

1

2

3

4

5

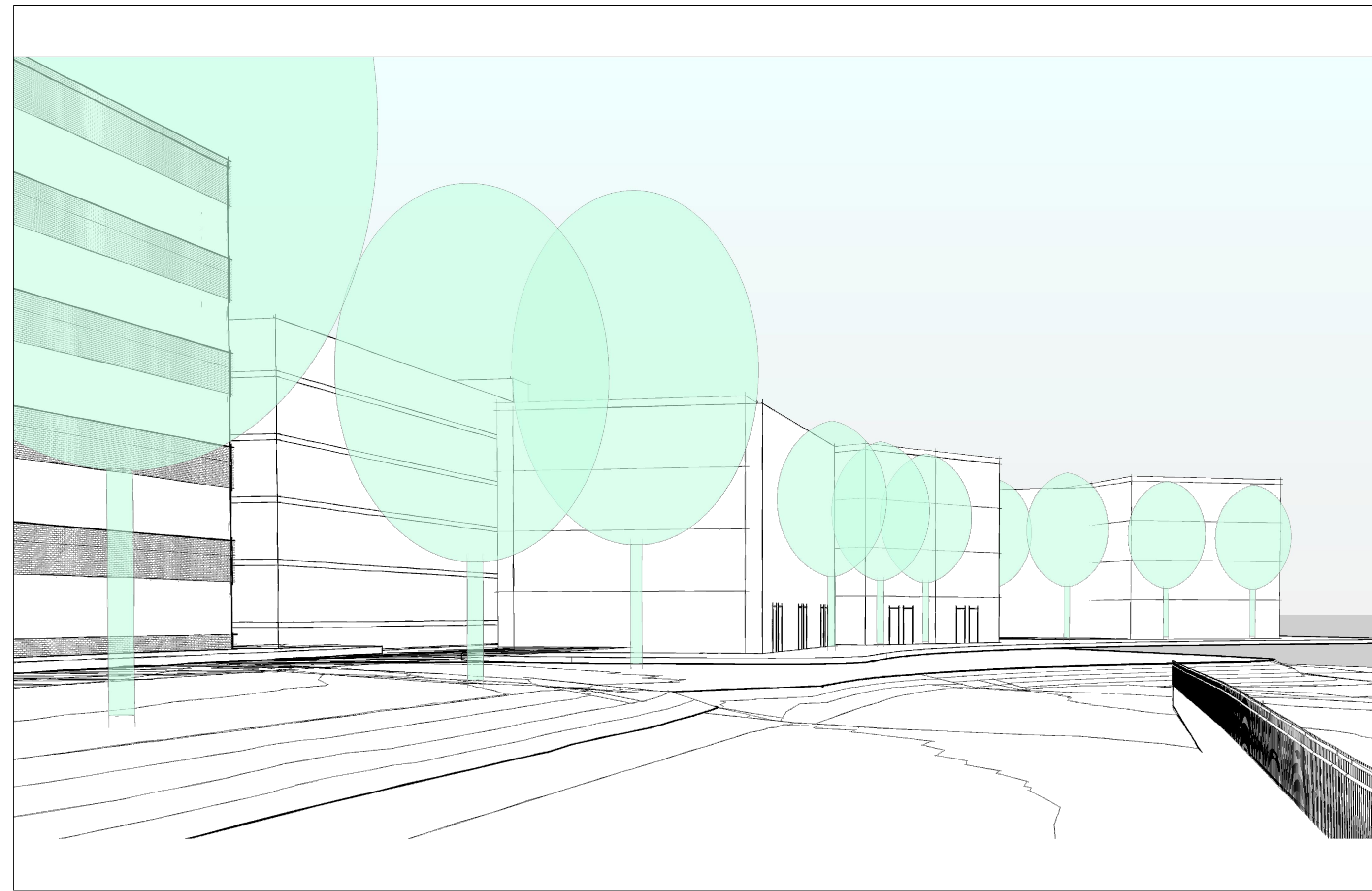
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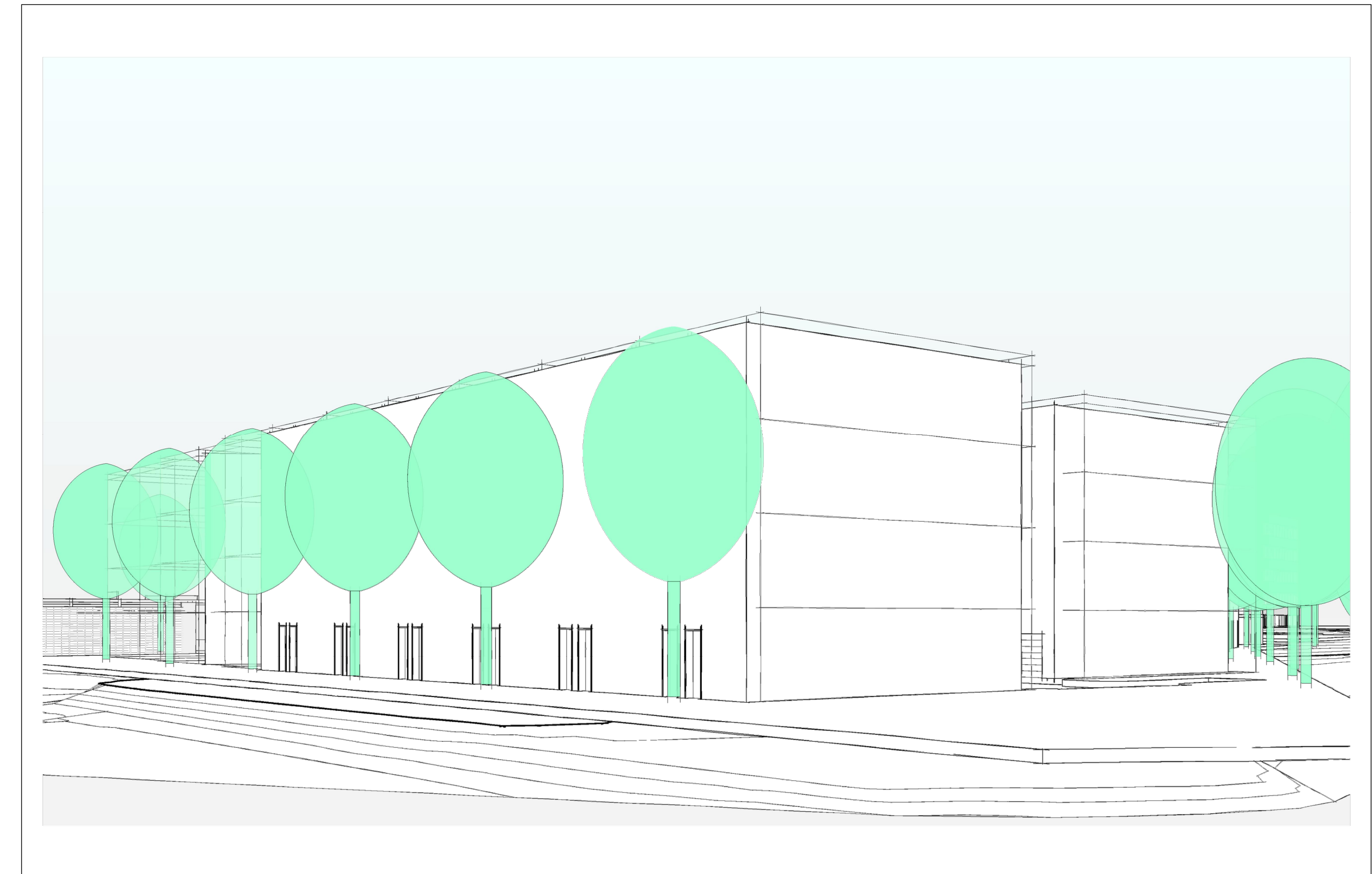
C

