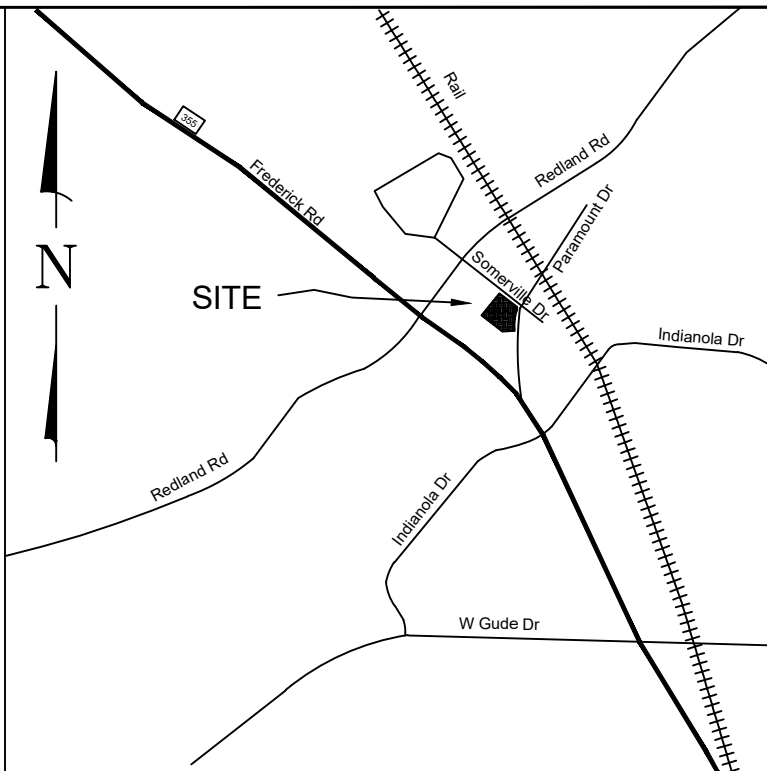
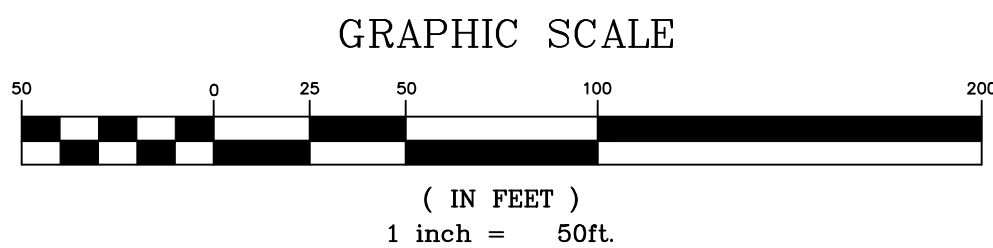
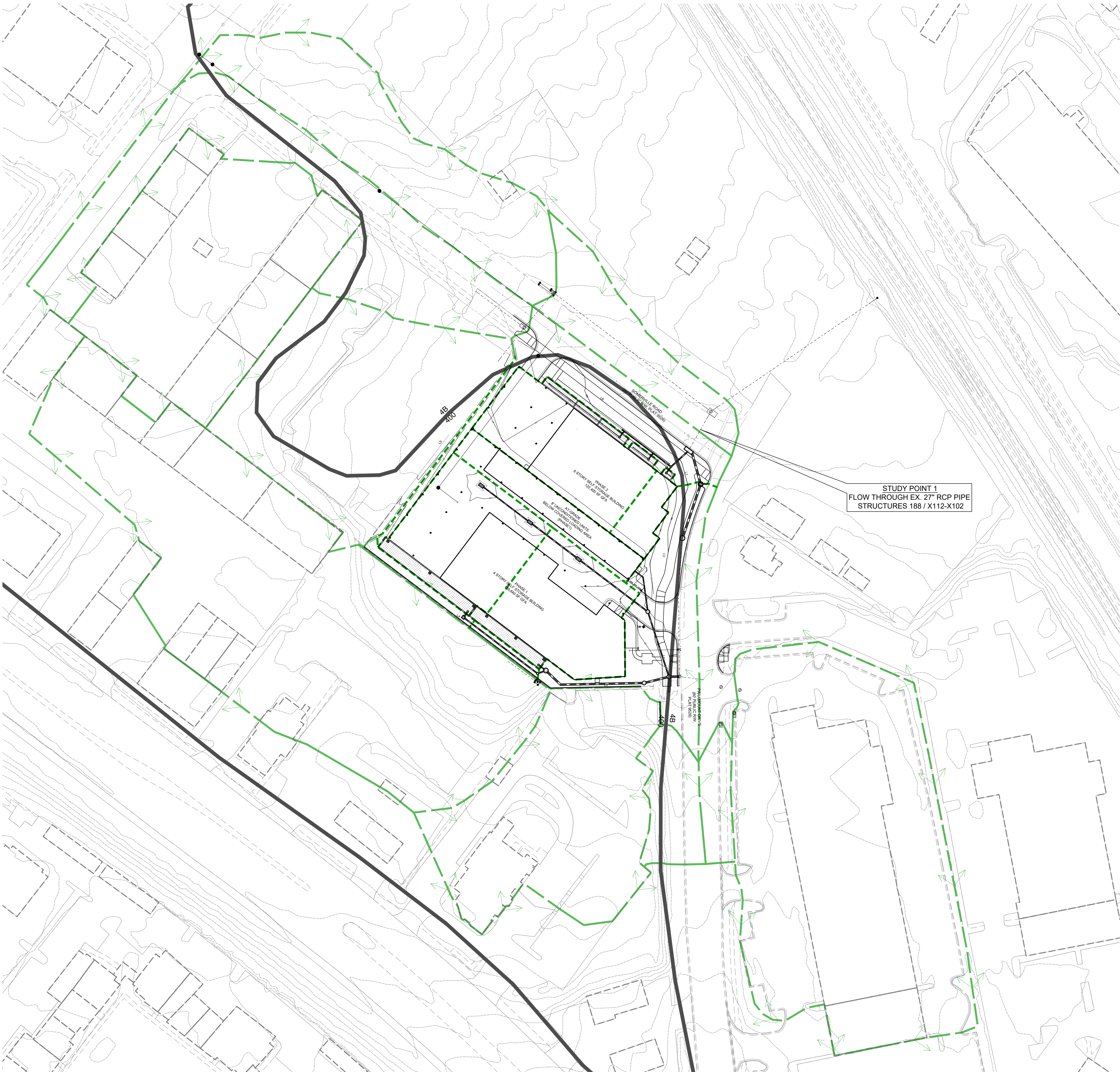




