cir	0.013	1.00	360.04	Pipe - (25)
4	End	26.595	38.202	Hdwl	0.00	0.90	0.57	10.0	350.75	3.76	351.75	15	Cir	0.013	1.00	353.27	Pipe - (192)
Project File: Bypass.stm												Number of lines: 4				Date: 5/29/2025	

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	FES 601	OpenHeadwall	371.79	n/a	n/a	n/a	18	Cir	370.00	15	Cir	356.41
2	CB 421	Combination	360.04	Rect	4.00	4.00	15	Cir	356.28			
3	CB 422	Combination	360.04	Rect	4.00	4.00	15	Cir	356.55			
4	FES 700	OpenHeadwall	353.27	n/a	n/a	n/a	15	Cir	351.75			
										</		

Storm Sewer Summary Report

25-Year Bypass Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (27)	5.96	18	Cir	93.000	364.86	370.00	5.527	366.06	370.94	n/a	370.94 j	End	OpenHeadwall
2	Pipe - (26)	1.27	15	Cir	25.000	356.16	356.28	0.480	357.00	357.01	0.02	357.03	End	Combination
3	Pipe - (25)	0.83	15	Cir	27.005	356.41	356.55	0.518	357.03	357.03	0.06	357.09	2	Combination
4	Pipe - (192)	3.42	15	Cir	26.595	350.75	351.75	3.760	351.73	352.50	n/a	352.50 j	End	OpenHeadwall
Project File: Bypass.stm									Number of lines: 4			Run Date: 5/29/2025		
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Inlet Report

25-Year Bypass Report

Page 1

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	FES 601	5.96	0.00	5.96	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CB 421	0.45	0.00	0.45	0.00	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.13	2.57	0.01	0.24	0.0	Off
3	CB 422	0.83	0.00	0.78	0.05	Comb	6.0	1.50	0.00	3.00	2.50	0.020	2.00	0.060	0.020	0.013	0.16	4.10	0.06	0.98	0.0	Off
4	FES 700	3.42	0.00	3.42	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Bypass.stm

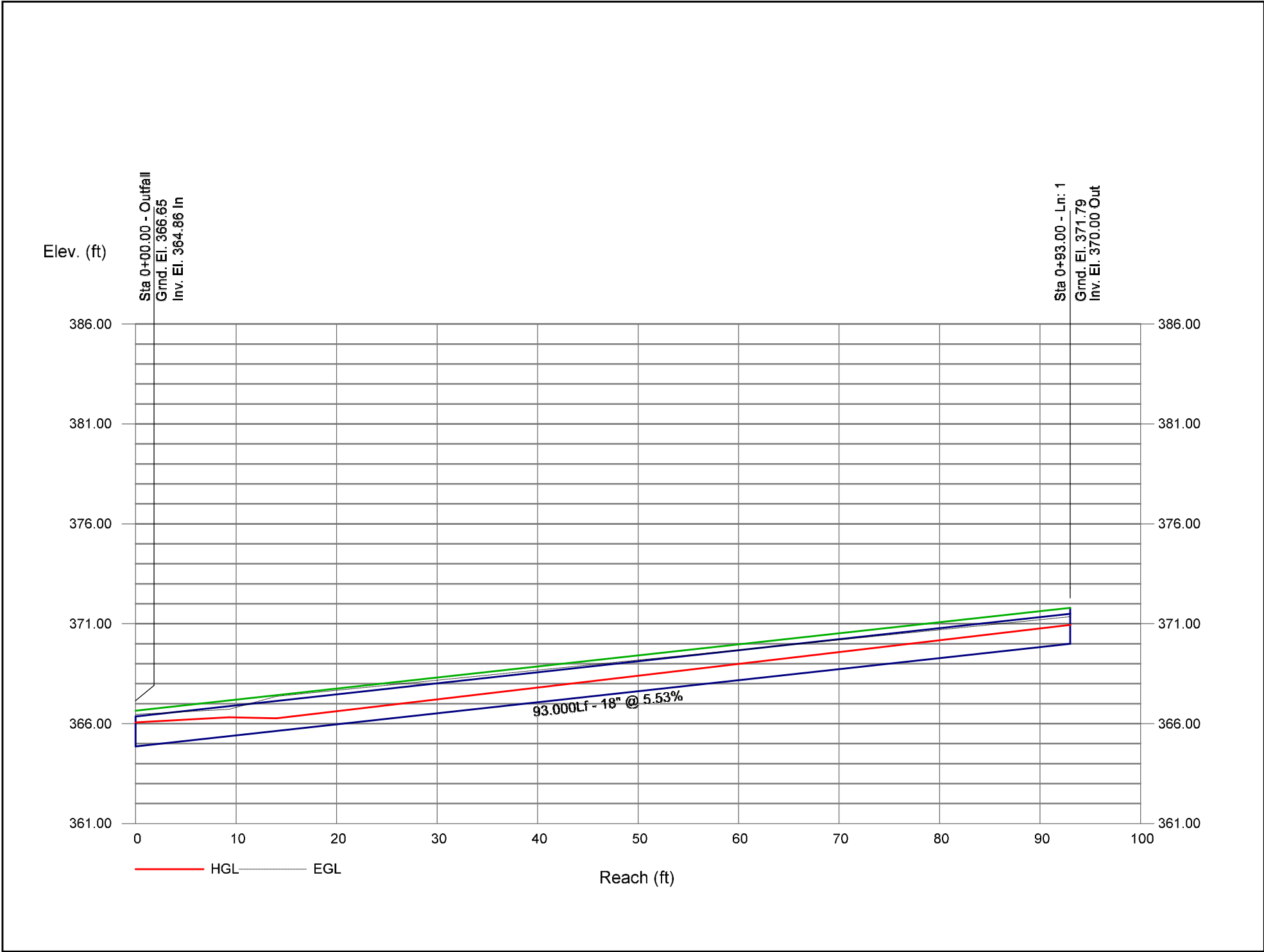
Number of lines: 4

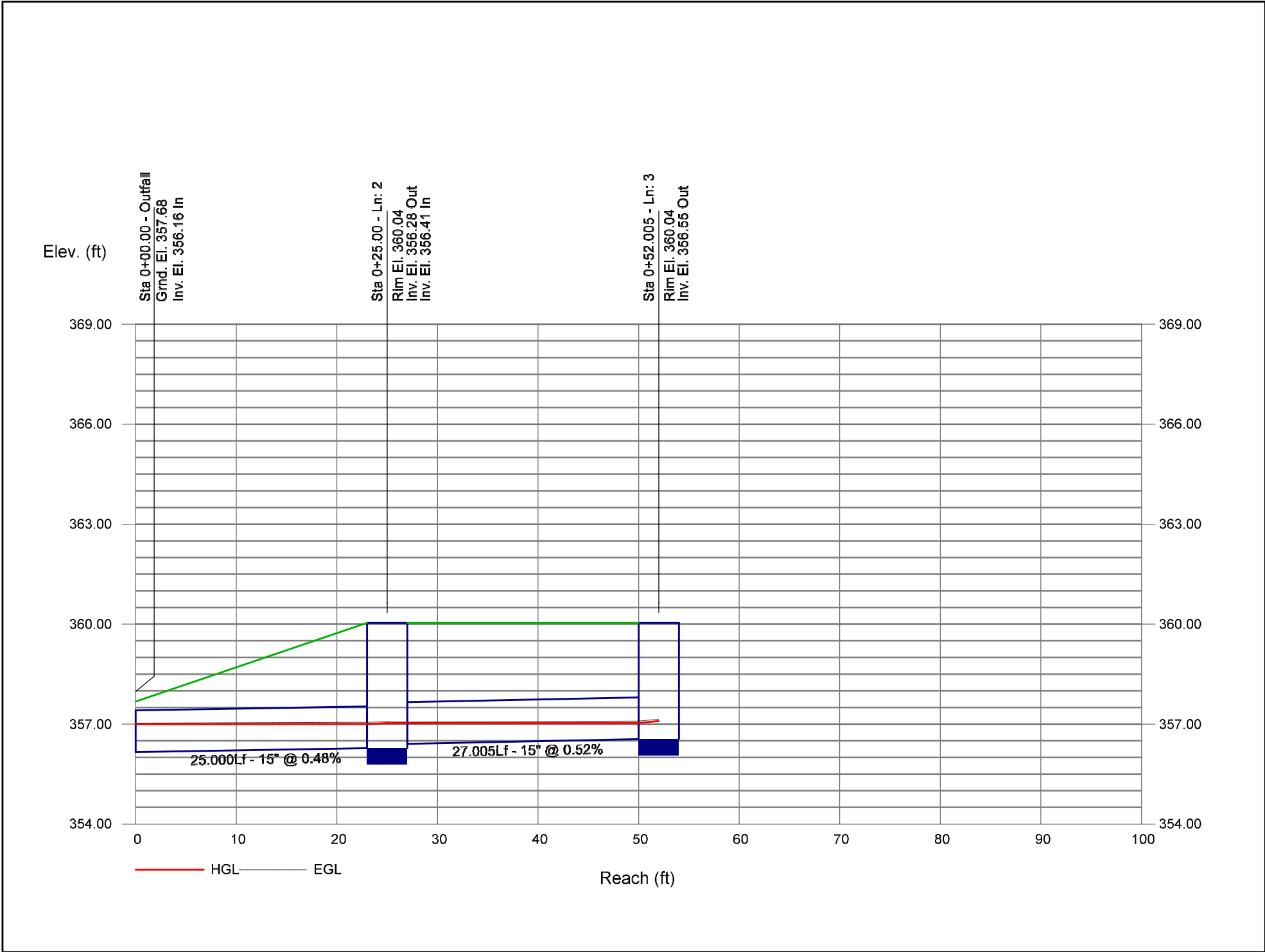
Run Date: 5/29/2025

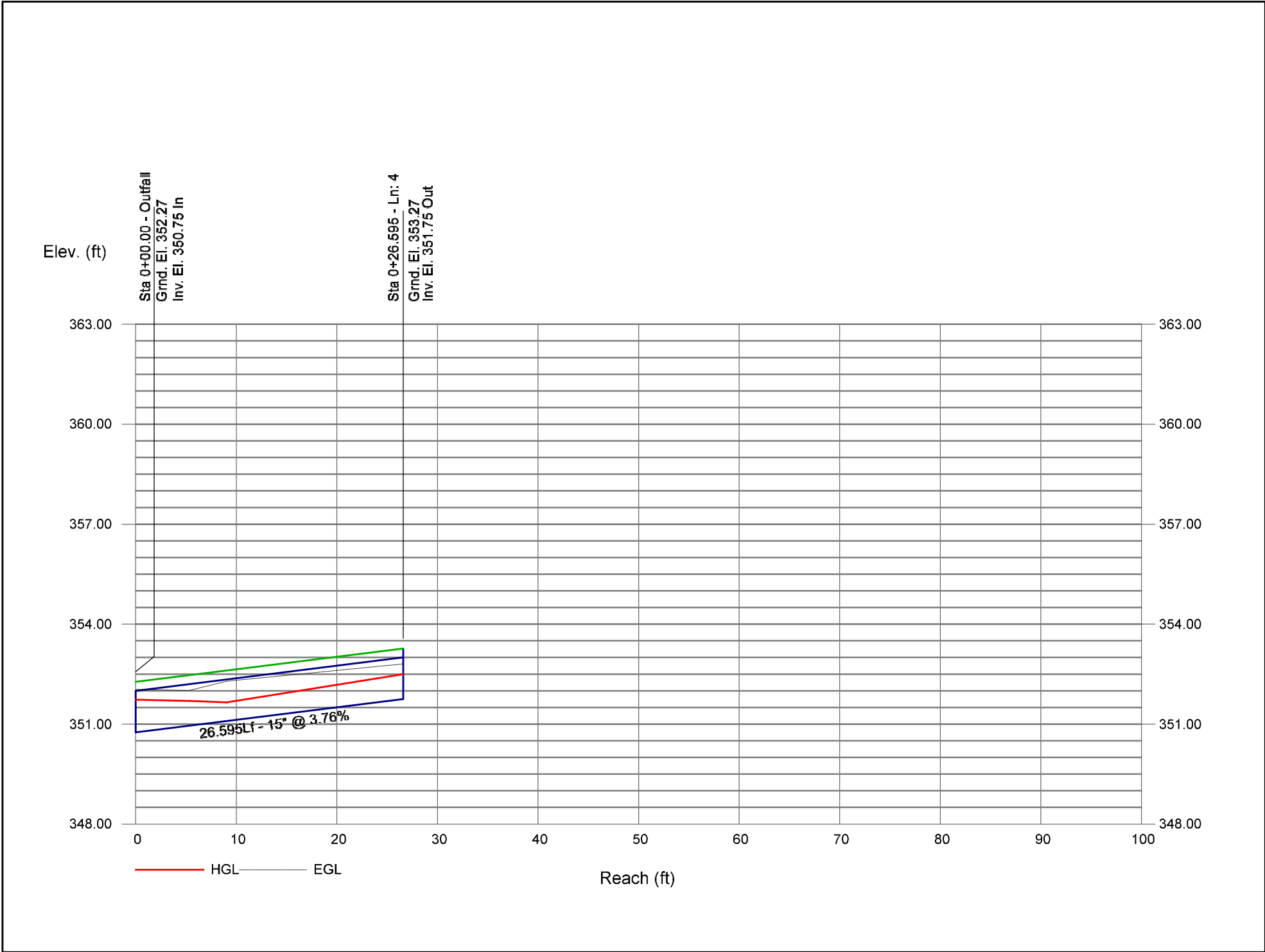
NOTES: Inlet N-Values = 0.016; Intensity = 62.86 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added.All curb inlets are throat.

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream									Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)			
1	18	5.96	364.86	366.06	1.20	1.17	3.93	0.40	366.46	0.000	93.000	370.00	370.94 j	0.94**	1.17	5.10	0.40	371.35	0.000	0.000	n/a	1.00	n/a	
2	15	1.27	356.16	357.00	0.84	0.88	1.45	0.03	357.03	0.062	25.000	356.28	357.01	0.73	0.74	1.72	0.05	357.05	0.095	0.079	0.020	0.50	0.02	
3	15	0.83	356.41	357.03	0.62	0.61	1.37	0.03	357.06	0.068	27.005	356.55	357.03	0.48	0.44	1.90	0.06	357.09	0.165	0.117	0.032	1.00	0.06	
4	15	3.42	350.75	351.73	0.98	0.76	3.32	0.31	352.04	0.000	26.595	351.75	352.50 j	0.75**	0.76	4.48	0.31	352.81	0.000	0.000	n/a	1.00	0.31	







APPENDIX D
**STORMWATER CONTROL
MEASURE CALCULATIONS**

Project Information

SNAP v4.2.0

*Complete this sheet if required by your reviewing authority.
Contact them for any questions. Grey boxes/text are optional.*

LOCATION

Project Name (optional):	Moody Development		Parcel ID (optional):	1767284304 & 1767284925	
Submission Date (optional):	12/16/2024	date	Nutrient Management Watershed:	Neuse	menu
Local Jurisdiction / Reviewing Agency:	Wake County	menu	Subwatershed:	Neuse-Upper	menu
Project Latitude Coordinates (optional):		N	Phosphorus Delivery Zone:	Neuse - Upper 03020201	menu
Project Longitude Coordinates (optional):		W	Nitrogen Delivery Zone:	Neuse - Upper 03020201	menu

PROJECT DETAILS

Development Land Use Type:	Single Family Residential	menu	Disturbed Area:	827,640	ft ²
Part of Common Development Plan?	no	y/n	Project Activity:	New Development	menu
Designated Downtown Area?	no	y/n	Project Drains to SA Waters?	no	y/n
Public Linear Road/Sidewalk Project?	no	y/n	Pre-Project Land Use:	crops	menu
Project Owner Type:	Private	menu	Project Description (optional):		

STORMWATER DETAILS

(Falls ONLY) Onsite Reduction % Req.		%	Project Uses LID/Runoff Volume Match?	no	y/n
Existing BUA/Development Onsite?	yes	y/n	Local Gov't nutrient req's same as State?	yes	y/n
Local Gov't cutoff date for Existing BUA:		date	Project Drains to Regional SCM?	no	y/n
Nitrogen Export Rate Target:	3.60	lb/ac/yr	Total Nitrogen Offset Credits Needed:		lb/yr
Phosphorus Export Rate Target:		lb/ac/yr	Total Phosphorus Offset Credits Needed:		lb/yr

Project Area and Offsite Land Cover Characteristics

Precipitation
Station:

Raleigh

Copy & Paste VALUES ONLY for Best Results

[Click here to scroll down to error messages on this sheet.](#)

PROJECT AREA LAND COVERS	TN EMC (mg/L)	TP EMC (mg/L)	Pre-Project Area (ft ²)	Post-Project Area (ft ²)	Change pre-to-post (ft ²)
Roof	1.18	0.11		324,522	324,522
Roadway	1.64	0.34		169,884	169,884
Parking/Driveway/Sidewalk	1.42	0.18		120,661	120,661
Protected Forest	0.97	0.03	198,564	198,564	0
Managed Pervious/Landscaping	2.48	1.07	1,908,895	1,243,734	-665,161
Offsite or Existing Roof	1.18	0.11	6,411	6,411	0
Offsite or Existing Roadway	1.64	0.34			0
Offsite or Existing Parking/Driveway/Sidewalk	1.42	0.18	24,233	24,233	0
Offsite Protected Forest	0.97	0.03			0
Offsite Managed Pervious	2.48	1.07			0
CUSTOM LAND COVER 1					0
CUSTOM LAND COVER 2					0
CUSTOM LAND COVER 3					0
LAND TAKEN UP BY SCM	1.18	0.11		50,094	50,094
Total (Regulated & UnReg) Area			2,138,103.00	2,138,103.00	
Project (Regulated) Area			2,107,459.00	2,107,459.00	

Stormwater Control Measure (SCM) Characteristics

SNAP v4.2.0

Copy & Paste VALUES ONLY

[Click here to go to SCM101's Land Cover Data](#)

[Click here to review Errors](#)

[Click here to go to Summary Data](#)

[Click here to go back to the top](#)

[illegible]

Nutrient Export Summary

SNAP v4.2.0

Landcover & SCM Data Review

Errors / Advisories

Avg Annual precip (in) =	46.22	
Total (Regulated + Unregulated) Area (ft ²) =	2,138,103	
Project (Regulated) Area (ft ²) =	2,107,459	
Net BUA (Project Area BUA only ft ²) =	615,067	Net BUA indicates new development or expansion.
Custom Landcovers are present:	no	
Total Nitrogen Export Target Scaled to Project Area (lb/yr):	174.17	

Errors / Advisories

SCM Area (ft ²) =	50,094	
SCM Treated Area (ft ²) =	1,413,523	
Catchment Routing:	No errors	
Treating Runoff from Existing BUA or Offsite:	no	
Disturbed Area (ft ²) =	827,640	
Total Phosphorus Export Target Scaled to Project Area (lb/yr):	0.00	

Nutrient Export Summary	Total Area (Onsite + Offsite) Pre-Project	Project Area (Onsite Only) Pre-Project	Total Area Post-Project before Treatment	Project Area Post-Project before Treatment	Total Area Post-Project after Treatment	Project Area Post-Project after Treatment	Total Area Post-Project SCM-Treated Area Only	Project Area Post-Project SCM-Treated Area Only	Total Area Post-Project Untreated Areas	Project Area Post-Project Untreated Areas
Area (All Landcover Types) (acres)	49.0841	48.3806	49.0841	48.3806	49.0841	48.3806	32.4500	32.4500	16.6341	15.9306
Percent Built-Up Area (BUA) (%)	1%	0%	30%	29%	30%	29%	40%	40%	10%	6%
Built-Up Area (BUA) (sqft)	30,644	0	645,711	606,252	645,711	606,252	571,073	571,073	74,638	43,994
Annual Runoff Volume (ft ³ /yr)	466,191	365,275	2,550,076	2,449,160	2,248,200	2,147,284	1,889,752	1,889,752	358,447	257,531
Annual Runoff % Change			447%	570%	382%	488%				
Total Runoff Change (cuft/yr)			2,083,885	2,083,885	1,782,008	1,782,008				
Total Nitrogen EMC (mg/L)	2.13	1.86	1.43	1.44	1.05	1.04	0.96	0.96	1.54	1.60
Total Nitrogen Load Leaving Site (lb/yr)	61.95	53.32	228.16	219.53	147.43	138.80	113.07	113.07	34.36	25.73
Total Nitrogen Loading Rate (lb/ac/yr)	1.26	1.10	4.65	4.54	3.00	2.87	3.48	3.48	2.07	1.62
Total Nitrogen % Change Pre-to-Post			268%	312%	138%	160%				
Total Nitrogen Change (lb/yr) Pre-to-Post			166.21	166.21	85.48	85.48				
Total Phosphorus EMC (mg/L)	0.80	0.77	0.25	0.26	0.18	0.18	0.15	0.15	0.35	0.42
Total Phosphorus Load Leaving Site (lb/yr)	23.21	22.17	40.39	39.34	25.35	24.31	17.61	17.61	7.74	6.70
Total Phosphorus Loading Rate (lb/ac/yr)	0.47	0.46	0.82	0.81	0.52	0.50	0.54	0.54	0.47	0.42
Total Phosphorus % Change Pre-to-Post			74%	77%	9%	10%				
Total Phosphorus Change (lb/yr) Pre-to-Post			17.17	17.17	2.14	2.14				

SCM/Catchment Summary

SCM ID and Type	Volume Reduction (%)	TN Reduction (%)	TP Reduction (%)	TN Out (lbs/ac/yr)	TP Out (lbs/ac/yr)
Catchment 1	16.88%	44.06%	50.02%	2.96	0.47
101: Wet Pond	16.88%	44.06%	50.02%	2.96	0.47
102: NA	0.00%	0.00%	0.00%	0.00	0.00
103: NA	0.00%	0.00%	0.00%	0.00	0.00
Catchment 2	12.66%	38.48%	42.93%	2.40	0.37
201: Wet Pond	12.66%	38.48%	42.93%	2.40	0.37
202: NA	0.00%	0.00%	0.00%	0.00	0.00
203: NA	0.00%	0.00%	0.00%	0.00	0.00
Catchment 3	12.66%	40.89%	45.85%	3.34	0.52
301: Wet Pond	12.66%	40.89%	45.85%	3.34	0.52
302: NA	0.00%	0.00%	0.00%	0.00	0.00
303: NA	0.00%	0.00%	0.00%	0.00	0.00
Catchment 4	12.66%	41.82%	47.51%	3.73	0.59
401: NA	12.66%	41.82%	47.51%	3.73	0.59
402: NA	0.00%	0.00%	0.00%	0.00	0.00
403: NA	0.00%	0.00%	0.00%	0.00	0.00
Catchment 5	12.66%	40.37%	41.27%	4.53	0.69
501: NA	12.66%	40.37%	41.27%	4.53	0.69
502: NA	0.00%	0.00%	0.00%	0.00	0.00
503: NA	0.00%	0.00%	0.00%	0.00	0.00
Catchment 6	0.00%	0.00%	0.00%	0.00	0.00
601: NA	0.00%	0.00%	0.00%	0.00	0.00
602: NA	0.00%	0.00%	0.00%	0.00	0.00
603: NA	0.00%	0.00%	0.00%	0.00	0.00

Falls Lake ONLY: Onsite Reduction Compliance Check

	Nitrogen	Phosphorus
Onsite % Reduction Requirement		
Export Target Scaled to Area (lb/yr)	174.17	
Export Load Post-Project Before Treatment	219.53	39.34
Total Reduction Need (lb/yr)		
Onsite Reduction Need (lb/yr)		
Onsite Export Target (lb/yr)		
Project Area Post-Project After Treatment	138.80	24.31

Nutrient Management Strategy Watershed - Nutrient Offset Credit Reporting Form

SNAP v4.2.0

Please complete and submit the following information to the local government permitting your development project to characterize it and assess the need to purchase nutrient offset credits. Contact and rule implementation information can be found online at:

<http://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information>

PROJECT INFORMATION

Applicant Name:	Caruso Homes		
Project Name:	Moody Development		
Project Address:	0 Rolesville RD & 0 Amazon Trail		
Date: (mm/dd/yyyy)	12/3/2024	Development Land Use Type:	Single Family Residential
County:	Wake	Project Activity Type:	New Development
Project Area (sqft):	2,107,459	Project Latitude:	0.000000
Post-Project Built-Up Area %:	28.77%	Project Longitude:	0.000000

WATERSHED INFORMATION

Nutrient Management Watershed:	Neuse	N Target Export Rate (lb/ac/yr):	3.60
Subwatershed:	Neuse-Upper	P Target Export Rate (lb/ac/yr):	0.00
Nitrogen Delivery Zone:	Neuse - Upper 03020201	Nitrogen Delivery Factor:	100%
Phosphorus Delivery Zone:	Neuse - Upper 03020201	Phosphorus Delivery Factor:	100%

PERMANENT NUTRIENT OFFSET REQUEST

Post-Project Nitrogen Calculations - Projects with No Offsite or Built-Up Area

(A)	(B)	(C)	(D)		(F)	(G)	(Where Applicable)	
TN Untreated Load (lb/yr)	TN Export Target Load (lb/yr)	TN Treated Load (lb/yr)	TN Remaining Reduction Need (lb/yr)		TN Delivery Factor (%)	TN Permanent Offsets Required (lb/yr)	Additional Local Gov't Offsets (lb/yr)	Total TN Permanent Offsets to Buy (lb/yr)
219.5	174.2	138.8	0.0		100.0%	0.0		0.0

Post-Project Phosphorus Calculations - Projects with No Offsite or Built-Up Area

(A)	(B)	(C)	(D)		(F)	(G)	(Where Applicable)	
TP Untreated Load (lb/yr)	TP Export Target Load (lb/yr)	TP Treated Load (lb/yr)	TP Remaining Reduction Need (lb/yr)		TP Delivery Factor (%)	TP Permanent Offsets Required (lb/yr)	Additional Local Gov't Offsets (lb/yr)	Total TP Permanent Offsets to Buy (lb/yr)
								0.0

LOCAL GOVERNMENT AUTHORIZATION

Local Government Name:			
Staff Name:		Phone:	
Staff Email:		Date:	
Local Government Authorizing Signature:			



SITE DATA

Project Information		
Project Name:	The Preserve at Moody Farm	
Applicant:	American Engineering	
Applicant Contact Name:	Jakob Klein	
Applicant Contact Number:	(919) 469-1101	
Contact Email:	jklein@american-ea.com	
Municipal Jurisdiction (Select from dropdown menu):	Rolesville	
Last Updated:	Thursday, May 29, 2025	
Site Data:		
Total Site Area (Ac):	48.28	
Existing Lake/Pond Area (Ac):	1.49	
Proposed Disturbed Area (Ac):	40.00	
Impervious Surface Area (acre):	15.13	
Type of Development (Select from Dropdown menu):	Residential	
Percent Built Upon Area (BUA):	31%	
Project Density:	High	
Is the proposed project a site expansion?	No	
Number of Drainage Areas on Site:	2	
NOAA	1-Year, 24-Hour Storm (inches) (See NOAA Website):	2.86
	2-Year, 24-Hour Storm (inches) (See NOAA Website):	3.46
	10-Year, 24-Hour Storm (inches) (See NOAA Website):	5.06
Lot Data (if applicable):		
Total Acreage in Lots:	24.38	
Number of Lots:	82	
Average Lot Size (SF):	10000.00	
Total Impervious Surface Area on Lots (SF):	402666.00	
Average Impervious Surface Area Per Lot (SF):	4910.56	
Stormwater Narrative (limit to 1,200 characters - attach additional pages with submittal if necessary):		
See project Stormwater Impact Analysis Report for detailed narrative and calculations. The Moody project will have five (5) SCM's which the cumulative areas are post-development POD 2. Hydrograph modeling for the project shows peak flows being attenuated for the 1-year and 10-year storm events. Although the Wake County tool calculations show 5.56 lb/ac/yr as the nitrogen loading rate on site, the NCDEQ SNAP Tool was implemented as well for for nitrogen removal and shows no offsets required as the site is currently below the target Nitrogen export rate of 3.6 lb/ac/yr. Thank you.		



Project Name: The Preserve at Moody Farm

DRAINAGE AREA 1
STORMWATER PRE-POST CALCULATIONS
POD #1 BYPASS

LAND USE & SITE DATA					PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=					9.68				5.22			
Site Acreage within Drainage=					6.54				2.05			
One-year, 24-hour rainfall (in)=					2.86							
Two-year, 24-hour rainfall (in)=					3.46							
Ten-year, 24-hour storm (in)=					5.06							
Total Lake/Pond Area (Acres)=					0.00				0.00			
Lake/Pond Area not in the Tc flow path (Acres)=					0.00				0.00			
Site Land Use (acres):					A	B	C	D	A	B	C	D
Pasture												
Woods, Poor Condition						1.23	4.84	0.01				
Woods, Fair Condition												
Woods, Good Condition												
Open Space, Poor Condition						0.12	0.16					
Open Space, Fair condition							3.14					
Open Space, Good Condition											4.31	0.40
Reforestation (in dedicated OS)												
Connected Impervious							0.18				0.51	
Disconnected Impervious												
SITE FLOW					PRE-DEVELOPMENT T _p				POST-DEVELOPMENT T _c			
Sheet Flow												
Length (ft)=					Kirpich Used, See SCM Sizing & Calcs				Kirpich Used, See SCM Sizing & Calcs			
Slope (ft/ft)=												
Surface Cover:												
n-value=												
T _i (hrs)=												
Shallow Flow												
Length (ft)=												
Slope (ft/ft)=												
Surface Cover:												
Average Velocity (ft/sec)=												
T _i (hrs)=												
Channel Flow 1												
Length (ft)=												
Slope (ft/ft)=												
Cross Sectional Flow Area (ft ²)=												
Wetted Perimeter (ft)=												
Channel Lining												
n-value=												
Hydraulic Radius (ft)=												
Average Velocity (ft/sec)=												
T _i (hrs)=												
Channel Flow 2												
Length (ft)=												
Slope (ft/ft)=												
Cross Sectional Flow Area (ft ²)=												
Wetted Perimeter (ft)=												
Channel Lining												
n-value=												
Hydraulic Radius (ft)=												
Average Velocity (ft/sec)=												
T _i (hrs)=												
Channel Flow 3												
Length (ft)=												
Slope (ft/ft)=												
Cross Sectional Flow Area (ft ²)=												
Wetted Perimeter (ft)=												
Channel Lining												
n-value=												
Hydraulic Radius (ft)=												
Average Velocity (ft/sec)=												
T _i (hrs)=												
T _c (hrs)=					6.67				6.67			
RESULTS					PRE-DEVELOPMENT				POST-DEVELOPMENT			
Composite Curve Number=					77				77			
Disconnected Impervious Adjustment												
Disconnected impervious area (acre) =												
CN _{adjusted (1-year)} =					77							
High Density Only												
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =					2,614							
1-year, 24-hour storm (Peak Flow)												
Runoff (inches) = Q _{1-year} =					0.97				0.96			
Volume of runoff (ft ³) =					22,920				7,177			
Volume change (ft ³) =												
Peak Discharge (cfs) = Q _{1-year} =					1.090				0.587			
2-year, 24-hour storm (LID)												
Runoff (inches) = Q _{2-year} =					1.39				1.39			
Volume of runoff (ft ³) =					32,978				10,327			
Peak Discharge (cfs) = Q _{2-year} =					1.569				0.845			
10-year, 24-hour storm (DIA)												
Runoff (inches) = Q _{10-year} =					2.66				2.66			
Volume of runoff (ft ³) =					63,085				63,043			
Peak Discharge (cfs) = Q _{10-year} =					3.001				1.617			



Project Name: The Preserve at Moody Farm

DRAINAGE AREA 2
STORMWATER PRE-POST CALCULATIONS
DA #2 and #3 equal hydrograph modeling POD 2
Thru SCM's

LAND USE & SITE DATA		PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=		41.98				46.82			
Site Acreage within Drainage=		41.98				46.12			
One-year, 24-hour rainfall (in)=		2.86							
Two-year, 24-hour rainfall (in)=		3.46							
Ten-year, 24-hour storm (in)=		5.06							
Total Lake/Pond Area (Acres)=		0.68				0.68			
Lake/Pond Area not in the Tc flow path (Acres)=		0.68				0.68			
Site Land Use (acres):		A	B	C	D	A	B	C	D
Pasture				0.48		0.00	0.00	0.00	0.00
Woods, Poor Condition			2.39	12.78	3.92				
Woods, Fair Condition									
Woods, Good Condition						0.17		0.07	1.74
Open Space, Poor Condition			2.87	13.12	5.65				
Open Space, Fair condition									
Open Space, Good Condition						3.61		20.31	6.30
Reforestation (in dedicated OS)									
Connected Impervious			0.19	0.51	0.08			14.62	
Disconnected Impervious									
SITE FLOW		PRE-DEVELOPMENT T _c				POST-DEVELOPMENT T _c			
Sheet Flow									
Length (ft)=		100.00				100.00			
Slope (ft/ft)=		0.030				0.028			
Surface Cover=		Grass				Grass			
n-value=		0.240				0.240			
T _s (hrs)=		0.214				0.220			
Shallow Flow									
Length (ft)=		530.00				150.00			
Slope (ft/ft)=		0.030				0.030			
Surface Cover=		Unpaved				Unpaved			
Average Velocity (ft/sec)=		2.79				2.79			
T _s (hrs)=		0.05				0.01			
Channel Flow 1									
Length (ft)=		1600.00				550.00			
Slope (ft/ft)=		0.020				0.050			
Cross Sectional Flow Area (ft ²)=		2.50				1.77			
Wetted Perimeter (ft)=		5.00				2.90			
Channel Lining=		Weeds				Concrete, finished			
n-value=		0.040				0.012			
Hydraulic Radius (ft)=		0.50				0.61			
Average Velocity (ft/sec)=		3.32				19.98			
T _s (hrs)=		0.13				0.01			
Channel Flow 2									
Length (ft)=						20.00			
Slope (ft/ft)=						0.020			
Cross Sectional Flow Area (ft ²)=						2.00			
Wetted Perimeter (ft)=						6.13			
Channel Lining=						Gravel Bottom/riprap sides			
n-value=						0.033			
Hydraulic Radius (ft)=						0.33			
Average Velocity (ft/sec)=						3.03			
T _s (hrs)=						0.00			
Channel Flow 3									
Length (ft)=						1350.00			
Slope (ft/ft)=						0.025			
Cross Sectional Flow Area (ft ²)=						12.00			
Wetted Perimeter (ft)=						12.65			
Channel Lining=						Weeds			
n-value=						0.040			
Hydraulic Radius (ft)=						0.95			
Average Velocity (ft/sec)=						5.69			
T _s (hrs)=						0.07			
T _c (hrs)=		0.25				0.31			
RESULTS		PRE-DEVELOPMENT				POST-DEVELOPMENT			
Composite Curve Number=		82				81			
Disconnected Impervious Adjustment									
Disconnected impervious area (acres) =									
CN _{adjusted} (1-year)=		81							
High Density Only									
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		56,261							
1-year, 24-hour storm (Peak Flow)									
Runoff (inches) = Q* _{1-year} =		1.26				1.23			
Volume of runoff (ft ³) =		192,013				205,583			
Volume change (ft ³) =		13,570							
Peak Discharge (cfs)= Q _{1-year} =		52.587				52.057			
2-year, 24-hour storm (LID)									
Runoff (inches) = Q* _{2-year} =		1.74				1.70			
Volume of runoff (ft ³) =		264,901				284,770			
Peak Discharge (cfs)= Q _{2-year} =		72.549				72.108			
10-year, 24-hour storm (DIA)									
Runoff (inches) = Q* _{10-year} =		3.12				3.07			
Volume of runoff (ft ³) =		475,183				467,839			
Peak Discharge (cfs)= Q _{10-year} =		130.138				130.159			

Post-development peak flow exceeds pre-development peak flow for this DA!



Project Name: The Preserve at Moody Farm

DRAINAGE AREA 3
STORMWATER PRE-POST CALCULATIONS
 DA #2 and #3 equal hydrograph modeling POD 2
 Bypass

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=	13.94				13.73			
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=	2.86							
Two-year, 24-hour rainfall (in)=	3.46							
Ten-year, 24-hour storm (in)=	5.06							
Total Lake/Pond Area (Acres)=	0.79				0.79			
Lake/Pond Area not in the Tc flow path (Acres)=	0.79				0.79			
Site Land Use (acres):	A	B	C	D	A	B	C	D
Pasture								
Woods, Poor Condition								
Woods, Fair Condition								
Woods, Good Condition		1.61	2.90	0.97		1.61	2.90	0.97
Open Space, Poor Condition								
Open Space, Fair condition								
Open Space, Good Condition		2.35	4.54	0.26		2.35	4.33	0.26
Reforestation (in dedicated OS)								
Connected Impervious			0.52	0.79			0.52	0.79
Disconnected Impervious								
SITE FLOW	PRE-DEVELOPMENT T_c				POST-DEVELOPMENT T_c			
Sheet Flow								
Length (ft)=	From Culvert Tc Calculations				From Culvert Tc Calculations			
Slope (ft/ft)=								
Surface Cover:								
n-value=								
T _i (hrs)=								
Shallow Flow								
Length (ft)=								
Slope (ft/ft)=								
Surface Cover:								
Average Velocity (ft/sec)=								
T _i (hrs)=								
Channel Flow 1								
Length (ft)=								
Slope (ft/ft)=								
Cross Sectional Flow Area (ft ²)=								
Wetted Perimeter (ft)=								
Channel Lining:								
n-value=								
Hydraulic Radius (ft)=								
Average Velocity (ft/sec)=								
T _i (hrs)=								



Project Name: The Preserve at Moody Farm

DRAINAGE AREA 3
STORMWATER PRE-POST CALCULATIONS
 DA #2 and #3 equal hydrograph modeling POD 2
 Bypass

Channel Flow 2		
Length (ft)=		
Slope (ft/ft)=		
Cross Sectional Flow Area (ft ²)=		
Wetted Perimeter (ft)=		
Channel Lining:		
n-value=		
Hydraulic Radius (ft)=		
Average Velocity (ft/sec)=		
T ₁ (hrs)=		
Channel Flow 3		
Length (ft)=		
Slope (ft/ft)=		
Cross Sectional Flow Area (ft ²)=		
Wetted Perimeter (ft)=		
Channel Lining:		
n-value=		
Hydraulic Radius (ft)=		
Average Velocity (ft/sec)=		
T ₁ (hrs)=		
T _c (hrs)=	5.00	5.00
RESULTS		
	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=	71	71
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =	71	
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =	6,771	
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =	0.70	0.69
Volume of runoff (ft ³) =	35,252	34,632
Volume change (ft ³) =		
Peak Discharge (cfs) = Q _{1-year} =	1.027	1.009
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =	1.06	1.06
Volume of runoff (ft ³) =	0	
Peak Discharge (cfs) = Q _{2-year} =	1.560	1.533
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =	2.19	2.19
Volume of runoff (ft ³) =	0	
Peak Discharge (cfs) = Q _{10-year} =	3.229	3.176



Project Name: The Preserve at Moody Farm

DA SITE SUMMARY
STORMWATER PRE-POST CALCULATIONS

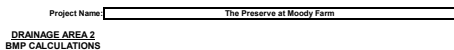
SITE SUMMARY										
DRAINAGE AREA SUMMARIES										
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10
Pre-Development (1-year, 24-hour storm)										
Runoff (in) = $Q_{pre,1-year}$ =	0.97	1.26	0.70							
Peak Flow (cfs) = Q_{1-year} =	1.090	52.587	1.027							
Post-Development (1-year, 24-hour storm)										
Proposed Impervious Surface (acre) =	0.51	14.62								
Runoff (in) = Q_{1-year} =	0.96	1.23	0.69							
Peak Flow (cfs) = Q_{1-year} =	0.587	52.057	1.009							
Increase in volume per DA (ft ³)_1-yr storm =		13,570								
Minimum Volume to be Managed for DA HIGH DENSITY REQUIREMENT = (ft ³) =	2,614	56,261	6,771							
TARGET CURVE NUMBER (TCN)										
Site Data										
SITE \SOIL COMPOSITION										
HYDROLOGIC SOIL GROUP				Site Area		%		Target CN		
A				0.00		0%		N/A		
B				4.65		10%		N/A		
C				35.84		74%		N/A		
D				8.05		17%		N/A		
Total Site Area (acres) =					48.54					
Percent BUA (Includes Existing Lakes/Pond Areas) =					30%					
Project Density =					High					
Target Curve Number (TCN) =					N/A					
CN_{adjusted (1-year)} =					81					
Minimum Volume to be Managed (Total Site) Per TCN Requirement = ft ³ =					N/A					
Site Nitrogen Loading Data										
HSG	TN export coefficient (lbs/ac/yr)			Site Acreage			N Export			
Pasture	1.2			0.00			0.00			
Woods, Poor Condition	1.6			0.00			0.00			
Woods, Fair Condition	1.2			0.00			0.00			
Woods, Good Condition	0.8			7.46			5.97			
Open Space, Poor Condition	1.0			0.00			0.00			
Open Space, Fair Condition	0.8			0.00			0.00			
Open Space, Good Condition	0.6			41.87			25.12			
Reforestation (in dedicated OS)	0.6			0.00			0.00			
Impervious	21.2			16.44			348.53			
SITE NITROGEN LOADING RATE (lbs/ac/yr) =					5.77					
Nitrogen Load (lbs/yr) =					379.62					
Site Nitrogen Loading Data For Expansions Only										
	Existing				New					
Impervious(acres) =	NA				NA					
"Expansion Area" (acres) =										
Nitrogen Load (lbs/yr) =	NA				NA					
SITE NITROGEN LOADING RATE (lbs/ac/yr) =	NA				NA					
Total Site loading rate (lbs/ac/yr)										
TOTAL SITE NITROGEN TO MITIGATE (lbs/yr) =					NA					



Project Name The Preserve at Moody Farm

**DRAINAGE AREA 1
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA1 Site Acreage ^(a)	2.05									
DA1 Off-Site Acreage ^(a)	3.17									
Total Required Storage Volume for Site TCR Requirement (ft ³) ^(b)	N/A									
Total Required Storage Volume for DA1 1" Rainfall for High Density (ft ³) ^(c)	2,614									
Will site use underground detention/cistern?	No	Enter % of the year water will be reused ^(d)	0%	Note: Supporting information/details should be submitted to demonstrate water usage.						
ENTER ACREAGE FOR ALL SUB-DRAINAGE AREAS IN DA										
HSG	Sub-DA1(a) (Ac)		Sub-DA1(b) (Ac)		Sub-DA1(c) (Ac)		Sub-DA1(d) (Ac)		Sub-DA1(e) (Ac)	
	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Pasture										
Woods, Poor Condition										
Woods, Fair Condition										
Woods, Good Condition										
Open Space, Poor Condition										
Open Space, Fair Condition										
Open Space, Good Condition		1.62								
Reforestation (in dedicated OS)										
Impervious		0.43								
Sub-DA1(a) BMP(s)										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2.5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
N/A			1,777		1,777		0%	10.09	0.00	
							0%	10.09	0.00	
							0%	10.09	0.00	
							0%	10.09	0.00	
							0%	10.09	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):			10.09							
Sub-DA1(b) BMP(s)										
If Sub-DA1(b) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2.5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):										
Sub-DA1(c) BMP(s)										
If Sub-DA1(c) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2.5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):										
Sub-DA1(d) BMP(s)										
If Sub-DA1(d) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2.5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):										
Sub-DA1(e) BMP(s)										
If Sub-DA1(e) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2.5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
							0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):										
DA1 BMP SUMMARY										
Total Volume Treated (ft ³) ^(e)			1,777							
Nitrogen Mitigated(lbs) ^(f)										
1-year, 24-hour storm										
Post BMP Volume of Runoff (ft ³) _{1-year} ^(g)			5,400							
Post BMP Runoff (inches) = Q _{1-year} ^(h)			0.73							
Post BMP CN _{1-year} ⁽ⁱ⁾			71							
Post BMP Peak Discharge (cfs) = Q _{1-year} ^(j)			0.59							
2-year, 24-hour storm (LID)										
Post BMP Volume of Runoff (ft ³) _{2-year} ^(g)			8,550							
Post BMP Runoff (inches) = Q _{2-year} ^(h)			1.15							
Post BMP CN _{2-year} ⁽ⁱ⁾			72							
Post BMP Peak Discharge (cfs) = Q _{2-year} ^(j)										
10-year, 24-hour storm (DIA)										
Post BMP Volume of Runoff (ft ³) _{10-year} ^(g)			61,266							
Post BMP Runoff (inches) = Q _{10-year} ^(h)			8.23							
Post BMP CN _{10-year} ⁽ⁱ⁾			98							
Post BMP Peak Discharge (cfs) = Q _{10-year} ^(j)										

DA2 BMPs



Project Name: The Preserve at Moody Farm

**DRAINAGE AREA 3
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA3 Site Acreage=										
DA3 Off-Site Acreage=	13.73									
Total Required Storage Volume TCN Requirement (ft ³)=	N/A									
Total Required Storage Volume for DA3 1" Rainfall for High Density (ft ³)=	6,771									
Will site use underground detention/cistern?	No	Enter % of the year water will be reused=	0%		Note: Supporting information/details should be submitted to demonstrate water usage.					
ENTER ACREAGE FOR ALL SUB-DRAINAGE AREAS IN DA										
HSG	Sub-DA3(a) (Ac)		Sub-DA3(b) (Ac)		Sub-DA3(c) (Ac)		Sub-DA3(d) (Ac)		Sub-DA3(e) (Ac)	
	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Pasture										
Woods, Poor Condition										
Woods, Fair Condition	0.04				0.34					
Woods, Good Condition	0.87				0.27					
Open Space, Poor Condition										
Open Space, Fair Condition										
Open Space, Good Condition	5.36		0.12		5.86					
Reforestation (in dedicated OS)										
Impervious	0.57		0.12		0.18					
Sub-DA1(a) BMP(s)										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will <u>drawdown 2-5 days</u> (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
N/A (BYPASS)			2,169		2,169		0%	16.04	0.00	
							0%	16.04	0.00	
							0%	16.04	0.00	
							0%	16.04	0.00	
							0%	16.04	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							16.04			
Sub-DA1(b) BMP(s)										
If Sub-DA1(b) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will <u>drawdown 2-5 days</u> (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
N/A (BYPASS)			50		50		0%	2.62	0.00	
							0%	2.62	0.00	
							0%	2.62	0.00	
							0%	2.62	0.00	
							0%	2.62	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							2.62			
Sub-DA1 (c) BMP(s)										
If Sub-DA1(c) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):										
Device Name (As Shown on Plan)	Device Type		Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will <u>drawdown 2-5 days</u> (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
N/A (BYPASS)			1,492		1,492		0%	7.96	0.00	
							0%	7.96	0.00	
							0%	7.96	0.00	
							0%	7.96	0.00	
							0%	7.96	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							7.96			



Project Name: The Preserve at Moody Farm

**DRAINAGE AREA 3
BMP CALCULATIONS**

Sub-DA1(d) BMP(s)							
If Sub-DA1(d) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):							
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)	Provided Volume that will drawdown 2-5 days (ft ³)	Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							
Sub-DA1(e) BMP(s)							
If Sub-DA1(e) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):							
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)	Provided Volume that will drawdown 2-5 days (ft ³)	Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							
DA3 BMP SUMMARY							
Total Volume Treated (ft ³)=		3,711					
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =		30,921					
Post BMP Runoff (inches) = Q* _(1-year) =		0.62					
Post BMP CN _(1-year) =		69					
Post BMP Peak Discharge (cfs)= Q _{1-year} =		1.00					
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =		0					
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =		0					
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



Project Name: **The Preserve at Moody Farm**

DA SITE SUMMARY
BMP CALCULATIONS

BMP SUMMARY											
DRAINAGE AREA SUMMARIES											
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10	
Pre-Development (1-year, 24-hour storm)											
Runoff (in)=Q* _{1-year} =	0.97	1.26	0.70								
Peak Flow (cfs)=Q _{1-year} =	1.090	52.587	1.027								
Post-Development (1-year, 24-hour storm)											
Target Curve Number (TCN) =	NA										
Post BMP Runoff (inches) = Q* _(1-year) =	0.73	1.11	0.62								
Post BMP Peak Discharge (cfs)= Q _{1-year} =	0.590	41.550	1.000								
Post BMP CN _(1-year) =	79										
Post-BMP Nitrogen Loading											
TOTAL SITE NITROGEN MITIGATED (lbs)=	78.36										
SITE NITROGEN LOADING RATE (lbs/ac/yr)=	4.58										
TOTAL SITE NITROGEN LEFT TO MITIGATE_Wendell Only (lbs)=	64.49										

PreDev_POD #1:		285072	S.F.	6.54	Ac
	Land Use	Area	CN	Wtd. CN	
	Pasture (Fair) - B Soils	0.12	69	1.25	
	Pasture (Fair) - C Soils	0.16	79	1.96	
	Pasture (Fair) - D Soils	0.00	84	0.00	
	Woods/Wetlands (Fair) -B Soils	1.23	60	11.28	
	Woods/Wetlands (Fair) -C Soils	5.02	73	56.02	
	Woods/Wetlands (Fair) -D Soils	0.01	79	0.08	
	Roofs	0.00	98	0.00	
	Roadway	0.00	98	0.00	
	Open Water	0.00	98	0.00	
	Total (Check):	6.54	Composite "CN"	70.6	
	Tc (Kirpich):	Length	Elev Delta	Tc=	
	Tc, min.= 60*.000132*L^.77/S^.385	1299	46	6.67	Minutes

PreDev_POD #2		1918625	S.F.	44.05	Ac
	Land Use	Area	CN	Wtd. CN	
	Pasture (Fair) - B Soils	2.87	69	4.50	
	Pasture (Fair) - C Soils	13.78	79	24.72	
	Pasture (Fair) - D Soils	1.85	84	3.53	
	Woods/Wetlands (Fair) -B Soils	2.39	60	3.25	
	Woods/Wetlands (Fair) -C Soils	12.44	73	20.62	
	Woods/Wetlands (Fair) -D Soils	6.46	79	11.59	
	Roof	0.15	98	0.33	
	Roadway	0.56	98	1.24	
	Open Water	1.49	98	3.32	
	Total (Check):	41.98	Composite "CN"	73.1	
	Tc (Kirpich):	Length	Elev Delta	Tc=	
	Tc, min.= 60*.000132*L^.77/S^.385	2427	38	14.78	Minutes

Moody: Supplemental & Supporting Info for Hydrograph Generation**PostDev POD 1 - bypass**

Roman Cook

5/28/2025

PostDev POD 1 - Bypass		89282	S.F.	2.05	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.00	98	0.00		
Roofs	0.48	98	23.05		
Driveways	0.00	98	0.00		
Sidewalks	0.00	98	0.00		
Openspace- B Soils	0.00	61	0.00		
Openspace- C Soils	1.22	74	44.16		
Openspace- D Soils	0.34	80	13.44		
Woods/Wetlands-B Soils	0.00	55	0.00		
Woods/Wetlands-C Soils	0.00	70	0.00		
Woods/Wetlands-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.00	98	0.00		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	2.05	Composite "CN"	80.7		
	Percent Impervious		24%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= $60 \cdot .000132 \cdot L^{.77} / S^{.385}$	605	30	3.25	Minutes	
Percent Impervious		24%			

Moody: Supplemental & Supporting Info for Hydrograph Generation

Post Dev - POD 2A #1 (SCM #1)

Roman Cook

5/28/2025

Post Dev - POD 2A #1 (SCM #1)		412674	S.F.	9.47	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.93	98	9.63		
Roofs	1.67	98	17.32		
Driveways/Parking	0.39	98	4.04		
Sidewalks	0.19	98	1.95		
Openspace- A Soils	0.00	39	0.00		
Openspace- B Soils	1.48	61	9.54		
Openspace- C Soils	4.11	74	32.14		
Openspace- D Soils	0.30	80	2.51		
Woods-A Soils	0.00	30	0.00		
Woods-B Soils	0.00	55	0.00		
Woods-C Soils	0.00	70	0.00		
Woods-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.40	98	4.10		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	9.47	Composite "CN"	81.2		
	Percent Impervious		37.8%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= 60*.000132*L^.77/S^.385	1083	27	6.64	Minutes	
Percent Impervious		37.8%			
	Pond Design Depth, ft.:	3.50			
SCM #1 Design Elements:	SA/DA Factor:	1.30	From NCDEQ SA/DA Char	D Avg, ft	
Davg = VPP-Vshelf /A shelf bottom	Min.SCM Surface Area:	5365	S.F.	3.43	
	VPP, c.f.	Perimeter, ft.	Vshelf, c.f.	Abottom, s.f.	3.50
Treatment Volume Requirement:	43,409	605	7,259.00	10,525	
	(From HydraFlow Attachment)		Design Pond Depth, ft.=		
Rv=0.05-.009*(%Impervious)					
Total Runoff for 1" Event= S in A	DA to SCM:	9.47	Ac.		
Treatment "S" in Cu. Ft. =	Composite % Impervious (Above) =	38%			
Treatment Volume to Be Stored:	Rv=0.05+.009*(%Impervious)	0.39	inch/inch		
Treatment Volume Provided, Cu.	Total Runoff for 1" Event= S in Ac-Ft:	0.31	S=1"*Rv*Drainage Area/12		
	Treatment "S" in Cu. Ft. =	13417.23			
	Treatment Volume to Be Stored:	13417	Cu. FT		
	Volume Achieved at Elev.	364.26	Orifice Dia	2.00	Inch Drawdown Pipe
	Drawdown Pipe Elev.	363.5	Elev Diff, H., ft.	0.76	

Table 1: Piedmont and Mountain SA/DA Table (Adapted from Driscoll, 1986)

Percent Impervious Cover	Permanent Pool Average Depth (ft)					
	3.0	4.0	5.0	6.0	7.0	≥8.0
10%	0.51	0.43	0.37	0.30	0.27	0.25
20%	0.84	0.69	0.61	0.51	0.44	0.40
30%	1.17	0.94	0.84	0.72	0.61	0.56
40%	1.51	1.24	1.09	0.91	0.78	0.71
50%	1.79	1.51	1.31	1.13	0.95	0.87
60%	2.09	1.77	1.49	1.31	1.12	1.03
70%	2.51	2.09	1.80	1.56	1.34	1.17
80%	2.92	2.41	2.07	1.82	1.62	1.40
90%	3.25	2.64	2.31	2.04	1.84	1.59
100%	3.55	2.79	2.52	2.34	2.04	1.75

30% 1.17 0.94
40% 1.51 1.24
37.6% (interpolation) 1.43 1.17 1.30 SA/DA

Permanent Pool Surface Area (no forebay):	11540	sf
Forebay Volume (Total):	6440	cf
Permanent Pool Volume (Total):	36969	cf
Forebay Size (Volume):	17	%

Moody: Supplemental & Supporting Info for Hydrograph Generation

Post Dev - POD 2A #2 (SCM #2)

Roman Cook

5/28/2025

Post Dev - POD 2A #2 (SCM #2)		57269	S.F.	1.31	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.00	98	0.00		
Roofs	0.10	98	7.32		
Driveways/Parking	0.00	98	0.00		
Sidewalks	0.00	98	0.00		
Openspace- A Soils	0.00	39	0.00		
Openspace- B Soils	0.15	61	6.86		
Openspace- C Soils	0.60	74	33.56		
Openspace- D Soils	0.27	80	16.52		
Woods-A Soils	0.00	30	0.00		
Woods-B Soils	0.00	55	0.00		
Woods-C Soils	0.00	70	0.00		
Woods-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.20	98	14.98		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	1.31	Composite "CN"	79.2		
	Percent Impervious		22.8%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= 60*.000132*L^.77/S^.385	390	19	2.34	Minutes	use 5 min. minimum
Percent Impervious		22.8%			
	Pond Design Depth, ft.:	3.50			
SCM #1 Design Elements:	SA/DA Factor:	1.00	From NCDEQ SA/DA Char	D Avg, ft	
Davg = VPP-Vshelf /A shelf bottom	Min.SCM Surface Area:	573	S.F.	4.40	
	VPP, c.f.	Perimeter, ft.	Vshelf, c.f.	Abottom, S.F.	3.50
Treatment Volume Requirement:	15,908	517	3,197.00	2,888	
	(From HydraFlow Attachment)		Design Pond Depth, ft.=	3.50	
Rv=0.05-.009*(%Impervious)					
Total Runoff for 1" Event= S in A	DA to SCM:	1.31	Ac.		
Treatment "S" in Cu. Ft. =	Composite % Impervious (Above) =	23%			
Treatment Volume to Be Stored:	Rv=0.05+.009*(%Impervious)	0.25	inch/inch		
Treatment Volume Provided, Cu.	Total Runoff for 1" Event= S in Ac-Ft:	0.03	S=1"*Rv*Drainage Area/12		
	Treatment "S" in Cu. Ft. =	1216.10			
	Treatment Volume to Be Stored:	1216	Cu. FT		
	Volume Achieved at Elev.	361.71	Orifice Dia	1.00	Inch Drawdown Pipe
	Drawdown Pipe Elev.	361.5	Elev Diff, H., ft.	0.21	