B

A



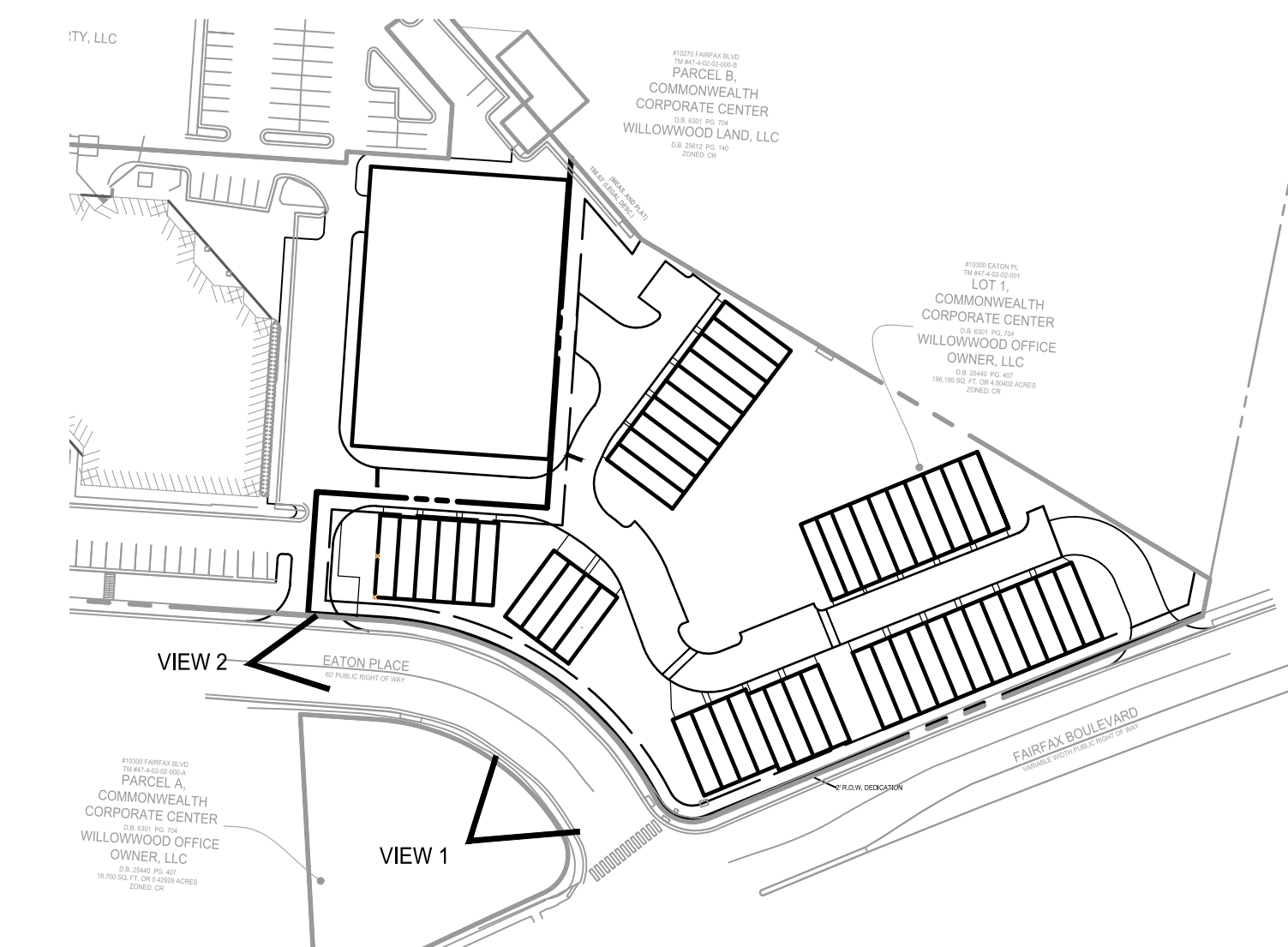
1) 3D VIEW 1



3) 3D VIEW 3

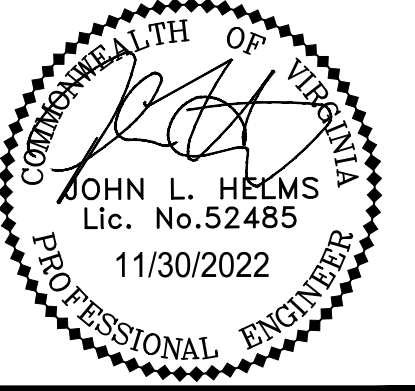


2) 3D VIEW 2



NOTE: THE GRAPHICS, SHOWN ON THIS SHEET, ARE CONCEPTUAL IN NATURE AND ILLUSTRATE THE GENERAL CHARACTER OF THE BUILDINGS AND PROJECT SITE. THESE DRAWINGS ARE NOT INTENDED TO REPRESENT FINAL BUILDING DESIGN OR TO BE INTERPRETED AS A COMMITMENT TO FINAL DESIGN OF THE PROJECT. FINAL DESIGN WILL BE DETERMINED AT THE TIME OF FINAL SITE PLAN SUBMISSION.

