raSmith

CREATIVITY BEYOND ENGINEERING

Storm Sewer Calculations for

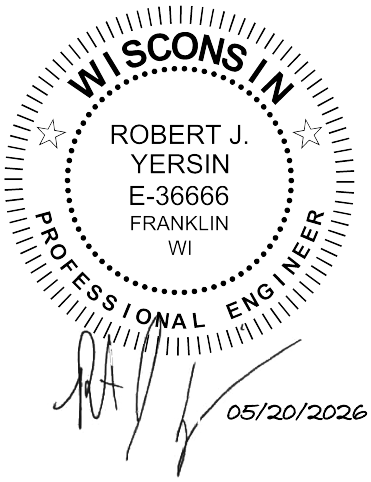
INNIO – Project Green

Waukesha, WI

Project No. 3250244

May 20th, 2026

PREPARED BY:
raSmith
16745 W. Bluemound Road
Brookfield, WI 53005
PH: 262-781-1000



BASIS OF DESIGN

The proposed storm sewer is for the re-development of a proposed Innio building addition in the city of Waukesha, WI. The storm sewer systems are designed to convey drainage from offsite areas and finished surfaces/buildings through pipes to the underground detention systems. There are also 2 bypass storm sewer networks that will evade the underground detention systems and connect into existing storm sewers that will ultimately drain into the Fox River. There are 9 proposed storm sewer networks on the proposed site that will drain into the one of the underground detentions systems. Below are the networks and where they drain to.

Drains to West underground detention: 100, 300, 400, 600, 1300 (Note: 1300 is just an inlet grate on top of the west underground detention system).
Drains to East underground detention: 700, 900, 1000, 1200
Bypass underground detention: 200, 1110

For the STO 200 by-pass network design, the existing maximum flow rate was calculated for the existing upstream pipe to compare maximum flow rates from existing to the proposed pipe. The inverts from the "Waukesha Engine Division – Laboratory Cooling Systems Upgrade – Site Plan" were used to calculate the existing slope for the existing pipe (see attached). There is a double conversion from City Datum, to NGVD29 datum, to NAVD88 datum, which for the Innio site is a total add of 780.43 from City Datum. For the proposed STO 200 by-pass network design please see "Storm Utility Plan – Building Addition" in the construction plans. Below are calculations for the maximum flow of the existing 24" pipe upstream of STO 200 by-pass network.

24" W - 24.97 = 805.40 24" E – 24.58 = 805.01 Length = 68.96'
805.40 – 805.01 = 0.3 / 68.96 = 0.0043 = 0.43% Q capacity (existing 24") = 15.00 cfs

Below is the first proposed STO 200 pipe down stream of existing 24" pipe:
24" SW = 804.50 24" NE = 803.30 Length = 120.29'
804.50 – 803.30 = 1.2 / 120.29 = 0.01 = 1.00% Q capacity (STO 200) = 22.6 cfs

Q capacity (STO 200) = 22.6 cfs > Q capacity (existing 24") = 15.00 cfs
The capacity for STO 200 by-pass network is greater than the existing capacity and will be able to convey the existing upstream storm sewer system.

For the STO 1110 by-pass network, raSmith was given a slope and invert to tie into at the building. The MEP is routing this existing 21" storm pipe through the proposed building addition. Due to pipe material changes, the first pipe coming out of the building will be a 24" ductile iron pipe. See "Storm Utility Plan – Building Addition" in the construction plans for STO 1110 by-pass network pipe design.

The storm sewer is designed to convey the 10-year storm within the pipe using a gravity design with the HGL elevation within the pipe. Design charts have been provided for the 10-year and 100-yr storm design. The 100-yr storm will not surcharge system rims. Also based on comments from MSA, all roof drains have been updated to convey the 100-yr storm. In the event of fully clogged inlets, stormwater will follow a designed overland flow path. All storm sewer is subject to the City of Waukesha approval.

