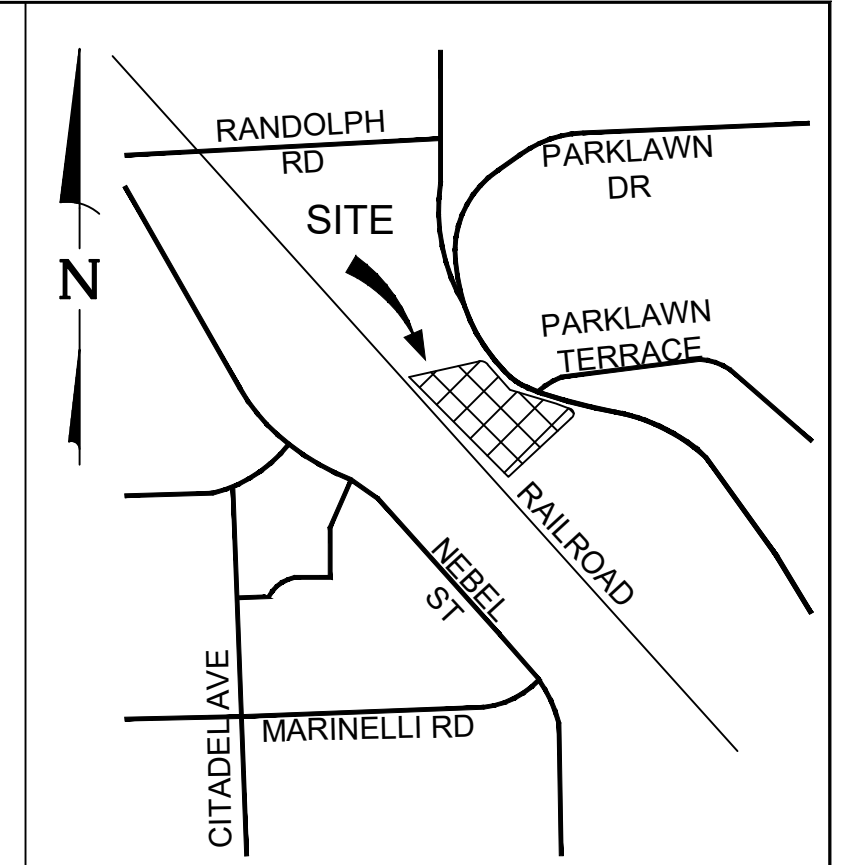


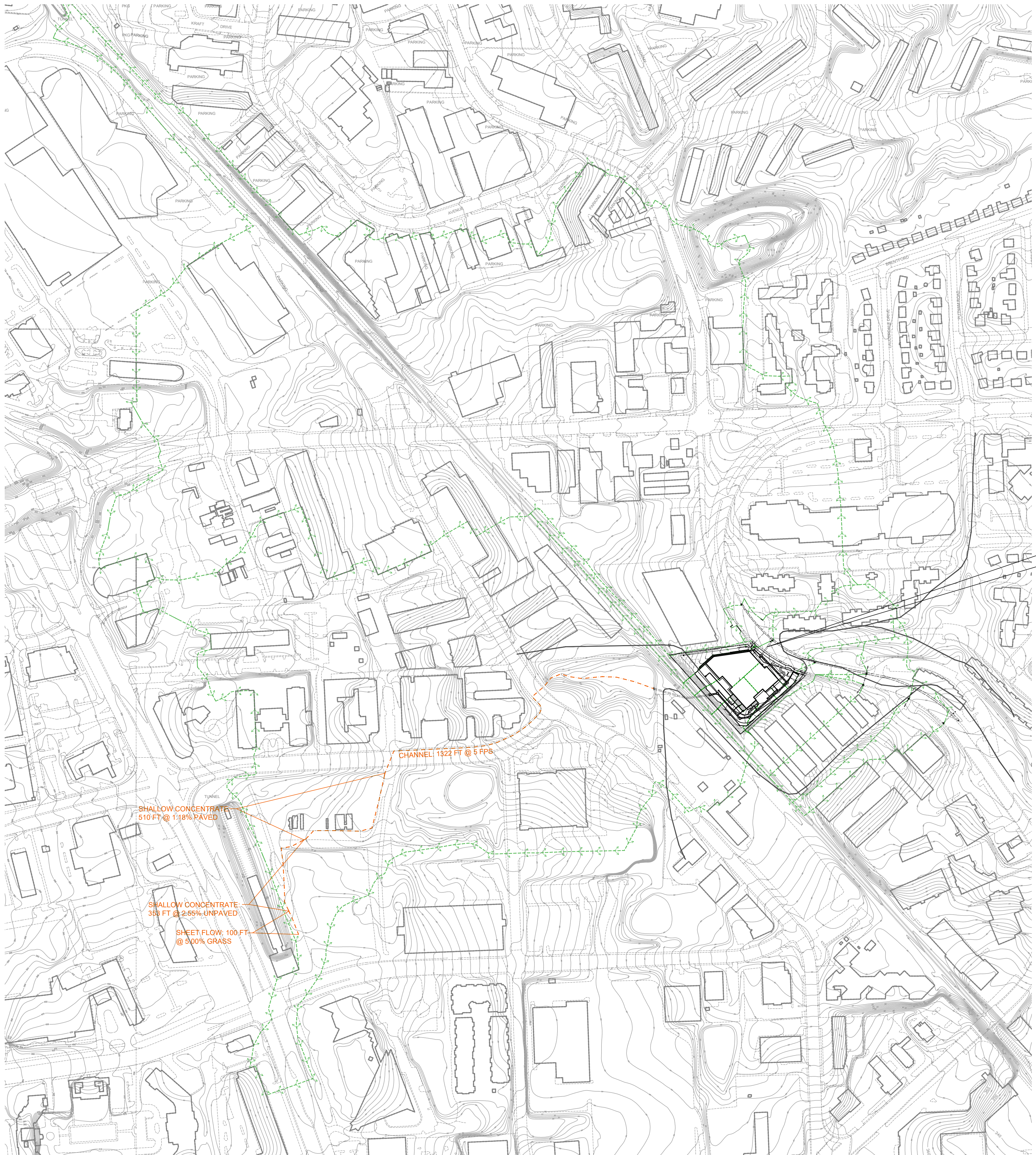
Exhibit 23 H-154



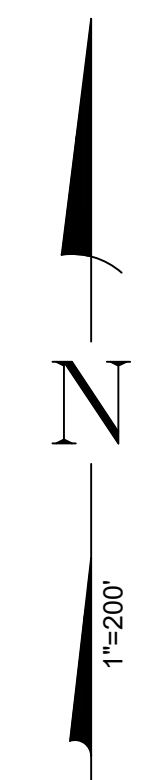
VICINITY MAP
NOT TO SCALE

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. 14979 Exp. Date: 07/02/2026

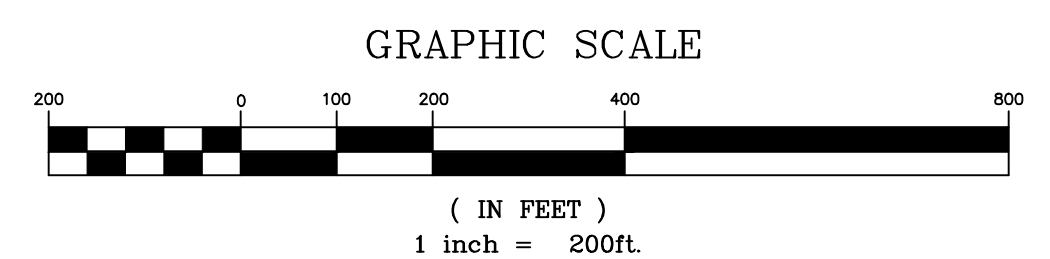