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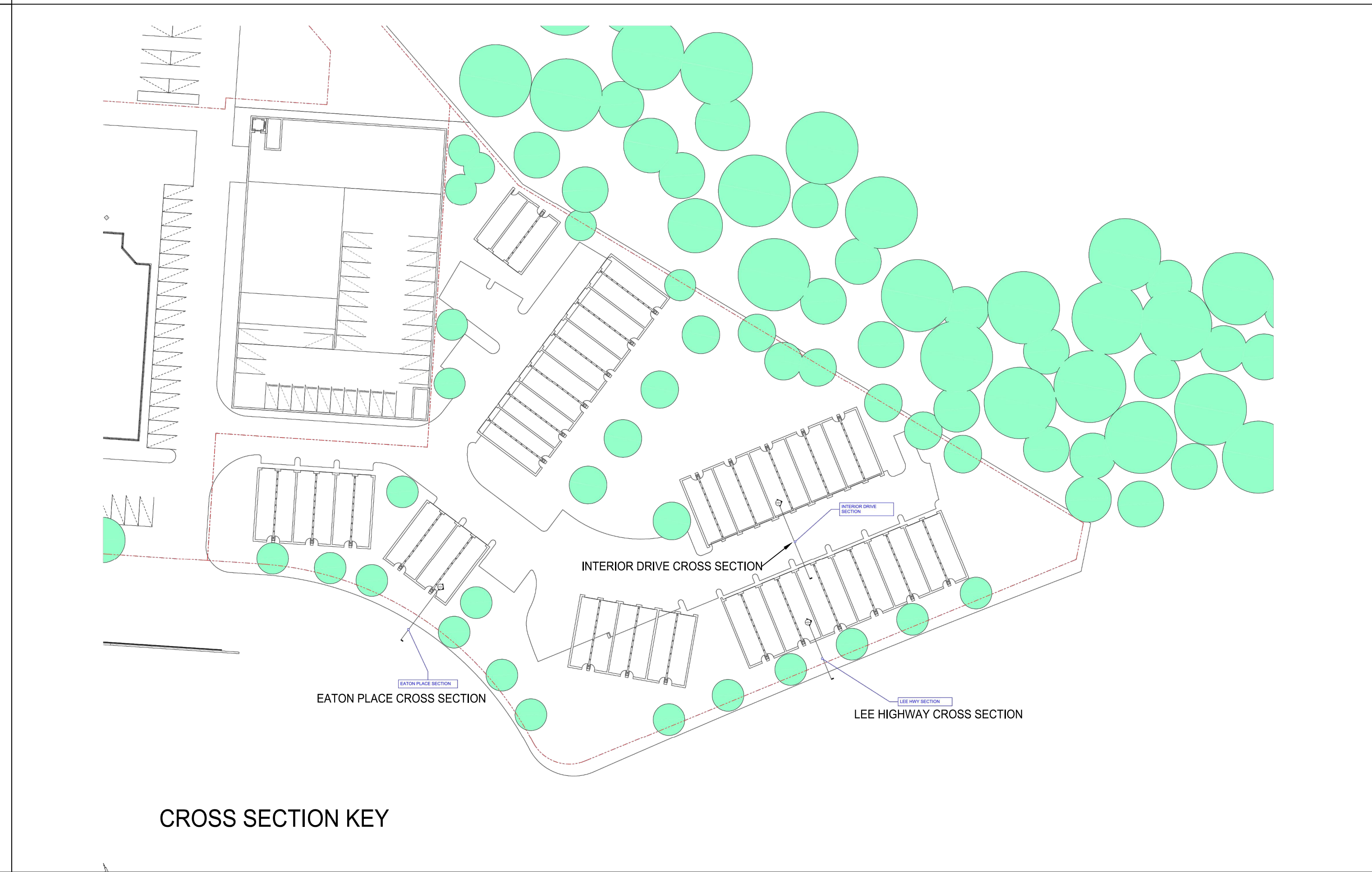
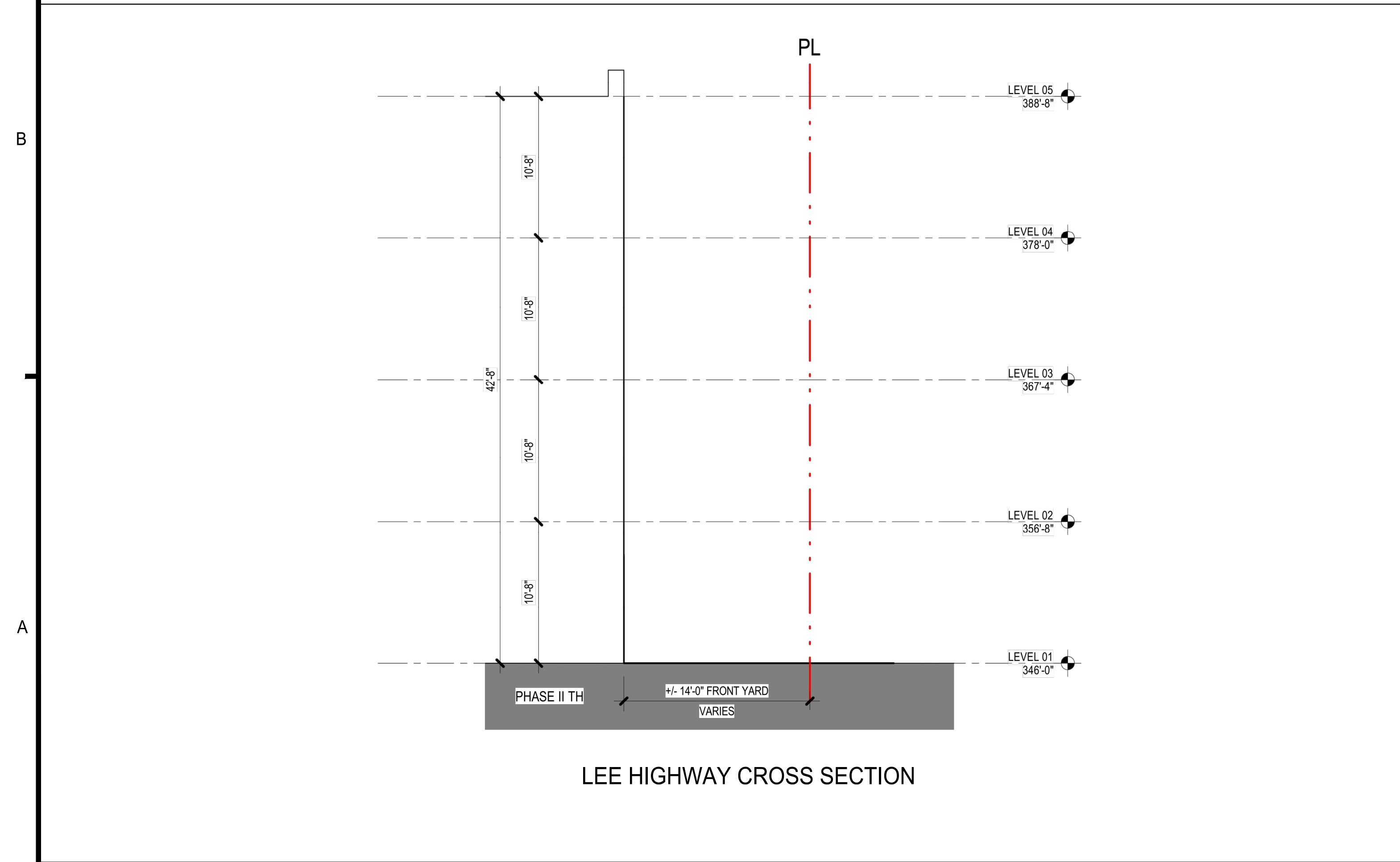
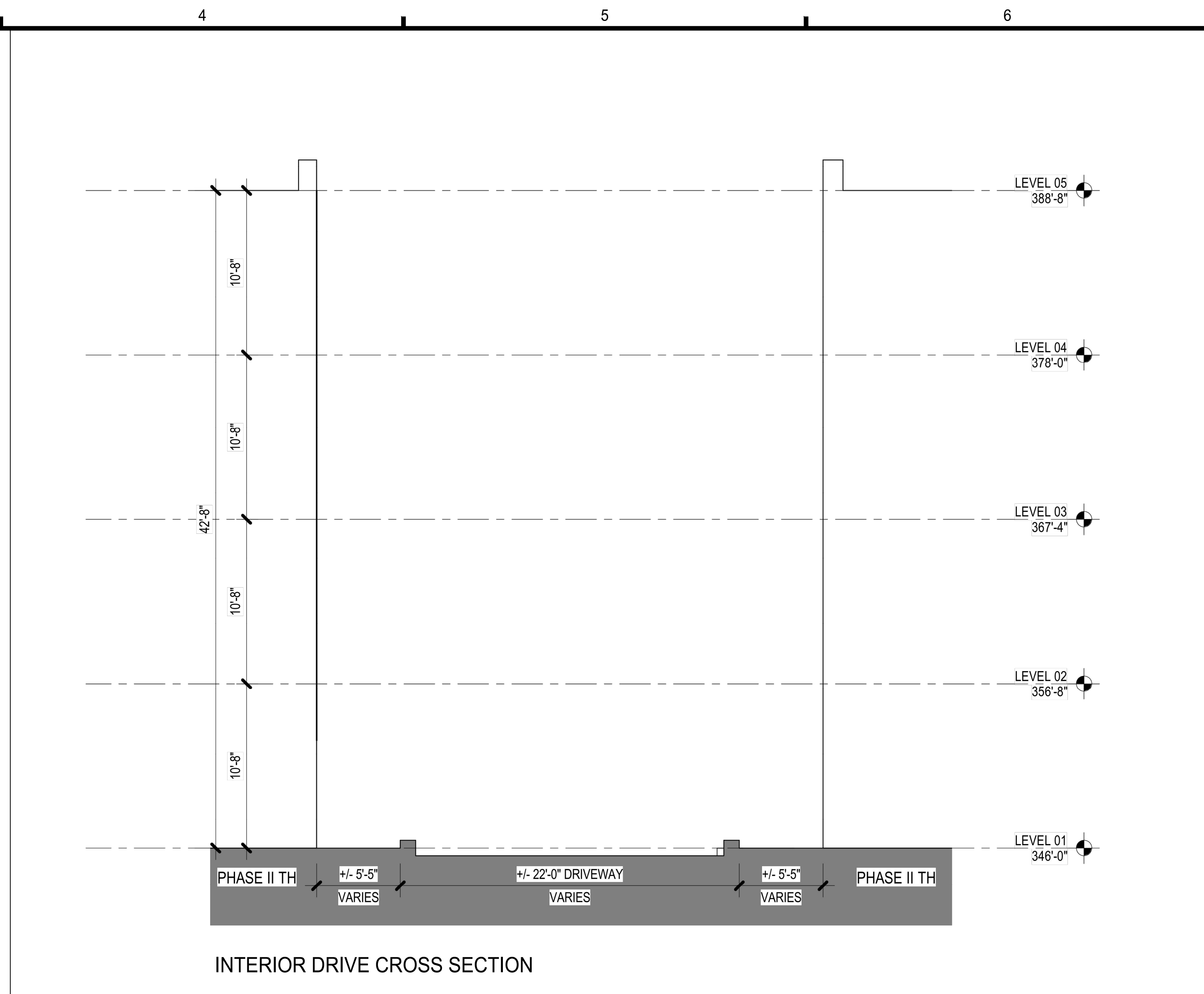
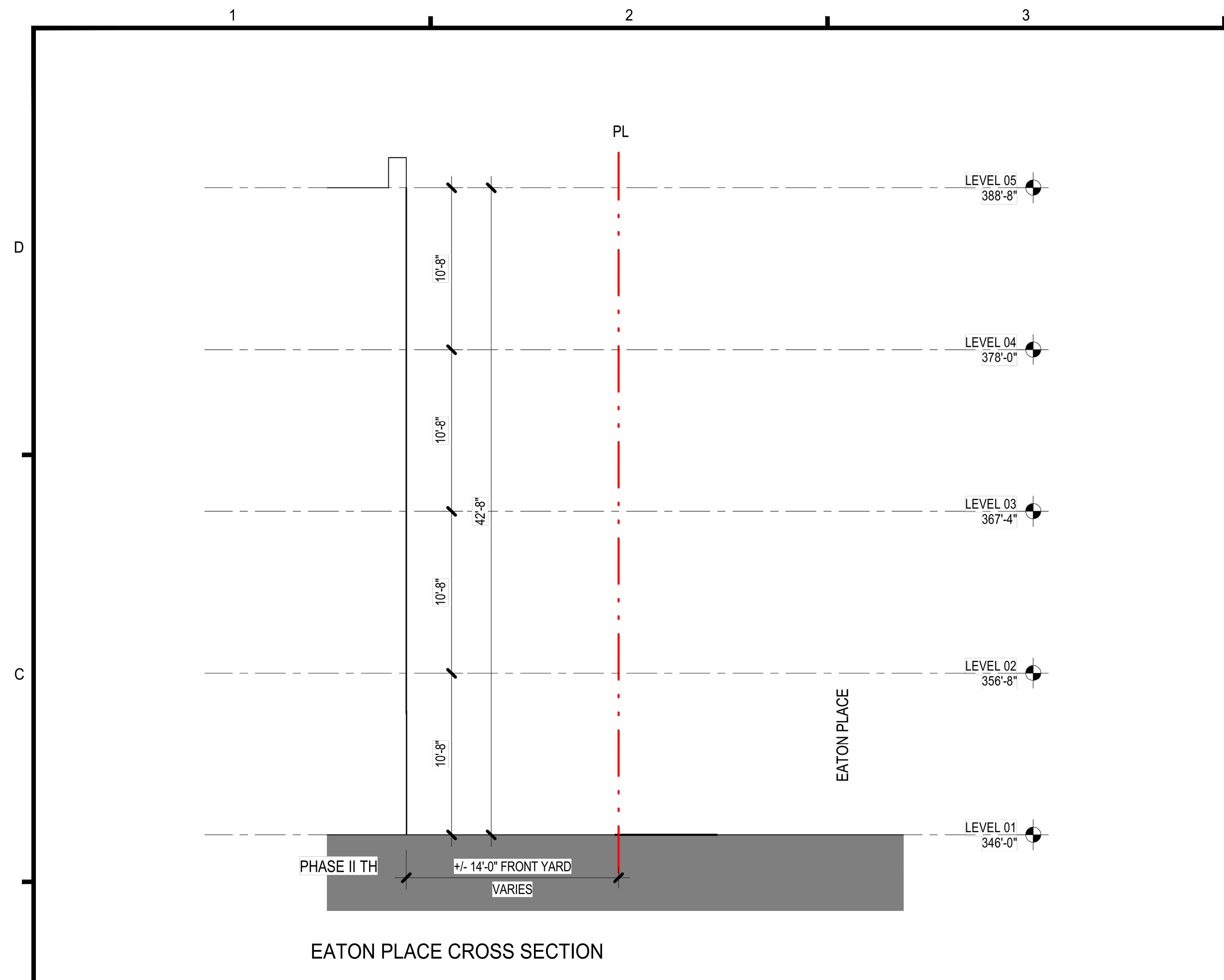
N29 RESIDENCES
 GENERAL DEVELOPMENT PLAN
 CITY OF FAIRFAX, VA

MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: AS SHOWN
 DESIGN: QN
 DRAWN: QN
 CHECKED: JM

