Cover Letter

Date: **01/22/2025**

From: Jared Simon, P.E.
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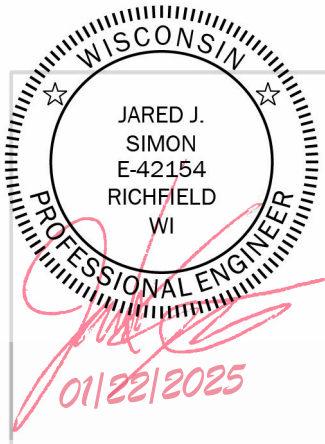
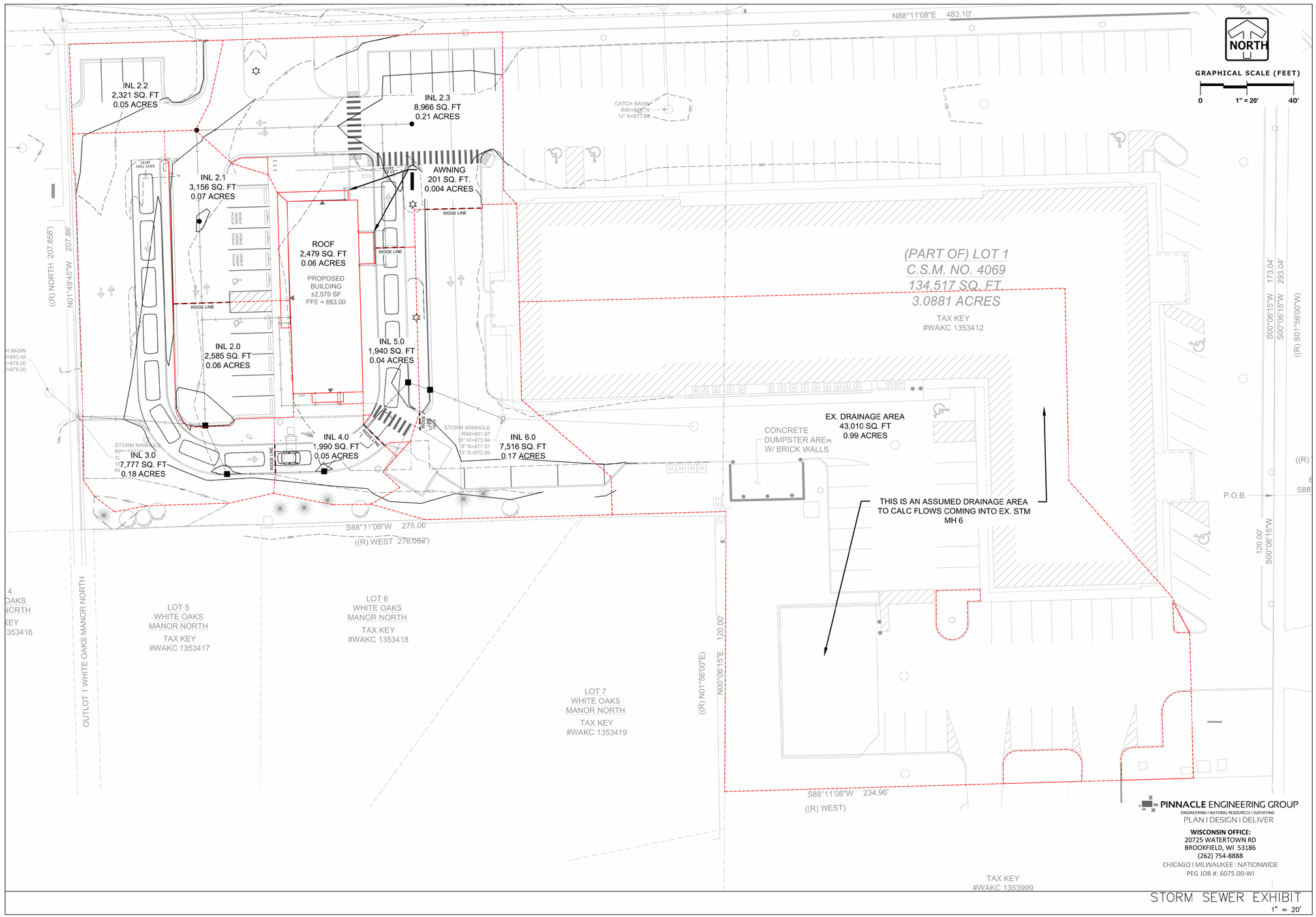
PEG Project: **New Building for: Starbucks** PEG Project No.: 6075.00