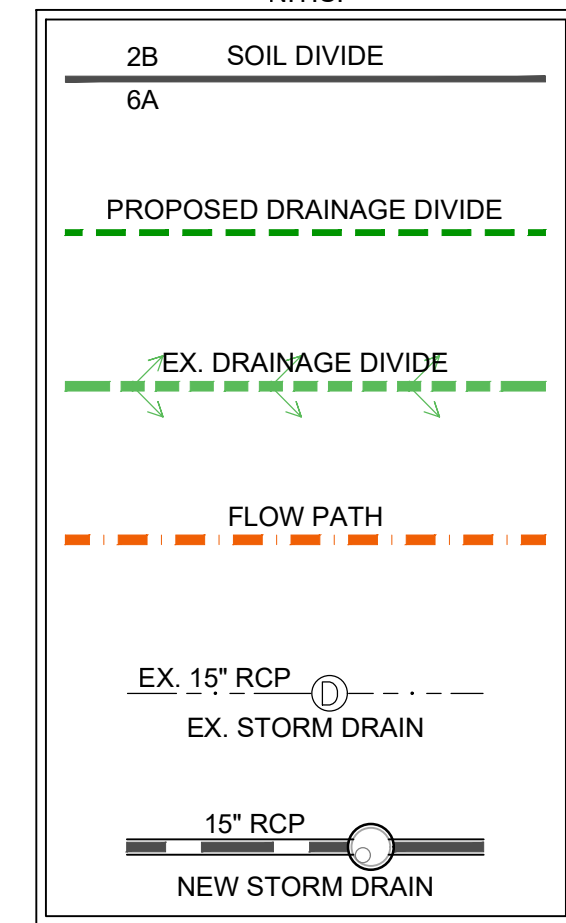
OWNER / APPLICANT:
ARCLAND
P.O. BOX 25523
WASHINGTON, DC 20027
CONTACT: ANTHONY PISCITELLI
PHONE: 202-818-9264
EMAIL: anthony@arcland



NORTHEAST DA: STUDY POINT 3
FLOW THROUGH EX. 54" RCP PIPE
STRUCTURES X12 - X10



LEGEND
N.T.S.