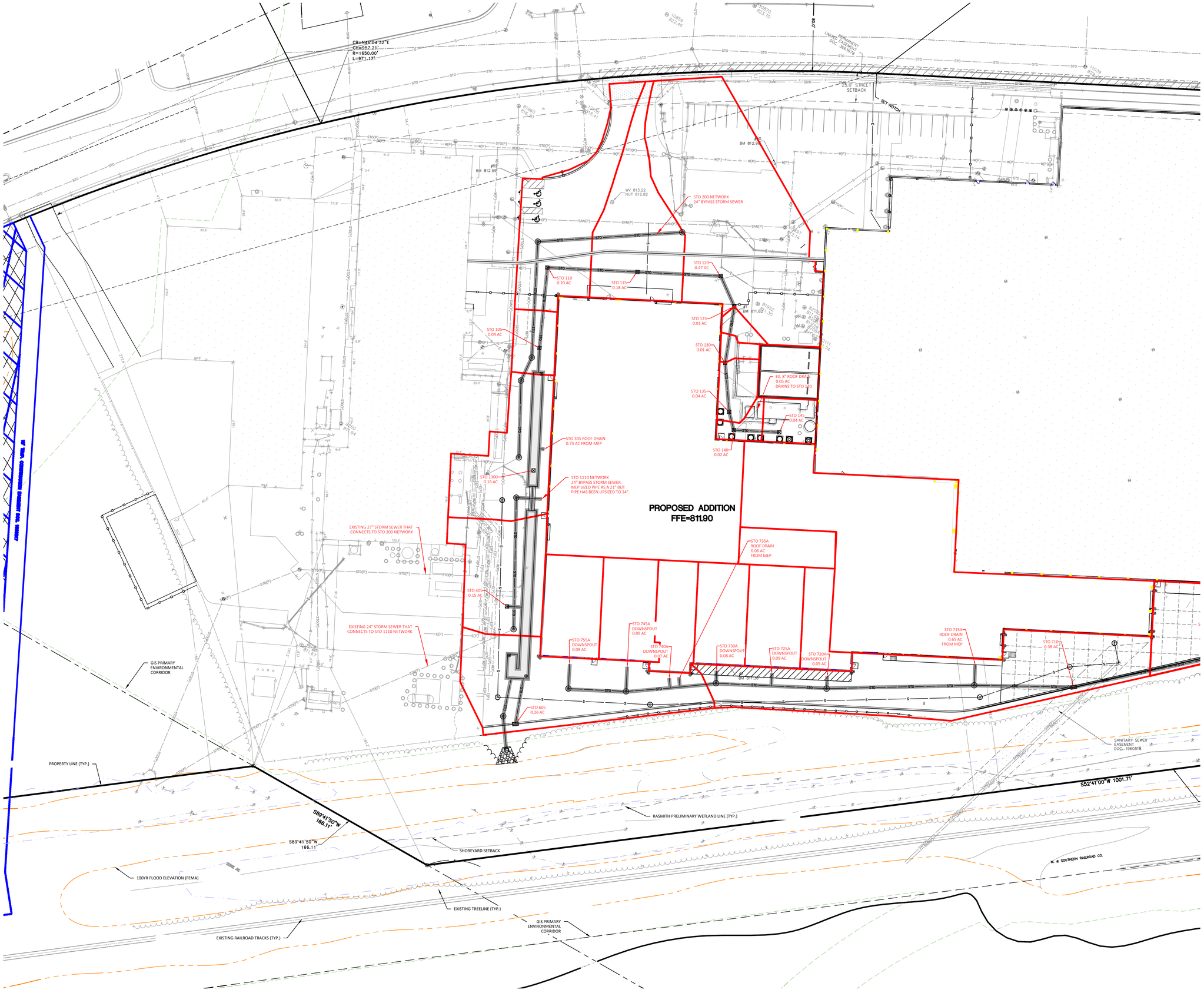
INLET CAPACITY

See attached inlet capacity spreadsheets for proposed Innio building addition. All inlets are functional with a 25% clogging factor during the 100-yr storm. The inlet clogging factor in the spreadsheet reads the percent of flow allowed.

There are 3 inlets that are in an on-grade condition, 125, 130, and 1215. Their clogging factor has been changed to 50% in column “clogging Factor Adj. Flow Qc (cfs)” due to the inlets being in an on-grade condition. The 3 inlets that are in an on-grade condition are shown in red under the “Inlet No.” column and there is no bypass flow with a 50% clogging factor. Inlets 1220A and 1220B are double inlets. The areas for inlets 1220A and 1220B have been added together and are in row 1220A.

ATTACHMENTS

Storm Sewer Inlet Drainage Exhibits
Storm Sewer Bypass Layout over Existing As-built
100 yr Inlet Capacity Calculations
10yr/100yr - Storm Sewer Design Reports



UTILITY LEGEND

- PROPOSED PROPERTY LINE
- PRIMARY ENVIRONMENTAL CORRIDOR
- PRELIMINARY WETLAND
- 100 YEAR FLOOD ELEVATION
- EXISTING GAS LINE
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING WATER MAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED GAS LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TELEPHONE LINE
- PROPOSED WATER MAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED INLET/ CB
- PROPOSED STORM MANHOLE
- PROPOSED AREA DRAIN
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER

Know what's **below.**
Call before you dig.

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DATE	DESCRIPTION

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INNIO - PLANT EXPANSION
CITY OF WAUKESHA, WI

STORM SEWER INLET DRAINAGE EXHIBIT
BUILDING ADDITION

DATE: 4/29/2026

SCALE: 1" = 30'

JOB NO. 3250244

PROJECT MANAGER:
RYAN J. LANCOUR, P.E.