VICINITY MAP
SCALE 1" = 2,000'

LEGEND
N.T.S.

2B	SOIL DIVIDE
400	
PROPOSED DRAINAGE DIVIDE	
EX. DRAINAGE DIVIDE	
EX. 15" RCP	EX. STORM DRAIN
15" RCP	NEW STORM DRAIN

STUDY POINT 1
FLOW THROUGH EX. 27" RCP PIPE
STRUCTURES 188 / X112-X102

Exhibit 21
CU 25-01

NARRATIVE

AT THE STUDY POINT THERE IS A 0.04 ACRE DECREASE IN DESIGN DRAINAGE AREA AND A 3.9 CFS DECREASE IN FLOW UNDER ULTIMATE CONDITIONS. THESE CHANGES ARE ATTRIBUTED TO THE PROPOSED ENCLOSED STORM DRAIN SYSTEM AND THE OVERALL DECREASE IN IMPERVIOUS SURFACES. THE DOWNSTREAM STORM DRAIN IS ADEQUATELY SIZED TO SAFELY CONVEY THE DISCHARGES PRODUCED BY THE REDEVELOPMENT OF THIS SITE.

(SEE <http://websoilsurvey.nrcs.usda.gov/app/>)

SOIL BOUNDARIES HAVE BEEN GRAPHICALLY REPRODUCED FROM MONTGOMERY COUNTY SOILS MAP, FROM THE WEB SOIL SURVEY INTERNET SITE, DATED 2024-01-18.

