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January 5th, 2024

To: City Naperville
400 S. Eagle Street
Naperville, IL 60540

From: Joseph Vavrina, P.E.

Subject: Stormwater Memo
Chick-fil-A – Naperville, IL
Job #: 2302569

Background

Chick-fil-A (CFA) is proposing the construction of an approximate 5,000 square foot free-standing restaurant, drive-thru lane, parking facilities, and associated utilities located within the Iroquois Center Development in the City of Naperville (1163 E. Ogden Avenue). This project is more generally located along the north side of Ogden Avenue between Iroquois Avenue and East Avenue. The proposed stormwater management improvements have been designed in accordance with the requirements of the City of Naperville.

Existing Conditions

The subject CFA project area is located on the south side of the Iroquois Center Development. The project area currently encompasses part of a multi-tenant retail building and parking lot that will be razed as part of this project. The site is bordered by the multi-tenant building to the west, Staples parking lot to the south, parking lot & access drive to the north, and Ogden Avenue to the east. The proposed lease parcel is approximately 1.70 acres (73,927 sq. ft.) in size. In the existing condition, the impervious and pervious areas within the lease parcel are calculated to be 68,126 square feet and 5,801 square feet respectively, resulting in the site to be 92% impervious.

The subject site is currently tributary to the storm sewer system for the Iroquois Center Development. This storm sewer system drains to the west of the CFA site to a regional detention basin. Per previous design plans for the center, the regional basin was designed with a high water level (HWL) of 766.00. In addition to the basin, it was discovered that stormwater detention for the center is also provided via storm sewer and parking lot surface storage.

Per the ALTA survey, pipe and parking lot detention storage is currently provided within the CFA project site. The existing storage with the site (up to an elevation of 766.00) has been calculated to be approximately 5,374 cubic feet (0.123 ac-ft). The CFA development will need to replace this detention storage as part of the proposed improvements. All existing detention storage calculations and exhibits have been included with this report.

Proposed Conditions

The proposed improvements to the site consist of the construction of the Chick-fil-A restaurant, drive-thru lane, parking facilities, and the installation of underground utilities. In the proposed condition, the impervious and pervious areas within the subject parcel are calculated to be 56,232 square feet and 17,695 square feet respectively, resulting in the site to be 76% impervious. The proposed improvements will be decreasing the impervious coverage by approximately 11,894 square feet from the existing condition.

As noted in the existing conditions section, the CFA development will be required to provide onsite stormwater detention for the pipe & parking lot storage that will be taken away. The storm system has been oversized (up to 36 inch diameter pipe) to provide the required storage. The total storage being provided has been calculated to be 5,720 cubic feet (0.131 ac-ft).

The CFA site has been designed to capture and convey stormwater via an onsite storm sewer system. Catch basin structures have been introduced around the site to capture runoff from the various drainage areas and convey stormwater to the existing Iroquois Cetner storm sewer system. The onsite drainage areas for each storm structure have been delineated on the Proposed Drainage Plan (PDP).

The new storm sewer installed as part of the CFA improvements will be able to convey the 2-year event due to existing storm sewer size constraints. The system can convey the 2-year event without the HGL exceeding the proposed rim elevations. The storm sewer was modeled utilizing Hydraflow Storm Sewers for AutoCAD Civil3D, 2023. Illinois State Water Survey (Bulletin 75) rainfall intensities for the 2-year event were utilized in all calculations. Per the model, the proposed flow within pipes ST-2 and ST-4 exceeds the capacity but these pipes are both existing and will remain in place. Onsite drainage areas were defined for each individual storm sewer catch basin. These drainage areas can be seen on the PDP and are also noted in the Rational "C" Calculation table included in this memo. The times of concentration used in calculation for each drainage area were assumed to be 5 minutes due to short onsite flow paths. The Hydraflow model was also utilized to calculate the HGL of the storm sewers, verifying that the HGL is below the rim elevations of the storm structures. The Hydraflow model and inlet capacity calculations have been included in this report.

The CFA site has been designed to provide overland flood routes throughout the parking lot and drive-thru lane to direct water away from the CFA building. The overland flood path ultimately reaches the west side of the site where it is directed to the regional basin for the overall development. The overland flood route through the CFA site has been shown via bold arrows on the Grading Plan (C-300).

Erosion Control

Installation of sediment and erosion control measures will be placed prior to the start of construction. Inlet protection baskets and silt fence are planned to be installed to control erosion and silt displacement until vegetation is established.

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RATIONAL METHOD "C" CALCULATION

Project #:	2302569				
Project:	CHICK-FIL-A	By	NHL	Date	11/6/2023
Location:	NAPERVILLE, IL	Checked		Date	
		Revised	NHL	Date	1/4/2024

BASIN NO.	AREA (SQ-FT)	AREA PAVED	AREA GRASS	%PAVED 0.95	%GRASS 0.35	RUNOFF "C"	AREA (acres)
CFA PROJECT AREA							
EXISTING CONDITION	73,927	68,126	5,801	92%	8%	**0.90**	**1.70**
PROPOSED CONDITION	73,927	56,232	17,695	76%	24%	**0.81**	**1.70**
PROPOSED DRAINAGE AREAS							
PR-DA-1	6,343	6,343	0	100%	0%	**0.95**	**0.15**
PR-DA-2	5,100	4,730	370	93%	7%	**0.91**	**0.12**
PR-DA-3	2,587	2,318	269	90%	10%	**0.89**	**0.06**
PR-DA-4	3,598	2,703	895	75%	25%	**0.80**	**0.08**
PR-DA-5	4,485	4,415	70	98%	2%	**0.94**	**0.10**
PR-DA-5A (BUILDING)	5,226	5,226	0	100%	0%	**0.95**	**0.12**
PR-DA-6	6,523	5,853	670	90%	10%	**0.89**	**0.15**
PR-DA-7	7,689	6,345	1,344	83%	17%	**0.85**	**0.18**
PR-DA-8	2,200	2,200	0	100%	0%	**0.95**	**0.05**
PR-DA-9	6,788	5,841	947	86%	14%	**0.87**	**0.16**
PR-DA-10	4,438	2,114	2,324	48%	52%	**0.64**	**0.10**
PR-DA-11	9,168	6,147	3,021	67%	33%	**0.75**	**0.21**
PR-DA-12	9,125	1,071	8,054	12%	88%	**0.42**	**0.21**
PR-DA-13	655	655	0	100%	0%	**0.95**	**0.02**

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RATIONAL METHOD "C" CALCULATION

Project #:	2302569			
Project:	CHICK-FIL-A	By NHL	Date	11/6/2023
Location:	NAPERVILLE, IL	Checked	Date	
		Revised	Date	

BASIN NO.	AREA (SQ-FT)	AREA PAVED	AREA GRASS	%PAVED 0.95	%GRASS 0.35	RUNOFF "C"	AREA (acres)
PROPOSED DRAINAGE AREAS OFF-SITE							
PR-DA-5B	42,539	35,539	7,000	84%	16%	**0.85**	**0.98**
PR-DA-5C	52,974	51,213	1,761	97%	3%	**0.93**	**1.22**

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INLET CAPACITIES

Project #:	2302569	By	NHL	Date	11/8/2023
Project:	CHICK-FIL-A	Checked		Date	
Location:	NAPERVILLE, IL	Revised	NHL	Date	1/4/2024

CURB INLETS

Structure Number	Frame and Grate	Flow 10-Year (CFS)	Water Depth (ft) Required to Accommodate Flow	Ponding Depth (ft) Provided
ST 3	R-3235 TY A	0.98	0.20	0.50
ST 5	R-2504 TY D	0.79	0.15	0.50
ST 9	R-3235 TY A	0.39	0.10	0.50
ST 11	R-3235 TY A	0.49	0.15	0.50
ST 13	R-3235 TY A	1.57	0.30	0.50
ST 21	R-3235 TY A	0.99	0.20	0.50
ST 25	R-3235 TY A	1.11	0.20	0.50
ST 27	R-3235 TY A	0.36	0.10	0.35
ST 23	R-3235 TY A	1.00	0.20	0.50
ST 34	R-3235 TY A	0.52	0.15	0.40
ST 36	R-3235 TY A	1.18	0.20	0.50

Inlet Capacities per IDOT Design Manual

Neenah R-3235

Type A Grate

0.9 = Free open area of grate (sq. ft.)

4.5 = Weir Perimeter of grate (ft.)

---- Capacity Calculation -----

Ponding	Weir Equation	Orifice Equation	Net Capacity	Weir/Orifice ratio	Flow Type
0.05	0.15	0.97	0.15	0.16	Weir Flow
0.10	0.43	1.37	0.43	0.31	Weir Flow
0.15	0.78	1.68	0.78	0.47	Weir Flow
0.17	0.95	1.79	0.95	0.53	Weir Flow
0.20	1.21	1.94	1.21	0.62	Weir Flow
0.25	1.69	2.17	1.54	0.78	Transition Flow
0.30	2.22	2.37	1.84	0.93	Transition Flow
0.35	2.80	2.56	2.14	1.09	Transition Flow
0.40	3.42	2.74	2.46	1.25	Transition Flow
0.45	4.08	2.91	2.79	1.40	Transition Flow
0.50	4.77	3.06	3.06	1.56	Orifice Flow
0.55	5.51	3.21	3.21	1.71	Orifice Flow
0.60	6.27	3.36	3.36	1.87	Orifice Flow
0.65	7.07	3.49	3.49	2.02	Orifice Flow
0.70	7.91	3.63	3.63	2.18	Orifice Flow
0.75	8.77	3.75	3.75	2.34	Orifice Flow
0.85	10.58	4.00	4.00	2.65	Orifice Flow
1.00	13.50	4.33	4.33	3.12	Orifice Flow
1.25	18.87	4.84	4.84	3.89	Orifice Flow
1.50	24.80	5.31	5.31	4.67	Orifice Flow
1.75	31.25	5.73	5.73	5.45	Orifice Flow
2.00	38.18	6.13	6.13	6.23	Orifice Flow
2.25	45.56	6.50	6.50	7.01	Orifice Flow
2.50	53.36	6.85	6.85	7.79	Orifice Flow
2.75	61.56	7.19	7.19	8.57	Orifice Flow
3.00	70.15	7.51	7.51	9.35	Orifice Flow
3.25	79.10	7.81	7.81	10.12	Orifice Flow
3.50	88.40	8.11	8.11	10.90	Orifice Flow
3.75	98.03	8.39	8.39	11.68	Orifice Flow
4.00	108.00	8.67	8.67	12.46	Orifice Flow
4.25	118.28	8.93	8.93	13.24	Orifice Flow
4.50	128.87	9.19	9.19	14.02	Orifice Flow

Notes:

Equations used

Q=0.6A(2gh)^0.5 Orifice equation

Q=3P(h)^1.5 Weir equation

where:

A= free open area of grate

P= weir perimeter

h= feet of head (ponding depth)

g= 32.2 feet per sec/sec

Q=capacity of grate in CFS

Net total flow is the lower of the two equations except where the the ratio of the two solutions is between 0.667 and 1.5. In the latter case the net flow is 80% of the average of the two solutions as an approximation of transitional flow.

Inlet Capacities per IDOT Design Manual

Neenah R-2504 TY D Grate

0.9 = Free open area of grate (sq. ft.)
6 = Weir Perimeter of grate (ft.)