SHEET TITLE:
ILLUSTRATIVE BUILDING GRAPHICS

SHEET No.
PII_410



MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: NOT TO SCALE
 DESIGN: QN
 DRAWN: QN
 CHECKED: JM

SHEET TITLE:
CROSS SECTIONS

SHEET No.
PII_411



LEGEND

--- LIMITS OF DISTURBANCE

#10304 EATON PL
TM #47-4-02-02-004
**LOT 4,
COMMONWEALTH
CORPORATE CENTER**
D.B. 6301 PG. 704
WILLOWOOD PROPERTY, LLC
D.B. 27193 PG. 1113
ZONED: CR

#10270 FAIRFAX BLVD
TM #47-4-02-02-000-B
**PARCEL B,
COMMONWEALTH
CORPORATE CENTER**
D.B. 6301 PG. 704
WILLOWOOD LAND, LLC
D.B. 25612 PG. 140
ZONED: CR

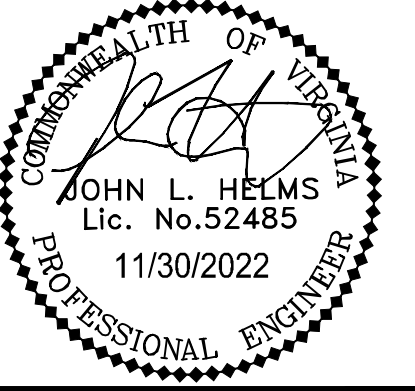
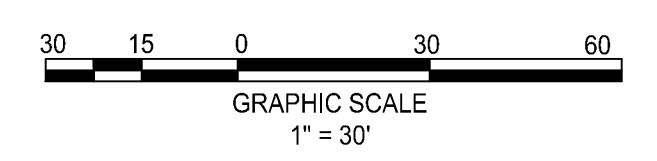
#10300 EATON PL
TM #47-4-02-02-001
**LOT 1,
COMMONWEALTH
CORPORATE CENTER**
D.B. 6301 PG. 704
**WILLOWOOD OFFICE
OWNER, LLC**
D.B. 25440 PG. 407
196,195 SQ. FT. OR 4.50402 ACRES
ZONED: CR

#10300 FAIRFAX BLVD
TM #47-4-02-02-000-A
**PARCEL A,
COMMONWEALTH
CORPORATE CENTER**
D.B. 6301 PG. 704
**WILLOWOOD OFFICE
OWNER, LLC**
D.B. 25440 PG. 407
18,700 SQ. FT. OR 0.42929 ACRES
ZONED: CR

EATON PLACE
60' PUBLIC RIGHT OF WAY

FAIRFAX BOULEVARD
VARIABLE WIDTH PUBLIC RIGHT OF WAY

EXISTING POLE AND OVERHEAD
UTILITY LINE TO BE REMOVED AND
REPLACED WITH UNDERGROUND
UTILITY LINES.



**N29 RESIDENCES
GENERAL DEVELOPMENT PLAN**
CITY OF FAIRFAX, VA

MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

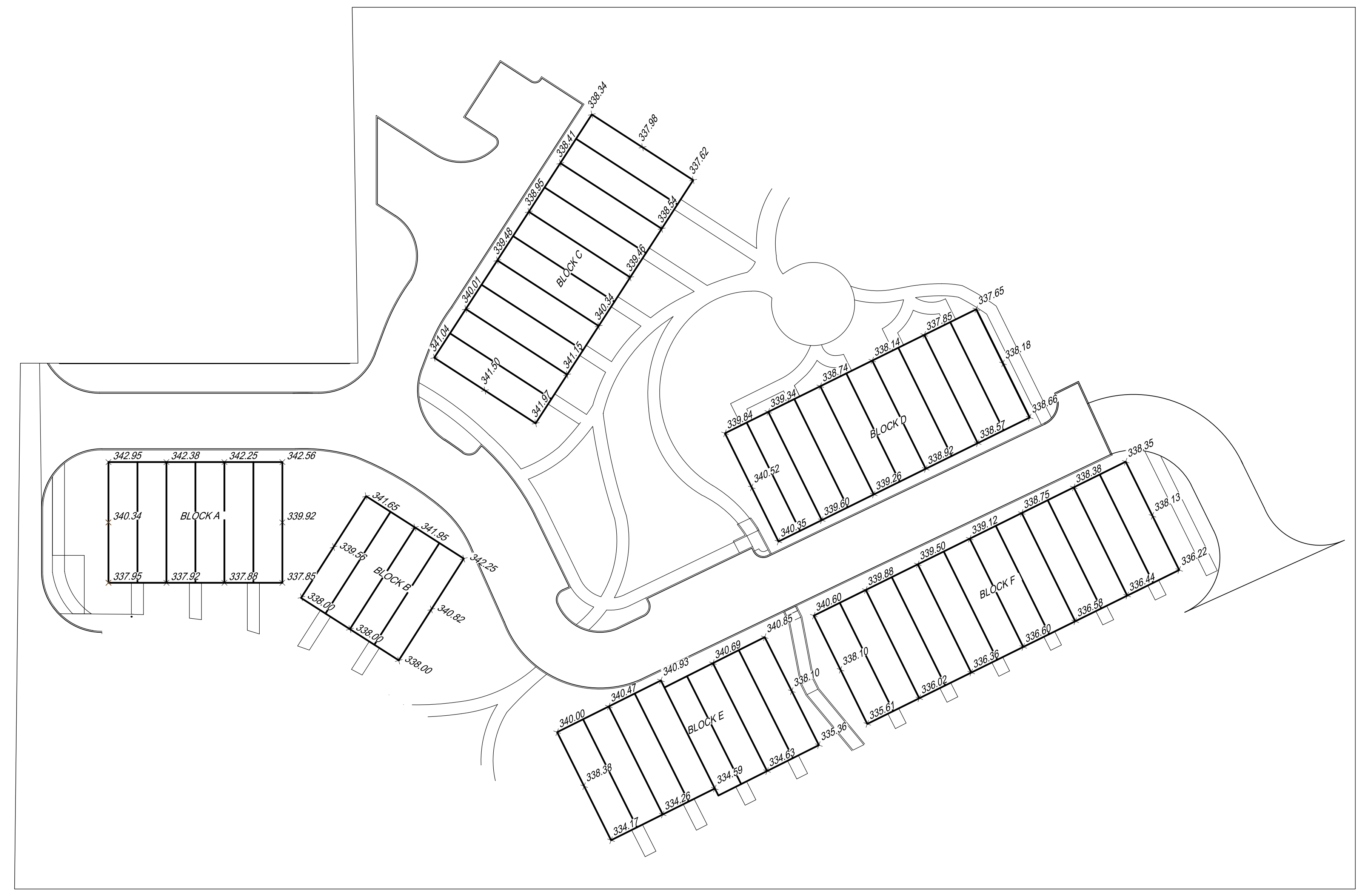
PROJECT No.: 21082.002.00
DRAWING No.: 111937
DATE: 2022-07-15
SCALE: 1" = 30'
DESIGN: JH
DRAWN: YH
CHECKED: JH

SHEET TITLE:

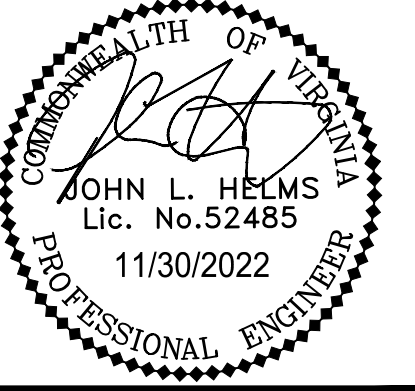
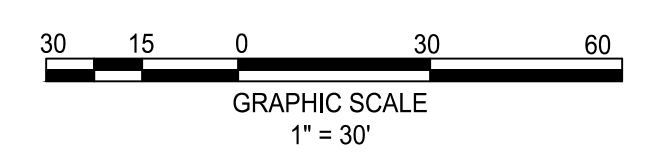
GRADING PLAN

SHEET No.

PII_420



	Block A	Block B	Block C	Block D	Block E	Block F
1	342.95	341.65	341.04	339.84	340.00	340.60
2	342.38	341.95	340.01	339.34	340.47	339.88
3	342.25	342.25	339.48	338.74	340.93	339.50
4	342.56	340.82	338.95	338.14	340.69	339.12
5	339.92	338.00	338.41	337.85	340.85	338.75
6	337.85	338.00	338.34	337.65	338.10	338.38
7	337.88	338.00	337.98	338.18	335.36	338.35
8	337.92	339.56	337.62	338.66	334.63	338.13
9	337.95		338.54	338.57	334.59	336.22
10	340.34		339.46	338.92	334.26	336.44
11			340.34	339.26	334.17	336.58
12			341.15	339.60	338.38	336.60
13			341.97	340.35		336.36
14			341.50	340.52		336.02
15						335.61
16						338.10
AFG=	340.20	340.03	339.63	338.97	337.70	337.79



