ENGINEERING RESOURCE ASSOCIATES

Reserves of Saddle Creek

10846 S Book Road, Uninc Naperville IL

Stormwater Report

ERA Project #W24300.00

Prepared for:

Overstreet Builders Inc.

Final Stormwater Submittal — September 18, 2025

Overstreet Builders Inc.
10846 S Book Road, Uninc. Naperville, Illinois

September 18, 2025

City of Naperville
Community Development Department
400 S Eagle Street
Naperville, Illinois 60540

Subject: Civil Site Design – 10846 S Book Road, Uninc. Naperville, IL – Reserves of Saddle Creek

To whom it may concern:

ERA is pleased to submit this report for the civil site design of the subject Single Family Subdivision. Enclosed you will find preliminary calculations, plans, exhibits and a narrative describing the proposed work for this project.

All work has been completed by me or someone directly under my supervision, and this sheet signed and sealed will encompass all documents pertaining to the stormwater report.

I appreciate the opportunity for your review of this project.

Sincerely,

Nicholas A. Varchetto, P.E.
Project Manager

Expires: November 30, 2025

Narrative

Reserves of Saddle Creek
10846 S Book Road, Uninc. Naperville, Illinois
PROJECT SUMMARY

We are pleased to present our proposal to the City of Naperville for a new 14 Lot Single Family Subdivision to be annexed to the city and is located on at 10846 S Book Road, between East and West Clearwater Lane. Our proposal includes the construction of a stormwater management pond, roadway, sidewalks, utilities and future single family homes.

EXISTING CONDITIONS

The total contiguous size of the property is 8.000 acres and is unsubdivided land in Unincorporated Will County. The existing site is a farmette with several structures, including homes, barns, and silos. The site slopes gradually from south to north and sheet drains over the parcel until it crosses the property line at the north and enters into Clow Creek.

The subject property is bounded on the west and south by the Saddle Creek Subdivision, on the east by Book Road and on the north by the Naperville Park District.

There are no wetlands located on the property. Clow Creek is considered Waters of Will County and thus has a 75' buffer which slightly encroaches into the northwest corner of the property.

There is floodplain located at the very north end of the property. The floodplain was determined utilizing the National Flood Hazard Layer FIRMette (17197C0045G, eff. 02/15/2019). The 100 Yr estimated high water for that study was 631.88. At the location of the property that touches this elevation, we assumed a slight increase to 632.00.

No Detention is located on the existing property. As part of the Will County ordinance, detention will be required because the site is over 5 acres.

There is no upstream tributary that is conveyed through the property. The Saddle Creek Subdivision utilizes storm sewers to convey the water around the subject property and the other unsubdivided land to the SE has swales that convey all the stormwater towards book road.

There is no depressional storage areas located on the site. All water is sheet flowing north or onto Book Road ROW.

The site has a significant amount of trees which have been identified as a tree line in the accompanying survey. Due to the nature of the development and the stormwater requirements, it is assumed most of the trees will not live and will be removed.

PROPOSED CONDITIONS

The property is 8.000 acres and is to be subdivided into 14 lots of approximately 1/3 acre, a stormwater outlot of approximately 1.5 acres, and dedication of 80' Clearwater Lane ROW and dedication of 17' Book Road ROW from existing 33' Book Road ROW, which will total 1.78 acres.

As the land is currently Unincorporated Will County (A-1 Zoning), the owner will request annexation to the City of Naperville, into the R1-A single family zoning. The new road that is created will continue the existing Clearwater Lane until it intersects with Book Road. The ROW was created as such to allow for Clearwater Lane to meet directly with the East side of Clearwater Lane across Book Road.

The subdivision meets almost all of the requirements of the R1-A zoning district but will ask for relief on Lots 8 and 9 from the 90% Rule. The City of Naperville has calculated that the lots in this subdivision must be 13,662 SF minimum, which deviates from the R1-A (10,000 SF minimum), due to the 90% rule, which requires all new lots created to be at least 90% the size of the average of all the surrounding lots within 500. Due to the fact that the proposed Clearwater Lane had to align directly across from the existing Clearwater Lane, this caused some reduction in lot size for Lots 8 & 9. The average of all the lots divided by 14, (206,501/14) = 14,750 SF, will still meet the standard code as a whole, but will be just under on Lots 13 & 14.

Clearwater Lane will be improved to the city standard as a collector street. It will provide 80' of ROW and meet the standard road design requirements of a 25 mph road. Sidewalks of 5' width, will be included on both sides of the road. One Foot from the ROW. Street lights, parkway trees, sanitary, water, gas, and all other necessary infrastructure will be extended through the proposed Clearwater Lane.

Book Road will not have any significant improvements except for the sidewalk that will run from the bridge to the North of the site and to the South ending North of Engle Road and re-striping of the north bound turn lane from yellow chevrons to a city standard turn lane. Re-grading of the swale on the west side of Book Road will be completed during the time of the improved sidewalk. Limited work across Book Road is intended and it will be determined during permitting on how to construct the watermain extension, either through a street cut or directional boring.

DRAINAGE AND DETENTION

In accordance with the Will County Stormwater Ordinance and the City of Naperville Subdivision Ordinance, the site has been designed to utilize a storm sewer network to collect runoff from all new impervious areas. Under existing conditions, the majority of the site drains towards the floodplain located in the northwest portion of the site, with a small portion of the site draining towards offsite structures in the south. In the proposed conditions, the majority of the site will be collected through storm sewers and directed to a proposed detention pond located at the northern part of the site, with overflow directed to the floodplain in the northwest. Existing drainage patterns have been maintained wherever possible.

Under typical flows, the curb and storm sewer sized for the 10-year storm will convey stormwater to the detention basin. In areas where overland flow does not drain to the detention basin, storm sewers have been sized for the 100-year storm event.

The area of the proposed site is 8.00 acres, but only a portion of the 50' of Book Road Dedication will be disturbed for some minor grading to improve the existing swales. So, the total disturbance area is 8.00- 0.175 = 7.825 Acres.

Detention Basin Tributary Areas (100 Yr)					
Description	*Disturbance Area (ac)*	*Tributary Area Inc Offsite (ac)*	*Will County Allowable Release (cfs/ac)*	*Total Allowable Release Rate (cfs)*	*Total Design Release Rate (cfs)*
Detention Basin	7.825	0	0.15	1.173	1.163

Detention Basin Tributary Areas (2 Yr)					
Description	*Disturbance Area (ac)*	*Tributary Area Inc Offsite (ac)*	*Will County Allowable Release (cfs/ac)*	*Total Allowable Release Rate (cfs)*	*Total Design Release Rate (cfs)*
Detention Basin	7.825	0	0.04	0.313	0.310

The proposed detentions were designed using the Will County Ordinance rainfall intensity rates. The StormStudio SCS print outs have been provided as an exhibit to show the storm calculations models. The 24-hr storm was found to be the critical storm in the proposed detained condition. The Bulletin 70 Rainfall data was used to complete this analysis per Will County Ordinance.

A restrictor meeting the release maximums was utilized and is summarized below in the orifice restrictor table.

Orifice Restrictor				
Location ID	*Type*	*Size (in)*	*Orifice Coefficient*	*Orifice Elevation*
2 Yr	Circular	2.7	0.61	633.00
100 Yr	Circular	3.9	0.61	635.75

The curve number for the development is Calculated below.

Proposed Curve Number - Detention Tributary Area		
Soil Group= C		
Impervious area CN =	98	(Impervious)
Pervious area CN =	74	(Pervious)
Proposed Conditions		
Impervious Area =	144,883	sq. ft.
Pervious Area =	195,998	sq. ft.
Composite Runoff Coefficient =	84.201	

Performance of Weir

In the event of the pond being full and a storm exceeding the 100-year event or the orifice being clogged causing the detention basin to overtop, an overflow weir has been provided at elevation 640.00. The weir is sized to safely convey the full post-development 100-year subdivision flow of 58.40 CFS with only 0.45 feet of head. See Overflow Weir Calculation along with hydrograph report page 7 indicating the maximum flow into the basin of 58.40 CFS.

A critical storm duration analysis of the 100-year event where both the 2-year and 100-year restrictors are blocked; the basin will fill up and the overflow weir will overtop at a maximum release rate of 1.235 CFS. (See hydrograph calculations plugged restrictors page 3). The maximum post-development release of 1.235 CFS in a blocked condition will be less than the pre-development release of 28.06 CFS. (See Exhibit 1.0)

100 yr Swale Capacity Performance

The side yard swales are designed with sufficient capacity to manage runoff from the 100-year storm event. Land Overflow Swale #1 (as shown on Exhibit 1.1) is expected to receive 1.97 CFS of tributary flow, while Land Overflow Swale #2 will receive 1.50 CFS. Both swales have been sized to convey up to 6.32 CFS at only 0.5 feet of depth, providing a substantial factor of safety compared to the anticipated flows. This demonstrates that the swales not only accommodate the design storm but also offer additional capacity to ensure reliable conveyance under extreme conditions.

100 yr Inlet Capacity Performance (South Property Line)

In Exhibit 1.1 Unblocked Conditions, the blue inundation area shows the maximum water elevation (depth) during the 100-year critical duration storm event. The areas in blue show the depth of head required at each individual inlets in order to convey the full 100 yr critical storm event. The storm pipes within those areas are sized to convey the 100-year flow once the maximum depth has been reached.

100 yr Criticial Storm Event with Unmaintained (clogged) Inlet

The condition of the 100 yr critical storm event with an unmaintained inlet is to be looked at, because we are utilizing 100 yr pipes instead of overland flow swales and the Will County Stormwater Ordinance requires that the engineer confirm that the 100 yr condition will not cause harm to the development or neighboring properties. Since it is not possible to have overland flows connect to our pond, the development is utilizing 100 yr pipes and storm inlets. As such, there is a possibility, that a clog or lack of maintenance is possible.

(Exhibit 1.2 Blocked conditions) displays the maximum water elevations if each individual catch basin were 100% blocked and a 100-year critical duration storm event occurred. In this scenario the storm pipes would not receive any flow but rather the water would rise until it had the ability to overland flow as shown in the exhibit onto the neighboring property. (direction arrows and flows provided on the exhibit) The scenario is unlikely to occur as a combined event. The chance of one inlet being fully 100% blocked while a 100 yr critical storm event is taking place is low probability, but possible. The chance of multiple inlets being fully 100% blocked (unmaintained) during a 100 yr event is even less probable.