---- Capacity Calculation -----

Ponding	Weir Equation	Orifice Equation	Net Capacity	Weir/Orifice ratio	Flow Type
0.05	0.20	0.97	0.20	0.21	Weir Flow
0.10	0.57	1.37	0.57	0.42	Weir Flow
0.15	1.05	1.68	1.05	0.62	Weir Flow
0.17	1.26	1.79	1.22	0.71	Transition Flow
0.20	1.61	1.94	1.42	0.83	Transition Flow
0.25	2.25	2.17	1.77	1.04	Transition Flow
0.30	2.96	2.37	2.13	1.25	Transition Flow
0.35	3.73	2.56	2.52	1.45	Transition Flow
0.40	4.55	2.74	2.74	1.66	Orifice Flow
0.45	5.43	2.91	2.91	1.87	Orifice Flow
0.50	6.36	3.06	3.06	2.08	Orifice Flow
0.55	7.34	3.21	3.21	2.28	Orifice Flow
0.60	8.37	3.36	3.36	2.49	Orifice Flow
0.65	9.43	3.49	3.49	2.70	Orifice Flow
0.70	10.54	3.63	3.63	2.91	Orifice Flow
0.75	11.69	3.75	3.75	3.12	Orifice Flow
0.82	13.37	3.92	3.92	3.41	
1.00	18.00	4.33	4.33	4.15	Orifice Flow
1.25	25.16	4.84	4.84	5.19	Orifice Flow
1.50	33.07	5.31	5.31	6.23	Orifice Flow
1.75	41.67	5.73	5.73	7.27	Orifice Flow
2.00	50.91	6.13	6.13	8.31	Orifice Flow
2.25	60.75	6.50	6.50	9.35	Orifice Flow
2.50	71.15	6.85	6.85	10.38	Orifice Flow
2.75	82.09	7.19	7.19	11.42	Orifice Flow
3.00	93.53	7.51	7.51	12.46	Orifice Flow
3.25	105.46	7.81	7.81	13.50	Orifice Flow
3.50	117.86	8.11	8.11	14.54	Orifice Flow
3.75	130.71	8.39	8.39	15.58	Orifice Flow
4.00	144.00	8.67	8.67	16.61	Orifice Flow
4.25	157.71	8.93	8.93	17.65	Orifice Flow
4.50	171.83	9.19	9.19	18.69	Orifice Flow

Notes:

Equations used

$Q=0.6A(2gh)^{0.5}$ Orifice equation

$Q=3P(h)^{1.5}$ Weir equation

where:

A= free open area of grate

P= weir perimeter

h= feet of head (ponding depth)

g= 32.2 feet per sec/sec

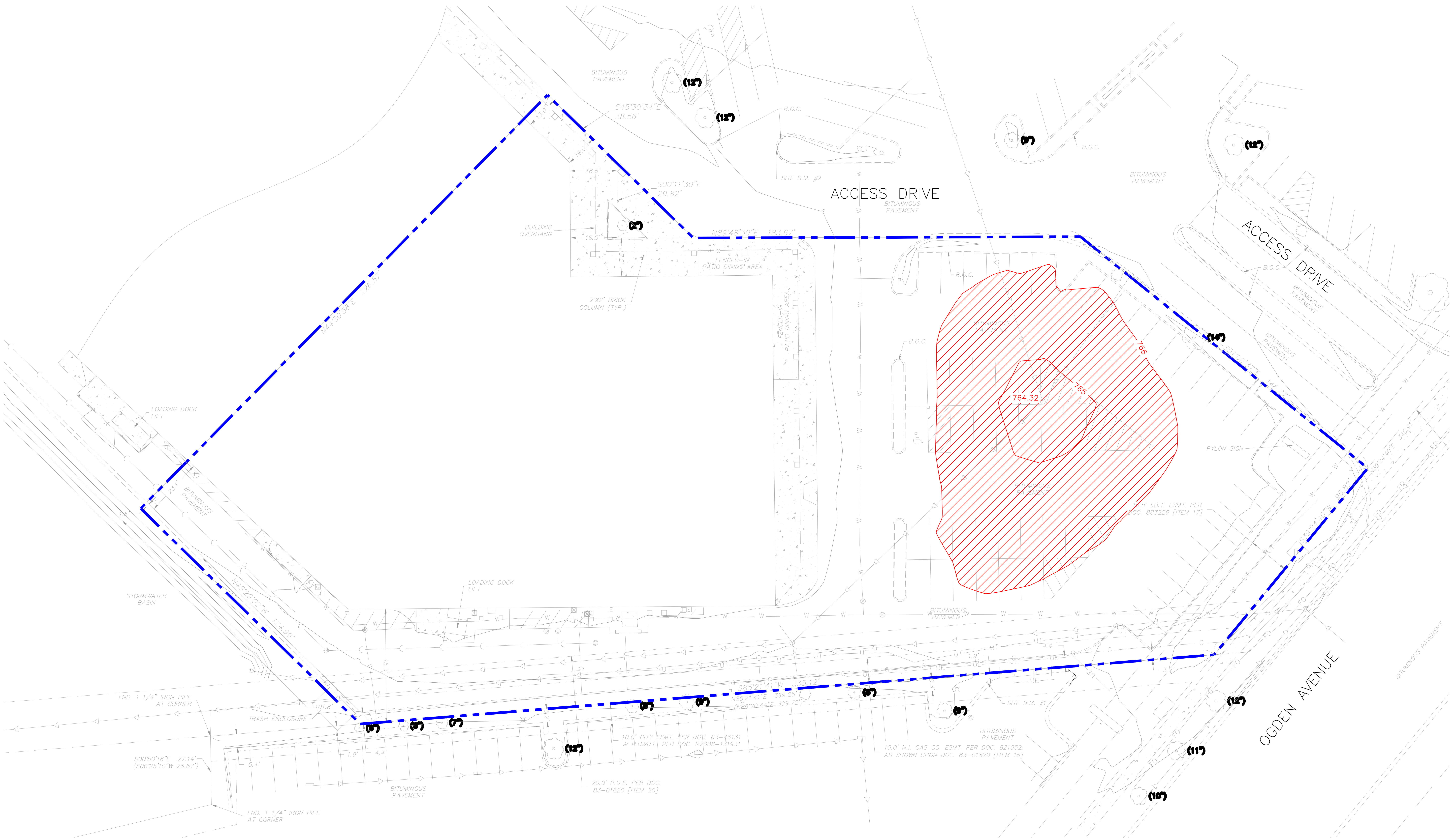
Q=capacity of grate in CFS

Net total flow is the lower of the two equations except where the the ratio of the two solutions is between 0.667 and 1.5. In the latter case the net flow is 80% of the average of the two solutions as an approximation of transitional flow.

LEGEND:

PROJECT AREA BOUNDARY

DENOTES EXISTING SURFACE STORAGE



NORTH

0 20'
1" = 20'

BAR IS ONE INCH ON OFFICIAL DRAWINGS
0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY

Chick-fil-A

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

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CHICK-FIL-A

OGDEN & IROQUOIS (IL) FSU

1163 E. OGDEN AVENUE
NAPERVILLE, IL 60563

FSR# 05590

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

PRELIMINARY

ENGINEER'S PROJECT #	**2302569**
PRINTED FOR	PRELIMINARY
DATE	10/16/2023

DRAWN BY: MRJ
CHECKED BY: JFV

SHEET
EXISTING DETENTION EXHIBIT

SHEET NUMBER
EDE

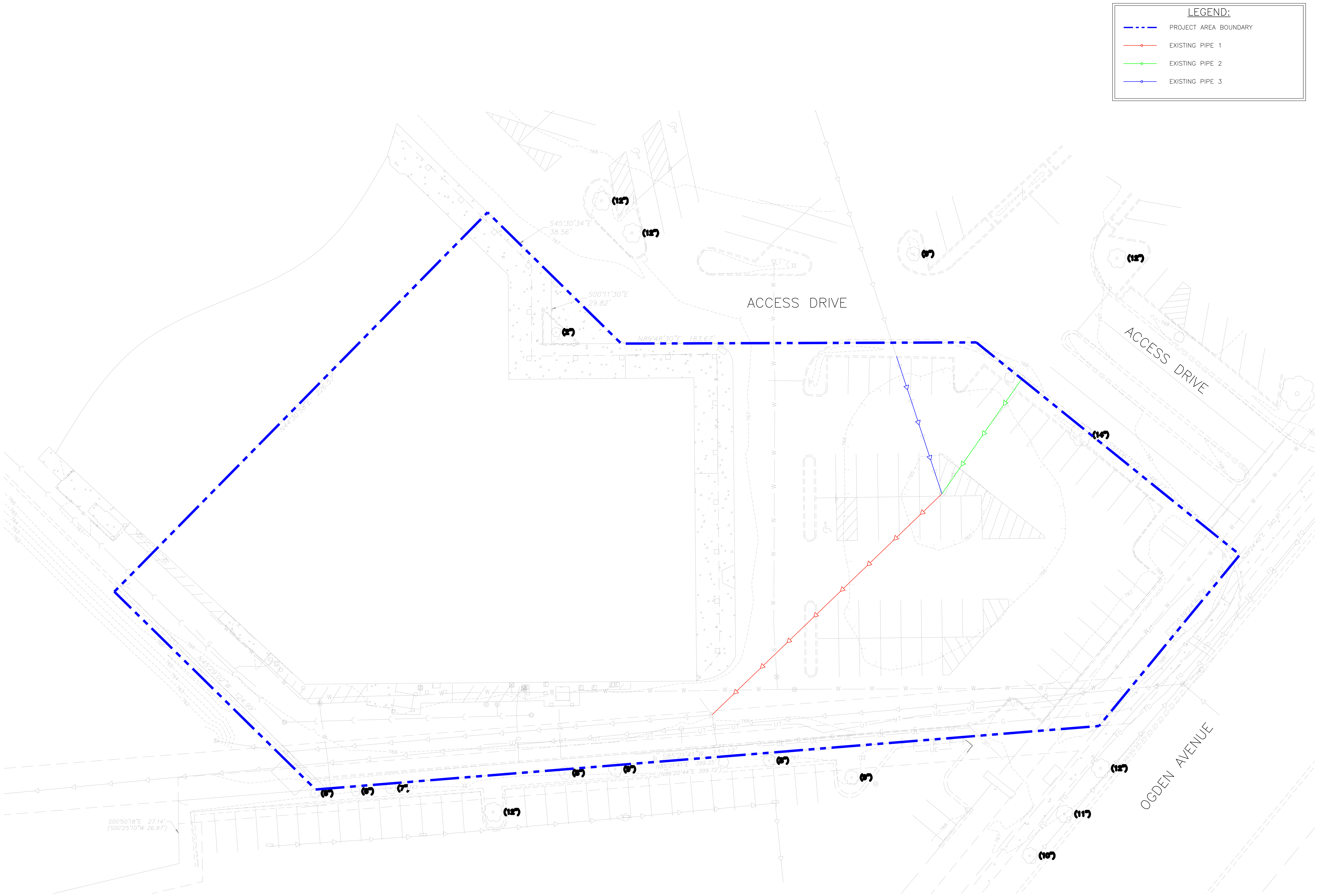
HRGreen

JOB: Chick-fil-A Naperville, IL
JOB # 2302569

BY: NHL
Date: 11/7/23

EXISTING SURFACE DETENTION

Elevation (ft)	Area (sq. ft.)	Area (acres)	Volume (ac-ft)	Cumulative Volume (ac-ft)	Cumulative Volume (cf)
764.32	1	0.00	0.00	0.000	0
765.00	1096	0.03	0.01	0.006	256
766.00	9324	0.21	0.10	0.110	4795



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FSR# 05590

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

PRELIMINARY

ENGINEER'S PROJECT #	**2302569**
PRINTED FOR	PRELIMINARY
DATE	10/16/2023

DRAWN BY: MRJ
CHECKED BY: JFV

SHEET
EXISTING PIPE STORAGE EXHIBIT

SHEET NUMBER
EPSE

HRGreen

STORM SEWER PIPE STORAGE VOLUME CALCULATIONS

Project #	**2302569**	By	NHL	Date	**11/7/2023**
Project:	**Chick-fil-A Naperville, IL**	Revised		Date	
Location	**Naperville, IL**	Checked		Date	

Pipe #	**Size**	**Length**	**US INV**	**Top Pipe**	**Slope**	**DS INV**	**Avg Inv**	**Pipe Area**	**cu.ft. Volume Full**	Pipe Volume Filled at Elevation **766.00**	U/S Manhole Dia (ft)	Manhole Volume (upstream of designated pipe) Filled at Elevation 766.00
1	16	138	760.34	761.67	0.06%	760.26	760.30	1.40	193	175	4	71
2	12	62	762.88	763.88	3.97%	760.42	761.65	0.79	49	44	5	61
3	15	63	760.47	761.72	0.21%	760.34	760.41	1.23	77	70	6	156

subtotal cu-ft **289**

Total Pipe Volume Cu-Ft	319	290
Total Manhole Volume Cu-Ft		289
Provided Total Volume Cu-Ft		**579**
Provided Total Volume Ac-Ft		**0.013**
Maximum Water Elevation		766.00