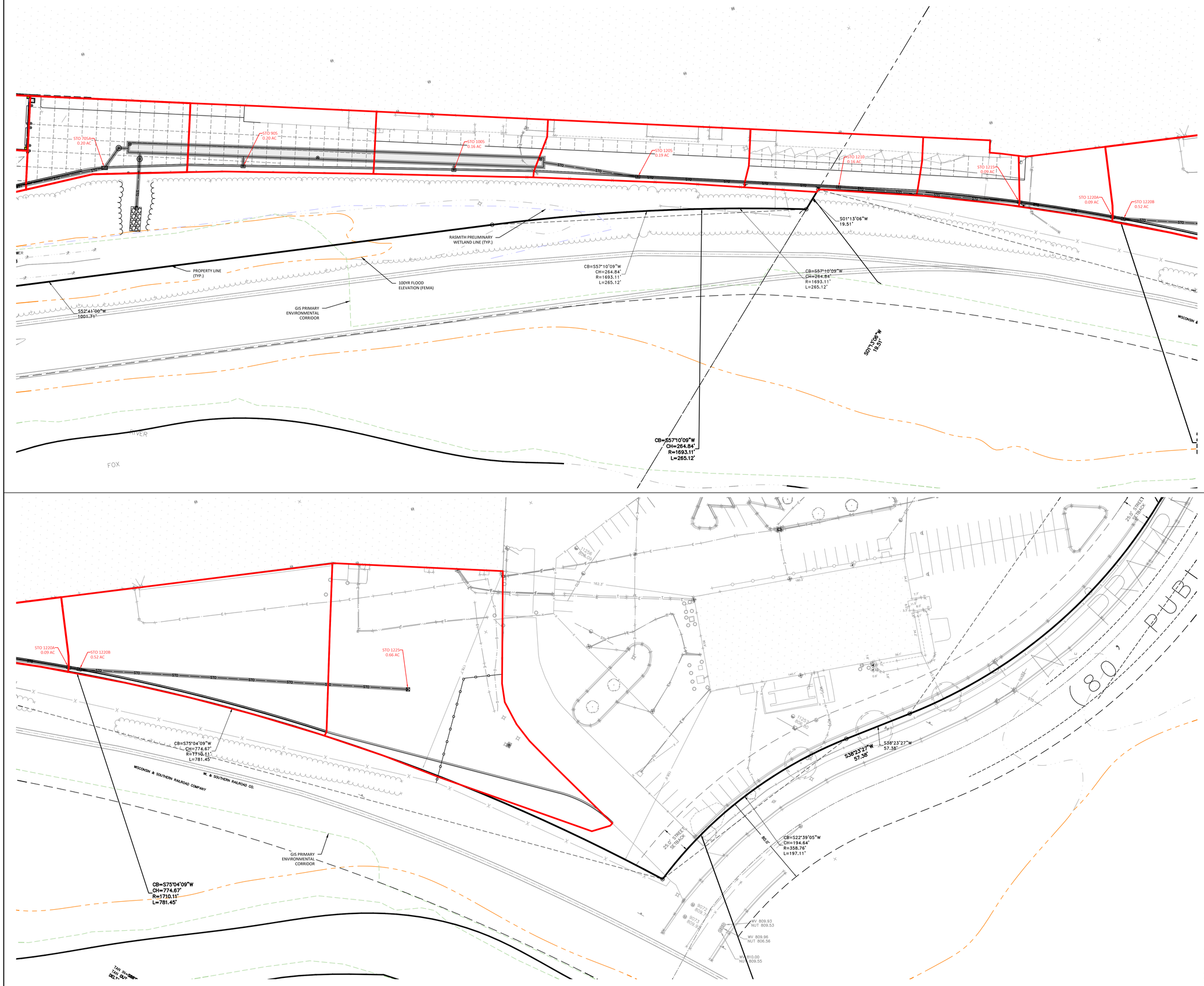
DESIGNED BY: TJR

CHECKED BY: RJY

SHEET NUMBER

EX-01

P:\3250244\Dwg\Exhibits\3250244_Storm Sewer Drainage Areas.dwg, STORM BLDG, 5/20/2026 11:34:14 AM, orr



UTILITY LEGEND

- PROPOSED PROPERTY LINE
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Cedarburg, WI | Naperville, IL | Irvine, CA

INNIO - PLANT EXPANSION
CITY OF WAUKESHA, WI

STORM SEWER INLET DRAINAGE EXHIBIT
ACCESS ROAD

DATE: 4/26/2026

SCALE: 1" = 30'

JOB NO. 3250244

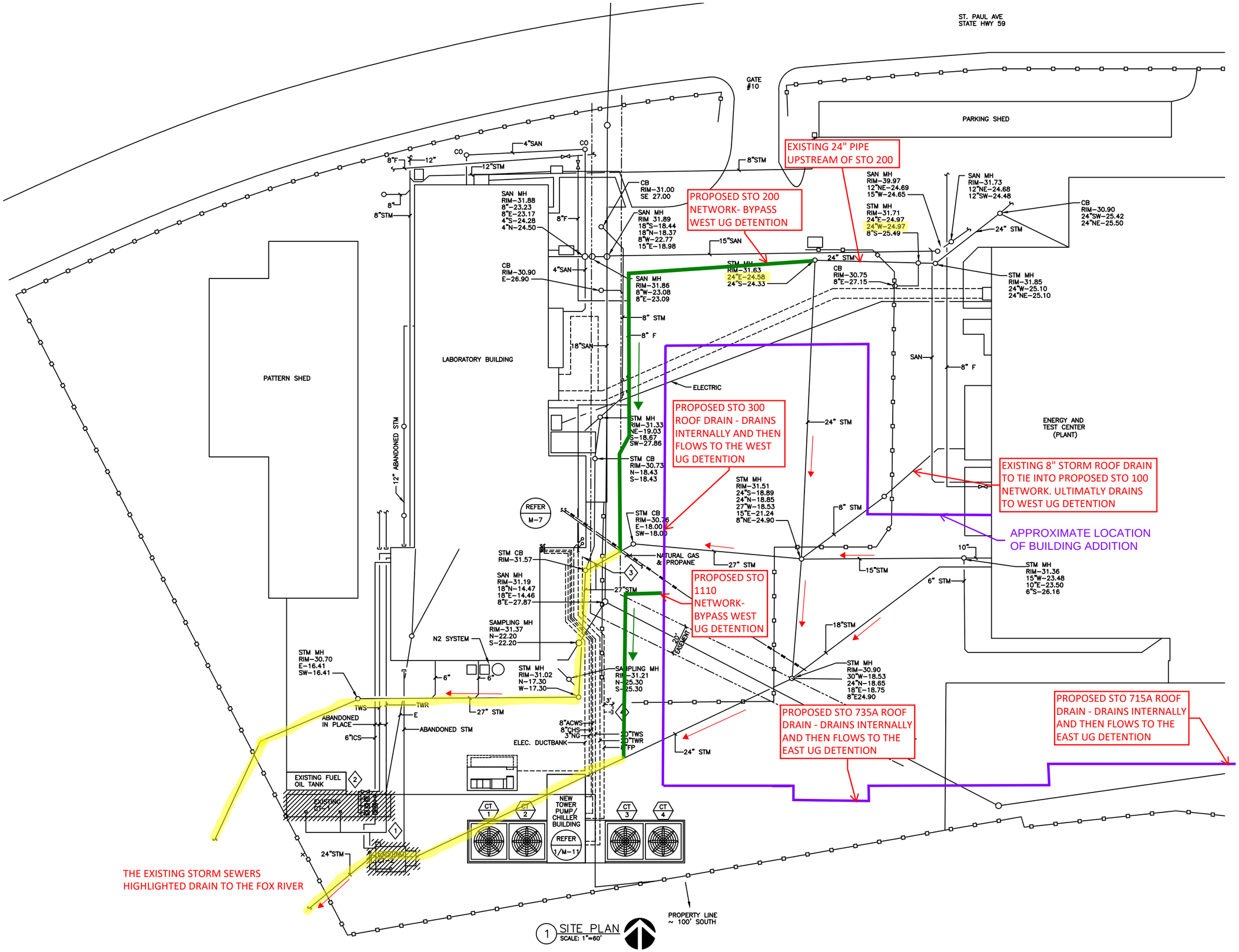
PROJECT MANAGER:
RYAN J. LANCOUR, P.E.