MAP UNIT SYMBOL	MAP UNIT NAME	HSG RATING
4B	Eloak silt loam, 3 to 8 percent slopes	C
400	Urban Land	D

MHG

CIVIL ENGINEERING
LAND SURVEYING
LANDSCAPE ARCHITECTURE
LAND PLANNING

9220 Wightman Road, Suite 120
Montgomery Village, MD 20886
Phone: 301.870.0840
www.mhga.com

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Professional Certification
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the Laws of the State of Maryland, Lic. No. 35186 Exp. Date: 01/05/2026

OWNER / APPLICANT:
PARAMOUNT SELF STORAGE, LLC
C/O ARCLAND PROPERTY COMPANY LLC
1055 THOMAS JEFFERSON ST. NW
SUITE 250 WASHINGTON DC 20007
CONTACT: STEVE CRATIN
PHONE: 202-480-5392
EMAIL: steve@arc.land

REVISIONS

NO.	DESCRIPTION	DATE

TAX MAP GS122 WSSC 22-1NW08
PLAT 10829
4TH ELECTION DISTRICT
MONTGOMERY COUNTY
MARYLAND

PARCEL H-2 DERWOOD
SOMERVILLE ADDITION

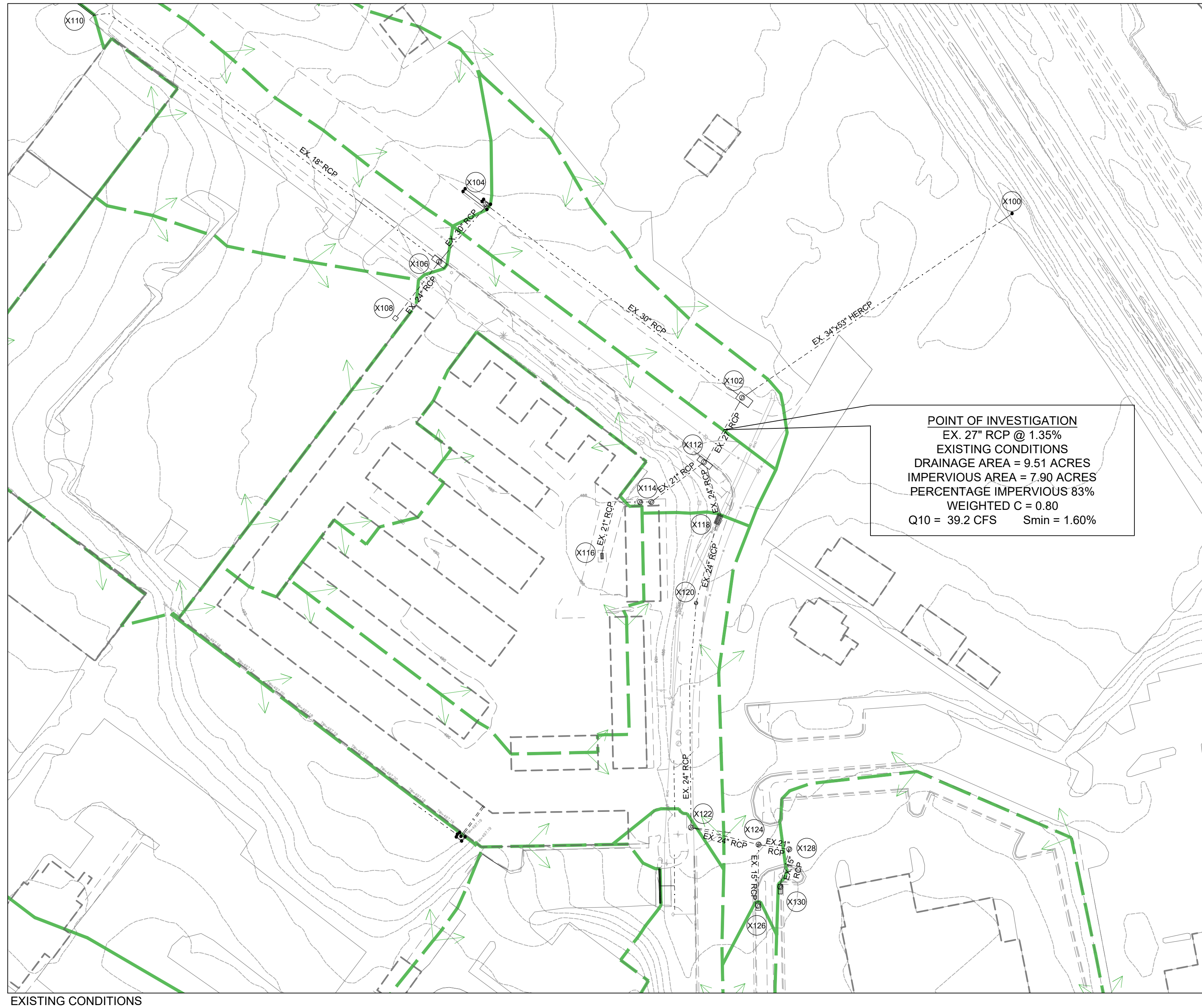