The following calculations and exhibits have been included under this cover:

Pages	Description
1	Storm Sewer Exhibit
1	Storm Sewer Computations
14	Hydraulic Grade Line Profiles
2	Inlet Capacity Computations



PLOT DATE: 1/21/2025



PINNACLE ENGINEERING GROUP
ENGINEERING | NATURAL RESOURCES | SURVEYING
PLAN | DESIGN | DELIVER

WISCONSIN OFFICE:
20725 WATERTOWN RD
BROOKFIELD, WI 53186
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CHICAGO | MILWAUKEE : NATIONWIDE
PEG JOB #: 6075.00-WI

FILE NAME: Z:\PROJECTS\2024\6075.00-WI\CAD\EXHIBITS\6075.00-WI STORM SEWER AREA EXHIBIT.DWG

logic design & architecture, inc.
LogicDA.com | 414.909.0080
Project Manager: WBM
Job Number: 22-082

Additional Info

Project Name

NEW BUILDING FOR:
STARBUCKS

101 SUNSET DR.
WAUKESHA, WI 53186

Dates/Revisions

Drawing Title
STORM SEWER EXHIBIT

EX-2

- PRELIMINARY -
NOT FOR CONSTRUCTION

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STORM SEWER COMPUTATIONS FOR SBX WAUKESHA

WAUKESHA, WISCONSIN

SHEET 1 OF 1
DESIGN BY: HLY
PROJECT NUMBER: 6075.00-WI
DATE: 1/22/2025

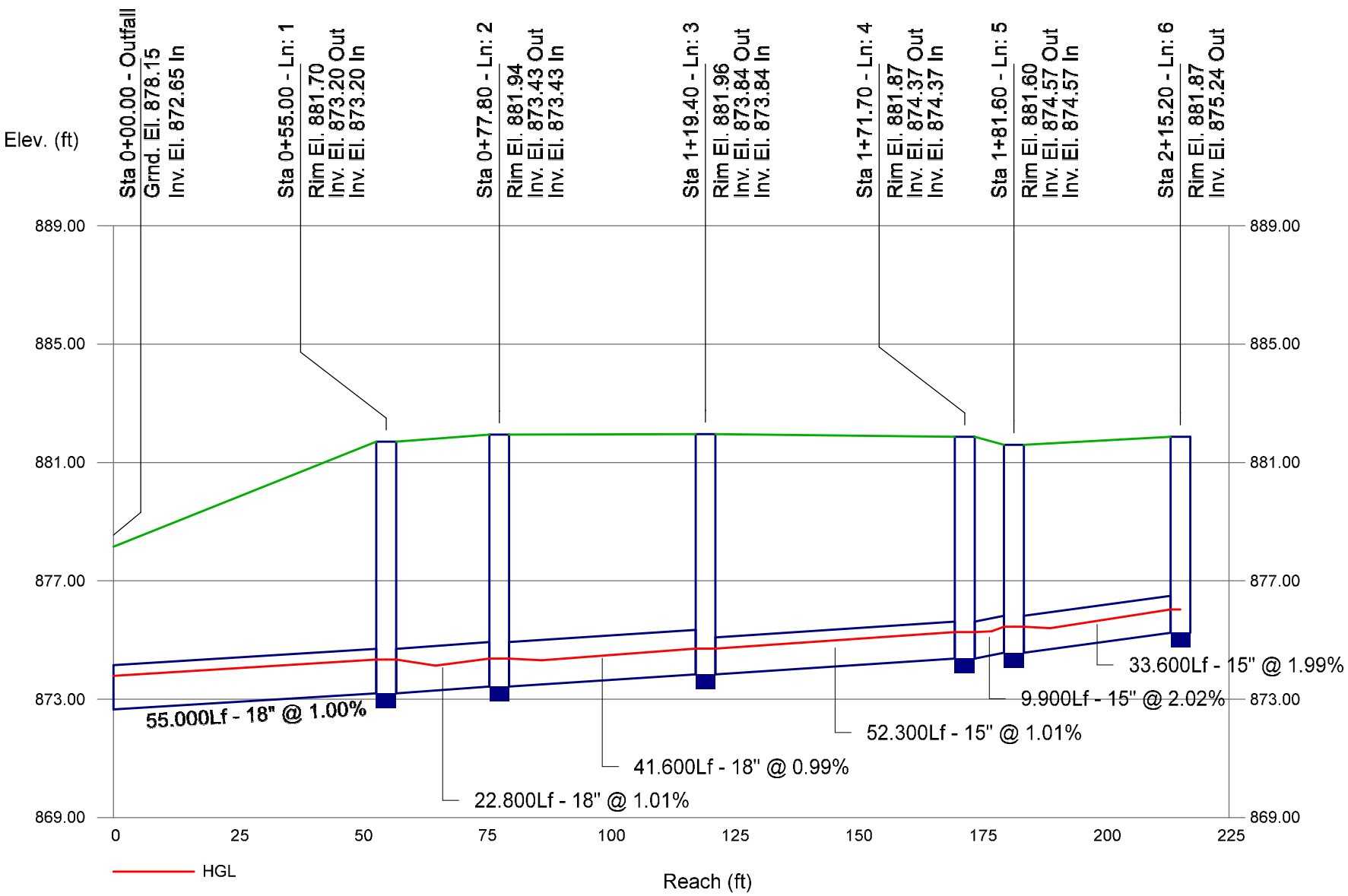
DESIGN DATA