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STORM SEWER PIPE STORAGE VOLUME CALCULATIONS

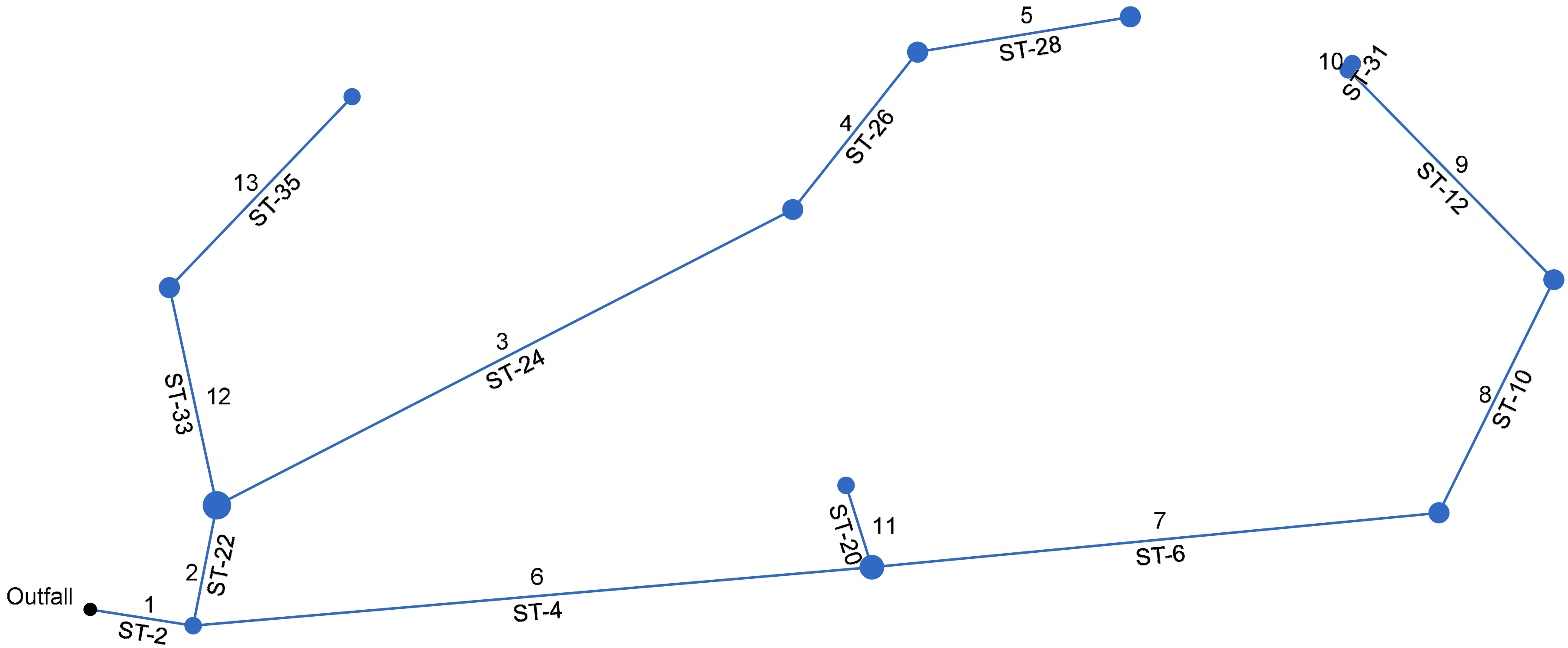
Project #	2302569	By	NHL	Date	1/3/2024
Project:	Chick-fil-A Naperville, IL	Revised		Date	
Location:	Naperville, IL	Checked		Date	

Pipe #	Size	Length	US INV	Top Pipe	Slope	DS INV	Avg Inv	Pipe Area	cu.ft. Volume Full	Pipe Volume Filled at Elevation 766.00	U/S Manhole Dia (ft)	Manhole Volume (upstream of designated pipe) Filled at Elevation 766.00
ST-2	15	28	759.88	761.13	0.00%	759.88	759.88	1.23	34	34	4	77
ST-4	15	183	760.26	761.51	0.21%	759.88	760.07	1.23	225	204	4	72
ST-6	36	153	761.35	764.35	0.71%	760.26	760.81	7.07	1081	985	5	91
ST-10	36	70	762.00	765.00	0.93%	761.35	761.68	7.07	495	451	5	79
ST-12	24	79	762.60	764.60	0.76%	762.00	762.30	3.14	248	226	4	43
ST-20	12	21	761.20	762.20	4.48%	760.26	760.73	0.79	16	15	4	60
ST-22	15	33	759.95	761.20	0.21%	759.88	759.92	1.23	40	37	7	233
ST-24	36	174	760.32	763.32	0.21%	759.95	760.14	7.07	1230	1120	5	112
ST-26	36	54	760.43	763.43	0.20%	760.32	760.38	7.07	382	348	5	109
ST-28	30	58	760.55	763.05	0.21%	760.43	760.49	4.91	285	259	5	107
ST-31	15	2	762.88	764.13	4.00%	762.80	762.84	1.23	2	2	4	39
ST-33	36	60	760.15	763.15	0.33%	759.95	760.05	7.07	424	386	5	115
ST-35	36	71	761.30	764.30	1.62%	760.15	760.73	7.07	502	457	4	59

subtotal cu-ft **1196**

Total Pipe Volume Cu-Ft	4965	4524
Total Manhole Volume Cu-Ft		1196
Provided Total Volume Cu-Ft		**5720**
Provided Total Volume Ac-Ft		**0.131**
Maximum Water Elevation		766.00

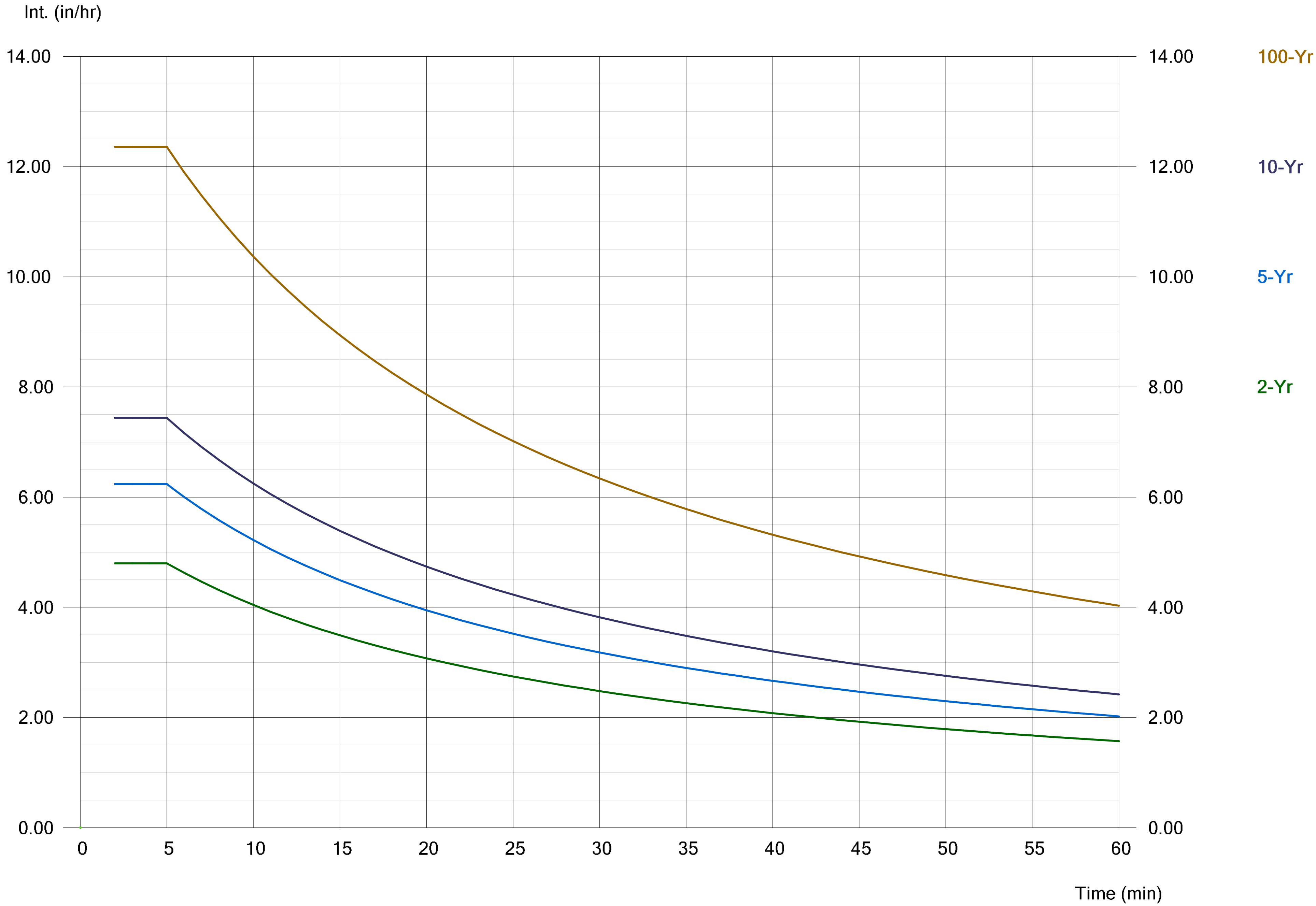
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 2302569_Hydraflow.stm	Number of lines: 13	Date: 1/4/2024

Storm Sewer IDF Curves

IDF file: IL B75 - NE.IDF



Hydraflow IDF Report

Return Period (Yrs)	Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	127.7602	21.7001	0.9991	--------
3	0.0000	0.0000	0.0000	--------
5	133.5045	19.5000	0.9578	--------
10	181.9707	20.8000	0.9836	--------
25	0.0000	0.0000	0.0000	--------
50	0.0000	0.0000	0.0000	--------
100	277.6214	20.1000	0.9656	--------

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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	4.80	4.04	3.49	3.07	2.75	2.48	2.26	2.08	1.92	1.79	1.67	1.57
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	6.24	5.22	4.49	3.95	3.52	3.18	2.90	2.67	2.47	2.30	2.15	2.02
10	7.44	6.25	5.39	4.74	4.23	3.82	3.48	3.20	2.96	2.76	2.58	2.42
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	12.36	10.37	8.94	7.86	7.02	6.34	5.78	5.32	4.92	4.58	4.29	4.03

Tc = time in minutes. Min Tc = 5

Storm Sewer Tabulation

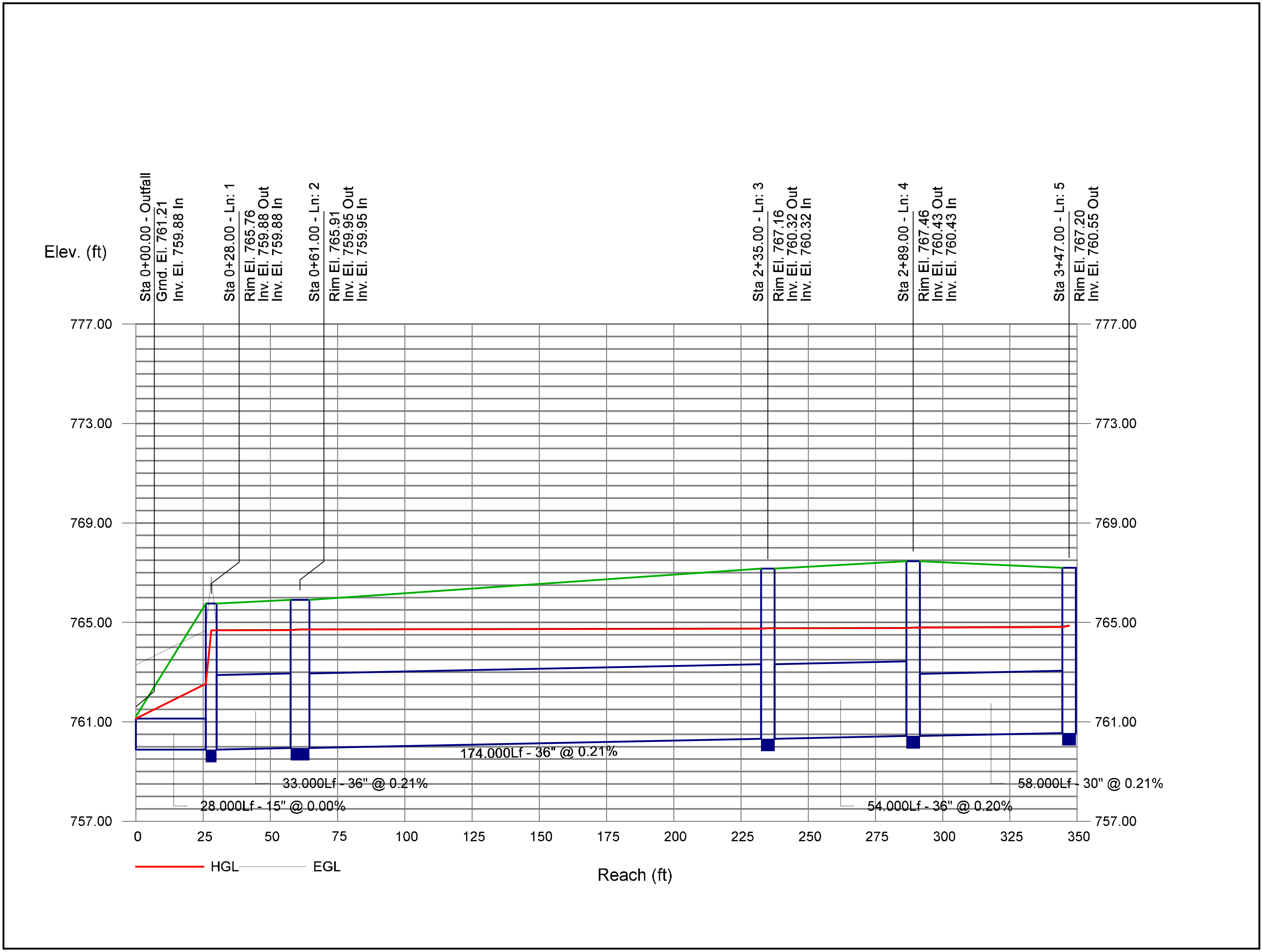
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	28.000	0.14	2.46	0.95	0.13	2.10	5.0	23.0	2.9	14.44	0.00	11.77	15	0.00	759.88	759.88	761.13	762.53	761.21	765.76	ST-2
2	1	33.000	0.16	0.71	0.87	0.14	0.57	5.0	22.7	2.9	10.06	30.72	1.42	36	0.21	759.88	759.95	764.68	764.69	765.76	765.91	ST-22
3	2	174.000	0.18	0.23	0.85	0.15	0.20	5.0	5.7	4.7	9.36	30.75	1.32	36	0.21	759.95	760.32	764.72	764.75	765.91	767.16	ST-24
4	3	54.000	0.05	0.05	0.95	0.05	0.05	5.0	5.0	4.8	8.65	30.10	1.22	36	0.20	760.32	760.43	764.76	764.77	767.16	767.46	ST-26
5	4	58.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.42	18.65	1.72	30	0.21	760.43	760.55	764.79	764.81	767.46	767.20	ST-28
6	1	183.000	0.12	1.61	0.91	0.11	1.40	5.0	10.3	4.0	5.61	2.94	4.57	15	0.21	759.88	760.26	764.68	766.07	765.76	766.20	ST-4
7	6	153.000	0.06	1.34	0.89	0.05	1.16	5.0	6.9	4.5	5.18	56.29	0.73	36	0.71	760.26	761.35	766.39	766.40	766.20	767.11	ST-6
8	7	70.000	0.08	1.28	0.80	0.06	1.10	5.0	5.8	4.7	5.14	39.52	1.05	30	0.93	761.35	762.00	766.41	766.42	767.11	767.16	ST-10
9	8	79.000	0.22	1.20	0.94	0.21	1.04	5.0	5.0	4.8	4.99	19.71	1.59	24	0.76	762.00	762.60	766.43	766.47	767.16	767.21	ST-12
10	9	2.000	0.98	0.98	0.85	0.83	0.83	5.0	5.0	4.8	4.00	12.92	3.26	15	4.00	762.80	762.88	766.51	766.52	767.21	765.66	ST-31
11	6	23.000	0.15	0.15	0.89	0.13	0.13	5.0	5.0	4.8	0.64	13.05	0.52	15	4.09	760.26	761.20	766.39	766.39	766.20	766.81	ST-20
12	2	60.000	0.11	0.32	0.63	0.07	0.23	5.0	16.1	3.4	0.77	38.51	0.11	36	0.33	759.95	760.15	764.72	764.72	765.91	765.91	ST-33
13	12	71.000	0.21	0.21	0.75	0.16	0.16	5.0	5.0	4.8	0.76	84.88	0.11	36	1.62	760.15	761.30	764.72	764.72	765.91	766.56	ST-35