**N29 RESIDENCES
GENERAL DEVELOPMENT PLAN**
CITY OF FAIRFAX, VA

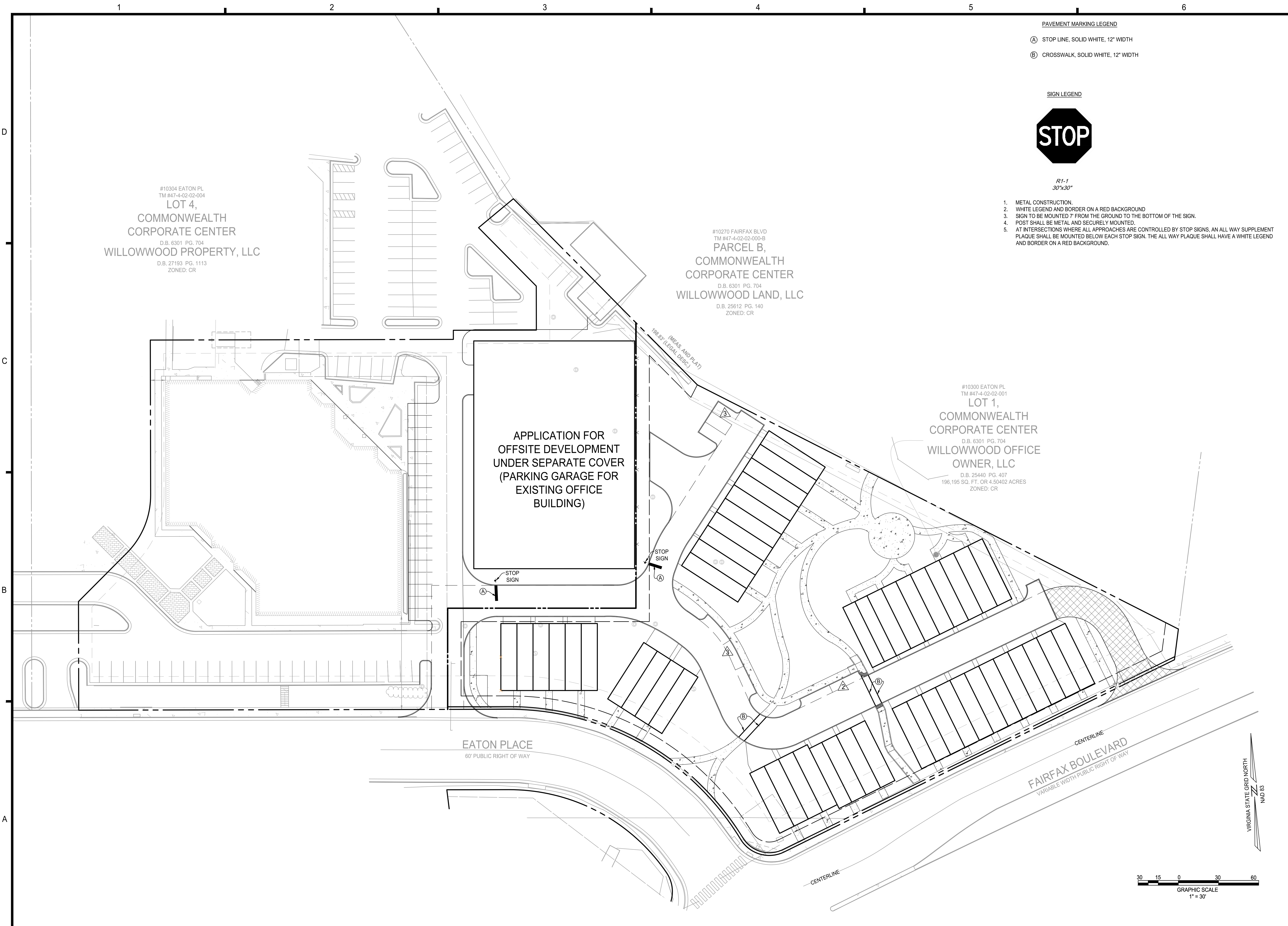
MARK	DATE	DESCRIPTION

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: 1" = 30'
 DESIGN: JH
 DRAWN: YH
 CHECKED: JH

SHEET TITLE:

AFG DIAGRAM

SHEET No.
PII_421



#10304 EATON PL
 TM #47-4-02-02-004
LOT 4,
COMMONWEALTH
CORPORATE CENTER
 D.B. 6301 PG. 704
WILLOWOOD PROPERTY, LLC
 D.B. 27193 PG. 1113
 ZONED: CR

#10270 FAIRFAX BLVD
 TM #47-4-02-02-000-B
PARCEL B,
COMMONWEALTH
CORPORATE CENTER
 D.B. 6301 PG. 704
WILLOWOOD LAND, LLC
 D.B. 25612 PG. 140
 ZONED: CR

#10300 EATON PL
 TM #47-4-02-02-001
LOT 1,
COMMONWEALTH
CORPORATE CENTER
 D.B. 6301 PG. 704
WILLOWOOD OFFICE
OWNER, LLC
 D.B. 25440 PG. 407
 196,195 SQ. FT. OR 4.50402 ACRES
 ZONED: CR

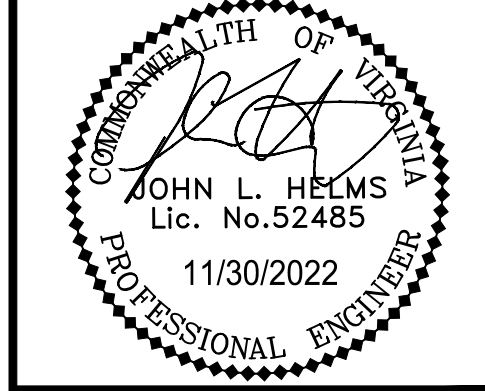
APPLICATION FOR
OFFSITE DEVELOPMENT
UNDER SEPARATE COVER
(PARKING GARAGE FOR
EXISTING OFFICE
BUILDING)

PAVEMENT MARKING LEGEND
 (A) STOP LINE, SOLID WHITE, 12" WIDTH
 (B) CROSSWALK, SOLID WHITE, 12" WIDTH



- R1-1
 30"x30"
- METAL CONSTRUCTION.
 - WHITE LEGEND AND BORDER ON A RED BACKGROUND
 - SIGN TO BE MOUNTED 7' FROM THE GROUND TO THE BOTTOM OF THE SIGN.
 - POST SHALL BE METAL AND SECURELY MOUNTED.
 - AT INTERSECTIONS WHERE ALL APPROACHES ARE CONTROLLED BY STOP SIGNS, AN ALL WAY SUPPLEMENT PLAQUE SHALL BE MOUNTED BELOW EACH STOP SIGN. THE ALL WAY PLAQUE SHALL HAVE A WHITE LEGEND AND BORDER ON A RED BACKGROUND.

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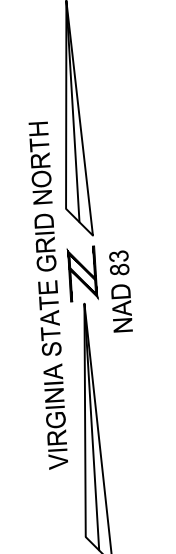
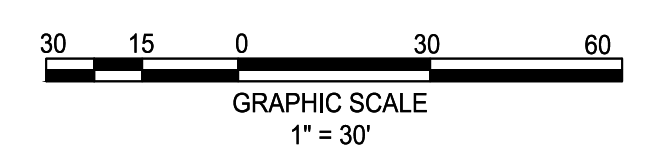
N29 RESIDENCES
GENERAL DEVELOPMENT PLAN
 CITY OF FAIRFAX, VA

MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: 1" = 30'
 DESIGN: LBD
 DRAWN: LBD, ZY
 CHECKED: JR

SHEET TITLE:
STRIPING AND SIGNAGE PLAN

SHEET No.
PII_422



STORMWATER MANAGEMENT & BEST MANAGEMENT PRACTICE (SWM/BMP) NARRATIVE

ADEQUATE OUTFALL
THE EXISTING SITE DISCHARGES RUNOFF TO ACCOTINK CREEK THAT IS ADJACENT TO THE SITE.

SWM
WATER QUANTITY FOR THIS PROJECT WILL BE PROVIDED IN ACCORDANCE WITH STATE CODE 9VAC25-870-66-WATER QUANTITY AND THE CITY OF FAIRFAX STORMWATER ORDINANCE.

THE WATER QUANTITY REQUIREMENTS WILL BE MET BY A REDUCTION IN IMPERVIOUS AND A MANUFACTURED TREATMENT DEVICE. THE EXISTING DETENTION SYSTEM WILL BE REPLACED WITH A NEW UNDERGROUND DETENTION VAULT ADJACENT TO THE SITE. THE STORMWATER WILL BE DIRECTED TO THE NEW ONSITE DETENTION VAULTS AND ULTIMATELY TO THE TRIPLE BOX CULVERT AND INTO ACCOTINK CREEK WHERE IT DOES NOT CAUSE EROSION TO THE SYSTEM FOR THE TWO-YEAR STORM (CHANNEL PROTECTION) AND CONFINES THE STORMWATER RUNOFF DURING A 10-YEAR STORM (FLOOD PROTECTION).

A PRELIMINARY LOCATION OF THE PROPOSED SWM DETENTION FACILITIES ARE SHOWN ON THIS SHEET.

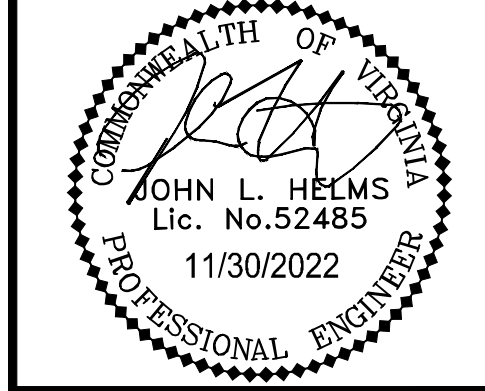
FOR THE OVERALL 100-YEAR STORM CALCULATIONS, SEE SHEET PII_505 THROUGH PII_808.