County: Waukesha | **Design Storm:** 10 yr | **Storm Duration:** 5 min | **DESIGN INTENSITY (I):** 7.22 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3} S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	EX. MH 7	INL 6.0	0.00	0.00	0.00	3.86	33.6	15	2.00	0.013	0.12	0.67	44%	7.13	9.83	881.87	875.24	874.57
	INL 6.0	INL 5.0	0.17	0.70	0.86	4.72	9.9	15	2.00	0.013	0.05	0.20	51%	7.50	9.83	881.60	874.57	874.37
	INL 5.0	INL 4.0	0.05	0.63	0.23	4.95	52.3	15	1.00	0.013	0.31	0.52	69%	5.80	6.95	881.87	874.37	873.84
	INL 4.0	INL 3.0	0.05	0.49	0.18	5.12	41.6	18	1.00	0.013	0.10	0.42	49%	5.91	11.30	881.96	873.84	873.43
	INL 3.0	INL 2.0	0.18	0.67	0.87	5.99	22.8	18	1.00	0.013	0.07	0.23	55%	6.14	11.30	881.94	873.43	873.20
	INL 2.0	EX. MH 1	0.06	0.90	0.39	8.68	55.0	18	1.00	0.013	0.38	0.55	74%	6.64	11.30	881.70	873.20	872.65
	INL 2.3	INL 2.2	0.21	0.78	1.18	1.21	92.1	8	2.00	0.013	0.92	1.84	65%	5.31	1.84	881.49	878.41	876.56
	INL 2.2	INL 2.1	0.05	0.70	0.25	1.46	39.0	8	2.00	0.013	0.57	0.78	76%	5.50	1.84	883.20	876.56	875.78
	INL 2.1	INL 2.0	0.07	0.87	0.44	2.29	87.5	10	2.00	0.013	0.96	1.75	68%	6.22	3.33	881.90	875.62	873.87
	ROOF	TEE	0.06	0.90	0.39	0.39	67.8	6	2.50	0.013	0.33	1.70	45%	4.37	0.95	883.00	878.95	877.25
	TEE	INL 2.1	0.00	0.90	0.00	0.39	32.9	6	7.00	0.013	0.16	2.30	31%	6.37	1.60	882.93	877.25	874.95
	AWNING	INL 2.3	0.004	0.90	0.03	0.03	71.4	6	2.50	0.013	0.00	1.79	7%	2.01	0.95	883.00	880.02	878.23