(Drainage Area – Existing Conditions) Exhibits 1.0 shows three existing areas that drain to the south subdivision with the following 100 yr flows : 0.97 cfs, 1.99 cfs and 2.82 cfs. The drainage area to the southwest, drains towards book road. It is assumed that the original designer of the subdivision to the south, was taking into account for this, as there are 5 inlet structures along the south and west side along the property that take in that flow. (Drainage Area – Proposed Conditions Blocked) 1.2 show that there will be only now be two overflows areas to the south with the following 100 yr flows: 2.03 cfs and 5.49 cfs. The drainage area to the southeast , drains towards Book Road.

Existing drainage areas 2 and 3 correspond to proposed drainage area 2 and the 100-year overflow is increased by 0.68 CFS in the proposed condition. Existing drainage area 4 corresponds with proposed drainage area 3 and the 100-year overflow is increased by 1.06 CFS. Therefore, in the absolute worst, most improbable case, that both structures are fully blocked and a 100 yr storm event would occur, the net increase to the total stormwater system of the subdivision to the south 1.74 CFS.

As there is nothing mentioned in the Will County Ordinance to require that the developing subdivision ensure that a development account for unmaintained storm sewer systems. It is

in our professional opinion that the minimal increase of 1.74 cfs that is only possible in two very unlikely scenarios occurring, those being each individual inlet being clogged separately during a 100 yr storm event, that the development has been thoroughly designed to meet and exceed the ordinance requirements and minimize impact to the development and the surrounding neighbors.

See the StormStudio for further modeling calculations.

On Site BMP's will be utilized for this development. The swales will allow for infiltration into the ground, and also the detention basin will utilize native plantings.

CONCLUSION

The proposed site is designed to meet all the requirements of the Will County Stormwater ordinance. The proposed improvements of the subdivision will meet up to date current design standards for the City of Naperville. It is our professional opinion that the proposed development meets the requirements set forth by The City of Naperville and the Will County Stormwater Management Ordinance

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Calculations

Hydrograph Calculations

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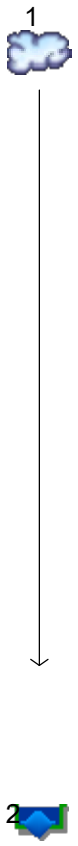
Watershed Model Schematic



Hydrograph Return Period Recap

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	------	12.00	16.34	-------	23.90	30.73	41.25	49.76	58.40	W24300_Detention Analysis
2	Reservoir	1	0.274	0.310	-------	0.617	0.785	0.958	1.067	1.163	<no description>

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	16.34	2	724	51,102	------	------	------	W24300_Detention Analysis
2	Reservoir	0.310	2	1186	50,003	1	635.72	38,126	<no description>

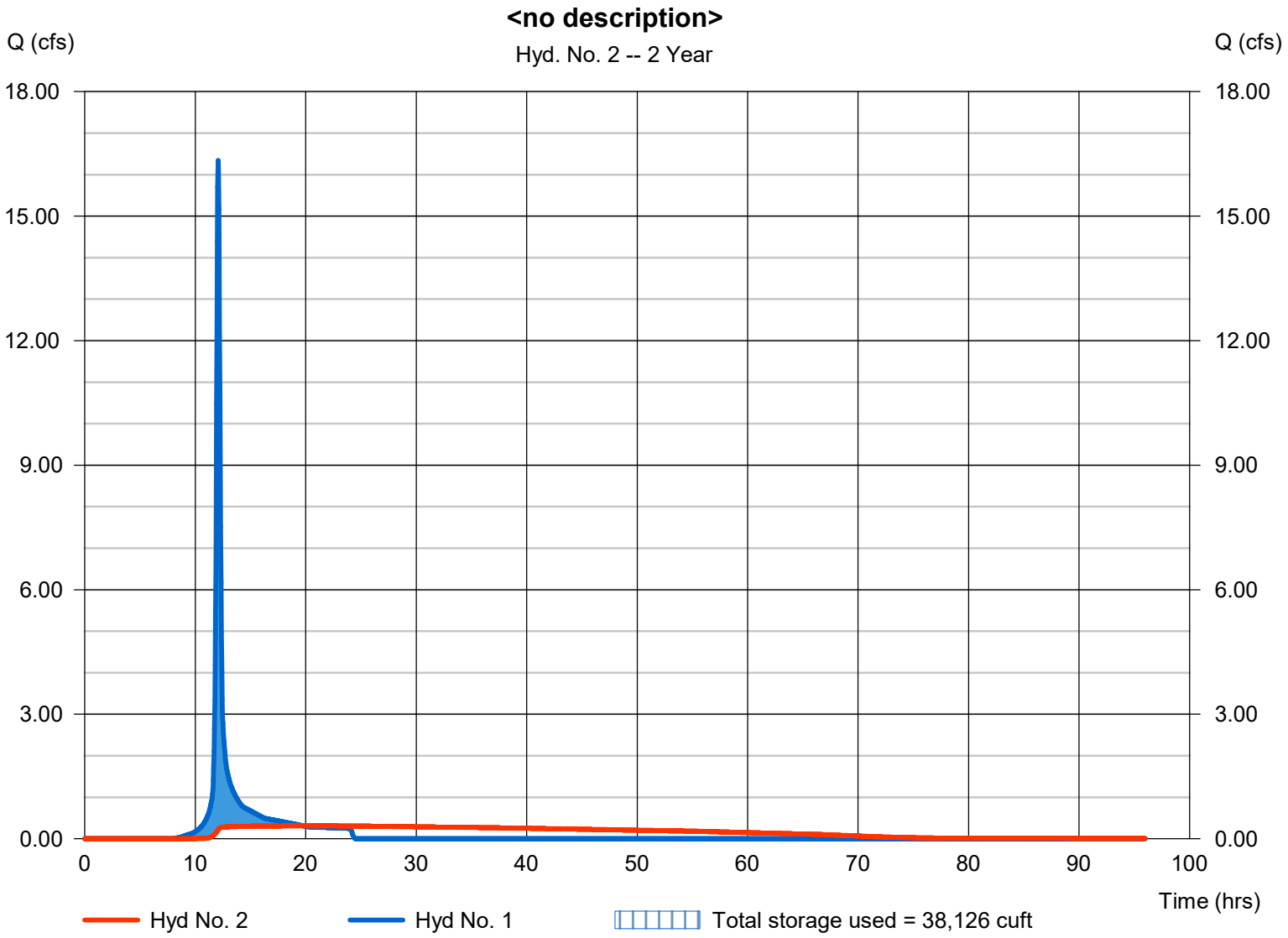
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0.310 cfs
Storm frequency	= 2 yrs	Time to peak	= 19.77 hrs
Time interval	= 2 min	Hyd. volume	= 50,003 cuft
Inflow hyd. No.	= 1 - W24300_Detention Analysis	Max. Elevation	= 635.72 ft
Reservoir name	= W24300_Pond	Max. Storage	= 38,126 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - W24300_Pond

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 633.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	633.00	7,687	0	0
1.00	634.00	11,522	9,605	9,605
2.00	635.00	16,769	14,146	23,750
3.00	636.00	22,914	19,842	43,592
4.00	637.00	29,228	26,071	69,663
5.00	638.00	36,755	32,992	102,654
6.00	639.00	43,000	39,878	142,532

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 2.70	3.90	0.00	0.00
Span (in)	= 2.70	3.90	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 633.00	635.75	0.00	0.00
Length (ft)	= 1.00	1.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

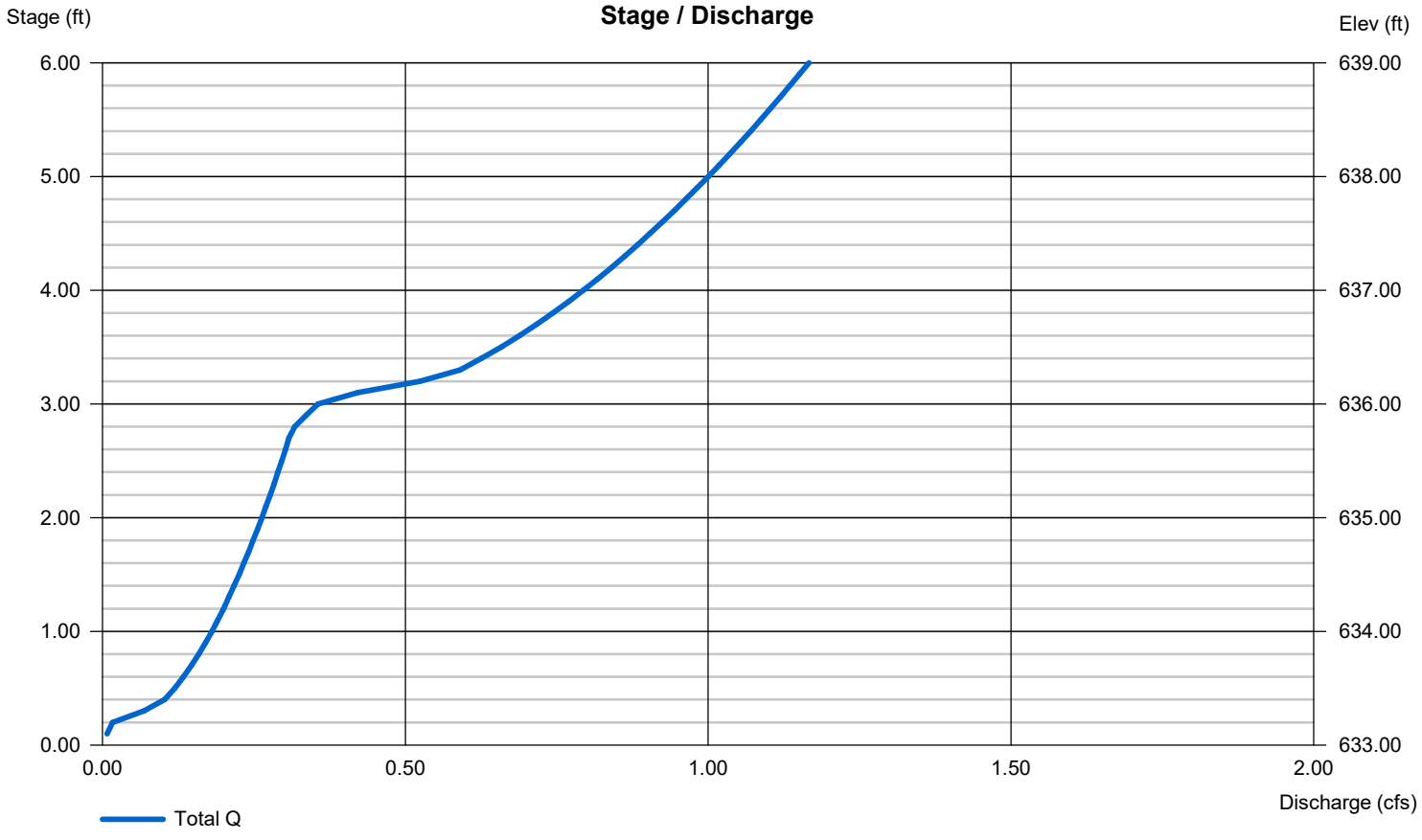
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 65.00	0.00	0.00	0.00
Crest El. (ft)	= 640.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