Table 1: Piedmont and Mountain SA/DA Table (Adapted from Driscoll, 1986)

Percent Impervious Cover	Permanent Pool Average Depth (ft)					
	3.0	4.0	5.0	6.0	7.0	≥8.0
10%	0.51	0.43	0.37	0.30	0.27	0.25
20%	0.84	0.69	0.61	0.51	0.44	0.40
30%	1.17	0.94	0.84	0.72	0.61	0.56
40%	1.51	1.24	1.09	0.91	0.78	0.71
50%	1.79	1.51	1.31	1.13	0.95	0.87
60%	2.09	1.77	1.49	1.31	1.12	1.03
70%	2.51	2.09	1.80	1.56	1.34	1.17
80%	2.92	2.41	2.07	1.82	1.62	1.40
90%	3.25	2.64	2.31	2.04	1.84	1.59
100%	3.55	2.79	2.52	2.34	2.04	1.75

	3	4
20%	0.84	0.69
30%	1.17	0.94
28.0% (interpolation)	1.10	0.89
	1.00 SA/DA	

Permanent Pool Surface Area (no forebay):	5547	sf
Forebay Volume (Total):	2567	cf
Permanent Pool Volume (Total):	13341	cf
Forebay Size (Volume):	19	%

Moody: Supplemental & Supporting Info for Hydrograph Generation

Post Dev - POD 2A #3 (SCM #3)

Roman Cook

5/28/2025

Post Dev - POD 2A #3 (SCM #3)		409186	S.F.	9.39	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	1.08	98	11.25		
Roofs	1.91	98	19.94		
Driveways/Parking	0.28	98	2.90		
Sidewalks	0.24	98	2.50		
Openspace- A Soils	0.00	39	0.00		
Openspace- B Soils	1.51	61	9.83		
Openspace- C Soils	2.80	74	22.05		
Openspace- D Soils	1.30	80	11.07		
Woods-A Soils	0.00	30	0.00		
Woods-B Soils	0.10	55	0.59		
Woods-C Soils	0.00	70	0.00		
Woods-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.17	98	1.80		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	9.39	Composite "CN"	81.9		
	Percent Impervious		39.2%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= 60*.000132*L^.77/S^.385	1140	25	7.25	Minutes	
Percent Impervious		39.2%			
	Pond Design Depth, ft.:	3.50			
SCM #1 Design Elements:	SA/DA Factor:	1.20	From NCDEQ SA/DA Char	D Avg, ft	
Davg = VPP-Vshelf /A shelf bottom	Min.SCM Surface Area:	4910	S.F.	3.72	
	VPP, c.f.	Perimeter, ft.	Vshelf, c.f.	Abottom, S.F.	3.50
Treatment Volume Requirement:	16,418	354	2,957.00	3,619	
(From HydraFlow Attachment)			Design Pond Depth, ft.=	3.50	
Rv=0.05-.009*(%Impervious)					
Total Runoff for 1" Event= S in A	DA to SCM:	9.394	Ac.		
Treatment "S" in Cu. Ft. =	Composite % Impervious (Above) =	39%			
Treatment Volume to Be Stored:	Rv=0.05+.009*(%Impervious)	0.40	inch/inch		
Treatment Volume Provided, Cu.	Total Runoff for 1" Event= S in Ac-Ft:	0.32	S=1"*Rv*Drainage Area/12		
	Treatment "S" in Cu. Ft. =	13727.92			
	Treatment Volume to Be Stored:	13728	Cu. FT		
	Volume Achieved at Elev.	363.13	Orifice Dia	2.00	Inch Drawdown Pipe
	Drawdown Pipe Elev.	361.5	Elev Diff, H., ft.	1.63	

Table 1: Piedmont and Mountain SA/DA Table (Adapted from Driscoll, 1986)

Percent Impervious Cover	Permanent Pool Average Depth (ft)					
	3.0	4.0	5.0	6.0	7.0	≥8.0
10%	0.51	0.43	0.37	0.30	0.27	0.25
20%	0.84	0.69	0.61	0.51	0.44	0.40
30%	1.17	0.94	0.84	0.72	0.61	0.56
40%	1.51	1.24	1.09	0.91	0.78	0.71
50%	1.79	1.51	1.31	1.13	0.95	0.87
60%	2.09	1.77	1.49	1.31	1.12	1.03
70%	2.51	2.09	1.80	1.56	1.34	1.17
80%	2.92	2.41	2.07	1.82	1.62	1.40
90%	3.25	2.64	2.31	2.04	1.84	1.59
100%	3.55	2.79	2.52	2.34	2.04	1.75

	4	5
40%	1.24	1.09
50%	1.51	1.31
41.5% (interpolation)	1.28	1.12
	1.20 SA/DA	

Permanent Pool Surface Area (no forebay):	4788	sf
Forebay Volume (Total):	3009	cf
Permanent Pool Volume (Total):	16422	cf
Forebay Size (Volume):	18	%

Hawthorne Trail: Supplemental & Supporting Info for Hydrograph Generation**Post Dev POD 2A #4 - Bypass**

Roman Cook

5/28/2025

Post Dev POD 2A #4 - Bypass		291427	S.F.	6.69	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.00	98	0.00		
Roofs	0.57	98	8.37		
Driveways	0.00	98	0.00		
Sidewalks	0.00	98	0.00		
Openspace- B Soils	0.00	61	0.00		
Openspace- C Soils	1.13	74	12.44		
Openspace- D Soils	3.38	80	40.46		
Woods/Wetlands-B Soils	0.00	55	0.00		
Woods/Wetlands-C Soils	0.04	70	0.39		
Woods/Wetlands-D Soils	0.87	77	10.03		
Lands Taken Up by BMP	0.00	98	0.00		
Open Water (Exist'g or Proposed Ponds)	0.70	98	10.27		
Total (Check):	6.69	Composite "CN"	82.0		
	Percent Impervious		19%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= $60 \cdot .000132 \cdot L^{.77} / S^{.385}$	11.50 min TR-55 calcs, see Tc onsite bypass in SIA for culverts.				
Percent Impervious		19.0%			

Hawthorne Trail: Supplemental & Supporting Info for Hydrograph Generation**Post Dev POD 2B #1 - Bypass**

Roman Cook

5/28/2025

Post Dev POD 2B #1 - Bypass		14677	S.F.	0.34	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.13	98	36.92		
Roofs	0.00	98	0.00		
Driveways	0.00	98	0.00		
Sidewalks	0.02	98	7.02		
Openspace- B Soils	0.00	39	0.00		
Openspace- C Soils	0.19	74	40.82		
Openspace- D Soils	0.00	80	0.00		
Woods/Wetlands-B Soils	0.00	30	0.00		
Woods/Wetlands-C Soils	0.00	70	0.00		
Woods/Wetlands-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.00	98	0.00		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):		0.34	Composite "CN"	84.8	
	Percent Impervious			45%	
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= $60 \cdot .000132 \cdot L^{.77} / S^{.385}$	143	11	0.90		Minutes
Percent Impervious		44.8%			

Moody: Supplemental & Supporting Info for Hydrograph Generation

Post Dev - POD 2B #2 (SCM #4)

Roman Cook

5/28/2025

Table 1: Piedmont and Mountain SA/DA Table (Adapted from Driscoll, 1986)

Post Dev - POD 2B #2 (SCM #4)		263796	S.F.	6.06	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.81	98	13.07		
Roofs	1.40	98	22.68		
Driveways/Parking	0.29	98	4.72		
Sidewalks	0.14	98	2.32		
Openspace- A Soils	0.00	39	0.00		
Openspace- B Soils	0.77	61	7.71		
Openspace- C Soils	2.41	74	29.45		
Openspace- D Soils	0.04	80	0.59		
Woods-A Soils	0.00	30	0.00		
Woods-B Soils	0.02	55	0.18		
Woods-C Soils	0.00	70	0.00		
Woods-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.17	98	2.79		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	6.06	Composite "CN"	84		
	Percent Impervious		46.5%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= 60*.000132*L^.77/S^.385	710	2.5	10.19	Minutes	use 10 min. minimum
Percent Impervious		46.5%			
	Pond Design Depth, ft.:	3.50			
SCM #1 Design Elements:	SA/DA Factor:	1.55	From NCDEQ SA/DA Char	D Avg, ft	
Davg = VPP-Vshelf /A shelf bottom	Min.SCM Surface Area:	4089	S.F.	4.94	
	VPP, c.f.	Perimeter, ft.	Vshelf, c.f.	Abottom, S.F.	3.50
Treatment Volume Requirement:	12,515	537	2,661.00	1,995	
	(From HydraFlow Attachment)		Design Pond Depth, ft.=	3.50	
Rv=0.05-.009*(%Impervious)					
Total Runoff for 1" Event= S in A	DA to SCM:	6.056	Ac.		
Treatment "S" in Cu. Ft. =	Composite % Impervious (Above) =	47%			
Treatment Volume to Be Stored:	Rv=0.05+.009*(%Impervious)	0.47	inch/inch		
Treatment Volume Provided, Cu.	Total Runoff for 1" Event= S in Ac-Ft:	0.24	S=1"*Rv*Drainage Area/12		
	Treatment "S" in Cu. Ft. =	10300.38			
	Treatment Volume to Be Stored:	10300	Cu. FT		
	Volume Achieved at Elev.	358.82	Orifice Dia	1.50	Inch Drawdown Pipe
	Drawdown Pipe Elev.	357.5	Elev Diff, H., ft.	1.32	

Percent Impervious Cover	Permanent Pool Average Depth (ft)					
	3.0	4.0	5.0	6.0	7.0	≥8.0
10%	0.51	0.43	0.37	0.30	0.27	0.25
20%	0.84	0.69	0.61	0.51	0.44	0.40
30%	1.17	0.94	0.84	0.72	0.61	0.56
40%	1.51	1.24	1.09	0.91	0.78	0.71
50%	1.79	1.51	1.31	1.13	0.95	0.87
60%	2.09	1.77	1.49	1.31	1.12	1.03
70%	2.51	2.09	1.80	1.56	1.34	1.17
80%	2.92	2.41	2.07	1.82	1.62	1.40
90%	3.25	2.64	2.31	2.04	1.84	1.59
100%	3.55	2.79	2.52	2.34	2.04	1.75

3 4
40% 1.51 1.24
50% 1.79 1.51
46.4% (interpolation) 1.69 1.41 1.55 SA/DA

Permanent Pool Surface Area (no forebay):	4279	sf
Forebay Volume (Total):	2387	cf
Permanent Pool Volume (Total):	12515	cf
Forebay Size (Volume):	19	%

Hawthorne Trail: Supplemental & Supporting Info for Hydrograph Generation**Post Dev POD 2B #3 - Bypass**

Roman Cook

5/28/2025

Post Dev POD 2B #3 - Bypass		261974	S.F.	6.01	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.00	98	0.00		
Roofs	0.08	98	1.34		
Driveways	0.01	98	0.19		
Sidewalks (+Pump Station)	0.00	98	0.00		
Openspace- A Soils	0.00	39	0.00		
Openspace- C Soils	3.54	74	43.53		
Openspace- D Soils	1.77	80	23.52		
Woods/Wetlands-A Soils	0.00	30	0.00		
Woods/Wetlands-C Soils	0.27	70	3.17		
Woods/Wetlands-D Soils	0.34	77	4.38		
Lands Taken Up by BMP	0.00	98	0.00		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	6.01	Composite "CN"	76.1		
	Percent Impervious		2%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= $60 \cdot .000132 \cdot L^{.77} / S^{.385}$	931	15	6.99	Minutes	
Percent Impervious		2%			

Moody: Supplemental & Supporting Info for Hydrograph Generation

Post Dev - POD 2B #4 (SCM #5)

Roman Cook

5/28/2025

Post Dev - POD 2B #4 (SCM #5)		328659	S.F.	7.54	Ac
Land Use	Area, Ac.	"CN"	Wtd'd "CN"		
Roadways + C&G (not Sidewalks)	0.95	98	12.40		
Roofs	1.67	98	21.66		
Driveways/Parking	0.23	98	3.03		
Sidewalks	0.26	98	3.38		
Openspace- A Soils	0.00	39	0.00		
Openspace- B Soils	0.59	61	4.79		
Openspace- C Soils	3.56	74	34.90		
Openspace- D Soils	0.00	80	0.00		
Woods-A Soils	0.00	30	0.00		
Woods-B Soils	0.05	55	0.36		
Woods-C Soils	0.00	70	0.00		
Woods-D Soils	0.00	77	0.00		
Lands Taken Up by BMP	0.23	98	2.97		
Open Water (Exist'g or Proposed Ponds)	0.00	98	0.00		
Total (Check):	7.54	Composite "CN"	83		
	Percent Impervious		44.3%		
Tc (Kirpich):	Length	Elev Delta	Tc=		
Tc, min.= 60*.000132*L^.77/S^.385	1195	12	10.16	Minutes	
Percent Impervious		44.3%			
	Pond Design Depth, ft.:	3.50	(4.5' w/ 0.5' Sediment Storage)		
SCM #1 Design Elements:	SA/DA Factor:	1.87	From NCDEQ SA/DA Char	D Avg, ft	
Davg = VPP-Vshelf / A shelf bottom	Min.SCM Surface Area:	6146	S.F.	4.04	
	VPP, c.f.	Perimeter, ft.	Vshelf, c.f.	Abottom, S.f.	3.50
Treatment Volume Requirement:	19,680	537	3,760.00	3,945	
	(From HydraFlow Attachment)		Design Pond Depth, ft.=	3.50	
Rv=0.05-.009*(%Impervious)					
Total Runoff for 1" Event= S in Ac	DA to SCM:	7.545	Ac.		
Treatment "S" in Cu. Ft. =	Composite % Impervious (Above) =	44%			
Treatment Volume to Be Stored:	Rv=0.05+.009*(%Impervious)	0.45	inch/inch		
Treatment Volume Provided, Cu.	Total Runoff for 1" Event= S in Ac-Ft:	0.28	S=1"*Rv*Drainage Area/12		
	Treatment "S" in Cu. Ft. =	12295.79			
	Treatment Volume to Be Stored:	12296	Cu. FT		
	Volume Achieved at Elev.	348.7	Orifice Dia	2.00	Inch Drawdown Pipe
	Drawdown Pipe Elev.	347.5	Elev Diff, H., ft.	1.2	

Table 1: Piedmont and Mountain SA/DA Table (Adapted from Driscoll, 1986)

Percent Impervious Cover	Permanent Pool Average Depth (ft)					
	3.0	4.0	5.0	6.0	7.0	≥8.0
10%	0.51	0.43	0.37	0.30	0.27	0.25
20%	0.84	0.69	0.61	0.51	0.44	0.40
30%	1.17	0.94	0.84	0.72	0.61	0.56
40%	1.51	1.24	1.09	0.91	0.78	0.71
50%	1.79	1.51	1.31	1.13	0.95	0.87
60%	2.09	1.77	1.49	1.31	1.12	1.03
70%	2.51	2.09	1.80	1.56	1.34	1.17
80%	2.92	2.41	2.07	1.82	1.62	1.40
90%	3.25	2.64	2.31	2.04	1.84	1.59
100%	3.55	2.79	2.52	2.34	2.04	1.75

3
 4
 50% 1.79 1.51
 60% 2.09 1.77
 57.7% (interpolation) 2.02 1.71 1.87 SA/DA

Permanent Pool Surface Area (no forebay):	5760	sf
Forebay Volume (Total):	3881	cf
Permanent Pool Volume (Total):	19680	cf
Forebay Size (Volume):	20	%

Pond Report

Pond No. 1 - SCM #1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 360.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	360.00	10,525	0	0
1.00	361.00	11,518	11,017	11,017
2.00	362.00	12,558	12,033	23,050
3.00	363.00	13,653	13,100	36,150
3.50	363.50	15,404	7,259	43,409
4.00	364.00	17,281	8,166	51,575
5.00	365.00	19,287	18,273	69,848
6.00	366.00	21,423	20,344	90,192
7.00	367.00	23,693	22,546	112,738
8.00	368.00	26,063	24,866	137,604

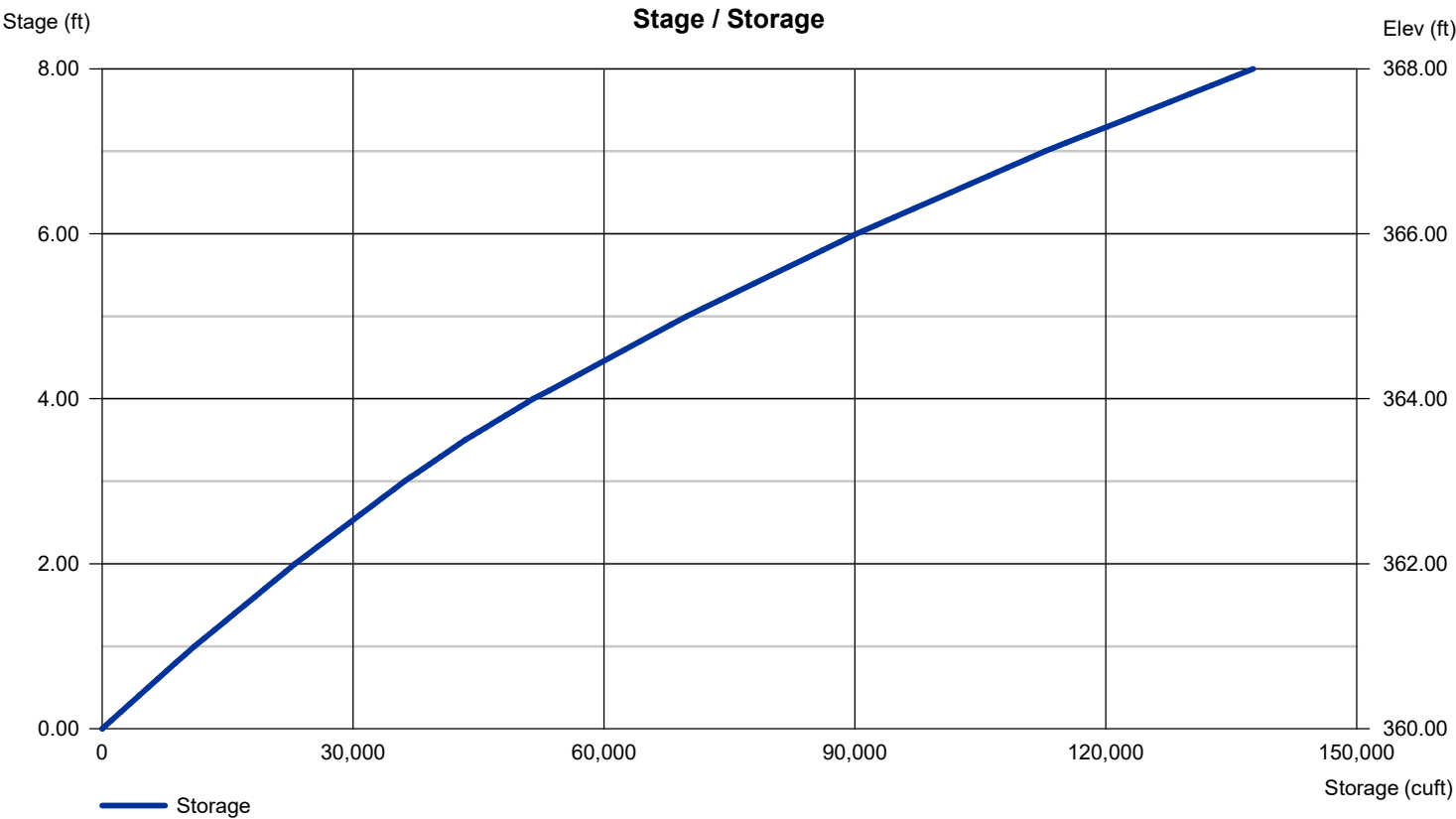
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	24.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 360.00	363.50	365.75	0.00
Length (ft)	= 50.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	24.00	0.00	0.00
Crest El. (ft)	= 366.25	366.75	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 2 - SCM #2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 358.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	358.00	2,888	0	0
1.00	359.00	3,772	3,320	3,320
2.00	360.00	4,695	4,225	7,545
3.00	361.00	5,655	5,167	12,712
3.50	361.50	7,163	3,197	15,908
4.00	362.00	8,755	3,972	19,881
5.00	363.00	10,430	9,579	29,460
6.00	364.00	12,189	11,297	40,757
7.00	365.00	14,033	13,099	53,856

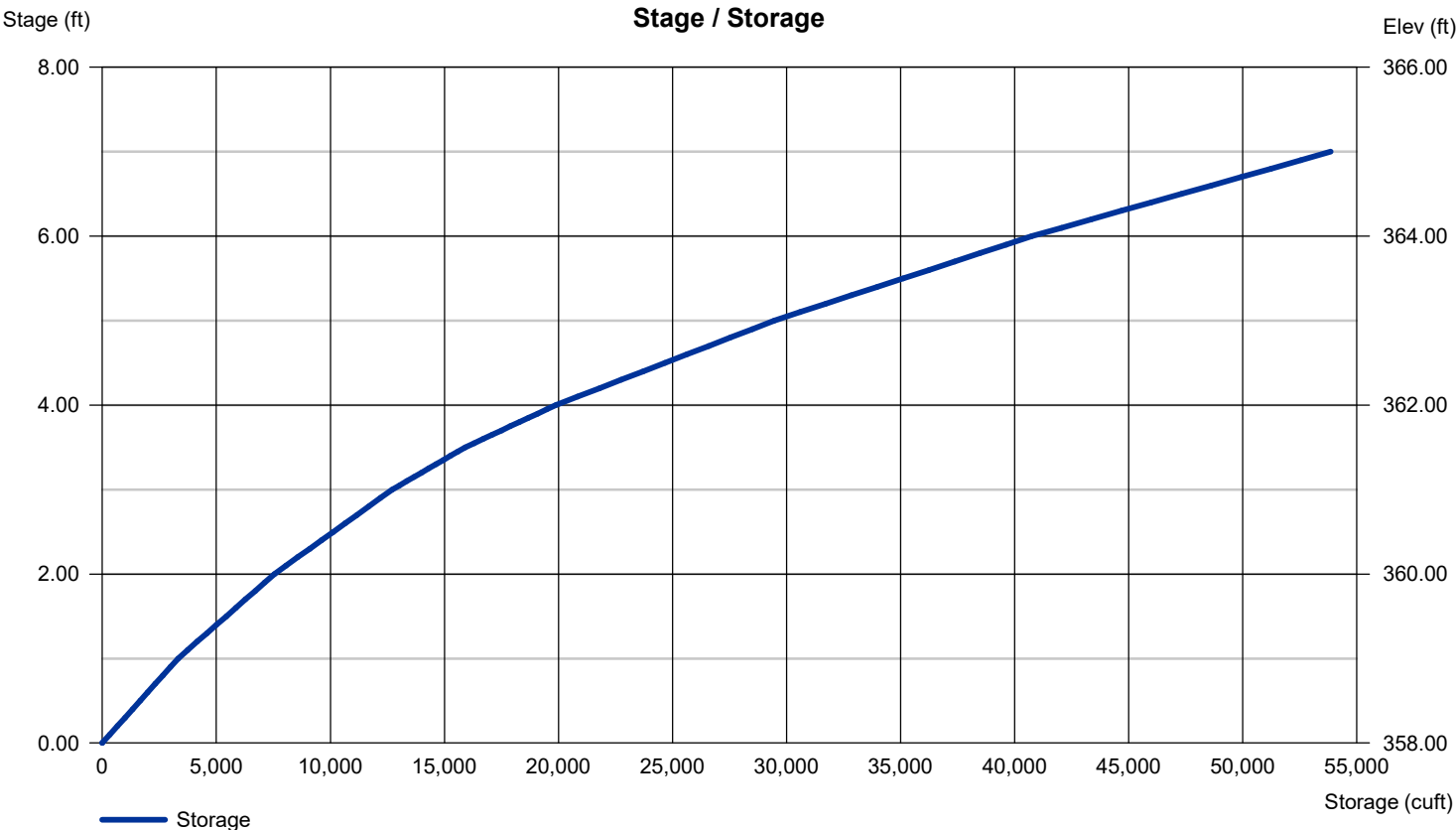
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	1.00	6.00	0.00
Span (in)	= 18.00	1.00	12.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 358.00	361.50	362.75	0.00
Length (ft)	= 100.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	12.00	0.00	0.00
Crest El. (ft)	= 363.25	363.75	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 3 - SCM #3

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 357.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	357.00	2,465	0	0
1.00	358.00	3,606	3,036	3,036
2.00	359.00	4,169	3,888	6,923
3.00	360.00	4,767	4,468	11,391
4.00	361.00	5,401	5,084	16,475
4.50	361.50	6,424	2,956	19,431
5.00	362.00	7,528	3,488	22,919
6.00	363.00	8,717	8,123	31,042
7.00	364.00	9,993	9,355	40,397
8.00	365.00	11,354	10,674	51,070

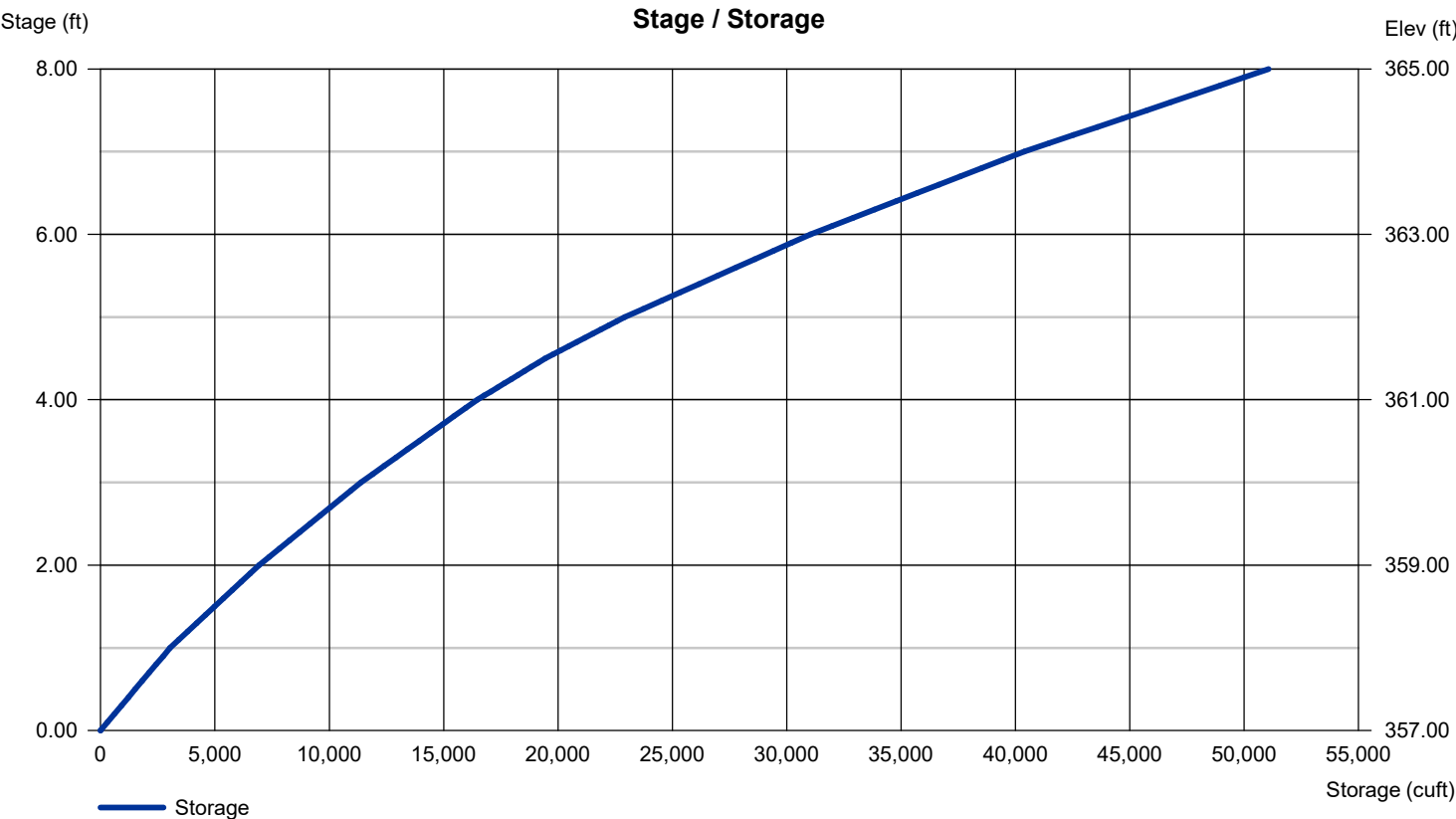
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	42.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 358.00	361.50	362.75	0.00
Length (ft)	= 0.00	0.00	0.50	0.00
Slope (%)	= 0.00	0.00	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 22.00	24.00	0.00	0.00
Crest El. (ft)	= 363.25	363.90	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 5 - SCM #4

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 354.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	354.00	1,995	0	0
1.00	355.00	2,838	2,417	2,417
2.00	356.00	3,711	3,275	5,691
3.00	357.00	4,615	4,163	9,854
3.50	357.50	6,029	2,661	12,515
4.00	358.00	7,511	3,385	15,900
5.00	359.00	9,061	8,286	24,186
6.00	360.00	10,681	9,871	34,057
7.00	361.00	12,369	11,525	45,582

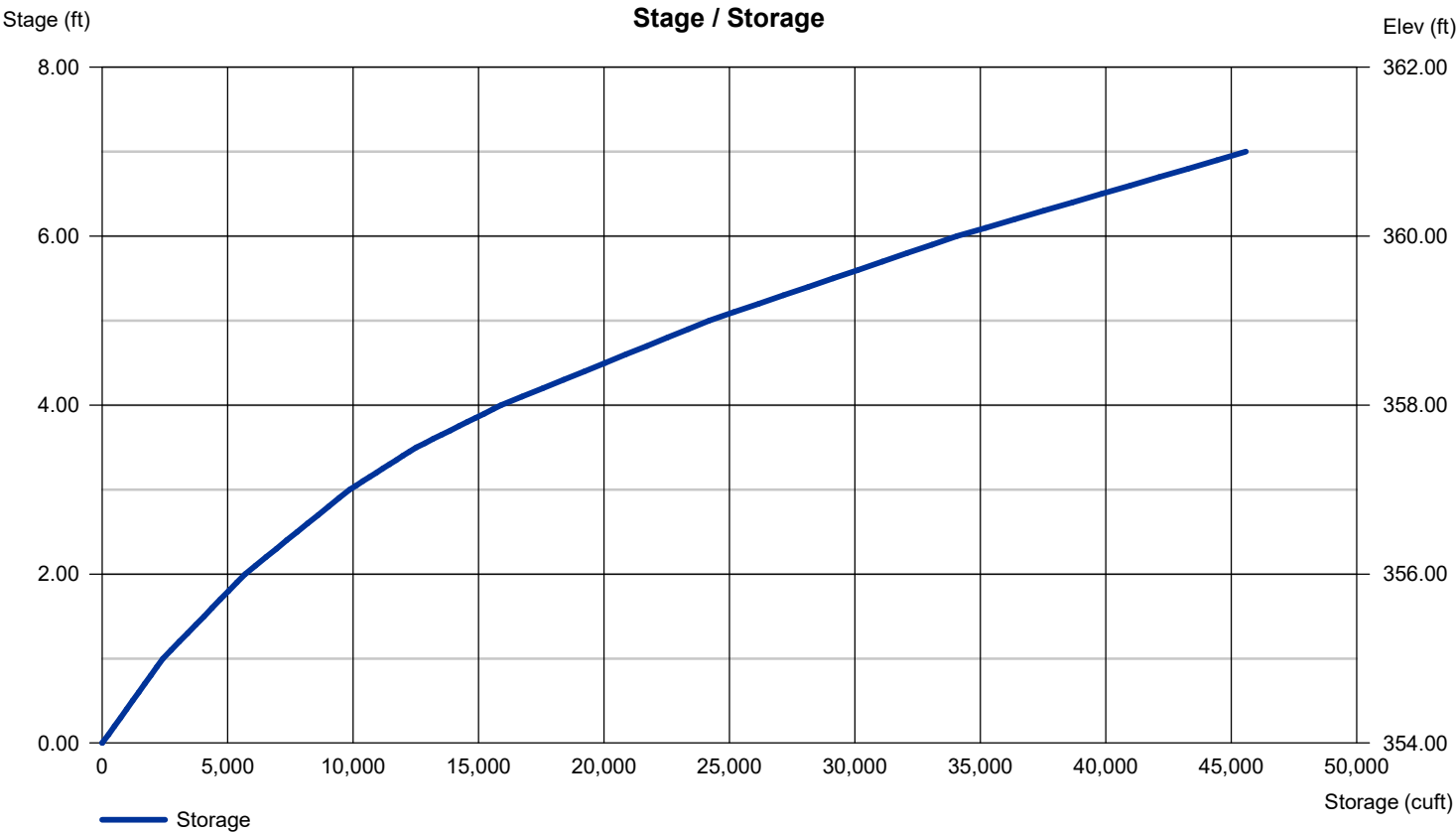
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	1.50	6.00	0.00
Span (in)	= 24.00	1.50	30.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 354.00	357.50	358.75	0.00
Length (ft)	= 100.00	0.00	0.50	0.00
Slope (%)	= 0.50	0.00	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 22.00	24.00	0.00	0.00
Crest El. (ft)	= 359.25	360.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 4 - SCM #5

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 344.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	344.00	3,945	0	0
1.00	345.00	4,823	4,384	4,384
2.00	346.00	5,755	5,289	9,673
3.00	347.00	6,738	6,247	15,920
3.50	347.50	8,303	3,760	19,680
4.00	348.00	9,952	4,564	24,244
5.00	349.00	11,681	10,817	35,060
6.00	350.00	13,490	12,586	47,646
7.00	351.00	15,379	14,435	62,080
8.00	352.00	17,348	16,364	78,444

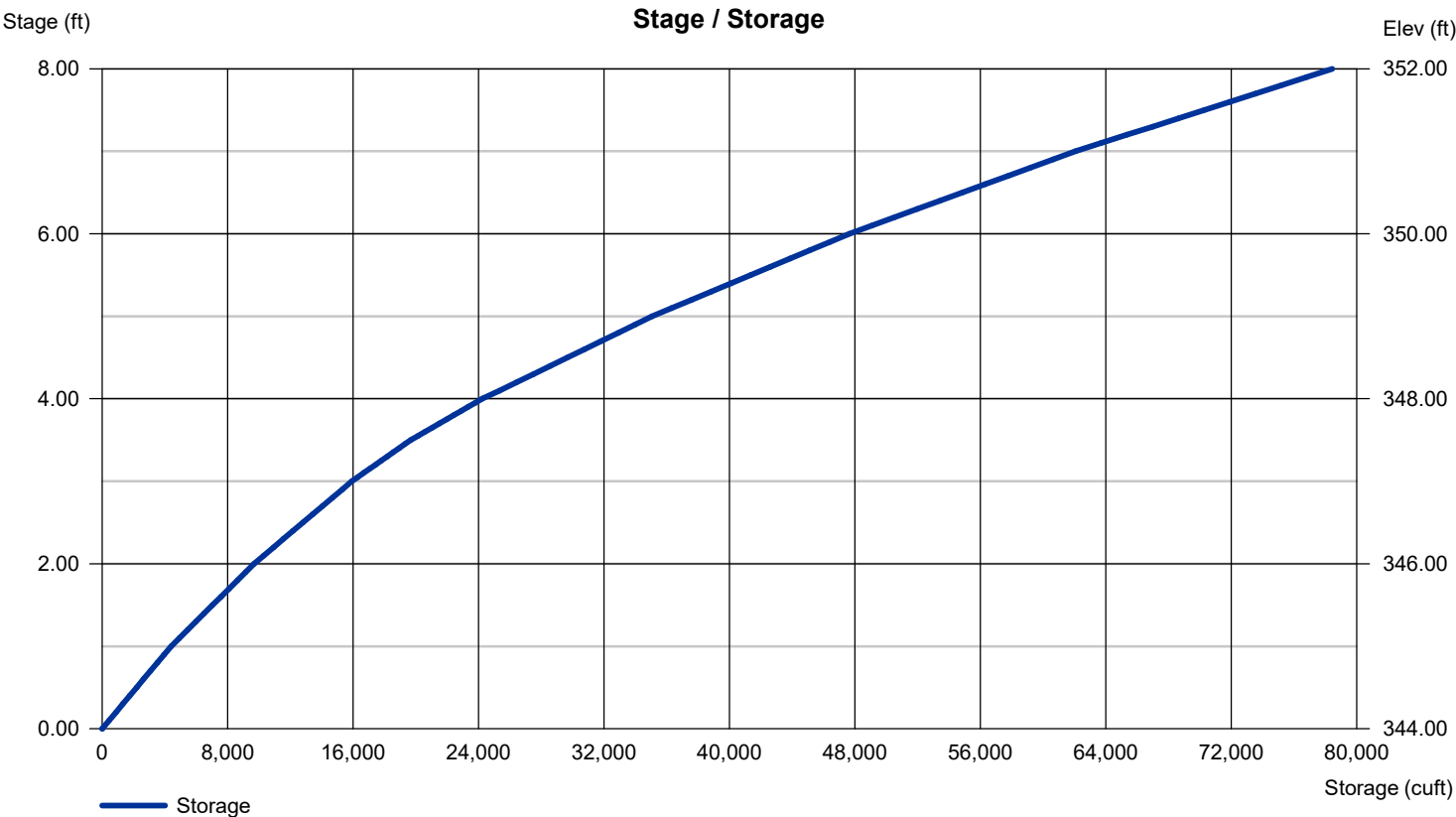
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	24.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 344.00	347.50	350.00	0.00
Length (ft)	= 100.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

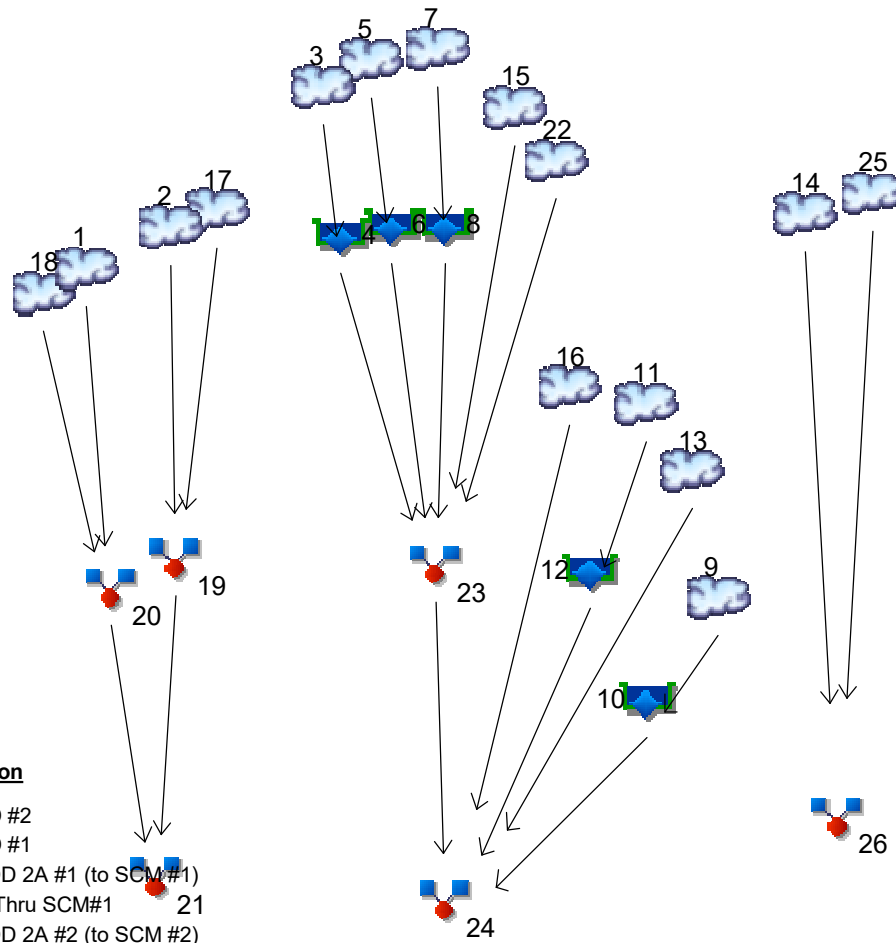
	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	24.00	0.00	0.00
Crest El. (ft)	= 350.50	351.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



Legend

Hyd.	Origin	Description
1	SCS Runoff	PRE POD #2
2	SCS Runoff	PRE POD #1
3	SCS Runoff	POST POD 2A #1 (to SCM #1)
4	Reservoir	PostDev Thru SCM#1
5	SCS Runoff	POST POD 2A #2 (to SCM #2)
6	Reservoir	Route PostDev SCM #2
7	SCS Runoff	POST POD 2A #3 (to SCM #3)
8	Reservoir	Route PostDev @ SCM#3
9	SCS Runoff	POST POD 2B #4 (to SCM #5)
10	Reservoir	Route PostDev SCM#5
11	SCS Runoff	POST POD 2B #2 (to SCM #4)
12	Reservoir	Route PostDev SCM #4
13	SCS Runoff	POST POD 2B #3 (BYPASS)
14	SCS Runoff	POST POD #1 (BYPASS)
15	SCS Runoff	POST POD 2A #4 (BYPASS)
16	SCS Runoff	POST POD 2B #1 (BYPASS)
17	SCS Runoff	PRE POD #1 OFFSITE AREA
18	SCS Runoff	PRE OFFSITE AREA #4
19	Combine	PRE POD #1 TOTAL
20	Combine	PRE POD #2 TOTAL
21	Combine	PRE POD GRAND TOTAL
22	SCS Runoff	POST POD AREA A (OFFSITE BYPASS)
23	Combine	POST POD 2A TOTAL
24	Combine	POST POD 2 GRAND TOTAL
25	SCS Runoff	POST POD AREA C & B OFFSITE BYPASS
26	Combine	POST POD 1 GRAND TOTAL

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	----	42.90	----	----	----	121.51	----	----	230.07	PRE POD #2
2	SCS Runoff	----	7.331	----	----	----	21.78	----	----	42.19	PRE POD #1
3	SCS Runoff	----	19.92	----	----	----	45.12	----	----	76.89	POST POD 2A #1 (to SCM #1)
4	Reservoir	3	0.150	----	----	----	7.837	----	----	58.32	PostDev Thru SCM#1
5	SCS Runoff	----	2.674	----	----	----	6.229	----	----	10.81	POST POD 2A #2 (to SCM #2)
6	Reservoir	5	0.019	----	----	----	0.049	----	----	0.528	Route PostDev SCM #2
7	SCS Runoff	----	20.42	----	----	----	45.62	----	----	77.17	POST POD 2A #3 (to SCM #3)
8	Reservoir	7	12.05	----	----	----	35.98	----	----	72.61	Route PostDev @ SCM#3
9	SCS Runoff	----	15.72	----	----	----	34.50	----	----	57.86	POST POD 2B #4 (to SCM #5)
10	Reservoir	9	0.485	----	----	----	17.87	----	----	50.25	Route PostDev SCM#5
11	SCS Runoff	----	13.26	----	----	----	28.48	----	----	47.26	POST POD 2B #2 (to SCM #4)
12	Reservoir	11	6.899	----	----	----	26.57	----	----	38.98	Route PostDev SCM #4
13	SCS Runoff	----	9.656	----	----	----	24.42	----	----	44.18	POST POD 2B #3 (BYPASS)
14	SCS Runoff	----	4.499	----	----	----	10.18	----	----	17.38	POST POD #1 (BYPASS)
15	SCS Runoff	----	13.26	----	----	----	29.77	----	----	50.47	POST POD 2A #4 (BYPASS)
16	SCS Runoff	----	0.900	----	----	----	1.880	----	----	3.077	POST POD 2B #1 (BYPASS)
17	SCS Runoff	----	4.826	----	----	----	12.60	----	----	23.29	PRE POD #1 OFFSITE AREA
18	SCS Runoff	----	9.181	----	----	----	25.99	----	----	49.11	PRE OFFSITE AREA #4
19	Combine	2, 17,	11.80	----	----	----	34.24	----	----	65.08	PRE POD #1 TOTAL
20	Combine	1, 18,	48.86	----	----	----	138.98	----	----	263.30	PRE POD #2 TOTAL
21	Combine	19, 20	56.68	----	----	----	163.83	----	----	310.97	PRE POD GRAND TOTAL
22	SCS Runoff	----	9.042	----	----	----	25.60	----	----	48.37	POST POD AREA A (OFFSITE BYP
23	Combine	4, 6, 8, 15, 22	30.11	----	----	----	84.35	----	----	210.96	POST POD 2A TOTAL
24	Combine	10, 12, 13, 16, 23	41.55	----	----	----	137.75	----	----	333.32	POST POD 2 GRAND TOTAL
25	SCS Runoff	----	4.872	----	----	----	12.72	----	----	23.52	POST POD AREA C & B OFFSITE B
26	Combine	14, 25	9.371	----	----	----	22.90	----	----	40.90	POST POD 1 GRAND TOTAL
Proj. file: 20250528 SCM Modeling.gpw										Thursday, 05 / 29 / 2025	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

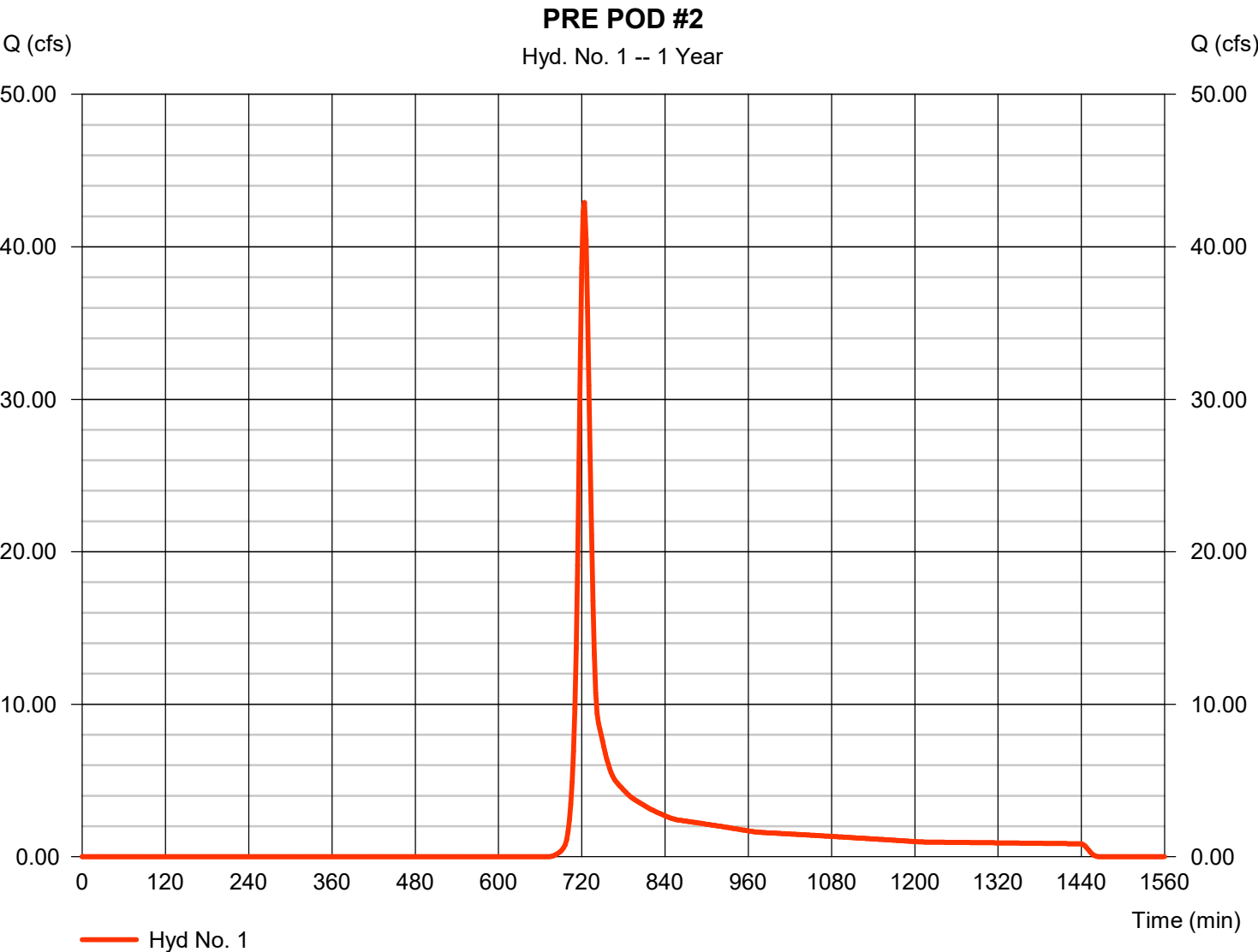
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	42.90	2	724	128,128	-----	-----	-----	PRE POD #2
2	SCS Runoff	7.331	2	720	17,610	-----	-----	-----	PRE POD #1
3	SCS Runoff	19.92	2	720	45,597	-----	-----	-----	POST POD 2A #1 (to SCM #1)
4	Reservoir	0.150	2	1446	35,689	3	365.63	82,727	PostDev Thru SCM#1
5	SCS Runoff	2.674	2	718	5,352	-----	-----	-----	POST POD 2A #2 (to SCM #2)
6	Reservoir	0.019	2	1442	4,289	5	362.06	20,481	Route PostDev SCM #2
7	SCS Runoff	20.42	2	720	46,777	-----	-----	-----	POST POD 2A #3 (to SCM #3)
8	Reservoir	12.05	2	724	43,694	7	363.23	33,184	Route PostDev @ SCM#3
9	SCS Runoff	15.72	2	720	40,830	-----	-----	-----	POST POD 2B #4 (to SCM #5)
10	Reservoir	0.485	2	936	39,197	9	350.05	48,361	Route PostDev SCM#5
11	SCS Runoff	13.26	2	720	34,397	-----	-----	-----	POST POD 2B #2 (to SCM #4)
12	Reservoir	6.899	2	730	33,989	11	359.16	25,799	Route PostDev SCM #4
13	SCS Runoff	9.656	2	720	22,265	-----	-----	-----	POST POD 2B #3 (BYPASS)
14	SCS Runoff	4.499	2	718	9,029	-----	-----	-----	POST POD #1 (BYPASS)
15	SCS Runoff	13.26	2	720	34,535	-----	-----	-----	POST POD 2A #4 (BYPASS)
16	SCS Runoff	0.900	2	716	1,821	-----	-----	-----	POST POD 2B #1 (BYPASS)
17	SCS Runoff	4.826	2	718	9,705	-----	-----	-----	PRE POD #1 OFFSITE AREA
18	SCS Runoff	9.181	2	736	45,436	-----	-----	-----	PRE OFFSITE AREA #4
19	Combine	11.80	2	718	27,315	2, 17,	-----	-----	PRE POD #1 TOTAL
20	Combine	48.86	2	724	173,564	1, 18,	-----	-----	PRE POD #2 TOTAL
21	Combine	56.68	2	722	200,879	19, 20	-----	-----	PRE POD GRAND TOTAL
22	SCS Runoff	9.042	2	736	44,752	-----	-----	-----	POST POD AREA A (OFFSITE BYP
23	Combine	30.11	2	724	162,958	4, 6, 8, 15, 22	-----	-----	POST POD 2A TOTAL
24	Combine	41.55	2	724	260,230	10, 12, 13, 16, 23	-----	-----	POST POD 2 GRAND TOTAL
25	SCS Runoff	4.872	2	718	9,798	-----	-----	-----	POST POD AREA C & B OFFSITE B
26	Combine	9.371	2	718	18,827	14, 25	-----	-----	POST POD 1 GRAND TOTAL
20250528 SCM Modeling.gpw					Return Period: 1 Year			Thursday, 05 / 29 / 2025	

Hydrograph Report

Hyd. No. 1

PRE POD #2

Hydrograph type	= SCS Runoff	Peak discharge	= 42.90 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 128,128 cuft
Drainage area	= 41.980 ac	Curve number	= 73.1
Basin Slope	= 1.4 %	Hydraulic length	= 4320 ft
Tc method	= User	Time of conc. (Tc)	= 14.00 min
Total precip.	= 3.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

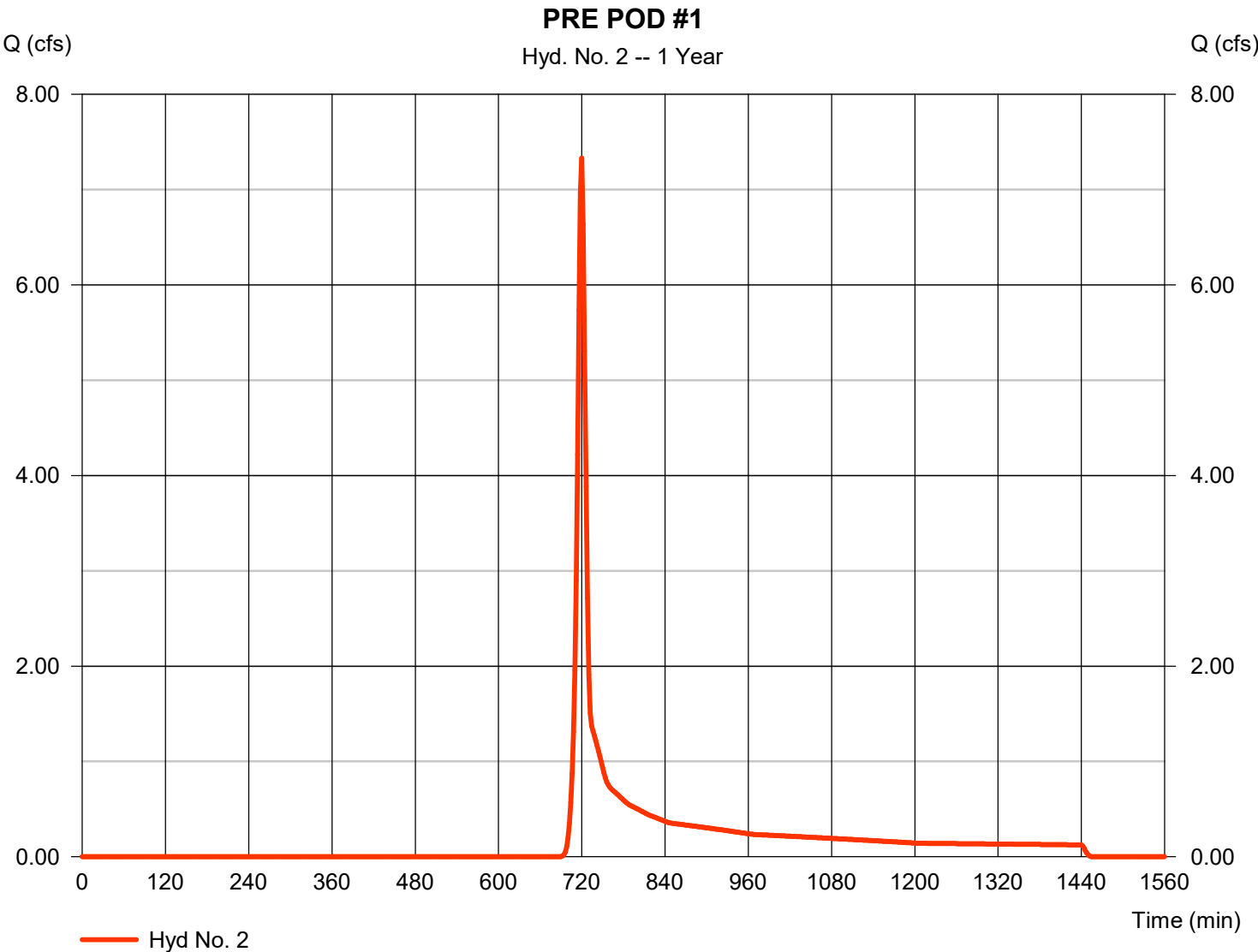


Hydrograph Report

Hyd. No. 2

PRE POD #1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.331 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 17,610 cuft
Drainage area	= 6.540 ac	Curve number	= 70.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.70 min
Total precip.	= 3.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

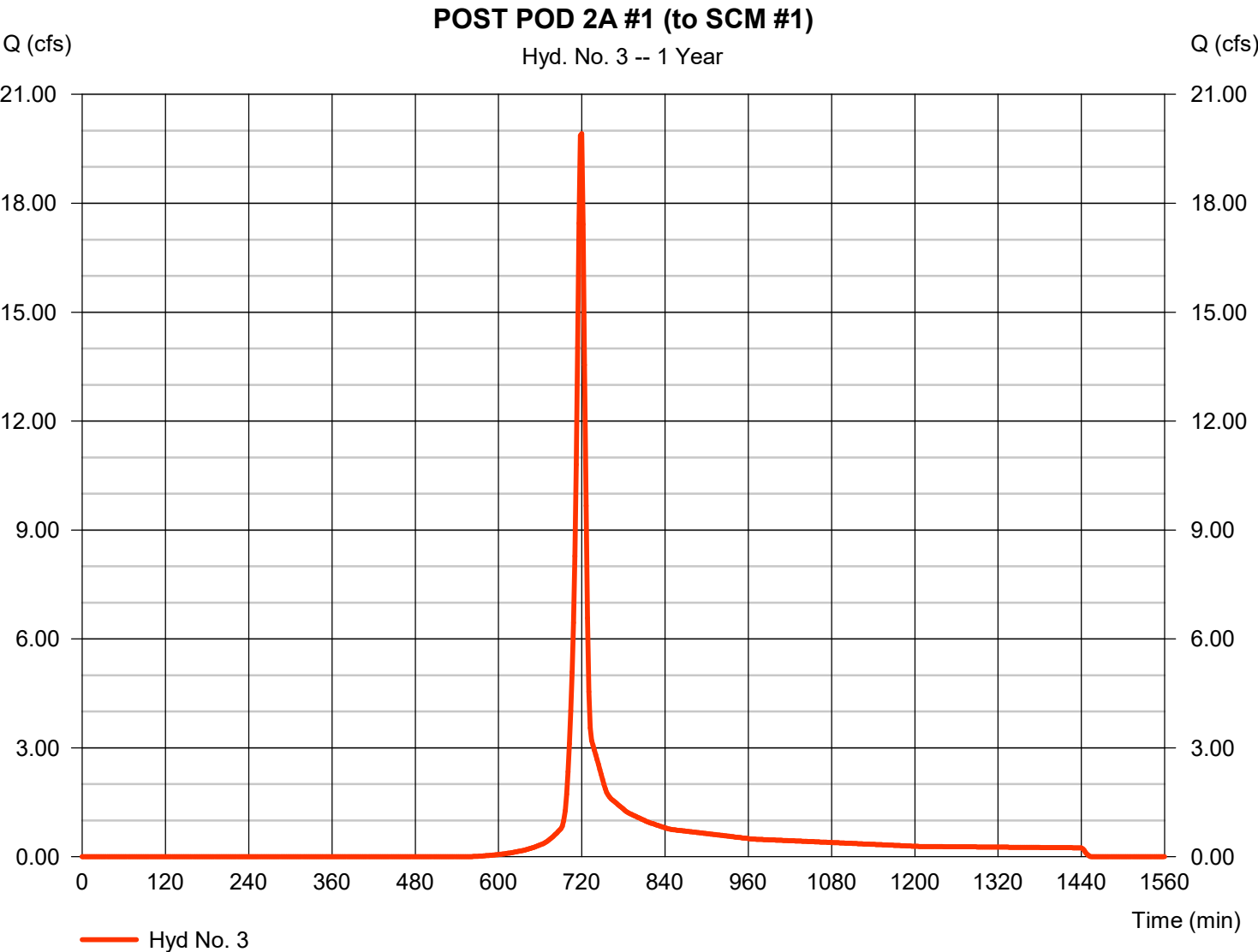


Hydrograph Report

Hyd. No. 3

POST POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.92 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	45,597 cuft
Drainage area	=	9.470 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	User	Time of conc. (Tc)	=	6.60 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



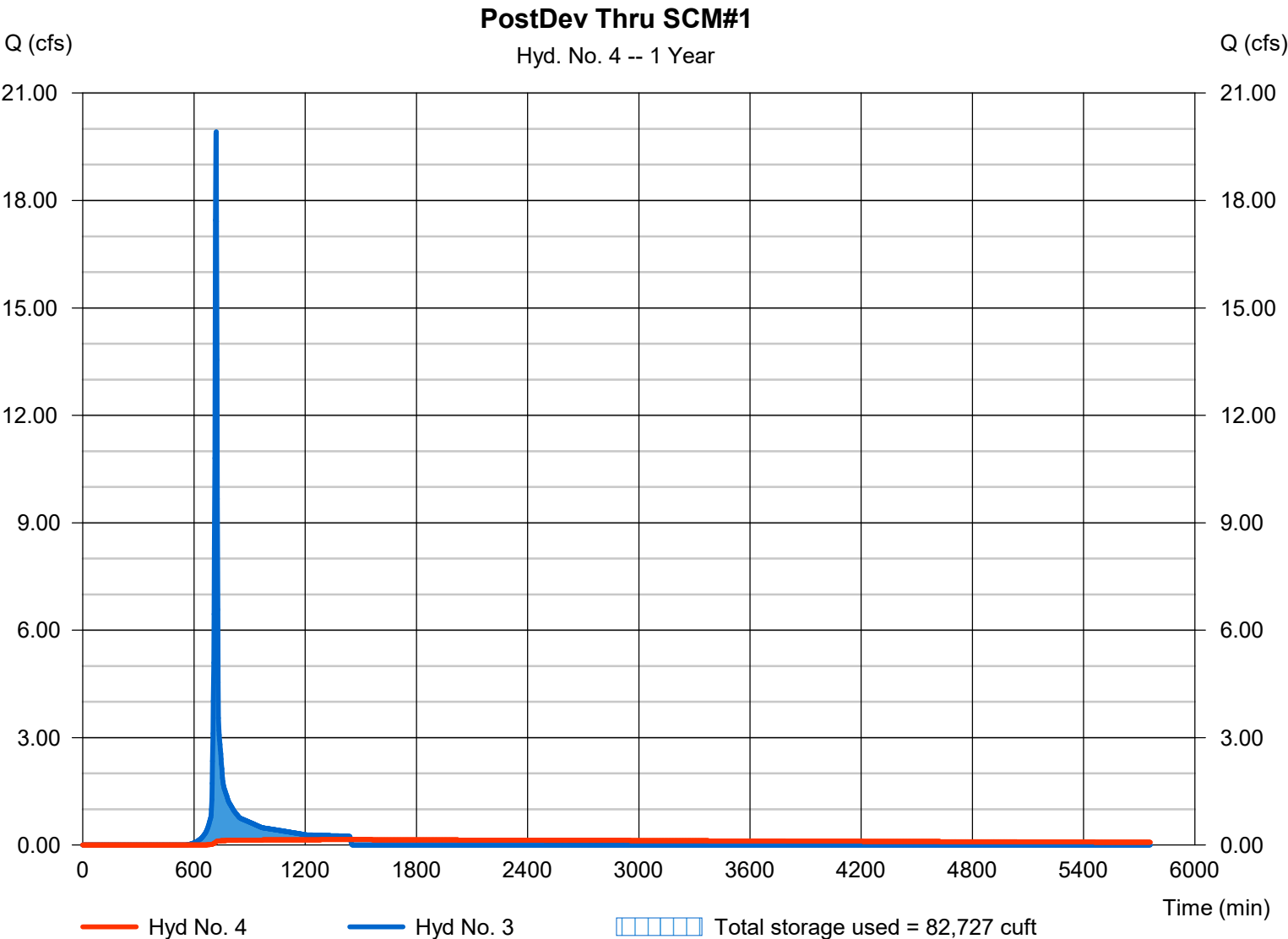
Hydrograph Report

Hyd. No. 4

PostDev Thru SCM#1

Hydrograph type	= Reservoir	Peak discharge	= 0.150 cfs
Storm frequency	= 1 yrs	Time to peak	= 1446 min
Time interval	= 2 min	Hyd. volume	= 35,689 cuft
Inflow hyd. No.	= 3 - POST POD 2A #1 (to SCM#1)	Max. Elevation	= 365.63 ft
Reservoir name	= SCM #1	Max. Storage	= 82,727 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.