BMP
THIS PROJECT WILL USE THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) REDEVELOPMENT TO MEET THE STATE, PART IIB CRITERIA (9VAC25-870-65) AND CITY WATER QUALITY DESIGN CRITERIA. THE PROJECT SITE AREA FOR WATER QUALITY CALCULATIONS WILL INCLUDE ALL AREA WITHIN THE LIMITS OF CLEARING AND GRADING. TO MEET WATER QUALITY DESIGN CRITERIA AND PHOSPHORUS REMOVAL, REDUCTION IN IMPERVIOUS AREA AND A MANUFACTURED TREATMENT DEVICE WILL BE USED. ADDITIONAL PROPRIETARY AND NON-PROPRIETARY BMP FACILITIES MAY BE USED AS THE DESIGN OF THE SITE DEVELOPS FURTHER. PRELIMINARY LOCATIONS ARE SHOWN ON THE DEVELOPMENT PLAN.

NOTE:
LOCATIONS AND SIZING OF SWM/BMP FACILITIES SHOWN ARE BASED ON A PRELIMINARY STUDY TO ENSURE COMPLIANCE WITH STATE AND CITY REQUIREMENTS. THE LOCATION AND TYPE OF FACILITY IS SUBJECT TO CHANGE WITH FINAL DESIGN.



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suite 601 fairfax, va 22030
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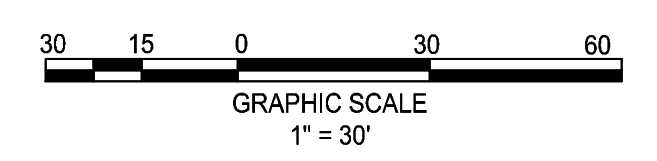
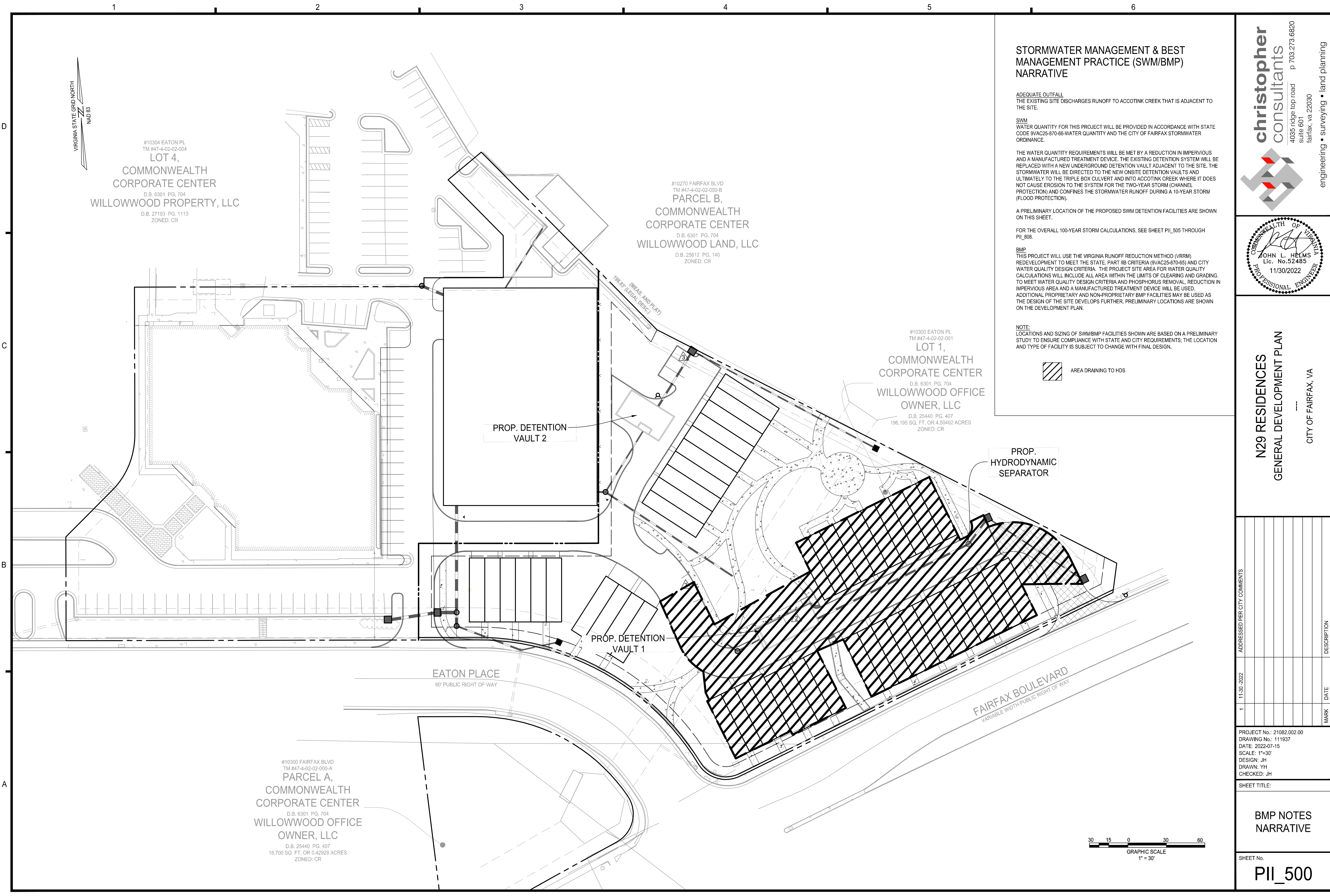
**N29 RESIDENCES
GENERAL DEVELOPMENT PLAN**
CITY OF FAIRFAX, VA

MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

PROJECT No.: 21082.002.00
DRAWING No.: 111937
DATE: 2022-07-15
SCALE: 1"=30'
DESIGN: JH
DRAWN: YH
CHECKED: JH

SHEET TITLE:
**BMP NOTES
NARRATIVE**

SHEET No.
PII_500



Project Name: Willowood - Phase 2
 Date: 11/28/2022
 Linear Development Project? No

CLEAR ALL

data input cells
 constant values
 calculation cells
 final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → 2.96

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0
Post-Development TP Load Reduction for Site (lb/yr):	0.25

Check:
 BMP Design Specifications List: 2013 Draft Stds & Specs
 Linear project? No
 Land cover areas entered correctly? ✓
 Total disturbed area entered? ✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.43	0.43
Impervious Cover (acres)				1.75	1.75
					2.18

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.78	0.78
Impervious Cover (acres)				1.40	1.40
Area Check	OK.	OK.	OK.	OK.	2.18

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	Listed	Adjusted ¹
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	0.43	0.43
Weighted Rv(turf)	0.25	0.25
% Managed Turf	20%	20%
Impervious Cover (acres)	1.75	1.75
Rv(impervious)	0.95	0.95
% Impervious	80%	80%
Total Site Area (acres)	2.18	2.18
Site Rv	0.81	0.81

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)			
Post ReDev. & New Impervious	Post-ReDevelopment	Post-Development New Impervious	
Forest/Open Space Cover (acres)	0.00		
Weighted Rv(forest)	0.00		
% Forest	0%		
Managed Turf Cover (acres)	0.78		
Weighted Rv (turf)	0.25		
% Managed Turf	36%		
Impervious Cover (acres)	1.40		
Rv(impervious)	0.95		
% Impervious	64%		
Final Site Area (acres)	2.18		
Final Post Dev Site Rv	0.70		
		New Impervious Cover (acres)	0.00
		Rv(impervious)	--

Treatment Volume and Nutrient Load

	Pre-ReDevelopment	Adjusted ¹
Pre-ReDevelopment Treatment Volume (acre-ft)	0.1475	0.1475
Pre-ReDevelopment Treatment Volume (cubic feet)	6,425	6,425
Pre-ReDevelopment TP Load (lb/yr)	4.04	4.04
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.85	1.85
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		0.89

Treatment Volume and Nutrient Load

	Final Post-Development	Post-ReDevelopment	Post-Development
Final Post-Development Treatment Volume (acre-ft)	0.1271	0.1271	--
Final Post-Development Treatment Volume (cubic feet)	5,536	5,536	--
Final Post-Development TP Load (lb/yr)	3.48	3.48	--
Final Post-Development TP Load per acre (lb/acre/yr)	1.60	1.60	--
Max. Reduction Required (Below Pre-ReDevelopment Load)		20%	
TP Load Reduction Required for Redeveloped Area (lb/yr)		0.25	
TP Load Reduction Required for New Impervious Area (lb/yr)			0

¹ Adjusted Land Cover Summary:
 Pre-ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.
 Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).
 Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.25
------------------------------------	------

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	28.88	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	24.88
-----------------------------------	-------	--	-------

Drainage Area A

CLEAR BMP AREAS

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.06	0.06	0.25
Impervious Cover (acres)				0.70	0.70	0.95
Total					0.76	

Total Phosphorus Available for Removal in D.A. A (lb/yr) 1.55
 Post Development Treatment Volume in D.A. A (ft³) 2,468

14. Manufactured Treatment Devices (no RR)

14.a. Manufactured Treatment Device-Hydrodynamic	0	0.06	0.70	0	0	2,468	2,468	20	0.00	1.55	0.31	1.24
--	---	------	------	---	---	-------	-------	----	------	------	------	------

Site Results (Water Quality Compliance)

Area Checks

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.70	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.70	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.06	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.06	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³) 5,536