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 Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	58.40	2	724	188,593	------	------	------	W24300_Detention Analysis
2	Reservoir	1.163	2	1094	181,812	1	638.98	141,771	<no description>

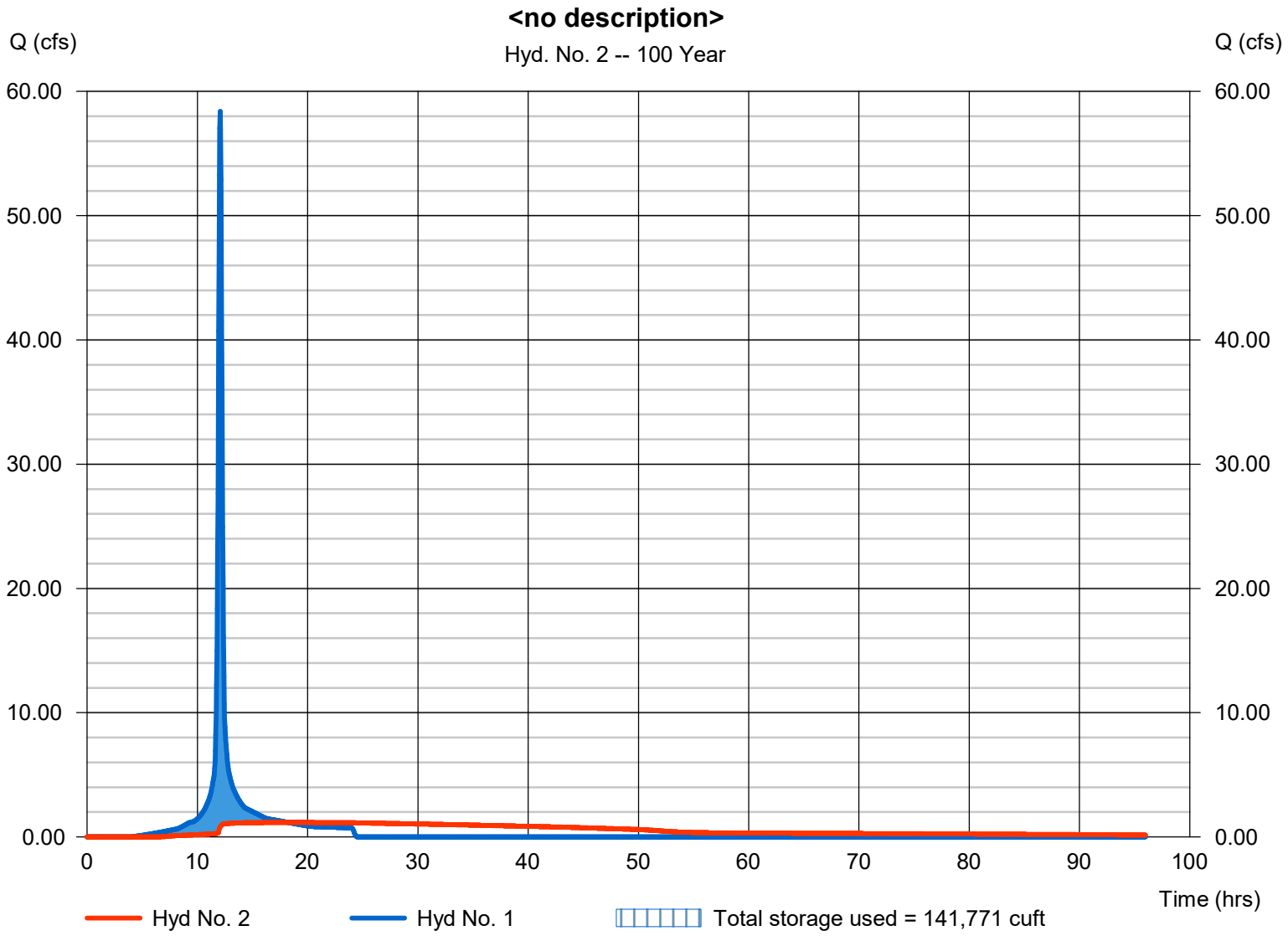
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 1.163 cfs
Storm frequency	= 100 yrs	Time to peak	= 18.23 hrs
Time interval	= 2 min	Hyd. volume	= 181,812 cuft
Inflow hyd. No.	= 1 - W24300_Detention Analysis	Max. Elevation	= 638.98 ft
Reservoir name	= W24300_Pond	Max. Storage	= 141,771 cuft

Storage Indication method used.



Calculations

Hydrograph Calculations Plugged Restrictors

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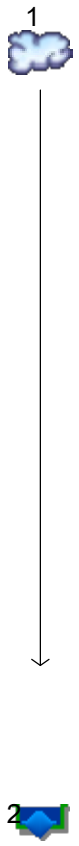
Watershed Model Schematic



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	58.40	2	724	188,593	------	------	------	W24300_Detention Analysis
2	Reservoir	1.235	2	1068	24,435	1	639.52	165,238	<no description>

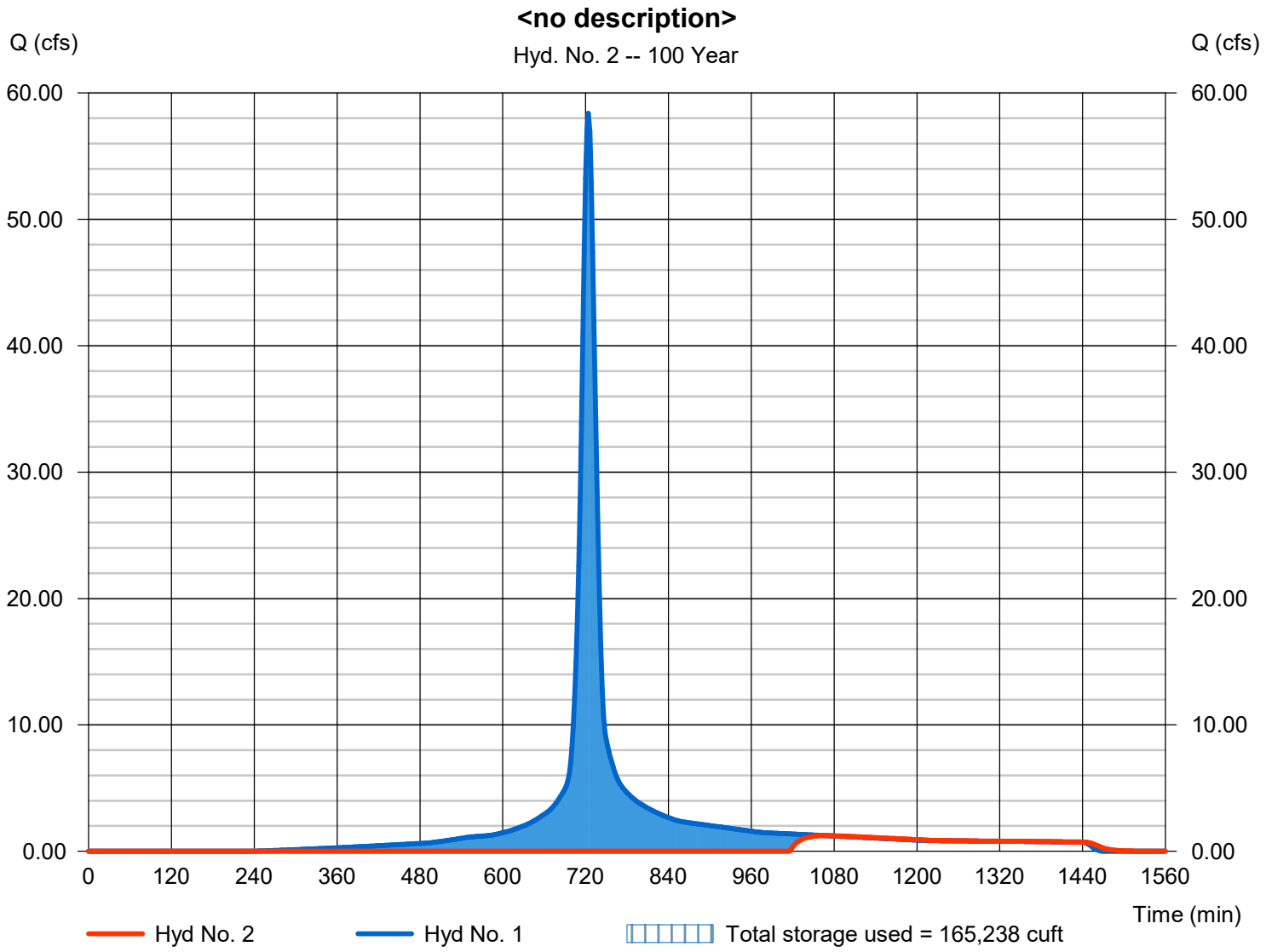
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 1.235 cfs
Storm frequency	= 100 yrs	Time to peak	= 1068 min
Time interval	= 2 min	Hyd. volume	= 24,435 cuft
Inflow hyd. No.	= 1 - W24300_Detention Analysis	Max. Elevation	= 639.52 ft
Reservoir name	= W24300_Pond	Max. Storage	= 165,238 cuft

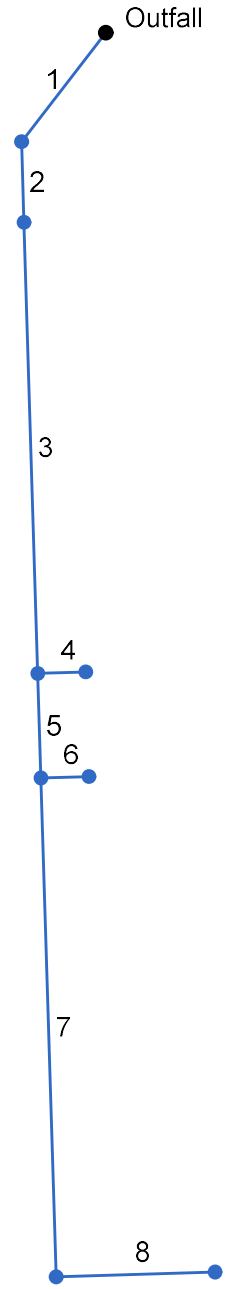
Storage Indication method used.