DESIGNED BY: TJR

CHECKED BY: RJY

SHEET NUMBER

EX-02



ACS
Affiliated Construction Services, Inc.
3330 University Ave.
Madison, WI 53705
(608)663-1590
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AEI Affiliated Engineers
Affiliated Engineers, Inc.
625 North Segoe Road P.O. Box 5039
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Tel 608/238-2616 Fax 608/238-2614

Flad & Associates
Flad & Associates
644 Science Drive P.O. Box 44977
Madison, WI 63744-4977
Phone (608) 238-2661

General Notes

1. REFER TO SHEET M-17 FOR PLAN AND PROFILE OF NEW SITE WORK.

Plan Notes

1. DEMO EXISTING COOLING TOWERS, PUMP BUILDING, AND EQUIPMENT NOT TO BE RELOCATED. TURN EQUIPMENT OVER TO OWNER FOR DISPOSITION. DEMO EXISTING CONCRETE BASIN, BACKFILL, AND PAVE TO MATCH EXISTING GRADE.
2. REMOVE EXISTING PUMP MARKED AS P-17 FOR RELOCATION TO NEW TOWER PUMP BUILDING. REFER TO SCHEDULES FOR PUMP MODIFICATION REQUIREMENTS.
3. CONNECT TO EXISTING 8"FP LINE.
4. CONTRACTOR SHALL MARK FINAL GRADE INDICATING THE LOCATION OF 8" CAPPED TEE.