Project Description		Inlet X10	
Storm No.	Efficiency		
Input Data			
Channel	3.91 ch		
Slope	0.00 ft/ft		
Gutter Width	1.00 ft		
Gutter Cross Slope	0.09 ft/ft		
Road Cross Slope	0.02 ft/ft		
Roughness Coefficient	0.013		
Local Depression	4.0 in		
Local Depression Width	30.0 in		
Gutter Width	1.00 ft		
Gutter Length	45" TR Bar		
Gutter Type	0.0 ft		
Clipping	0.0 ft		
Catchment Length	0.0 ft		
Options			
Calculation Option	Use Both	Exclude None	
Grid Flow Option			
Results			
Efficiency	84.85 %		
Intercepted Flow	2.02 cfs		
Bypass Flow	0.37 cfs		
Spill	0.0 ft		
Depth	1.11 in		
Flow Area	0.3 ft ²		
Gutter Depression	3.0 in		
Total Depression	5.0 in		
Velocity	4.97 ft/s		
Spill Over Velocity	9.71 ft/s		
Frontal Flow Factor	0.00		
Side Flow Factor	0.32		
Gutter Flow Rate	0.20 cfs		
Equivalent Cross Slope	0.23 ft/ft		
Active Gutter Length	2.0 ft		
Length Factor	0.00		
Total Depression Length	0.7 ft		
Messages			
Gutter Length should be within the defined range of 0.5 - 10.0 ft.			
Gutter Depth should be between 0.5 - 1.0 ft.			
Gutter Slope should be between 0.01 - 0.05 ft/ft.			
Gutter Cross Slope should be between 0.01 - 0.05 ft/ft.			
Gutter Length Factor should be between 0.00 - 1.00.			
Gutter Type should be 0.0 - 1.0 ft.			
Gutter Width should be between 0.5 - 1.0 ft.			
Gutter Width Factor should be between 0.00 - 1.00.			

Project Description		Inlet X8	
Storm No.	Efficiency		
Input Data			
Channel	7.84 ch		
Slope	0.14 ft/ft		
Gutter Width	1.00 ft		
Gutter Cross Slope	0.09 ft/ft		
Road Cross Slope	0.02 ft/ft		
Roughness Coefficient	0.013		
Local Depression	4.0 in		
Local Depression Width	30.0 in		
Gutter Width	1.00 ft		
Gutter Length	45" TR Bar		
Gutter Type	0.0 ft		
Clipping	0.0 ft		
Catchment Length	0.0 ft		
Options			
Calculation Option	Use Both	Exclude None	
Grid Flow Option			
Results			
Efficiency	43.78 %		
Intercepted Flow	3.41 cfs		
Bypass Flow	4.41 cfs		
Spill	0.0 ft		
Depth	3.3 in		
Flow Area	0.3 ft ²		
Gutter Depression	3.0 in		
Total Depression	5.0 in		
Velocity	14.61 ft/s		
Spill Over Velocity	9.71 ft/s		
Frontal Flow Factor	0.00		
Side Flow Factor	0.26		
Gutter Flow Rate	0.20 cfs		
Equivalent Cross Slope	0.23 ft/ft		
Active Gutter Length	5.0 ft		
Length Factor	0.00		
Total Depression Length	3.2 ft		
Messages			
Gutter Length should be within the defined range of 0.5 - 10.0 ft.			
Gutter Depth should be between 0.5 - 1.0 ft.			
Gutter Slope should be between 0.01 - 0.05 ft/ft.			
Gutter Cross Slope should be between 0.01 - 0.05 ft/ft.			
Gutter Length Factor should be between 0.00 - 1.00.			
Gutter Type should be 0.0 - 1.0 ft.			
Gutter Width should be between 0.5 - 1.0 ft.			
Gutter Width Factor should be between 0.00 - 1.00.			