Storm Sewer Profile

Proj. file: Storm Sewer Analysis.stm



Storm Sewer Profile

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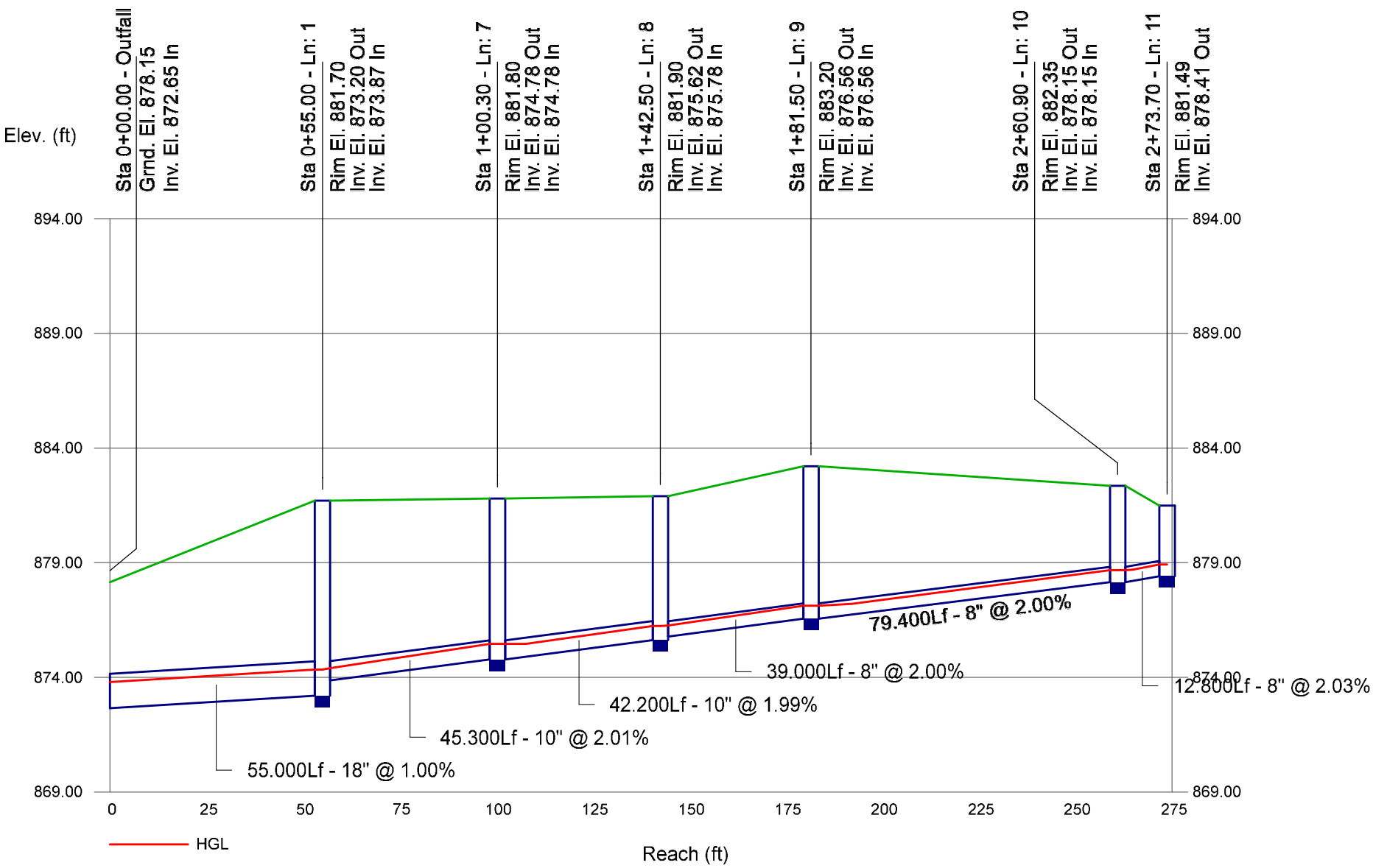
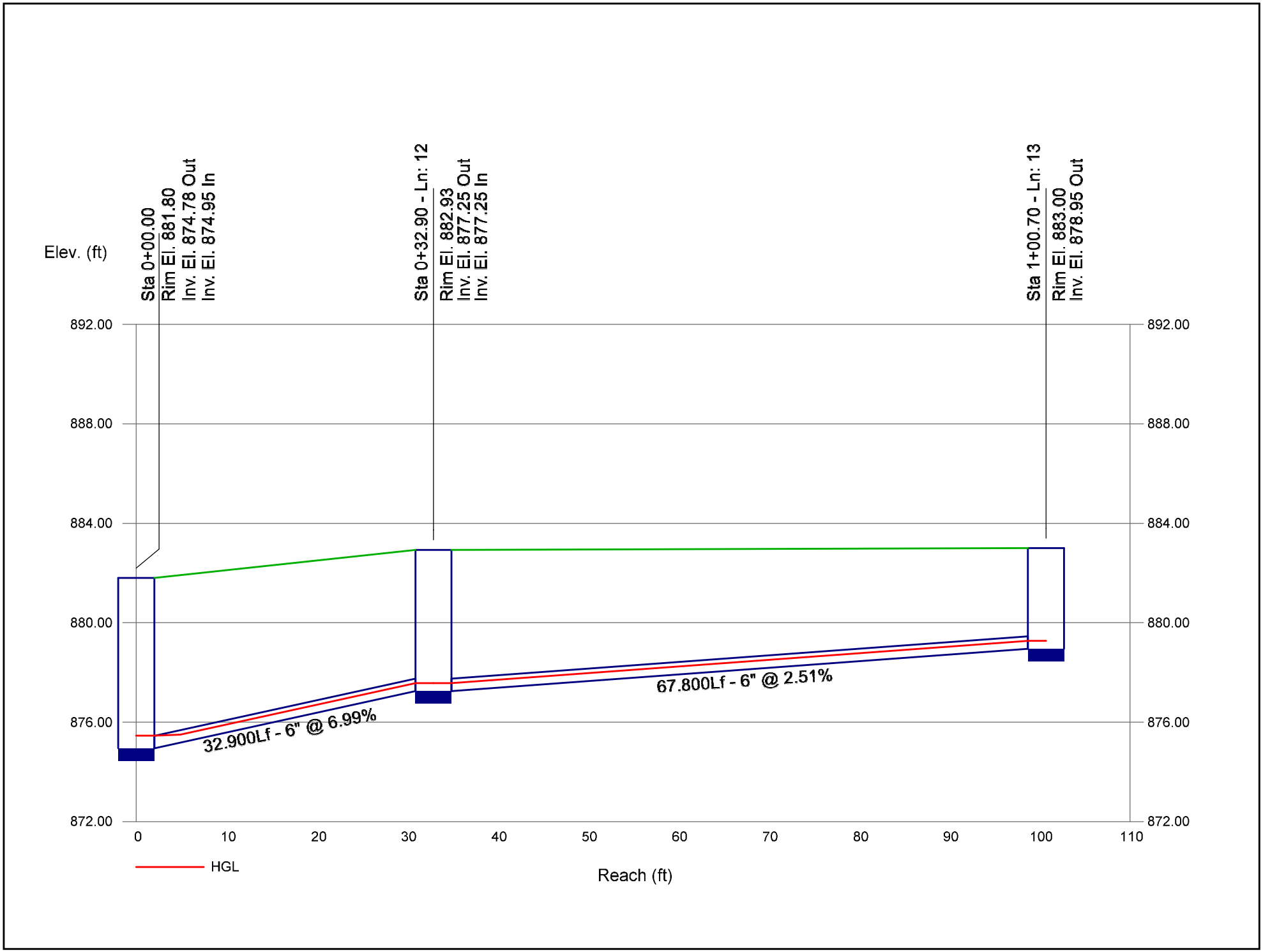