Runoff Reduction Volume and TP By Drainage Area

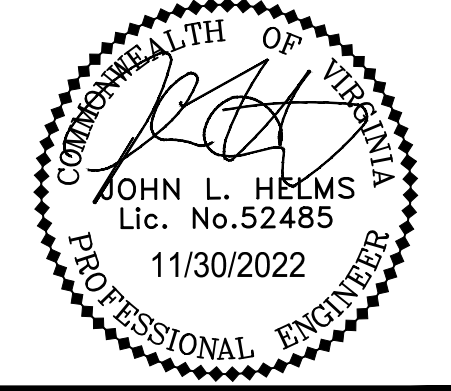
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft ³)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	1.55	0.00	0.00	0.00	0.00	1.55
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.31	0.00	0.00	0.00	0.00	0.31
TP LOAD REMAINING (lb/yr)	1.24	0.00	0.00	0.00	0.00	1.24
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	3.48
TP LOAD REDUCTION REQUIRED (lb/yr)	0.25
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.31
TP LOAD REMAINING (lb/yr)	3.17
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **
** TARGET TP REDUCTION EXCEEDED BY 0.06 LB/YEAR **	

Total Nitrogen (For Informational Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	24.88
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	24.88



N29 RESIDENCES
 GENERAL DEVELOPMENT PLAN
 CITY OF FAIRFAX, VA

ADDRESS PER CITY COMMENTS	MARK	DATE	DESCRIPTION
1 11-30-2022			

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: N/A
 DESIGN: JH
 DRAWN: YH
 CHECKED: JH

SHEET TITLE:
 BMP COMPUTATIONS

SHEET No.
 PII_501

Project Name: Willowwood - Garage
 Date: 11/28/2022
 Linear Development Project? No

CLEAR ALL

data input cells
 constant values
 calculation cells
 final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → 0.56

Check:
 BMP Design Specifications List: 2013 Draft Stds & Specs
 Linear project? No
 Land cover areas entered correctly? ✓
 Total disturbed area entered? ✓

Maximum reduction required: 10%
 The site's net increase in impervious cover (acres) is: 0
 Post-Development TP Load Reduction for Site (lb/yr): 0.12

Pre-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land				0.01	0.01
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed					0.55
Impervious Cover (acres)				0.55	0.56

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land				0.01	0.01
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed					0.55
Impervious Cover (acres)				0.55	0.56
Area Check	OK.	OK.	OK.	OK.	0.56

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT			LAND COVER SUMMARY -- POST DEVELOPMENT		
Land Cover Summary-Pre			Land Cover Summary-Post (Final)		
Pre-Development	Listed	Adjusted ²	Post-Development	Post-Development	Post-Development
Forest/Open Space Cover (acres)	0.00	0.00	Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00	Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%	% Forest	0%	0%
Managed Turf Cover (acres)	0.01	0.01	Managed Turf Cover (acres)	0.01	0.01
Weighted Rv(turf)	0.25	0.25	Weighted Rv (turf)	0.25	0.25
% Managed Turf	2%	2%	% Managed Turf	2%	2%
Impervious Cover (acres)	0.55	0.55	ReDev. Impervious Cover (acres)	0.55	0.55
Rv(impervious)	0.95	0.95	Rv(impervious)	0.95	0.95
% Impervious	98%	98%	% Impervious	98%	98%
Total Site Area (acres)	0.56	0.56	Total ReDev. Site Area (acres)	0.56	0.56
Site Rv	0.94	0.94	ReDev Site Rv	0.94	0.94

Treatment Volume and Nutrient Load		
Pre-Development Treatment Volume (acre-ft)	0.0438	0.0438
Pre-Development Treatment Volume (cubic feet)	1,906	1,906
Pre-Development TP Load (lb/yr)	1.20	1.20
Pre-Development TP Load per acre (lb/acre/yr)	2.14	2.14
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		0.23

Treatment Volume and Nutrient Load		
Final Post-Development Treatment Volume (acre-ft)	0.0438	0.0438
Final Post-Development Treatment Volume (cubic feet)	1,906	1,906
Final Post-Development TP Load (lb/yr)	1.20	1.20
Final Post-Development TP Load per acre (lb/acre/yr)	2.14	2.14
Max. Reduction Required (Below Pre-Development Load)		10%
TP Load Reduction Required for Redeveloped Area (lb/yr)		0.12
TP Load Reduction Required for New Impervious Area (lb/yr)		0

²Adjusted Land Cover Summary:
 Pre-Development land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-Development acreage (minus acreage of new impervious cover).

Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.12
------------------------------------	------

Nitrogen Loads (Informational Purposes Only)

Pre-Development TN Load (lb/yr)	8.57	Final Post-Development TN Load (Post-Development & New Impervious) (lb/yr)	8.57
---------------------------------	------	--	------

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.01	0.01	0.25
Impervious Cover (acres)				0.47	0.47	0.95
Total				0.48	0.48	

Total Phosphorus Available for Removal in D.A. A (lb/yr) 1.02
 Post Development Treatment Volume in D.A. A (ft³) 1,630

Stormwater Best Management Practices (RR = Runoff Reduction)

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
2.1. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40		0.47	0	648	972	1,621	25	0.00	1.02	0.56	0.46	

Site Results (Water Quality Compliance)

Area Checks

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.47	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.47	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.01	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³) 1,906

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft ³)	648	0	0	0	0	648
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	1.02	0.00	0.00	0.00	0.00	1.02
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.56	0.00	0.00	0.00	0.00	0.56
TP LOAD REMAINING (lb/yr)	0.46	0.00	0.00	0.00	0.00	0.46
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	4.66	0.00	0.00	0.00	0.00	4.66

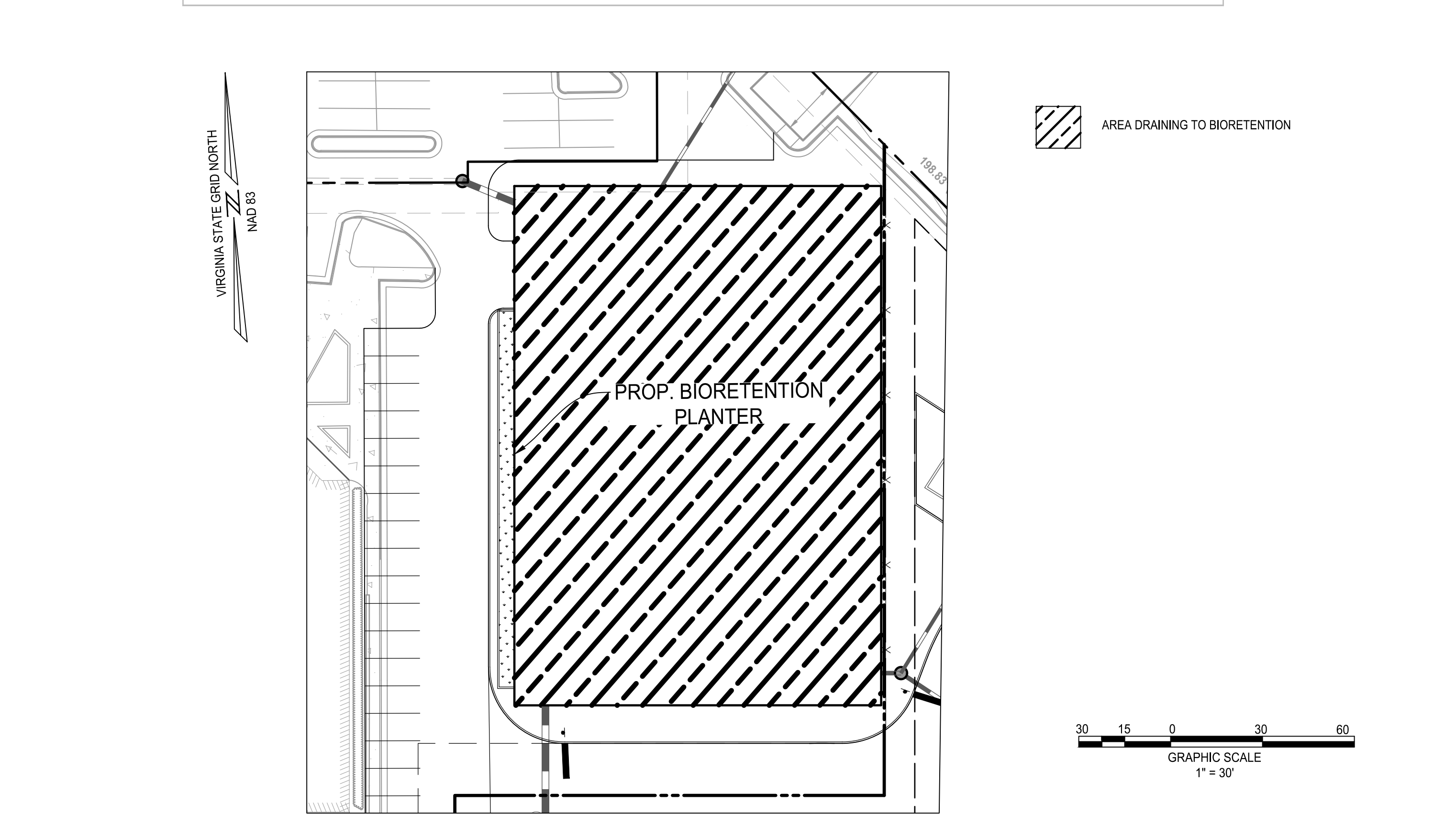
Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	1.20
TP LOAD REDUCTION REQUIRED (lb/yr)	0.12
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.56
TP LOAD REMAINING (lb/yr)	0.64
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00