REVISIONS		
NO.	DESCRIPTION	DATE

TAX MAP H2122 WSSC 219W05
PLAT 9530
4TH ELECTION DISTRICT
MONTGOMERY COUNTY
MARYLAND

LOT 6
NORTH BETHESDA
INDUSTRIAL CENTER

PROJ. MGR DCM
DRAWN BY MSH
SCALE 1"=200'
DATE 08.20.2024

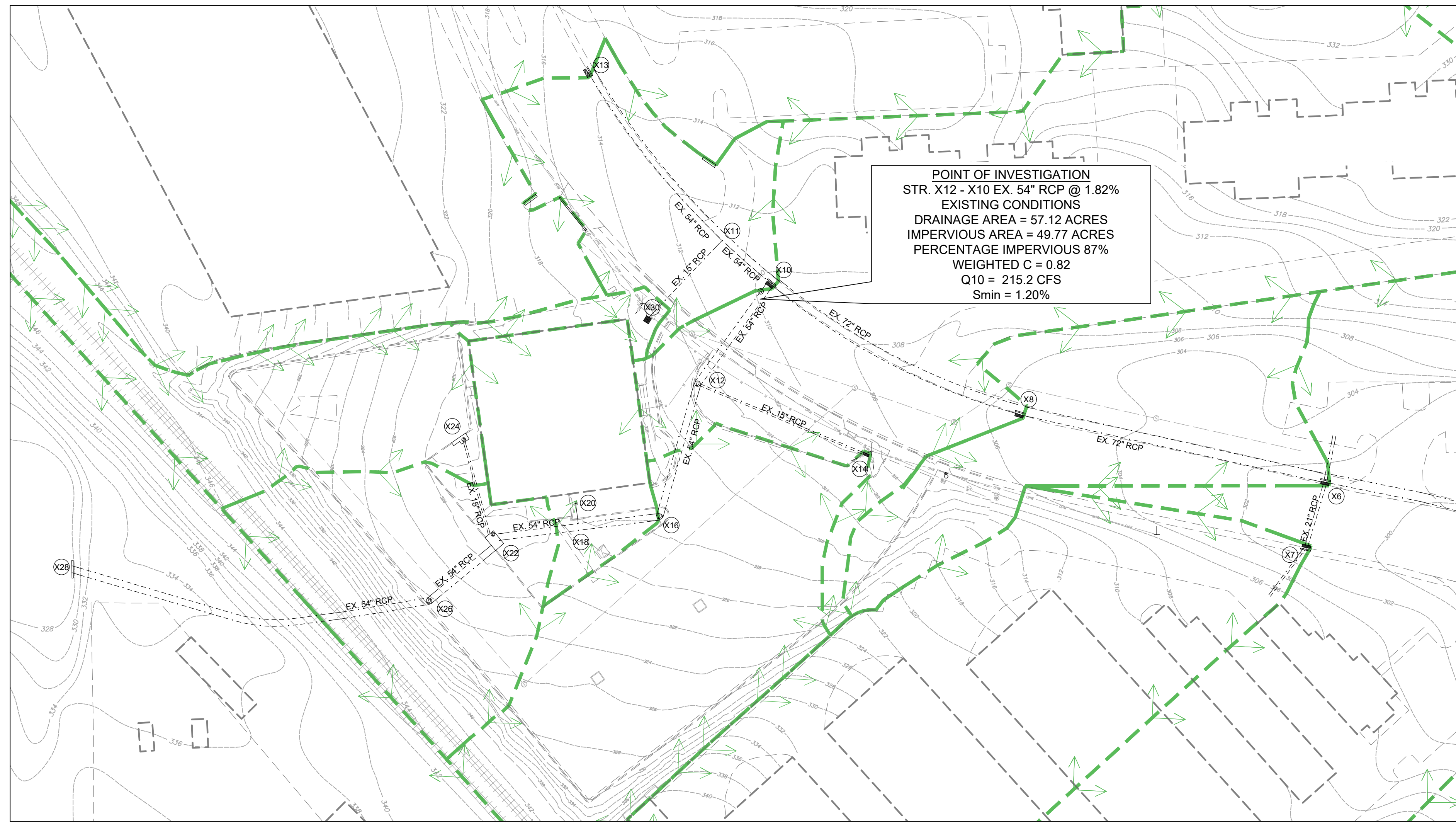
DRAINAGE STUDY PLAN
OVERALL DOWNSTREAM
CONDITIONS

PROJECT NO. 2023.193.21
SHEET NO. 1 OF 2

NARRATIVE
- AT THE POINT OF INVESTIGATION THERE IS A 1.01 ACREAGE DECREASE IN DESIGN DRAINAGE AREA AND A 3.7 CFS DECREASE IN 10 YEAR FLOW. THE DECREASE IN FLOW IS DUE TO THE OVERALL DECREASE IN IMPERVIOUS SURFACES ACROSS THE DEVELOPMENT SITE AND REROUTING OF FLOW VIA ENCLOSED STORM DRAINAGE.
- REFER TO SHEET 2 FOR IN-DEPTH COMPUTATIONS.
- THE EXISTING STORM DRAIN DOWNSTREAM OF THE POINT OF INVESTIGATION IS ADEQUATELY SIZED FOR THE CHANGE IN FLOW.

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

MAP UNIT SYMBOL	MAP UNIT NAME	HSG RATING
2B	Glenelg Silt Loam, 3 to 8 percent slopes.	B
400	Urban Land.	D