Calculations

Storm Sewer Calculations

W24300_STORM SEWER



Project File: W24300_SYSTEM 100.stm	Number of lines: 8	Date: 8/7/2025

Storm Sewer Tabulation

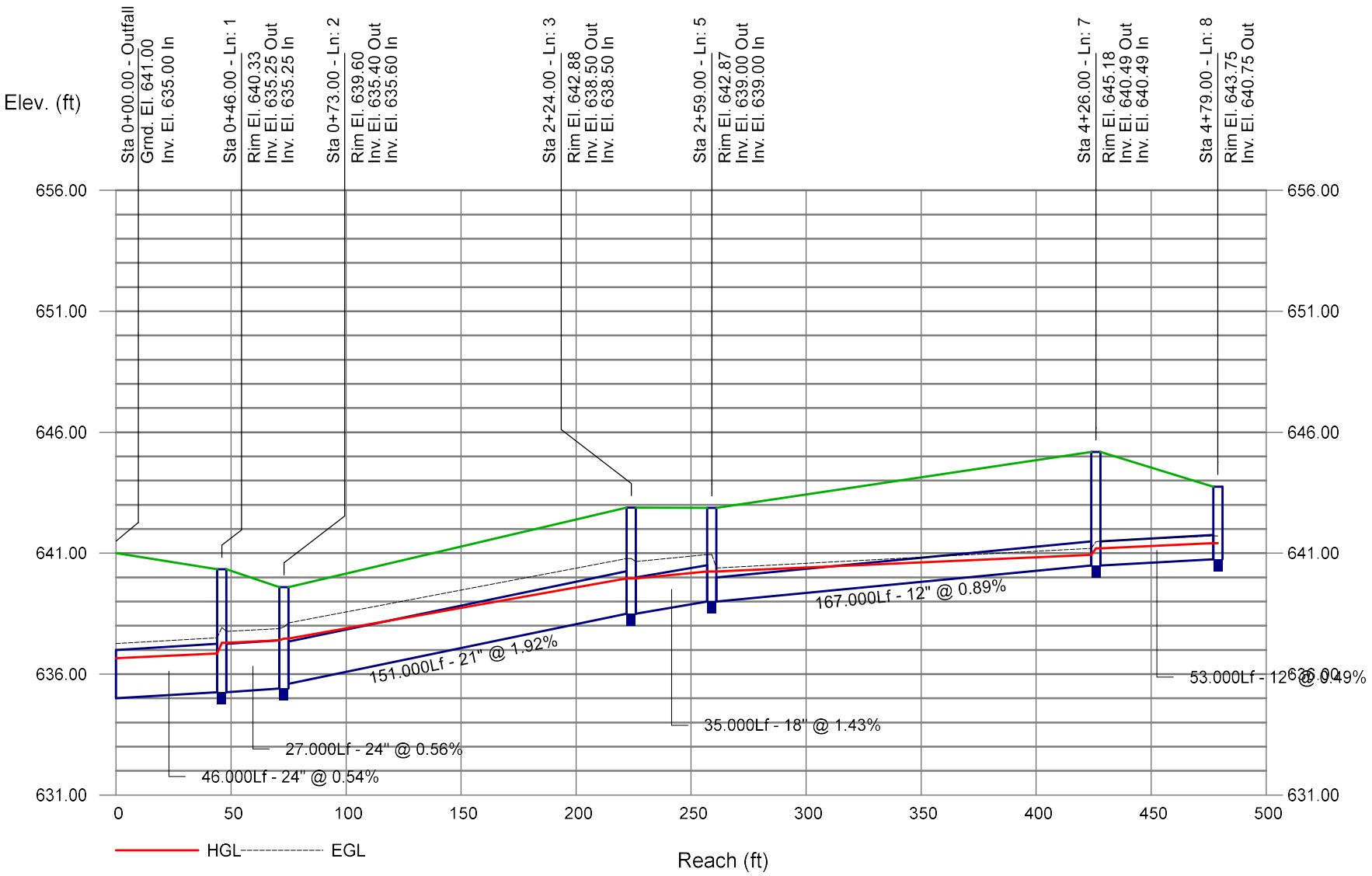
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	46.000	0.00	2.10	0.00	0.00	1.77	10.0	11.8	9.8	17.37	18.06	6.33	24	0.54	635.00	635.25	636.66	636.85	0.00	640.33	
2	1	27.000	0.25	2.10	0.85	0.21	1.77	10.0	11.7	9.8	17.41	18.26	5.54	24	0.56	635.25	635.40	637.29	637.40	640.33	639.60	
3	2	151.000	0.30	1.85	0.85	0.26	1.56	10.0	11.3	10.0	15.51	0.00	6.85	21	1.92	635.60	638.50	637.47	639.95	639.60	642.88	
4	3	16.000	0.30	0.30	0.85	0.26	0.26	10.0	10.0	10.4	2.64	0.00	4.93	12	3.13	639.35	639.85	639.95	640.55	642.88	642.94	
5	3	35.000	0.48	1.25	0.85	0.41	1.05	10.0	11.2	10.0	10.46	0.00	6.33	18	1.43	638.50	639.00	639.95	640.24	642.88	642.87	
6	5	16.000	0.48	0.48	0.85	0.41	0.41	10.0	10.0	10.4	4.23	0.00	5.79	12	3.13	639.35	639.85	640.24	640.72	642.87	642.91	
7	5	167.000	0.00	0.29	0.00	0.00	0.23	10.0	10.3	10.3	2.38	0.00	3.62	12	0.89	639.00	640.49	640.24	640.93	642.87	645.18	
8	7	53.000	0.29	0.29	0.80	0.23	0.23	10.0	10.0	10.4	2.41	0.00	3.73	12	0.49	640.49	640.75	641.20	641.41	645.18	643.75	

W24300_STORM SEWER | Number of lines: 8 | Run Date: 9/2/2025

NOTES:Intensity = 277.62 / (Inlet time + 20.10) ^ 0.97; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: W24300_SYSTEM 100.stm



Storm Sewer Profile

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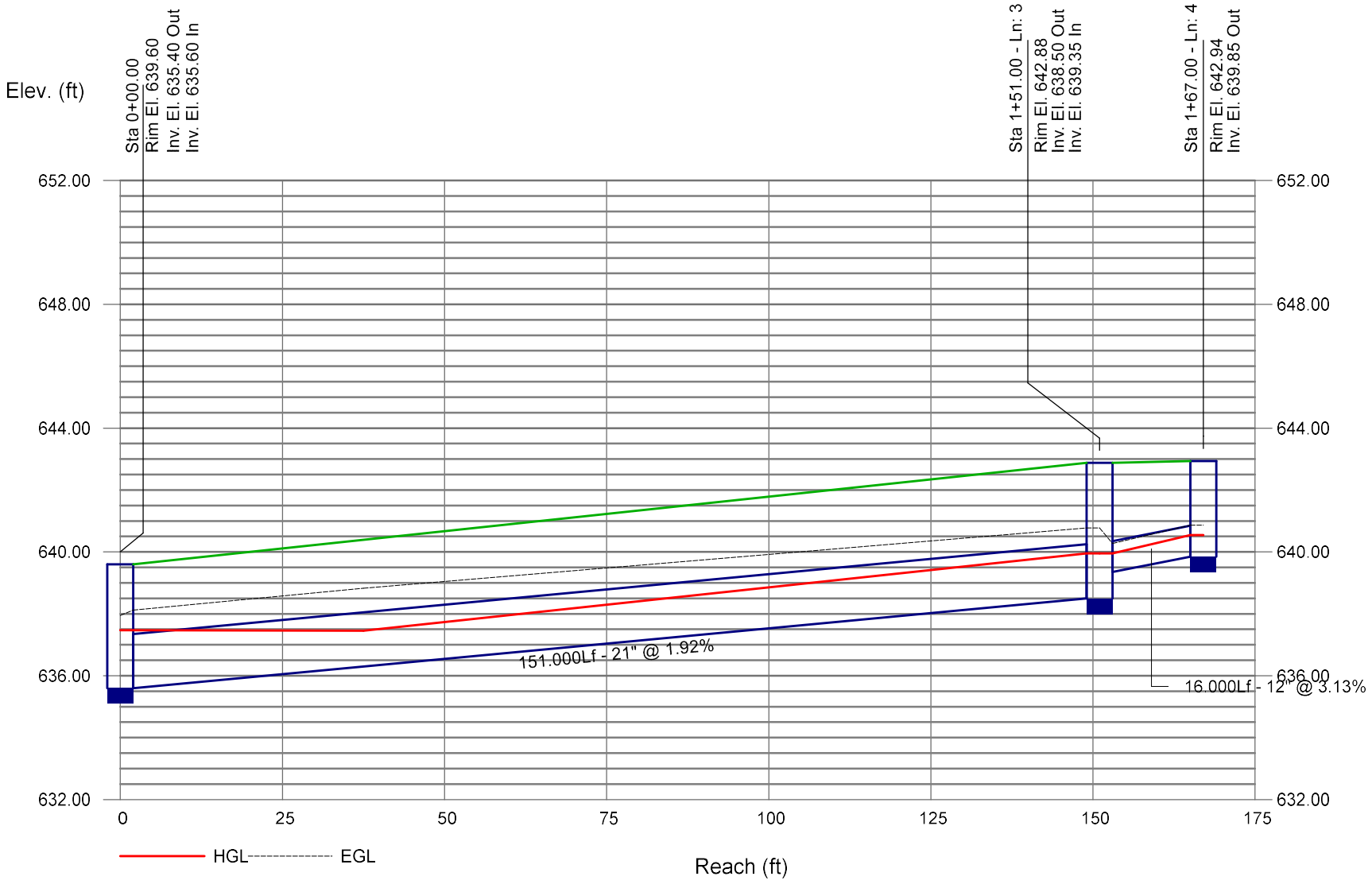