Revisions

08-15-2000 ISSUED FOR BID
09-11-2001 REVIEW MEETING
09-25-2001 REVIEW MEETING

Project

WAUKESHA ENGINE DIVISION-LABORATORY COOLING SYSTEMS UPGRADE
WAUKESHA, WI

Sheet Title

SITE PLAN

Date	Drawn By
08-15-2000	MDP

Project Number

99105-02

Sheet Number

M-4

HYDRAULIC COMPUTATIONS FOR GRATE INLETS IN SUMPS

INNIO

Sheet Number: 1 of 1
Computed By: CRR
Checked By: CRR Date: 4/21/2026

Inlet No.	Inlet Type	Drainage Area No.	Runoff Coeff. C	Area A (acres)	Time of Conc. Tc (min)	100 yr. Intensity I (in/hr)	Area Peak Flow Qp (cfs)	Carryover From Upstream Inlet q (cfs)	Total Flow Q (cfs)	Clogging Factor Adj. Flow Qc (cfs)	Length of Inlet Opening L (ft)	Area of Inlet Opening A (sq. ft.)	Flow Depth d (ft)	Type of Flow	Maximum Allowable Depth D (ft)	Maximum Grate Capacity Q_{max} (cfs)	Inlet Bypass (Qc - Q_{max}) q (cfs)	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
105	B		0.95	0.04	6	9.48	0.36		0.36	0.48	6.00	0.90	0.089	Weir Flow	0.38	2.670		GOOD
110	B		0.95	0.20	6	9.48	1.80		1.80	2.40	6.00	0.90	0.308	Orifice Flow	0.50	3.062		GOOD
115	B		0.95	0.18	6	9.48	1.62		1.62	2.16	6.00	0.90	0.249	Orifice Flow	0.43	2.840		GOOD
120	D		0.95	0.47	6	9.48	4.23		4.23	5.65	10.50	3.70	0.318	Weir Flow	0.74	15.316		GOOD
125	B		0.95	0.01	6	9.48	0.09		0.09	0.18	6.00	0.90	0.046	Weir Flow	0.42	2.807		NOT in sag, 50% clog.
130	B		0.95	0.01	6	9.48	0.09		0.09	0.18	6.00	0.90	0.046	Weir Flow	0.25	2.165		NOT in sag, 50% clog.
135	B		0.95	0.04	6	9.48	0.36		0.36	0.48	6.00	0.90	0.089	Weir Flow	0.66	3.518		GOOD
140	B		0.95	0.02	6	9.48	0.18		0.18	0.24	6.00	0.90	0.056	Weir Flow	0.54	3.182		GOOD
145	B		0.95	0.04	6	9.48	0.36		0.36	0.48	6.00	0.90	0.089	Weir Flow	0.37	2.634		GOOD
405	B		0.95	0.15	6	9.48	1.35		1.35	1.80	6.00	0.90	0.216	Weir Flow	0.35	2.562		GOOD
605	A		0.95	0.26	6	9.48	2.34		2.34	3.12	5.80	1.60	0.318	Weir Flow	0.50	5.444		GOOD
705A	A		0.95	0.20	6	9.48	1.80		1.80	2.40	5.80	1.60	0.267	Weir Flow	0.50	5.444		GOOD
710	A		0.95	0.38	6	9.48	3.42		3.42	4.56	5.80	1.60	0.410	Weir Flow	0.50	5.444		GOOD
905	A		0.95	0.20	6	9.48	1.80		1.80	2.40	5.80	1.60	0.267	Weir Flow	0.50	5.444		GOOD
1005	A		0.95	0.16	6	9.48	1.44		1.44	1.92	5.80	1.60	0.230	Weir Flow	0.50	5.444		GOOD
1205	A		0.95	0.19	6	9.48	1.71		1.71	2.28	5.80	1.60	0.258	Weir Flow	0.50	5.444		GOOD
1210	A		0.95	0.16	6	9.48	1.44		1.44	1.92	5.80	1.60	0.230	Weir Flow	0.50	5.444		GOOD
1215	A		0.95	0.09	6	9.48	0.81		0.81	1.62	5.80	1.60	0.206	Weir Flow	0.50	5.444		NOT in sag, 50% clog.
1220B	1220A (0.09 ac) and 1220B (0.52 ac) are double Inlets																	
1220A	E		0.95	0.61	6	9.48	5.50		5.50	7.33	11.60	3.20	0.354	Weir Flow	0.50	10.888		GOOD
1225	D		0.95	0.66	6	9.48	5.95		5.95	7.93	10.50	3.70	0.399	Weir Flow	1.45	21.439		GOOD
1300	C		0.95	0.16	6	9.48	1.47		1.47	1.95	8.40	2.00	0.182	Weir Flow	0.46	6.527		GOOD

Inlet Information				
Inlet Type	Inlet Perimeter P (ft)	Grated Open Area A (sf)	Inlet Inlet Clogging Factor (%)	Comments
A	5.800	1.600	75	NEENAH R-3067 (Type C)
B	6.000	0.900	75	NEENAH R-2050 (Type C)
C	8.400	2.000	75	NEENAH R-2557 (Type G)
D	10.500	3.700	75	NEENAH 1792-JG
E	11.600	3.200	75	NEENAH R-3067 (Type C) x2

Inlet information must appear in an alpha-numeric ascending order or spreadsheet will lookup incorrect values. The Inlet Clogging Factor indicates percent of flow allowed. Gutter flow is calculated assuming a normal gutter section. In normal conditions the addition of a curb box to a grate on grade has negligible flow additions and are thus ignored. The curb opening, however has a positive effect on clogging and should be reflected in the clogging factor. For Grate Types use the following: 1 = degree tilt bar, 2 = 45 degree tilt bar, 3 = curved vane,4 = P-1-1/8, 5 = P-1-7/8, 6 = P-1-7/8-4, and 7 = reticuline.

Calculations and Equations are Based On:

Drainage of Highway Pavements, HEC No. 12
By: Frank L. Johnson and Fred F.M. Chang
Prepared for: Federal Highway Administration
Report Date: March 1984

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.183	0.04	1.14	0.95	0.04	1.08	6.0	10.6	5.9	6.42	11.33	5.93	18	0.99	802.75	802.95	803.56	803.93	805.31	811.29	105-100
2	1	67.120	0.28	1.10	0.95	0.27	1.05	6.0	10.3	6.0	6.26	11.37	5.16	18	1.00	802.95	803.62	803.93	804.59	811.29	811.23	110-105
3	2	74.906	0.18	0.82	0.95	0.17	0.78	6.0	9.9	6.1	4.73	11.38	4.30	18	1.00	803.62	804.37	804.59	805.20	811.23	811.20	115-110
4	3	69.369	0.47	0.64	0.95	0.45	0.61	6.0	9.6	6.1	3.72	3.85	5.49	12	0.99	804.54	805.23	805.33	806.05	811.20	810.88	120-115
5	4	27.736	0.01	0.17	0.95	0.01	0.16	6.0	9.3	6.2	1.00	3.88	2.32	12	1.01	805.23	805.51	806.05	805.93	810.88	811.20	125-120
6	5	47.333	0.01	0.16	0.95	0.01	0.15	6.0	8.7	6.3	0.96	3.84	3.11	12	0.99	805.51	805.98	805.93	806.39	811.20	811.49	130-125
7	6	40.868	0.04	0.15	0.95	0.04	0.14	6.0	8.2	6.4	0.92	3.86	3.06	12	1.00	805.98	806.39	806.39	806.79	811.49	811.08	135-130
8	7	15.682	0.07	0.11	0.95	0.07	0.10	6.0	7.9	6.5	0.68	3.90	2.58	12	1.02	806.39	806.55	806.79	806.89	811.08	811.20	140-135
9	8	37.863	0.04	0.04	0.95	0.04	0.04	6.0	6.0	7.0	0.26	3.87	1.65	12	1.00	806.55	806.93	806.89	807.14	811.20	811.37	145-140