MHG

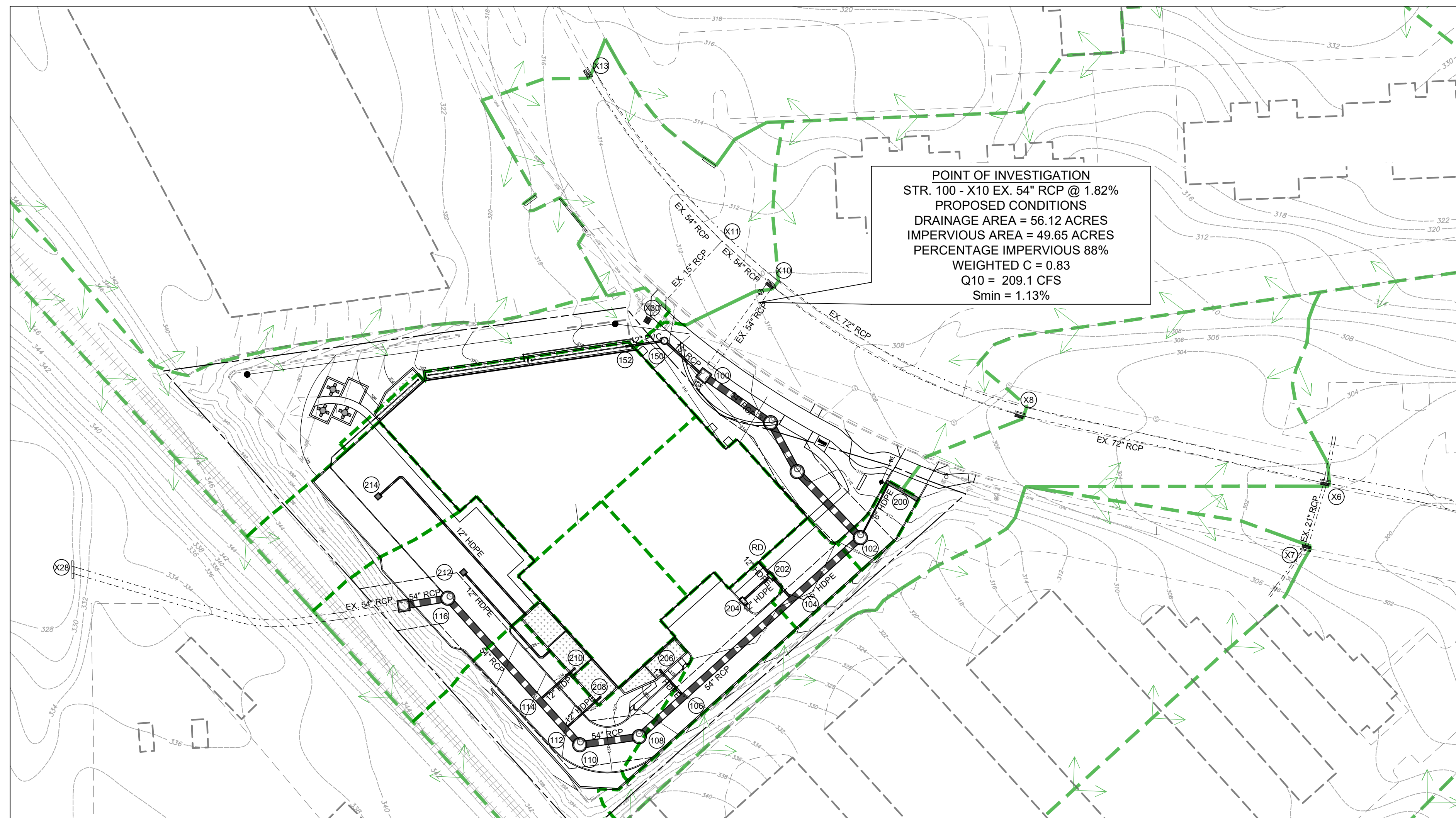
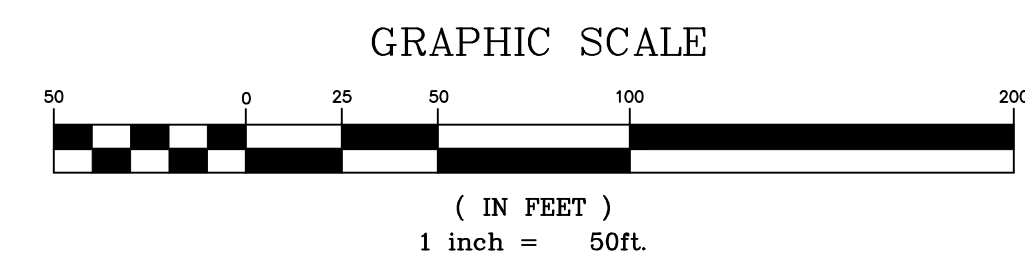
N BETHESDA PARKLAWN - EX. CONDITIONS DRAINAGE STUDY
STORM DRAIN COMPUTATIONS
10.00 YEAR RETURN PERIOD

USER: MSH
DATE: 08.20.2024
CHECKED BY: [Redacted]
JOB #: 2023.193.11
FILE: EX PIPE

FROM NO.	TO NO.	AREA AC.	AREA SUM AC.	R	AR	ARSUM	TIME MIN	I IN/HR	Q CFS	SLOPE %	DIA. IN.	VEL. FPS	L FT.	TIP MIN	N VALUE	HF FT.	Q CFS	PIPE
X28	X22	54.12	54.12	0.84	45.46	45.46	17.76	4.63	207.9	1.12	54	13.1	250.0	0.31	0.013	2.86	310.30	2.49
X24	X22	1.02	1.02	0.46	0.46	0.46	5.00	7.07	3.2	0.25	15	2.6	65.0	0.07	0.013	0.16	0.013	0.65
X22	X18	0.59	0.59	0.32	0.32	0.32	46.24	18.15	4.58	211.9	1.16	54	13.3	55.0	0.07	0.013	0.64	0.64
X20	X18	0.36	0.36	0.86	0.31	0.31	5.00	7.07	2.2	0.11	15	1.8	13.0	0.12	0.013	0.01	0.013	0.01
X18	X16	56.09	56.09	0.00	46.55	46.55	18.22	4.57	212.9	1.17	54	13.4	250.0	0.07	0.013	0.66	0.013	0.66
X16	X12	56.09	56.09	0.00	46.55	46.55	18.22	4.56	212.9	1.17	54	13.4	250.0	0.11	0.013	1.08	0.013	1.08
X14	X12	1.03	1.03	0.71	0.73	0.73	5.00	7.07	5.2	0.84	15	4.2	119.0	0.47	0.013	0.76	0.013	0.76
X12	X10	57.12	57.12	0.00	47.29	47.29	18.40	4.56	215.2	1.20	54	13.5	250.0	0.10	0.013	0.82	0.013	0.82