Storm Sewer Profile

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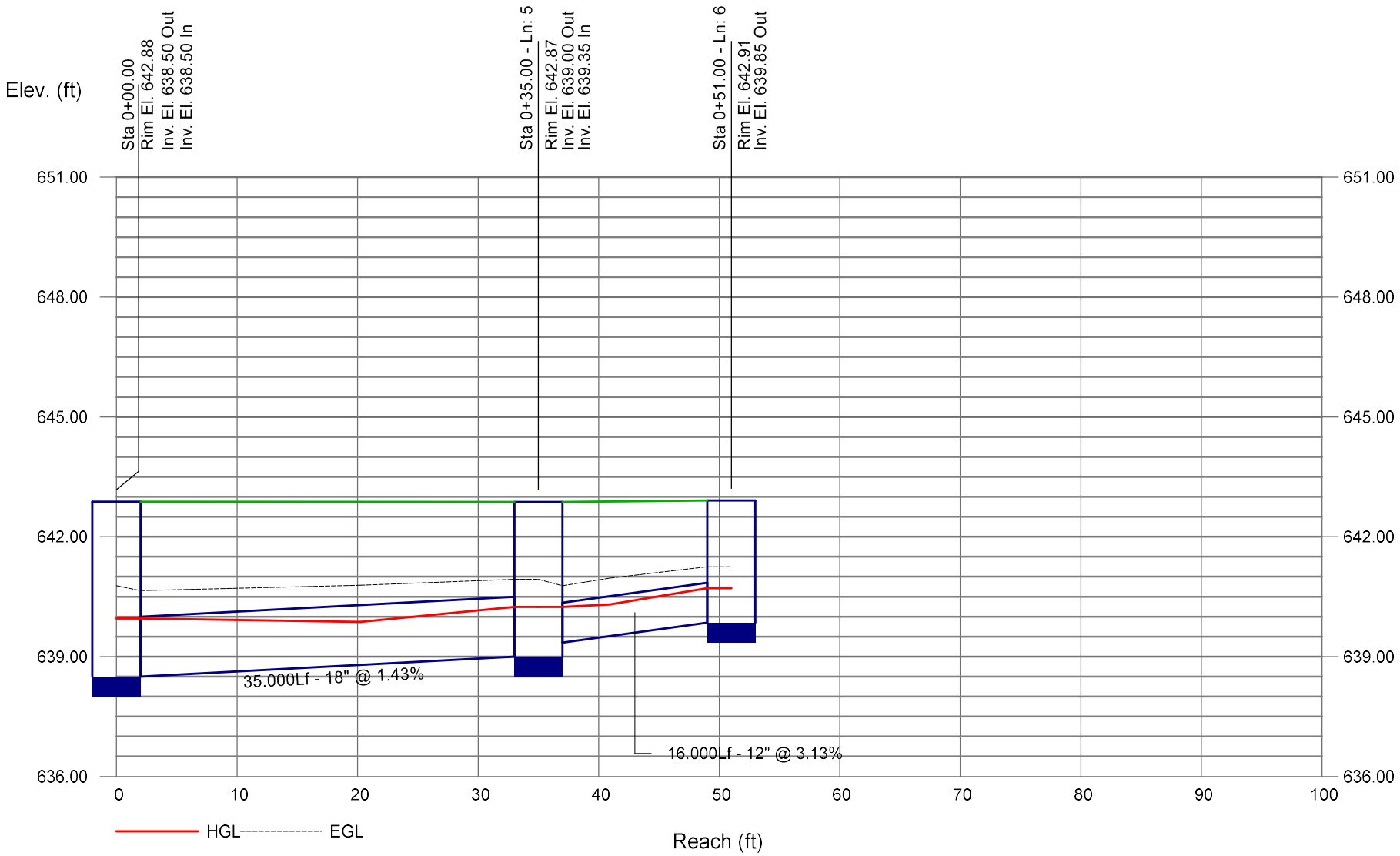
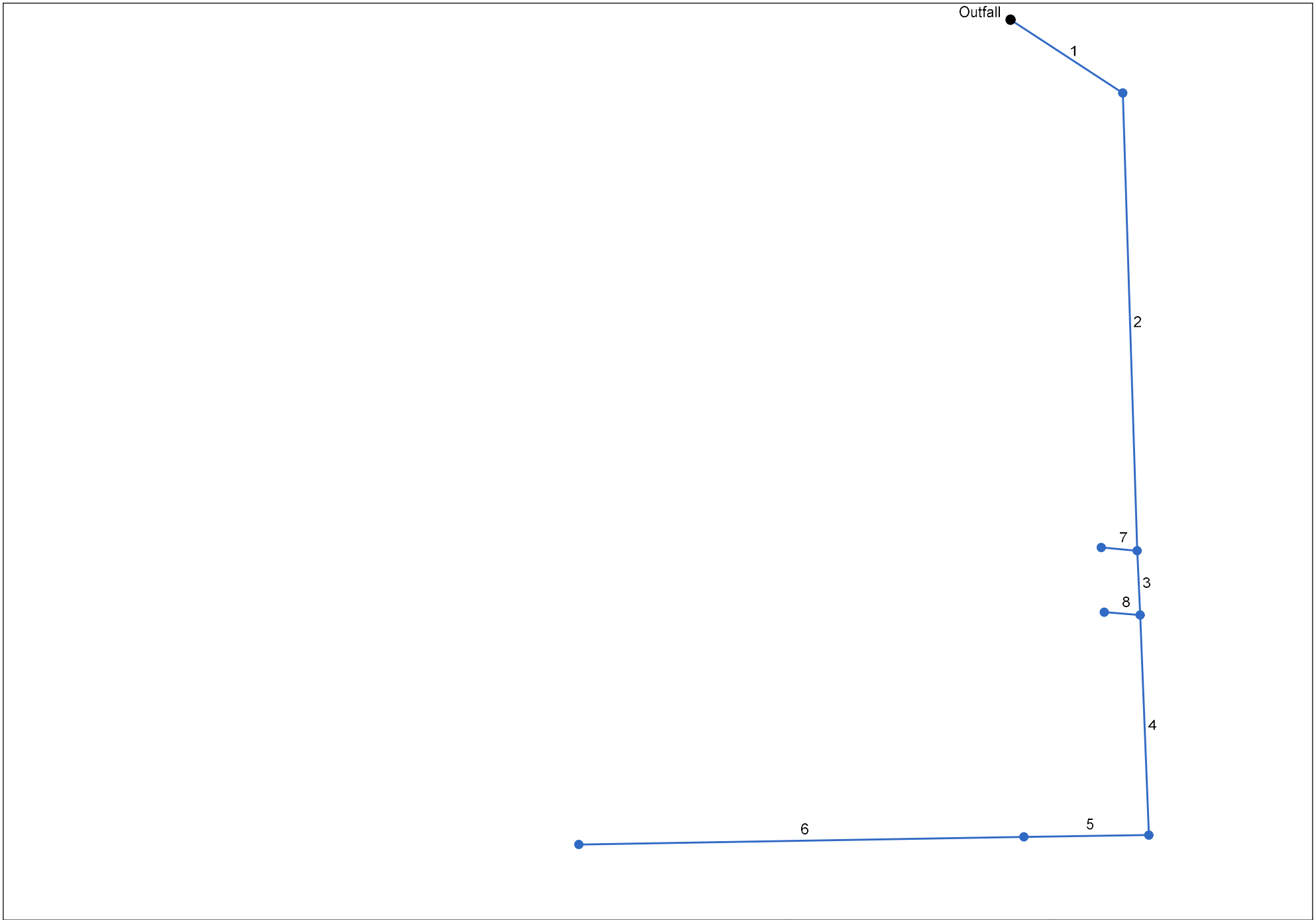


W24300 SYSTEM 200



Project File: W24300_SYSTEM 200.stm	Number of lines: 8	Date: 8/7/2025

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	72.321	0.00	2.17	0.00	0.00	1.79	10.0	12.8	9.5	17.05	39.08	6.78	24	2.54	633.00	634.84	634.50	636.33	0.00	641.26	
2	1	247.621	0.29	2.17	0.85	0.25	1.79	10.0	12.1	9.7	17.43	18.16	6.58	24	0.55	635.35	636.71	636.92	638.28	641.26	645.09	
3	2	34.788	0.28	1.59	0.85	0.24	1.30	10.0	12.0	9.8	12.68	12.68	5.27	21	0.55	636.71	636.90	639.29	639.48	645.09	645.01	
4	3	119.092	0.00	1.03	0.00	0.00	0.82	10.0	11.5	9.9	8.14	8.40	4.61	18	0.55	636.90	637.55	640.13	640.74	645.01	644.80	
5	4	67.382	0.37	1.03	0.80	0.30	0.82	10.0	11.3	10.0	8.20	8.43	4.64	18	0.55	637.55	637.92	641.07	641.42	644.80	642.75	
6	5	239.848	0.66	0.66	0.80	0.53	0.53	10.0	10.0	10.4	5.47	8.05	3.10	18	0.50	637.92	639.12	641.59	642.15	642.75	642.74	
7	2	19.454	0.29	0.29	0.85	0.25	0.25	10.0	10.0	10.4	2.56	7.16	6.41	12	3.44	641.59	642.26	642.00	642.94	645.09	645.28	
8	3	19.450	0.28	0.28	0.85	0.24	0.24	10.0	10.0	10.4	2.47	7.16	6.33	12	3.44	641.51	642.18	641.92	642.85	645.01	645.18	