PARAMOUNT SELF
STORAGE

PROJ. MGR	DCM
DRAWN BY	MSH
SCALE	1"=50'
DATE	01.09.2025

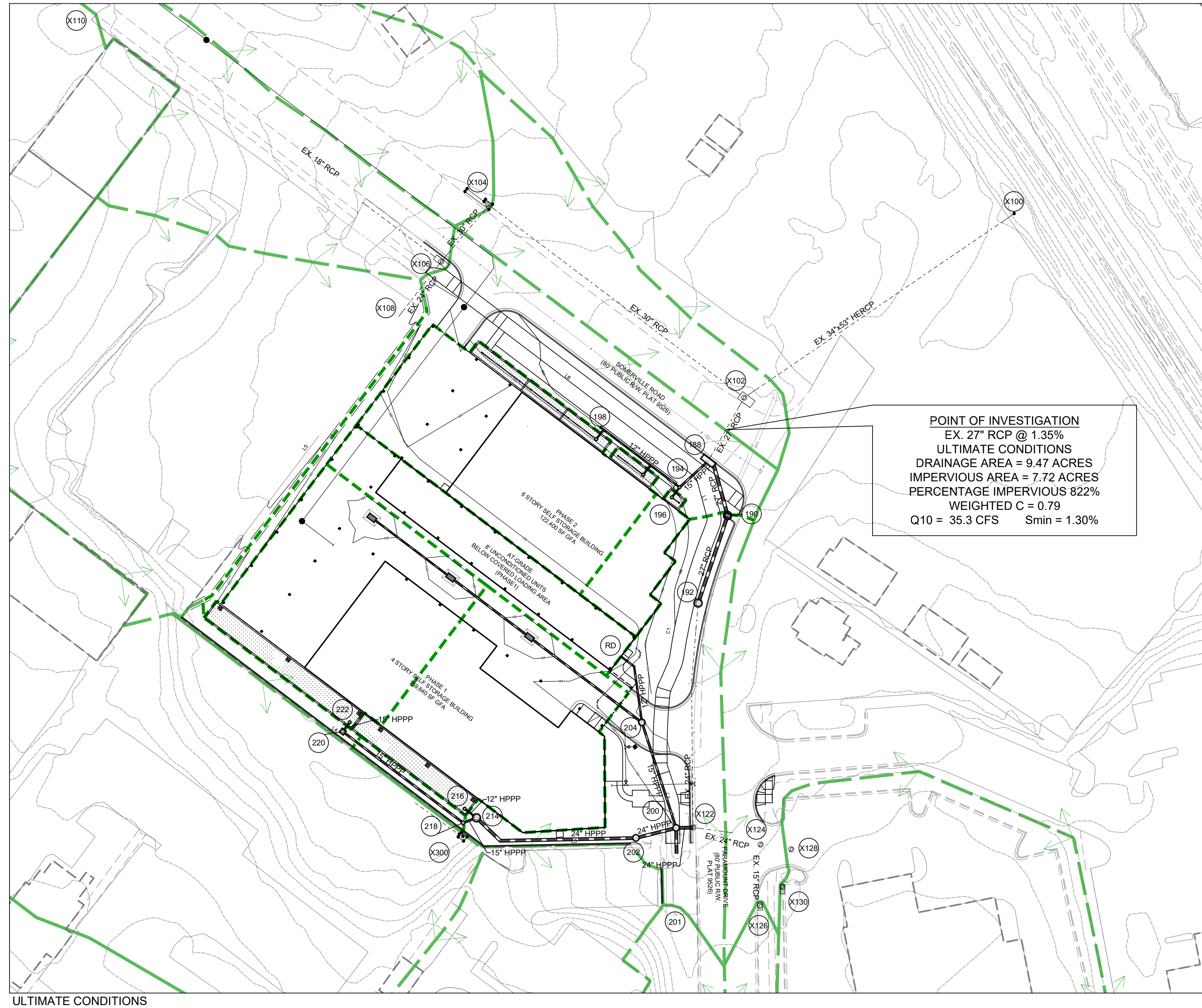
DRAINAGE STUDY PLAN

ULTIMATE DOWNSTREAM
CONDITIONS

PROJECT NO. 2023.120.12
SHEET NO. 1 OF 2

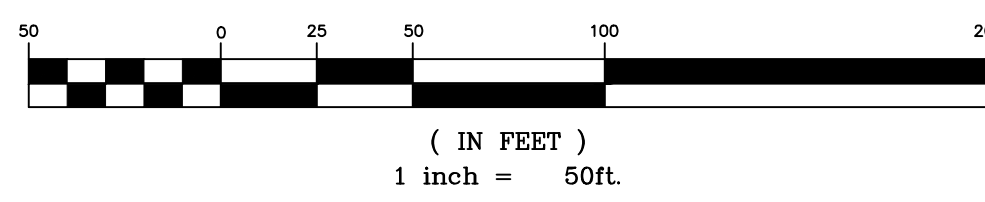


EXISTING CONDITIONS



ULTIMATE CONDITIONS

GRAPHIC SCALE



PARAMOUNT SS - EXISTING CONDITIONS DRAINAGE STUDY															
STORM DRAIN COMPUTATIONS															
10.00 YEAR RETURN PERIOD															
FROM NO.	TO NO.	AREA AC.	AREA SUM AC.	R	AR	AR SUM	TIME MIN.	I INHR	Q CFS	% SLOPE	DA IN.	VEL FPS	L FT.	TIP MIN	N VALUE
X130	X128	2.40	2.40	0.85	2.04	2.04	6.11	6.75	13.8	4.55	15	11.2	24.0	0.04	0.013
X128	X124	2.40	2.40	0.00	2.04	6.15	6.74	13.8	0.76	21	5.7	18.0	0.05	0.013	0.14
X126	X124	0.12	0.12	0.72	0.09	0.09	5.00	7.07	0.6	0.01	15	0.5	39.0	1.31	0.013
X124	X122	2.52	0.00	2.13	6.31	6.70	14.3	0.40	24	4.5	46.0	0.17	0.013	0.18	0.18