EXISTING CONDITIONS

Str. #	Total Drainage Area, DA (Ac.)	Impervious Drainage Area, I (Ac.)	Grassed Drainage Area, G (Ac.)	Rational "C"
X28	54.12	48.25	5.87	0.83
X24	1.02	0.25	0.77	0.45
X22	0.59	0.24	0.35	0.55
X20	0.36	0.31	0.05	0.82
X14	1.03	0.71	0.32	0.71
X10	0.47	0.32	0.15	0.71



MHG

N BETHESDA PARKLAWN - PROPOSED CONDITIONS DRAINAGE STUDY
STORM DRAIN COMPUTATIONS
10.00 YEAR RETURN PERIOD

USER: MSH
DATE: 08.20.2024
CHECKED BY: [Redacted]
JOB #: 2023.193.11
FILE: PR PIPE

FROM NO.	TO NO.	AREA AC.	AREA SUM AC.	R	AR	ARSUM	TIME MIN	I IN/HR	Q CFS	SLOPE %	DIA. IN.	VEL. FPS	L FT.	TIP MIN	N VALUE	HF FT.	Q CFS	PIPE
X28	116.0	54.12	54.12	0.83	44.92	44.92	17.76	4.63	207.9	1.12	54	13.1	236.0	0.33	0.013	2.86	310.30	2.49
116.0	114.0	54.12	54.12	0.00	44.92	18.09	4.59	207.9	1.12	54	13.1	127.0	0.16	0.013	1.42	310.30	2.49	NA
114.0	112.0	0.49	0.49	0.64	0.31	0.31	5.00	7.07	2.2	0.33	12	2.8	31.0	0.18	0.012	0.10	NA	NA
112.0	110.0	54.61	54.61	0.00	45.23	18.25	4.57	206.7	1.10	54	13.0	26.0	0.03	0.013	0.29	238.00	1.44	NA
110.0	108.0	0.18	0.18	0.90	0.16	0.16	5.00	7.07	1.1	0.09	12	1.5	31.0	0.35	0.012	0.03	NA	NA
108.0	106.0	54.79	54.79	0.00	45.40	18.28	4.57	207.2	1.11	54	13.0	11.0	0.01	0.013	0.12	236.00	1.44	RD
106.0	104.0	54.79	54.79	0.00	45.40	18.30	4.56	207.2	1.11	54	13.0	29.0	0.04	0.013	0.32	257.10	1.71	NA
104.0	102.0	0.46	0.46	0.46	0.21	0.21	5.00	7.07	1.5	0.15	12	1.9	22.0	0.19	0.012	0.03	NA	NA
102.0	100.0	55.25	55.25	0.00	45.61	18.38	4.55	207.7	1.12	54	13.1	112.0	0.14	0.013	1.25	214.0	1.20	NA
204.0	202.0	0.14	0.14	0.84	0.12	0.12	5.00	7.07	0.9	0.05	12	1.1	49.0	0.77	0.012	0.02	NA	NA
202.0	200.0	0.21	0.21	0.90	0.19	0.19	5.00	7.07	1.3	0.12	12	1.7	24.0	0.24	0.012	0.03	NA	NA
200.0	198.0	0.06	0.41	0.90	0.05	0.36	5.77	6.85	2.5	0.15	15	2.0	3.0	0.02	0.013	0.00	NA	NA
198.0	196.0	55.66	55.66	0.00	45.97	18.53	4.54	208.5	1.12	54	13.1	44.0	0.06	0.013	0.49	215.40	1.20	NA
196.0	194.0	0.04	0.04	0.90	0.04	0.04	5.00	7.07	0.3	0.04	8	0.7	46.0	1.05	0.012	0.02	NA	NA
194.0	192.0	55.70	55.70	0.00	46.00	18.58	4.53	208.4	1.12	54	13.1	143.0	0.18	0.013	1.61	240.80	1.50	NA
192.0	190.0	0.42	0.42	0.90	0.38	0.38	5.00	7.07	2.7	0.40	12	3.4	23.0	0.11	0.011	0.09	NA	NA
190.0	188.0	0.42	0.42	0.90	0.38	0.38	5.11	7.03	2.7	0.17	15	2.2	30.0	0.23	0.013	0.05	NA	NA
100.0	X10	56.12	56.12	0.00	46.38	18.76	4.51	209.1	1.13	54	13.1	74.0	0.09	0.013	0.84	266.00	1.83	NA

PROPOSED CONDITIONS

Str. #	Total Drainage Area, DA (Ac.)	Impervious Drainage Area, I (Ac.)	Grassed Drainage Area, G (Ac.)	Rational "C"
X28	54.12	48.25	5.87	0.83
214	0.19	0.11	0.09	0.63
212	0.27	0.15	0.12	0.63
210	0.49	0.28	0.21	0.64
208	0.18	0.18	0.00	0.90
206	0.46	0.12	0.34	0.46
204	0.14	0.13	0.01	0.84
202	0.03	0.03	0.00	0.90
RD	0.21	0.21	0.00	0.90
200	0.04	0.04	0.00	0.90
152	0.42	0.42	0.00	0.90
X30	1.02	0.00	1.02	0.30
X10	0.47	0.32	0.14	0.72