W24300 SYSTEM 200

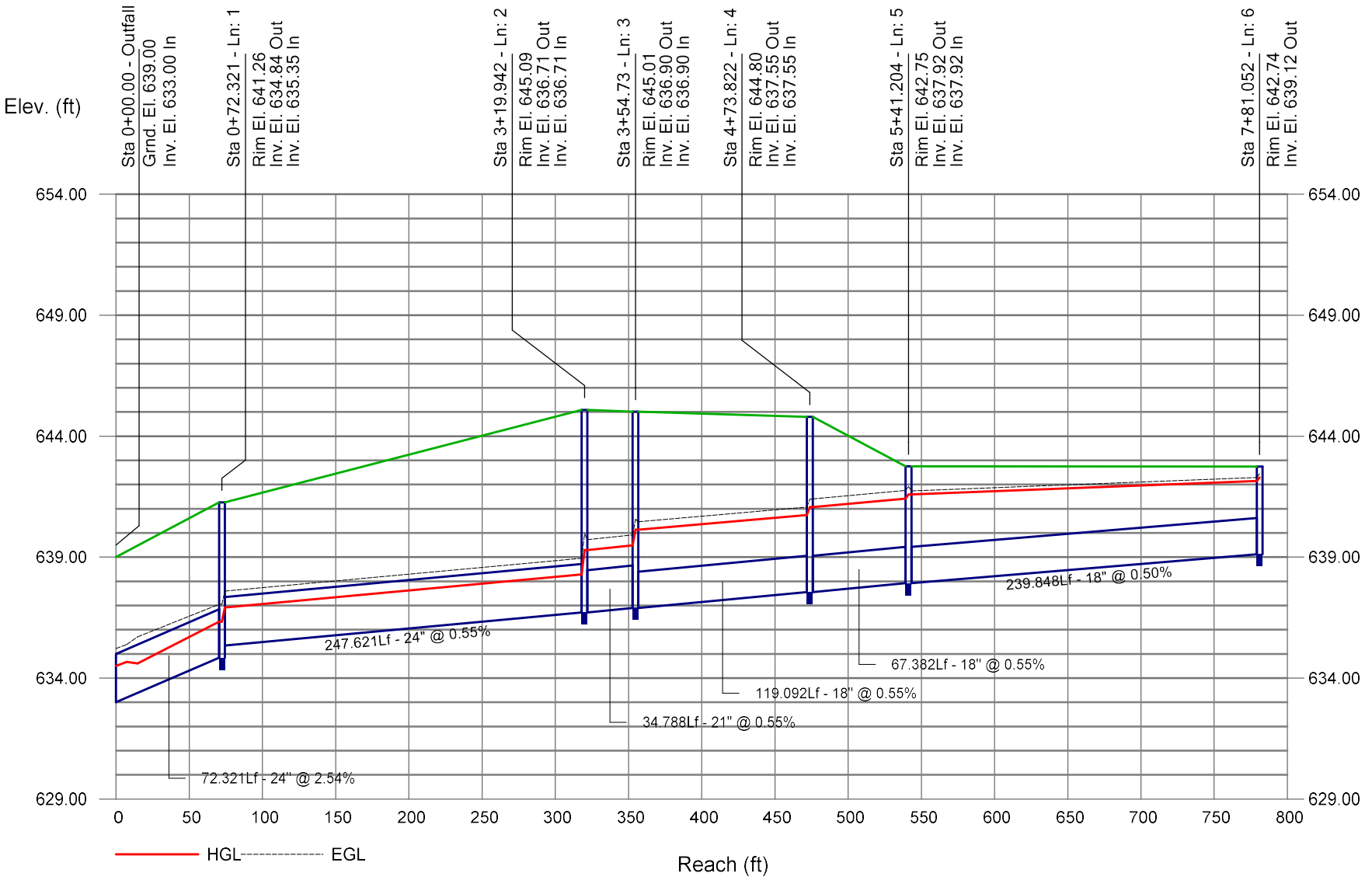
Number of lines: 8

Run Date: 8/7/2025

NOTES:Intensity = 277.62 / (Inlet time + 20.10) ^ 0.97; Return period =Yrs. 100 ; c = cir e = ellip b = box