X122	X120	2.52	0.00	2.13	6.48	6.66	14.3	0.40	24	4.5	157.0	0.58	0.013	0.82	0.82
X120	X118	2.52	0.00	2.13	7.05	6.51	14.3	0.40	24	4.5	57.0	0.21	0.013	0.23	0.23
X118	X112	5.30	7.82	0.47	2.50	4.63	7.26	6.46	29.9	1.75	24	5.6	35.0	0.06	0.013
X116	X114	0.99	0.99	0.90	0.89	0.89	5.00	7.07	6.3	0.16	21	2.6	63.0	0.40	0.013
X114	X112	0.99	0.00	0.89	5.40	6.95	6.3	0.16	21	2.6	43.0	0.27	0.013	0.07	0.07
X112	X102	0.70	9.51	0.80	0.56	6.08	7.32	6.44	39.2	1.60	27	9.9	48.0	0.08	0.013
X110	X106	1.45	1.45	0.90	1.31	1.31	5.00	7.07	8.2	0.77	15	5.2	300.0	0.96	0.013
X108	X106	1.30	1.30	0.90	1.17	1.17	5.00	7.07	8.3	0.13	24	2.6	47.0	0.30	0.013
X106	X104	1.09	3.84	0.81	0.88	3.36	5.96	6.80	22.8	0.31	30	4.6	48.0	0.17	0.013
X104	X102	0.97	4.81	0.50	0.49	3.84	6.13	6.75	25.9	0.40	30	5.3	223.0	0.70	0.013
X102	X100	0.41	14.73	0.51	0.21	10.13	7.40	6.42	65.1	0.42	42	6.8	230.0	0.60	0.013