Pond No. 1 - SCM #1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 360.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	360.00	10,525	0	0
1.00	361.00	11,518	11,017	11,017
2.00	362.00	12,558	12,033	23,050
3.00	363.00	13,653	13,100	36,150
3.50	363.50	15,404	7,259	43,409
4.00	364.00	17,281	8,166	51,575
5.00	365.00	19,287	18,273	69,848
6.00	366.00	21,423	20,344	90,192
7.00	367.00	23,693	22,546	112,738
8.00	368.00	26,063	24,866	137,604

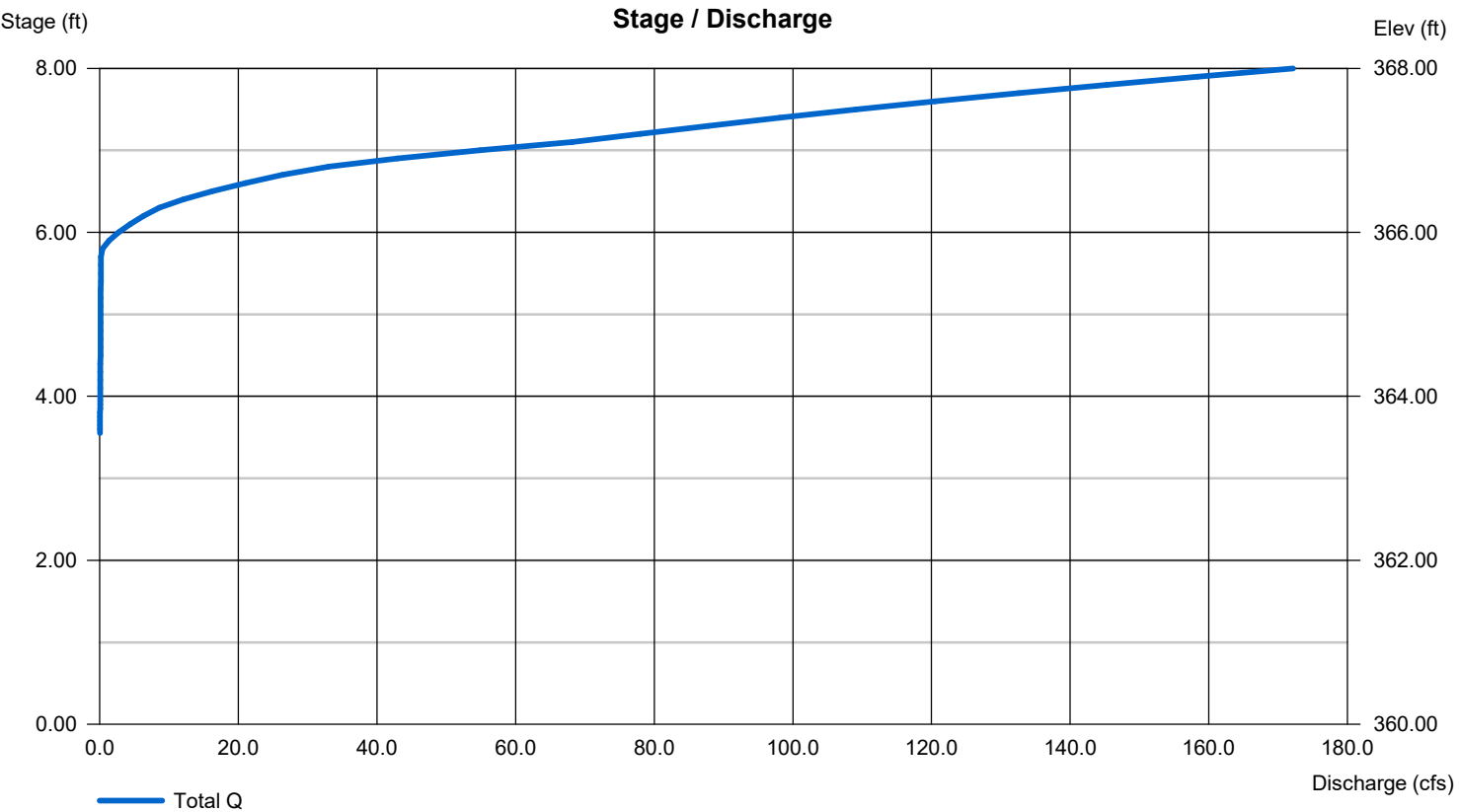
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	24.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 360.00	363.50	365.75	0.00
Length (ft)	= 50.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	24.00	0.00	0.00
Crest El. (ft)	= 366.25	366.75	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

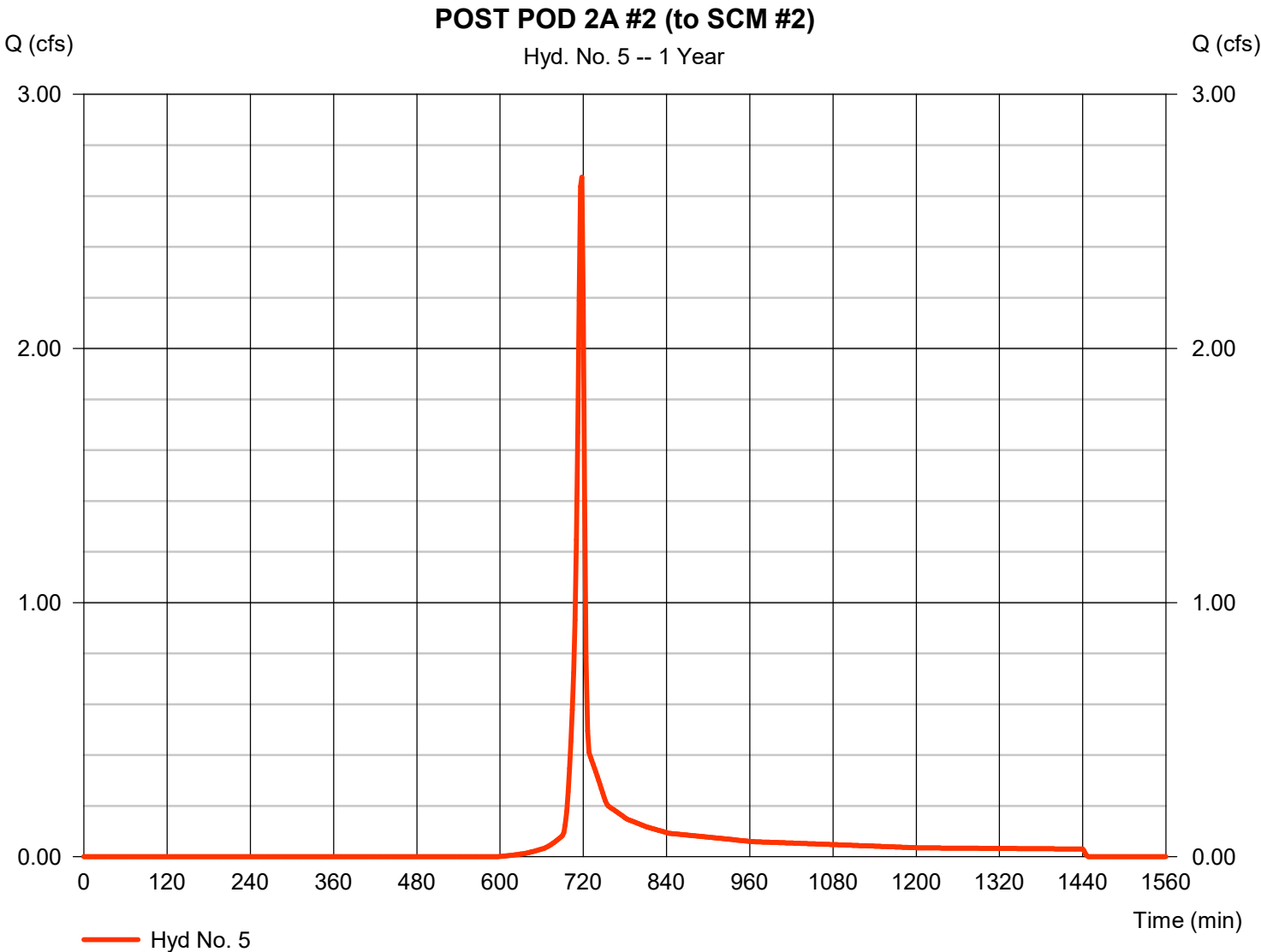


Hydrograph Report

Hyd. No. 5

POST POD 2A #2 (to SCM #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.674 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	5,352 cuft
Drainage area	=	1.310 ac	Curve number	=	79.2
Basin Slope	=	0.5 %	Hydraulic length	=	450 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

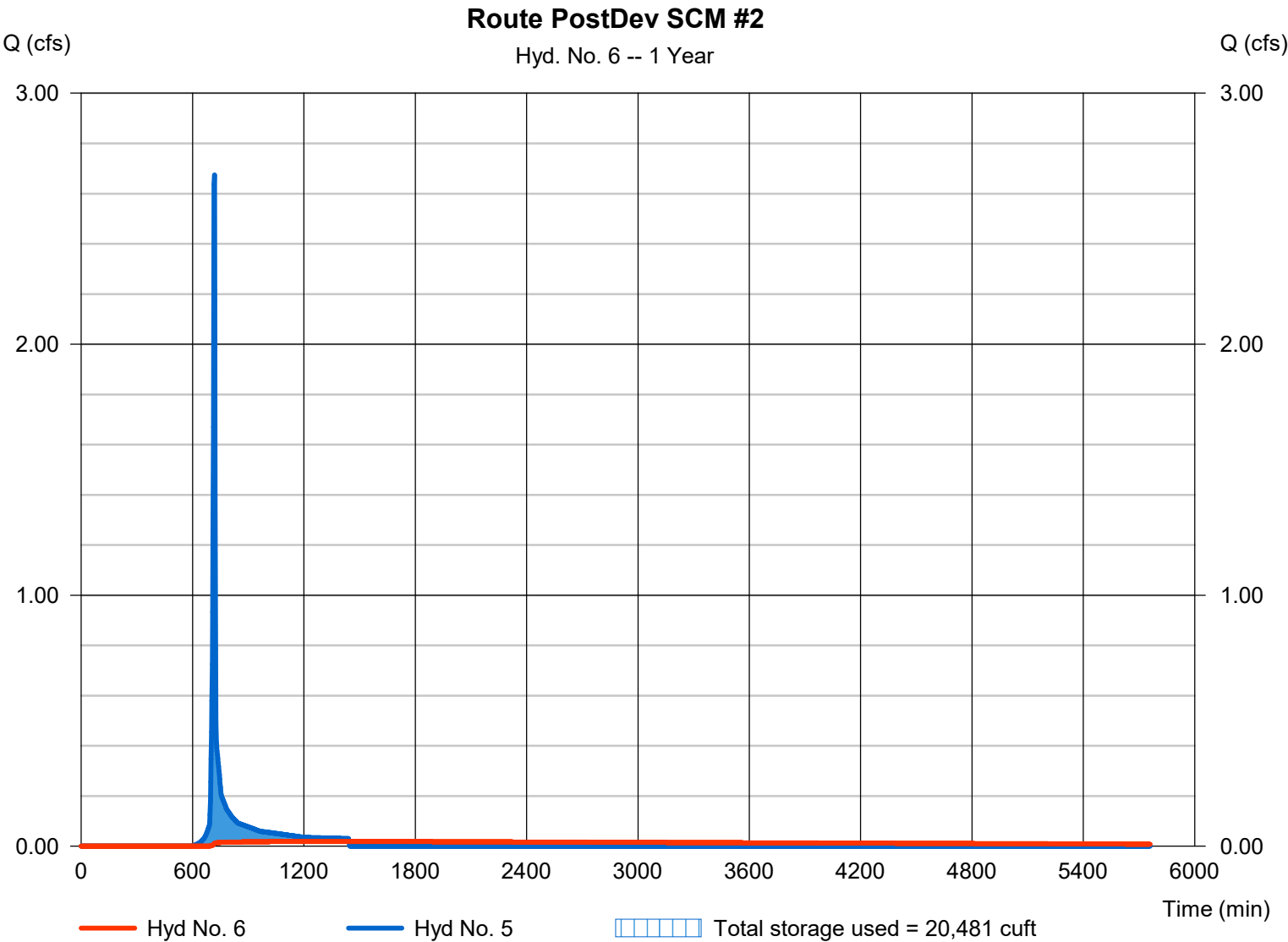
Thursday, 05 / 29 / 2025

Hyd. No. 6

Route PostDev SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 0.019 cfs
Storm frequency	= 1 yrs	Time to peak	= 1442 min
Time interval	= 2 min	Hyd. volume	= 4,289 cuft
Inflow hyd. No.	= 5 - POST POD 2A #2 (to SCM #2)	Max. Elevation	= 362.06 ft
Reservoir name	= SCM #2	Max. Storage	= 20,481 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.



Pond No. 2 - SCM #2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 358.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	358.00	2,888	0	0
1.00	359.00	3,772	3,320	3,320
2.00	360.00	4,695	4,225	7,545
3.00	361.00	5,655	5,167	12,712
3.50	361.50	7,163	3,197	15,908
4.00	362.00	8,755	3,972	19,881
5.00	363.00	10,430	9,579	29,460
6.00	364.00	12,189	11,297	40,757
7.00	365.00	14,033	13,099	53,856

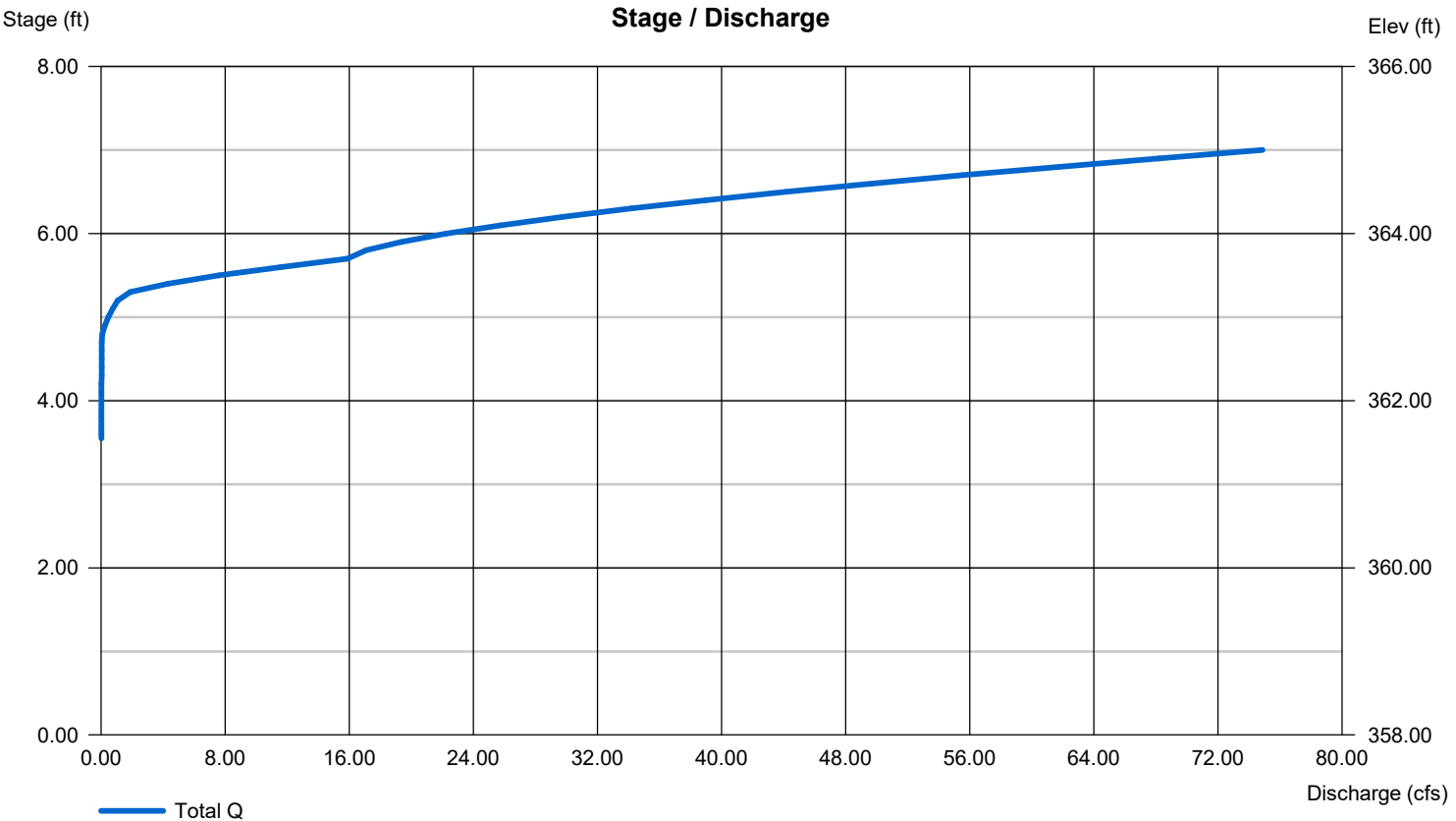
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	1.00	6.00	0.00
Span (in)	= 18.00	1.00	12.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 358.00	361.50	362.75	0.00
Length (ft)	= 100.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	12.00	0.00	0.00
Crest El. (ft)	= 363.25	363.75	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

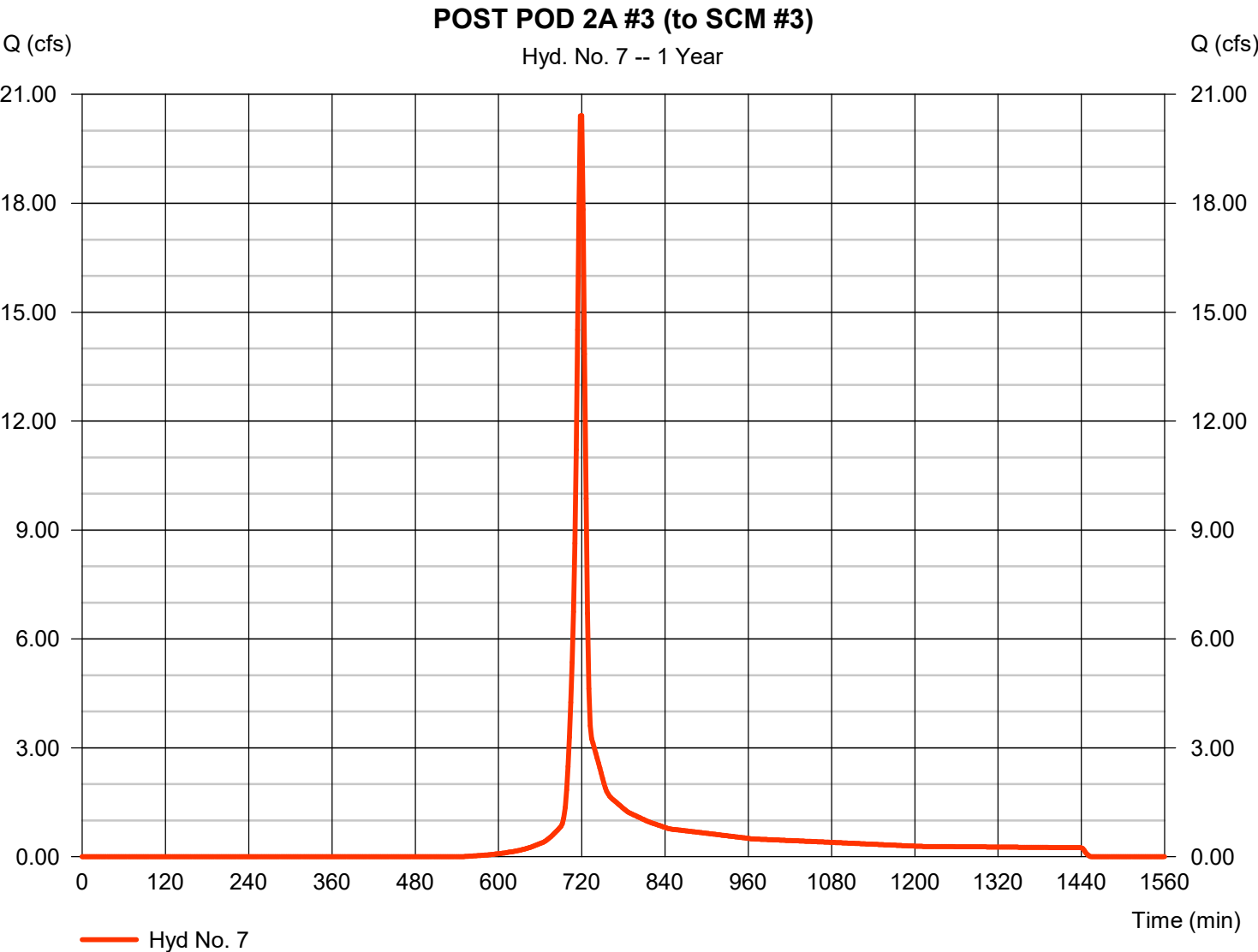


Hydrograph Report

Hyd. No. 7

POST POD 2A #3 (to SCM #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.42 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	46,777 cuft
Drainage area	=	9.390 ac	Curve number	=	81.9
Basin Slope	=	2.6 %	Hydraulic length	=	1120 ft
Tc method	=	User	Time of conc. (Tc)	=	7.30 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

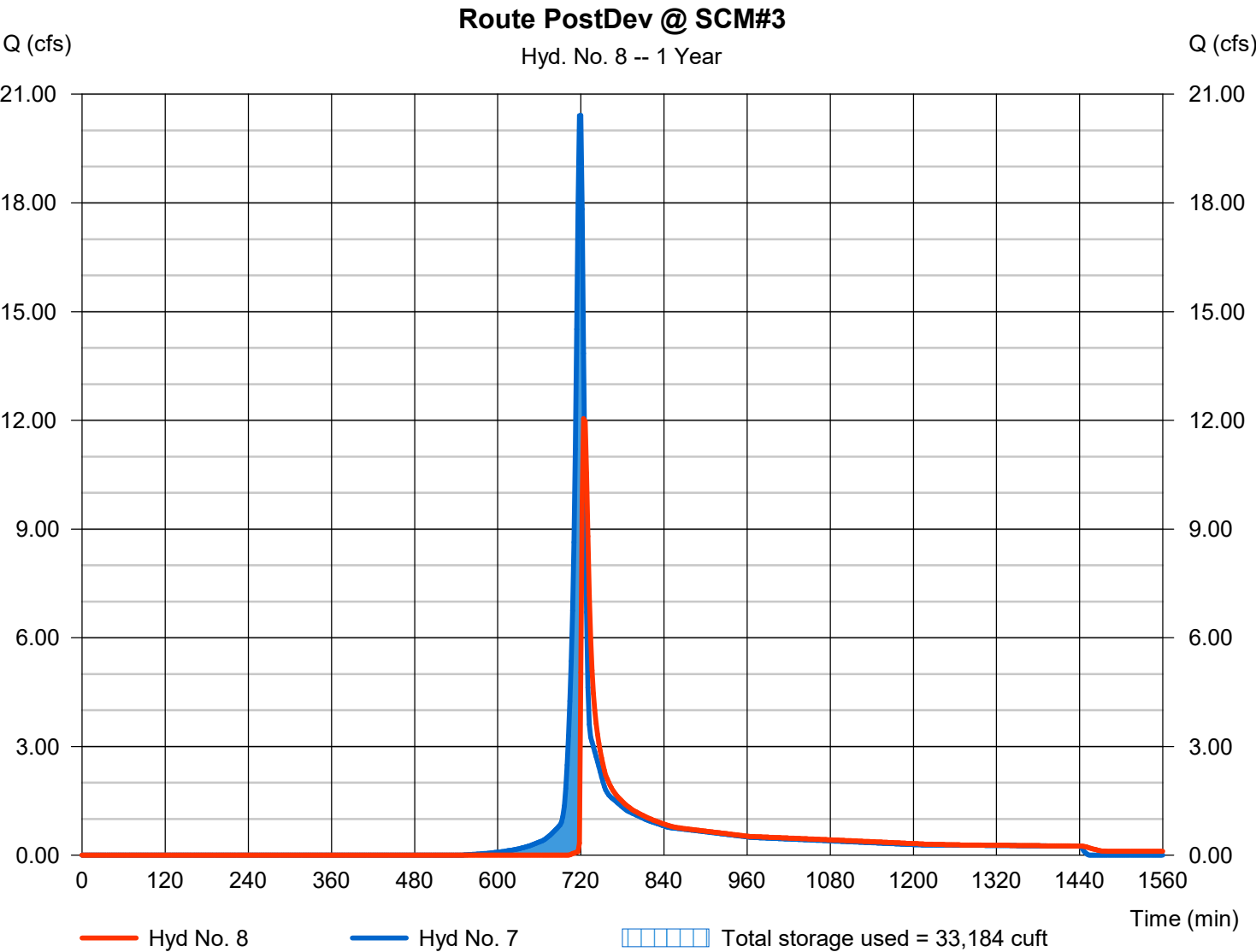
Thursday, 05 / 29 / 2025

Hyd. No. 8

Route PostDev @ SCM#3

Hydrograph type	= Reservoir	Peak discharge	= 12.05 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 43,694 cuft
Inflow hyd. No.	= 7 - POST POD 2A #3 (to SCM#3)	Max. Elevation	= 363.23 ft
Reservoir name	= SCM #3	Max. Storage	= 33,184 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.



Pond No. 3 - SCM #3

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 357.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	357.00	2,465	0	0
1.00	358.00	3,606	3,036	3,036
2.00	359.00	4,169	3,888	6,923
3.00	360.00	4,767	4,468	11,391
4.00	361.00	5,401	5,084	16,475
4.50	361.50	6,424	2,956	19,431
5.00	362.00	7,528	3,488	22,919
6.00	363.00	8,717	8,123	31,042
7.00	364.00	9,993	9,355	40,397
8.00	365.00	11,354	10,674	51,070

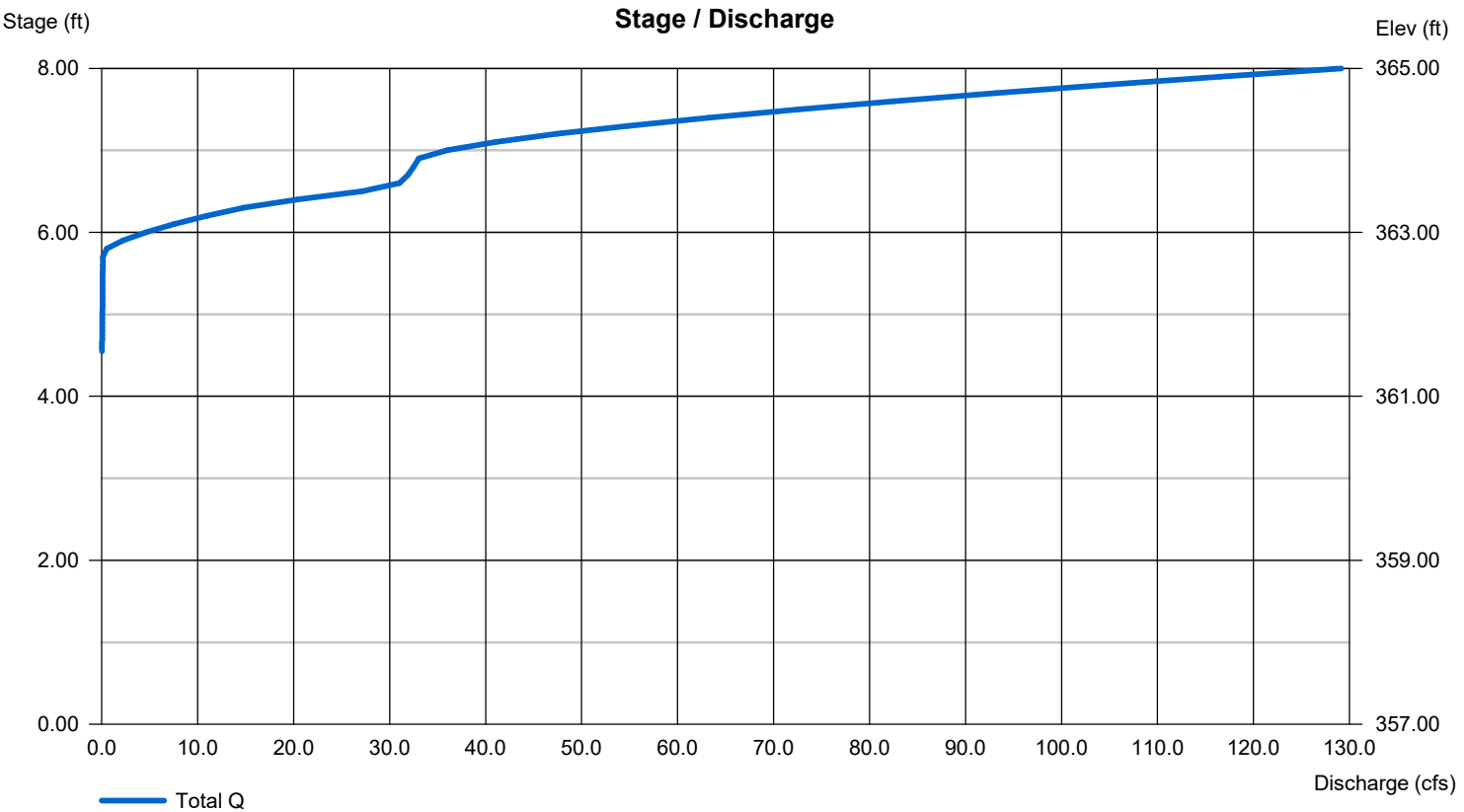
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	42.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 358.00	361.50	362.75	0.00
Length (ft)	= 0.00	0.00	0.50	0.00
Slope (%)	= 0.00	0.00	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 22.00	24.00	0.00	0.00
Crest El. (ft)	= 363.25	363.90	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

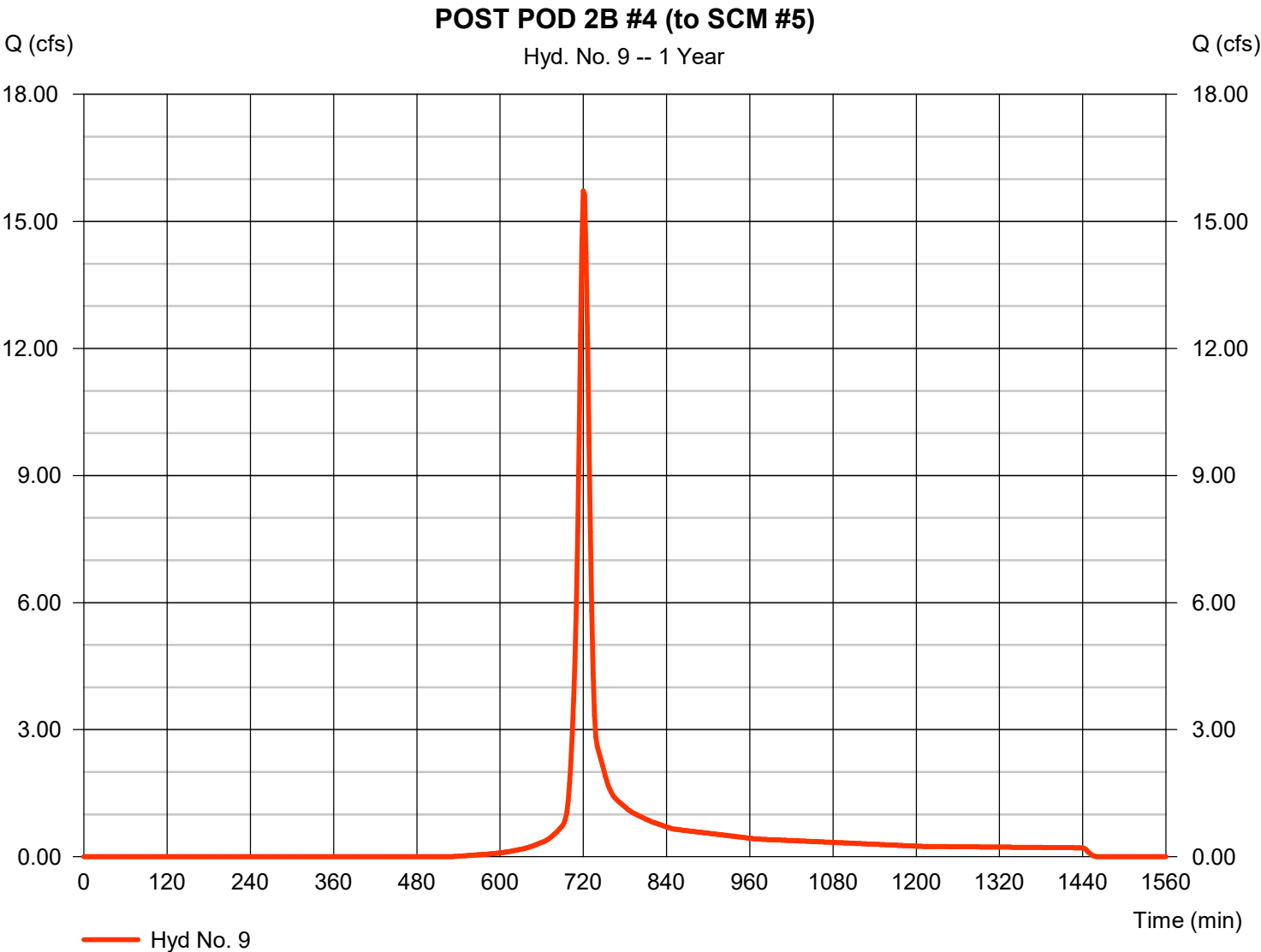


Hydrograph Report

Hyd. No. 9

POST POD 2B #4 (to SCM #5)

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.72 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	40,830 cuft
Drainage area	=	7.540 ac	Curve number	=	83
Basin Slope	=	3.2 %	Hydraulic length	=	1270 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



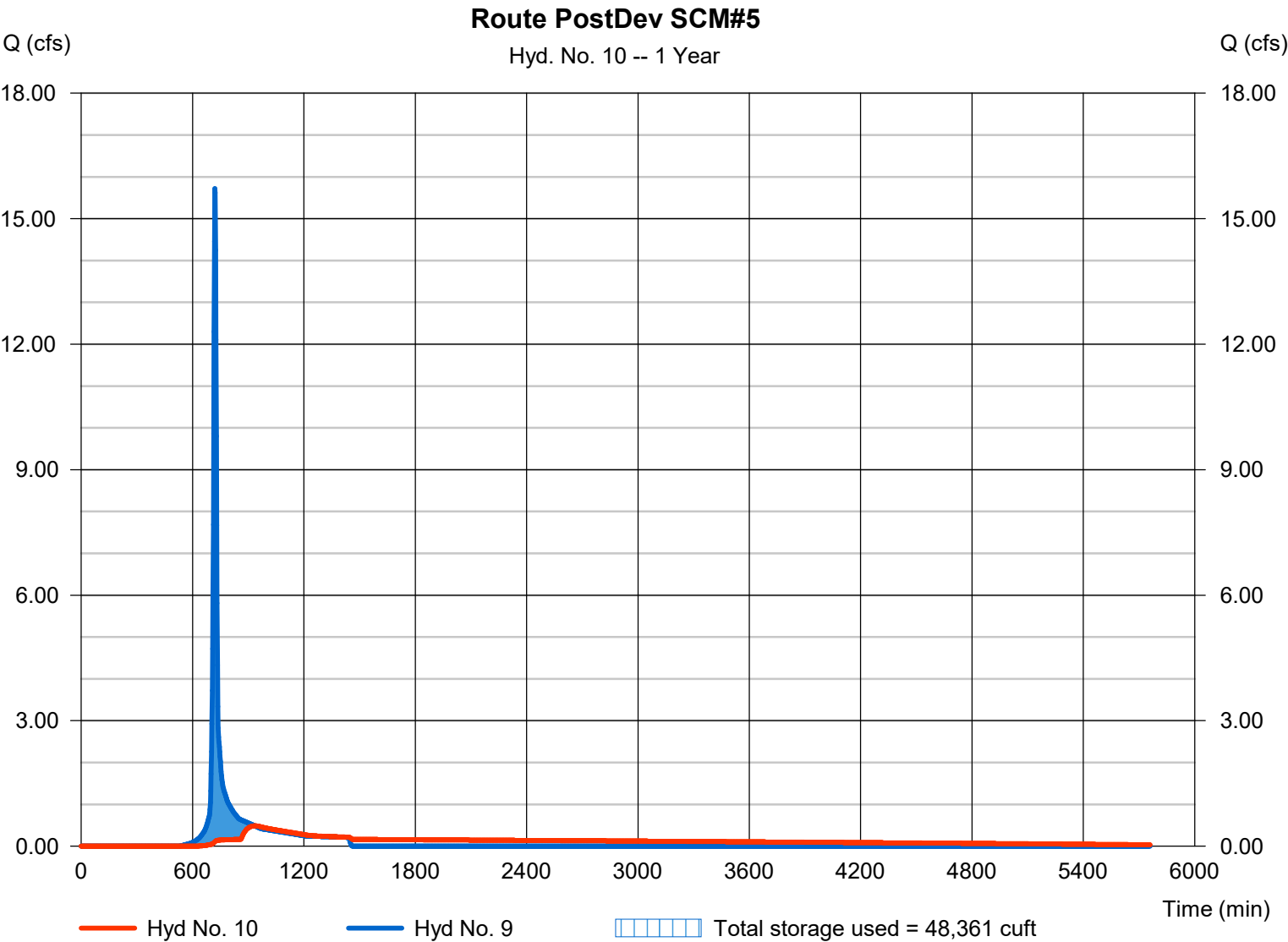
Hydrograph Report

Hyd. No. 10

Route PostDev SCM#5

Hydrograph type	= Reservoir	Peak discharge	= 0.485 cfs
Storm frequency	= 1 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 39,197 cuft
Inflow hyd. No.	= 9 - POST POD 2B #4 (to SCM#5)	Max. Elevation	= 350.05 ft
Reservoir name	= SCM #5	Max. Storage	= 48,361 cuft

Storage Indication method used. Wet pond routing start elevation = 347.50 ft.



Pond No. 4 - SCM #5

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 344.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	344.00	3,945	0	0
1.00	345.00	4,823	4,384	4,384
2.00	346.00	5,755	5,289	9,673
3.00	347.00	6,738	6,247	15,920
3.50	347.50	8,303	3,760	19,680
4.00	348.00	9,952	4,564	24,244
5.00	349.00	11,681	10,817	35,060
6.00	350.00	13,490	12,586	47,646
7.00	351.00	15,379	14,435	62,080
8.00	352.00	17,348	16,364	78,444

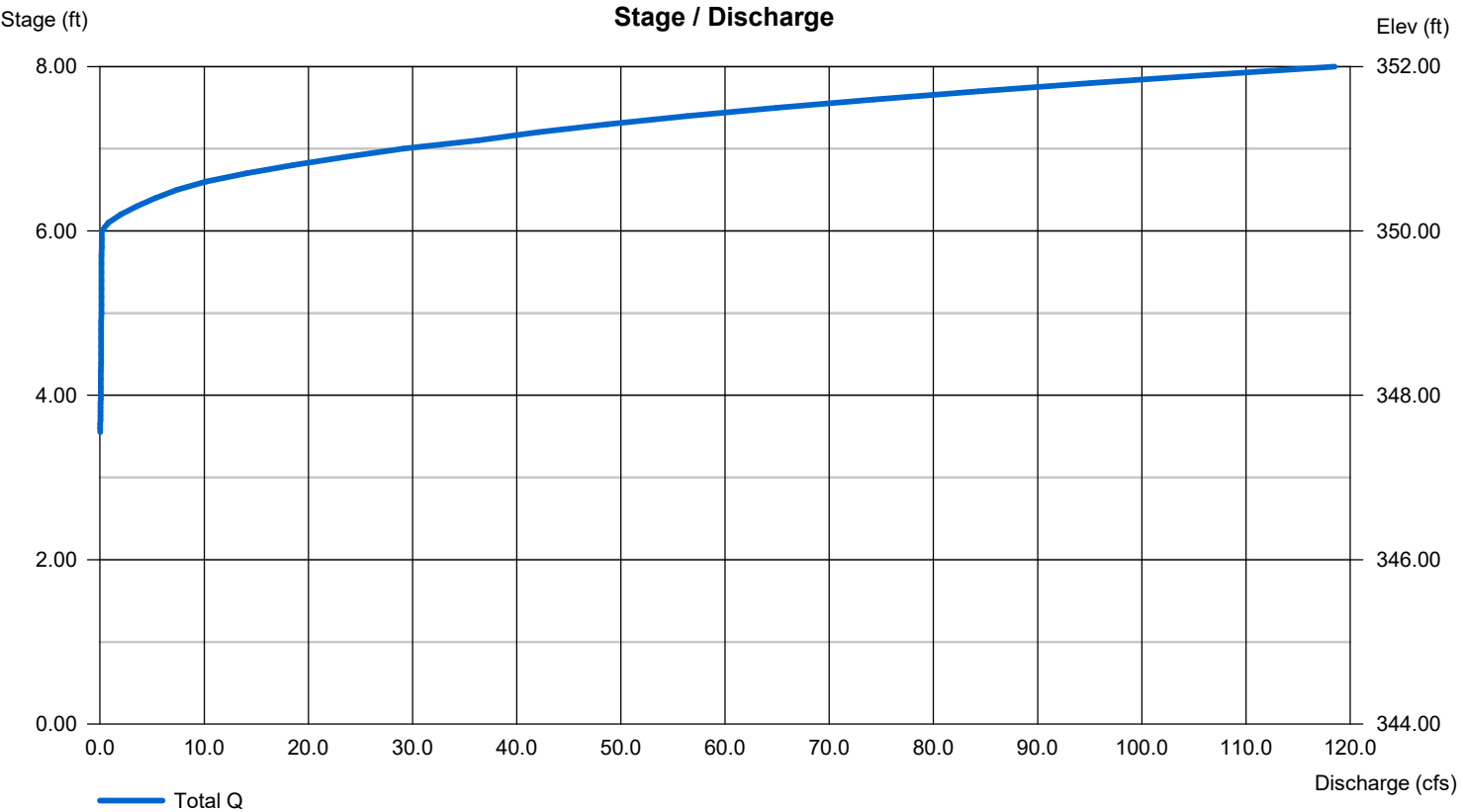
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	6.00	0.00
Span (in)	= 24.00	2.00	24.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 344.00	347.50	350.00	0.00
Length (ft)	= 100.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.50	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	24.00	0.00	0.00
Crest El. (ft)	= 350.50	351.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

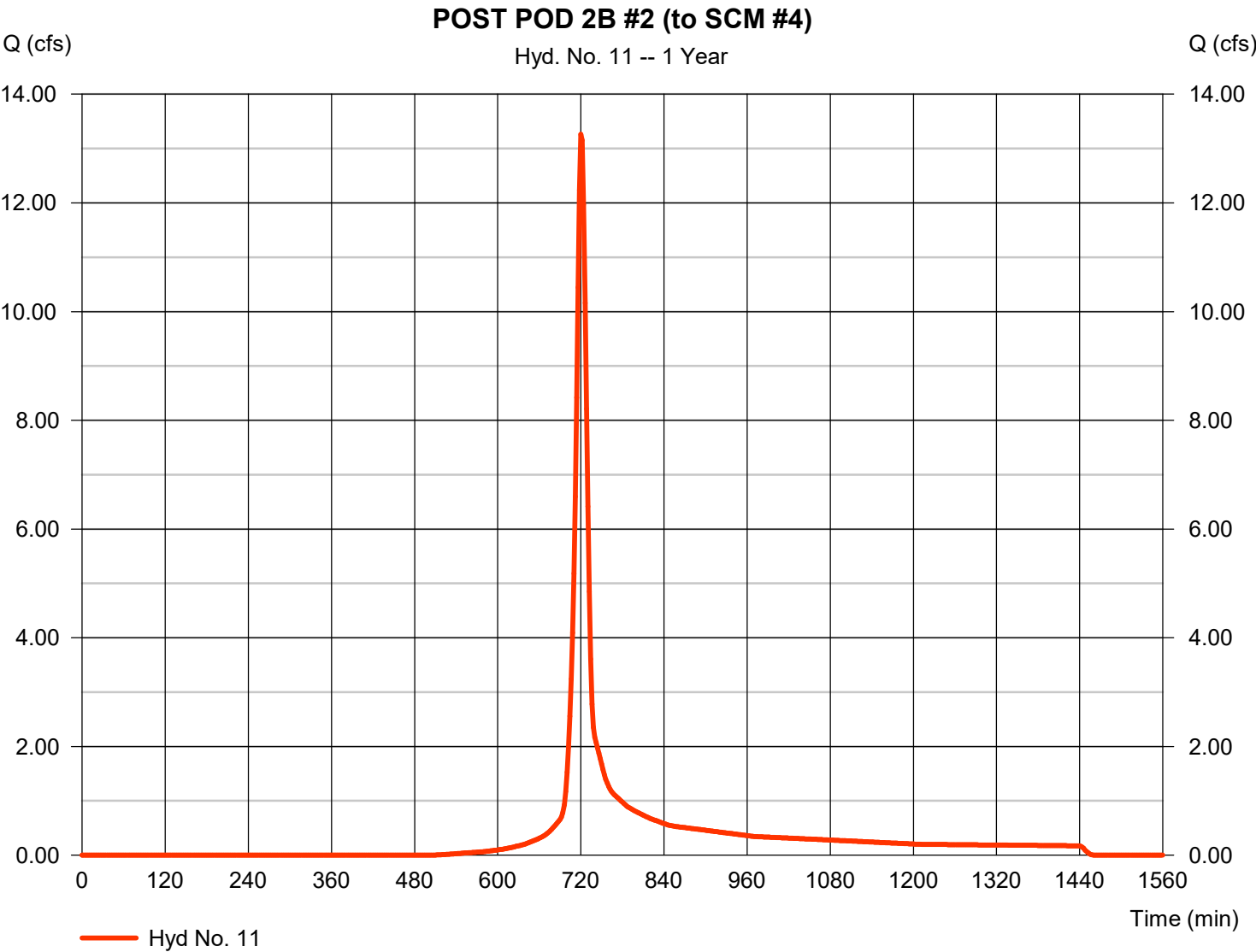


Hydrograph Report

Hyd. No. 11

POST POD 2B #2 (to SCM #4)

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.26 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	34,397 cuft
Drainage area	=	6.060 ac	Curve number	=	84
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

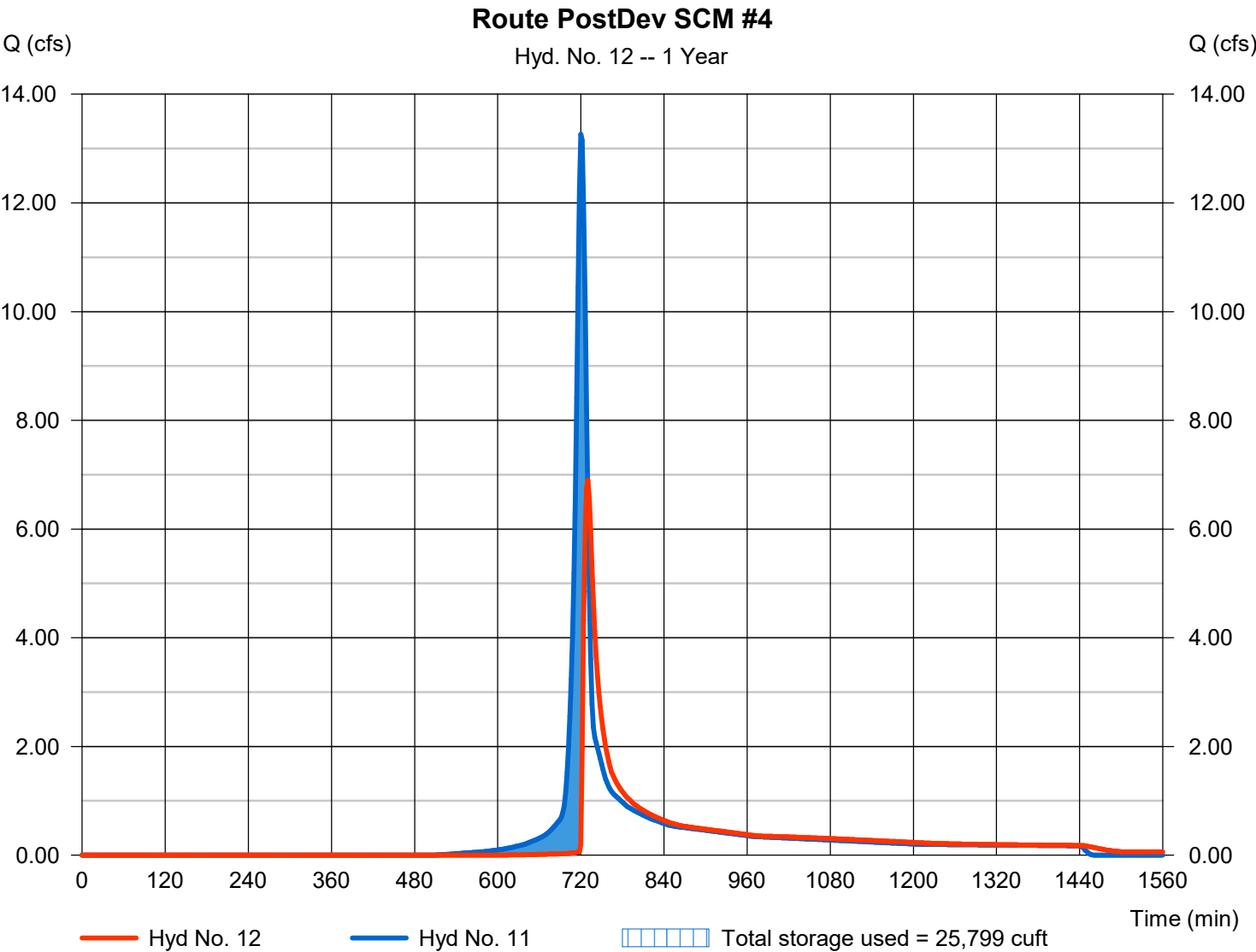
Thursday, 05 / 29 / 2025

Hyd. No. 12

Route PostDev SCM #4

Hydrograph type	= Reservoir	Peak discharge	= 6.899 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 33,989 cuft
Inflow hyd. No.	= 11 - POST POD 2B #2 (to SCM #4)	Wet Pond Elevation	= 359.16 ft
Reservoir name	= SCM #4	Max. Storage	= 25,799 cuft

Storage Indication method used. Wet pond routing start elevation = 357.50 ft.