Project File: 2302569_Hydraflow.stm | Number of lines: 13 | Run Date: 1/4/2024

NOTES:Intensity = 127.76 / (Inlet time + 21.70) ^ 1.00; Return period =Yrs. 2 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: 2302569_Hydraflow.stm



Storm Sewer Profile

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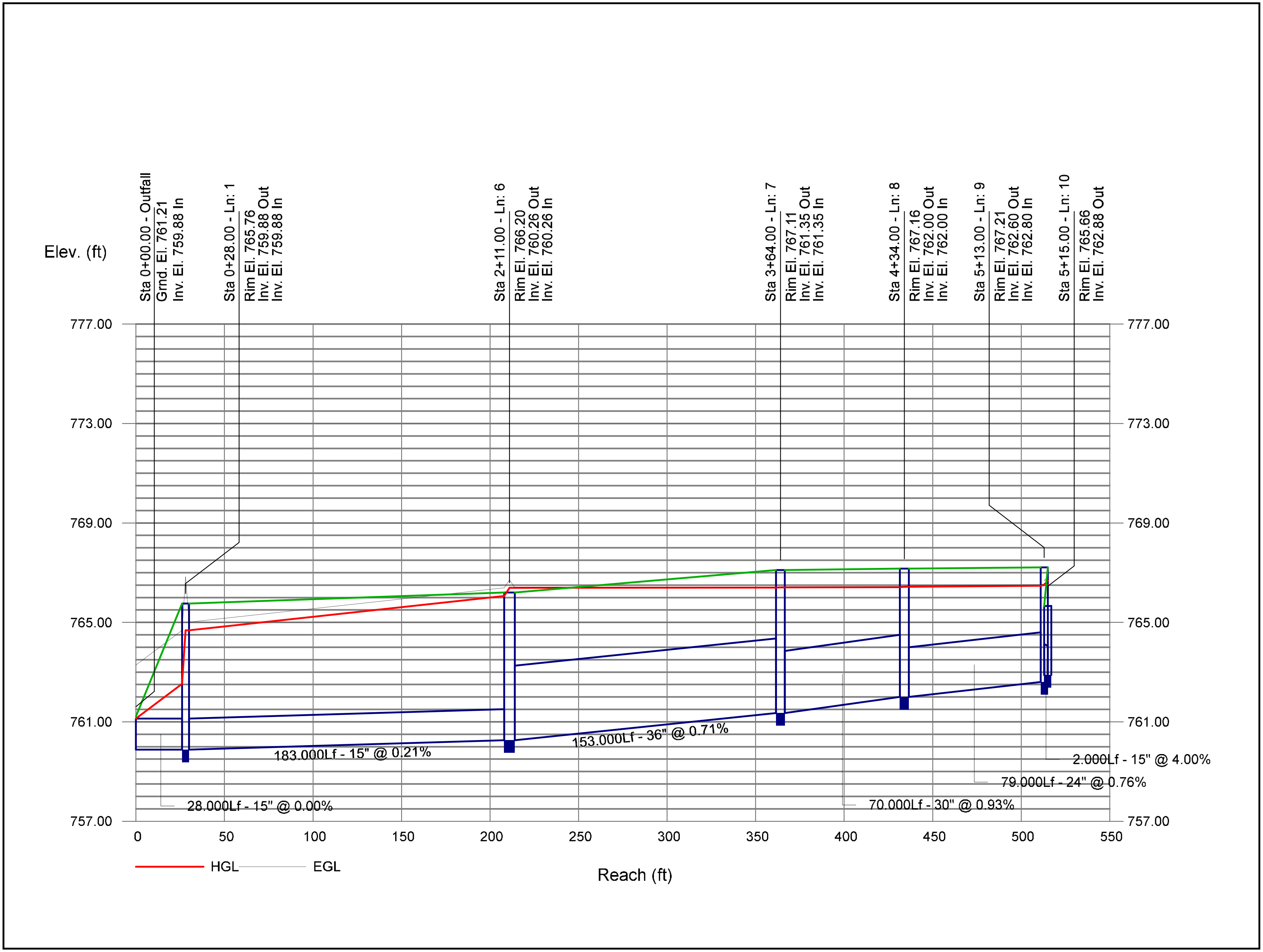
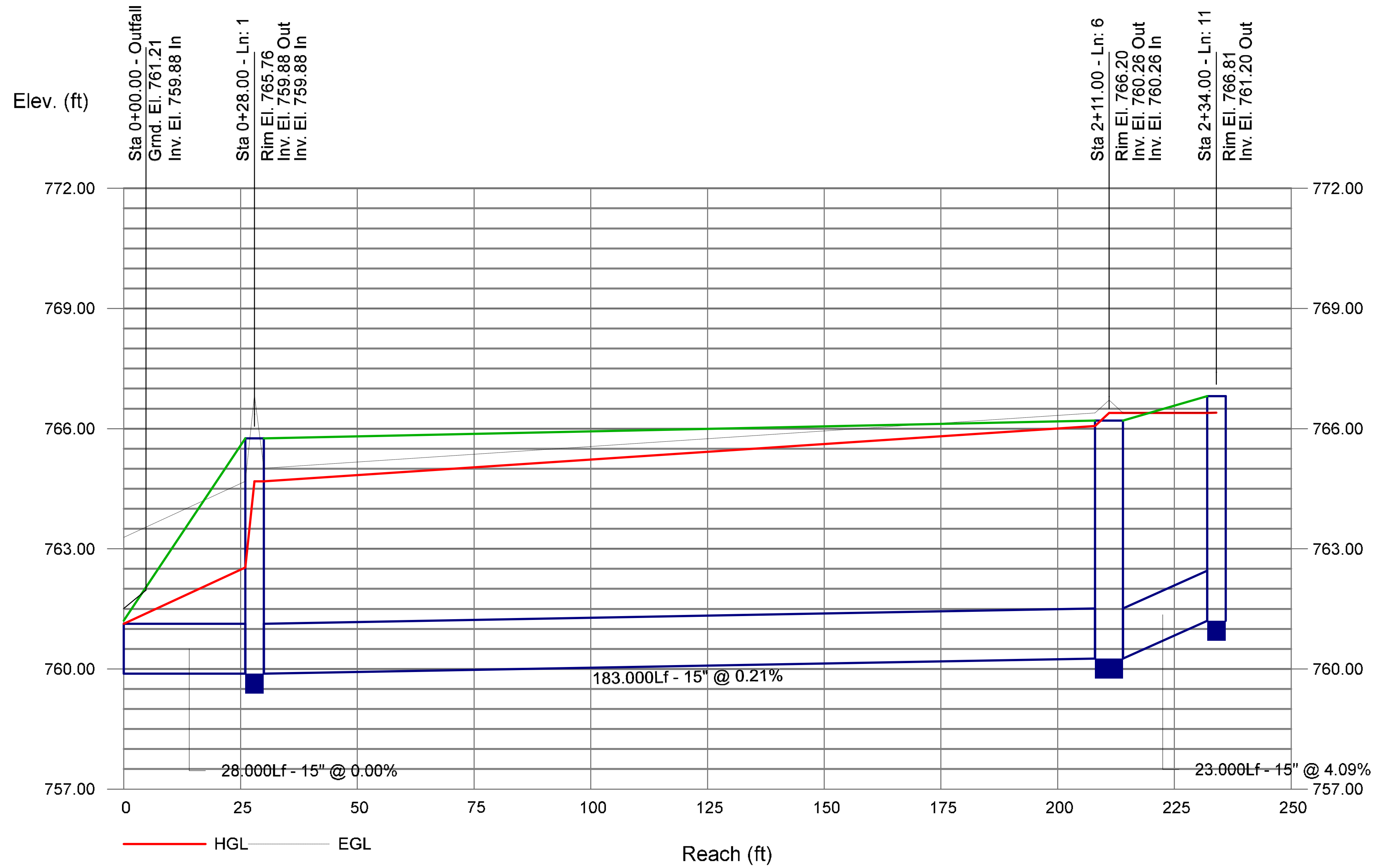