WEIGHTED RATIONAL "C" COEFFICIENT

CONDITION	STUDY POINT	TOTAL CA	TOTAL A	Cw
EXISTING	X12-X10	47.01	57.12	0.82
PROPOSED	100-X10	46.61	56.12	0.83

$C_w = (C1A1 + C2A2 + \dots) / (A1 + A2 + \dots)$

REVISIONS

NO.	DESCRIPTION	DATE

TAX MAP H2122 W58C 219NW5
PLAT 9530
4TH ELECTION DISTRICT
MONTGOMERY COUNTY
MARYLAND

LOT 6
NORTH BETHESDA
INDUSTRIAL CENTER

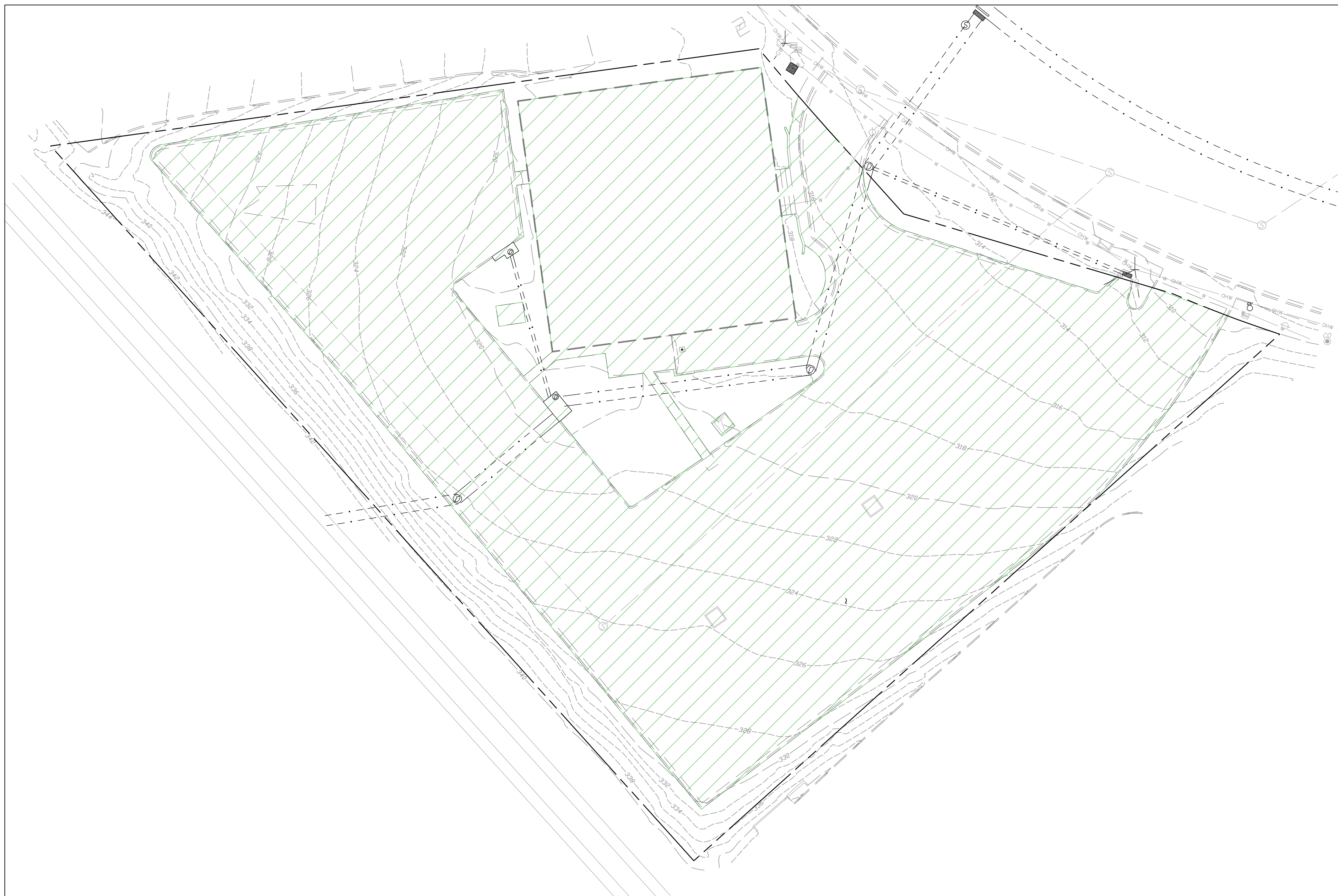
PROJ. MGR DCM
DRAWN BY MSH
SCALE 1"=50'
DATE 08.28.2024