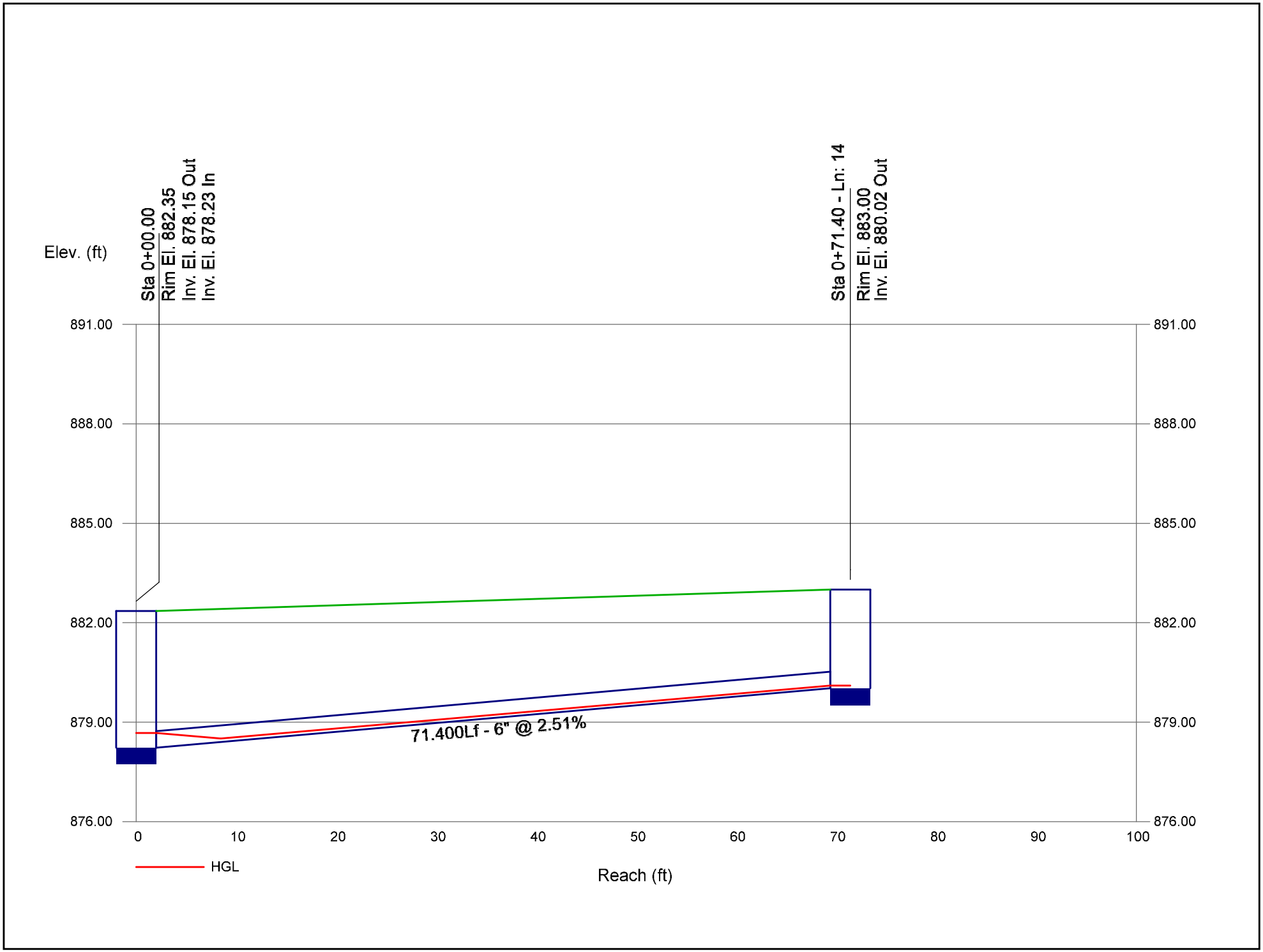
Storm Sewer Profile

Proj. file: Storm Sewer Analysis.stm



Storm Sewer Profile

Proj. file: Storm Sewer Analysis.stm



INLET CAPACITY

FOR

SBX WAUKESHA

PINNACLE ENGINEERING GROUP
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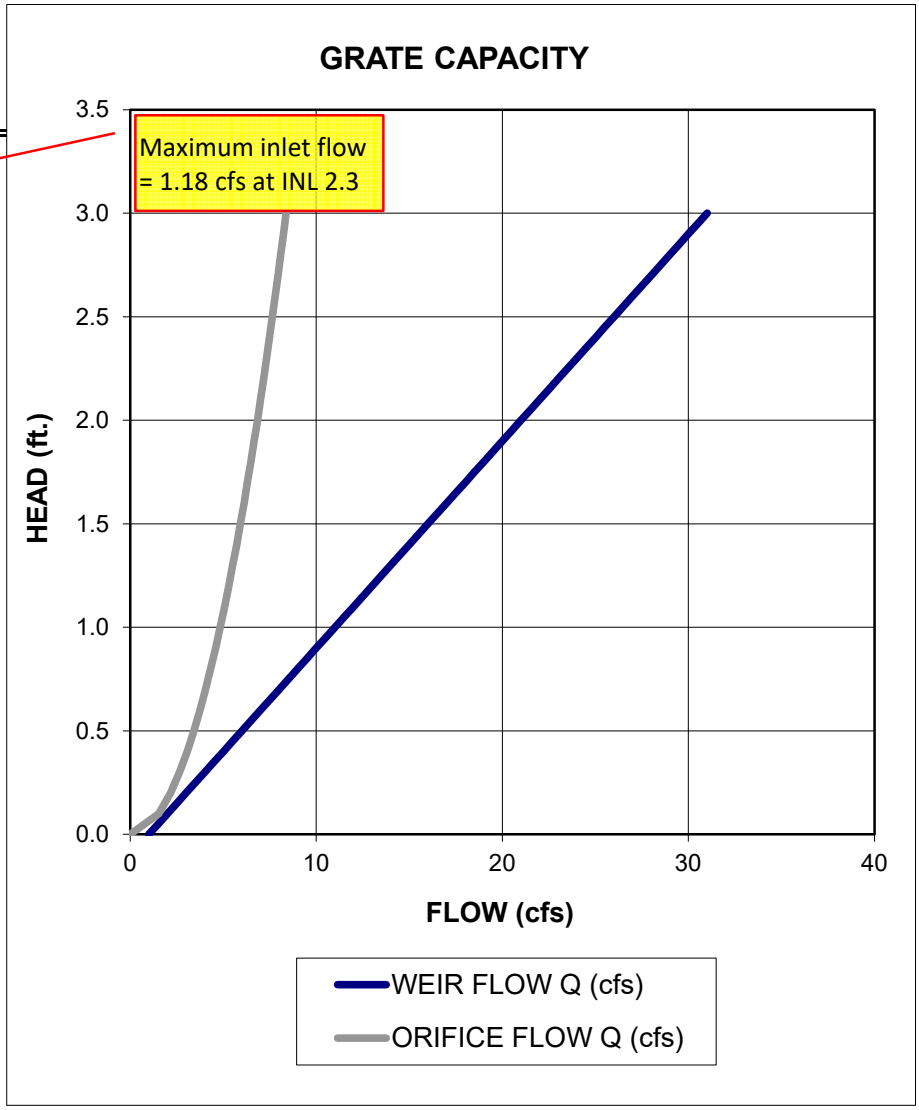
DESIGN BY: JJS
PROJECT NUMBER: 6075.00
DATE: 1/22/2025

NEENAH GRATE NUMBER: R-2502, TYPE D GRATE
INLET LENGTH OR PERIMETER: 6 ft.
GRATE OPEN END AREA: 0.9 sf.

HEAD H (ft.)	WEIR FLOW Q (cfs)	ORIFICE FLOW Q (cfs)
0.0	0.00	0.00
0.1	0.63	1.53
0.2	1.79	2.16
0.3	3.28	2.65
0.4	5.05	3.06
0.5	7.06	3.42
0.6	9.29	3.75
0.7	11.70	4.05
0.8	14.30	4.33
0.9	17.06	4.59
1.0	19.98	4.84
1.1	23.05	5.07
1.2	26.26	5.30
1.3	29.61	5.51
1.4	33.10	5.72
1.5	36.71	5.92
1.6	40.44	6.12
1.7	44.29	6.31
1.8	48.25	6.49
1.9	52.33	6.67
2.0	56.51	6.84
2.1	60.80	7.01
2.2	65.20	7.17
2.3	69.69	7.33
2.4	74.29	7.49
2.5	78.98	7.65
2.6	83.76	7.80
2.7	88.64	7.95
2.8	93.61	8.09
2.9	98.67	8.24
3.0	103.82	8.38



Weir flow controls until a head of 0.242 feet is reached, where orifce flow takes over and controls. The flow at this transition is less efficient than what is indicated by either the weir or orifice flow equations. A flow of 20% less than the equated flow is a conservative estimate.