Project File: STO 100.stm

Number of lines: 9

Run Date: 4/30/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.183	0.04	1.14	0.95	0.04	1.08	6.0	9.3	8.5	9.23	11.33	6.68	18	0.99	802.75	802.95	803.78	804.12	805.31	811.29	105-100
2	1	67.120	0.28	1.10	0.95	0.27	1.05	6.0	9.1	8.6	8.96	11.37	6.08	18	1.00	802.95	803.62	804.12	804.78	811.29	811.23	110-105
3	2	74.906	0.18	0.82	0.95	0.17	0.78	6.0	8.8	8.7	6.75	11.38	4.99	18	1.00	803.62	804.37	804.78	805.37	811.23	811.20	115-110
4	3	69.369	0.47	0.64	0.95	0.45	0.61	6.0	8.7	8.7	5.29	3.85	6.74	12	0.99	804.54	805.23	805.54	806.85	811.20	810.88	120-115
5	4	27.736	0.01	0.17	0.95	0.01	0.16	6.0	8.4	8.8	1.42	3.88	1.80	12	1.01	805.23	805.51	807.81	807.85	810.88	811.20	125-120
6	5	47.333	0.01	0.16	0.95	0.01	0.15	6.0	8.0	8.9	1.35	3.84	1.72	12	0.99	805.51	805.98	807.90	807.95	811.20	811.49	130-125
7	6	40.868	0.04	0.15	0.95	0.04	0.14	6.0	7.6	9.0	1.28	3.86	1.63	12	1.00	805.98	806.39	807.98	808.02	811.49	811.08	135-130
8	7	15.682	0.07	0.11	0.95	0.07	0.10	6.0	7.4	9.1	0.95	3.90	1.21	12	1.02	806.39	806.55	808.04	808.05	811.08	811.20	140-135
9	8	37.863	0.04	0.04	0.95	0.04	0.04	6.0	6.0	9.5	0.36	3.87	0.46	12	1.00	806.55	806.93	808.09	808.09	811.20	811.37	145-140

Project File: STO 100.stm | Number of lines: 9 | Run Date: 4/30/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	3.993	0.73	0.73	0.95	0.69	0.69	6.0	6.0	7.0	4.83	16.79	17.73	10	50.09	804.93	806.93	805.24	807.75	806.81	808.81	305-300

Project File: STO 300.stm | Number of lines: 1 | Run Date: 4/28/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	3.993	0.73	0.73	0.95	0.69	0.69	6.0	6.0	9.5	6.58	16.79	12.08	10	50.09	804.93	806.93	805.76	807.76	806.81	808.81	305-300

Project File: STO 300.stm

Number of lines: 1

Run Date: 4/28/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	12.447	0.15	0.15	0.95	0.14	0.14	6.0	6.0	7.0	0.99	16.11	7.27	12	17.43	803.25	805.42	803.42	805.84	810.67	810.42	405-400

Project File: STO 400.stm | Number of lines: 1 | Run Date: 4/24/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	12.447	0.15	0.15	0.95	0.14	0.14	6.0	6.0	9.5	1.35	16.11	3.52	12	17.43	803.25	805.42	803.74	805.91	810.67	810.42	405-400

Project File: STO 400.stm | Number of lines: 1 | Run Date: 4/24/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	38.092	0.26	0.26	0.95	0.25	0.25	6.0	6.0	7.0	1.72	9.38	6.46	12	5.91	803.25	805.50	803.54	806.06	810.67	809.99	605-600

Project File: STO 600.stm | Number of lines: 1 | Run Date: 5/20/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	38.092	0.26	0.26	0.95	0.25	0.25	6.0	6.0	9.5	2.34	9.38	4.30	12	5.91	803.25	805.50	803.90	806.15	810.67	809.99	605-600