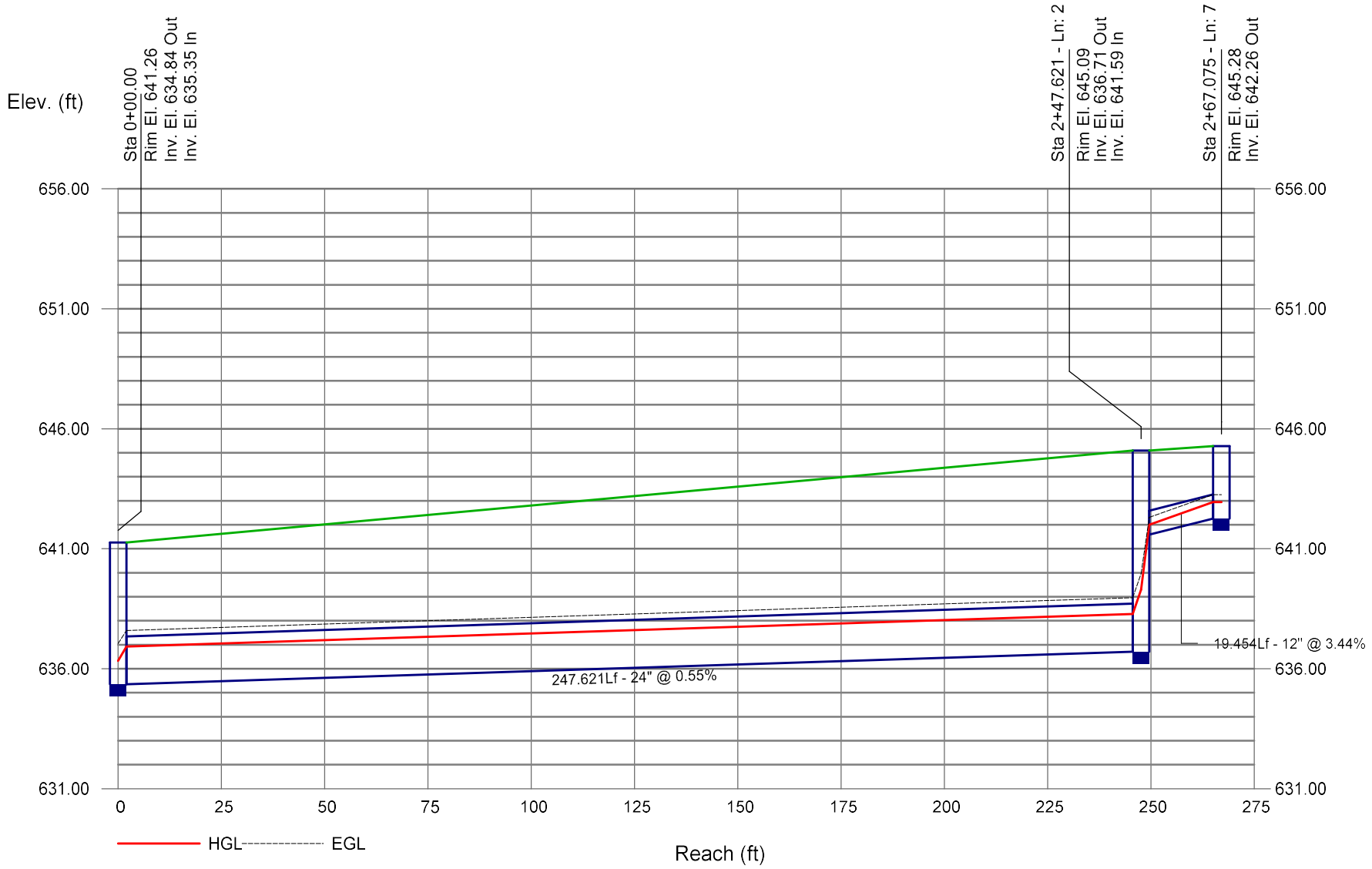
Storm Sewer Profile

Proj. file: W24300_SYSTEM 200.stm



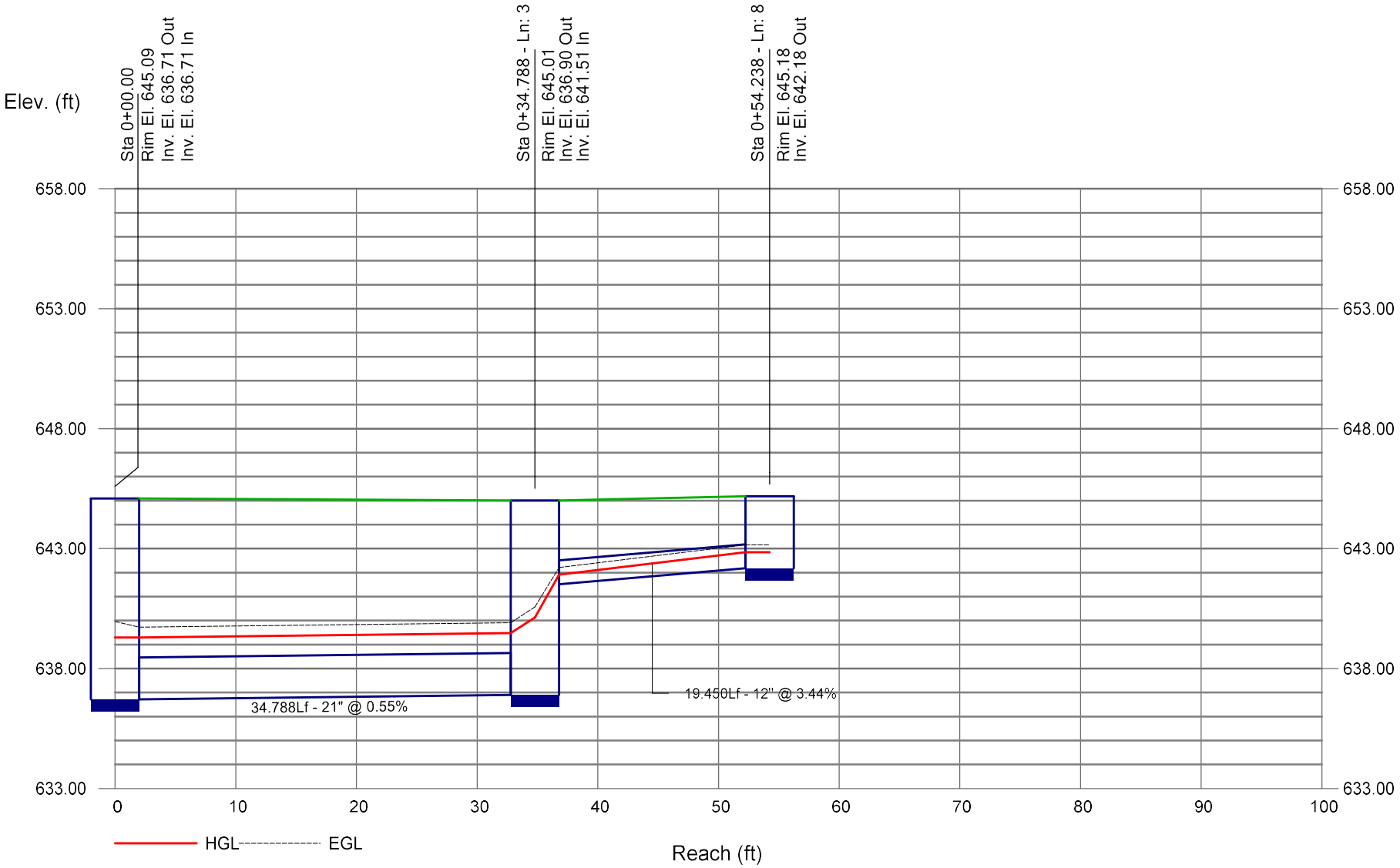
Storm Sewer Profile

Proj. file: W24300_SYSTEM 200.stm

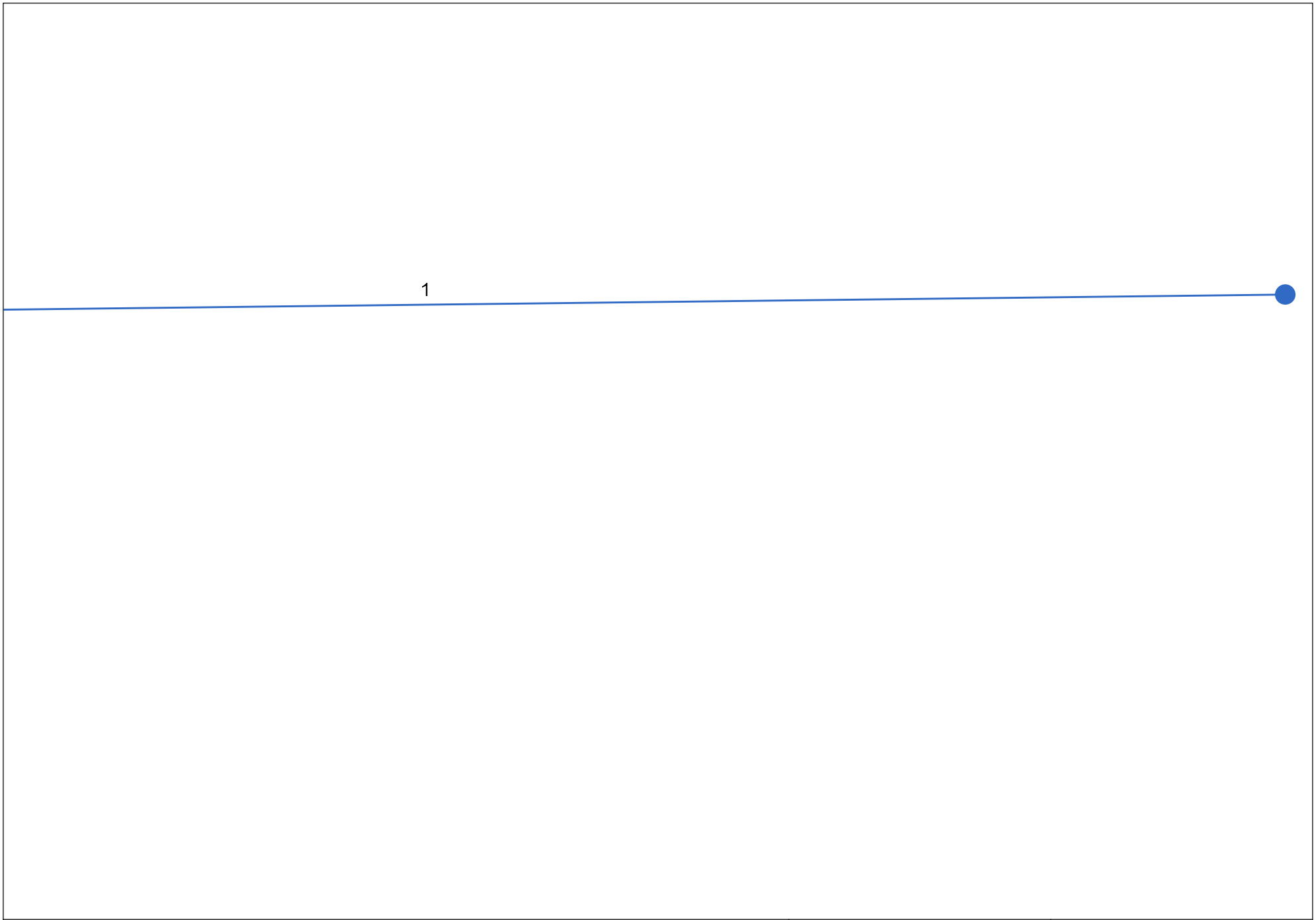


Storm Sewer Profile

Proj. file: W24300_SYSTEM 200.stm



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



Project File: New.stm	Number of lines: 1	Date: 7/7/2025

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	372.000	0.00	0.00	0.00	0.00	0.00	10.0	10.0	0.0	1.16	2.00	2.62	12	0.27	632.00	633.00	632.45	633.73	0.00	640.50	

Project File: New.stm

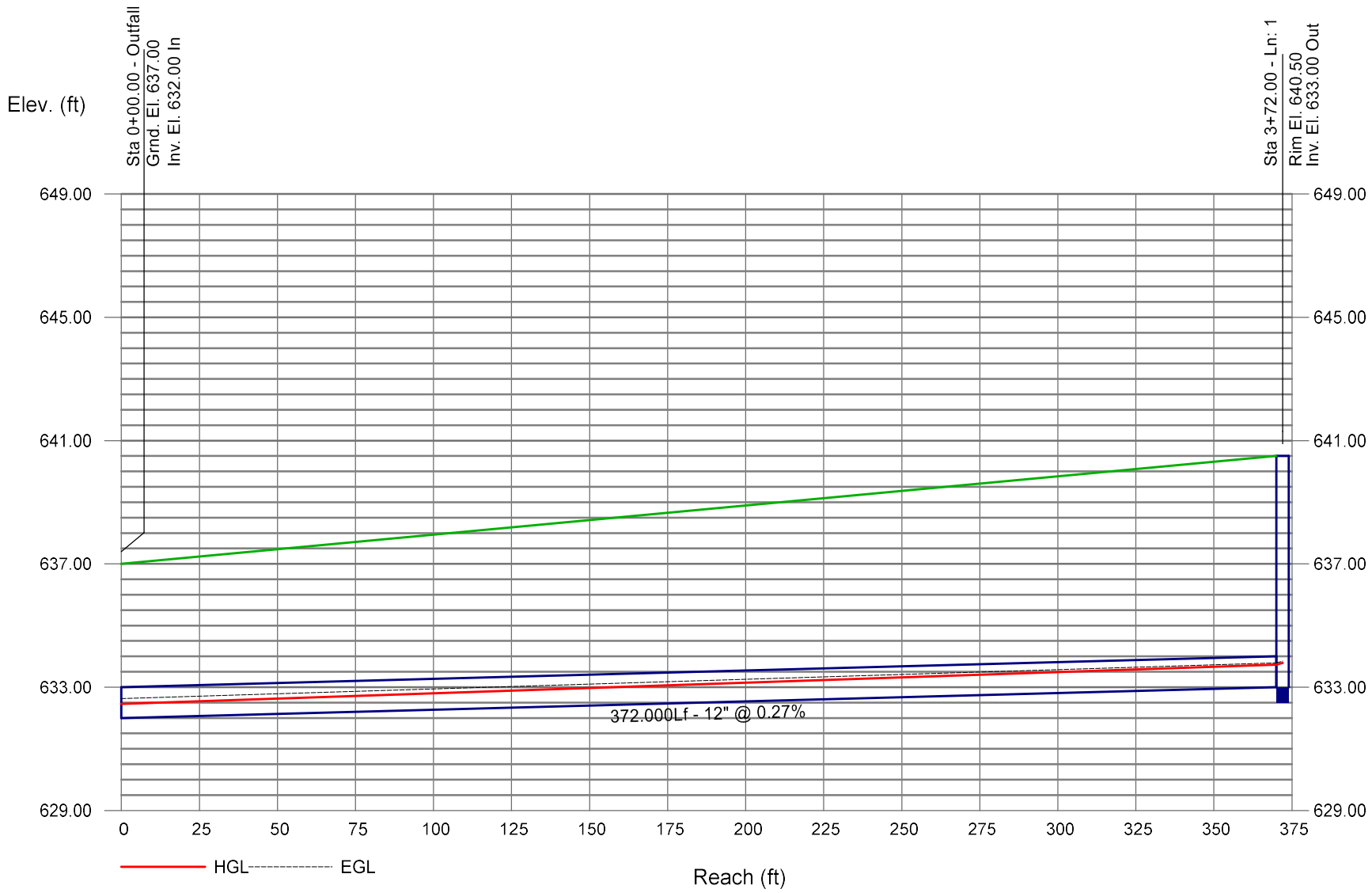
Number of lines: 1

Run Date: 7/7/2025

NOTES:Intensity = 277.62 / (Inlet time + 20.10) ^ 0.97; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: New.stm



Calculations

Inlet Capacity Calculations

ENGINEERING
RESOURCE ASSOCIATES

ENGINEERS | SCIENTISTS | SURVEYORS

www.eraconsultants.com

3S701 West Ave.
Warrenville, Illinois 60555

phone 630.393.3060
fax 630.393.2152

PROJECT: Overstreet Builders: Single Family Subdivision
LOCATION: 10826-10846 Book Road, Naperville, IL
PROJECT #: W24300.00

BY: MOD
DATE: 06/03/2025
REV. DATE:

INLET CAPACITY CALCULATIONS

Weir Flow Calculations

Weir Equation $Q = 3.3\ P(h)^{1.5}$
Q = Capacity in CFS
P = Feet perimeter
h = Head in feet

Orifice Flow Calculations

Orifice Flow Equation $Q = 0.6A(2gh)^{0.5}$
Q = Capacity in CFS
A = Free open area of grate in sq. ft.
g = 32.2 (feet per sec/sec)
h = Head in feet

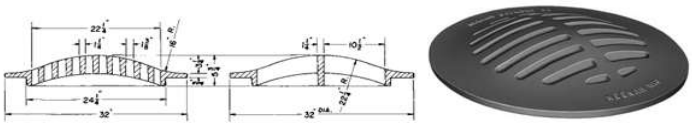
Neenah Catalog Number and Grate Type: R-4352

Feet perimiter (P): 5.8
Free Open area in sq. ft. (A): 1.3

Head in feet (h):	Weir Capacity in cfs:	Transitional flow in cfs:	Orifice capacity in cfs:
0.1	0.61		
0.2		1.73	
0.3			2.86
0.4			3.96
0.5			4.43
0.6			4.85
0.7			5.24
0.8			5.60
0.9			5.94
1			6.26

R-4352
Beehive Grate

Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4352	Beehive	1.3	5.8

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fax 630.393.2152

PROJECT: Overstreet Builders: Single Family Subdivision
LOCATION: 10826-10846 Book Road, Naperville, IL
PROJECT #: W24300.00

BY: MOD
DATE: 02/21/25
REV. DATE:

INLET CAPACITY CALCULATIONS

Weir Flow Calculations

Weir Equation $Q = 3.3\ P(h)^{1.5}$
Q = Capacity in CFS
P = Feet perimeter
h = Head in feet

Orifice Flow Calculations

Orifice Flow Equation $Q = 0.6A(2gh)^{0.5}$
Q = Capacity in CFS
A = Free open area of grate in sq. ft.
g = 32.2 (feet per sec/sec)
h = Head in feet

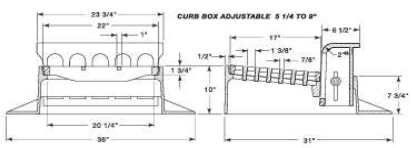
Neenah Catalog Number and Grate Type: R-3278-A

Feet perimiter (P): 4.6
Free Open area in sq. ft. (A): 1.2

Head in feet (h):	Weir Capacity in cfs:	Transitional flow in cfs:	Orifice capacity in cfs:
0.1	0.48		
0.2		1.82	
0.3			3.16
0.4			3.65
0.5			4.09
0.6			4.48
0.7			4.83
0.8			5.17
0.9			5.48
1			5.78

R-3278-A
Combination Inlet Frame, Grate, Curb Box

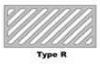
Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3278-A	C	1.2	4.6
R-3278-AR	R	1.2	4.6

Available with open curb box.
Frame available with 4-sided flange support.
2-1/4" adjusting ring available, see **R-1979** series.