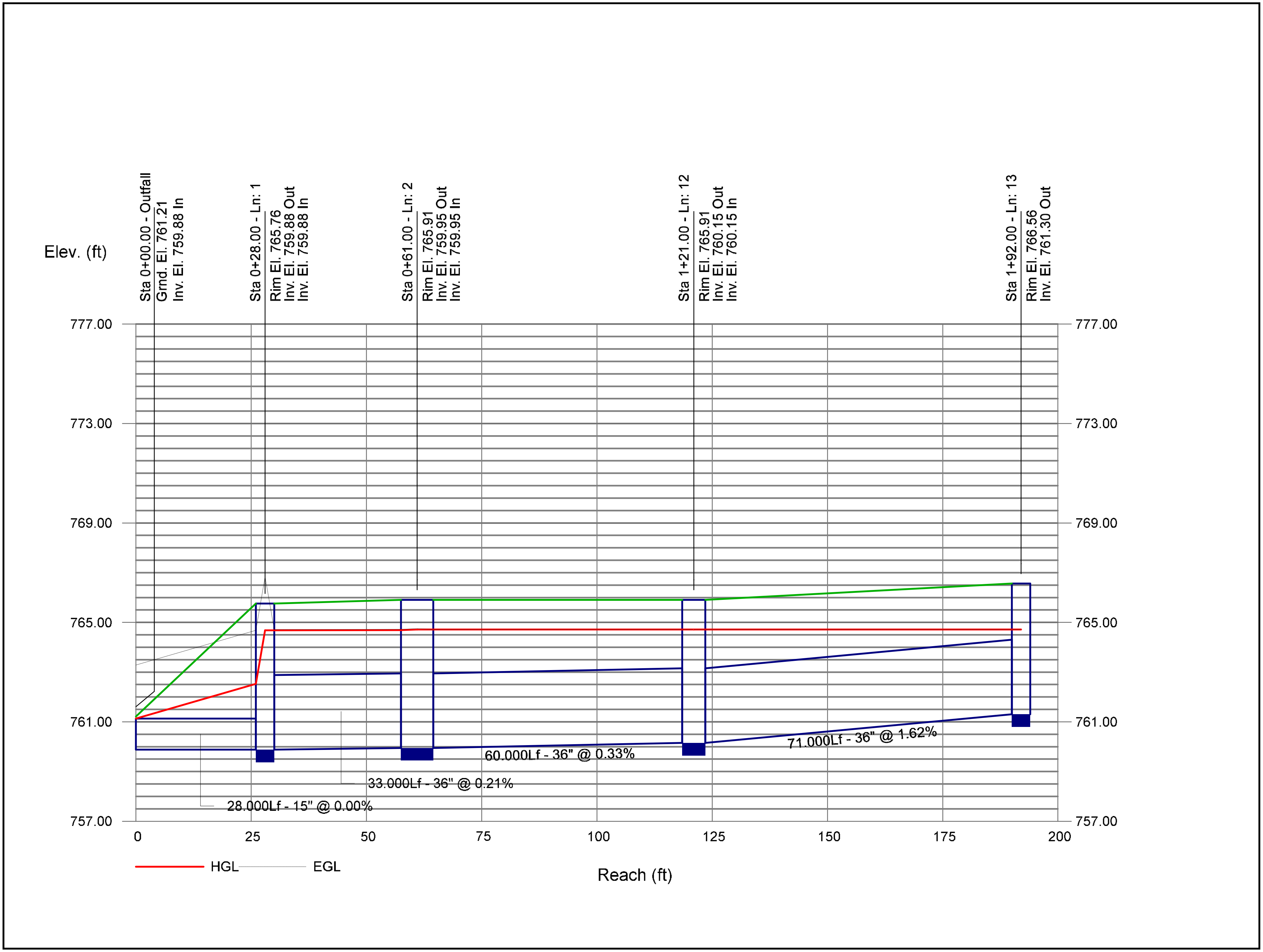
Storm Sewer Profile

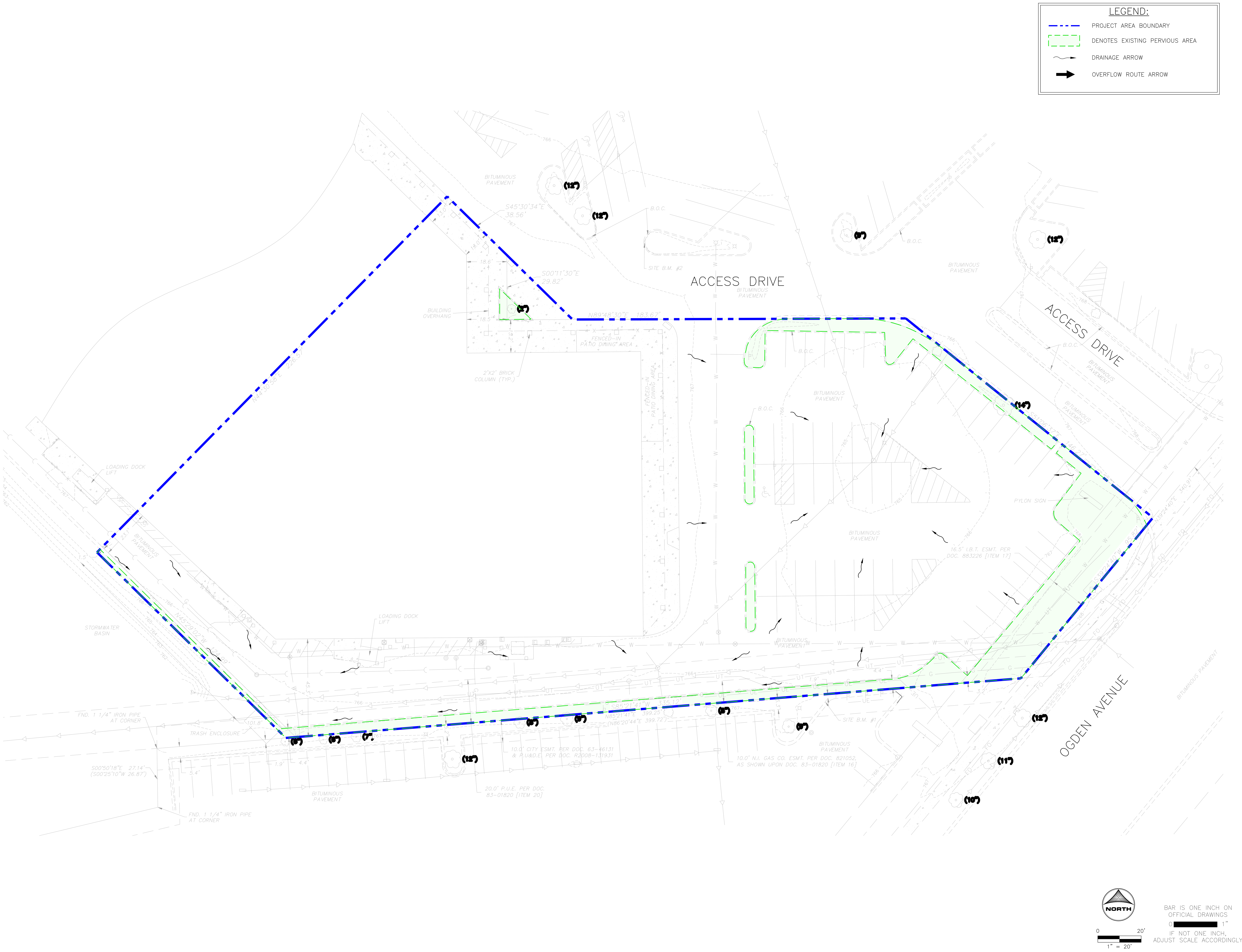
Proj. file: 2302569_Hydraflow.stm



Storm Sewer Profile

Proj. file: 2302569_Hydraflow.stm





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NAPERVILLE, IL 60563

FSR# 05590

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

PRELIMINARY

ENGINEER'S PROJECT # 2302569
PRINTED FOR PRELIMINARY
DATE 10/16/2023
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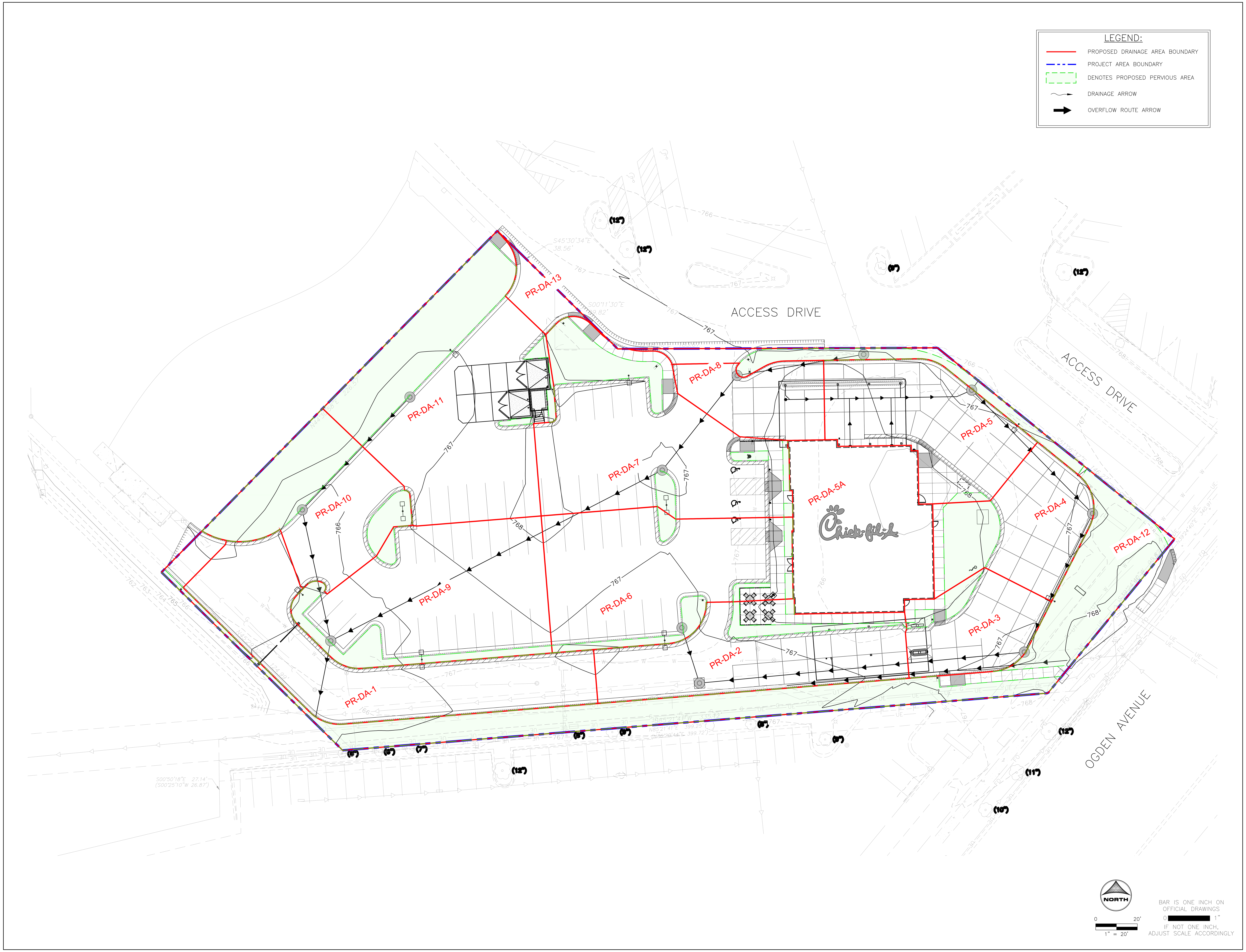
SHEET
EXISTING DRAINAGE PLAN

SHEET NUMBER
EDP



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SHEET
PROPOSED DRAINAGE PLAN

SHEET NUMBER
PDP

LEGEND:

- PROPOSED DRAINAGE AREA BOUNDARY
- PROJECT AREA BOUNDARY
- DENOTES PROPOSED PERVIOUS AREA
- DRAINAGE ARROW
- OVERFLOW ROUTE ARROW

NORTH

0 20'

1" = 20'

BAR IS ONE INCH ON OFFICIAL DRAWINGS

0 1"

IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY

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SHEET

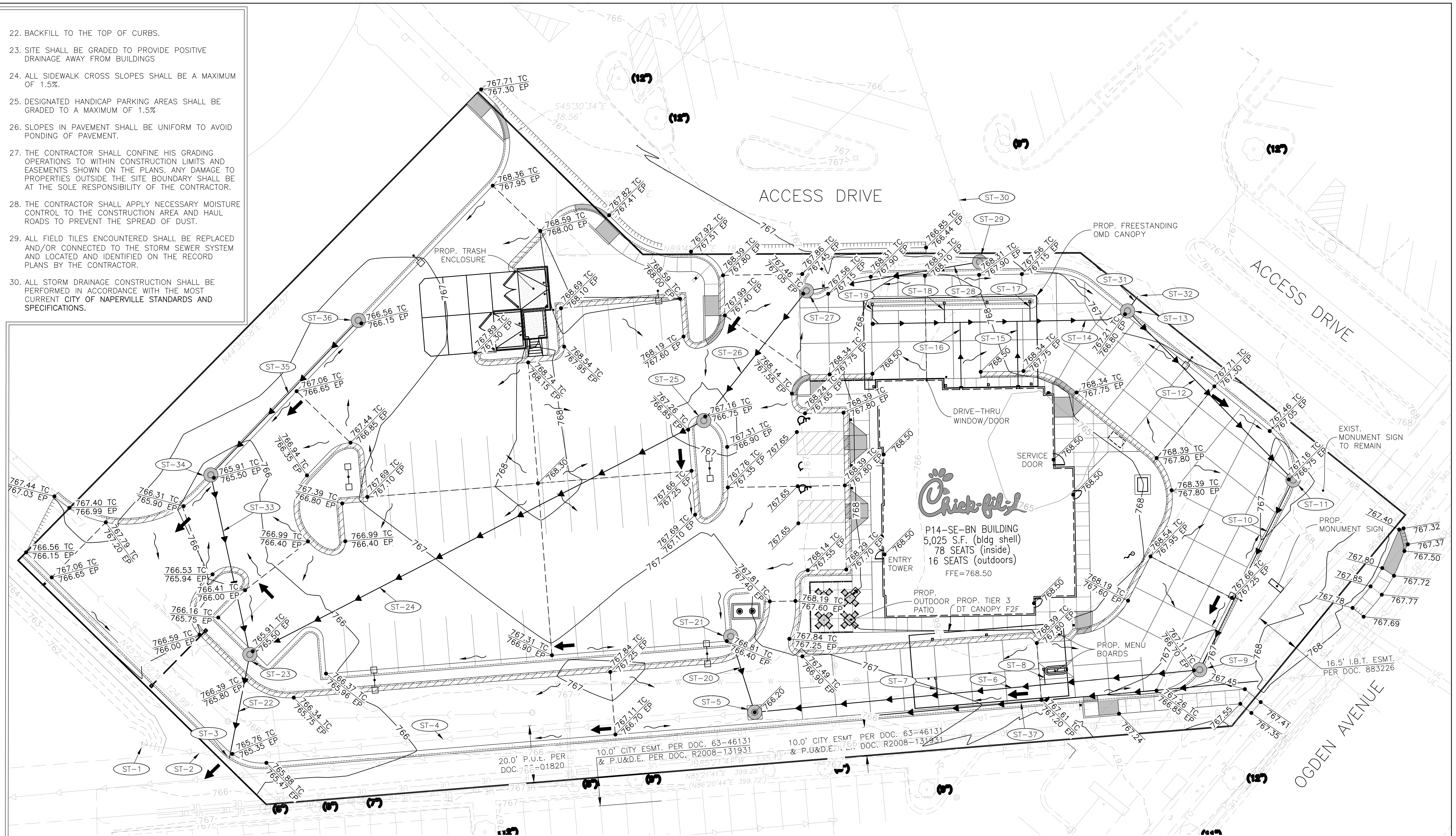
PROPOSED DRAINAGE PLAN - OFF-SITE

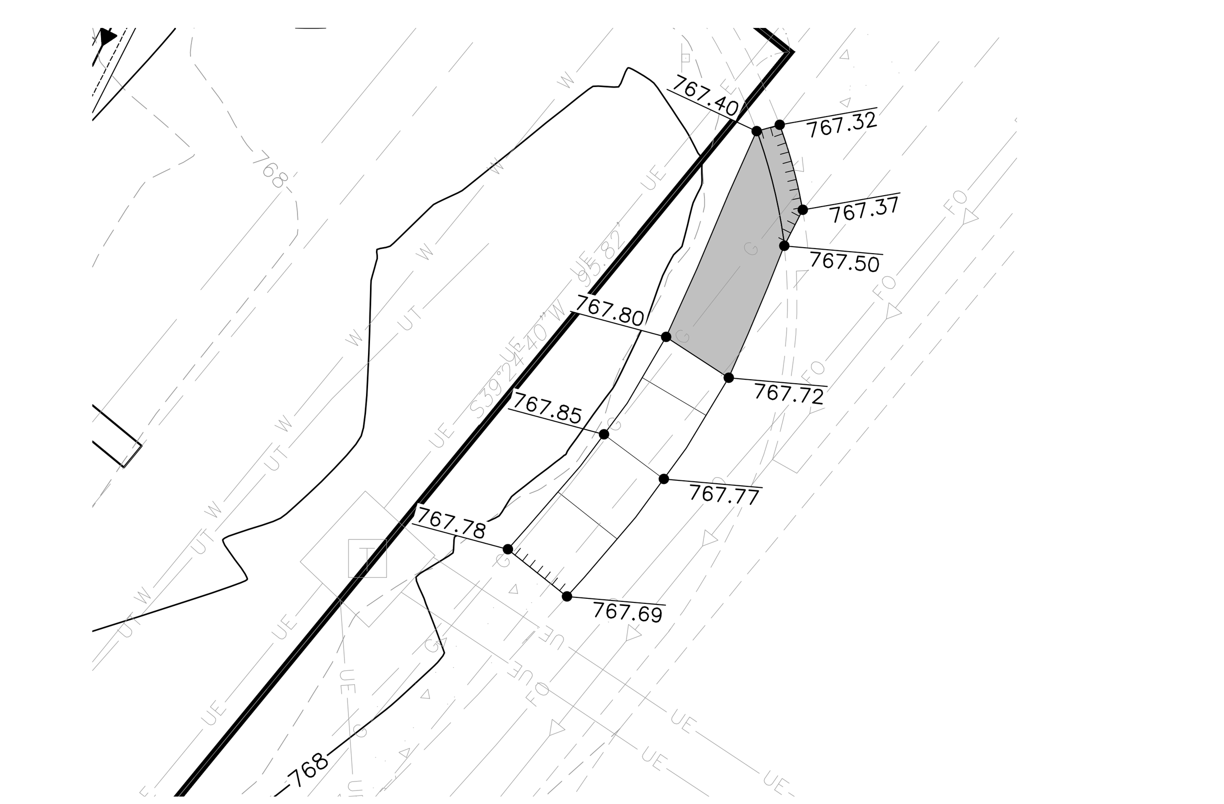
SHEET NUMBER

PDP-OFF

GRADING & DRAINAGE NOTES

1. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF SITE PLAN DOCUMENTS AND ARCHITECTURAL DESIGN FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS, GREASE TRAP REQUIREMENTS/DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE UTILITY SERVICE SIZES ARE TO BE DETERMINED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES/SERVICES WITH THE INDIVIDUAL COMPANIES, TO AVOID CONFLICTS AND ENSURE PROPER DEPTHS ARE ACHIEVED. THE JURISDICTION UTILITY REQUIREMENTS SHALL ALSO BE MET, AS WELL AS COORDINATING THE UTILITY TIE–INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE CONFLICTS EXIST WITH THESE SITE PLANS, ENGINEER IS TO BE NOTIFIED PRIOR TO CONSTRUCTION TO RESOLVE SAME.
2. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL BE SUBMITTED IN COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER OR OWNER'S REPRESENTATIVE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT.
3. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION SHALL BE AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND SHALL BE COORDINATED WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS.
4. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST OSHA STANDARDS AND REGULATIONS, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES.
5. PAVEMENT SHALL BE SAW CUT IN STRAIGHT LINES TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS SHALL BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
6. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS SHALL BE ADJUSTED, IF REQUIRED, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
7. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 0.75% MINIMUM SLOPE ALONG ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.5% MINIMUM ON ASPHALT, TO PREVENT PONDING. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITHOUT NOTIFICATION IS DONE SO AT THE CONTRACTOR'S OWN RISK.
8. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED. FIELD ADJUST TO CREATE A MINIMUM OF 0.75% GUTTER GRADE ALONG CURB FACE. ENGINEER TO APPROVE FINAL CURBING CUT SHEETS PRIOR TO INSTALLATION.
9. IN CASE OF DISCREPANCIES BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE. IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICTS.
10. CONTRACTOR SHALL BE REQUIRED TO SECURE ALL NECESSARY PERMITS AND APPROVALS FOR ALL OFF–SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR SHALL SUPPLY A COPY OF APPROVALS TO ENGINEER AND OWNER PRIOR TO INITIATING WORK.
11. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
12. SEE EROSION CONTROL PLAN FOR EROSION CONTROL MEASURES AND NOTES.
13. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. NO ON SITE BURNING WILL BE ALLOWED
14. ALL DRAINAGE STRUCTURES SHALL BE PRE–CAST.
15. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
16. GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT–OF–WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
17. NO PART OF THE PROPOSED PROJECT IS LOCATED WITHIN A FLOOD HAZARD AREA
18. SPOT ELEVATIONS SHOWN ARE @ EDGE OF PAVEMENT UNLESS OTHERWISE NOTED ON PLAN.
19. ALL CONCRETE CURB & GUTTER SHALL BE TYPE B–6.18 CURB UNLESS OTHERWISE NOTED ON THE PLANS.
20. ALL STORM SEWER JOINTS SHALL HAVE O–RING GASKETS.
21. MATCH EXISTING GRADES AT PROPERTY LINES AND/OR CONSTRUCTION LIMITS.
22. BACKFILL TO THE TOP OF CURBS.
23. SITE SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS
24. ALL SIDEWALK CROSS SLOPES SHALL BE A MAXIMUM OF 1.5%.
25. DESIGNATED HANDICAP PARKING AREAS SHALL BE GRADED TO A MAXIMUM OF 1.5%
26. SLOPES IN PAVEMENT SHALL BE UNIFORM TO AVOID PONDING OF PAVEMENT.
27. THE CONTRACTOR SHALL CONFINE HIS GRADING OPERATIONS TO WITHIN CONSTRUCTION LIMITS AND EASEMENTS SHOWN ON THE PLANS. ANY DAMAGE TO PROPERTIES OUTSIDE THE SITE BOUNDARY SHALL BE AT THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
28. THE CONTRACTOR SHALL APPLY NECESSARY MOISTURE CONTROL TO THE CONSTRUCTION AREA AND HAUL ROADS TO PREVENT THE SPREAD OF DUST.
29. ALL FIELD TILES ENCOUNTERED SHALL BE REPLACED AND/OR CONNECTED TO THE STORM SEWER SYSTEM AND LOCATED AND IDENTIFIED ON THE RECORD PLANS BY THE CONTRACTOR.
30. ALL STORM DRAINAGE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT **CITY OF NAPERVILLE STANDARDS AND SPECIFICATIONS.**




ADJACENT ADA SIDEWALK GRADING DETAIL
SCALE: 1"=10'

GENERAL NOTES:

* ACCESSIBLE PARKING, RAMPS, AND SIGNAGE SHALL COMPLY WITH ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES.
* ALL WORK SHALL BE IN ACCORDANCE WITH OSHA CODES AND STANDARDS, NOTHING INDICATED ON THE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATIONS.
* 1 WEEK PRIOR TO CONSTRUCTION WITHIN CITY OR STATE ROW OR ANY CONNECTION TO PUBLIC SEWERS, CONTRACTOR SHALL NOTIFY THE APPROPRIATE CITY ENGINEERING DIVISION.
* CONTRACTOR TO VERIFY BUILDING DIMENSIONS WITH ARCHITECTURAL PLANS. PLACE 3/4 INCH EXPANSION JOINT BETWEEN ALL P.C.C. PAVEMENT/ SIDEWALKS AND BUILDING. PLACE 1/2 INCH EXPANSION JOINT BETWEEN SIDEWALKS AND P.C.C. PAVEMENT. CUT/TRIM EXPANSION JOINTS TO BE FLUSH WITH SURFACE.
* ALL PROPERTY PINS SHALL BF PROTECTED FROM GRADING OR OTHER OPERATIONS. ANY PINS DISTURBED SHALL BE RESET AT THE CONTRACTOR'S EXPENSE.
* DO NOT STORE CONSTRUCTION MATERIALS AND EQUIPMENT IN THE RIGHT–OF–WAY.
* THE CONTRACTOR SHALL NOT DISTURB DESIRABLE GRASS AREAS AND DESIRABLE TREES OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL NOT BE PERMITTED TO PARK OR SERVICE VEHICLES AND EQUIPMENT OR USE THESE AREAS FOR STORAGE OR MATERIALS. STORAGE, PARKING AND SERVICE AREAS WILL BE SUBJECT TO THE APPROVAL OF THE OWNER.
* THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY AREAS OF PAVEMENT OR SIDEWALK NOT TO BE REMOVED THAT IS DAMAGED DUE TO OPERATING EQUIPMENT ON THE PAVEMENT OR SIDEWALK.
* THE CONTRACTOR MAY BE REQUIRED TO PLACE TEMPORARY WARNING DEVICES AND SAFETY FENCE AT CERTAIN LOCATIONS WHERE REPLACEMENT FEATURES ARE NOT INSTALLED THE SAME DAY, AS DIRECTED BY THE ENGINEER OR THE CITY.
* ALL CONSTRUCTION WITHIN PUBLIC ROW/EASEMENTS AND/OR ANY CONNECTION TO PUBLIC SEWERS AND STREETS, SHALL COMPLY WITH THE CITY CONSTRUCTION SPECIFICATIONS FOR SUBDIVISIONS AND LATEST EDITION OF IDOT DESIGN STANDARDS
* EXCAVATION SHALL BE IN ACCORDANCE WITH THE GEO TECHNICAL REPORT PREPARED FOR THIS PROJECT.
* CONTRACTOR TO GRADE 4" BELOW THE BACK OF CURB TO ALLOW FOR THE PLACEMENT OF TOPSOIL. A MINIMUM OF 4" OF TOPSOIL SHALL BE PLACED IN ALL PLANTING BEDS AND ALL GRASSED AREAS. GRADED AREAS TO BE HELD DOWN TO THE APPROPRIATE ELEVATION TO ACCOUNT FOR TOPSOIL. SEE SHEET L–101 FOR DETAILS.

HATCH LEGEND

- DENOTES REVERSE (SPILLING) CURB & GUTTER
- DENOTES CONCRETE CURB & GUTTER (CATCHING)
- DENOTES AREA OF DEPRESSED SPILLING CURB & GUTTER
- DENOTES AREA OF DEPRESSED CATCHING CURB & GUTTER
- DENOTES AREA OF DEPRESSED SIDEWALK
- XXX.XX — DENOTES EXISTING AND OR PROPOSED SPOT ELEVATIONS.
- DENOTES PROPOSED DRAINAGE DIRECTION ARROW.
- DENOTES PROPOSED OVERFLOW DIRECTION ARROW.

TRAFFIC CONTROL NOTES:

* ALL APPLICABLE CITY/STATE PERMITS, INCLUDING BUT NOT LIMITED TO CLOSURE PERMITS, SHALL BE OBTAINED PRIOR TO ANY CONSTRUCTION WITHIN CITY/STATE ROW OR LANE CLOSURES.
* ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
* SIDEWALK CLOSED SIGNS REQUIRED FOR ALL SIDEWALK CLOSURES.
* THE CONTRACTOR IS CAUTIONED NEITHER TO OBSTRUCT NOR REMOVE ANY EXISTING PAVEMENT, NOR TO DISTURB THE EXISTING TRAFFIC PATTERNS MORE THAN IS NECESSARY FOR THE PROPER EXECUTION OF THE WORK.

ST–# STORM TAGS

* REFER TO SHEET PS–101 FOR TAG INFO

NOTE:

* ALL STORM STRUCTURES WITHIN PAVED AREAS REQUIRE WEEP HOLES. SEE DETAIL 10 ON SHEET C–403 FOR WEEP HOLE DETAILS.