Pond No. 5 - SCM #4

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 354.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	354.00	1,995	0	0
1.00	355.00	2,838	2,417	2,417
2.00	356.00	3,711	3,275	5,691
3.00	357.00	4,615	4,163	9,854
3.50	357.50	6,029	2,661	12,515
4.00	358.00	7,511	3,385	15,900
5.00	359.00	9,061	8,286	24,186
6.00	360.00	10,681	9,871	34,057
7.00	361.00	12,369	11,525	45,582

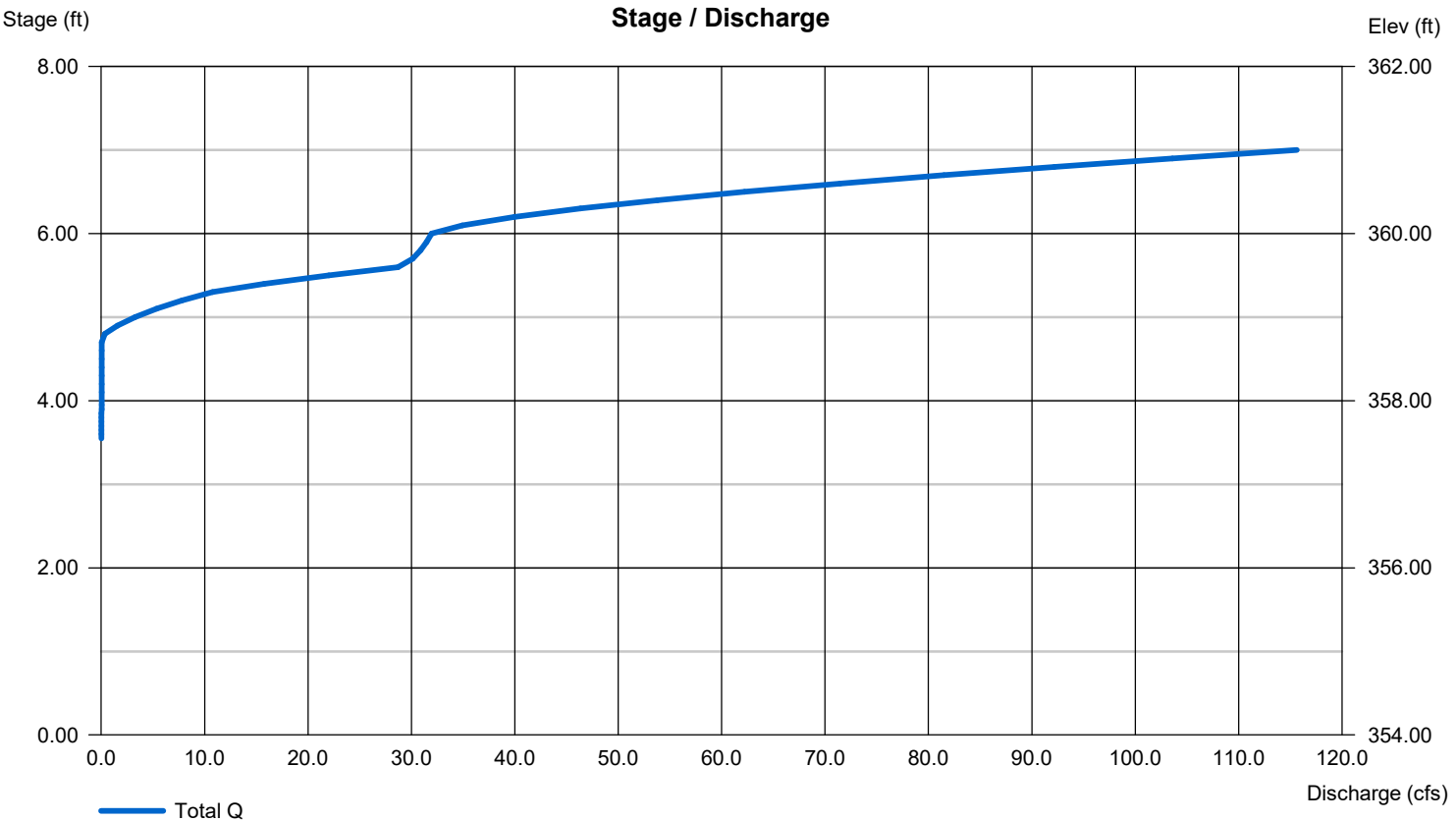
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	1.50	6.00	0.00
Span (in)	= 24.00	1.50	30.00	0.00
No. Barrels	= 1	1	3	0
Invert El. (ft)	= 354.00	357.50	358.75	0.00
Length (ft)	= 100.00	0.00	0.50	0.00
Slope (%)	= 0.50	0.00	0.50	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 22.00	24.00	0.00	0.00
Crest El. (ft)	= 359.25	360.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

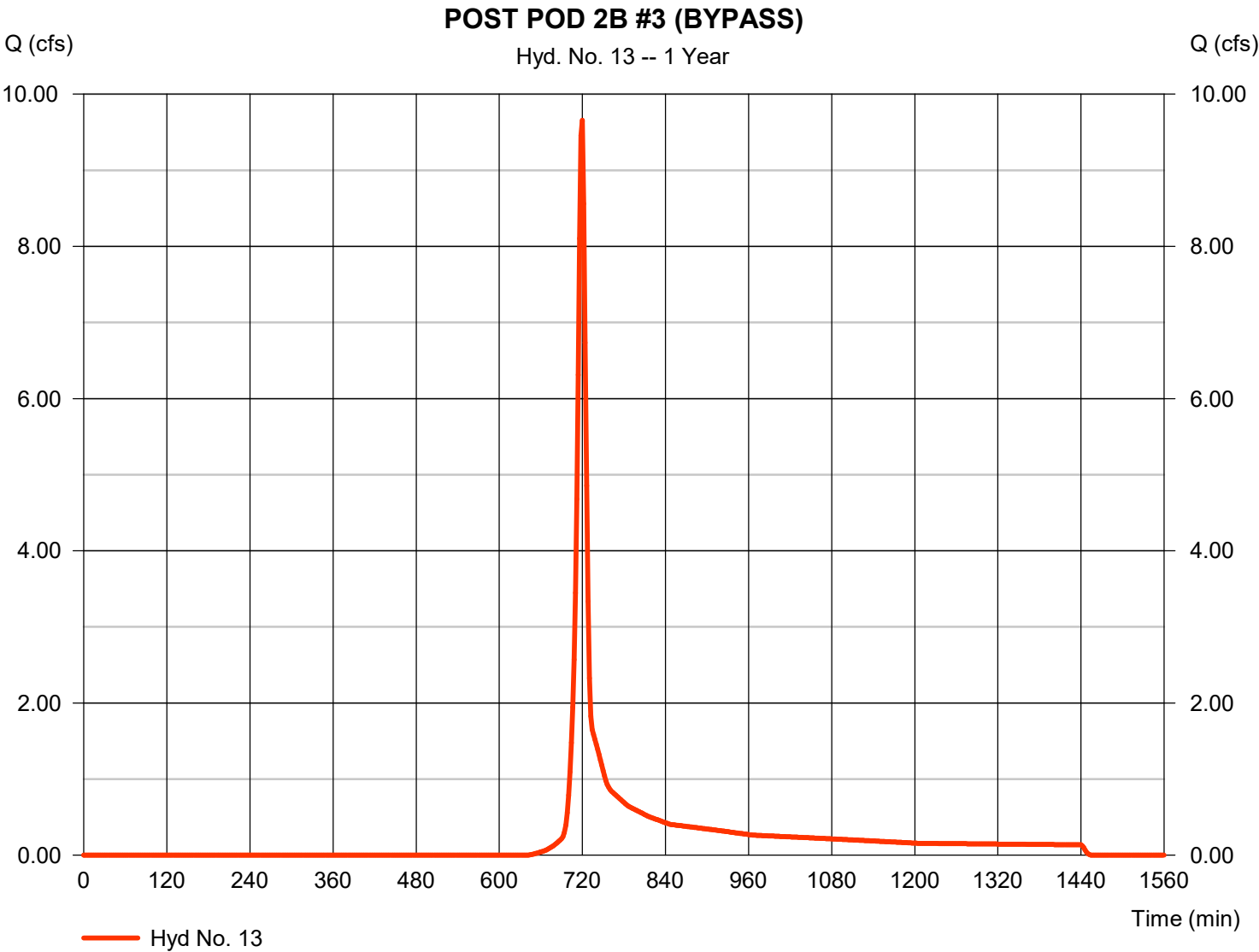
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 13

POST POD 2B #3 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.656 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	22,265 cuft
Drainage area	=	6.010 ac	Curve number	=	76.1
Basin Slope	=	1.3 %	Hydraulic length	=	4170 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

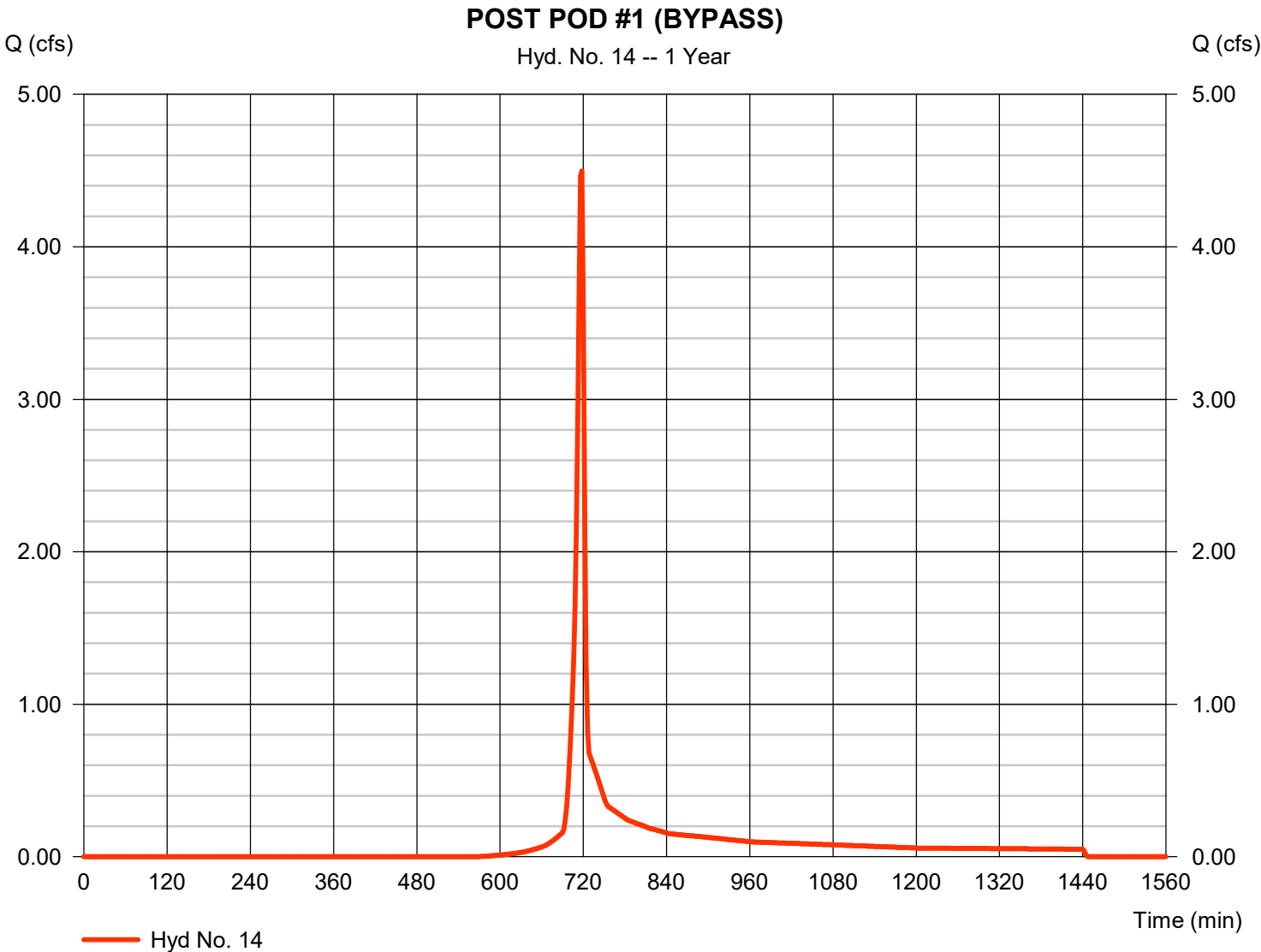
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 14

POST POD #1 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.499 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	9,029 cuft
Drainage area	=	2.050 ac	Curve number	=	80.7
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

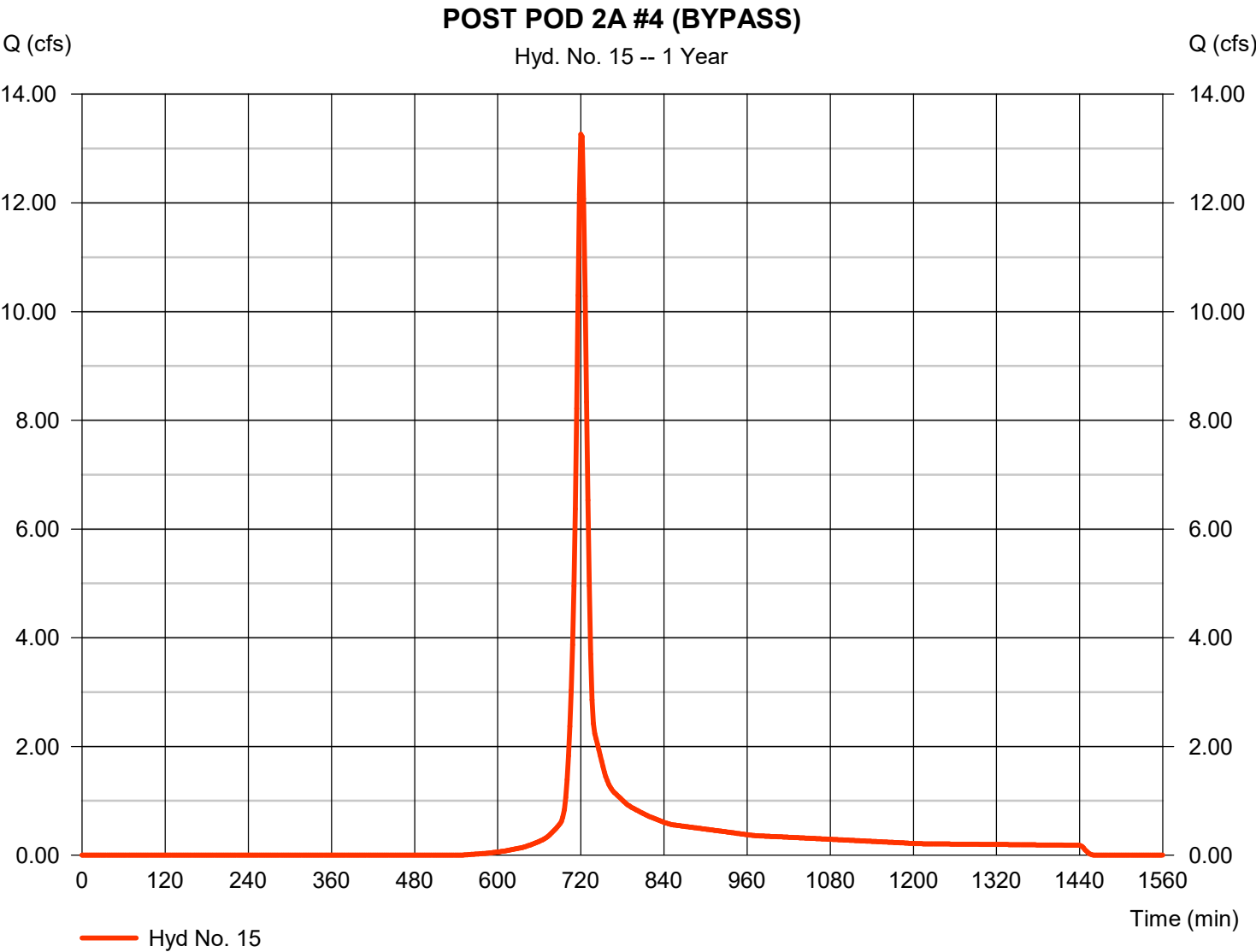


Hydrograph Report

Hyd. No. 15

POST POD 2A #4 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.26 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	34,535 cuft
Drainage area	=	6.690 ac	Curve number	=	82
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.50 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

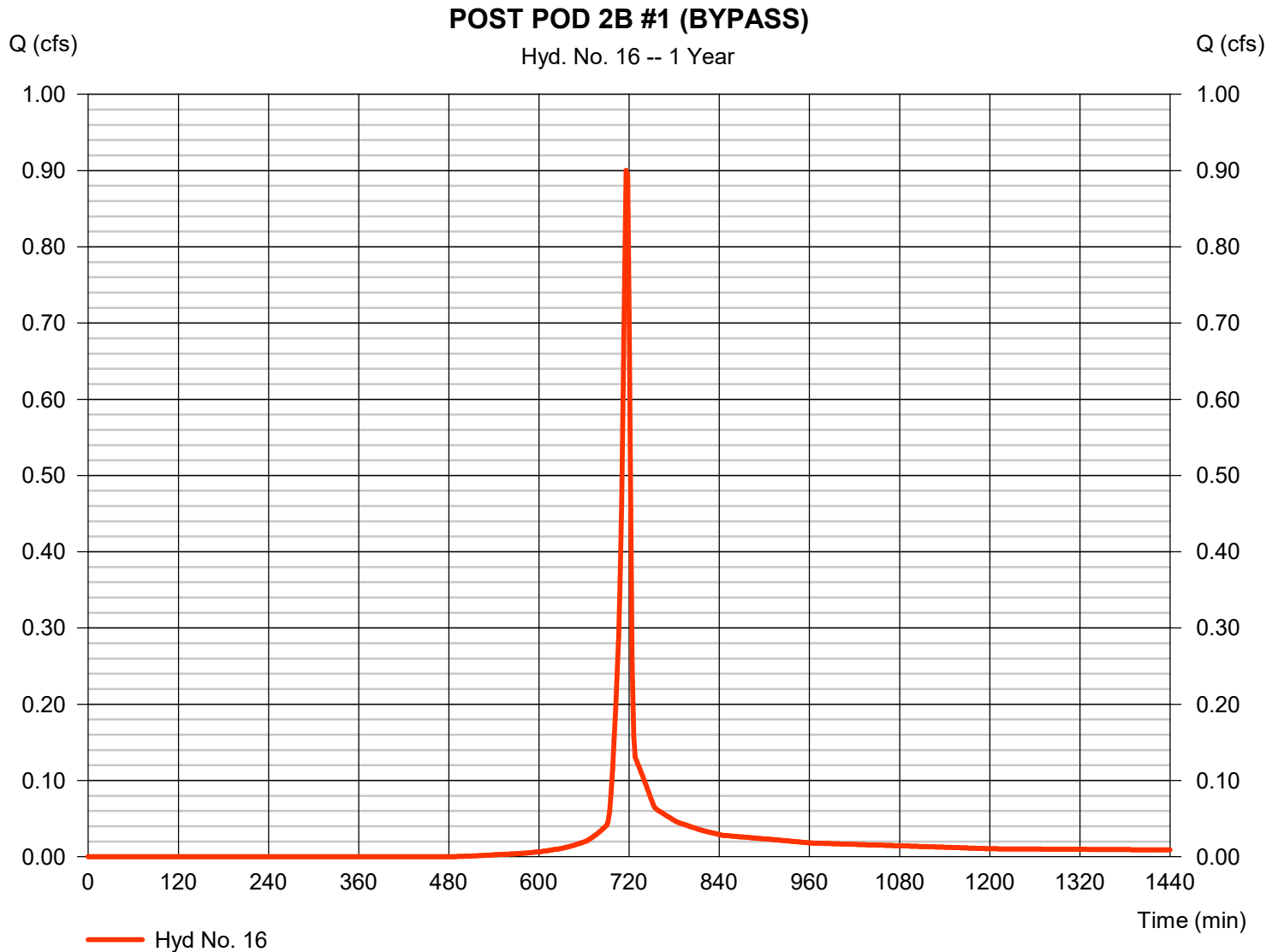
Thursday, 05 / 29 / 2025

Hyd. No. 16

POST POD 2B #1 (BYPASS)

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Time interval = 2 min
Drainage area = 0.340 ac
Basin Slope = 0.0 %
Tc method = User
Total precip. = 3.00 in
Storm duration = 24 hrs

Peak discharge = 0.900 cfs
Time to peak = 716 min
Hyd. volume = 1,821 cuft
Curve number = 84.8
Hydraulic length = 0 ft
Time of conc. (Tc) = 5.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

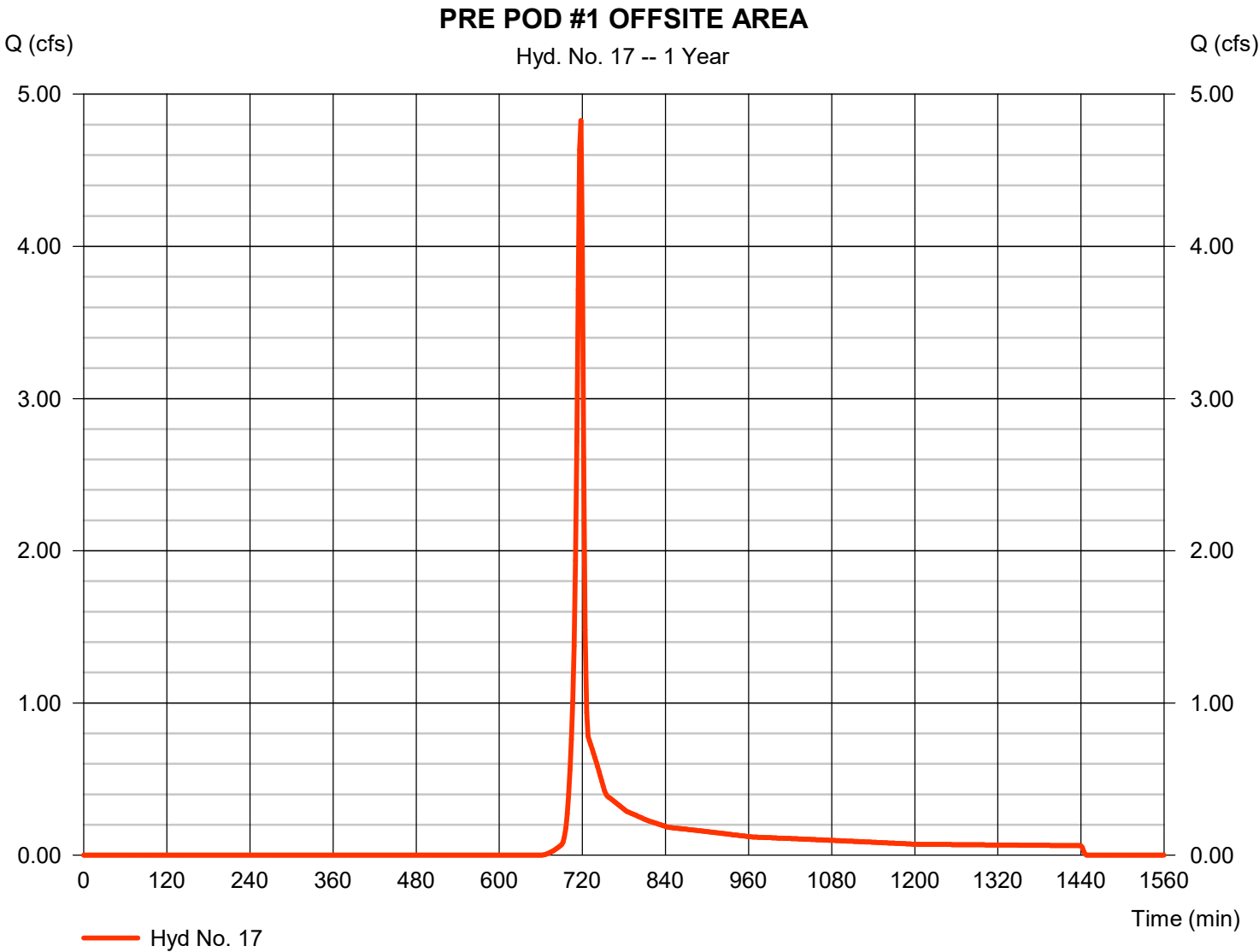
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 17

PRE POD #1 OFFSITE AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.826 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	9,705 cuft
Drainage area	=	3.140 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

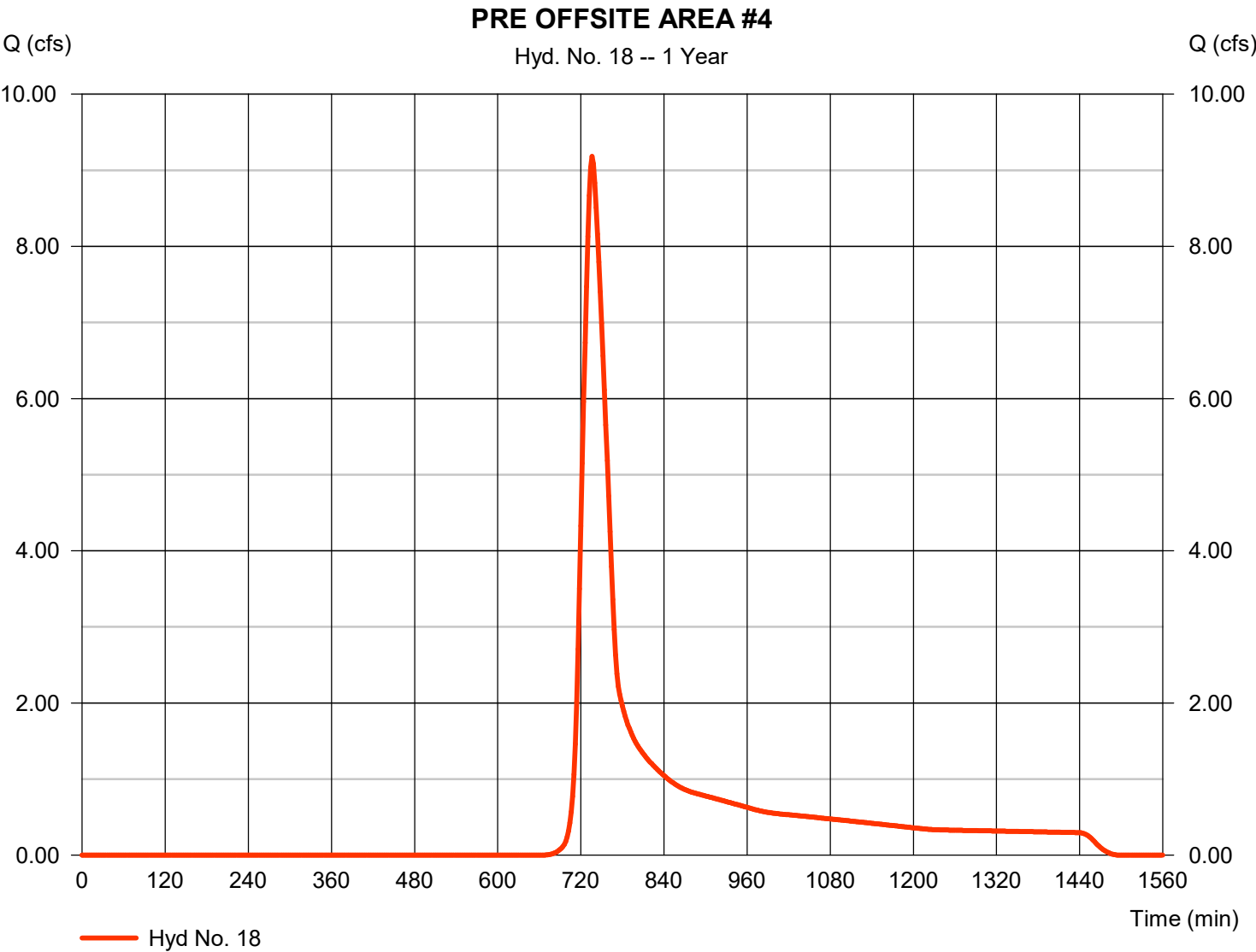


Hydrograph Report

Hyd. No. 18

PRE OFFSITE AREA #4

Hydrograph type	= SCS Runoff	Peak discharge	= 9.181 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 45,436 cuft
Drainage area	= 13.940 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.70 min
Total precip.	= 3.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

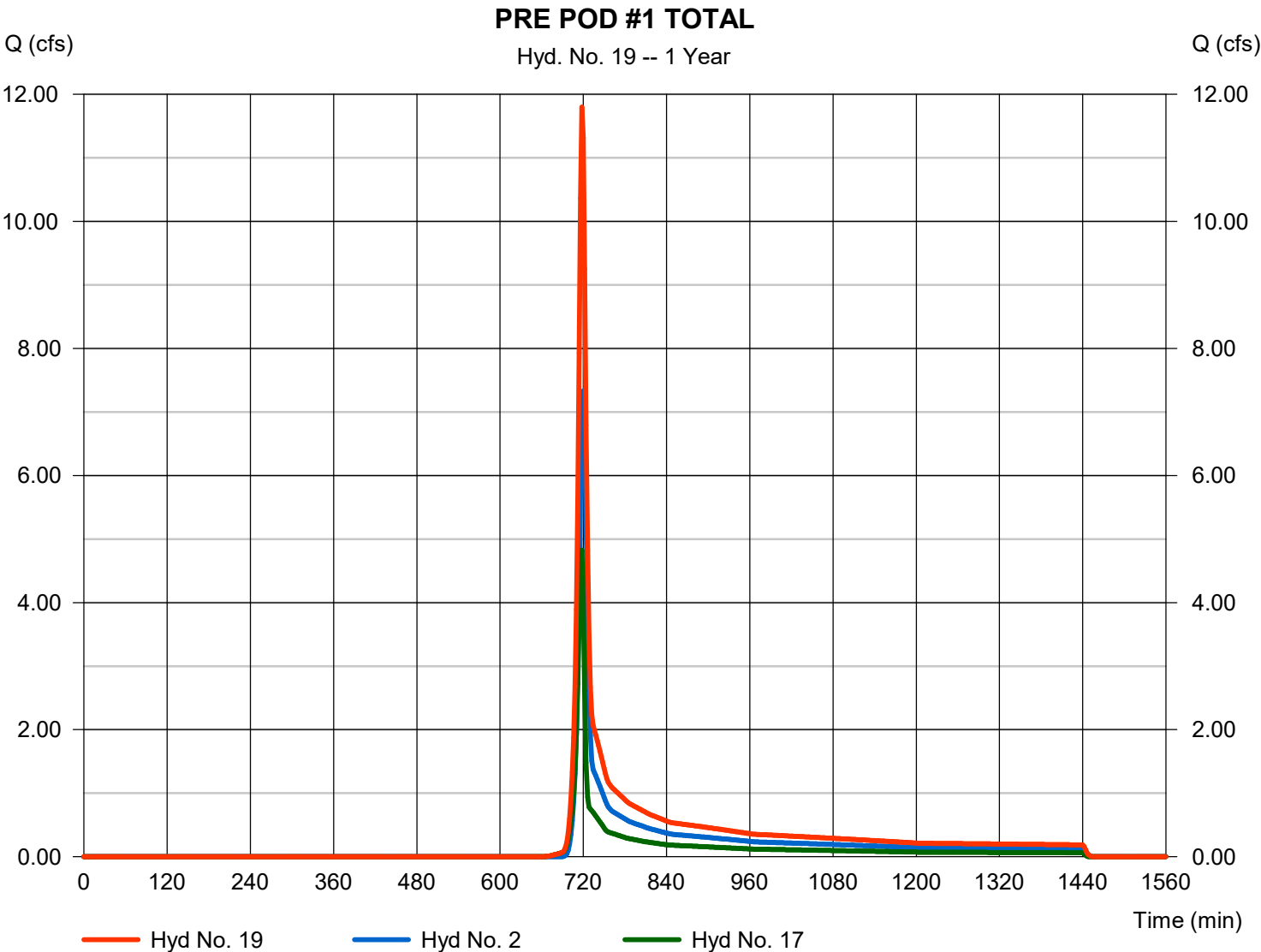
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 19

PRE POD #1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 11.80 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 27,315 cuft
Inflow hyds.	= 2, 17	Contrib. drain. area	= 9.680 ac

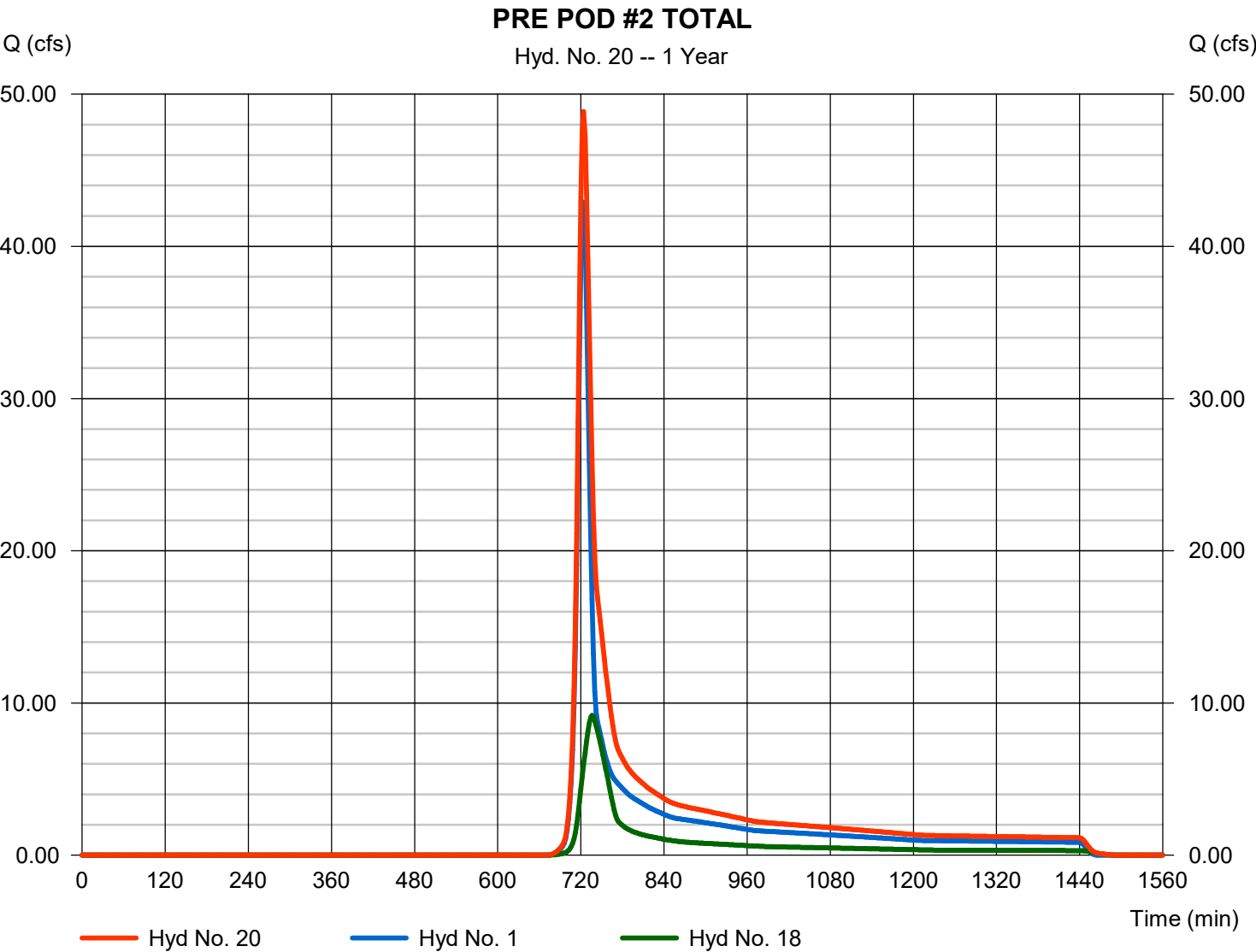


Hydrograph Report

Hyd. No. 20

PRE POD #2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 48.86 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 173,564 cuft
Inflow hyds.	= 1, 18	Contrib. drain. area	= 55.920 ac

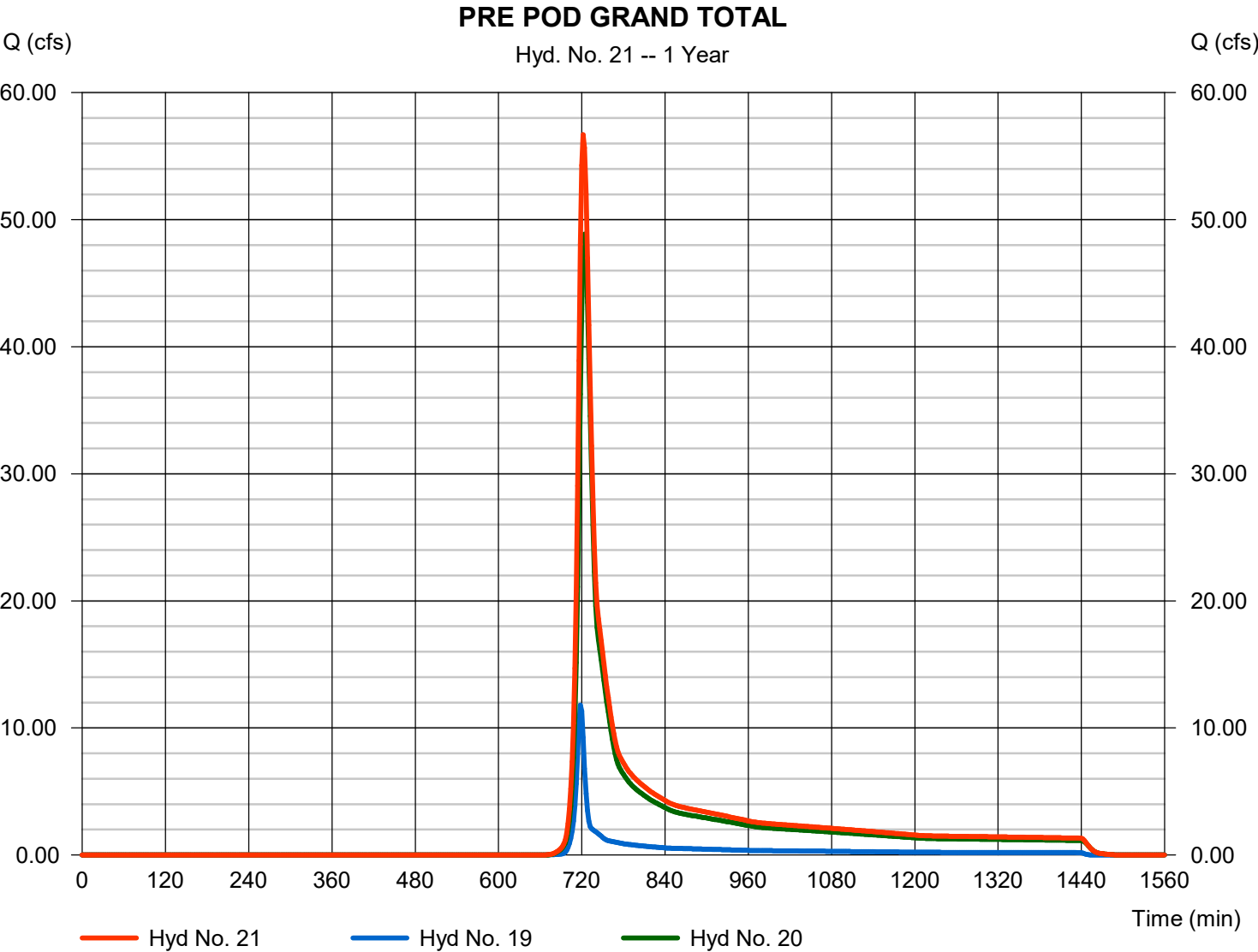


Hydrograph Report

Hyd. No. 21

PRE POD GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 56.68 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 200,879 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.000 ac



Hydrograph Report

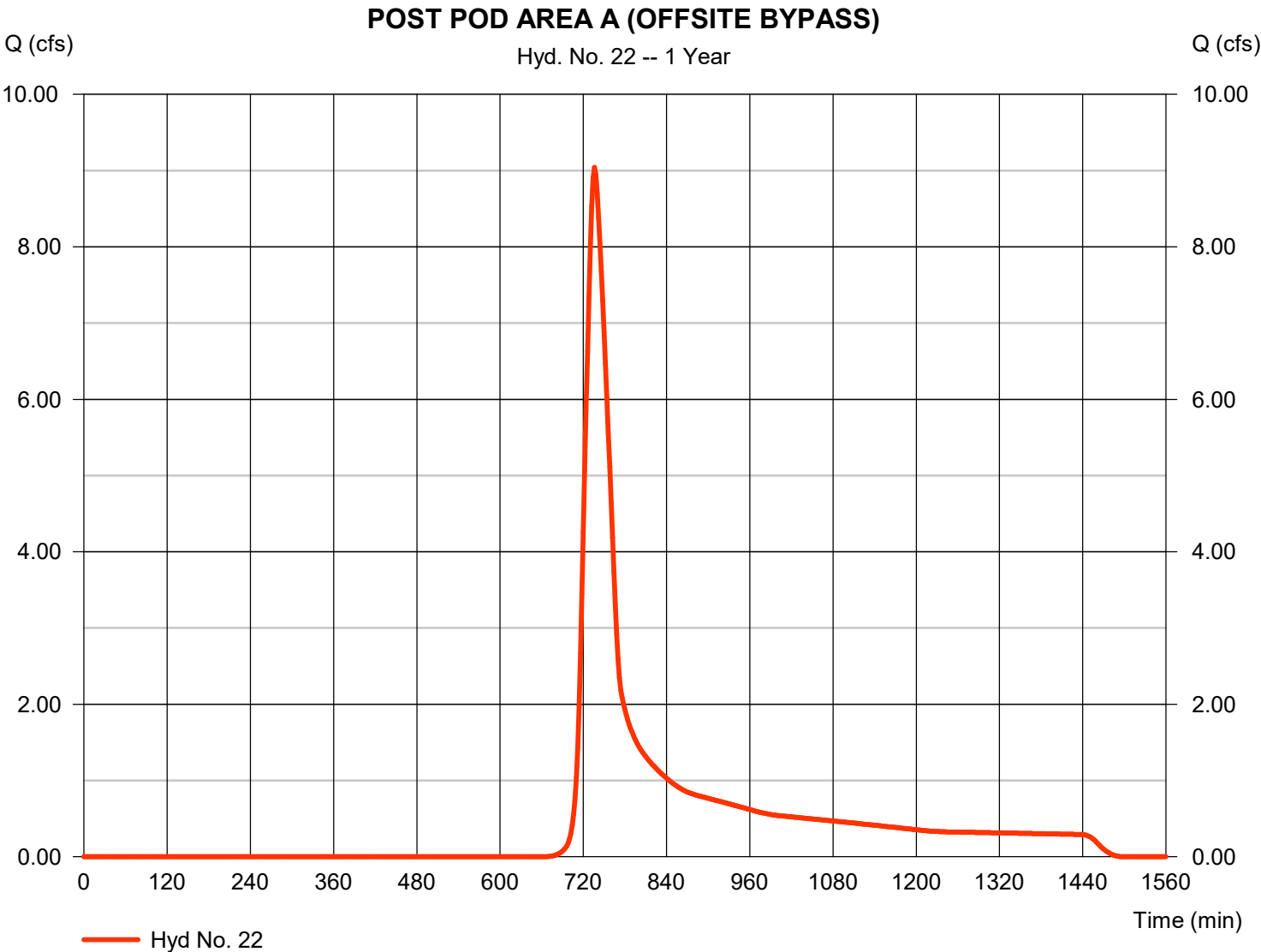
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 22

POST POD AREA A (OFFSITE BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.042 cfs
Storm frequency	=	1 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	44,752 cuft
Drainage area	=	13.730 ac	Curve number	=	74
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.70 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

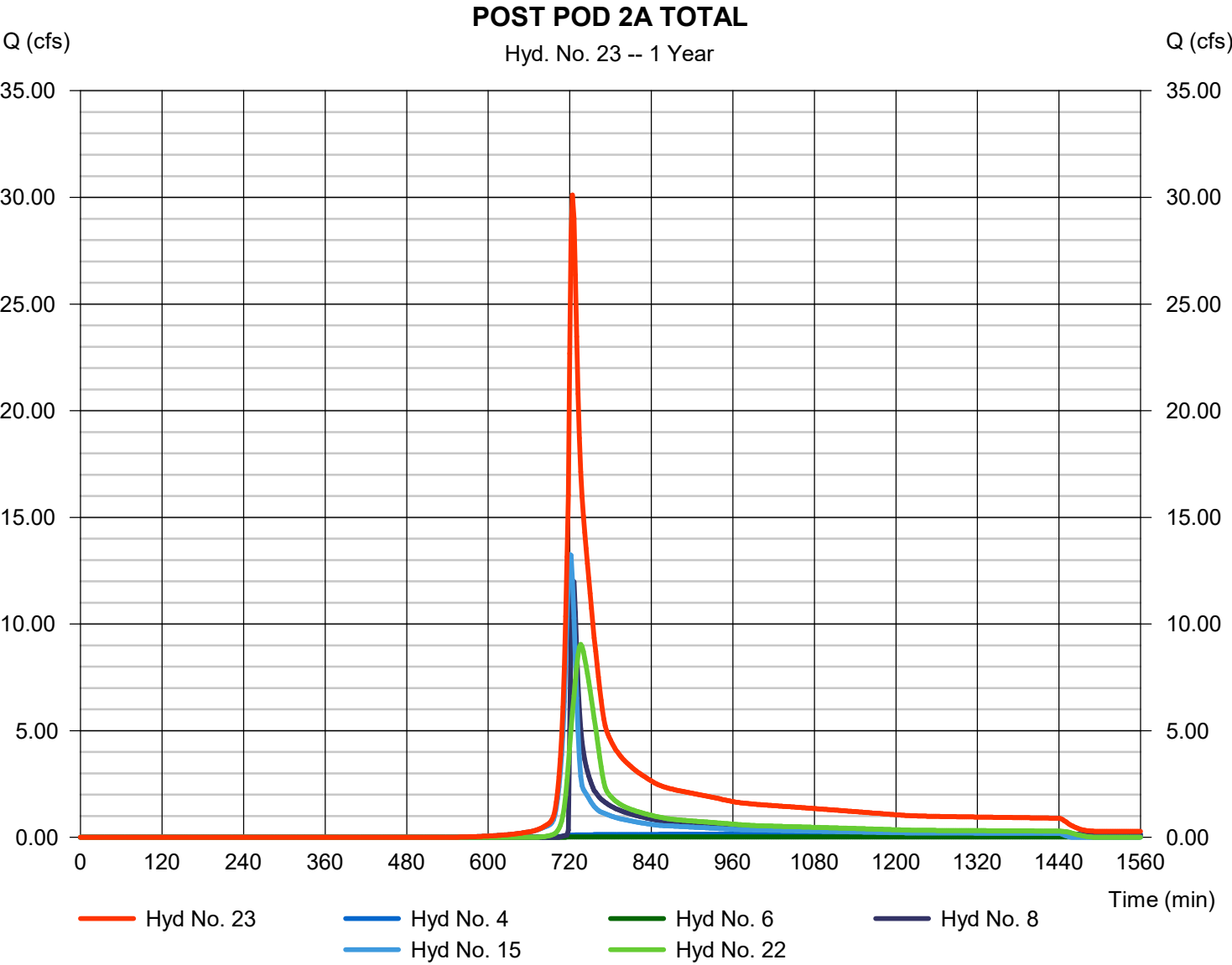


Hydrograph Report

Hyd. No. 23

POST POD 2A TOTAL

Hydrograph type	= Combine	Peak discharge	= 30.11 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 162,958 cuft
Inflow hyds.	= 4, 6, 8, 15, 22	Contrib. drain. area	= 20.420 ac

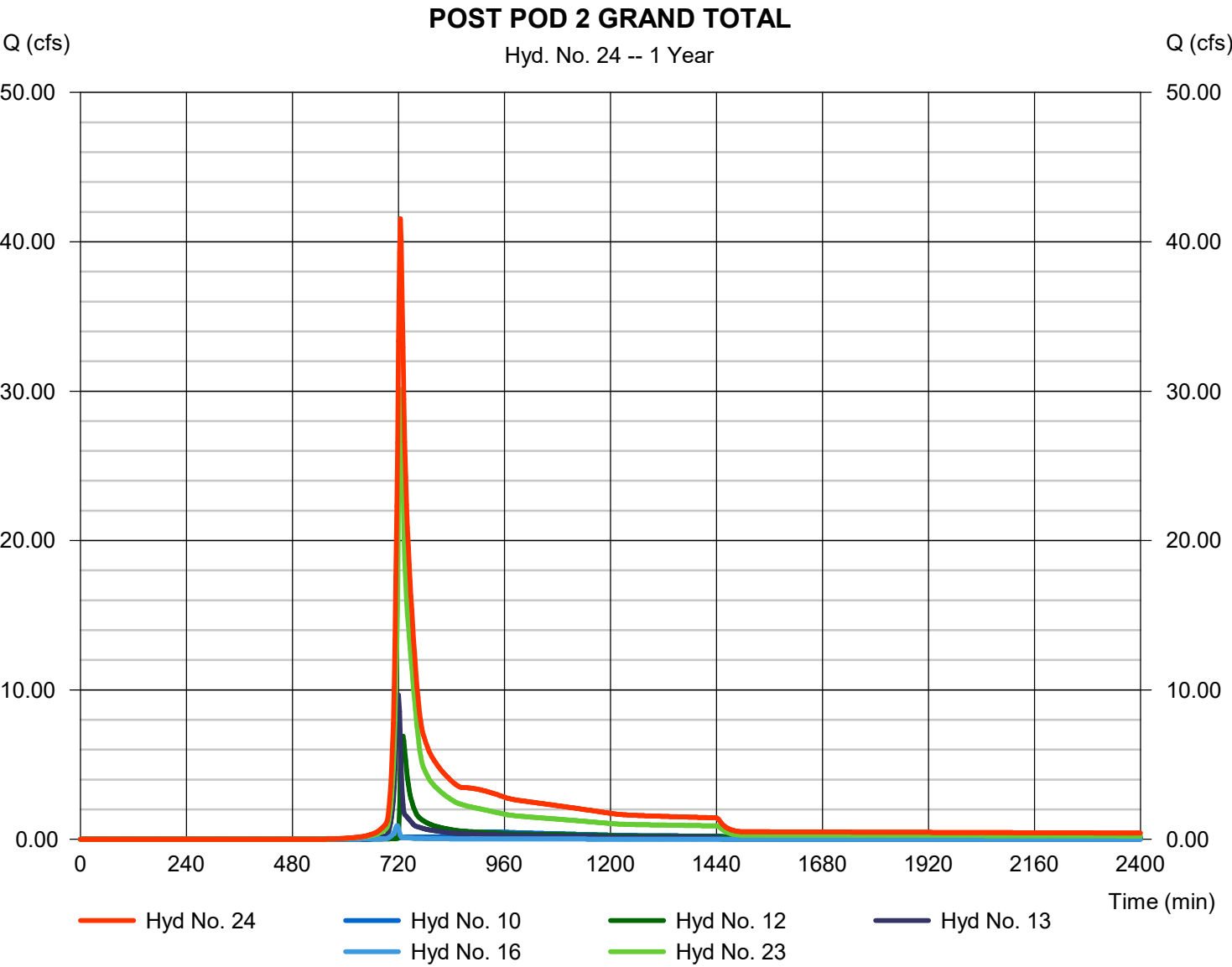


Hydrograph Report

Hyd. No. 24

POST POD 2 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 41.55 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 260,230 cuft
Inflow hyds.	= 10, 12, 13, 16, 23	Contrib. drain. area	= 6.350 ac

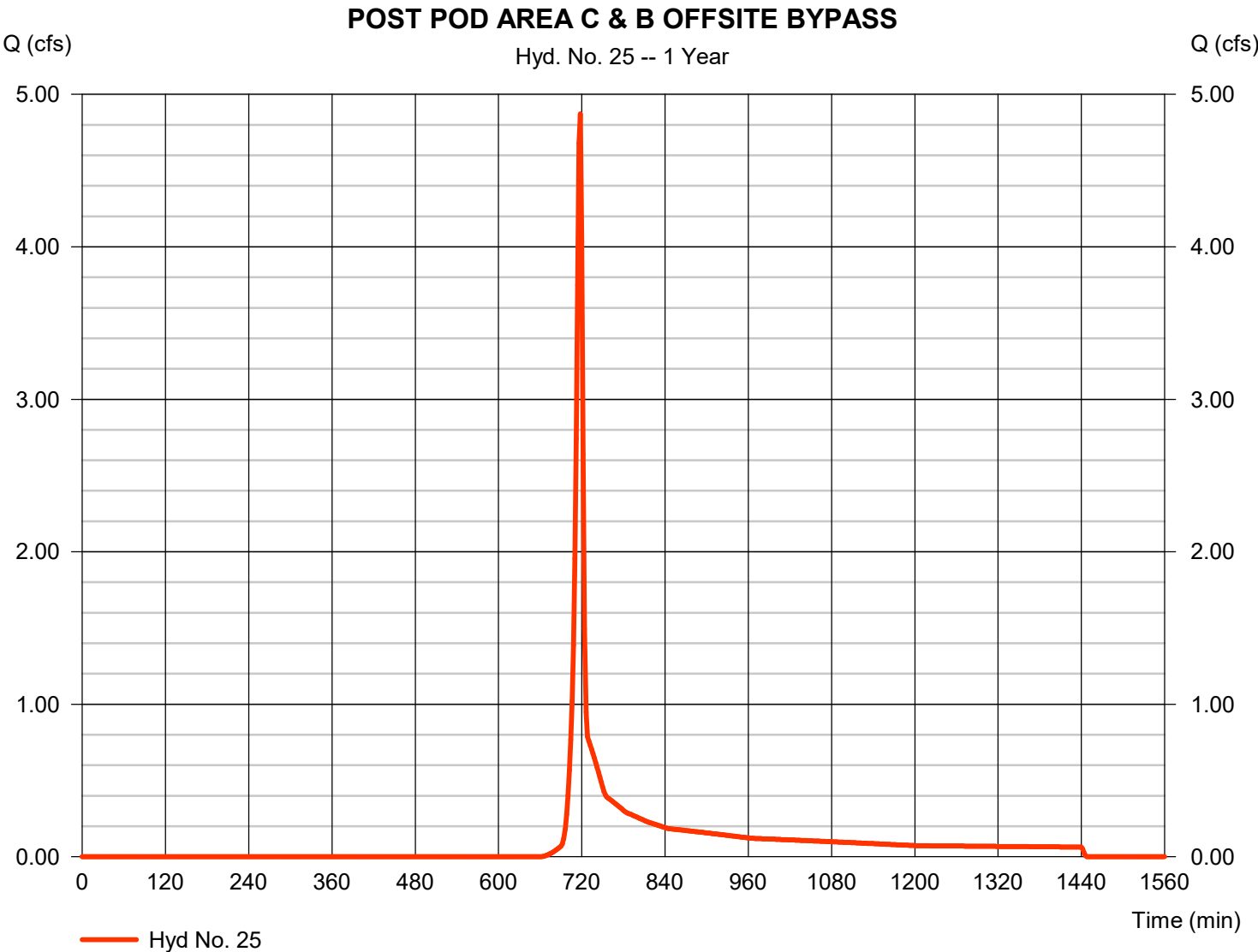


Hydrograph Report

Hyd. No. 25

POST POD AREA C & B OFFSITE BYPASS

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.872 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	9,798 cuft
Drainage area	=	3.170 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	3.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