EXISTING CONDITIONS				
Str. #	Total Drainage Area, DA (Ac.)	ImperVIOUS Drainage Area, I (Ac.)	Grassed Drainage Area, G (Ac.)	Rational "C"
X130	2.40	2.20	0.20	0.85
X126	0.12	0.09	0.04	0.72
X124	5.30	4.05	1.25	0.76
X116	0.99	0.99	0.00	0.90
X112	0.70	0.58	0.12	0.80
X110	1.45	1.45	0.00	0.90
X108	1.30	1.30	0.00	0.90
X106	1.09	0.92	0.17	0.81
X104	0.97	0.32	0.64	0.50
X102	0.41	0.14	0.26	0.51
Rational "C" = (I/DA)(0.9) + (G/DA)(0.3)				

WEIGHTED RATIONAL "C" COEFFICIENT				
CONDITION	STUDY POINT	TOTAL C _A	TOTAL A _i	C _w
EXISTING	EX. 27" RCP	7.59	9.51	0.80
ULTIMATE	EX. 27" RCP	7.47	9.47	0.79
C _w = (C _{A1} + C _{A2} + ...) / (A ₁ + A ₂ + ...)				



MTH

PARAMOUNT SS - ULTIMATE CONDITIONS DRAINAGE STUDY

STORM DRAIN COMPUTATIONS

10.00 YEAR RETURN PERIOD

USER: MSH

DATE: 01.09.2025

CHECKED BY:

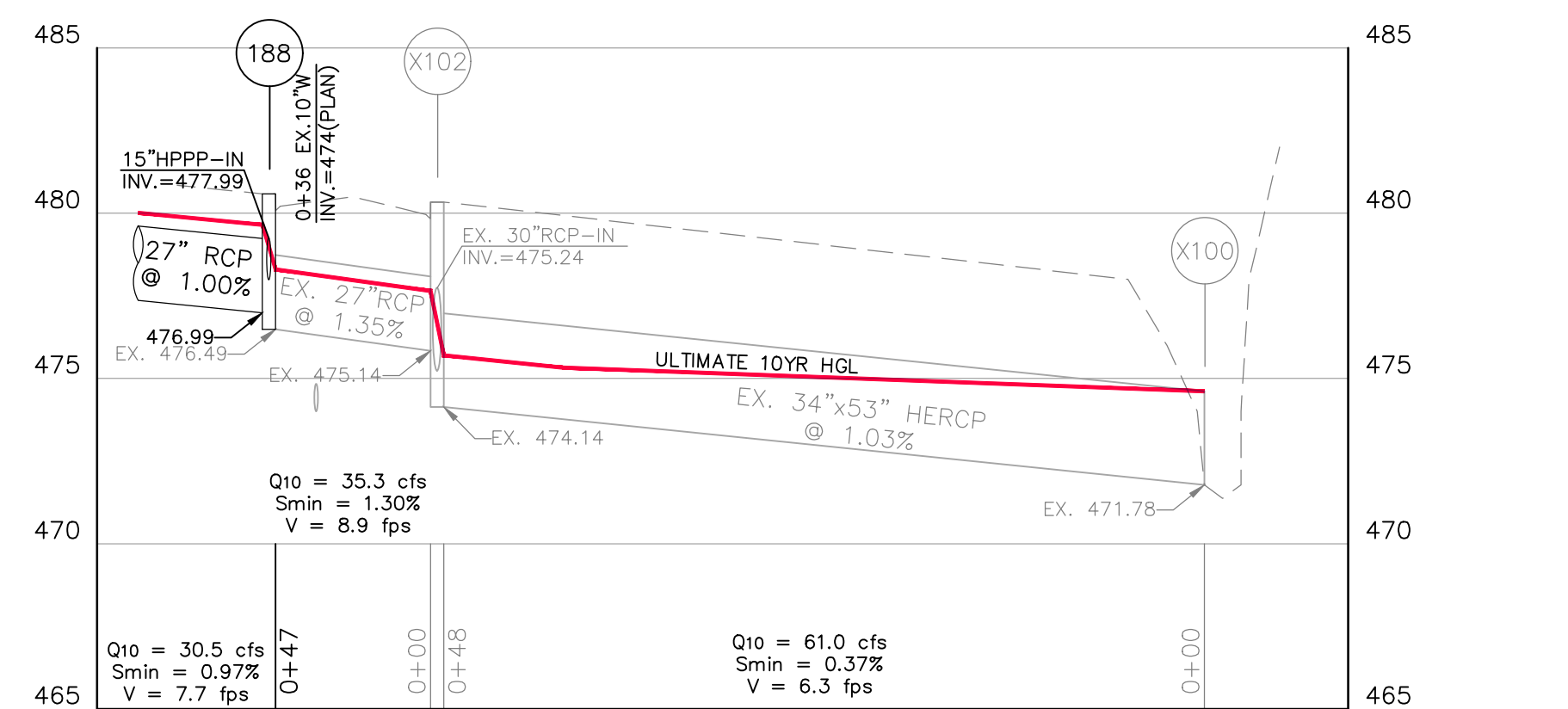
JOB #: 2023-120-12

FILE: C-PIPE

FROM NO.	TO NO.	AREA AC.	AREA SUM AC.	R	AR	AR SUM	TIME MIN.	I INHR	Q CFS	%	SLOPE	DA IN.	VEL FPS	L FT.	TIP MIN	N	VALUE	HT FT.
X130	X128	2.40	2.40	0.85	2.04	2.04	6.11	6.75	13.8	4.55	15	11.2	24.0	0.04	0.013	0.04		1.09
X128	X124	2.40	2.40	0.00	2.04	6.15	6.74	13.8	0.76	21	5.7	18.0	0.05	0.013	0.013	0.14		0.14
X126	X124	0.12	0.12	0.72	0.09	0.09	5.00	7.07	0.6	0.01	15	0.5	39.0	1.31	0.013	0.00		0.00
X124	X122	2.52	0.00	2.13	6.31	6.70	14.3	0.40	24	4.5	46.0	0.17	0.013	0.013	0.18		0.18	
X122	X120	0.46	0.46	0.90	0.41	0.41	5.00	7.07	2.9	0.17	15	2.4	6.0	0.04	0.012	0.01		0.01
X120	X118	0.40	0.50	0.30	0.01	0.43	5.04	7.05	3.0	0.18	15	2.4	105.0	0.71	0.012	0.01		0.19
X118	X114	0.03	0.53	0.30	0.01	0.44	5.76	6.85	3.0	0.18	15	2.4	6.0	0.04	0.012	0.01		0.19
X116	X114	0.45	0.45	0.90	0.41	0.41	5.00	7.07	2.9	0.55	12	3.6	8.0	0.04	0.012	0.04		0.04
X114	X112	2.94	2.94	0.08	0.23	0.23	6.00	6.78	1.6	0.16	12	2.0	14.0	0.12	0.012	0.02		0.02
X112	X110	0.20	3.92	0.00	1.07	6.12	6.75	7.2	0.09	24	2.3	116.0	0.84	0.012	0.10		0.10	
X110	X106	1.38	1.38	0.79	1.09	1.09	5.00	7.07	7.7	0.46	18	4.4	16.0	0.06	0.012	0.07		0.07
X106	X102	0.50	5.90	0.00	2.34	7.15	6.49	15.2	0.38	24	4.8	8.0	0.03	0.012	0.03		0.03	
X102	X100	0.00	8.02	0.00	4.47	7.18	6.48	28.9	1.64	24	9.2	156.0	0.28	0.013	2.55		2.55	
X122	X120	0.46	0.46	0.90	0.18	0.18	5.00	7.07	1.3	0.11	12	1.6	50.0	0.51	0.012	0.05		0.05
X120	X118	0.20	0.20	0.90	0.00	0.18	5.51	6.92	1.3	0.03	15	1.0	75.0	1.21	0.012	0.02		0.02
X118	X114	0.03	0.03	0.90	1.09	1.09	5.00	7.07	7.7	0.46	18	4.4	16.0	0.06	0.012	0.07		0.07