DRAINAGE STUDY PLAN
EXISTING AND PROPOSED
DRAINAGE AREA MAPS
AND COMPUTATIONS

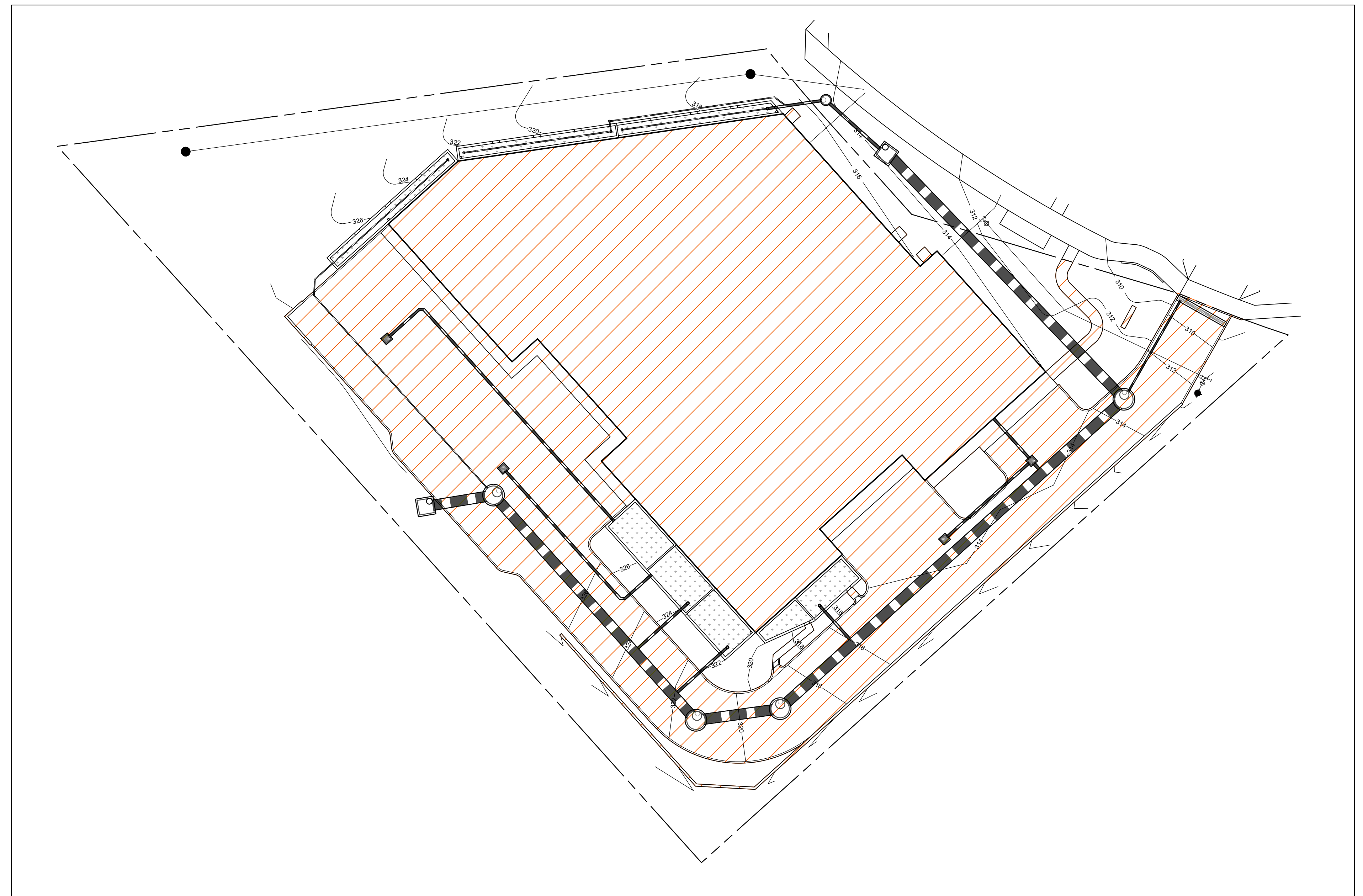
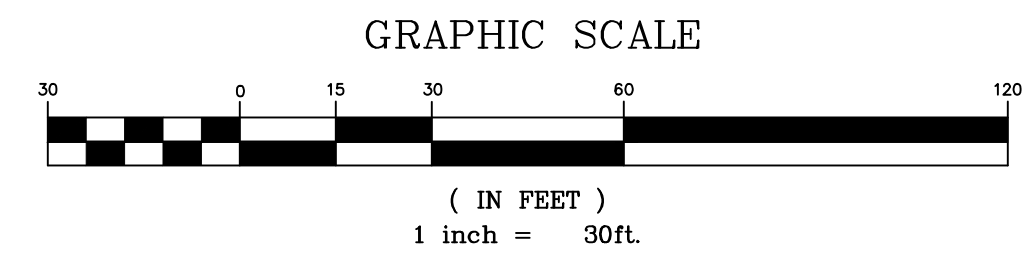
Professional Certification

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE No. 14878, EXPIRATION DATE 07/01/2028

OWNER / APPLICANT:
ARCLAND
P.O. BOX 25523
WASHINGTON, DC 20027
CONTACT: ANTHONY PISCITELLI
PHONE: 202-818-9264
EMAIL: anthony@arcland



EXISTING CONDITIONS IMPERVIOUS SURFACES = 71720 SF



PROPOSED CONDITIONS IMPERVIOUS SURFACES = 59420 SF

REVISIONS		
NO.	DESCRIPTION	DATE

TAX MAP H2122 WSSC 219W05

PLAT 9530

4TH ELECTION DISTRICT
MONTGOMERY COUNTY
MARYLAND

**LOT 6
NORTH BETHESDA
INDUSTRIAL CENTER**

PROJ. MGR DCM

DRAWN BY MSH

SCALE 1"=30'

DATE 08.21.2024

**IMPERVIOUS SURFACES
EXHIBIT**