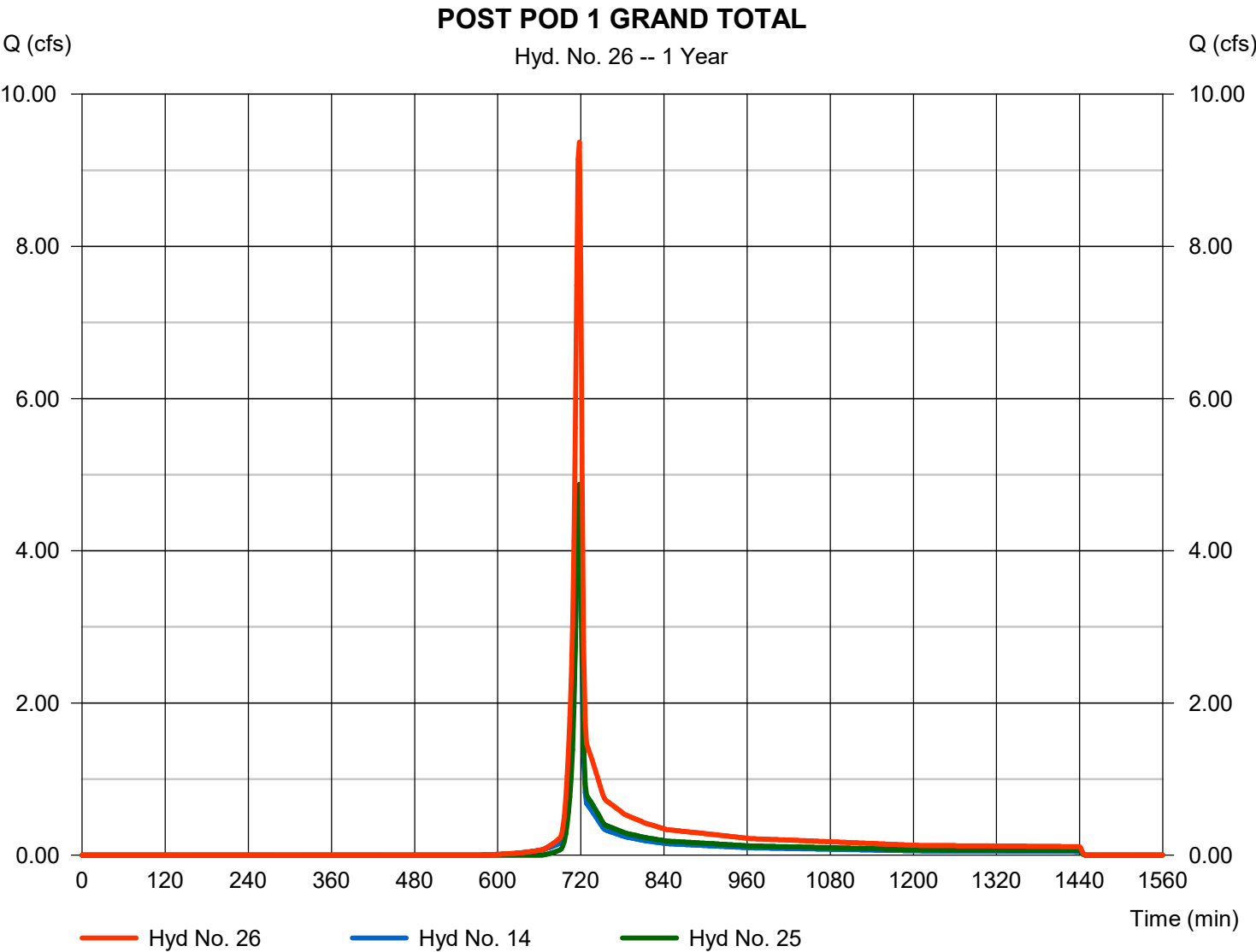


Hydrograph Report

Hyd. No. 26

POST POD 1 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 9.371 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 18,827 cuft
Inflow hyds.	= 14, 25	Contrib. drain. area	= 5.220 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

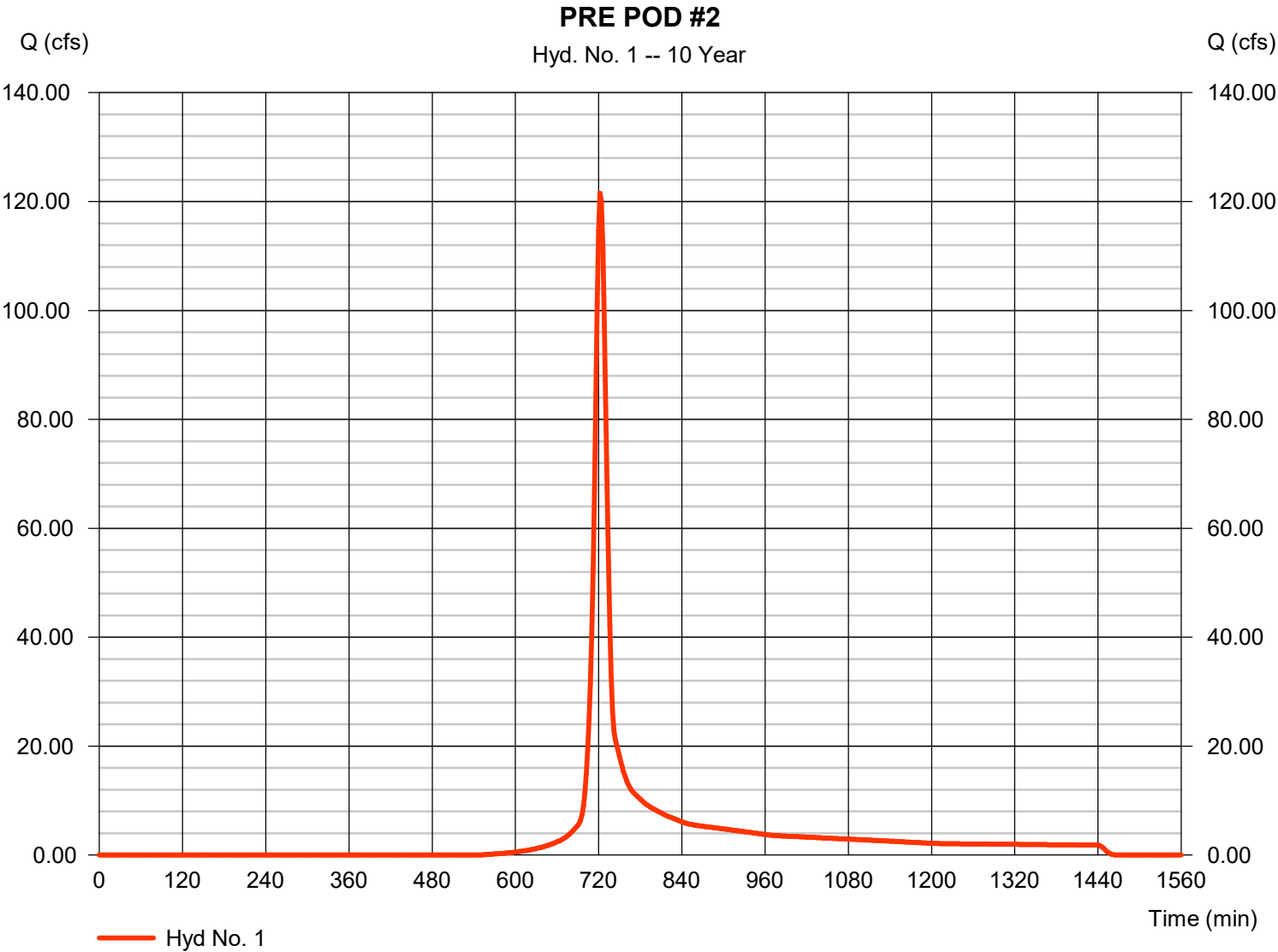
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	121.51	2	722	342,397	-----	-----	-----	PRE POD #2
2	SCS Runoff	21.78	2	720	49,838	-----	-----	-----	PRE POD #1
3	SCS Runoff	45.12	2	718	103,874	-----	-----	-----	POST POD 2A #1 (to SCM #1)
4	Reservoir	7.837	2	732	92,611	3	366.27	96,192	PostDev Thru SCM#1
5	SCS Runoff	6.229	2	716	12,648	-----	-----	-----	POST POD 2A #2 (to SCM #2)
6	Reservoir	0.049	2	1442	7,827	5	362.75	27,083	Route PostDev SCM #2
7	SCS Runoff	45.62	2	718	105,240	-----	-----	-----	POST POD 2A #3 (to SCM #3)
8	Reservoir	35.98	2	722	102,155	7	364.00	40,392	Route PostDev @ SCM#3
9	SCS Runoff	34.50	2	720	90,101	-----	-----	-----	POST POD 2B #4 (to SCM #5)
10	Reservoir	17.87	2	730	88,422	9	350.78	58,971	Route PostDev SCM#5
11	SCS Runoff	28.48	2	720	74,605	-----	-----	-----	POST POD 2B #2 (to SCM #4)
12	Reservoir	26.57	2	722	74,188	11	359.57	29,795	Route PostDev SCM #4
13	SCS Runoff	24.42	2	718	55,865	-----	-----	-----	POST POD 2B #3 (BYPASS)
14	SCS Runoff	10.18	2	716	20,755	-----	-----	-----	POST POD #1 (BYPASS)
15	SCS Runoff	29.77	2	720	77,559	-----	-----	-----	POST POD 2A #4 (BYPASS)
16	SCS Runoff	1.880	2	716	3,896	-----	-----	-----	POST POD 2B #1 (BYPASS)
17	SCS Runoff	12.60	2	718	25,435	-----	-----	-----	PRE POD #1 OFFSITE AREA
18	SCS Runoff	25.99	2	736	119,076	-----	-----	-----	PRE OFFSITE AREA #4
19	Combine	34.24	2	718	75,272	2, 17,	-----	-----	PRE POD #1 TOTAL
20	Combine	138.98	2	724	461,473	1, 18,	-----	-----	PRE POD #2 TOTAL
21	Combine	163.83	2	722	536,745	19, 20	-----	-----	PRE POD GRAND TOTAL
22	SCS Runoff	25.60	2	736	117,282	-----	-----	-----	POST POD AREA A (OFFSITE BYP
23	Combine	84.35	2	724	397,434	4, 6, 8, 15, 22	-----	-----	POST POD 2A TOTAL
24	Combine	137.75	2	724	619,805	10, 12, 13, 16, 23	-----	-----	POST POD 2 GRAND TOTAL
25	SCS Runoff	12.72	2	718	25,678	-----	-----	-----	POST POD AREA C & B OFFSITE B
26	Combine	22.90	2	716	46,433	14, 25	-----	-----	POST POD 1 GRAND TOTAL
20250528 SCM Modeling.gpw					Return Period: 10 Year			Thursday, 05 / 29 / 2025	

Hydrograph Report

Hyd. No. 1

PRE POD #2

Hydrograph type	= SCS Runoff	Peak discharge	= 121.51 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 342,397 cuft
Drainage area	= 41.980 ac	Curve number	= 73.1
Basin Slope	= 1.4 %	Hydraulic length	= 4320 ft
Tc method	= User	Time of conc. (Tc)	= 14.00 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

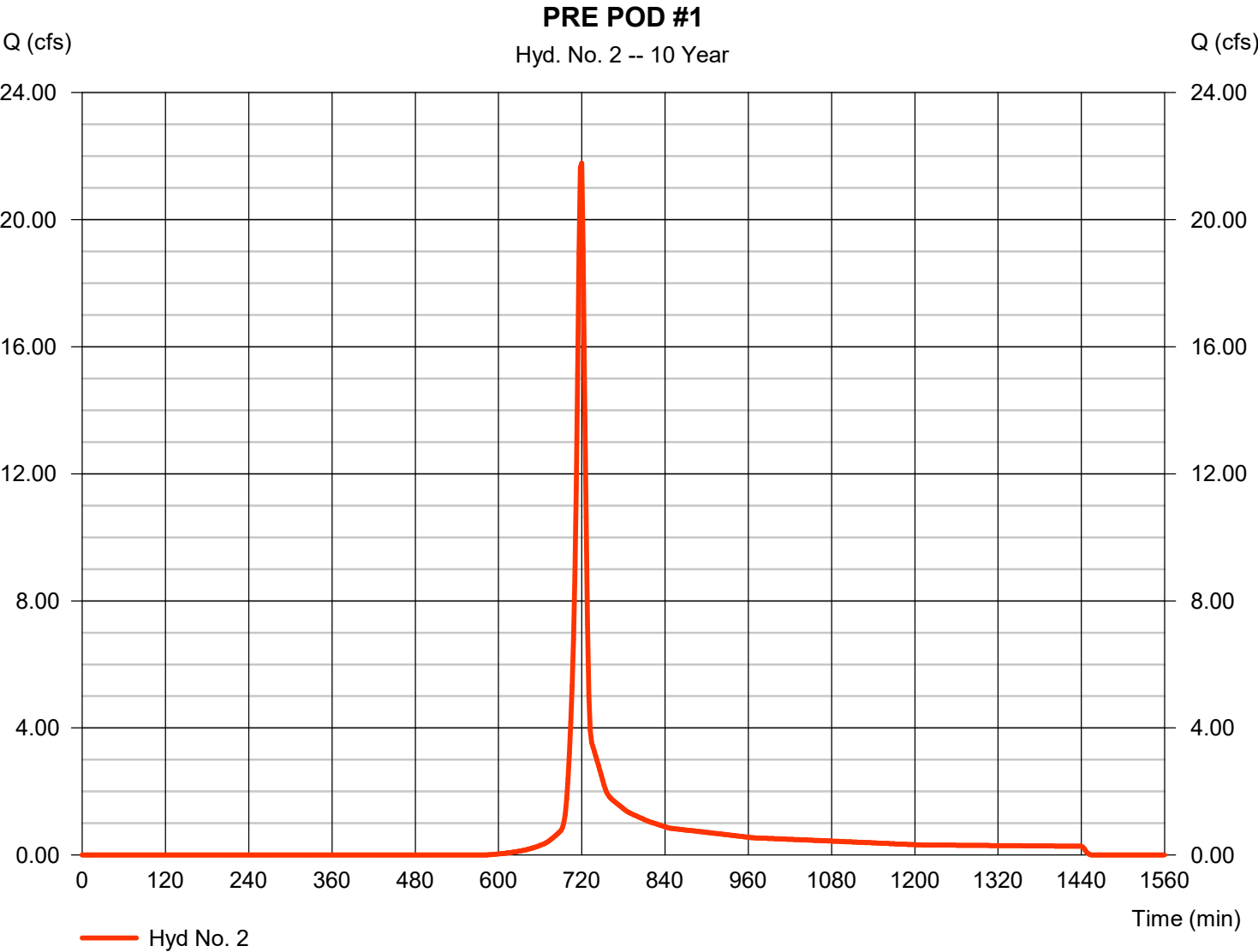
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 2

PRE POD #1

Hydrograph type	= SCS Runoff	Peak discharge	= 21.78 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 49,838 cuft
Drainage area	= 6.540 ac	Curve number	= 70.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.70 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

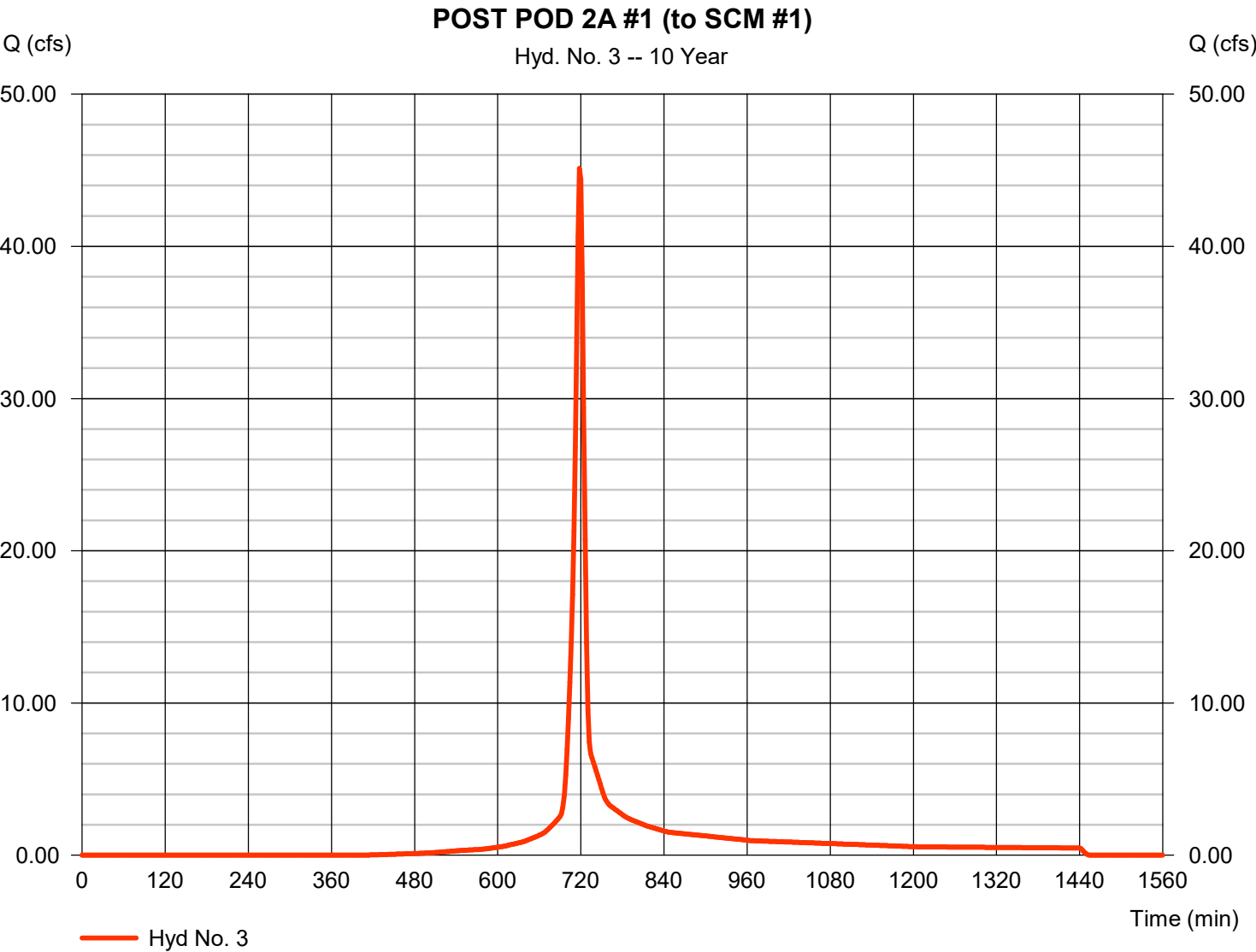


Hydrograph Report

Hyd. No. 3

POST POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	45.12 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	103,874 cuft
Drainage area	=	9.470 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	User	Time of conc. (Tc)	=	6.60 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



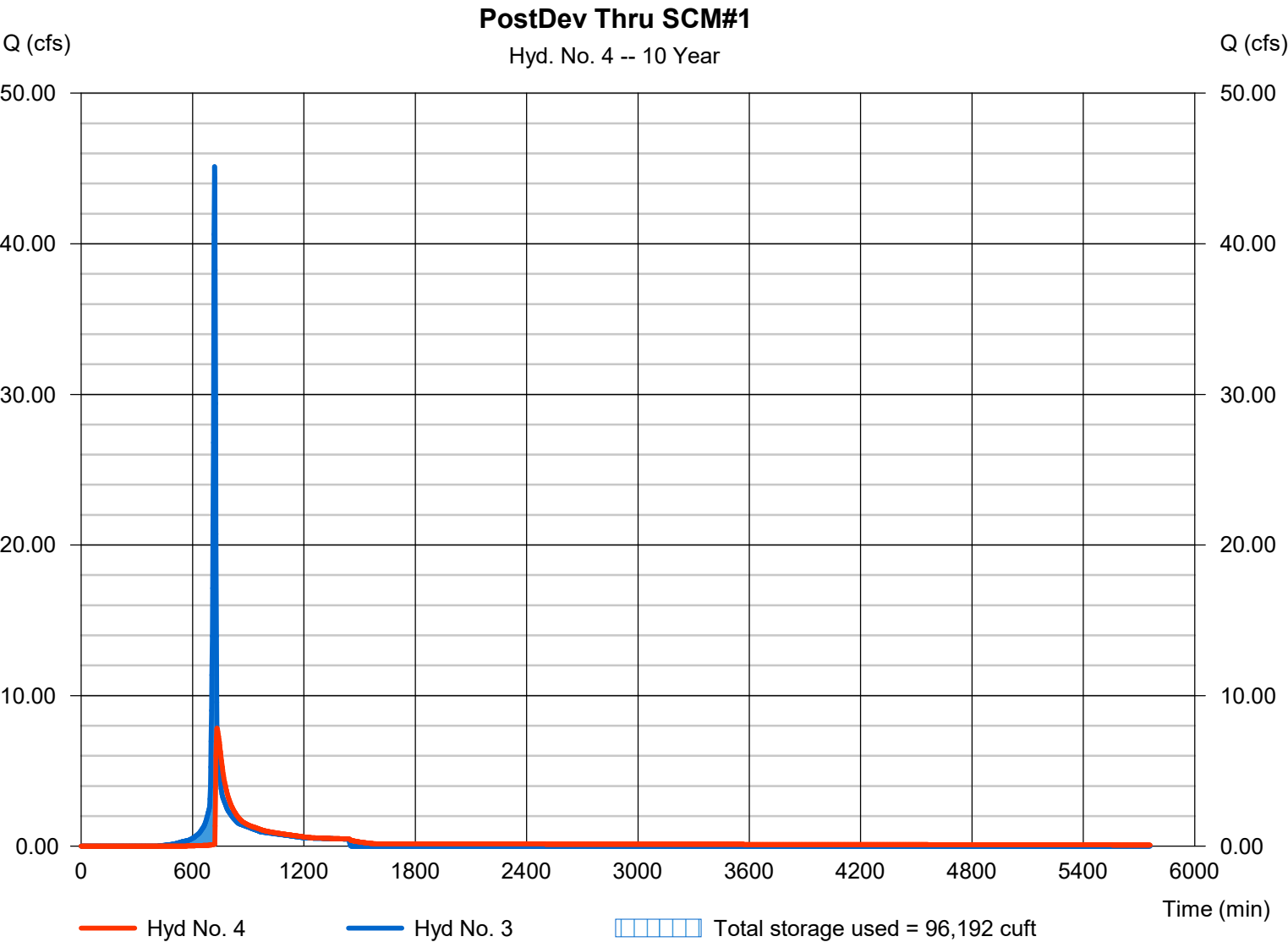
Hydrograph Report

Hyd. No. 4

PostDev Thru SCM#1

Hydrograph type	= Reservoir	Peak discharge	= 7.837 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 92,611 cuft
Inflow hyd. No.	= 3 - POST POD 2A #1 (to SCM#1)	Max. Elevation	= 366.27 ft
Reservoir name	= SCM #1	Max. Storage	= 96,192 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.



Hydrograph Report

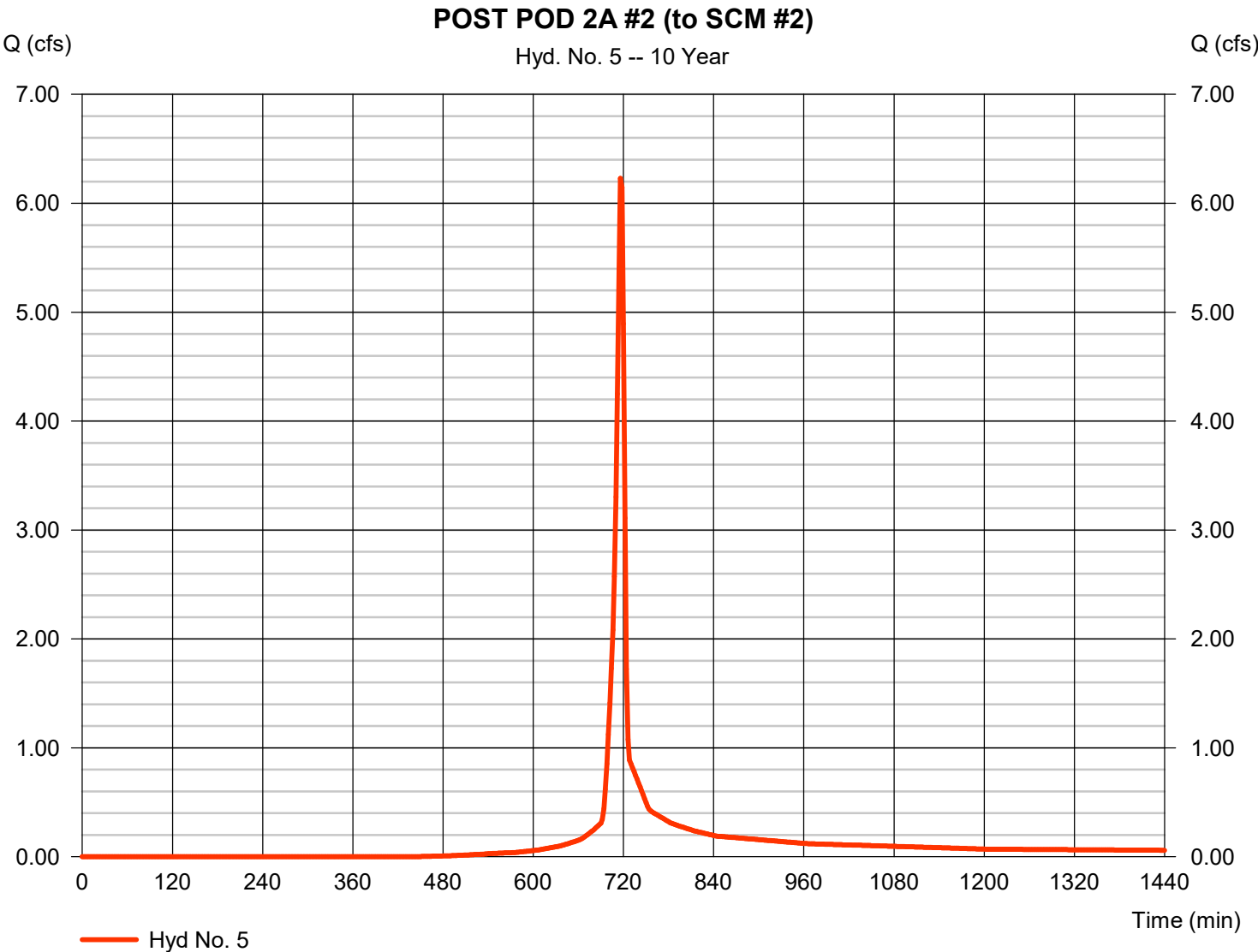
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 5

POST POD 2A #2 (to SCM #2)

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.229 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	12,648 cuft
Drainage area	=	1.310 ac	Curve number	=	79.2
Basin Slope	=	0.5 %	Hydraulic length	=	450 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

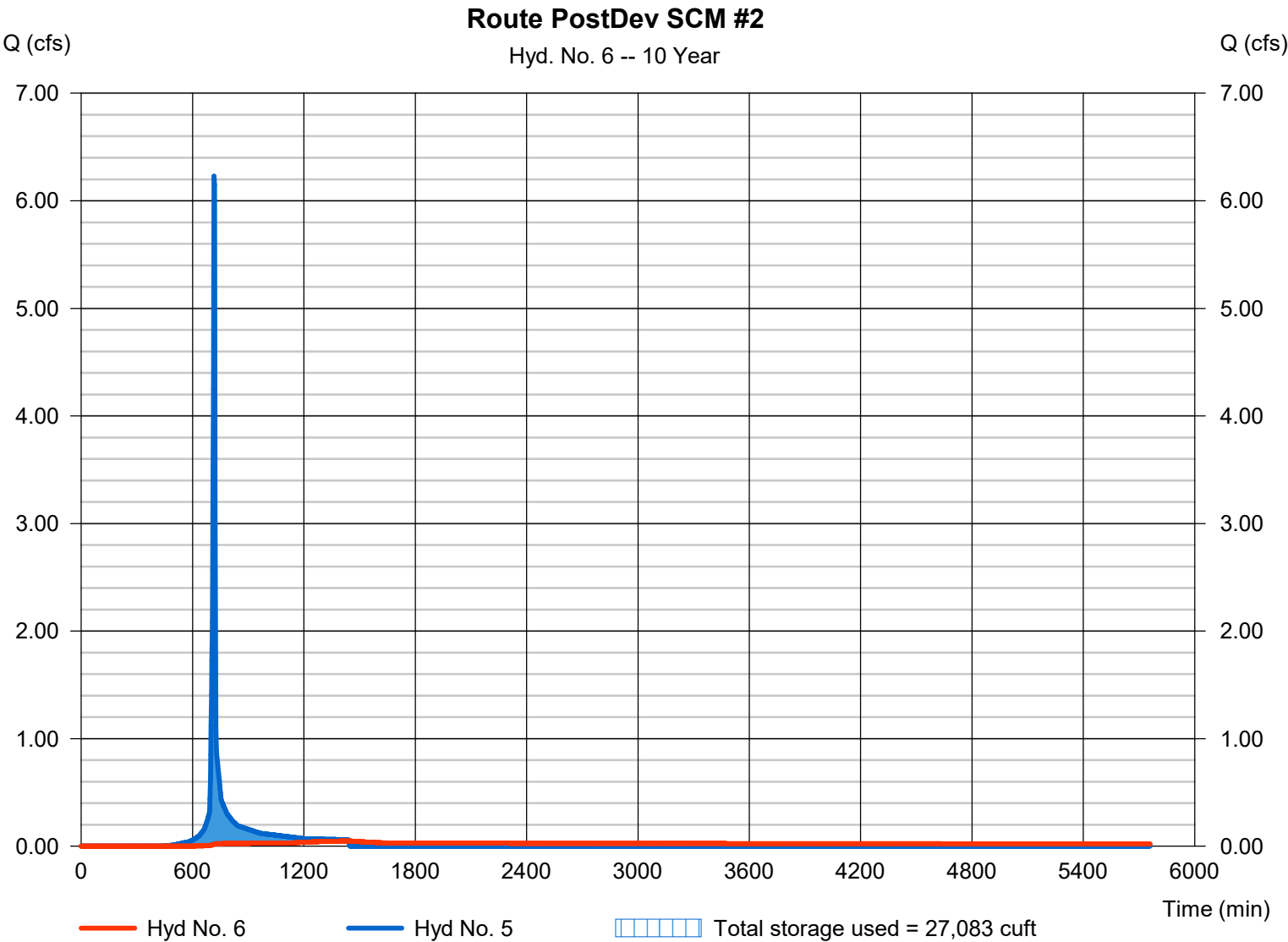
Thursday, 05 / 29 / 2025

Hyd. No. 6

Route PostDev SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 0.049 cfs
Storm frequency	= 10 yrs	Time to peak	= 1442 min
Time interval	= 2 min	Hyd. volume	= 7,827 cuft
Inflow hyd. No.	= 5 - POST POD 2A #2 (to SCM #2)	Max. Elevation	= 362.75 ft
Reservoir name	= SCM #2	Max. Storage	= 27,083 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.

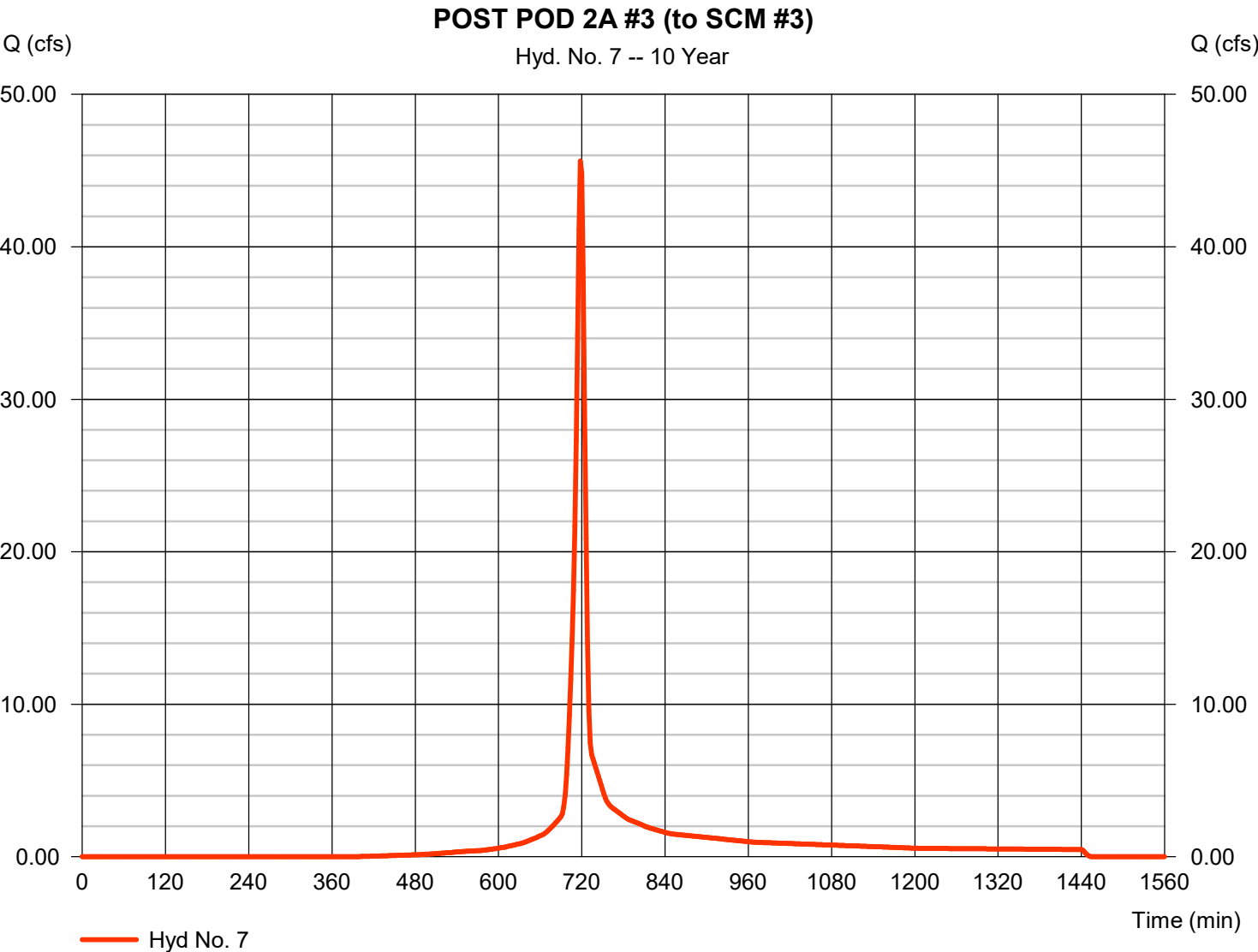


Hydrograph Report

Hyd. No. 7

POST POD 2A #3 (to SCM #3)

Hydrograph type	=	SCS Runoff	Peak discharge	=	45.62 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	105,240 cuft
Drainage area	=	9.390 ac	Curve number	=	81.9
Basin Slope	=	2.6 %	Hydraulic length	=	1120 ft
Tc method	=	User	Time of conc. (Tc)	=	7.30 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

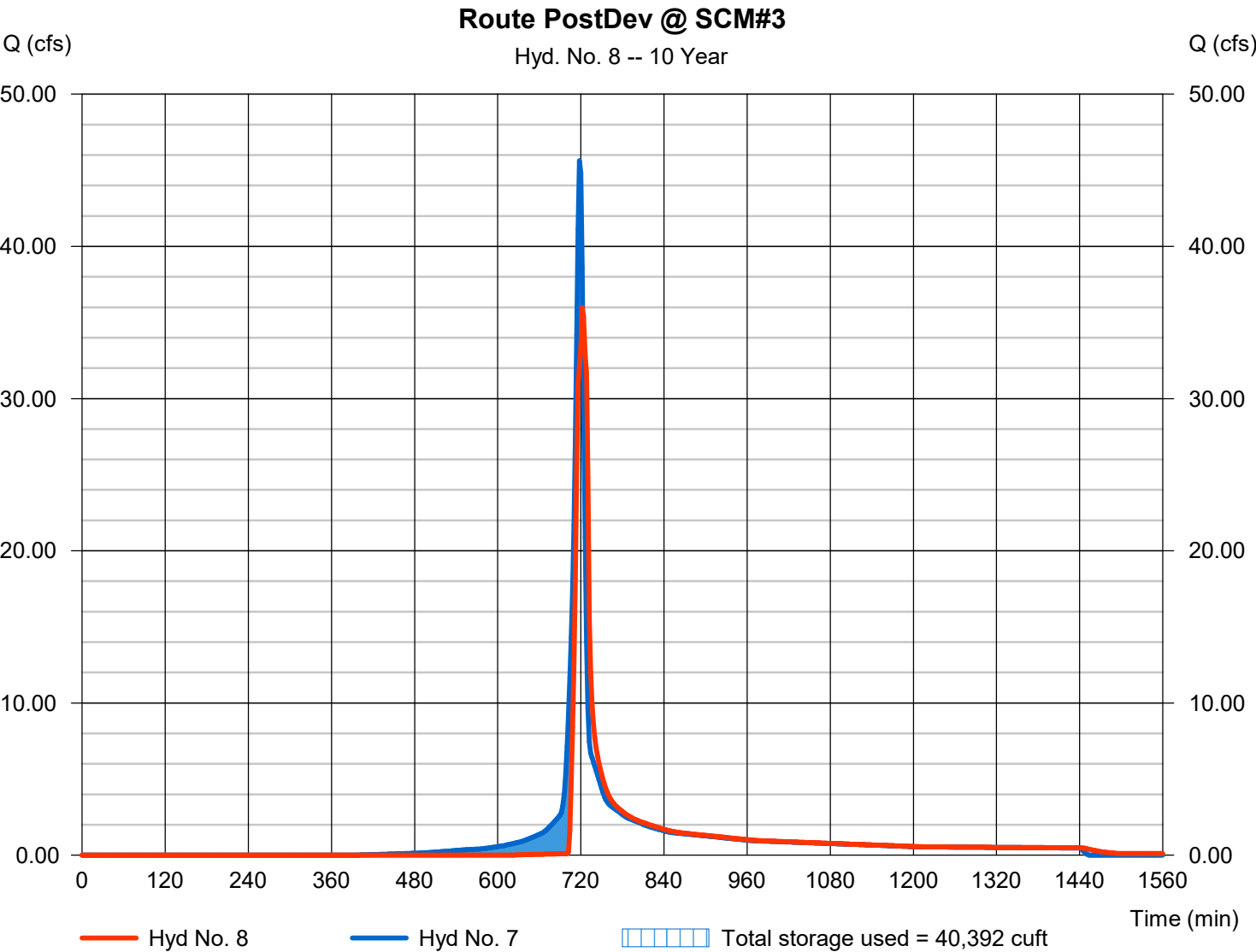
Thursday, 05 / 29 / 2025

Hyd. No. 8

Route PostDev @ SCM#3

Hydrograph type	= Reservoir	Peak discharge	= 35.98 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 102,155 cuft
Inflow hyd. No.	= 7 - POST POD 2A #3 (to SCM#3)	Max. Elevation	= 364.00 ft
Reservoir name	= SCM #3	Max. Storage	= 40,392 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.

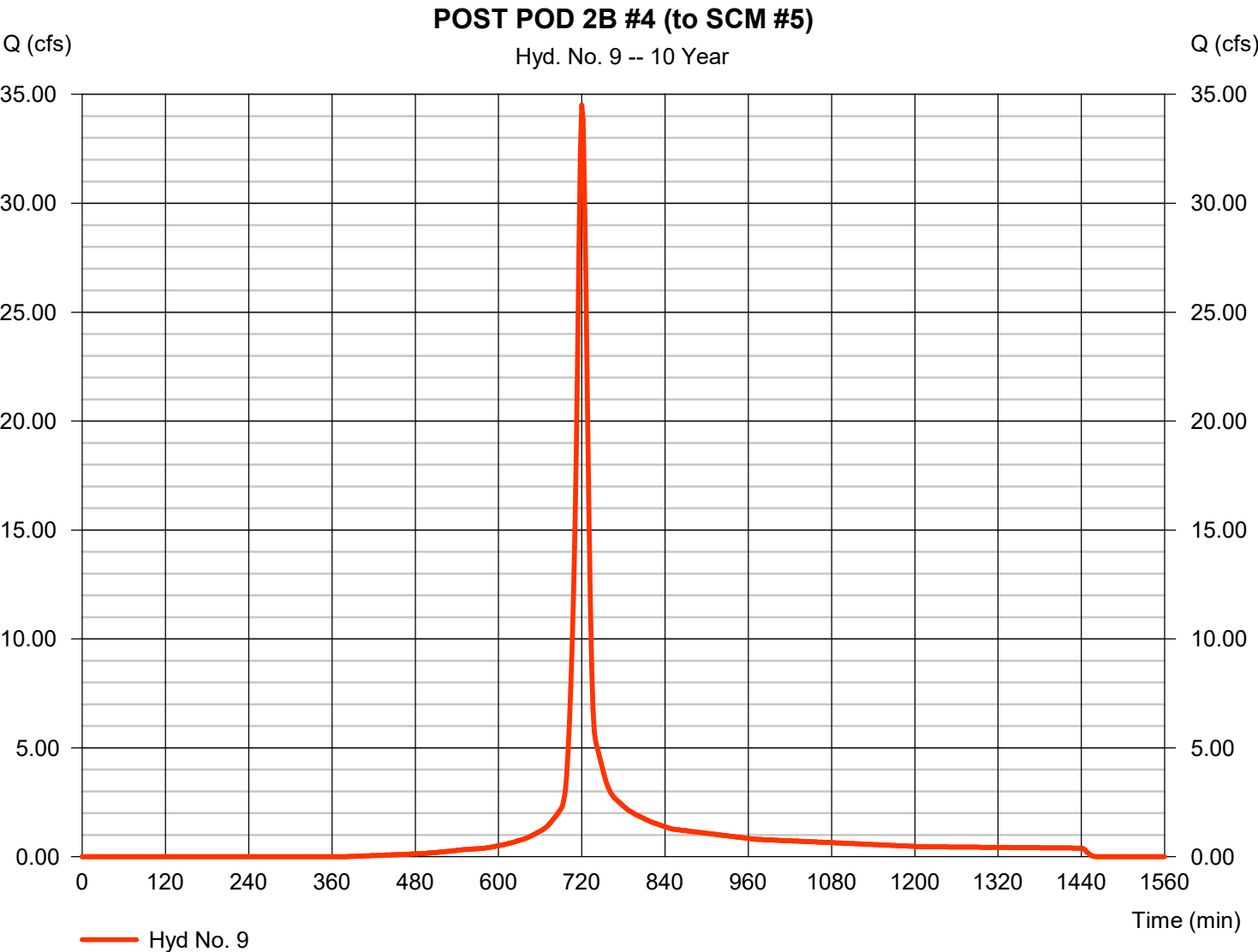


Hydrograph Report

Hyd. No. 9

POST POD 2B #4 (to SCM #5)

Hydrograph type	=	SCS Runoff	Peak discharge	=	34.50 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	90,101 cuft
Drainage area	=	7.540 ac	Curve number	=	83
Basin Slope	=	3.2 %	Hydraulic length	=	1270 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



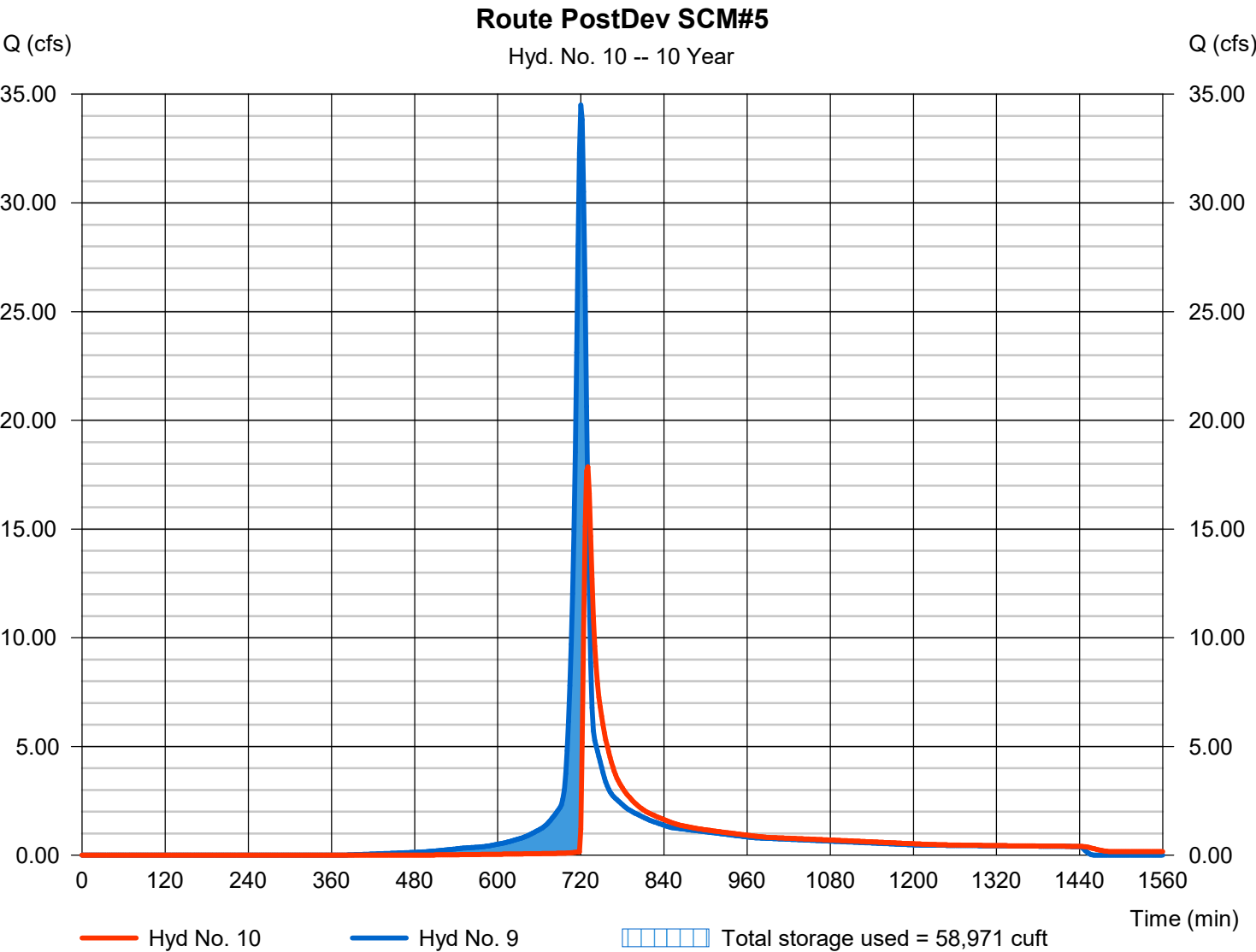
Hydrograph Report

Hyd. No. 10

Route PostDev SCM#5

Hydrograph type	= Reservoir	Peak discharge	= 17.87 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 88,422 cuft
Inflow hyd. No.	= 9 - POST POD 2B #4 (to SCM#5)	Max. Elevation	= 350.78 ft
Reservoir name	= SCM #5	Max. Storage	= 58,971 cuft

Storage Indication method used. Wet pond routing start elevation = 347.50 ft.

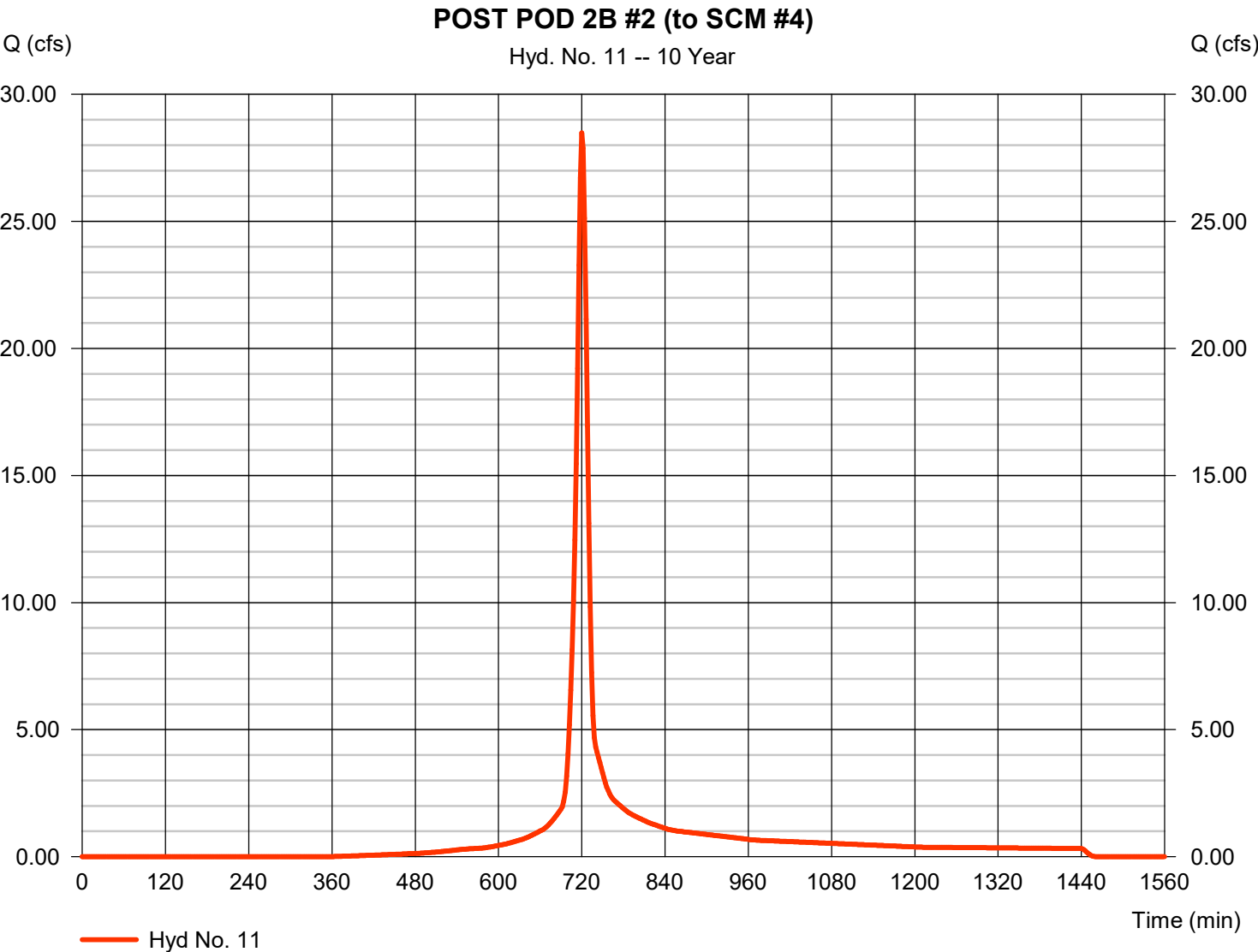


Hydrograph Report

Hyd. No. 11

POST POD 2B #2 (to SCM #4)

Hydrograph type	=	SCS Runoff	Peak discharge	=	28.48 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	74,605 cuft
Drainage area	=	6.060 ac	Curve number	=	84
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



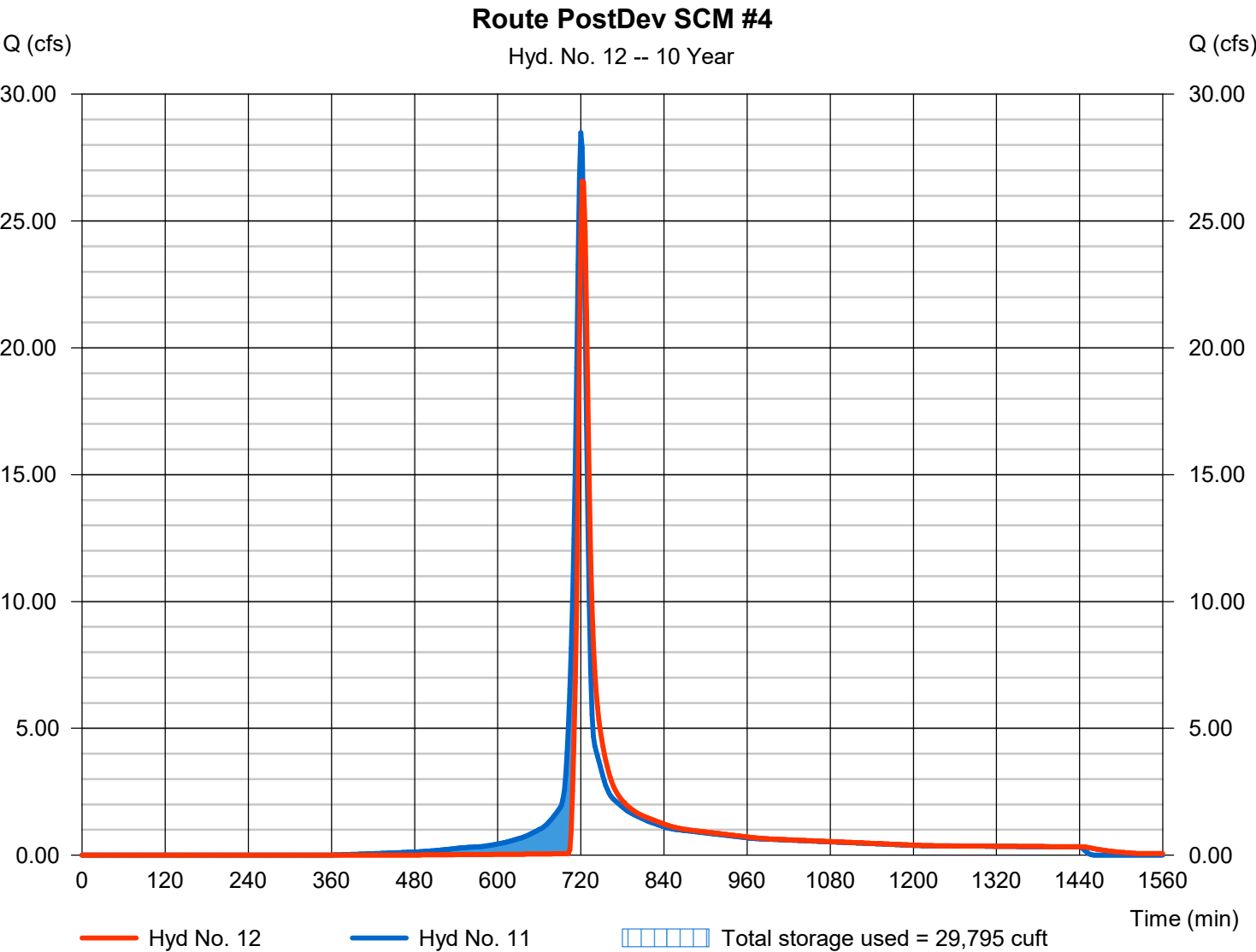
Hydrograph Report

Hyd. No. 12

Route PostDev SCM #4

Hydrograph type	= Reservoir	Peak discharge	= 26.57 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 74,188 cuft
Inflow hyd. No.	= 11 - POST POD 2B #2 (to SCM #4)	Wet Pond Elevation	= 359.57 ft
Reservoir name	= SCM #4	Max. Storage	= 29,795 cuft

Storage Indication method used. Wet pond routing start elevation = 357.50 ft.