IMPERVIOUS AREA DATA:

* LOT SIZE: 73,927 SQ. FT. (1.70 AC.)
** EXISTING IMPERVIOUS AREA: 68,126 SQ. FT.
** PROPOSED IMPERVIOUS AREA: 55,619 SQ. FT.

NORTH
1" = 20'

BAR IS ONE INCH ON OFFICIAL DRAWINGS
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY

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NOT FOR CONSTRUCTION

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REVISION SCHEDULE

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SHEET
GRADING PLAN

SHEET NUMBER
C-300

DEPARTMENT OF PUBLIC UTILITIES – ELECTRIC GENERAL NOTES:

- THE DEVELOPER SHALL SUPPLY THE DPU–E ENGINEER WITH CATALOG CUTS FOR ALL CT/METER EQUIPMENT (INCLUDING BUT NOT LIMITED TO METER SOCKETS, PT CABINET, CT CABINET, DISCONNECT CABINET) AND TRANSFORMER PAD/VAULT. THE CATALOG CUTS SHALL BE APPROVED BY DPU–E PRIOR TO PURCHASING.
- THE CT/METER CABINET SHALL BE TOP FED.
- CT/METER EQUIPMENT ARE LONG LEAD TIME ITEMS AND DPU–E SHALL NOT BE HELD RESPONSIBLE FOR DELAYS RESULTING FROM NON–COMPLIANT CT/METER EQUIPMENT.
- ELECTRICAL CONTRACTOR TBD.
- DPUE WILL PROVIDE, INSTALL, AND MAINTAIN THE TRANSFORMERS, ALL PRIMARY (15KV) CABLE AND CONDUIT, AND THE METERS AND INSTRUMENT TRANSFORMERS. DPUE WILL ALSO MAKE THE FINAL CONNECTIONS IN THE TRANSFORMERS ONCE THE INSPECTION IS COMPLETE AND THE BUILDING IS READY TO BE ENERGIZED.
- THE DEVELOPER IS RESPONSIBLE FOR PROVIDING, INSTALLING, AND MAINTAINING THE TRANSFORMER PAD/VAULT, ALL SERVICE LATERAL (480V) CABLE AND CONDUIT, THE SERVICE ENTRANCE EQUIPMENT INCLUDING THE CT/METER CABINET AND ALL BANKED METER SOCKETS.
- THE DEVELOPER SHALL COORDINATE SITE CONSTRUCTION WITH DPU–E TO ALLOW ELECTRIC FACILITIES TO BE INSTALLED PRIOR PAVING AND CURBING. DPU–E REQUIRES 30 WORKING DAYS ADVANCE WRITTEN NOTICE PRIOR TO PAVEMENT INSTALLATION TO ALLOW FOR THE INSTALLATION OF ELECTRIC FACILITIES. GRADE ELEVATION MUST BE WITHIN 4" OF FINAL GRADING BEFORE ELECTRIC FACILITIES CAN BE INSTALLED.
- ELECTRIC FACILITIES SHALL BE INSTALLED PURSUANT TO SECTION 8–1C–3 OF THE CITY OF NAPERVILLE MUNICIPAL CODE, WHICH REQUIRES A CONSTRUCTION FEE PAYMENT FOR INSTALLATION OF ELECTRIC FACILITIES.
- AT ALL TIMES, THE CUSTOMER SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING A SUITABLE APPROACH TO THE METER LOCATION, WITH NO OBSTRUCTIONS WITHIN FOUR (4) FEET OF THE FRONT AND TWO (2) FEET OF THE SIDES OF THE METER. PER NAPERVILLE SERVICE RULES AND POLICIES 22.2.F.
- CLEARANCE TO TRANSFORMER PAD SHALL BE 5 FEET FROM ALL SIDES, 10 FEET FROM FRONT, AND THE AREA ABOVE MUST BE COMPLETELY CLEAR OF OBSTRUCTION. NO TREES, SHRUBS, OR OTHER OBSTACLES WILL BE ALLOWED WITHIN THIS AREA. TRANSFORMER PAD SHALL MAINTAIN MINIMUM CLEARANCE OF 20 FEET FROM EGRESS POINTS. PER DPUE SPECIFICATIONS C10–2130 AND C30–0016.
- DPU–E REQUIRES A MINIMUM 5' OF SEPARATION BETWEEN ITS ELECTRIC FACILITIES AND ANY FIRE HYDRANTS STORM DRAINS, STORM SEWERS, WATER MAINS, GAS MAINS, ETC. THAT RUN PARALLEL TO ITS FACILITIES.
- TO HAVE AN EXISTING SERVICE DISCONNECTED CALL THE CITY DISPATCH OFFICE AT 630–420–6187. PLEASE ALLOW AT LEAST 24 HOURS NOTICE. METERS AND METER SEALS ARE TO BE REMOVED ONLY BY DPU–E PERSONNEL. THE LOCATION AND TYPE OF NEW OR REPLACEMENT METER RELATED EQUIPMENT MUST BE PRE–APPROVED IN WRITING BY DPU–E. AN ELECTRIC SERVICE MUST BE INSPECTED BY THE DEVELOPMENT SERVICES TEAM ELECTRICAL INSPECTOR PRIOR TO CONNECTION.
- APPROVAL OF METERING EQUIPMENT BY DPU–E DOES NOT REMOVE YOUR RESPONSIBILITY TO COMPLY WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AS ADOPTED BY THE CITY OF NAPERVILLE. DETERMINATION OF COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE WILL BE MADE BY THE TRANSPORTATION, ENGINEERING AND DEVELOPMENT DEPARTMENT.
- A CUSTOMER'S GROUNDING CONDUCTOR SHALL NOT BE CONNECTED TO DPU–E DISTRIBUTION EQUIPMENT.
- DUE TO SUPPLY CHAIN ISSUES DPU–E IS EXPERIENCING LONG LEAD TIMES (+400 DAYS) ON TRANSFORMERS. PLEASE TAKE THIS INTO CONSIDERATION WHEN PLANNING CONSTRUCTION.
- PLEASE IDENTIFY PREFERRED VOLTAGE LEVEL. 1–PHASE 120/240, 1–PHASE 120/208, 3–PHASE 120/208V OR, 3–PHASE 277/480V? PLEASE COMPLETED A SERVICE LOADING SPREADSHEET FOR EACH BUILDING AND RETURN TO THE DPUE ENGINEER.
- THE DEVELOPER IS RESPONSIBLE FOR THE CONSTRUCTION AND INSTALLATION OF A TRANSFORMER PAD AND VAULT. THE DPU–E ENGINEER MUST BE INFORMED PRIOR TO THE INSTALLATION OF THE AND VAULT. A MAIN DISCONNECT OR CIRCUIT BREAKER IS REQUIRED FOR DPU–E ACCESS IN CASE OF A NEED FOR SERVICE OR IN AN EMERGENCY. DPU–E SHALL MAKE THE FINAL CONNECTIONS OF THE CUSTOMER'S SERVICE TO THE TRANSFORMER TERMINALS. A MINIMUM OF EIGHT FEET OF ADDITIONAL CONDUCTOR LENGTH MUST BE LEFT ON THE CUSTOMER'S SERVICE CABLES.

ST–# STORM TAGS

ST–1	EXIST. FES RCP, 15" INV = 759.88
ST–2	EXIST. 28 LIN FT SS RCP, 15" @ 0.00%
ST–3	EXIST. STM SWR CURB INLET T/C = 765.76 INV = 759.88 E 15" RCP INV = 759.88 NW 15" RCP
ST–4	EXIST. 183 LIN FT SS RCP, 15" @ 0.21%
ST–5	STM SWR CB 6' DIA., R–2504 TY D GRATE RIM = 766.20 INV = 760.26 W 15" RCP INV = 760.26 N 15" RCP INV = 760.26 E 36" RCP
ST–6	153 LIN FT SS RCP, 36" @ 0.71%
ST–7	6 LIN FT SS PVC CANOPY DRAIN, 6" SDR 26 @ 1.00%
ST–8	6 LIN FT SS PVC CANOPY DRAIN, 6" SDR 26 @ 1.00%
ST–9	STM SWR CB 5' DIA., R–3235 TY A GRATE T/C = 767.11 INV = 761.35 W 36" RCP INV = 761.35 NE 30" RCP
ST–10	70 LIN FT SS RCP, 30" @ 0.93%
ST–11	STM SWR CB 5' DIA., R–3235 TY A GRATE T/C = 767.16 INV = 762.00 SW 30" RCP INV = 762.00 NW 24" RCP
ST–12	79 LIN FT SS RCP, 24" @ 0.76%
ST–13	STM SWR CB 4' DIA., R–3235 TY A GRATE T/C = 767.21 INV = 762.60 SE 24" RCP INV = 762.60 W 8" RCP INV = 762.80 NE 15" RCP
ST–14	88 LIN FT SS PVC, 8" SDR 26 @ 1.00%
ST–15	23 LIN FT SS PVC ROOF DRAIN, 8" SDR 26 @ 1.00%
ST–16	23 LIN FT SS PVC ROOF DRAIN, 8" SDR 26 @ 1.00%
ST–17	7 LIN FT SS PVC CANOPY DRAIN, 6" SDR 26 @ 1.00%
ST–18	7 LIN FT SS PVC CANOPY DRAIN, 6" SDR 26 @ 1.00%
ST–19	7 LIN FT SS PVC CANOPY DRAIN, 6" SDR 26 @ 1.00%
ST–20	23 LIN FT SS RCP, 15" @ 4.09%
ST–21	STM SWR CB 4' DIA., R–3235 TY A GRATE T/C = 766.81 INV = 761.20 SE 15" RCP
ST–22	33 LIN FT SS RCP, 15" @ 0.21%
ST–23	STM SWR CB 7' DIA., R–3235 TY A GRATE T/C = 765.91 INV = 759.95 SW 15" RCP INV = 759.95 NW 36" RCP INV = 759.95 NE 36" RCP
ST–24	174 LIN FT SS RCP, 36" @ 0.21%
ST–25	STM SWR CB 5' DIA., R–3235 TY A GRATE T/C = 767.16 INV = 760.32 SW 36" RCP INV = 760.32 NE 36" RCP
ST–26	54 LIN FT SS RCP, 36" @ 0.21%
ST–27	STM SWR CB 5' DIA., R–3235 TY A GRATE T/C = 767.46 INV = 760.43 SW 36" RCP INV = 760.43 E 30" RCP
ST–28	58 LIN FT SS RCP, 30" @ 0.21%
ST–29	STM SWR MH 5' DIA., R–1713 CL RIM = 767.20 INV = 760.55 NW 15" RCP (EXISTING PIPE. CONTRACTOR TO VERIFY EXISTING PIPE INVERT PRIOR TO ORDERING STRUCTURE. NOTIFY ENGINEER WITH ANY DISCREPANCIES.) INV = 760.55 W 30" RCP
ST–30	EXIST. 149 LIN FT SS RCP, 15" @ 0.15%
ST–31	2 LIN FT SS RCP, 15" @ 4.00%
ST–32	EXIST. STM SWR CURB INLET RIM = 765.66 INV = 762.88 W 15" RCP
ST–33	60 LIN FT SS RCP, 36" @ 0.33%
ST–34	STM SWR CB 5' DIA., R–3235 TY A GRATE T/C = 765.91 INV = 760.15 NE 36" RCP INV = 760.15 SE 36" RCP
ST–35	71 LIN FT SS RCP, 36" @ 1.62%
ST–36	STM SWR CB 4' DIA., R–3235 TY A GRATE T/C = 766.56 INV = 761.30 SW 36" RCP
ST–37	135 LIN FT SS RCP, 15" @ 0.17% (PIPE TO HAVE O–RING GASKETS) (PIPE TO BE REMOVED & REPLACED – MATCH EXISTING PIPE INVERTS)

NOTE:
- ALL STORM STRUCTURES WITHIN PAVED AREAS REQUIRE WEEP HOLES. SEE DETAIL 10 ON SHEET C–403 FOR WEEP HOLE DETAILS.