Project File: STO 600.stm | Number of lines: 1 | Run Date: 5/20/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	8.000	0.00	1.76	0.00	0.00	1.67	0.0	11.6	5.7	9.59	12.26	4.32	24	0.25	801.81	801.83	803.14	803.16	807.31	807.27	705-700
2	1	20.502	0.20	1.76	0.95	0.19	1.67	6.0	11.5	5.8	9.62	10.82	3.62	24	0.19	801.83	801.87	803.41	803.44	807.27	806.90	705A-705
3	2	132.565	0.38	1.56	0.95	0.36	1.48	6.0	10.8	5.9	8.72	10.85	3.02	24	0.20	801.87	802.13	803.66	803.80	806.90	806.57	710-705A
4	3	82.589	0.00	1.18	0.00	0.00	1.12	0.0	10.2	6.0	6.73	21.57	3.54	24	0.77	802.13	802.77	803.88	803.69	806.57	808.12	715-710
5	4	122.744	0.00	0.53	0.00	0.00	0.50	0.0	8.3	6.4	3.22	21.33	3.06	24	0.76	802.77	803.70	803.69	804.33	808.12	811.42	720-715
6	5	10.236	0.05	0.05	0.95	0.05	0.05	6.0	6.0	7.0	0.33	1.12	3.88	6	3.42	807.90	808.25	808.09	808.54	811.42	811.78	720A-720
7	5	46.000	0.00	0.48	0.00	0.00	0.46	0.0	8.1	6.4	2.94	3.86	5.08	12	1.00	804.70	805.16	805.35	805.89	811.42	810.91	725-720
8	7	46.000	0.00	0.39	0.00	0.00	0.37	0.0	7.8	6.5	2.41	3.86	4.12	12	1.00	805.16	805.62	805.89	806.28	810.91	810.91	730-725
9	8	30.144	0.00	0.31	0.00	0.00	0.29	0.0	7.7	6.5	1.93	3.85	3.73	12	1.00	805.62	805.92	806.28	806.51	810.91	811.75	735-730
10	9	8.103	0.00	0.25	0.00	0.00	0.24	0.0	7.6	6.6	1.56	3.83	3.46	12	0.99	805.92	806.00	806.51	806.53	811.75	811.56	740-735
11	10	36.893	0.00	0.18	0.00	0.00	0.17	0.0	7.2	6.7	1.14	3.86	3.02	12	1.00	806.00	806.37	806.53	806.82	811.56	811.27	745-740
12	11	20.626	0.09	0.09	0.95	0.09	0.09	6.0	6.0	7.0	0.59	1.16	4.77	6	3.64	807.50	808.25	807.75	808.64	811.27	811.80	745A-745
13	8	10.236	0.08	0.08	0.95	0.08	0.08	6.0	6.0	7.0	0.53	1.75	5.60	6	8.30	807.40	808.25	807.59	808.62	810.91	809.79	730A-730
14	11	48.000	0.00	0.09	0.00	0.00	0.09	0.0	6.1	6.9	0.59	3.86	2.24	12	1.00	806.37	806.85	806.82	807.17	811.27	810.93	755-745
15	14	20.636	0.09	0.09	0.95	0.09	0.09	6.0	6.0	7.0	0.59	1.27	4.98	6	4.36	807.35	808.25	807.59	808.64	810.93	811.49	755A-755
16	10	8.293	0.07	0.07	0.95	0.07	0.07	6.0	6.0	7.0	0.46	2.79	6.85	6	21.10	806.50	808.25	806.64	808.60	811.56	811.76	740A-740
17	9	7.019	0.06	0.06	0.95	0.06	0.06	6.0	6.0	7.0	0.40	2.79	6.52	6	21.09	806.42	807.90	806.55	808.22	811.75	811.75	735A-735
18	7	10.236	0.09	0.09	0.95	0.09	0.09	6.0	6.0	7.0	0.59	3.06	5.09	6	25.30	805.66	808.25	805.89	808.64	810.91	809.79	725A-725
19	4	17.131	0.65	0.65	0.95	0.62	0.62	6.0	6.0	7.0	4.30	6.09	10.02	10	6.60	803.27	804.40	803.79	805.21	808.12	808.45	715A-715

Project File: STO 700.stm

Number of lines: 19

Run Date: 5/20/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	8.000	0.00	1.76	0.00	0.00	1.67	0.0	10.1	8.3	13.93	12.26	5.93	24	0.25	801.81	801.83	803.15	803.29	807.31	807.27	705-700
2	1	20.502	0.20	1.76	0.95	0.19	1.67	6.0	10.0	8.3	13.96	10.82	4.44	24	0.19	801.83	801.87	803.83	803.87	807.27	806.90	705A-705
3	2	132.565	0.38	1.56	0.95	0.36	1.48	6.0	9.5	8.5	12.57	10.85	4.00	24	0.20	801.87	802.13	804.20	804.55	806.90	806.57	710-705A
4	3	82.589	0.00	1.18	0.00	0.00	1.12	0.0	9.1	8.6	9.63	21.57	3.07	24	0.77	802.13	802.77	804.67	804.77	806.57	808.12	715-710
5	4	122.744	0.00	0.53	0.00	0.00	0.50	0.0	7.7	9.0	4.52	21.33	1.83	24	0.76	802.77	803.70	804.92	804.94	808.12	811.42	720-715
6	5	10.236	0.05	0.05	0.95	0.05	0.05	6.0	6.0	9.5	0.45	1.12	4.28	6	3.42	807.90	808.25	808.12	808.59	811.42	811.78	720A-720
7	5	46.000	0.00	0.48	0.00	0.00	0.46	0.0	7.5	9.0	4.11	3.86	5.52	12	1.00	804.70	805.16	805.60	806.06	811.42	810.91	725-720
8	7	46.000	0.00	0.39	0.00	0.00	0.37	0.0	7.4	9.1	3.36	3.86	4.28	12	1.00	805.16	805.62	806.53	806.88	810.91	810.91	730-725
9	8	30.144	0.00	0.31	0.00	0.00	0.29	0.0	7.2	9.1	2.68	3.85	3.42	12	1.00	805.62	805.92	807.17	807.32	810.91	811.75	735-730
10	9	8.103	0.00	0.25	0.00	0.00	0.24	0.0	7.2	9.1	2.17	3.83	2.76	12	0.99	805.92	806.00	807.50	807.52	811.75	811.56	740-735
11	10	36.893	0.00	0.18	0.00	0.00	0.17	0.0	6.9	9.2	1.58	3.86	2.01	12	1.00	806.00	806.37	807.64	807.70	811.56	811.27	745-740
12	11	20.626	0.09	0.09	0.95	0.09	0.09	6.0	6.0	9.5	0.81	1.16	5.39	6	3.64	807.50	808.25	807.81	808.70	811.27	811.80	745A-745
13	8	10.236	0.08	0.08	0.95	0.08	0.08	6.0	6.0	9.5	0.72	1.75	6.26	6	8.30	807.40	808.25	807.62	808.68	810.91	809.79	730A-730
14	11	48.000	0.00	0.09	0.00	0.00	0.09	0.0	6.1	9.5	0.81	3.86	1.05	12	1.00	806.37	806.85	807.77	807.78	811.27	810.93	755-745
15	14	20.636	0.09	0.09	0.95	0.09	0.09	6.0	6.0	9.5	0.81	1.27	4.37	6	4.36	807.35	808.25	807.80	808.70	810.93	811.49	755A-755
16	10	8.293	0.07	0.07	0.95	0.07	0.07	6.0	6.0	9.5	0.63	2.79	3.47	6	21.10	806.50	808.25	807.64	808.65	811.56	811.76	740A-740
17	9	7.019	0.06	0.06	0.95	0.06	0.06	6.0	6.0	9.5	0.54	2.79	3.09	6	21.09	806.42	807.90	807.50	808.27	811.75	811.75	735A-735
18	7	10.236	0.09	0.09	0.95	0.09	0.09	6.0	6.0	9.5	0.81	3.06	4.26	6	25.30	805.66	808.25	806.53	808.70	810.91	809.79	725A-725
19	4	17.131	0.65	0.65	0.95	0.62	0.62	6.0	6.0	9.5	5.86	6.09	10.75	10	6.60	803.27	804.40	804.92	805.96	808.12	808.45	715A-715