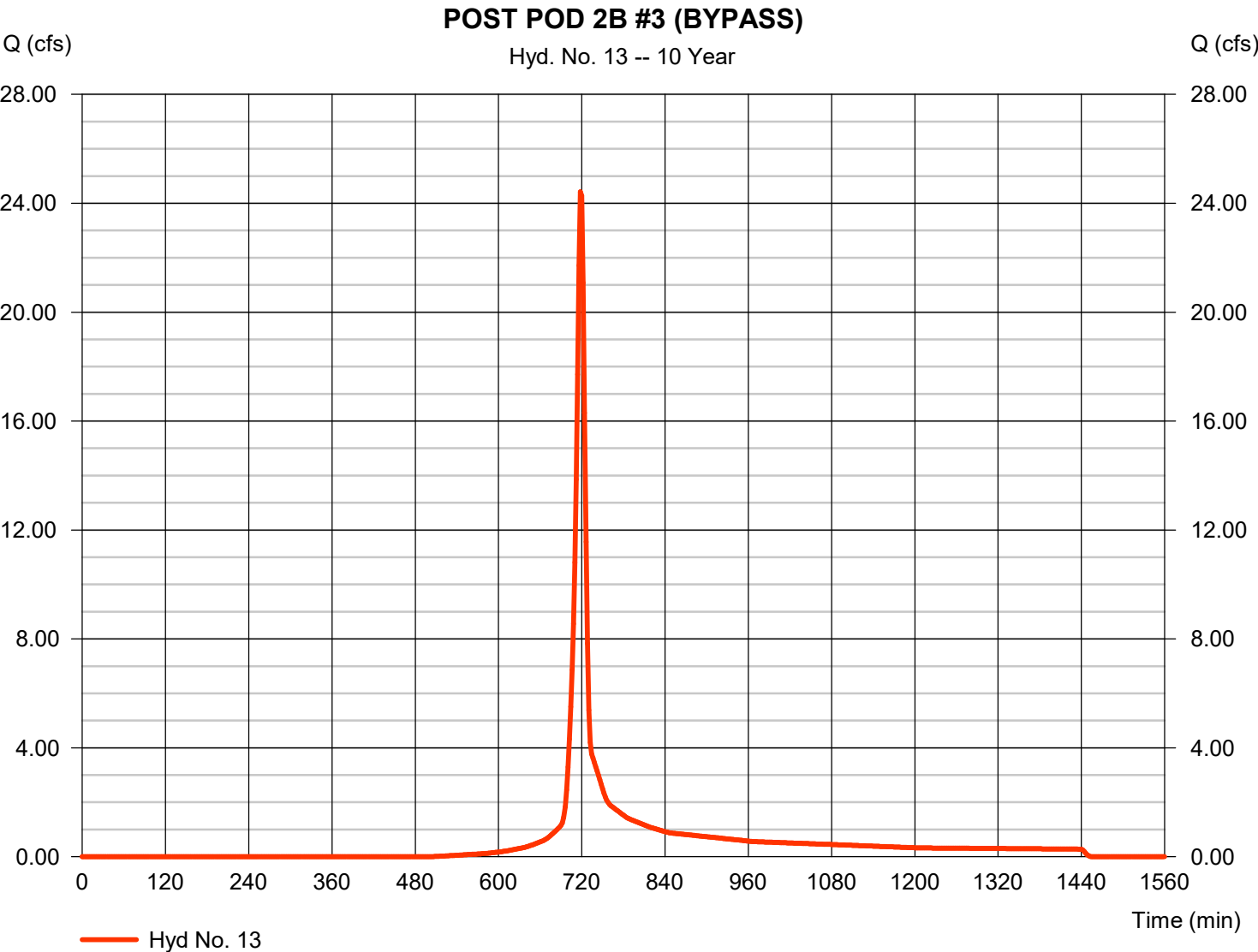


Hydrograph Report

Hyd. No. 13

POST POD 2B #3 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	24.42 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	55,865 cuft
Drainage area	=	6.010 ac	Curve number	=	76.1
Basin Slope	=	1.3 %	Hydraulic length	=	4170 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

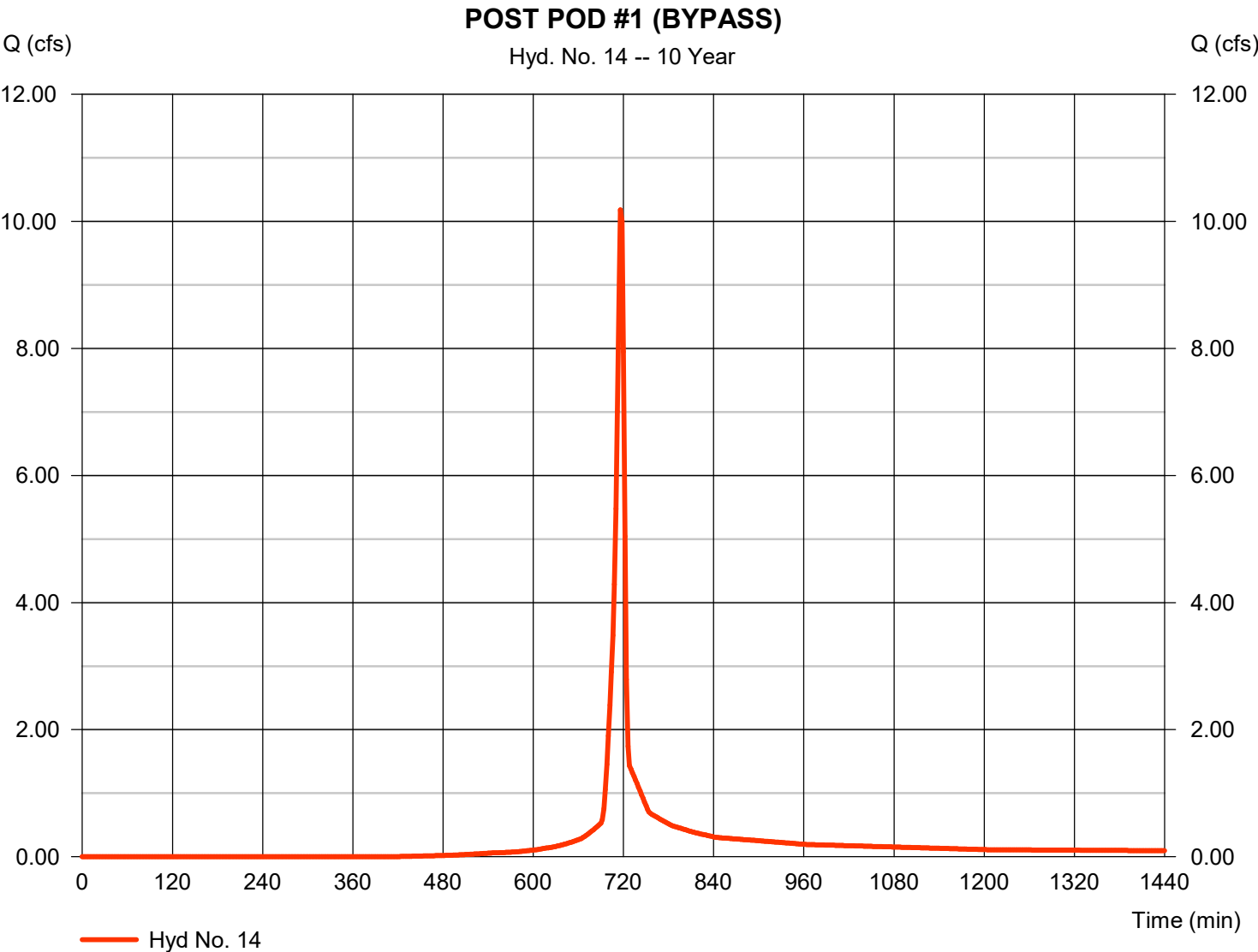
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 14

POST POD #1 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.18 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	20,755 cuft
Drainage area	=	2.050 ac	Curve number	=	80.7
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

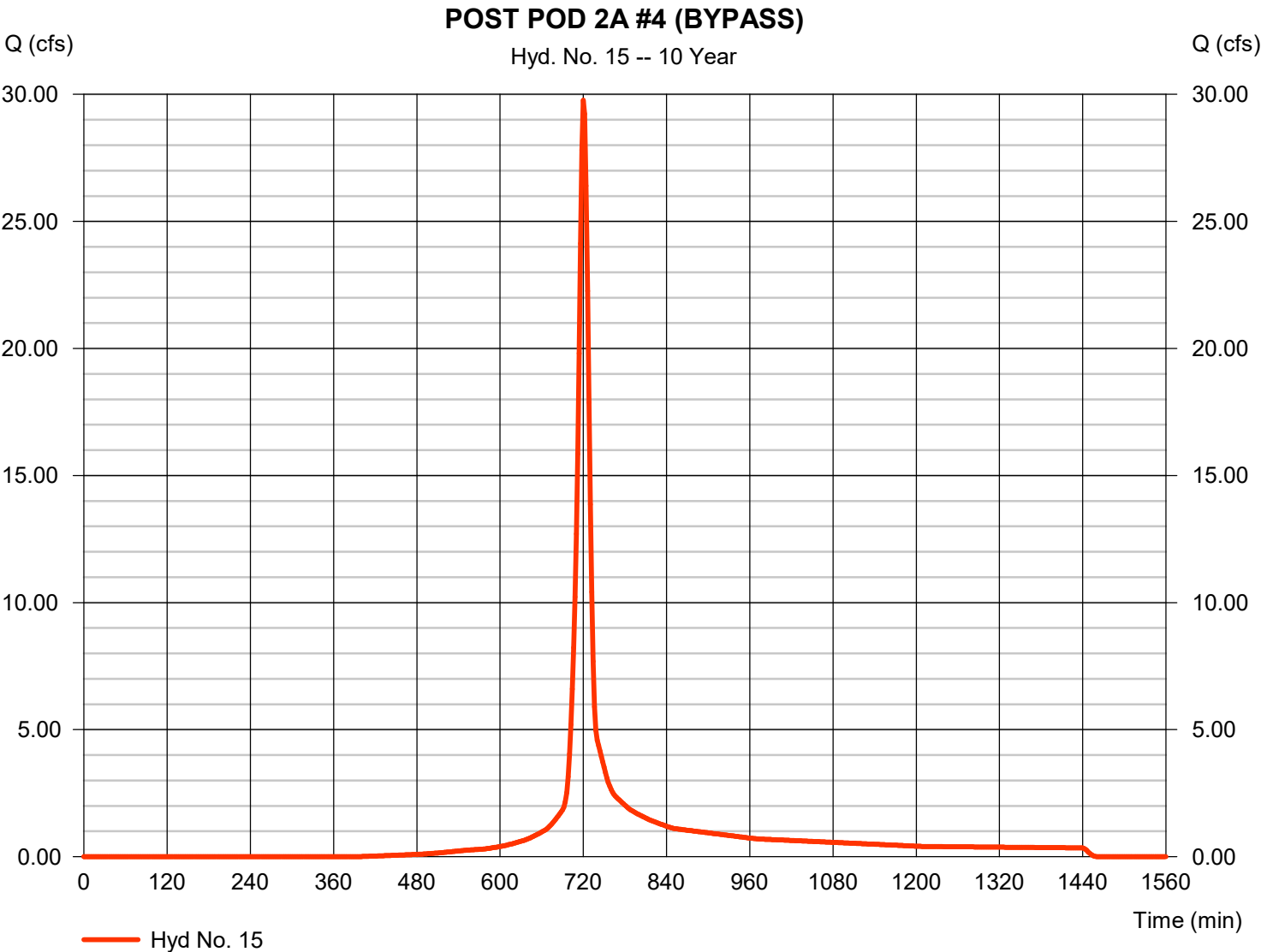
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 15

POST POD 2A #4 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	29.77 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	77,559 cuft
Drainage area	=	6.690 ac	Curve number	=	82
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.50 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

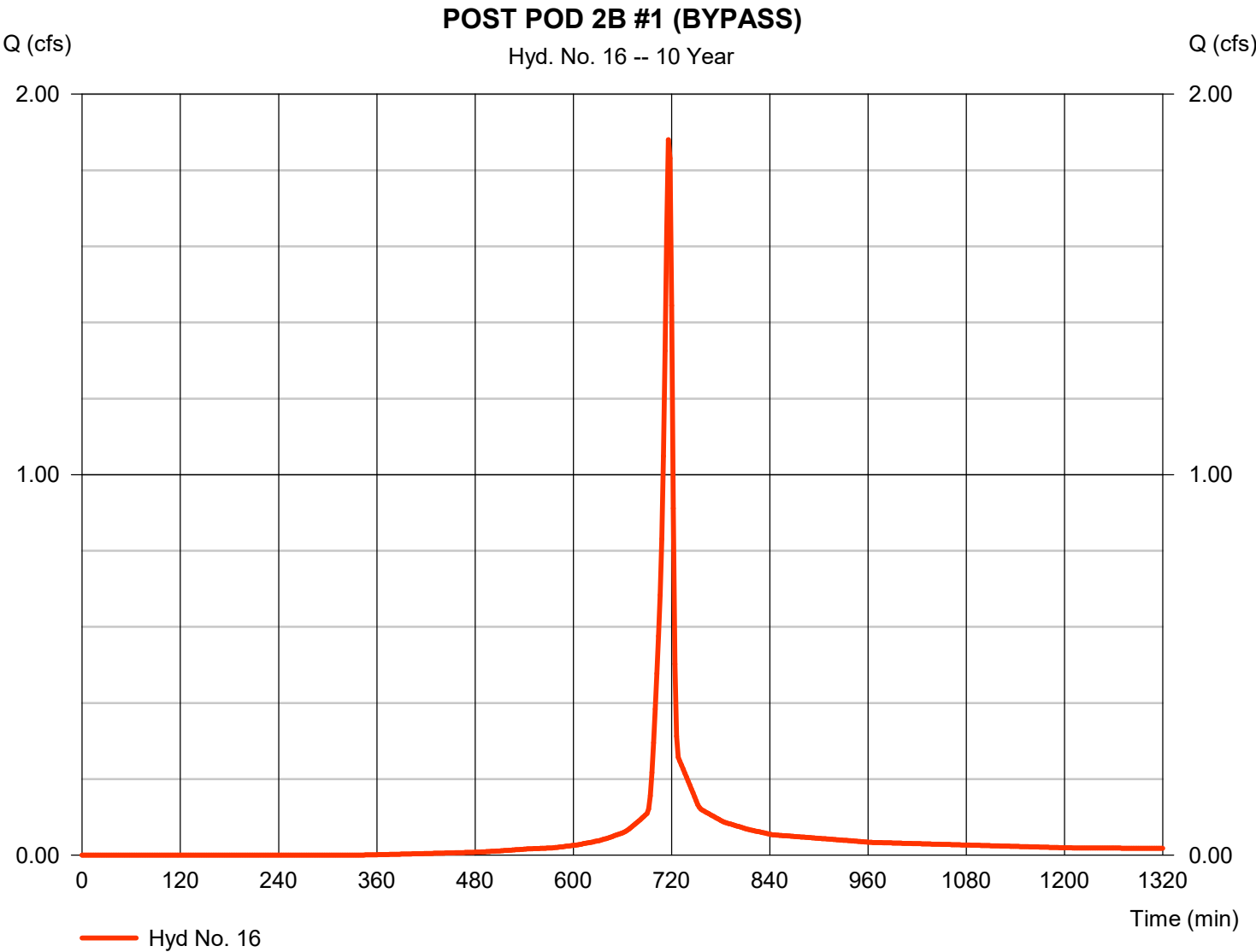


Hydrograph Report

Hyd. No. 16

POST POD 2B #1 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.880 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,896 cuft
Drainage area	=	0.340 ac	Curve number	=	84.8
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

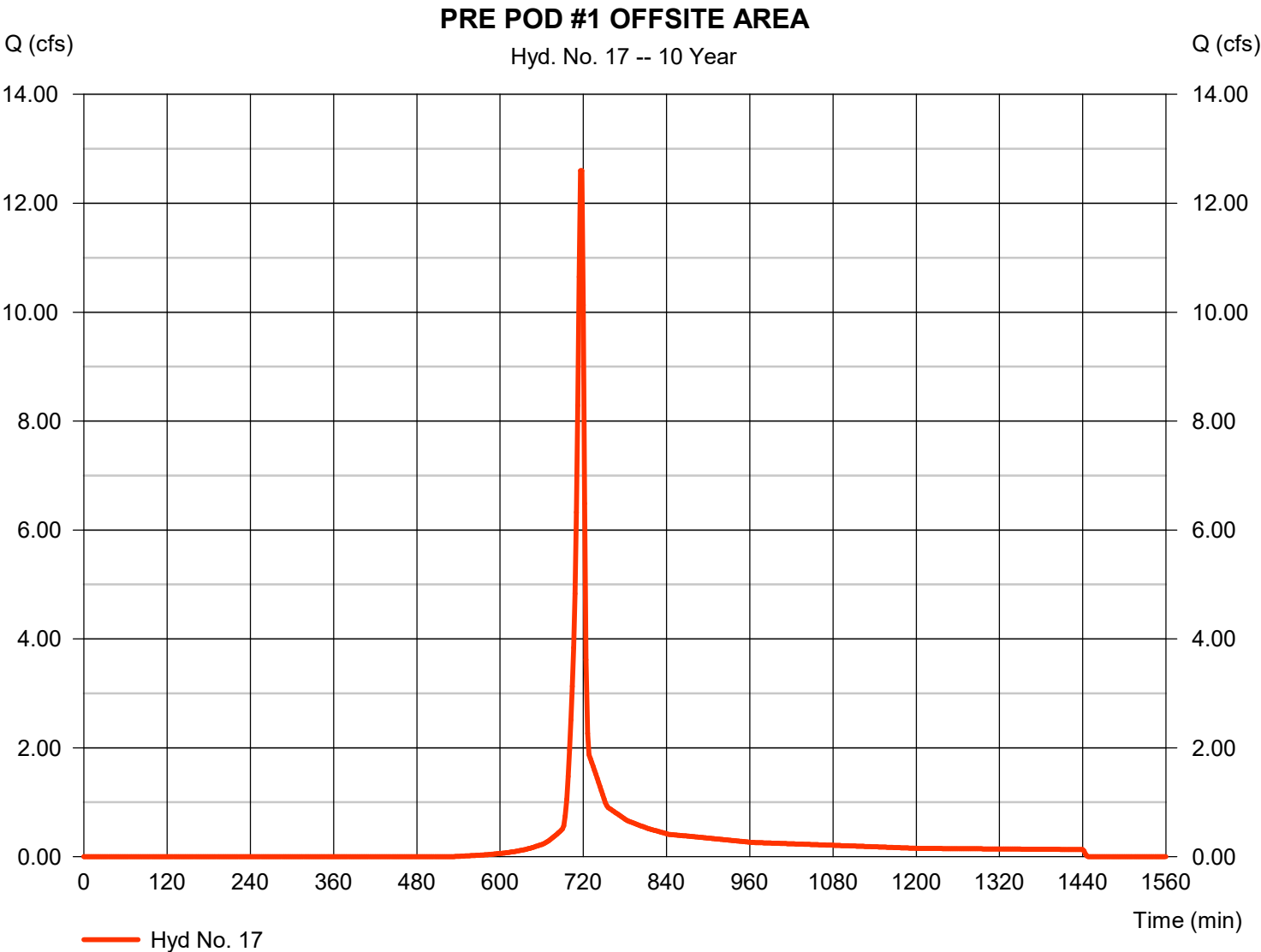
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 17

PRE POD #1 OFFSITE AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.60 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	25,435 cuft
Drainage area	=	3.140 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

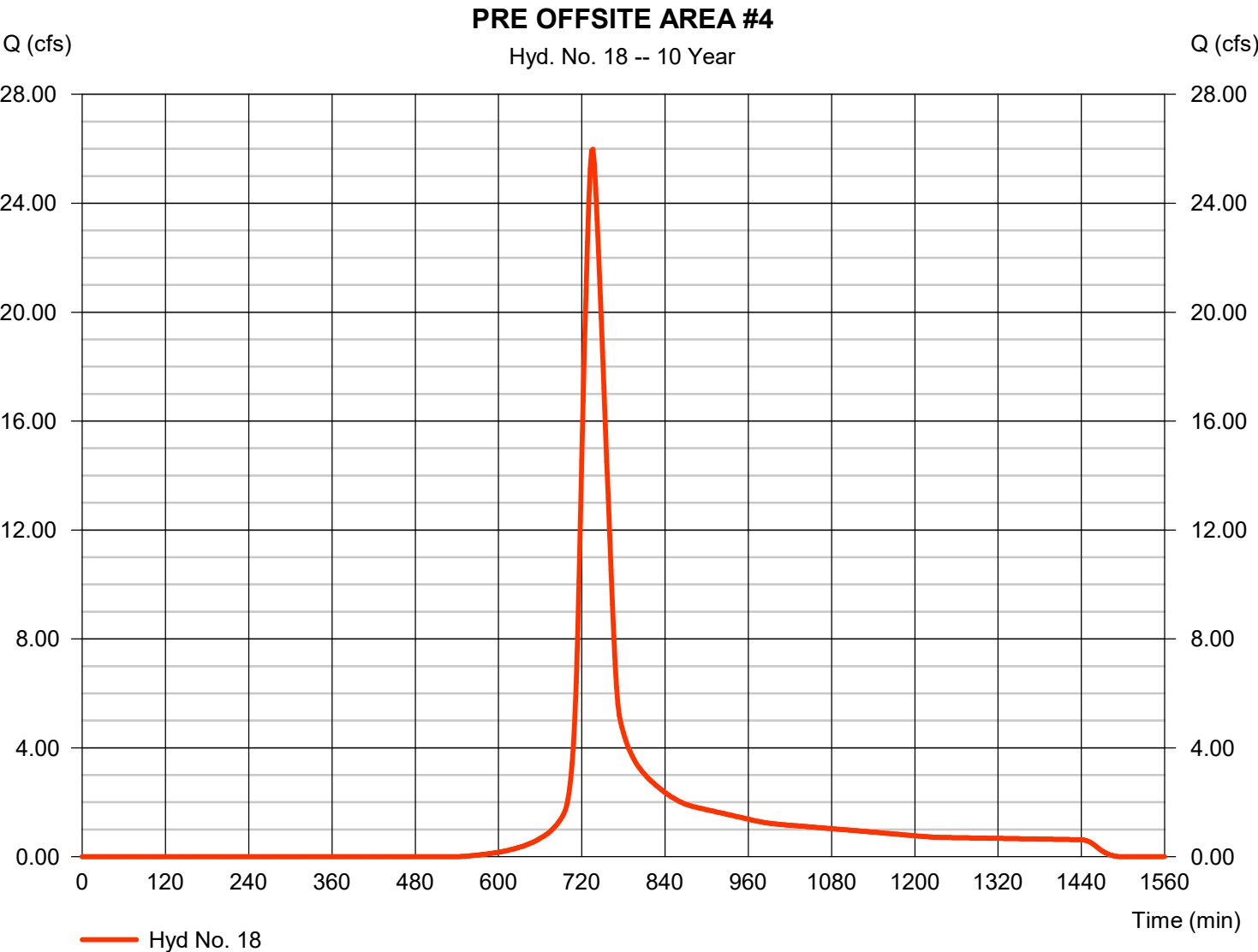


Hydrograph Report

Hyd. No. 18

PRE OFFSITE AREA #4

Hydrograph type	= SCS Runoff	Peak discharge	= 25.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 119,076 cuft
Drainage area	= 13.940 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.70 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

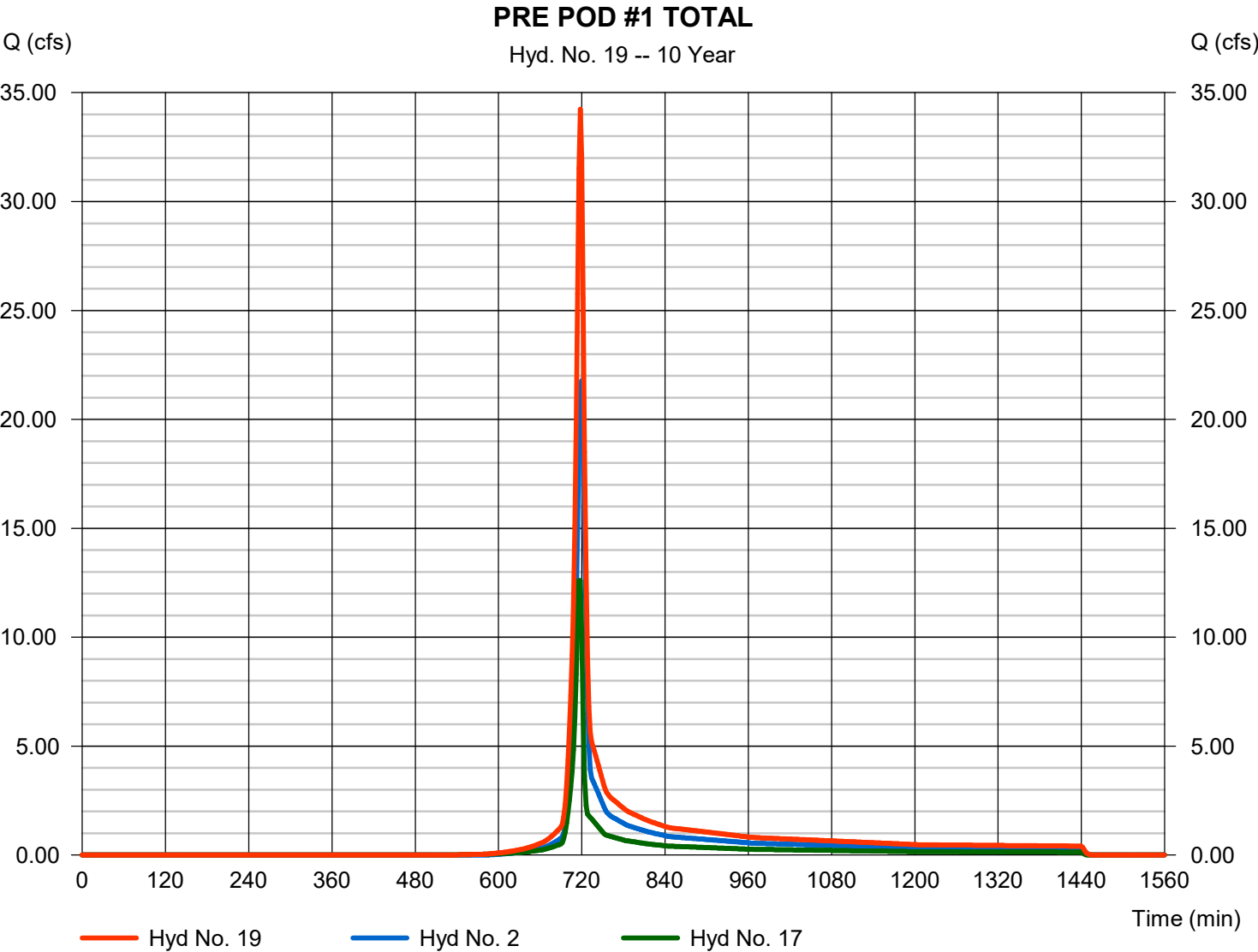


Hydrograph Report

Hyd. No. 19

PRE POD #1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 34.24 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 75,272 cuft
Inflow hyds.	= 2, 17	Contrib. drain. area	= 9.680 ac



Hydrograph Report

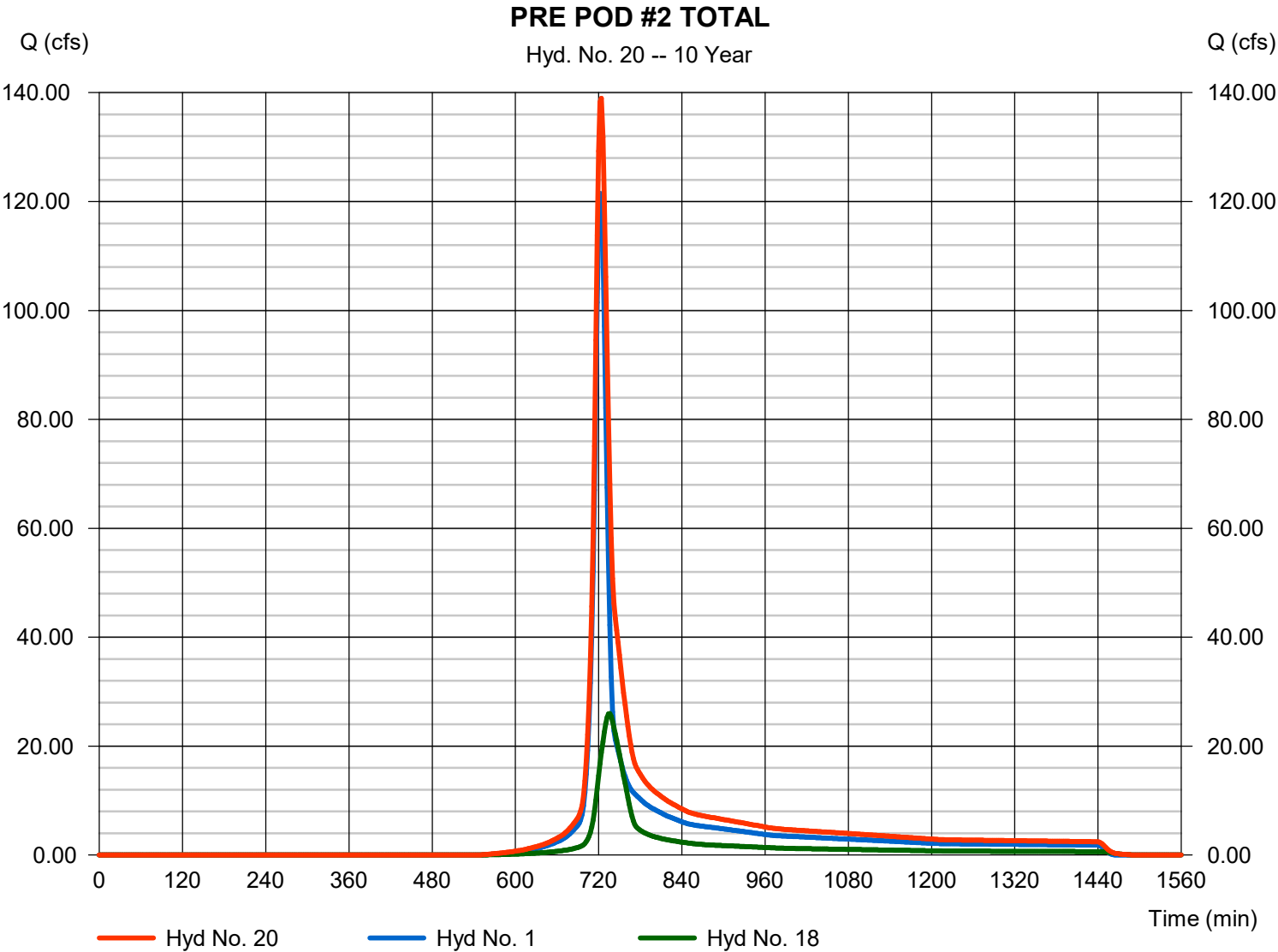
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 20

PRE POD #2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 138.98 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 461,473 cuft
Inflow hyds.	= 1, 18	Contrib. drain. area	= 55.920 ac



Hydrograph Report

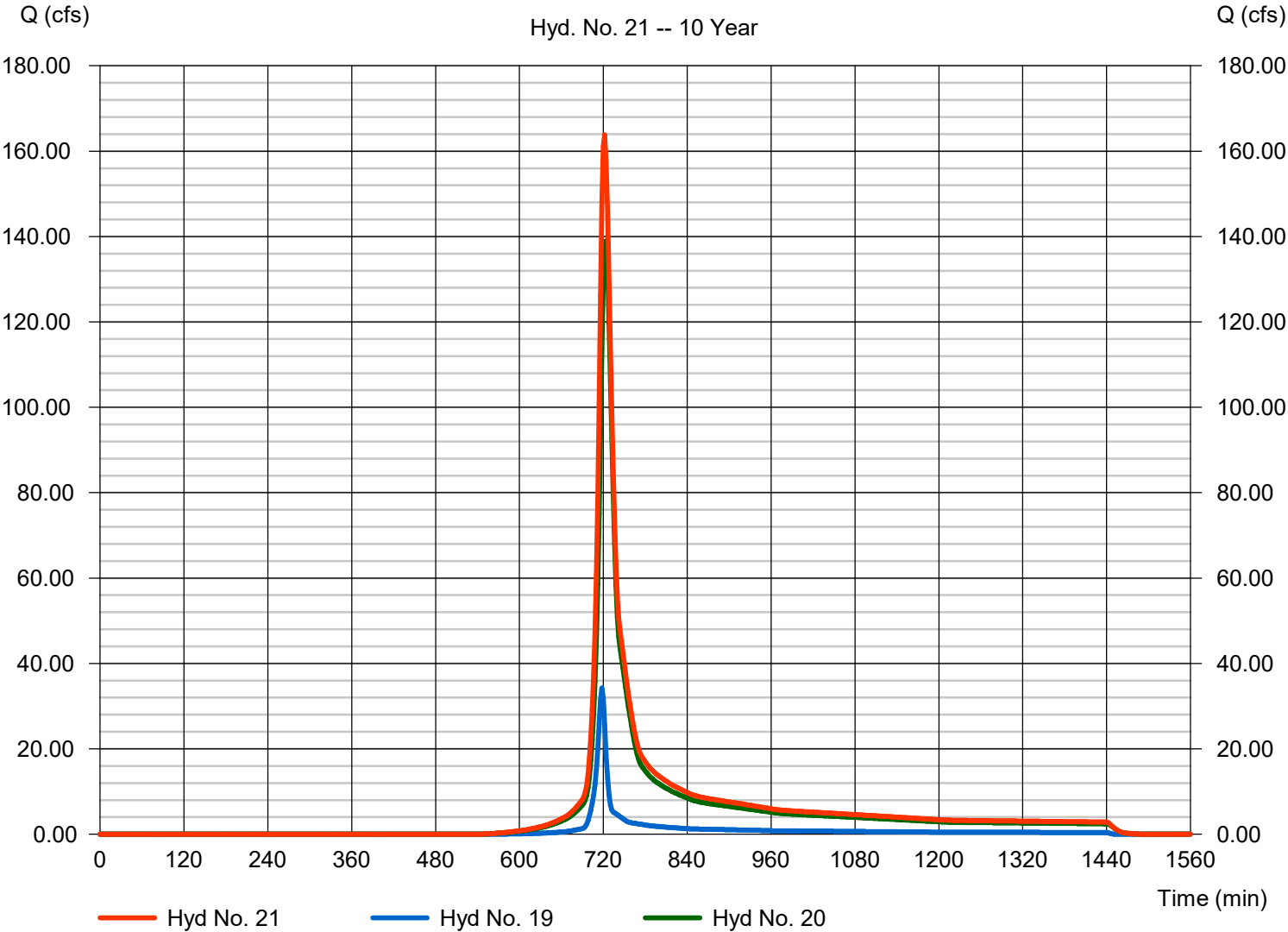
Hyd. No. 21

PRE POD GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 163.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 536,745 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.000 ac

PRE POD GRAND TOTAL

Hyd. No. 21 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

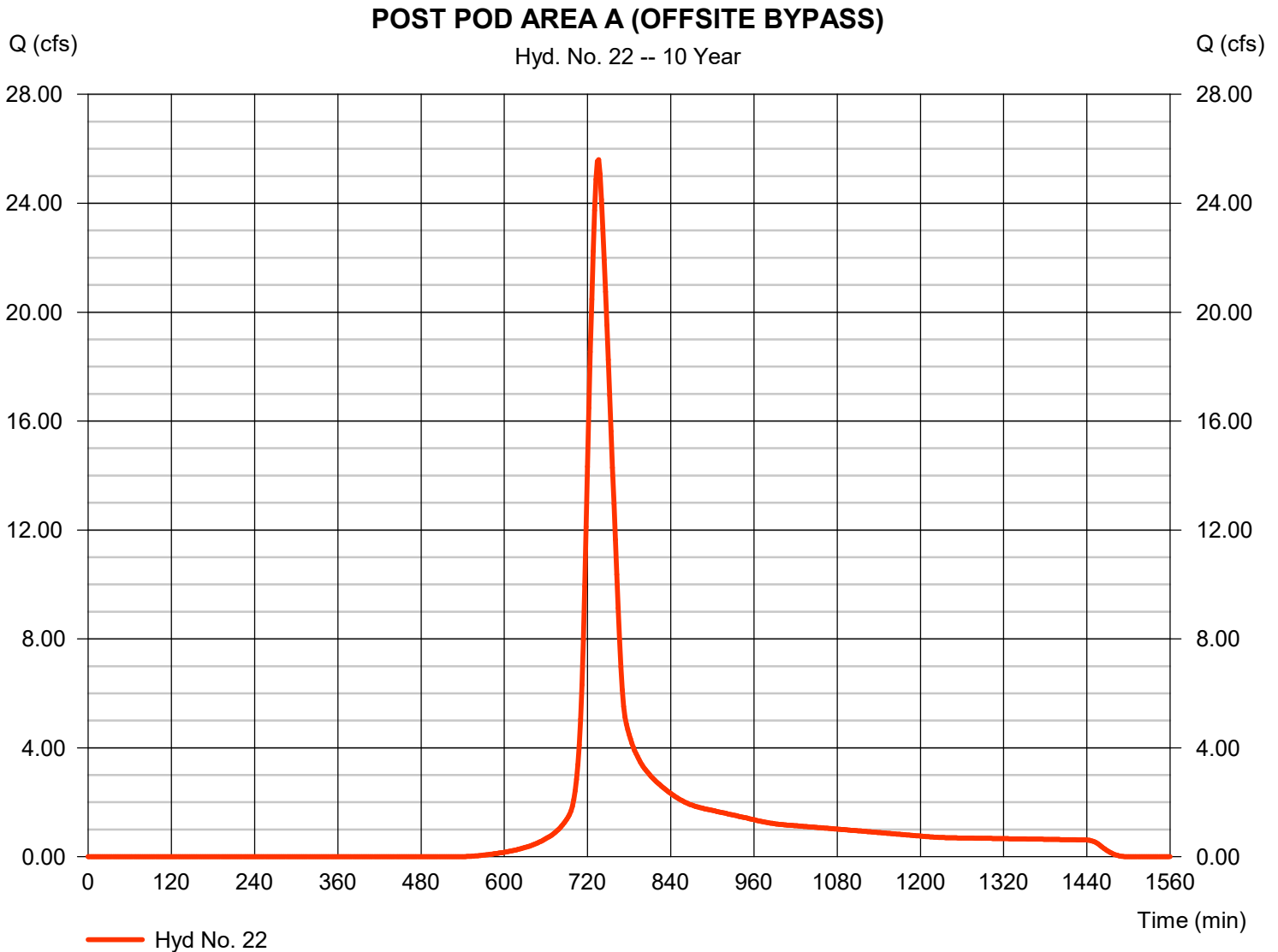
Thursday, 05 / 29 / 2025

Hyd. No. 22

POST POD AREA A (OFFSITE BYPASS)

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 13.730 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.02 in
 Storm duration = 24 hrs

Peak discharge = 25.60 cfs
 Time to peak = 736 min
 Hyd. volume = 117,282 cuft
 Curve number = 74
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.70 min
 Distribution = Type II
 Shape factor = 484

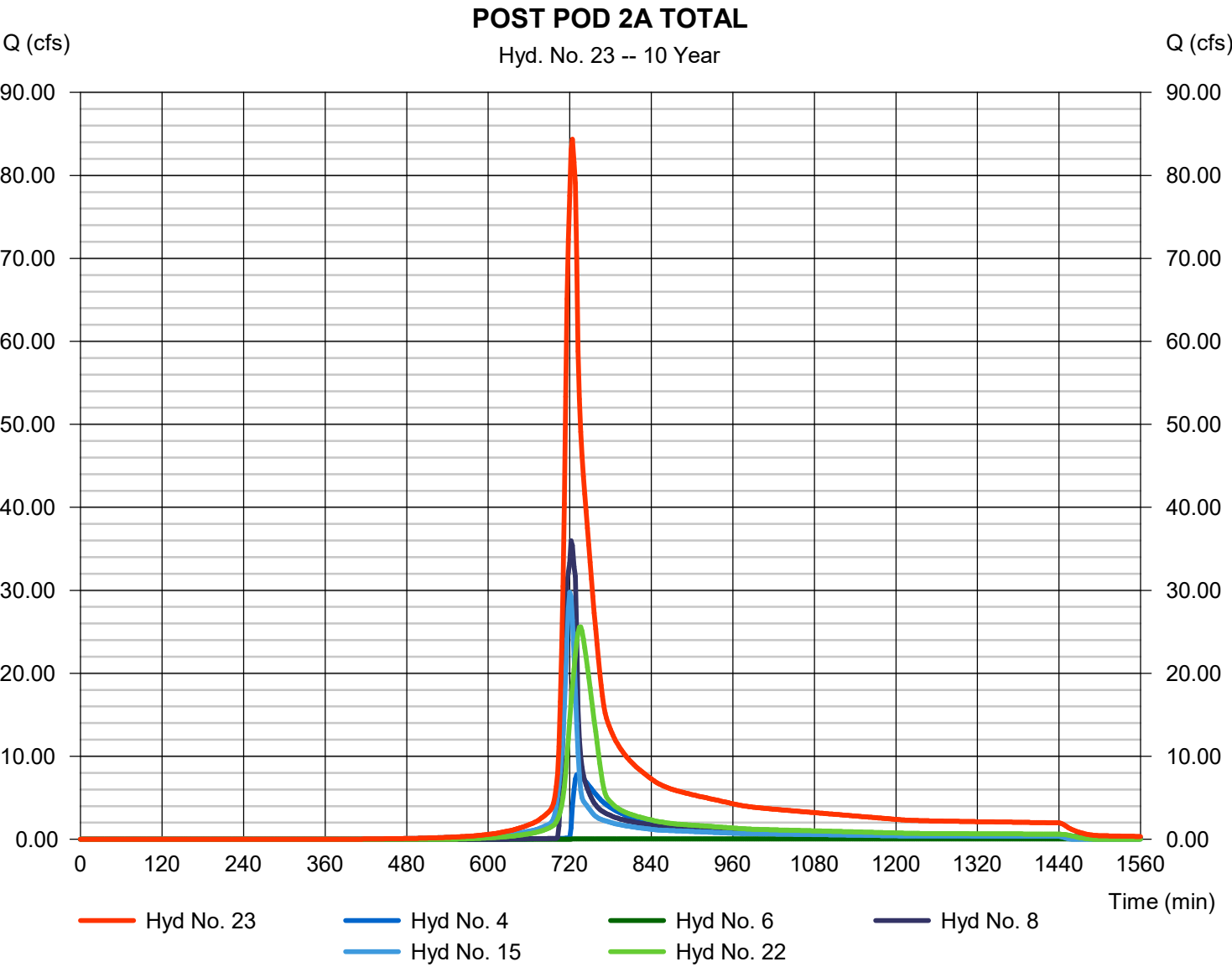


Hydrograph Report

Hyd. No. 23

POST POD 2A TOTAL

Hydrograph type	= Combine	Peak discharge	= 84.35 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 397,434 cuft
Inflow hyds.	= 4, 6, 8, 15, 22	Contrib. drain. area	= 20.420 ac



Hydrograph Report

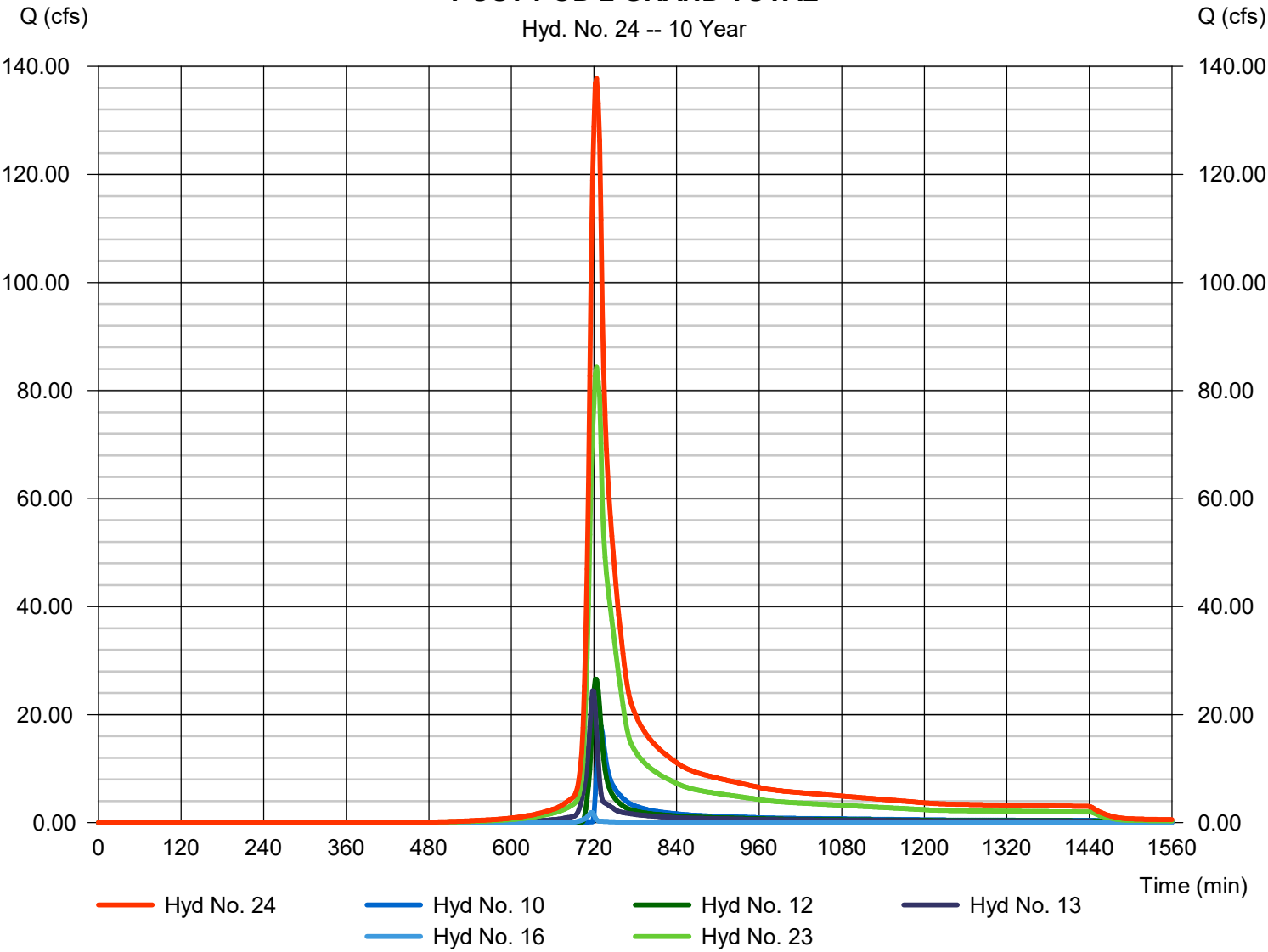
Hyd. No. 24

POST POD 2 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 137.75 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 619,805 cuft
Inflow hyds.	= 10, 12, 13, 16, 23	Contrib. drain. area	= 6.350 ac

POST POD 2 GRAND TOTAL

Hyd. No. 24 -- 10 Year



Hydrograph Report

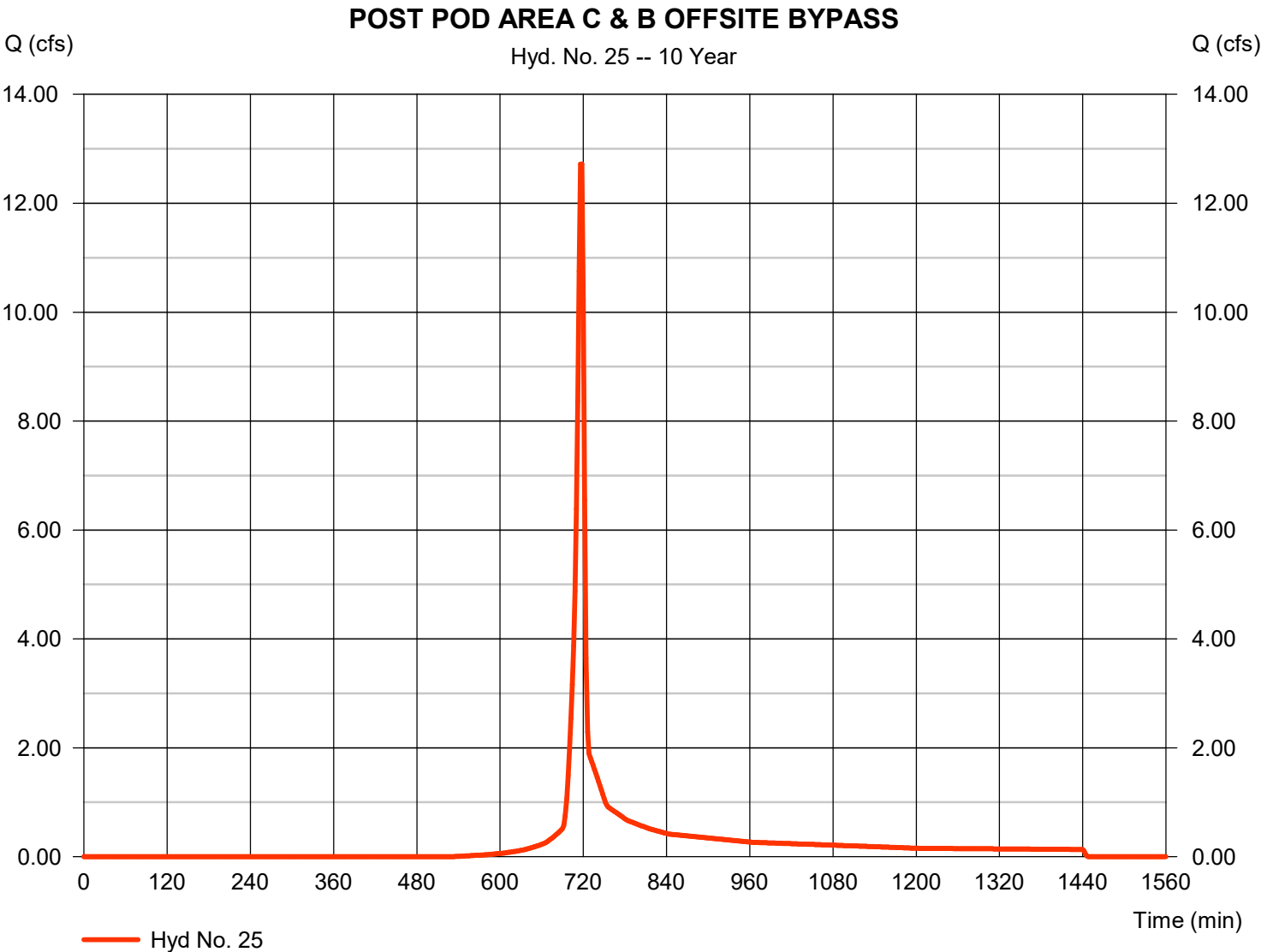
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 25

POST POD AREA C & B OFFSITE BYPASS

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.72 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	25,678 cuft
Drainage area	=	3.170 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	5.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

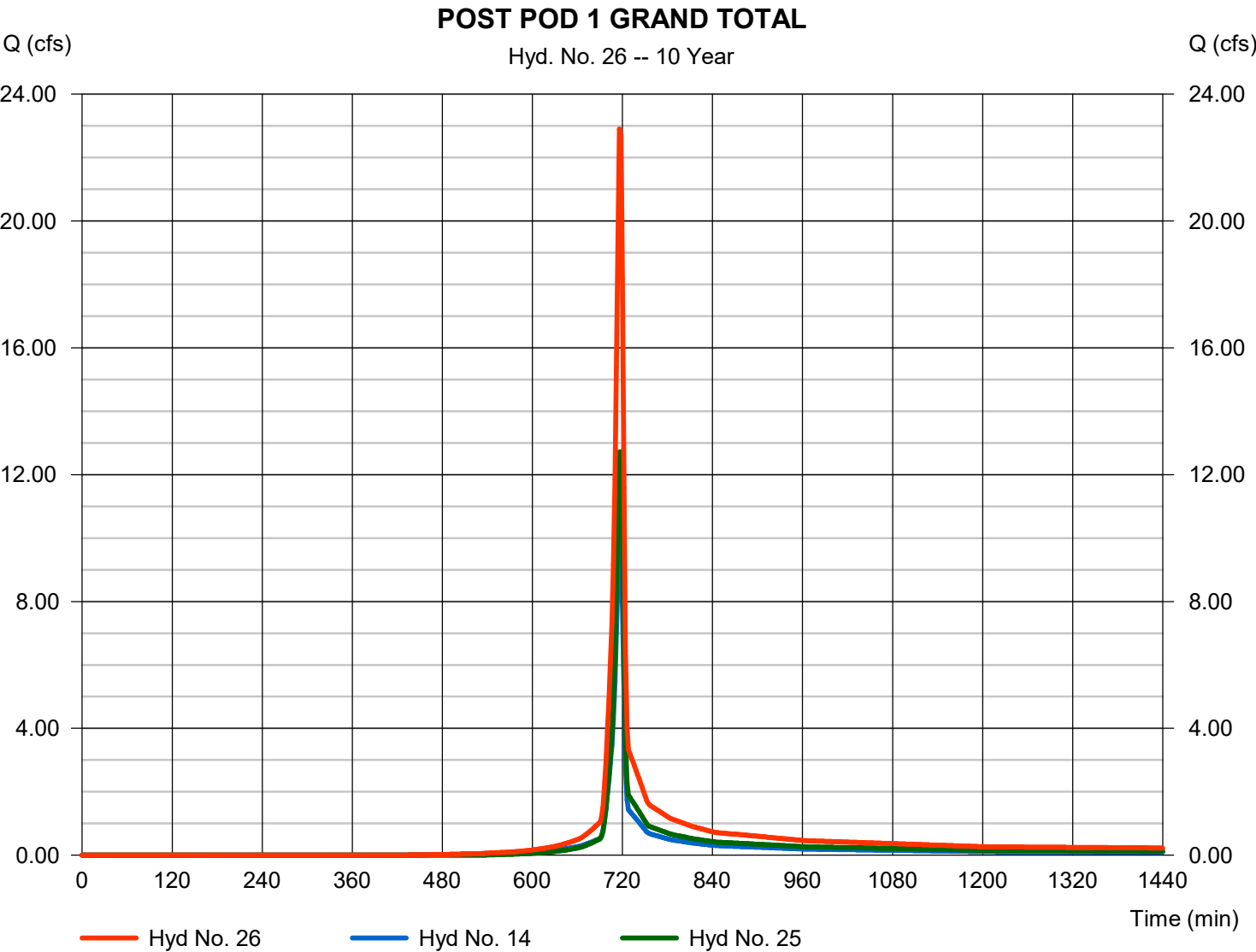


Hydrograph Report

Hyd. No. 26

POST POD 1 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 22.90 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 46,433 cuft
Inflow hyds.	= 14, 25	Contrib. drain. area	= 5.220 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