X114	X112	0.45	0.45	0.90	0.00	2.34	7.15	6.49	15.2	0.38	24	4.8	8.0	0.03	0.012	0.03		0.03
X112	X110	0.43	0.43	0.90	0.00	0.49	5.32	6.97	3.4	0.23	15	2.8	25.0	0.15	0.012	0.06		0.06
X110	X106	1.45	1.45	0.90	1.31	1.31	5.00	7.07	9.2	0.77	18	5.2	300.0	0.96	0.013	2.31		2.31
X108	X106	1.35	1.35	0.88	1.19	1.19	5.00	7.07	8.4	0.14	24	2.7	47.0	0.29	0.013	0.06		0.06
X106	X104	1.09	3.89	0.81	0.88	3.38	5.96	6.80	22.9	0.31	30	4.7	48.0	0.17	0.013	0.15		0.15
X104	X102	0.97	4.86	0.50	0.49	3.86	6.13	6.75	26.1	0.40	30	5.3	223.0	0.70	0.013	0.90		0.90
X102	X100	0.41	14.74	0.51	0.21	9.63	7.77	6.34	61.0	0.37	42	6.3	230.0	0.60	0.013	0.85		0.85

ULTIMATE CONDITIONS				
Str. #	Total Drainage Area, DA (Ac.)	ImperVIOUS Drainage Area, I (Ac.)	Grassed Drainage Area, G (Ac.)	Rational "C"
X130	2.40	2.20	0.20	0.85
X126	0.12	0.09	0.04	0.72
X124	0.46	0.46	0.00	0.90
X122	0.04	0.00	0.04	0.30
X118	0.03	0.00	0.03	0.30
X116	0.45	0.45	0.00	0.90
X114	2.94	2.12	0.82	0.73
X112	1.38	1.12	0.25	0.79
X110	0.20	0.20	0.00	0.90
X108	0.48	0.28	0.20	0.65
X106	0.45	0.45	0.00	0.90
X104	0.09	0.09	0.00	0.90
X102	0.43	0.27	0.16	0.68
X100	1.45	1.45	0.00	0.90
X108	1.35	1.30	0.05	0.88
X106	1.09	0.92	0.17	0.81
X104	0.97	0.32	0.64	0.50
X102	0.41	0.14	0.26	0.51
Rational "C" = (I/DA)(0.9) + (G/DA)(0.3)				

PROFILE SCALE:
VERT: 1" = 5'
HORIZ: 1" = 50'



REVISIONS		
NO.	DESCRIPTION	DATE

TAX MAP GS122 W58C 221NW08

PLAT 10829

4TH ELECTION DISTRICT
MONTGOMERY COUNTY
MARYLAND

PARCEL H-2 DERWOOD
SOMERVILLE ADDITION

PARAMOUNT SELF
STORAGE

PROJ. MGR DCM

DRAWN BY MSH

SCALE AS NOTED

DATE 01.09.2025

DRAINAGE STUDY PLAN

EXISTING AND ULTIMATE
CONDITIONS,
COMPUTATIONS, AND
HGL PROFILE

PROJECT NO. 2023.120.12

SHEET NO. 2 OF 2