Project File: STO 700.stm

Number of lines: 19

Run Date: 5/20/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	8.337	0.20	0.20	0.95	0.19	0.19	6.0	6.0	7.0	1.32	6.12	4.85	12	2.52	801.85	802.06	802.17	802.55	807.23	807.08	905-900

Project File: STO 900.stm | Number of lines: 1 | Run Date: 4/24/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	8.337	0.20	0.20	0.95	0.19	0.19	6.0	6.0	9.5	1.80	6.12	3.89	12	2.52	801.85	802.06	802.42	802.63	807.23	807.08	905-900

Project File: STO 900.stm | Number of lines: 1 | Run Date: 4/24/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	5.006	0.16	0.16	0.95	0.15	0.15	6.0	6.0	7.0	1.06	6.22	4.58	12	2.60	801.85	801.98	802.13	802.41	807.41	807.30	1005-1000

Project File: STO 1000.stm

Number of lines: 1

Run Date: 4/24/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	5.006	0.16	0.16	0.95	0.15	0.15	6.0	6.0	9.5	1.44	6.22	3.60	12	2.60	801.85	801.98	802.36	802.49	807.41	807.30	1005-1000

Project File: STO 1000.stm | Number of lines: 1 | Run Date: 4/24/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	80.219	0.19	1.71	0.95	0.18	1.13	6.0	11.9	5.7	6.43	13.40	4.22	24	0.30	800.85	801.09	801.83	802.07	804.89	807.27	1205-1200
2	1	169.212	0.16	1.52	0.95	0.15	0.95	6.0	10.4	6.0	5.66	13.45	3.68	24	0.30	801.09	801.60	802.21	802.48	807.27	807.84	1210-1205
3	2	153.090	0.09	1.36	0.95	0.09	0.80	6.0	8.9	6.3	5.00	13.43	3.61	24	0.30	801.60	802.06	802.62	802.88	807.84	807.73	1215-1210
4	3	79.481	0.09	1.27	0.95	0.09	0.71	6.0	8.0	6.5	4.61	13.74	3.50	24	0.31	802.06	802.31	803.01	803.12	807.73	806.92	1220A-1215
5	4	8.999	0.52	1.18	0.00	0.00	0.63	0.0	7.9	6.5	4.07	14.15	2.88	24	0.33	802.30	802.33	803.23	803.24	806.92	806.82	1220B-1220A
6	5	277.330	0.66	0.66	0.95	0.63	0.63	6.0	6.0	7.0	4.36	6.22	3.74	18	0.30	802.33	803.16	803.31	804.07	806.82	806.95	1225-1220B

Project File: STO 1200.stm | Number of lines: 6 | Run Date: 4/24/2026

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	80.219	0.19	1.71	0.95	0.18	1.13	6.0	10.3	8.3	9.36	13.40	4.89	24	0.30	800.85	801.09	801.94	802.36	804.89	807.27	1205-1200
2	1	169.212	0.16	1.52	0.95	0.15	0.95	6.0	9.2	8.6	8.12	13.45	3.84	24	0.30	801.09	801.60	802.51	802.76	807.27	807.84	1210-1205
3	2	153.090	0.09	1.36	0.95	0.09	0.80	6.0	8.1	8.9	7.07	13.43	3.72	24	0.30	801.60	802.06	802.91	803.12	807.84	807.73	1215-1210
4	3	79.481	0.09	1.27	0.95	0.09	0.71	6.0	7.5	9.0	6.44	13.74	3.61	24	0.31	802.06	802.31	803.25	803.34	807.73	806.92	1220A-1215
5	4	8.999	0.52	1.18	0.00	0.00	0.63	0.0	7.4	9.1	5.69	14.15	3.04	24	0.33	802.30	802.33	803.46	803.47	806.92	806.82	1220B-1220A
6	5	277.330	0.66	0.66	0.95	0.63	0.63	6.0	6.0	9.5	5.95	6.22	3.95	18	0.30	802.33	803.16	803.54	804.33	806.82	806.95	1225-1220B

Project File: STO 1200.stm | Number of lines: 6 | Run Date: 4/24/2026

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box