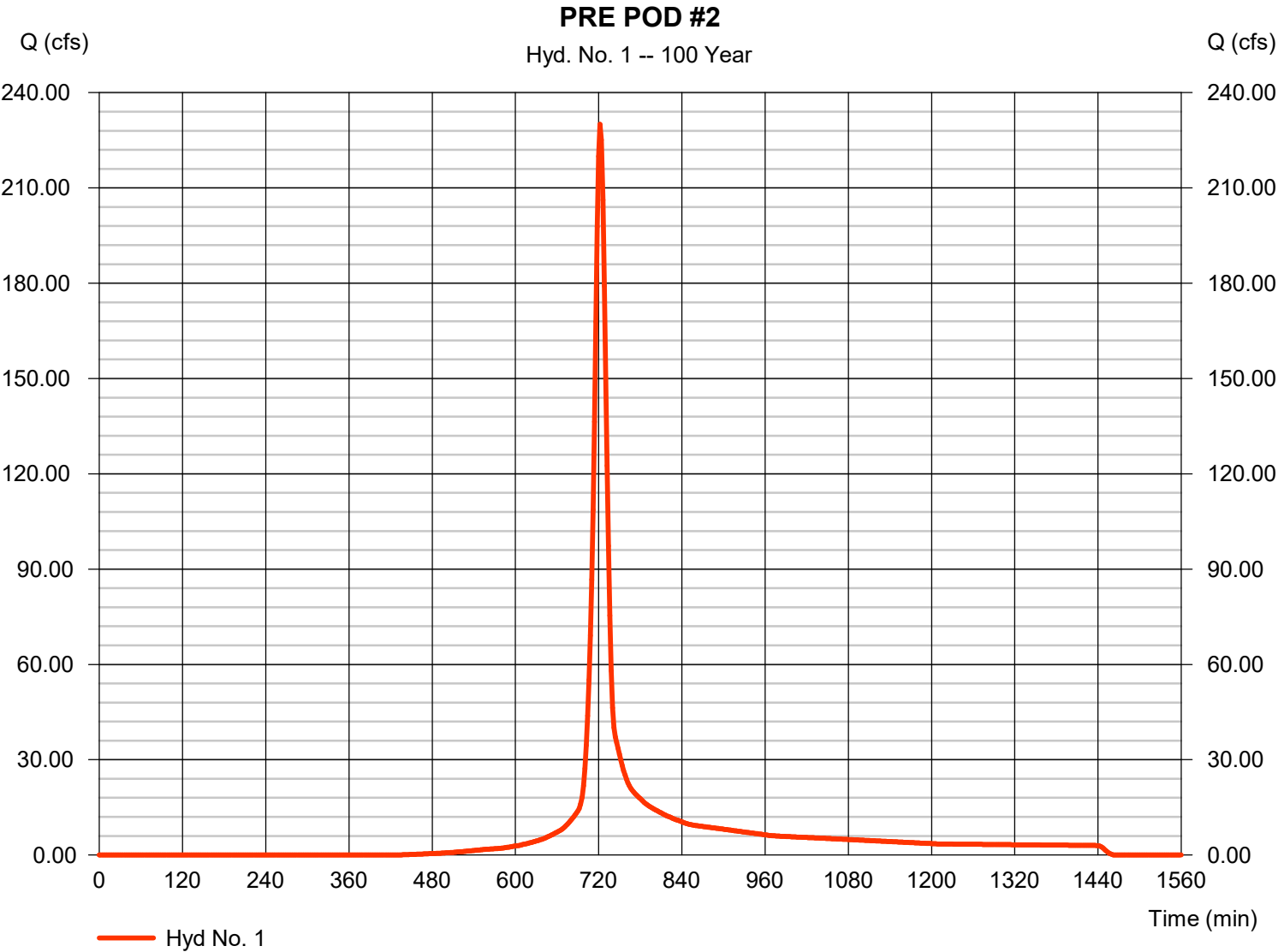
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	230.07	2	722	645,677	-----	-----	-----	PRE POD #2
2	SCS Runoff	42.19	2	718	96,618	-----	-----	-----	PRE POD #1
3	SCS Runoff	76.89	2	718	180,726	-----	-----	-----	POST POD 2A #1 (to SCM #1)
4	Reservoir	58.32	2	722	169,385	3	367.03	113,382	PostDev Thru SCM#1
5	SCS Runoff	10.81	2	716	22,424	-----	-----	-----	POST POD 2A #2 (to SCM #2)
6	Reservoir	0.528	2	780	17,397	5	363.03	29,744	Route PostDev SCM #2
7	SCS Runoff	77.17	2	718	181,924	-----	-----	-----	POST POD 2A #3 (to SCM #3)
8	Reservoir	72.61	2	720	178,838	7	364.50	45,747	Route PostDev @ SCM#3
9	SCS Runoff	57.86	2	720	154,203	-----	-----	-----	POST POD 2B #4 (to SCM #5)
10	Reservoir	50.25	2	724	152,491	9	351.32	67,313	Route PostDev SCM#5
11	SCS Runoff	47.26	2	720	126,541	-----	-----	-----	POST POD 2B #2 (to SCM #4)
12	Reservoir	38.98	2	724	126,121	11	360.18	36,136	Route PostDev SCM #4
13	SCS Runoff	44.18	2	718	102,108	-----	-----	-----	POST POD 2B #3 (BYPASS)
14	SCS Runoff	17.38	2	716	36,280	-----	-----	-----	POST POD #1 (BYPASS)
15	SCS Runoff	50.47	2	720	133,951	-----	-----	-----	POST POD 2A #4 (BYPASS)
16	SCS Runoff	3.077	2	716	6,561	-----	-----	-----	POST POD 2B #1 (BYPASS)
17	SCS Runoff	23.29	2	716	47,506	-----	-----	-----	PRE POD #1 OFFSITE AREA
18	SCS Runoff	49.11	2	734	222,406	-----	-----	-----	PRE OFFSITE AREA #4
19	Combine	65.08	2	718	144,124	2, 17,	-----	-----	PRE POD #1 TOTAL
20	Combine	263.30	2	722	868,083	1, 18,	-----	-----	PRE POD #2 TOTAL
21	Combine	310.97	2	722	1,012,207	19, 20	-----	-----	PRE POD GRAND TOTAL
22	SCS Runoff	48.37	2	734	219,056	-----	-----	-----	POST POD AREA A (OFFSITE BYP
23	Combine	210.96	2	722	718,626	4, 6, 8, 15, 22	-----	-----	POST POD 2A TOTAL
24	Combine	333.32	2	722	1,105,907	10, 12, 13, 16, 23	-----	-----	POST POD 2 GRAND TOTAL
25	SCS Runoff	23.52	2	716	47,960	-----	-----	-----	POST POD AREA C & B OFFSITE B
26	Combine	40.90	2	716	84,239	14, 25	-----	-----	POST POD 1 GRAND TOTAL
20250528 SCM Modeling.gpw					Return Period: 100 Year			Thursday, 05 / 29 / 2025	

Hydrograph Report

Hyd. No. 1

PRE POD #2

Hydrograph type	= SCS Runoff	Peak discharge	= 230.07 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 645,677 cuft
Drainage area	= 41.980 ac	Curve number	= 73.1
Basin Slope	= 1.4 %	Hydraulic length	= 4320 ft
Tc method	= User	Time of conc. (Tc)	= 14.00 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

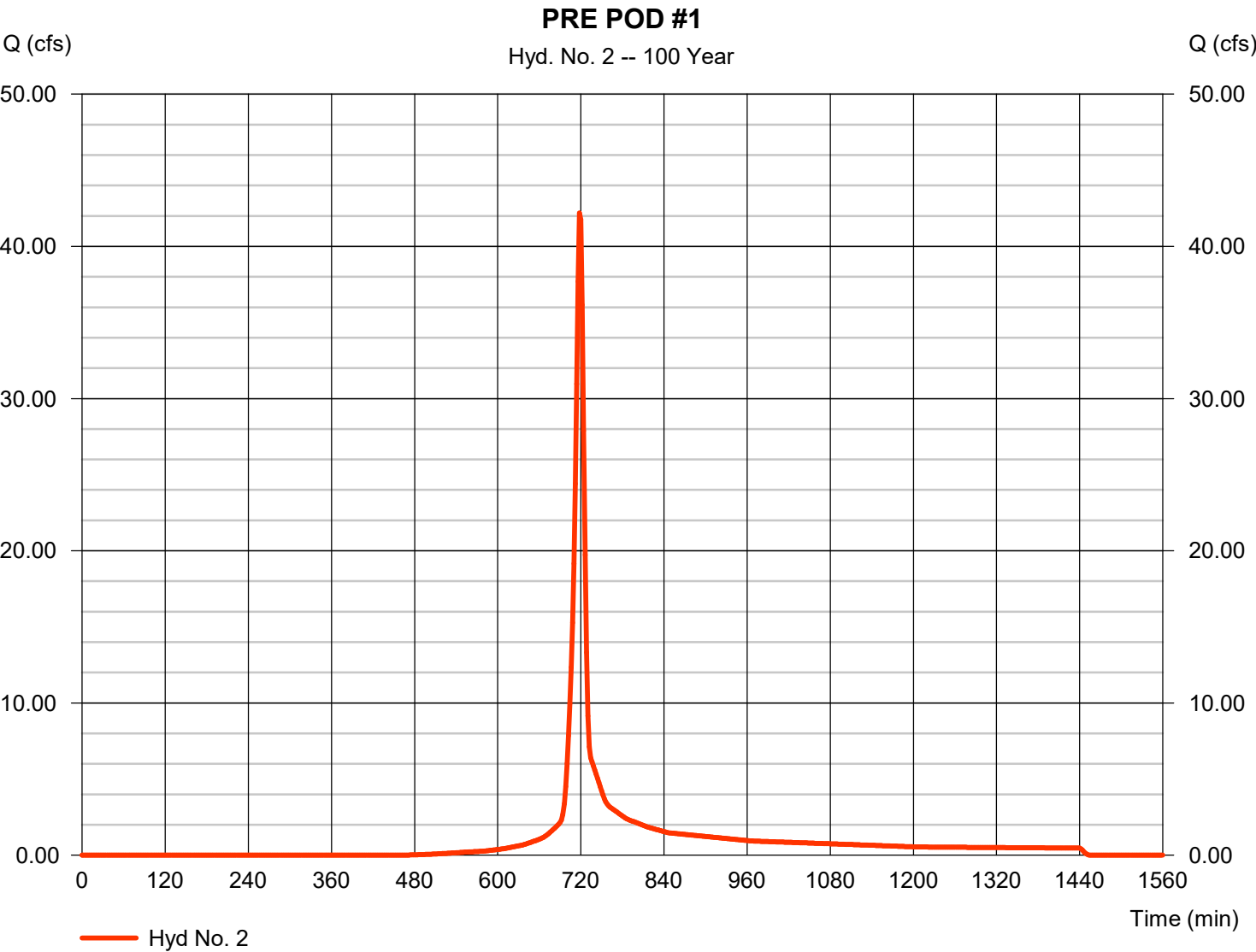


Hydrograph Report

Hyd. No. 2

PRE POD #1

Hydrograph type	= SCS Runoff	Peak discharge	= 42.19 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 96,618 cuft
Drainage area	= 6.540 ac	Curve number	= 70.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.70 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

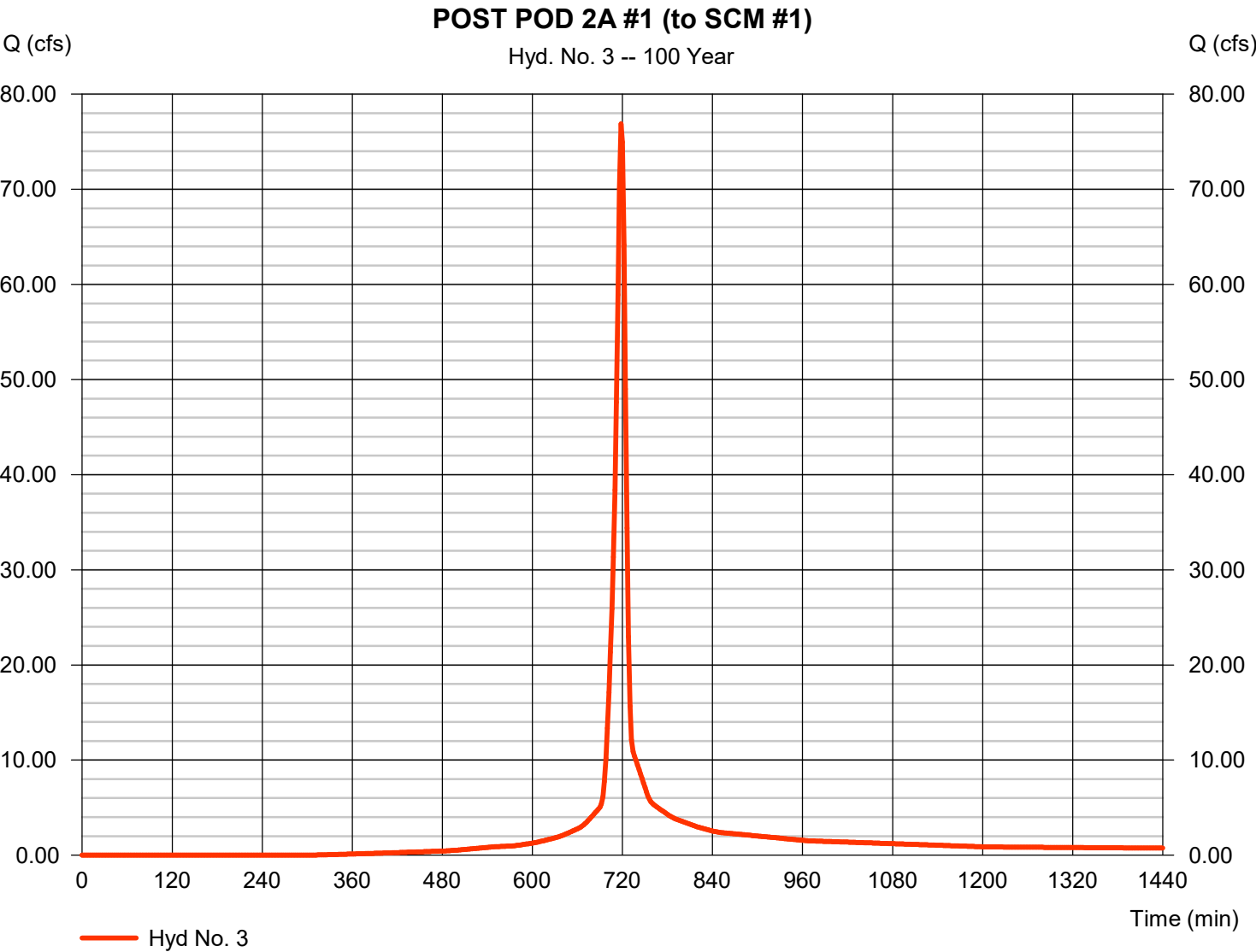


Hydrograph Report

Hyd. No. 3

POST POD 2A #1 (to SCM #1)

Hydrograph type	=	SCS Runoff	Peak discharge	=	76.89 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	180,726 cuft
Drainage area	=	9.470 ac	Curve number	=	81.2
Basin Slope	=	2.4 %	Hydraulic length	=	1000 ft
Tc method	=	User	Time of conc. (Tc)	=	6.60 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

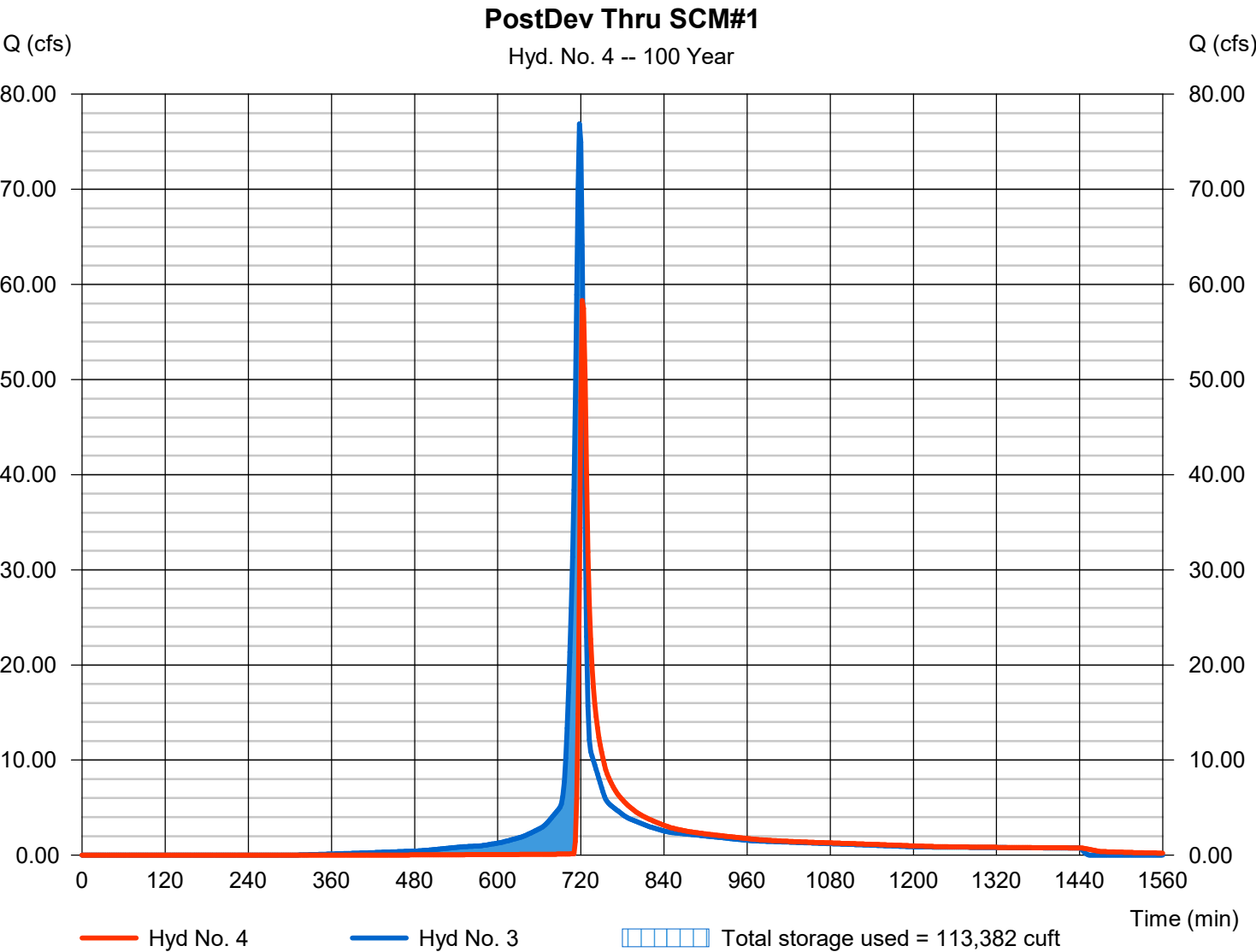
Thursday, 05 / 29 / 2025

Hyd. No. 4

PostDev Thru SCM#1

Hydrograph type	= Reservoir	Peak discharge	= 58.32 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 169,385 cuft
Inflow hyd. No.	= 3 - POST POD 2A #1 (to SCM#1)	Max. Elevation	= 367.03 ft
Reservoir name	= SCM #1	Max. Storage	= 113,382 cuft

Storage Indication method used. Wet pond routing start elevation = 363.50 ft.

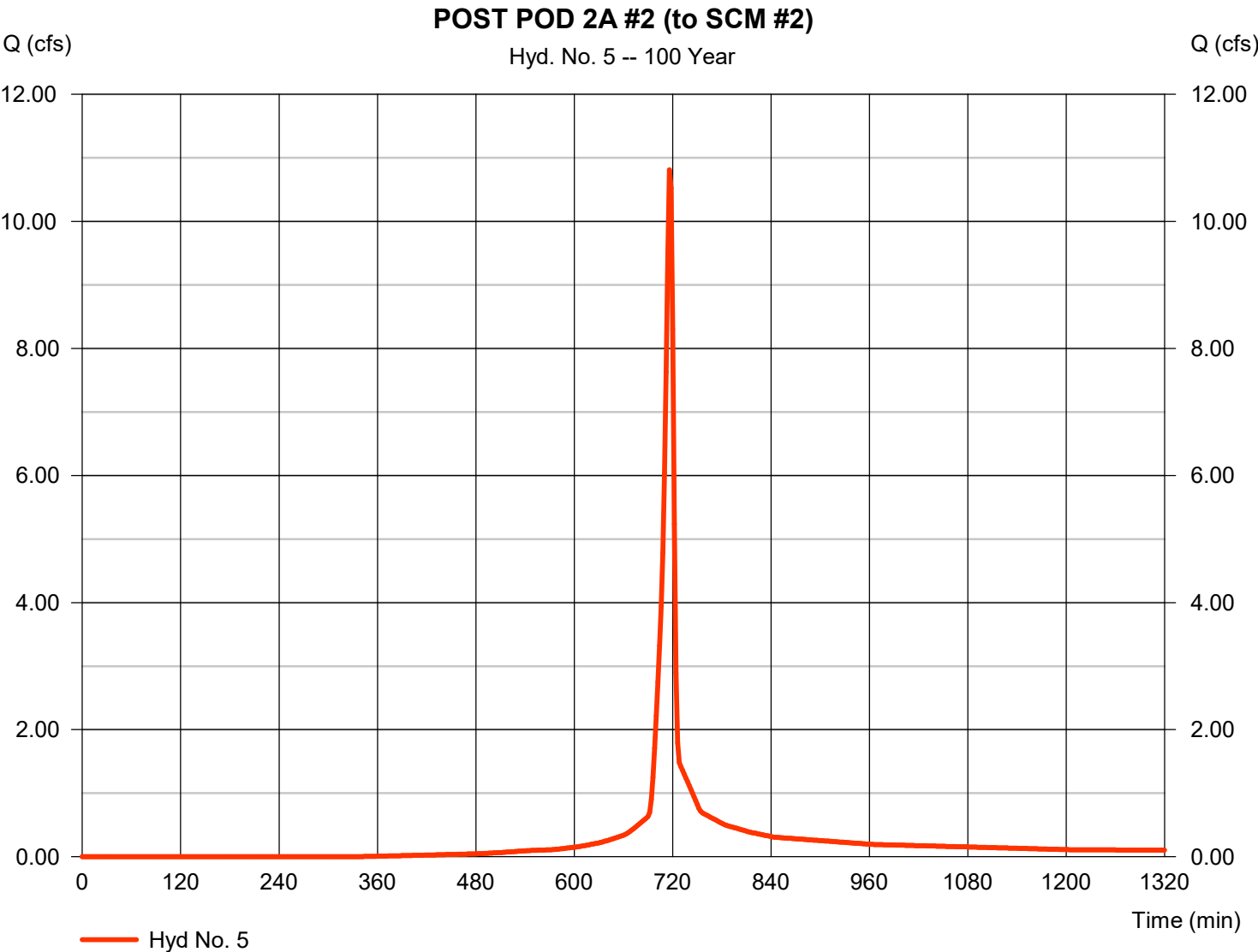


Hydrograph Report

Hyd. No. 5

POST POD 2A #2 (to SCM #2)

Hydrograph type	= SCS Runoff	Peak discharge	= 10.81 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 22,424 cuft
Drainage area	= 1.310 ac	Curve number	= 79.2
Basin Slope	= 0.5 %	Hydraulic length	= 450 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

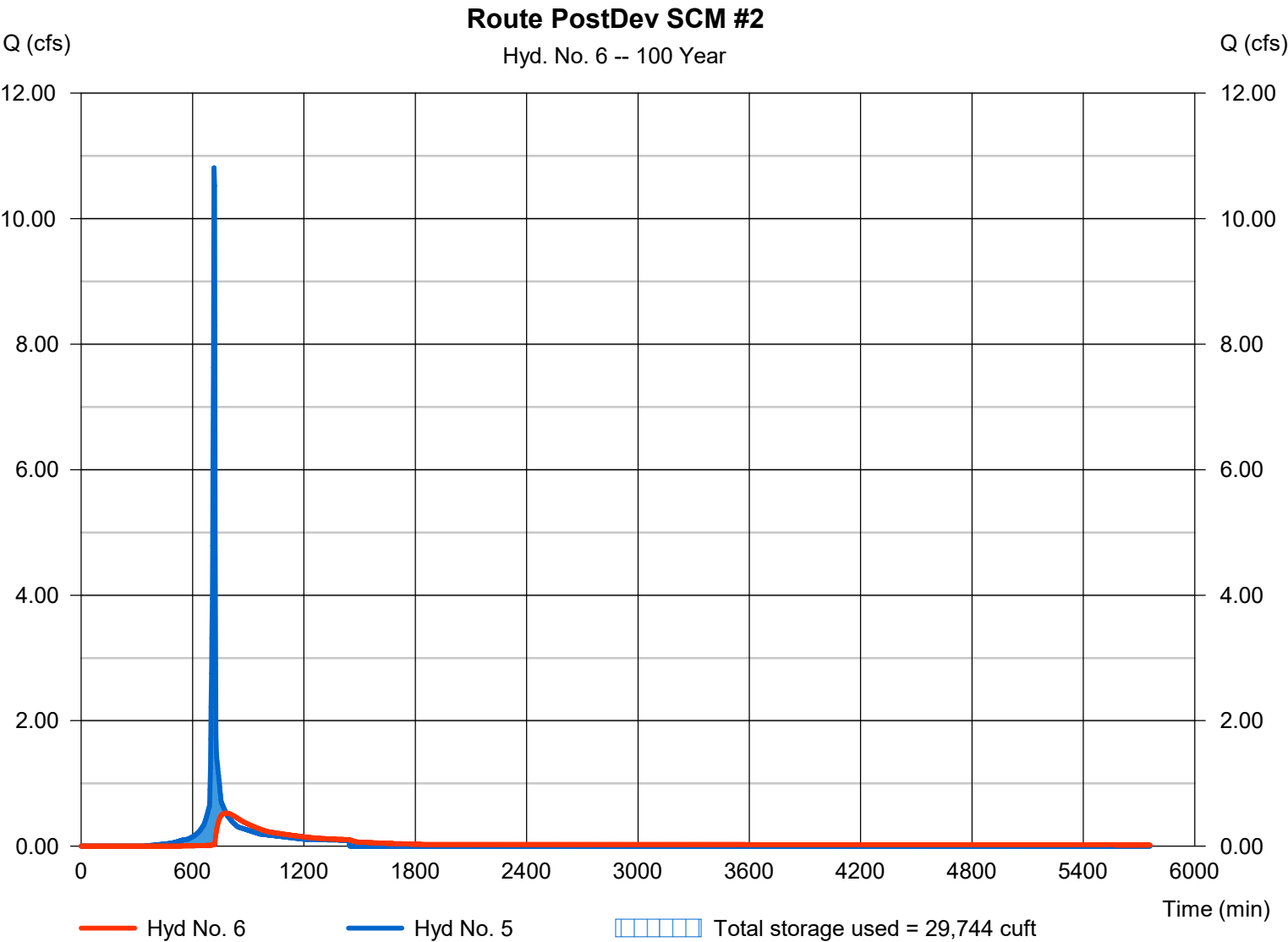
Thursday, 05 / 29 / 2025

Hyd. No. 6

Route PostDev SCM #2

Hydrograph type	= Reservoir	Peak discharge	= 0.528 cfs
Storm frequency	= 100 yrs	Time to peak	= 780 min
Time interval	= 2 min	Hyd. volume	= 17,397 cuft
Inflow hyd. No.	= 5 - POST POD 2A #2 (to SCM #2)	Max. Elevation	= 363.03 ft
Reservoir name	= SCM #2	Max. Storage	= 29,744 cuft

Storage Indication method used. Wet pond routing start elevation = 361.50 ft.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

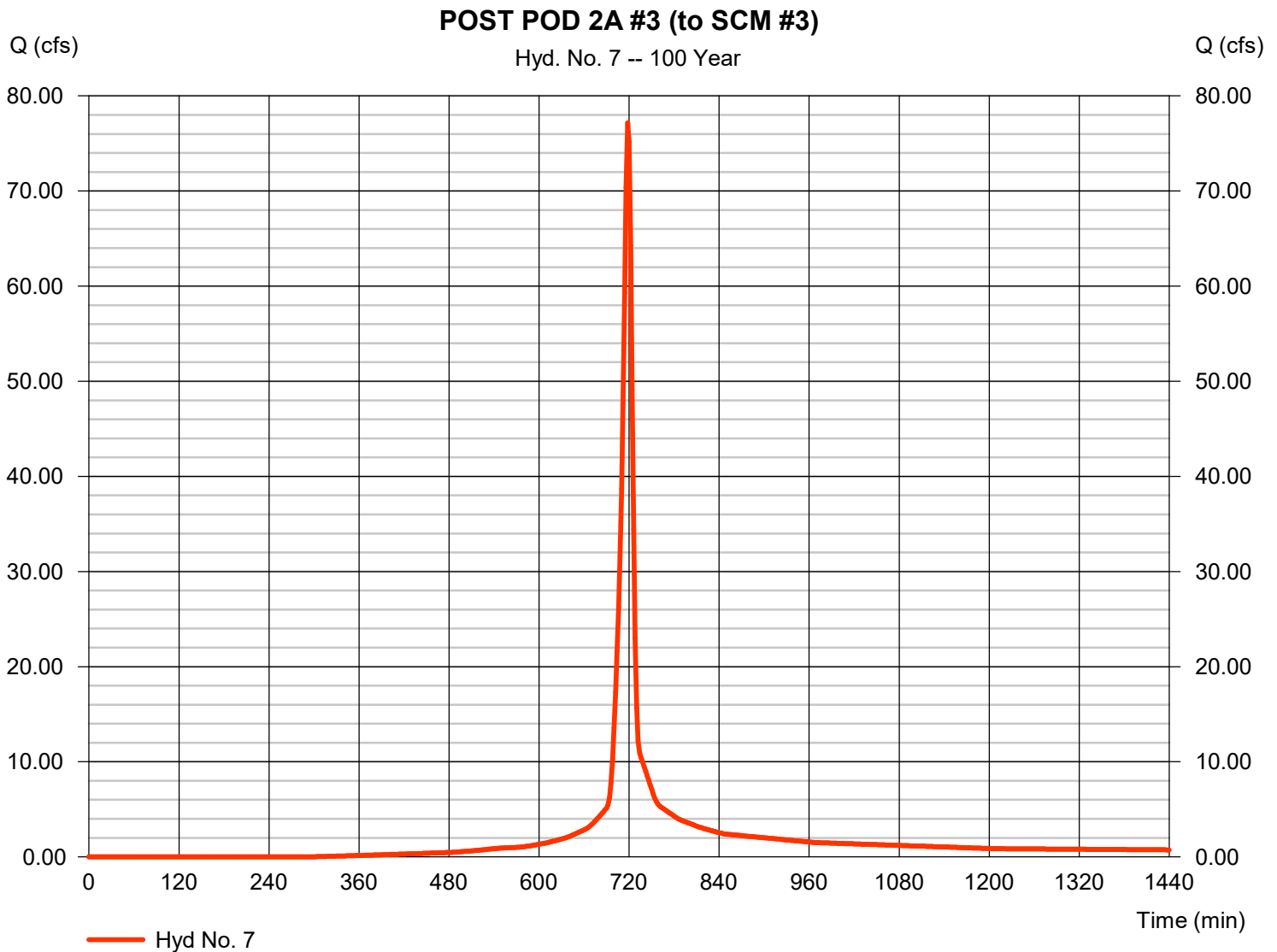
Thursday, 05 / 29 / 2025

Hyd. No. 7

POST POD 2A #3 (to SCM #3)

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 9.390 ac
 Basin Slope = 2.6 %
 Tc method = User
 Total precip. = 7.46 in
 Storm duration = 24 hrs

Peak discharge = 77.17 cfs
 Time to peak = 718 min
 Hyd. volume = 181,924 cuft
 Curve number = 81.9
 Hydraulic length = 1120 ft
 Time of conc. (Tc) = 7.30 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

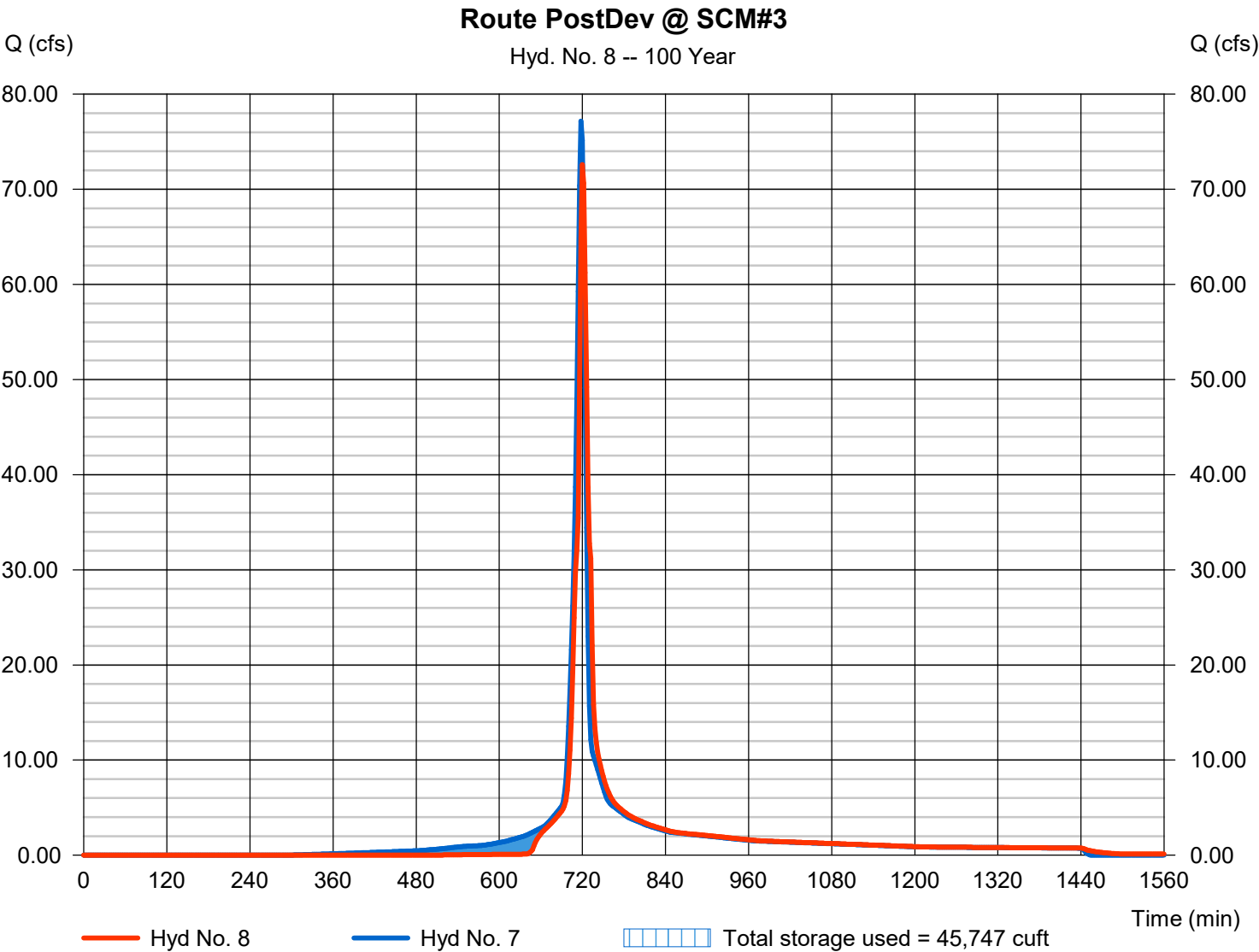
Thursday, 05 / 29 / 2025

Hyd. No. 8

Route PostDev @ SCM#3

Hydrograph type	= Reservoir	Peak discharge	= 72.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 178,838 cuft
Inflow hyd. No.	= 7 - POST POD 2A #3 (to SCM#3)	Max. Elevation	= 364.50 ft
Reservoir name	= SCM #3	Max. Storage	= 45,747 cuft

Storage Indication method used. Wet pond routing start elevation = 361.00 ft.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

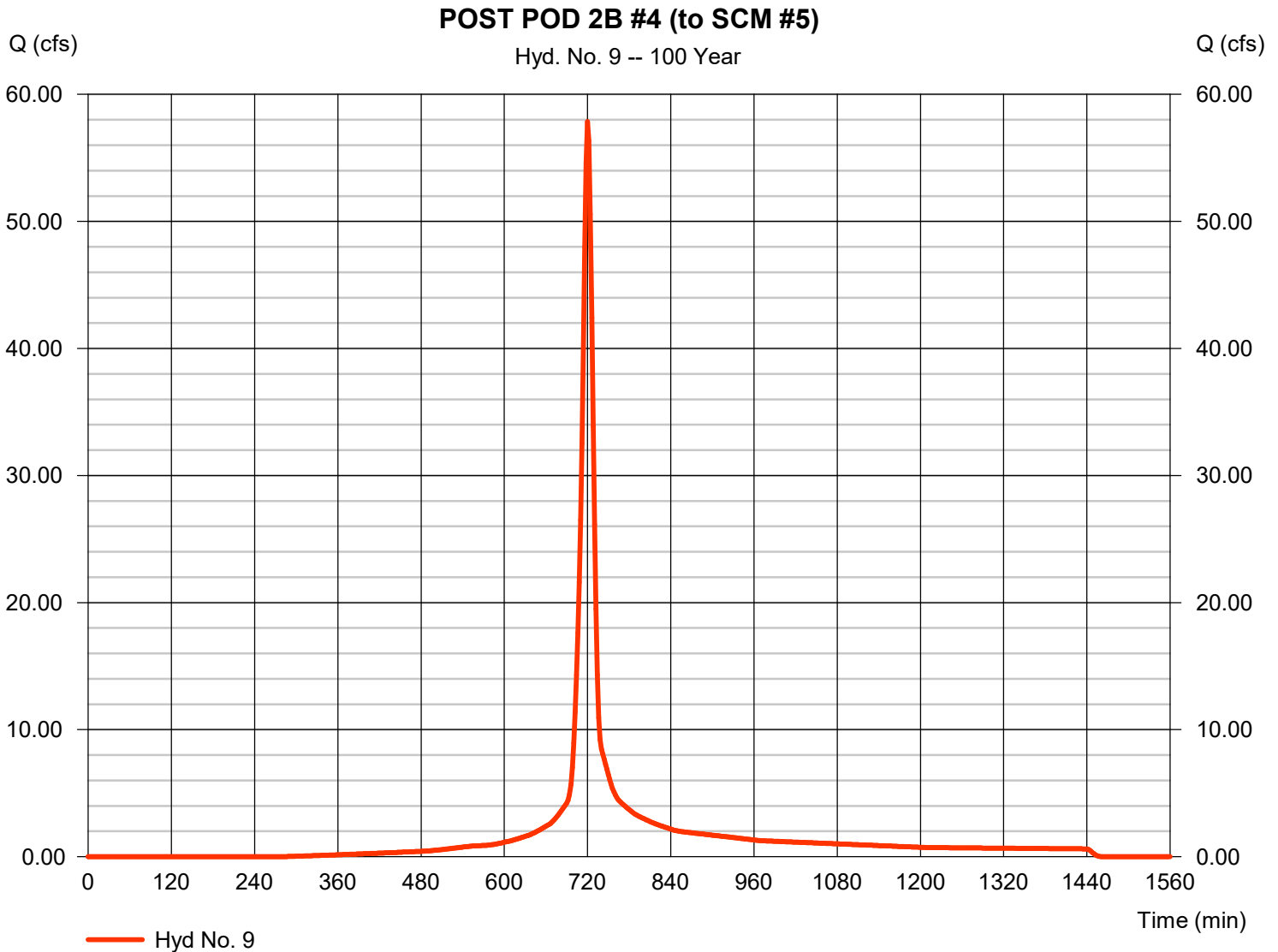
Thursday, 05 / 29 / 2025

Hyd. No. 9

POST POD 2B #4 (to SCM #5)

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 7.540 ac
 Basin Slope = 3.2 %
 Tc method = User
 Total precip. = 7.46 in
 Storm duration = 24 hrs

Peak discharge = 57.86 cfs
 Time to peak = 720 min
 Hyd. volume = 154,203 cuft
 Curve number = 83
 Hydraulic length = 1270 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

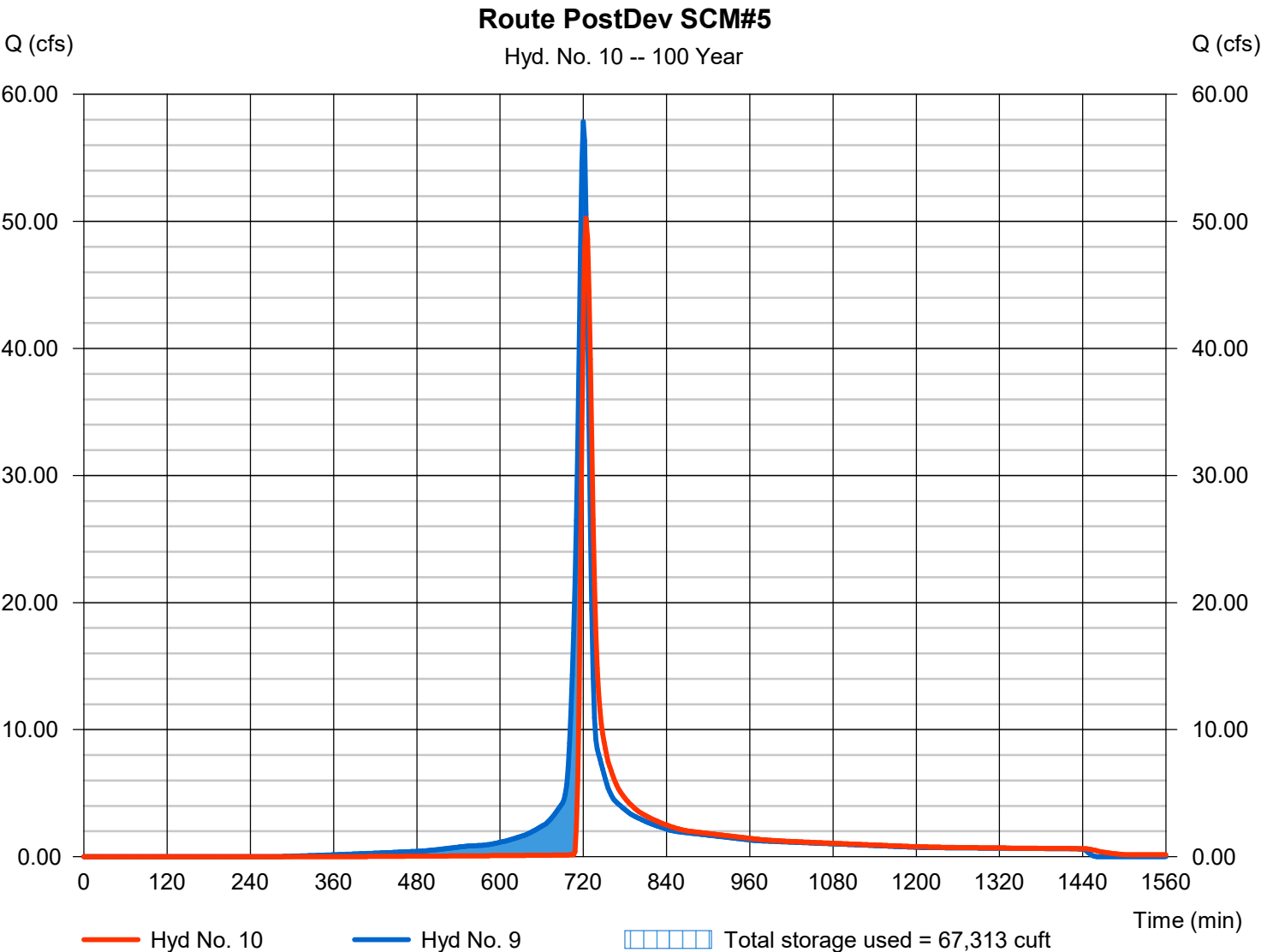
Thursday, 05 / 29 / 2025

Hyd. No. 10

Route PostDev SCM#5

Hydrograph type	= Reservoir	Peak discharge	= 50.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 152,491 cuft
Inflow hyd. No.	= 9 - POST POD 2B #4 (to SCM#5)	Max. Elevation	= 351.32 ft
Reservoir name	= SCM #5	Max. Storage	= 67,313 cuft

Storage Indication method used. Wet pond routing start elevation = 347.50 ft.

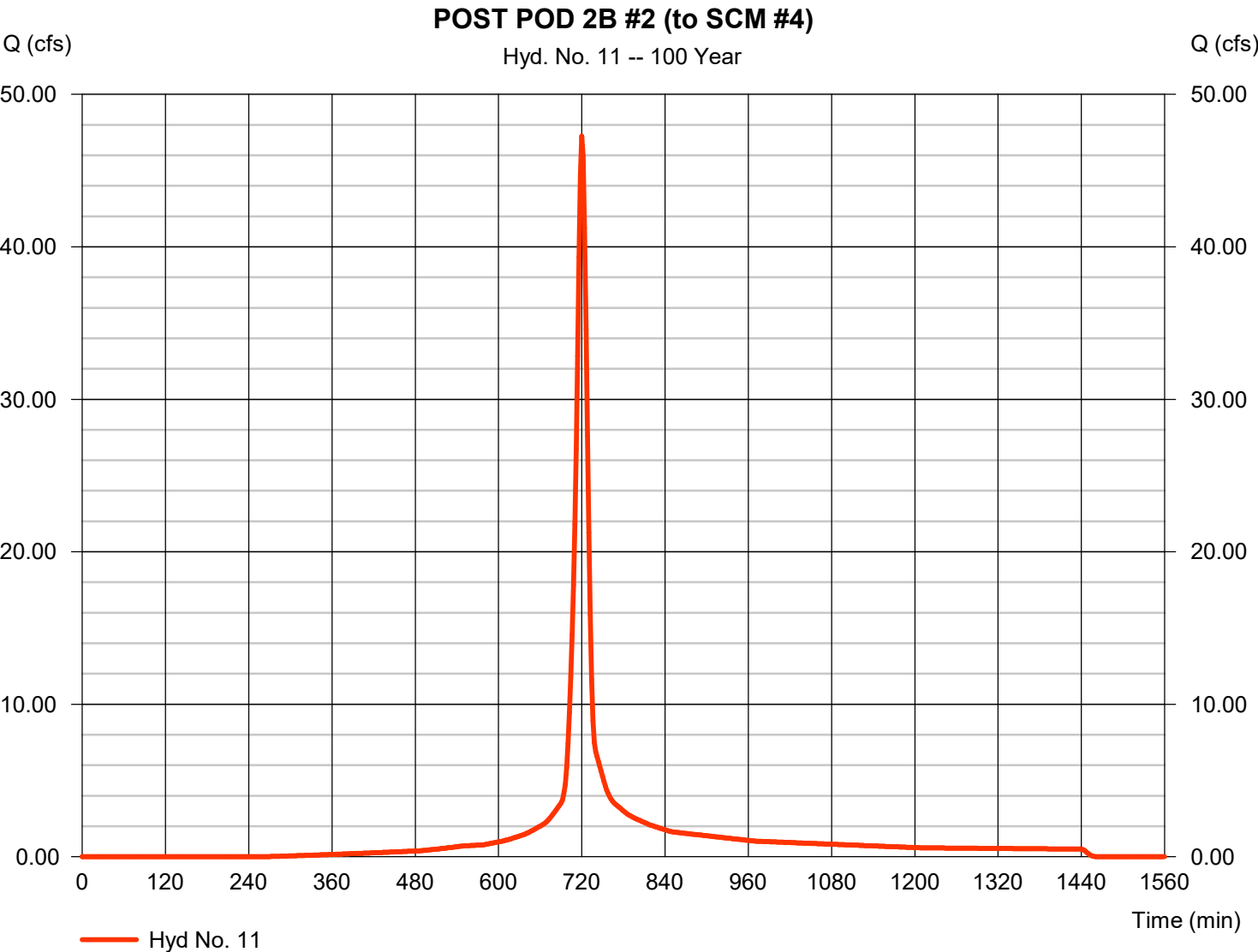


Hydrograph Report

Hyd. No. 11

POST POD 2B #2 (to SCM #4)

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.26 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	126,541 cuft
Drainage area	=	6.060 ac	Curve number	=	84
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



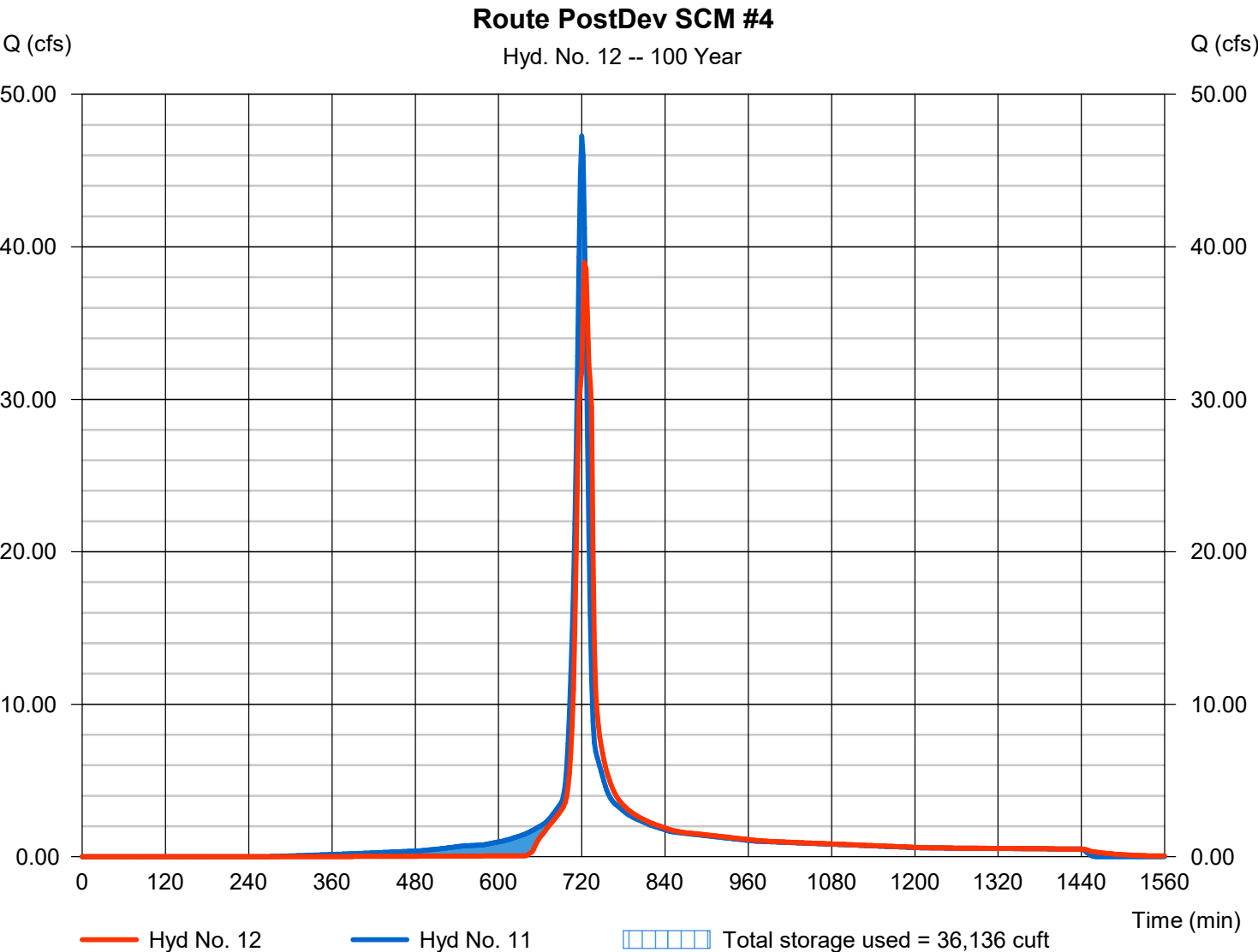
Hydrograph Report

Hyd. No. 12

Route PostDev SCM #4

Hydrograph type	= Reservoir	Peak discharge	= 38.98 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 126,121 cuft
Inflow hyd. No.	= 11 - POST POD 2B #2 (to SCM #4)	Wet Pond Elevation	= 360.18 ft
Reservoir name	= SCM #4	Max. Storage	= 36,136 cuft

Storage Indication method used. Wet pond routing start elevation = 357.50 ft.