S–# SANITARY SEWER TAGS

S–1	EXIST. SAN SWR MH EXIST. RIM = 765.88 PROP. RIM = 765.60 INV = 761.48 NW 8" INV = 761.48 E 8"
S–2	EXIST. 103 LIN FT SAN SWR MAIN, 8" VCP @ 0.70%
S–3	EXIST. SAN SWR MH RIM = 766.59 INV = 762.20 W 8" VCP INV = 762.30 NE 6" PVC (TO BE CORED) (CONTRACTOR TO VERFIY WEST INVERT PRIOR TO ORDERING STRUCTURES. NOTIFY ENGINEER WITH ANY DISCREPANCIES.)
S–4	62 LIN FT SAN SWR, 6" PVC (SDR 26) @ 1.04%
S–5	CLEANOUT (SEE DETAIL) RIM = 766.90 INV = +/– 762.94
S–6	80 LIN FT SAN SWR, 6" PVC (SDR 26) @ 1.04% INV @ S–4 = 762.92 INV @ BLDG = 763.75 (VERFIY W/ ARCH)
S–7	TWO–WAY CLEAN OUT (SEE DETAIL) RIM = 768.50 INV = +/– 763.73
S–8	37 LIN FT SAN SWR, 6" PVC (SDR 26) @ 1.04% INV @ S–4 = 762.76
S–9	TWO–WAY CLEAN OUT (SEE DETAIL) RIM = 766.60 INV = +/– 763.09
S–10	GREASE TRAP (1,000 GAL.) SEE BUILDING PLUMBING PLAN FOR DETAILS RIM(S) = 767.15 E, 767.15 W INV = 763.30 (INLET) INV = 763.13 (OUTLET)
S–11	44 LIN FT SAN SWR, 6" PVC (SDR 26) @ 1.04% INV @ BLDG = 763.75 (VERFIY W/ ARCH)
S–12	TWO–WAY CLEAN OUT (SEE DETAIL) RIM = 768.50 INV = +/– 763.73

A CONFLICT TAGS

- OMITTED FOR THIS SUBMITTAL

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

HRGreen
HRGreen.com

CHICK-FIL-A
OGDEN & IROQUOIS (IL) FSU
1163 E. OGDEN AVENUE
NAPERVILLE, IL 60563

FSR# 05590

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

PRELIMINARY

ENGINEER'S PROJECT # 2302569
PRINTED FOR PRELIMINARY
DATE 10/16/2023
DRAWN BY: MRJ
CHECKED BY: JFV

SHEET
UTILITY TAGS

SHEET NUMBER
PS-101

PRELIMINARY
NOT FOR CONSTRUCTION

NOTES

1. For additional pavement dimensions, see Geometric Plan sheet C 2.3.
2. Total detention storage provided in areas designated as I, II, III, IV, and V. Total planned storage = 4 acre feet ±.
3. See Geometric plan for parking dimensions.

ESTIMATE OF EARTHWORK QUANTITIES

Clay Cut	- 19,200 cubic yards	Topsoil Stripping	- 23,200 Cubic yards
Clay Fill	- 34,800 Cubic yards*	Topsoil Fill	- 5,900 Cubic yards **
Clay Deficit	- 15,600 Cubic yards	Topsoil Excess	- 17,300 Cubic yards

* Includes 20% Shrinkage Factor

** Includes 30% Shrinkage Factor

#6

SPECIAL NOTES

1. These earthwork quantities are based on:
   a. Stripping all of the existing topsoil from the entire site.
   b. Stockpiling of the amount of topsoil fill needed from the topsoil being stripped.
   c. Pavement section of 10½ inches in all parking areas, 14½ inches in (shaded) traffic routes, and a clay pad of 767.3 under both buildings A and B.
   d. All sodding, seeding and landscaping by others.
2. The earthwork quantities shown above are those estimated by the Engineer, and are provided solely for the convenience of the Contractor. The Contractor, by choosing to utilize these quantities in the preparation of his "lump sum" bid, also accepts their accuracy. The Contractor is therefore encouraged to make his own independent earthwork calculation, prior to the submittal of his "lump sum" bid.

BENCHMARKS

772.76 - Northwest bonnet bolt of hydrant at southwest corner of Sav-Way Liquors on north side of Ogden Ave.

768.98 - Northeast bonnet bolt of hydrant at north entrance of K-Mart on east side of Iroquois Avenue.

INTECH CONSULTANTS, INC.
ENGINEERS »« SURVEYORS
5413 WALNUT AVE. DOWNERS GROVE, ILL. PH. 312 964-5656

TRAMMELL CROW COMPANY
500 PARK BLVD.
ITASCA, ILL. 60143

IROQUOIS CENTER
NAPERVILLE, ILLINOIS

SITE GRADING AND PAVING PLAN

DATE	NO.	REVISION	BY
10-7-83	6	ADDED EXIST'G CONTOURS OF PAV'T AREAS I-III	J.M.
6-24-82	5	ENTRANCE APRONS - FINAL SUBMITTAL	[illegible]
6-1-82	4	[illegible]	[illegible]
5-21-82	3	[illegible] IN BLDG. CONFIGURATIONS & ADDITION OF DRAINAGE AREAS IV & V	[illegible]
4-14-82	2	PER I.D.O.T.	[illegible]
4-7-82	1	GENERAL	[illegible]

DATE 3-18-82	SCALE 1" = 40'
DRAWN SB/RL	SHEET C 2.1
CHECKED RL	PROJ. NO. 8153

6 (64')

#6

INTECH CONSULTANTS, INC. ENGINEERS »« SURVEYORS 5413 WALNUT AVE. DOWNERS GROVE, ILL. PH. 312 964-5656	TRAMMELL CROW COMPANY 500 PARK BLVD. ITASCA, ILL. 60143	IROQUOIS CENTER NAPERVILLE, ILLINOIS	SITE UTILITY PLAN	DATE 3-18-82	SCALE 1" = 40'
				DRAWN SB	SHEET C2.2
				CHECKED RL	PROJ. NO. 8153

RUNOFF COEFFICIENTS

VALUES OF C - Runoff / Rainfall			RUNOFF COEFFICIENT *C*	
TYPE OF DRAINAGE AREA SURFACES			MIN.	MAX.
ROOFS, slag to metal			0.75	0.95
PAVEMENTS	Asphalt		0.70	0.95
	Concrete		0.80	0.95
	Gravel, from clean and loose to clayey and compact		0.25	0.70
R. R. YARDS			0.20	0.40
EARTH SURFACES	Sand, from uniform grain size, no fines to well graded, some clay or silt	Bare	0.15	0.50
		Light Vegetation	0.10	0.40
		Dense Vegetation	0.05	0.30
	Loam, from sandy or gravelly to clayey	Bare	0.20	0.60
		Light Vegetation	0.10	0.45
		Dense Vegetation	0.05	0.35
	Gravel, from clean gravel and gravel sand mixtures, no silt or clay to high clay or silt content	Bare	0.25	0.65
		Light Vegetation	0.15	0.50
		Dense Vegetation	0.10	0.40
	Clay, from coarse sandy or silty to pure colloidal clays	Bare	0.30	0.75
		Light Vegetation	0.20	0.60
		Dense Vegetation	0.15	0.50
COMPOSITE AREAS	City, business areas		0.70	0.95
	City, dense residential areas, vary as to soil & vegetation		0.50	0.65
	Suburban residential areas, vary as to soil & vegetation		0.35	0.55
	Rural districts, vary as to soil & vegetation		0.10	0.25
	Parks, Golf Courses, etc., vary as to soil & vegetation		0.10	0.35
LAWNS	Sandy soil, flat 2%		0.05	0.10
	Sandy soil, average 2% to 7%		0.10	0.15
	Sandy soil, steep, 7%		0.15	0.20
	Heavy soil, flat 2%		0.13	0.17
	Heavy soil, average, 2% to 7%		0.18	0.22
	Heavy soil, steep 7%		0.25	0.35

Note: Values of C for earth surfaces are further varied by degree of saturation, compaction, surface irregularity and slope, by character of subsoil, and by presence of frost or glazed snow or ice.

Table 4-102a

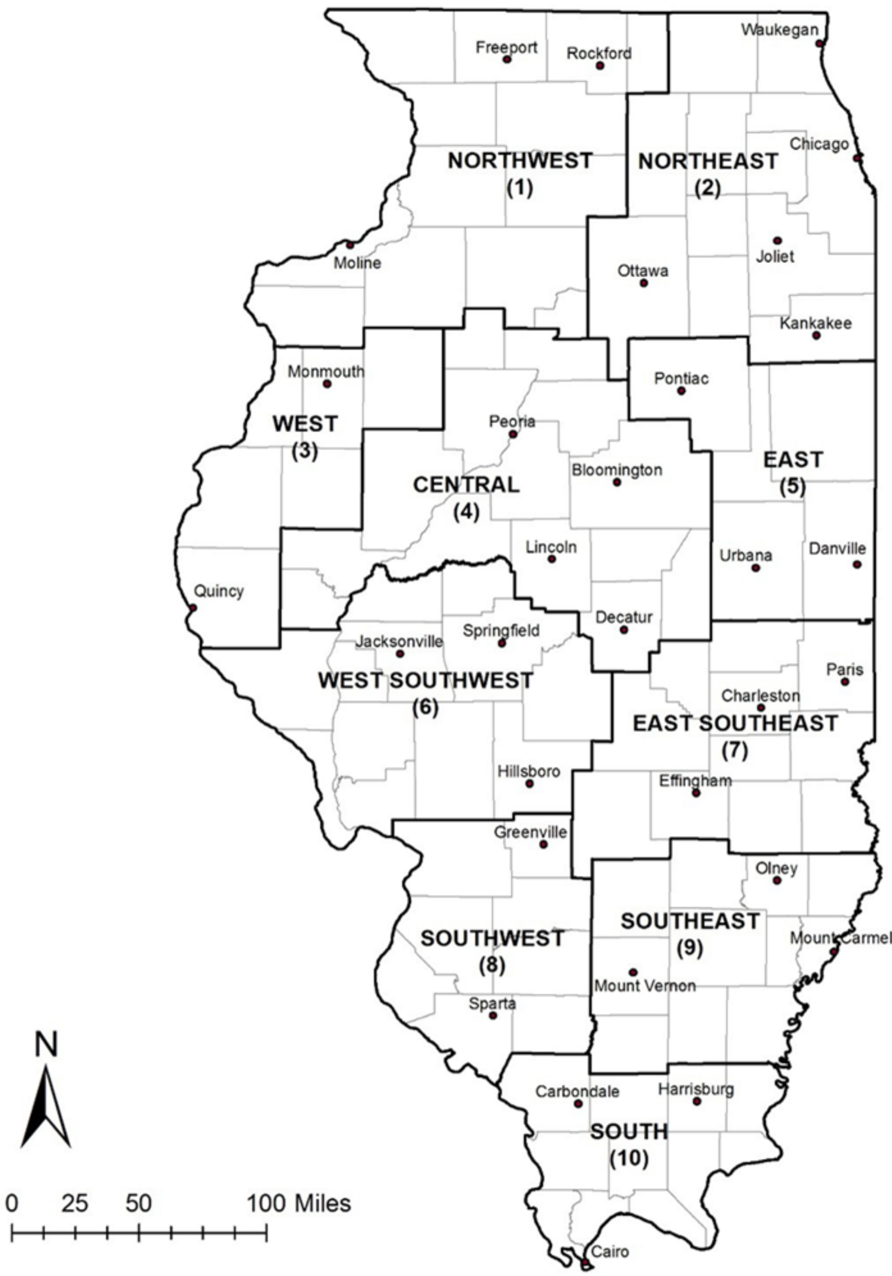

Figure 2. Climatic sections used in developing Illinois frequency estimates

Table 7. Rainfall (inches) for Given Recurrence Interval for Section 2 (Northeast)

Storm Duration	2-month	3-month	4-month	6-month	9-month	1-year	2-year	5-year	10-year	25-year	50-year	100-year	500-year
5 minutes	0.19	0.22	0.24	0.27	0.31	0.33	0.40	0.52	0.62	0.77	0.90	1.03	1.35
10 minutes	0.33	0.38	0.41	0.47	0.53	0.58	0.70	0.90	1.08	1.35	1.58	1.80	2.36
15 minutes	0.42	0.49	0.53	0.61	0.69	0.75	0.90	1.16	1.39	1.74	2.03	2.32	3.04
30 minutes	0.58	0.66	0.73	0.83	0.94	1.03	1.24	1.59	1.91	2.39	2.78	3.17	4.16
1 hour	0.74	0.84	0.93	1.05	1.20	1.30	1.57	2.02	2.42	3.03	3.53	4.03	5.28
2 hours	0.91	1.04	1.14	1.30	1.48	1.61	1.94	2.49	2.99	3.74	4.35	4.97	6.52
3 hours	1.00	1.15	1.26	1.44	1.63	1.77	2.14	2.75	3.30	4.13	4.80	5.49	7.20
6 hours	1.18	1.35	1.48	1.68	1.91	2.08	2.51	3.23	3.86	4.84	5.63	6.43	8.43
12 hours	1.37	1.56	1.71	1.95	2.21	2.41	2.91	3.74	4.48	5.61	6.53	7.46	9.78
18 hours	1.48	1.69	1.85	2.11	2.39	2.61	3.14	4.04	4.84	6.06	7.05	8.06	10.57
24 hours	1.57	1.80	1.97	2.24	2.55	2.77	3.34	4.30	5.15	6.45	7.50	8.57	11.24
48 hours	1.72	1.97	2.16	2.46	2.79	3.04	3.66	4.71	5.62	6.99	8.13	9.28	12.10
72 hours	1.87	2.14	2.34	2.67	3.03	3.30	3.97	5.08	6.05	7.49	8.64	9.85	12.81
120 hours	2.08	2.38	2.61	2.97	3.37	3.67	4.42	5.63	6.68	8.16	9.39	10.66	13.81
240 hours	2.63	3.01	3.30	3.76	4.27	4.65	5.60	7.09	8.25	9.90	11.26	12.65	16.00