INLET CAPACITY

FOR

SBX WAUKESHA

PINNACLE ENGINEERING GROUP
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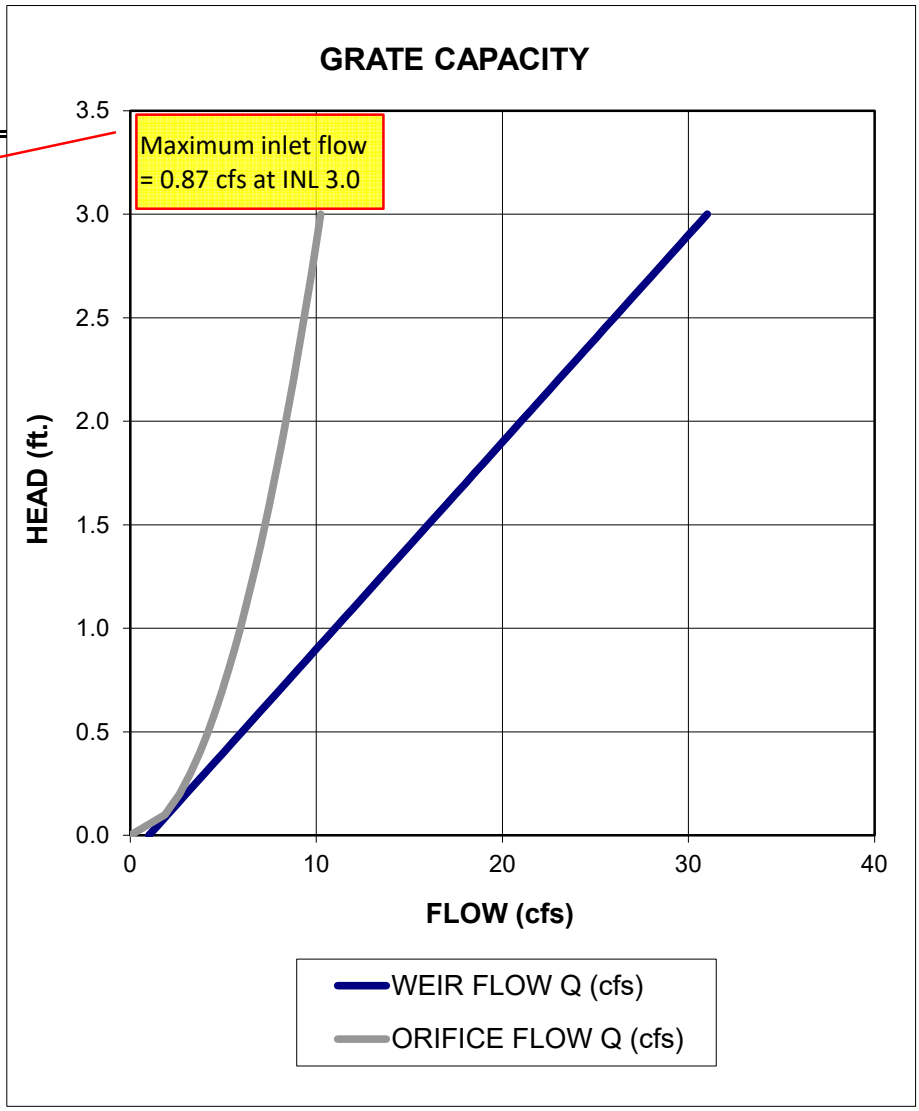
DESIGN BY: JJS
PROJECT NUMBER: 6075.00
DATE: 1/22/2025

NEENAH GRATE NUMBER: R-3015, TYPE R GRATE
INLET LENGTH OR PERIMETER: 4.6 ft.
GRATE OPEN END AREA: 1.1 sf.

HEAD H (ft.)	WEIR FLOW Q (cfs)	ORIFICE FLOW Q (cfs)
0.0	0.00	0.00
0.1	0.48	1.87
0.2	1.37	2.64
0.3	2.52	3.24
0.4	3.88	3.74
0.5	5.42	4.18
0.6	7.12	4.58
0.7	8.97	4.95
0.8	10.96	5.29
0.9	13.08	5.61
1.0	15.32	5.91
1.1	17.67	6.20
1.2	20.14	6.47
1.3	22.70	6.74
1.4	25.37	6.99
1.5	28.14	7.24
1.6	31.00	7.48
1.7	33.95	7.71
1.8	36.99	7.93
1.9	40.12	8.15
2.0	43.33	8.36
2.1	46.62	8.57
2.2	49.98	8.77
2.3	53.43	8.96
2.4	56.95	9.16
2.5	60.55	9.35
2.6	64.22	9.53
2.7	67.96	9.71
2.8	71.77	9.89
2.9	75.65	10.07
3.0	79.59	10.24



Weir flow controls until a head of 0.386 feet is reached, where orifce flow takes over and controls. The flow at this transition is less efficient than what is indicated by either the weir or orifice flow equations. A flow of 20% less than the equated flow is a conservative estimate.