Hydrograph Report

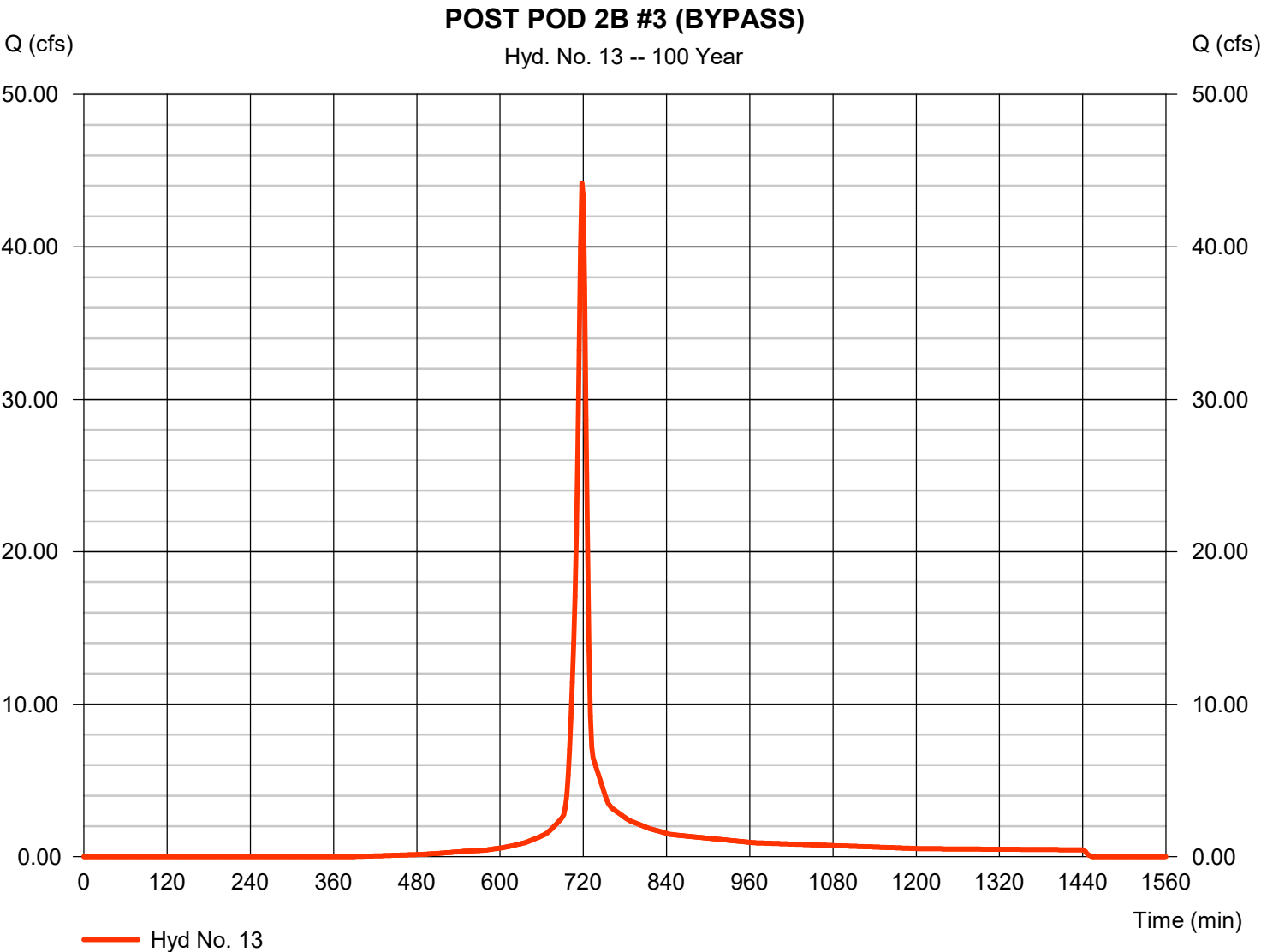
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 13

POST POD 2B #3 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	44.18 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	102,108 cuft
Drainage area	=	6.010 ac	Curve number	=	76.1
Basin Slope	=	1.3 %	Hydraulic length	=	4170 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

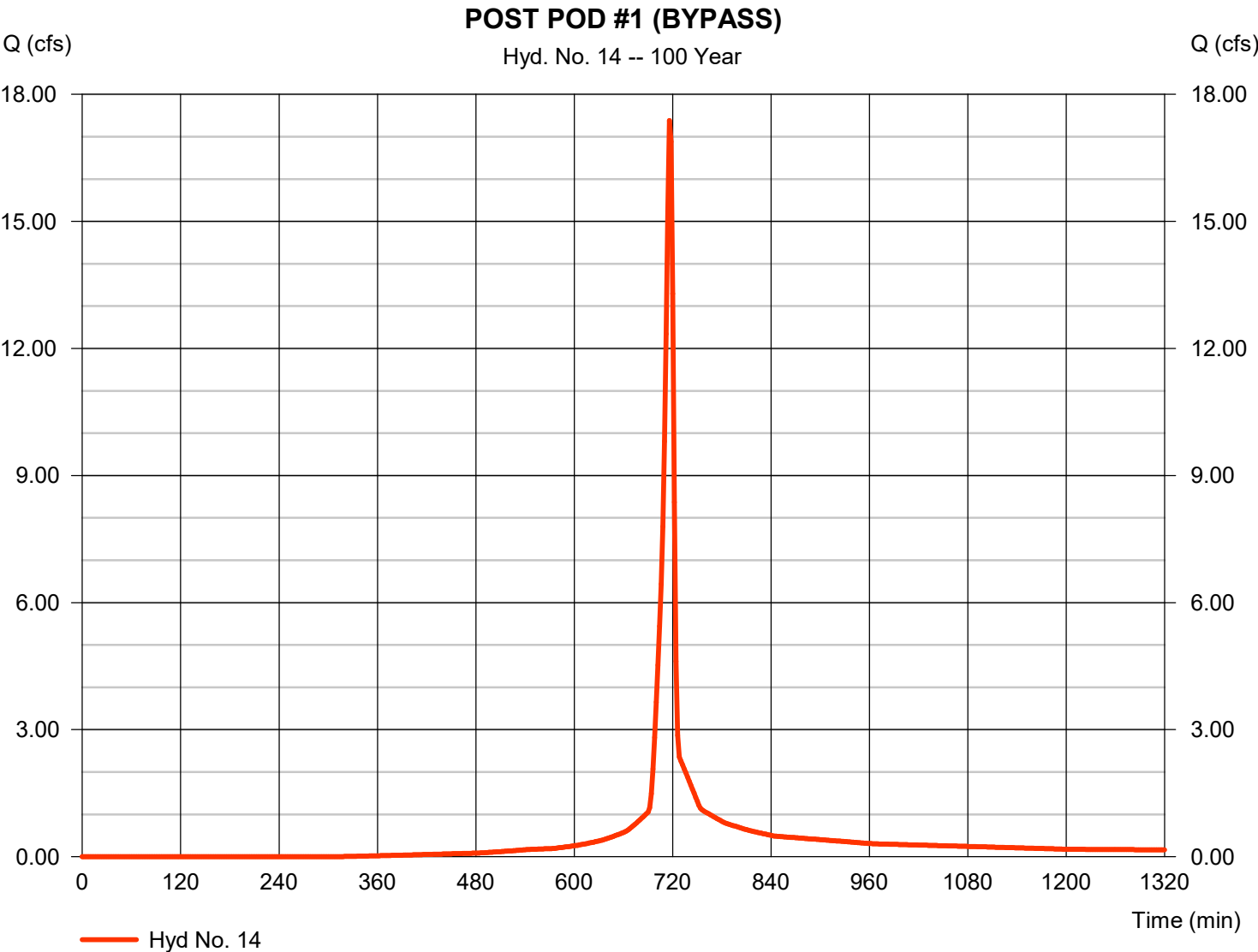


Hydrograph Report

Hyd. No. 14

POST POD #1 (BYPASS)

Hydrograph type	= SCS Runoff	Peak discharge	= 17.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 36,280 cuft
Drainage area	= 2.050 ac	Curve number	= 80.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

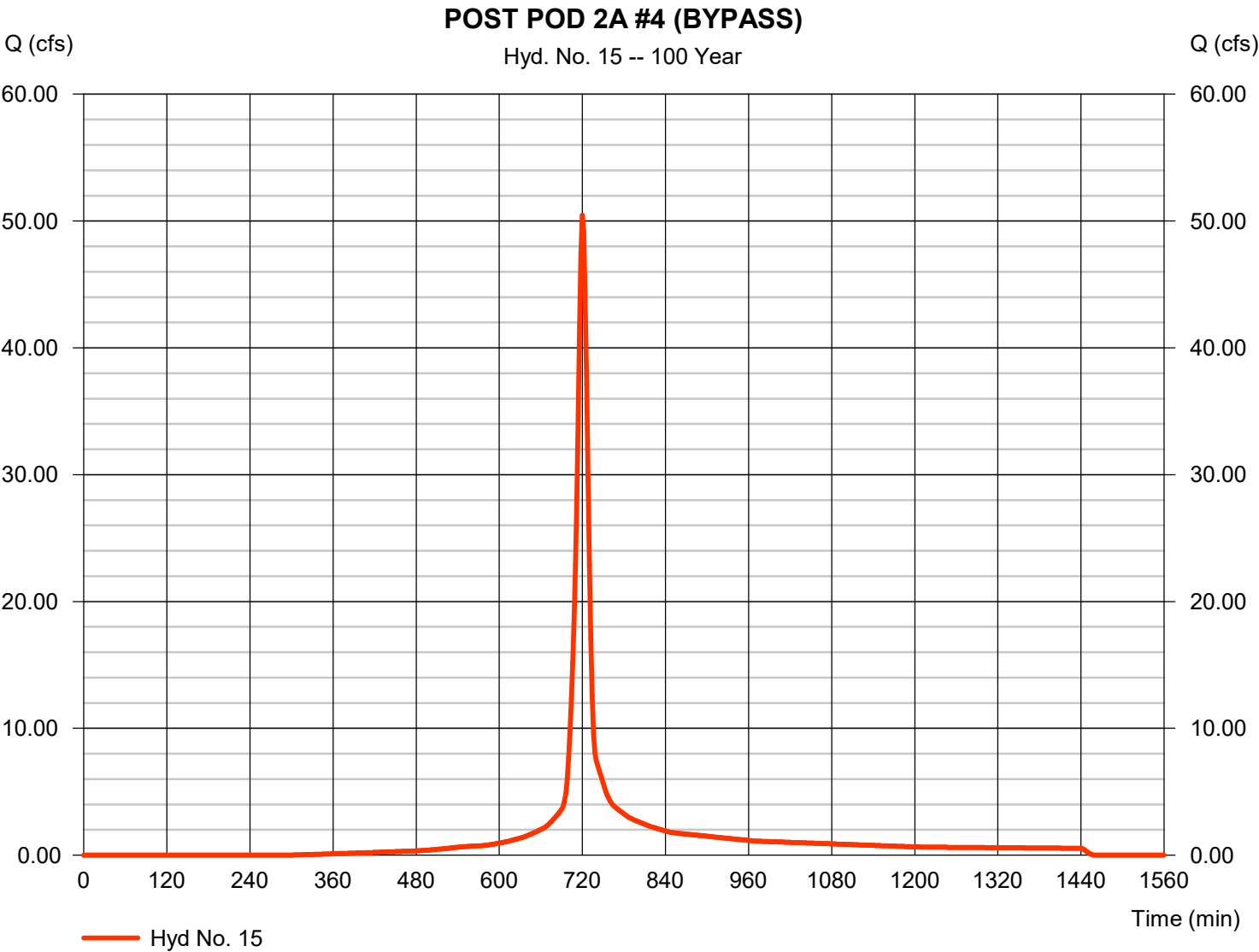
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 15

POST POD 2A #4 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	50.47 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	133,951 cuft
Drainage area	=	6.690 ac	Curve number	=	82
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.50 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

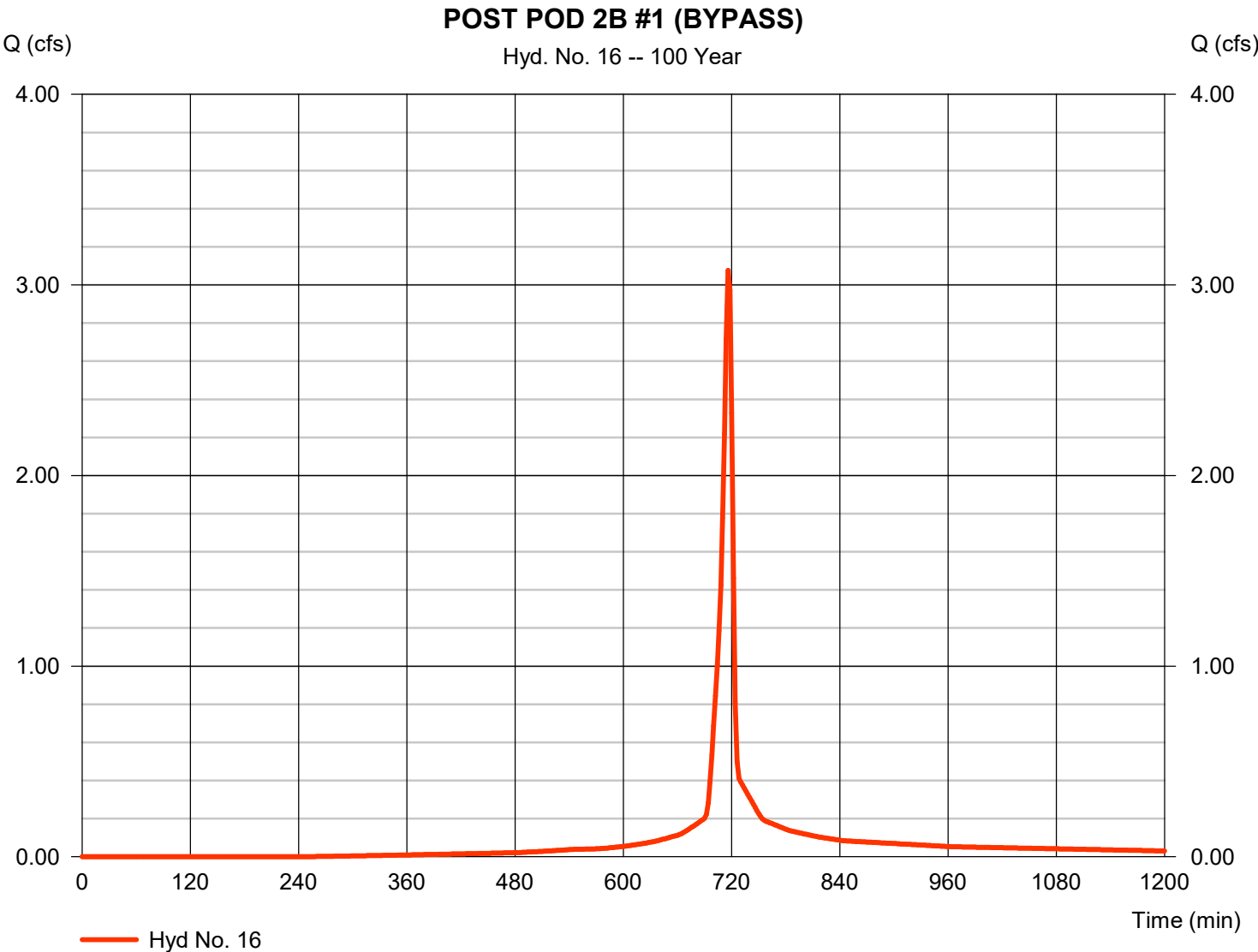


Hydrograph Report

Hyd. No. 16

POST POD 2B #1 (BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.077 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,561 cuft
Drainage area	=	0.340 ac	Curve number	=	84.8
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

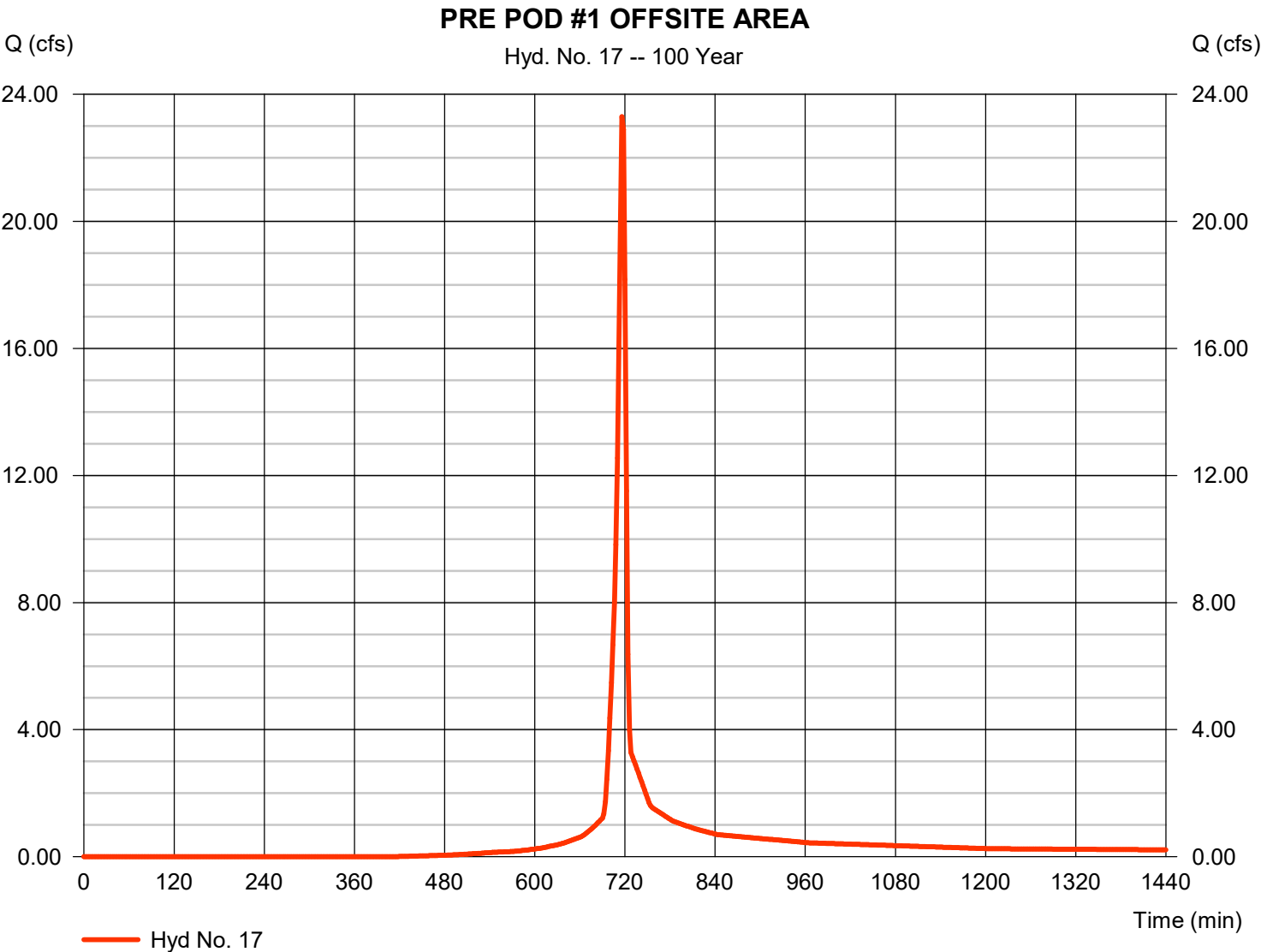
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 17

PRE POD #1 OFFSITE AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.29 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	47,506 cuft
Drainage area	=	3.140 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

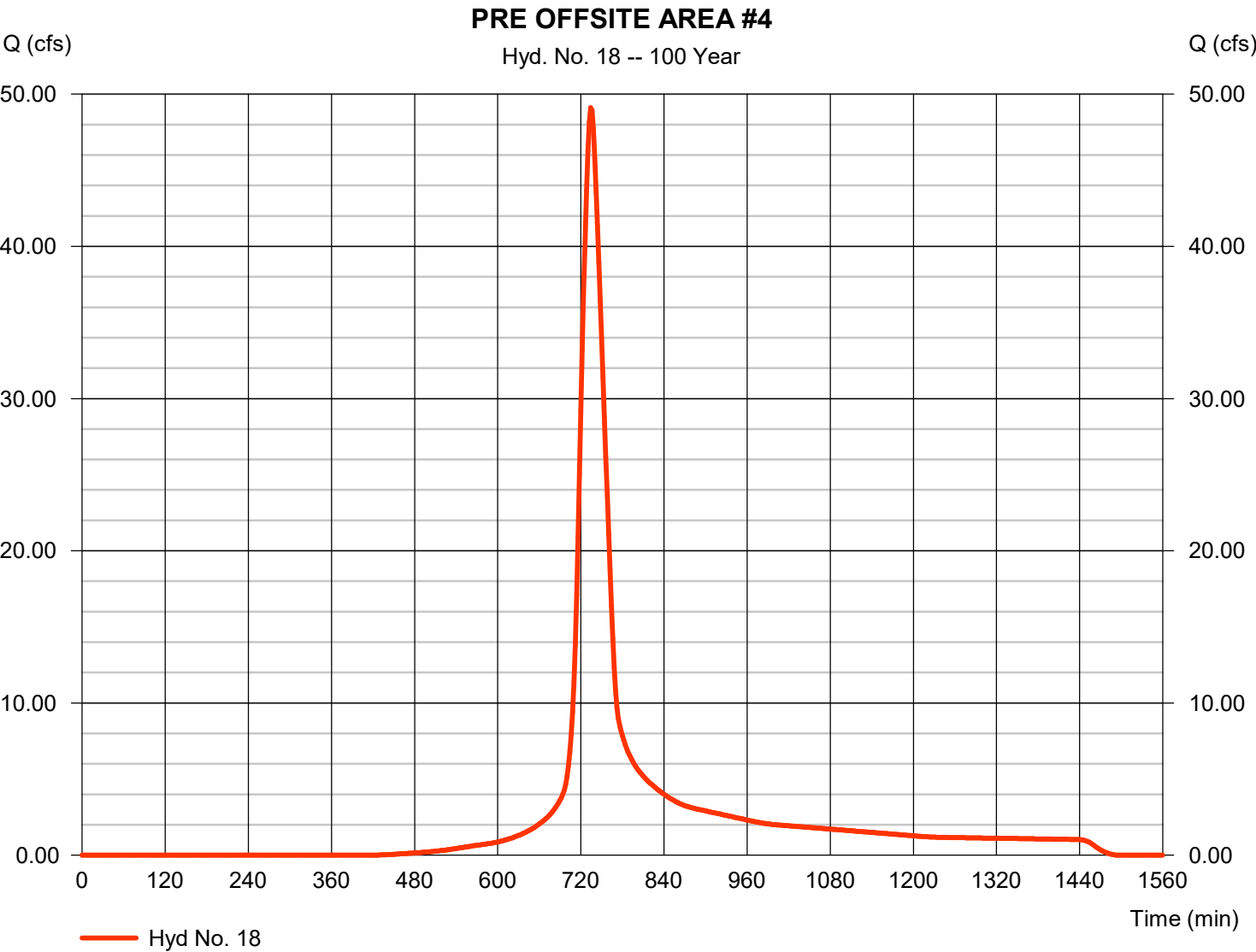


Hydrograph Report

Hyd. No. 18

PRE OFFSITE AREA #4

Hydrograph type	= SCS Runoff	Peak discharge	= 49.11 cfs
Storm frequency	= 100 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 222,406 cuft
Drainage area	= 13.940 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.70 min
Total precip.	= 7.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

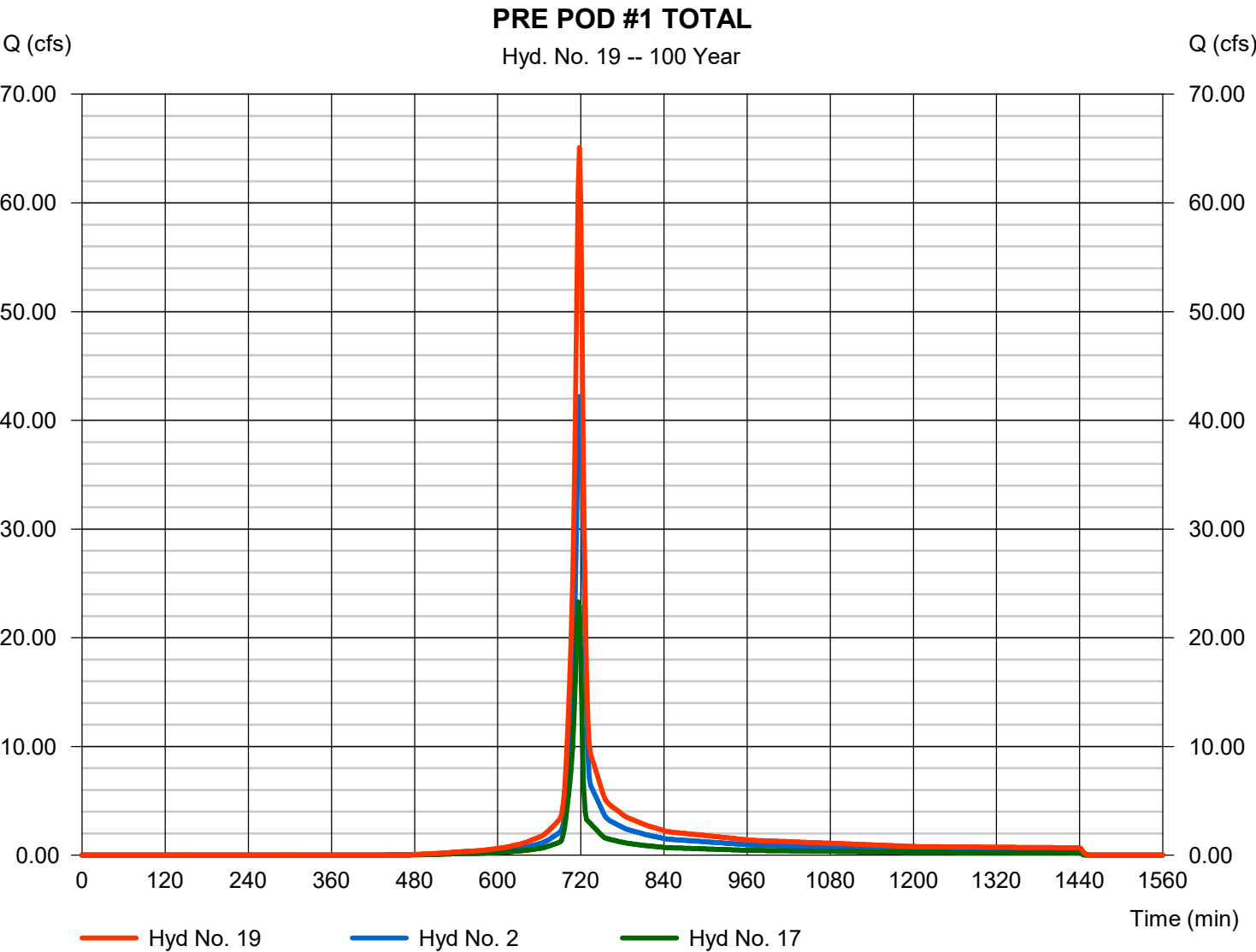
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 19

PRE POD #1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 65.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 144,124 cuft
Inflow hyds.	= 2, 17	Contrib. drain. area	= 9.680 ac



Hydrograph Report

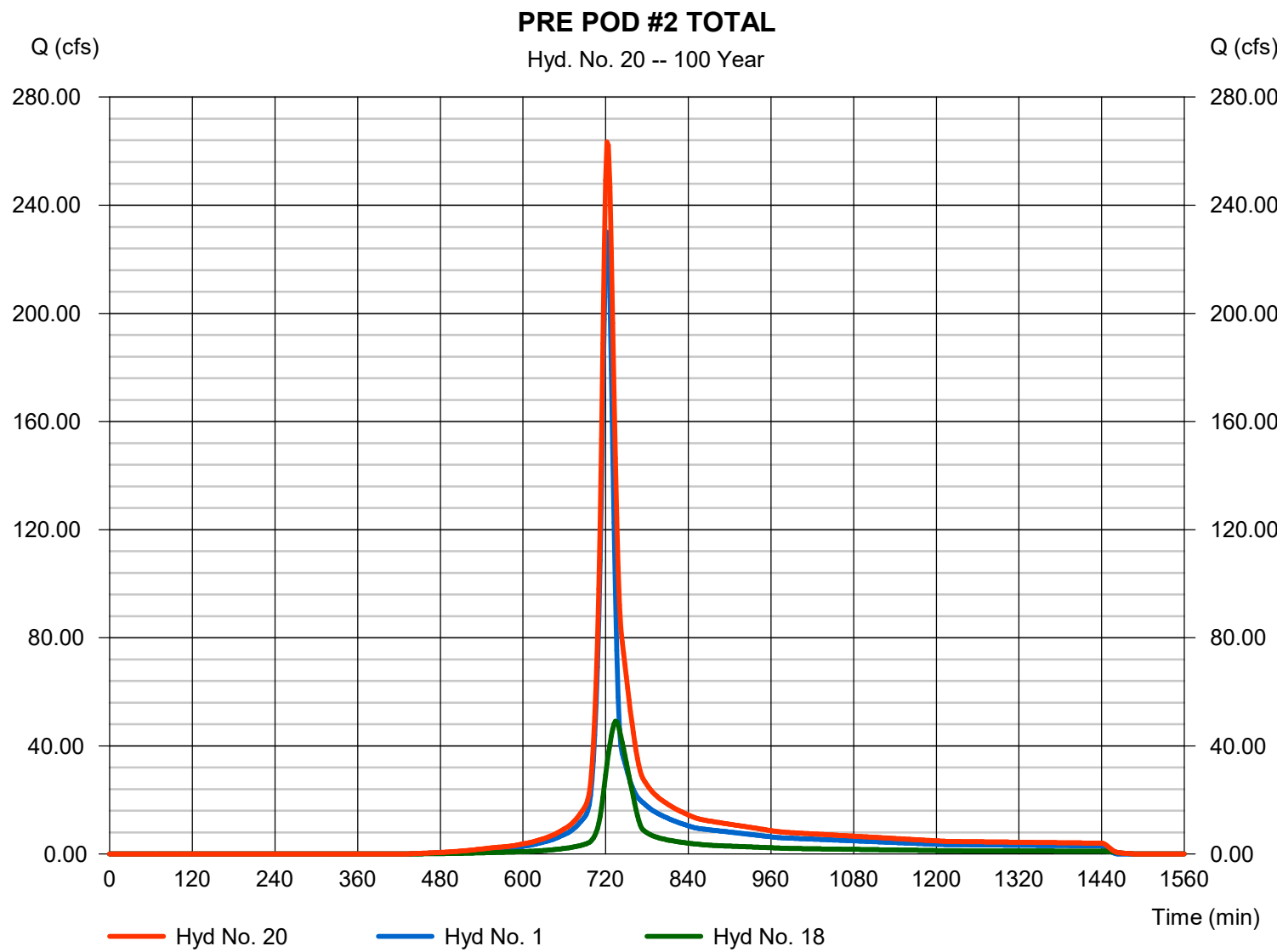
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Thursday, 05 / 29 / 2025

Hyd. No. 20

PRE POD #2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 263.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 868,083 cuft
Inflow hyds.	= 1, 18	Contrib. drain. area	= 55.920 ac



Hydrograph Report

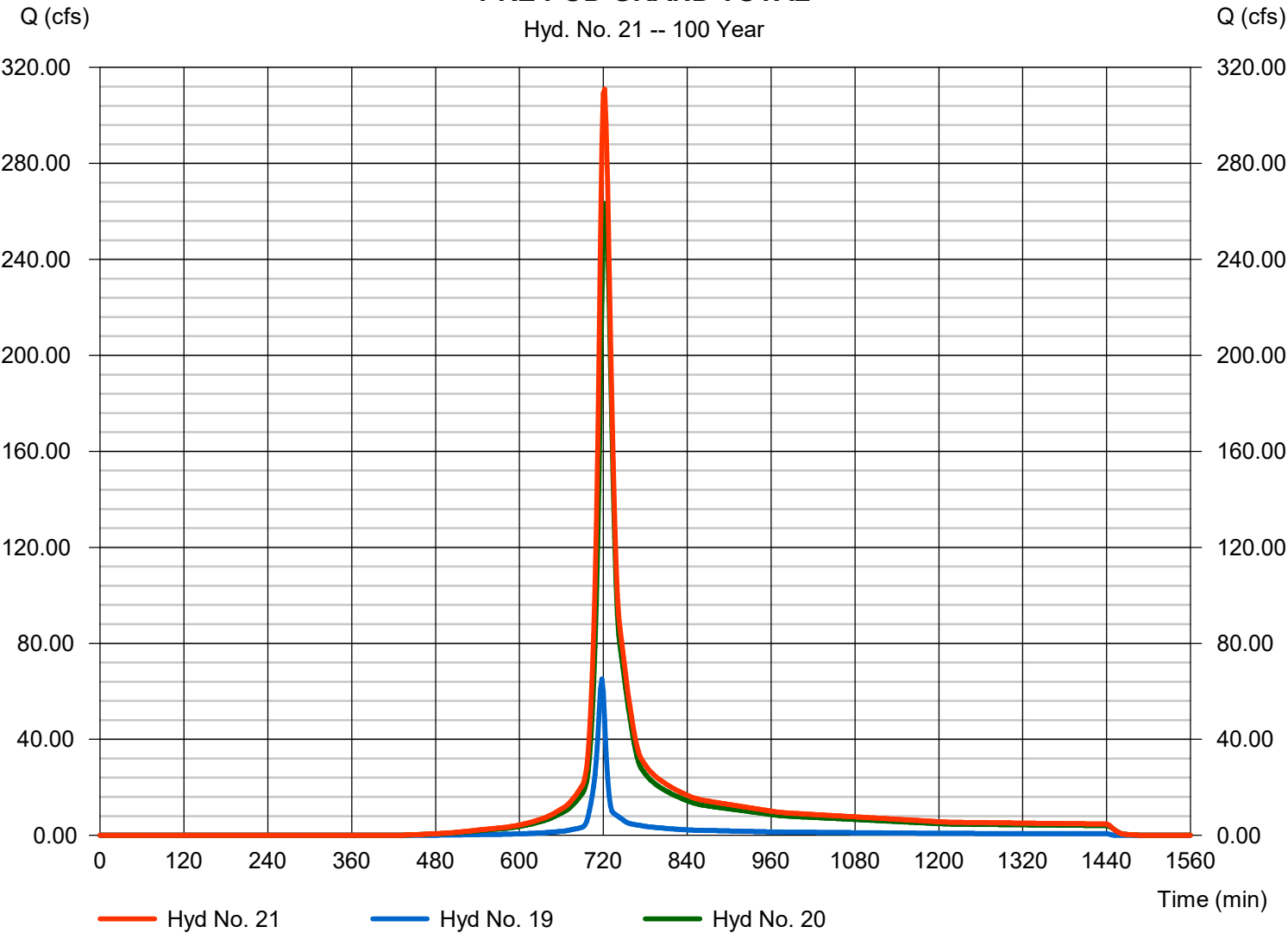
Hyd. No. 21

PRE POD GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 310.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,012,207 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.000 ac

PRE POD GRAND TOTAL

Hyd. No. 21 -- 100 Year

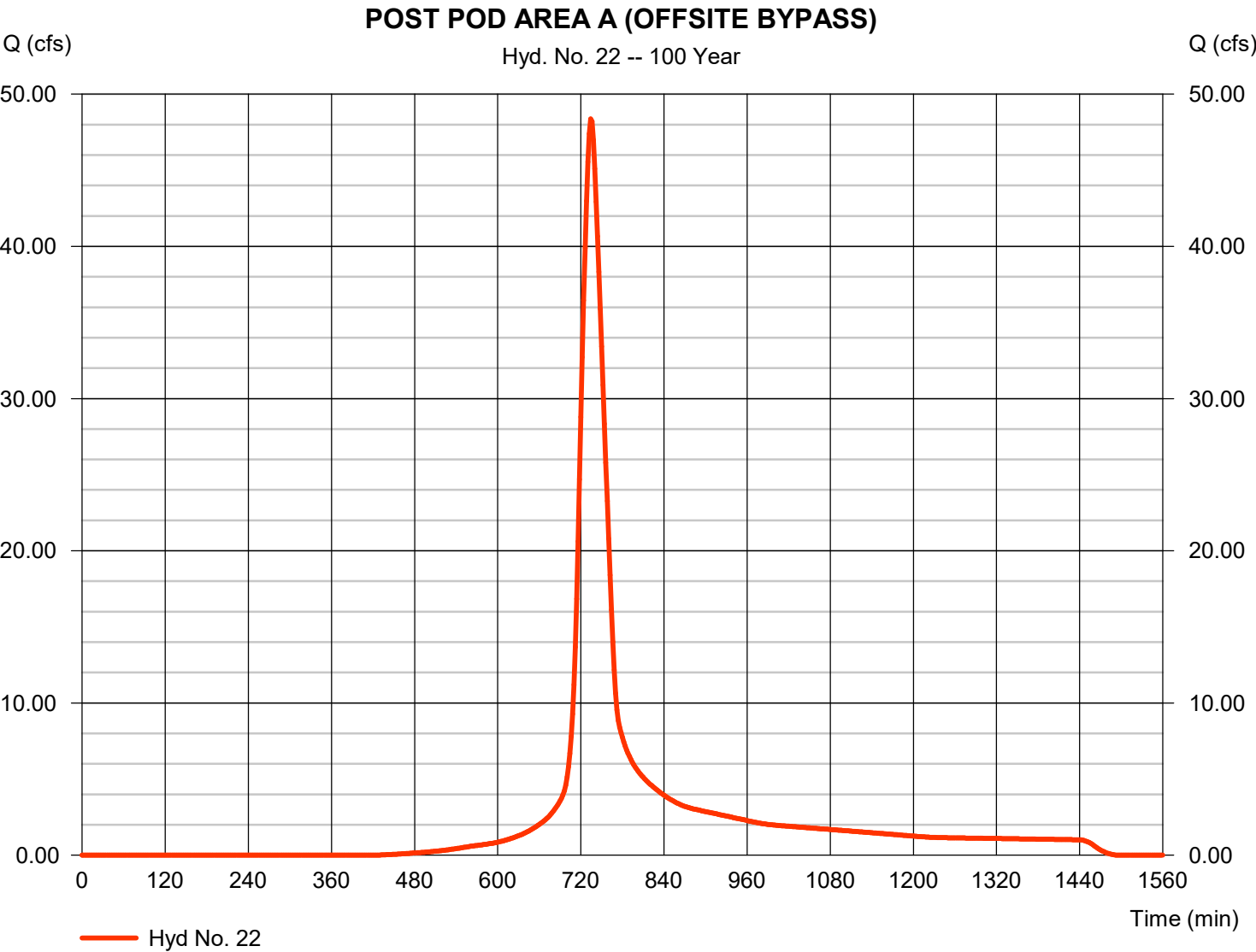


Hydrograph Report

Hyd. No. 22

POST POD AREA A (OFFSITE BYPASS)

Hydrograph type	=	SCS Runoff	Peak discharge	=	48.37 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	219,056 cuft
Drainage area	=	13.730 ac	Curve number	=	74
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.70 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

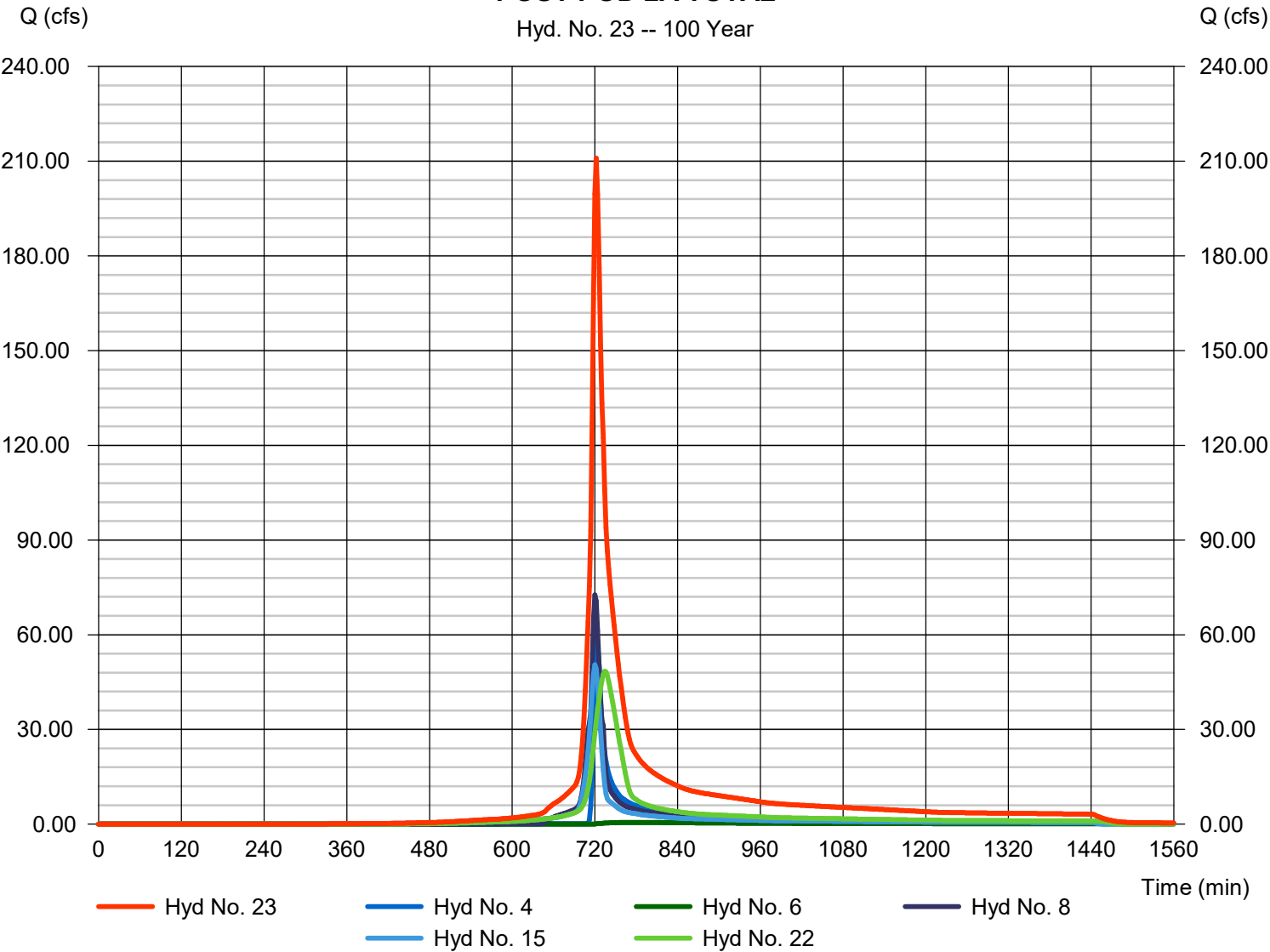
Hyd. No. 23

POST POD 2A TOTAL

Hydrograph type	= Combine	Peak discharge	= 210.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 718,626 cuft
Inflow hyds.	= 4, 6, 8, 15, 22	Contrib. drain. area	= 20.420 ac

POST POD 2A TOTAL

Hyd. No. 23 -- 100 Year



Hydrograph Report

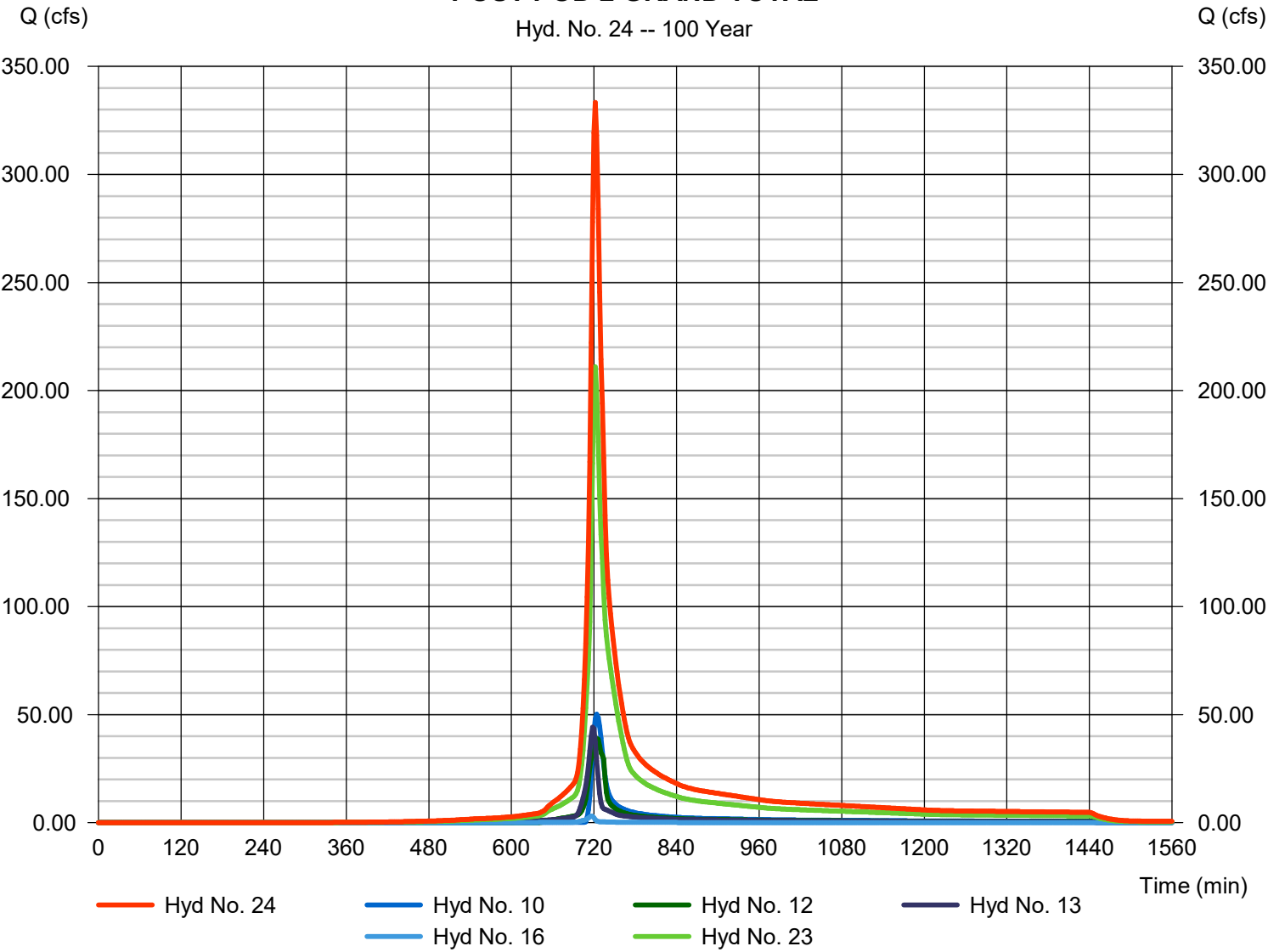
Hyd. No. 24

POST POD 2 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 333.32 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,105,907 cuft
Inflow hyds.	= 10, 12, 13, 16, 23	Contrib. drain. area	= 6.350 ac

POST POD 2 GRAND TOTAL

Hyd. No. 24 -- 100 Year

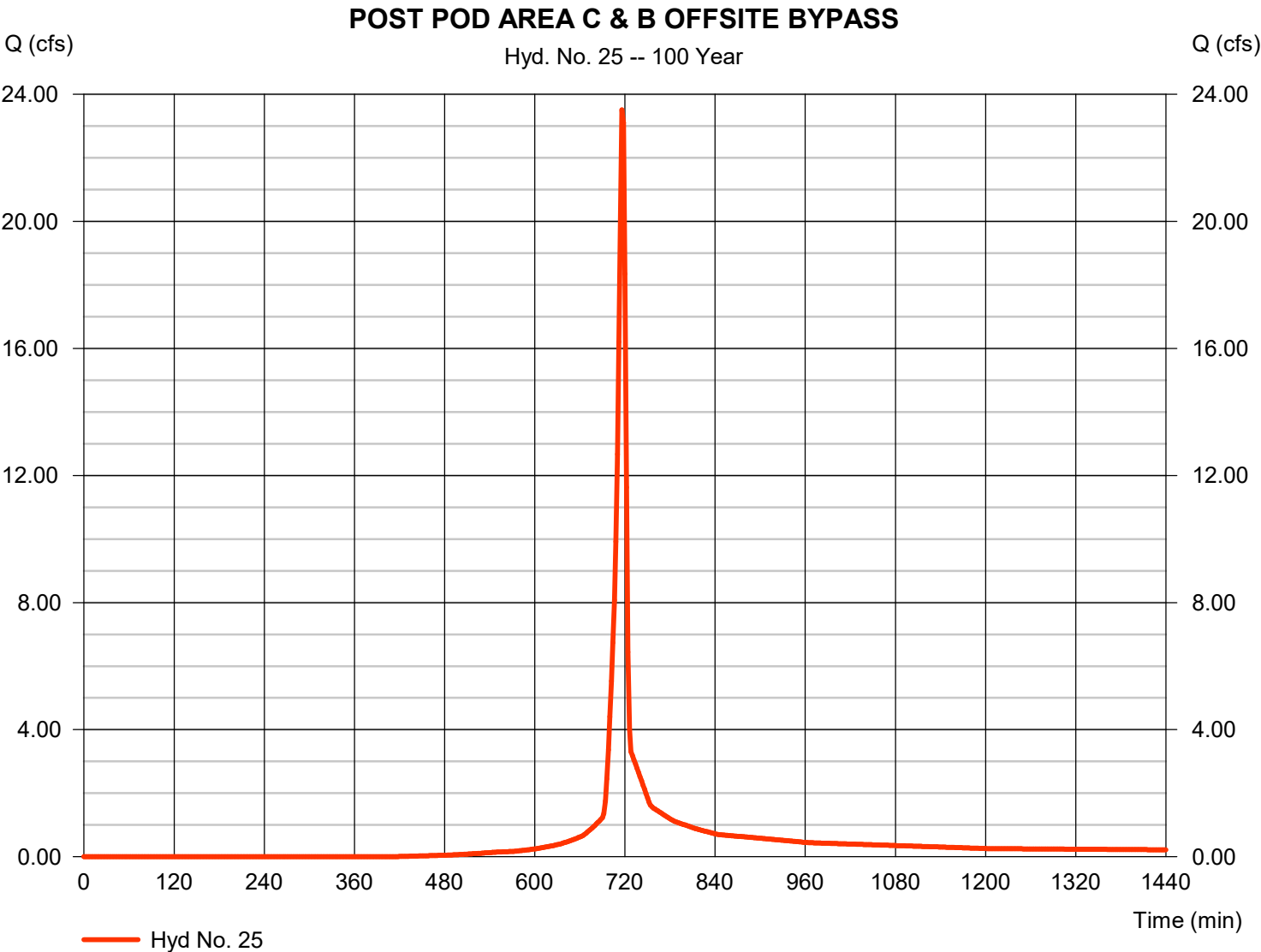


Hydrograph Report

Hyd. No. 25

POST POD AREA C & B OFFSITE BYPASS

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.52 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	47,960 cuft
Drainage area	=	3.170 ac	Curve number	=	74
Basin Slope	=	4.5 %	Hydraulic length	=	1030 ft
Tc method	=	KIRPICH	Time of conc. (Tc)	=	5.38 min
Total precip.	=	7.46 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

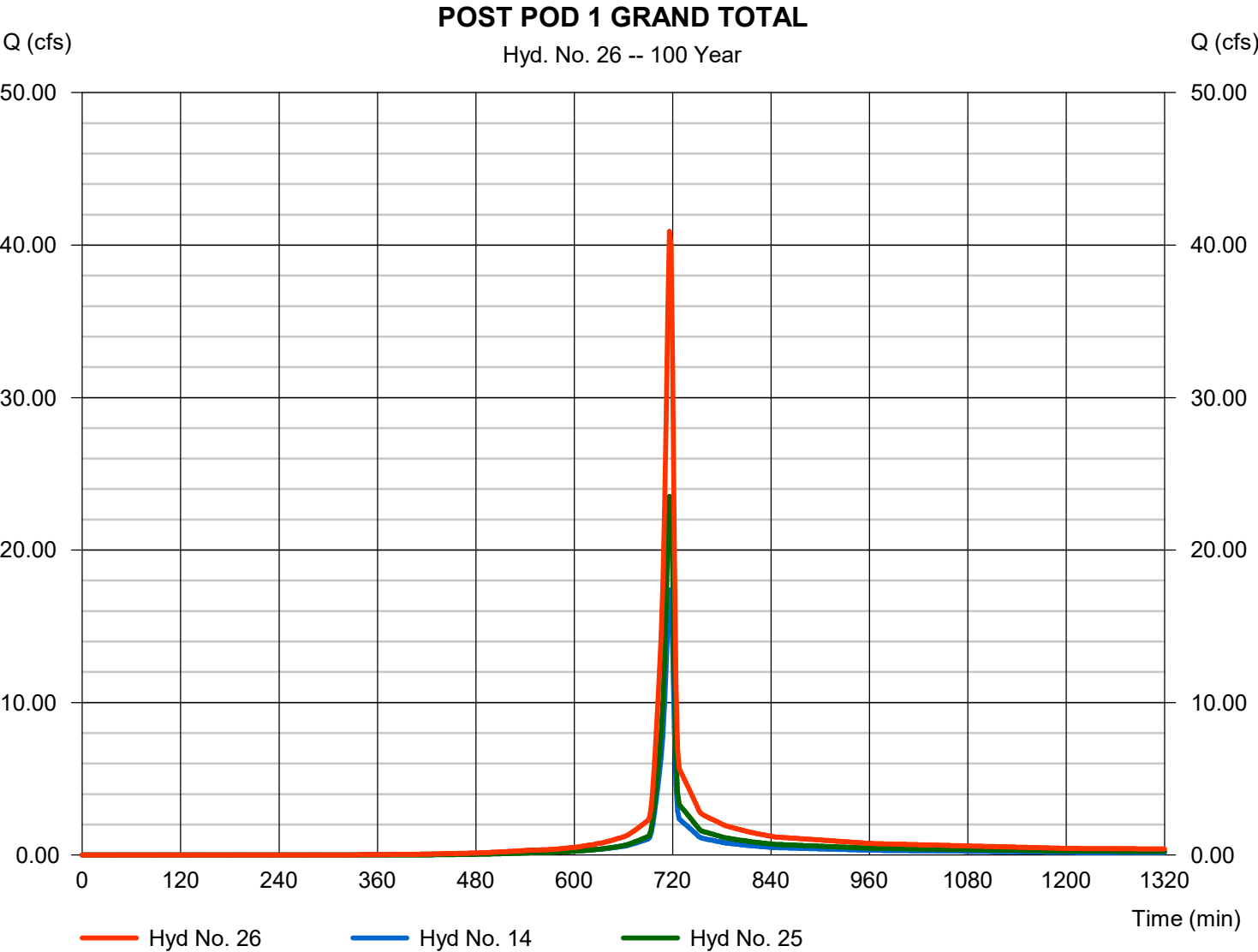


Hydrograph Report

Hyd. No. 26

POST POD 1 GRAND TOTAL

Hydrograph type	= Combine	Peak discharge	= 40.90 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 84,239 cuft
Inflow hyds.	= 14, 25	Contrib. drain. area	= 5.220 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.0305	12.5000	0.8674	-----
3	0.0000	0.0000	0.0000	-----
5	0.0000	0.0000	0.0000	-----
10	74.0861	12.5000	0.8066	-----
25	62.8559	11.0000	0.7384	-----
50	56.0596	9.9000	0.6909	-----
100	53.0414	9.3000	0.6596	-----

File name: 20241113 Moody IDF.IDF

Intensity = $B / (T_c + D)^E$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.76	4.64	3.89	3.37	2.98	2.67	2.42	2.22	2.05	1.91	1.79	1.68
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.36	6.01	5.11	4.47	3.98	3.60	3.29	3.04	2.82	2.64	2.48	2.34
25	8.11	6.64	5.67	4.98	4.46	4.05	3.72	3.45	3.22	3.02	2.85	2.70
50	8.67	7.10	6.08	5.36	4.82	4.39	4.05	3.76	3.52	3.32	3.14	2.98
100	9.17	7.53	6.47	5.72	5.15	4.71	4.35	4.06	3.81	3.59	3.40	3.24

Tc = time in minutes. Values may exceed 60.

Precip. file name: F:\Kalas Assemblage\Raleigh-Wake County 24Hr Rain.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	3.00	3.45	0.00	4.33	5.02	5.96	6.80	7.46
SCS 6-Hr	2.05	2.46	0.00	3.04	3.55	0.00	0.00	5.32
Huff-1st	0.00	0.00	0.00	2.75	0.00	5.38	6.50	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	2.80	0.00	5.25	6.00	0.00

Watershed Model Schematic.....	1
Hydrograph Return Period Recap.....	2
1 - Year	
Summary Report.....	3
Hydrograph Reports.....	4
Hydrograph No. 1, SCS Runoff, PRE POD #2.....	4
Hydrograph No. 2, SCS Runoff, PRE POD #1.....	5
Hydrograph No. 3, SCS Runoff, POST POD 2A #1 (to SCM #1).....	6
Hydrograph No. 4, Reservoir, PostDev Thru SCM#1.....	7
Pond Report - SCM #1.....	8
Hydrograph No. 5, SCS Runoff, POST POD 2A #2 (to SCM #2).....	9
Hydrograph No. 6, Reservoir, Route PostDev SCM #2.....	10
Pond Report - SCM #2.....	11
Hydrograph No. 7, SCS Runoff, POST POD 2A #3 (to SCM #3).....	12
Hydrograph No. 8, Reservoir, Route PostDev @ SCM#3.....	13
Pond Report - SCM #3.....	14
Hydrograph No. 9, SCS Runoff, POST POD 2B #4 (to SCM #5).....	15
Hydrograph No. 10, Reservoir, Route PostDev SCM#5.....	16
Pond Report - SCM #5.....	17
Hydrograph No. 11, SCS Runoff, POST POD 2B #2 (to SCM #4).....	18
Hydrograph No. 12, Reservoir, Route PostDev SCM #4.....	19
Pond Report - SCM #4.....	20
Hydrograph No. 13, SCS Runoff, POST POD 2B #3 (BYPASS).....	21
Hydrograph No. 14, SCS Runoff, POST POD #1 (BYPASS).....	22
Hydrograph No. 15, SCS Runoff, POST POD 2A #4 (BYPASS).....	23
Hydrograph No. 16, SCS Runoff, POST POD 2B #1 (BYPASS).....	24
Hydrograph No. 17, SCS Runoff, PRE POD #1 OFFSITE AREA.....	25
Hydrograph No. 18, SCS Runoff, PRE OFFSITE AREA #4.....	26
Hydrograph No. 19, Combine, PRE POD #1 TOTAL.....	27
Hydrograph No. 20, Combine, PRE POD #2 TOTAL.....	28
Hydrograph No. 21, Combine, PRE POD GRAND TOTAL.....	29
Hydrograph No. 22, SCS Runoff, POST POD AREA A (OFFSITE BYPASS).....	30
Hydrograph No. 23, Combine, POST POD 2A TOTAL.....	31
Hydrograph No. 24, Combine, POST POD 2 GRAND TOTAL.....	32
Hydrograph No. 25, SCS Runoff, POST POD AREA C & B OFFSITE BYPASS.....	33
Hydrograph No. 26, Combine, POST POD 1 GRAND TOTAL.....	34
10 - Year	
Summary Report.....	35
Hydrograph Reports.....	36
Hydrograph No. 1, SCS Runoff, PRE POD #2.....	36
Hydrograph No. 2, SCS Runoff, PRE POD #1.....	37
Hydrograph No. 3, SCS Runoff, POST POD 2A #1 (to SCM #1).....	38
Hydrograph No. 4, Reservoir, PostDev Thru SCM#1.....	39
Hydrograph No. 5, SCS Runoff, POST POD 2A #2 (to SCM #2).....	40
Hydrograph No. 6, Reservoir, Route PostDev SCM #2.....	41

Hydrograph No. 7, SCS Runoff, POST POD 2A #3 (to SCM #3).....	42
Hydrograph No. 8, Reservoir, Route PostDev @ SCM#3.....	43
Hydrograph No. 9, SCS Runoff, POST POD 2B #4 (to SCM #5).....	44
Hydrograph No. 10, Reservoir, Route PostDev SCM#5.....	45
Hydrograph No. 11, SCS Runoff, POST POD 2B #2 (to SCM #4).....	46
Hydrograph No. 12, Reservoir, Route PostDev SCM #4.....	47
Hydrograph No. 13, SCS Runoff, POST POD 2B #3 (BYPASS).....	48
Hydrograph No. 14, SCS Runoff, POST POD #1 (BYPASS).....	49
Hydrograph No. 15, SCS Runoff, POST POD 2A #4 (BYPASS).....	50
Hydrograph No. 16, SCS Runoff, POST POD 2B #1 (BYPASS).....	51
Hydrograph No. 17, SCS Runoff, PRE POD #1 OFFSITE AREA.....	52
Hydrograph No. 18, SCS Runoff, PRE OFFSITE AREA #4.....	53
Hydrograph No. 19, Combine, PRE POD #1 TOTAL.....	54
Hydrograph No. 20, Combine, PRE POD #2 TOTAL.....	55
Hydrograph No. 21, Combine, PRE POD GRAND TOTAL.....	56
Hydrograph No. 22, SCS Runoff, POST POD AREA A (OFFSITE BYPASS).....	57
Hydrograph No. 23, Combine, POST POD 2A TOTAL.....	58
Hydrograph No. 24, Combine, POST POD 2 GRAND TOTAL.....	59
Hydrograph No. 25, SCS Runoff, POST POD AREA C & B OFFSITE BYPASS.....	60
Hydrograph No. 26, Combine, POST POD 1 GRAND TOTAL.....	61

100 - Year

Summary Report.....	62
----------------------------	-----------

Hydrograph Reports.....	63
--------------------------------	-----------

Hydrograph No. 1, SCS Runoff, PRE POD #2.....	63
Hydrograph No. 2, SCS Runoff, PRE POD #1.....	64
Hydrograph No. 3, SCS Runoff, POST POD 2A #1 (to SCM #1).....	65
Hydrograph No. 4, Reservoir, PostDev Thru SCM#1.....	66
Hydrograph No. 5, SCS Runoff, POST POD 2A #2 (to SCM #2).....	67
Hydrograph No. 6, Reservoir, Route PostDev SCM #2.....	68
Hydrograph No. 7, SCS Runoff, POST POD 2A #3 (to SCM #3).....	69
Hydrograph No. 8, Reservoir, Route PostDev @ SCM#3.....	70
Hydrograph No. 9, SCS Runoff, POST POD 2B #4 (to SCM #5).....	71
Hydrograph No. 10, Reservoir, Route PostDev SCM#5.....	72
Hydrograph No. 11, SCS Runoff, POST POD 2B #2 (to SCM #4).....	73
Hydrograph No. 12, Reservoir, Route PostDev SCM #4.....	74
Hydrograph No. 13, SCS Runoff, POST POD 2B #3 (BYPASS).....	75
Hydrograph No. 14, SCS Runoff, POST POD #1 (BYPASS).....	76
Hydrograph No. 15, SCS Runoff, POST POD 2A #4 (BYPASS).....	77
Hydrograph No. 16, SCS Runoff, POST POD 2B #1 (BYPASS).....	78
Hydrograph No. 17, SCS Runoff, PRE POD #1 OFFSITE AREA.....	79
Hydrograph No. 18, SCS Runoff, PRE OFFSITE AREA #4.....	80
Hydrograph No. 19, Combine, PRE POD #1 TOTAL.....	81
Hydrograph No. 20, Combine, PRE POD #2 TOTAL.....	82
Hydrograph No. 21, Combine, PRE POD GRAND TOTAL.....	83
Hydrograph No. 22, SCS Runoff, POST POD AREA A (OFFSITE BYPASS).....	84
Hydrograph No. 23, Combine, POST POD 2A TOTAL.....	85
Hydrograph No. 24, Combine, POST POD 2 GRAND TOTAL.....	86
Hydrograph No. 25, SCS Runoff, POST POD AREA C & B OFFSITE BYPASS.....	87
Hydrograph No. 26, Combine, POST POD 1 GRAND TOTAL.....	88

IDF Report.....	89
------------------------	-----------