Standard Grate (shown): Type C
Also available with grate Type R-diagonal, order **R-3278-AR**.


Type R

Available with Type L grate, see R-3278-AL.

Calculations

Drainage Area Exhibits

PROFESSIONAL DESIGN FIRM NUMBER: 184.001186

ENGINEERING RESOURCE ASSOCIATES
35701 WEST AVENUE, SUITE 150
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OVERSTREET BUILDERS, INC.
3947 CALIENTE CR. NAPERVILLE, IL 60564
(630) 226-0460 EXT 206

RESERVES OF SADDLE CREEK
10826-10846 BOOK ROAD, NAPERVILLE, IL 60546

DESCRIPTION:	
ADDENDUM #1	06-11-2025
ADDENDUM #2	07-11-2025
ADDENDUM #3	08-07-2025
ADDENDUM #4	09-02-2025

DATE	: 04-16-2025
PROJECT #	: W24300.00
DESIGNED BY	: MD
DRAWN BY	: MD
CHECKED BY	: NAV

DRAINAGE AREA
EXH- EXISTING CONDITIONS

EXH-1.0
SHEET

G:\PROJECTS\OverstreetBuildersInc\W24300.00 10846 S Book Rd, UnincMillCo Naperville\CADD\EXHIBITS\W24300.00 EXH_Inlet Area Map -Existing.dwg

PROFESSIONAL DESIGN FIRM NUMBER: 184.001186

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10826-10846 BOOK ROAD, NAPERVILLE, IL 60546

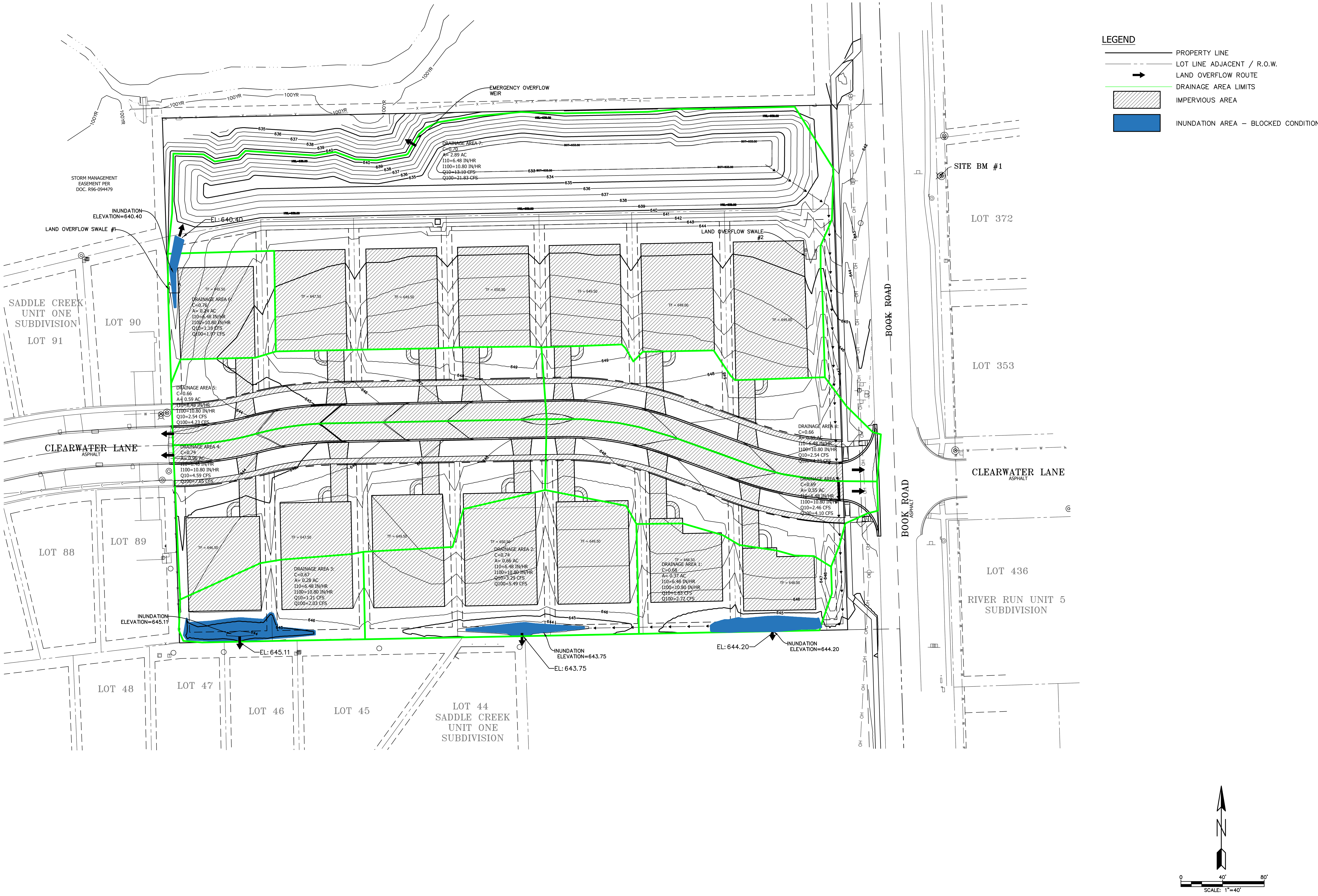
DESCRIPTION:	
ADDENDUM #1	06-11-2025
ADDENDUM #2	07-11-2025
ADDENDUM #3	08-07-2025
ADDENDUM #4	09-02-2025
ADDENDUM #5	09-15-2025

DATE	: 04-16-2025
PROJECT #	: W24300.00
DESIGNED BY	: MD
DRAWN BY	: MD
CHECKED BY	: NAV

DRAINAGE AREA EXH - PROPOSED CONDITIONS - UNBLOCKED

EXH-1.1
SHEET

G:\PROJECTS\OverstreetBuilders\nc\W24300.00 10846 S Book Rd, Unincwlllcs Naperville\CADD\EXHIBITS\W24300.00 EXH_Inlet Area Map.dwg



PROFESSIONAL DESIGN FIRM NUMBER: 184.001186

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(630) 226-0460 EXT 206

RESERVES OF SADDLE CREEK

10826-10846 BOOK ROAD, NAPERVILLE, IL 60546

DATE	DESCRIPTION
06-11-2025	ADDENDUM #1
07-11-2025	ADDENDUM #2
08-07-2025	ADDENDUM #3
09-02-2025	ADDENDUM #4
09-15-2025	ADDENDUM #5

DATE	: 04-16-2025
PROJECT #	: W24300.00
DESIGNED BY	: MD
DRAWN BY	: MD
CHECKED BY	: NAV

DRAINAGE AREA EXH - PROPOSED CONDITIONS - BLOCKED

EXH-1.2
SHEET

G:\PROJECTS\OverstreetBuildersInc\W24300.00 10846 S Book Rd, UnincWillCo Naperville\CADD\EXHIBITS\W24300.00 EXH_Inlet Area Map – Blocked.dwg

Calculations

Land Overflow Swale Calculations

ENGINEERING
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fax 630.393.2152

PROJECT: Reserves of Saddle Creek
LOCATION: Book Road, Uninc Naperville
PROJECT #: W24300.00

BY: MOD
DATE: 9/2/2025
REVISED:

SWALE CAPACITY ANALYSIS - CROSS SECTION (A-A)

Right Side Width:	2	ft	Bottom Width:	1	ft
Right Side Slope:	0.25	ft/ft	Bottom Elevation:	640	
Left Side Width:	2	ft	Top of Water Elevation:	640.5	
Left Side Slope:	0.25	ft/ft	Top of Foundation Elev.:	645.5	

SLOPE	0.030	FT/FT
MANNING'S n	0.027	FT
FLOW DEPTH, d	0.50	FEET
BOTTOM WIDTH, b	1.00	FEET
Z	0.25	FT/FT
FLOW AREA	1.50	SQ FT
WETTED PERIMETER	5.12	FEET
HYDRAULIC RADIUS	0.29	FT
CAPACITY (USING MANNING'S FORMULA)	6.32	CFS

ENGINEERING
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ENGINEERS | SCIENTISTS | SURVEYORS

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phone 630.393.3060
fax 630.393.2152

PROJECT: Reserves of Saddle Creek
LOCATION: Book Road, Uninc Naperville
PROJECT #: W24300.00

BY: MOD
DATE: 9/2/2025
REVISED:

SWALE CAPACITY ANALYSIS - CROSS SECTION (B-B)

Right Side Width:	2	ft	Bottom Width:	1	ft
Right Side Slope:	0.25	ft/ft	Bottom Elevation:	644	
Left Side Width:	2	ft	Top of Water Elevation:	644.5	
Left Side Slope:	0.25	ft/ft	Top of Foundation Elev.:	649.0	

SLOPE	0.030	FT/FT
MANNING'S n	0.027	FT
FLOW DEPTH, d	0.50	FEET
BOTTOM WIDTH, b	1.00	FEET
Z	0.25	FT/FT
FLOW AREA	1.50	SQ FT
WETTED PERIMETER	5.12	FEET
HYDRAULIC RADIUS	0.29	FT
CAPACITY (USING MANNING'S FORMULA)	6.32	CFS

Calculations

Emergency Overflow Weir Calculations

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Warrenville, Illinois 60555

phone 630.393.3060
fax 630.393.2152

PROJECT: Reserves of Saddle Creek
LOCATION: Naperville
PROJECT #: W24300.00

BY: MD
DATE: 9/2/2025
REVISED:

EMERGENCY OVERLAND FLOW WEIR CONVEYANCE (DRIVEWAY)

DESCRIPTION: Emergency Overflow Weir **WEIR FLOW EQUATION: Q = 3.00L(H)^1.5**

HYDRAULIC DIMENSIONS		#1
WEIR LENGTH	FT.	65
WEIR COEFFICIENT		3
WEIR ELEV.	(FT NAV88)	640.00

ELEVATION-DISCHARGE RELATIONSHIP

ELEVATION (feet)	Q-WIER (cfs)
640.00	0.00
640.10	6.17
640.20	17.44
640.30	32.04
640.40	49.33
640.45	58.39