**** TARGET TP REDUCTION EXCEEDED BY 0.44 LB/YEAR ****

Total Nitrogen (For Informational Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	8.57
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	4.66
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	3.91



VRRM FOR THE GARAGE PHASE SHOWN FOR INFORMATION ONLY. APPLICATION FOR THIS DEVELOPMENT WILL BE UNDER SEPARATE COVER.

christopher consultants
 4035 ridge top road p 703.273.6620
 suite 601 fairfax, va 22030
 engineering • surveying • land planning

JOHN L. HELMS
 Lic. No. 52485
 11/30/2022
 PROFESSIONAL ENGINEER

N29 RESIDENCES
 GENERAL DEVELOPMENT PLAN
 CITY OF FAIRFAX, VA

ADDRESS PER CITY COMMENTS	MARK	DATE	DESCRIPTION
1 11-30-2022			

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: 1"=30'
 DESIGN: JH
 DRAWN: YH
 CHECKED: JH

SHEET TITLE:
BMP COMPUTATIONS - GARAGE
 SHEET No.
PII_501A



#10304 EATON PL
TM #47-4-02-02-004
LOT 4,
COMMONWEALTH
CORPORATE CENTER
D.B. 6301 PG. 704
WILLOWOOD PROPERTY, LLC
D.B. 27193 PG. 1113
ZONED: CR

#10270 FAIRFAX BLVD
TM #47-4-02-02-000-B
PARCEL B,
COMMONWEALTH
CORPORATE CENTER
D.B. 6301 PG. 704
WILLOWOOD LAND, LLC
D.B. 25612 PG. 140
ZONED: CR

#10300 EATON PL
TM #47-4-02-02-001
LOT 1,
COMMONWEALTH
CORPORATE CENTER
D.B. 6301 PG. 704
WILLOWOOD OFFICE
OWNER, LLC
D.B. 25440 PG. 407
196,195 SQ. FT. OR 4.50402 ACRES
ZONED: CR

#10300 FAIRFAX BLVD
TM #47-4-02-02-000-A
PARCEL A,
COMMONWEALTH
CORPORATE CENTER
D.B. 6301 PG. 704
WILLOWOOD OFFICE
OWNER, LLC
D.B. 25440 PG. 407
18,700 SQ. FT. OR 0.42929 ACRES
ZONED: CR

PRE-DEVELOPED

OUTFALL

To Outfall	DA	IMP (D)	TURF (D)
To Outfall	2.18	1.75	0.43
CN ave.	94	98	80

POST-DEVELOPED

OUTFALL

Outfall	DA	IMP (D)	TURF (D)
Outfall 1	0.76	0.70	0.06
	97	98	80
Outfall 2	0.98	0.59	0.39
	91	98	80
Uncontrolled	0.44	0.11	0.33
	85	98	80
Total Area	2.18		
CN ave.	92		

Outfall Phase II

	On-Site			
	Q1	RV1	Q10	RV10
Pre	5.21	15,024	10.82	32,575
Post	3.37	14,719	6.17	32,329

Channel Protection (1-Year Storm)

Qdev < IF (Qpre * Rvpre) / Rvdev

< 0.80 (5.209 * 15024) / 14719

3.37 < 4.25

Detention required: -0.88 CFS

Flood Protection (10-Year Storm)

Q10 post < Q10 pre

6.17 < 10.90

Detention required: -4.73 CFS

	On-Site			
	Q2	RV2	Q100	RV100
Pre	6.58	19,233	19.55	60,974
Post	4.05	18,943	17.86	60,787

Channel Protection (2-Year Storm)

Qdev < IF (Qpre * Rvpre) / Rvdev

< 0.80 (6.584 * 19233) / 18943

4.05 < 5.35

Detention required: -1.30 CFS

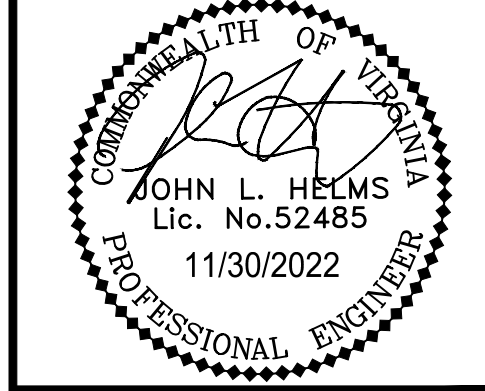
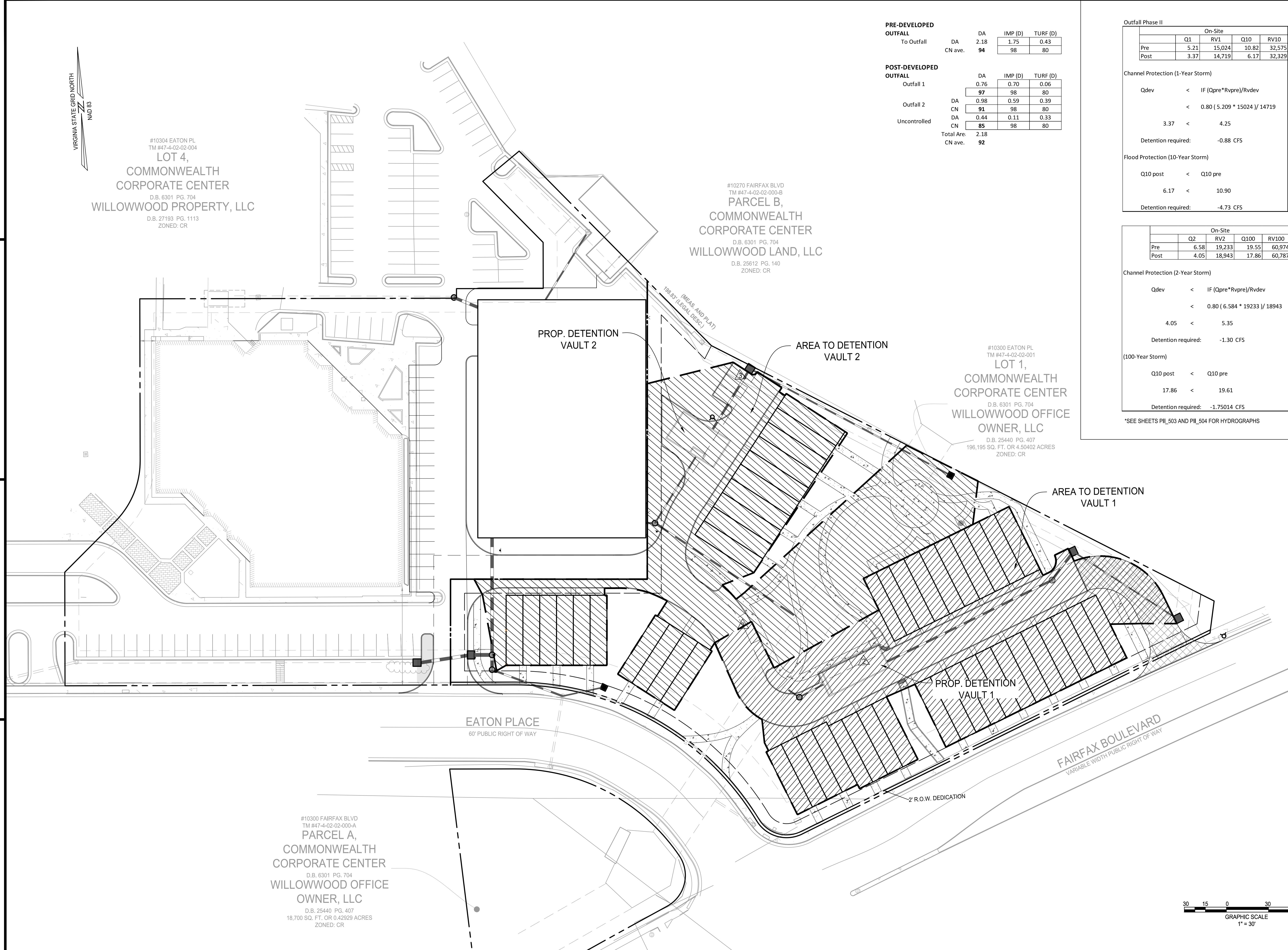
(100-Year Storm)

Q10 post < Q10 pre

17.86 < 19.61

Detention required: -1.75014 CFS

*SEE SHEETS PII_503 AND PII_504 FOR HYDROGRAPHS



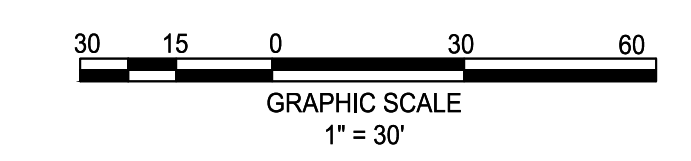
N29 RESIDENCES
GENERAL DEVELOPMENT PLAN
CITY OF FAIRFAX, VA

MARK	DATE	DESCRIPTION
1	11-30-2022	ADDRESSED PER CITY COMMENTS

PROJECT No.: 21082.002.00
DRAWING No.: 111937
DATE: 2022-07-15
SCALE: 1"=30'
DESIGN: JH
DRAWN: YH
CHECKED: JH

SHEET TITLE:
STORMWATER
MANAGEMENT
PLAN

SHEET No.
PII_502

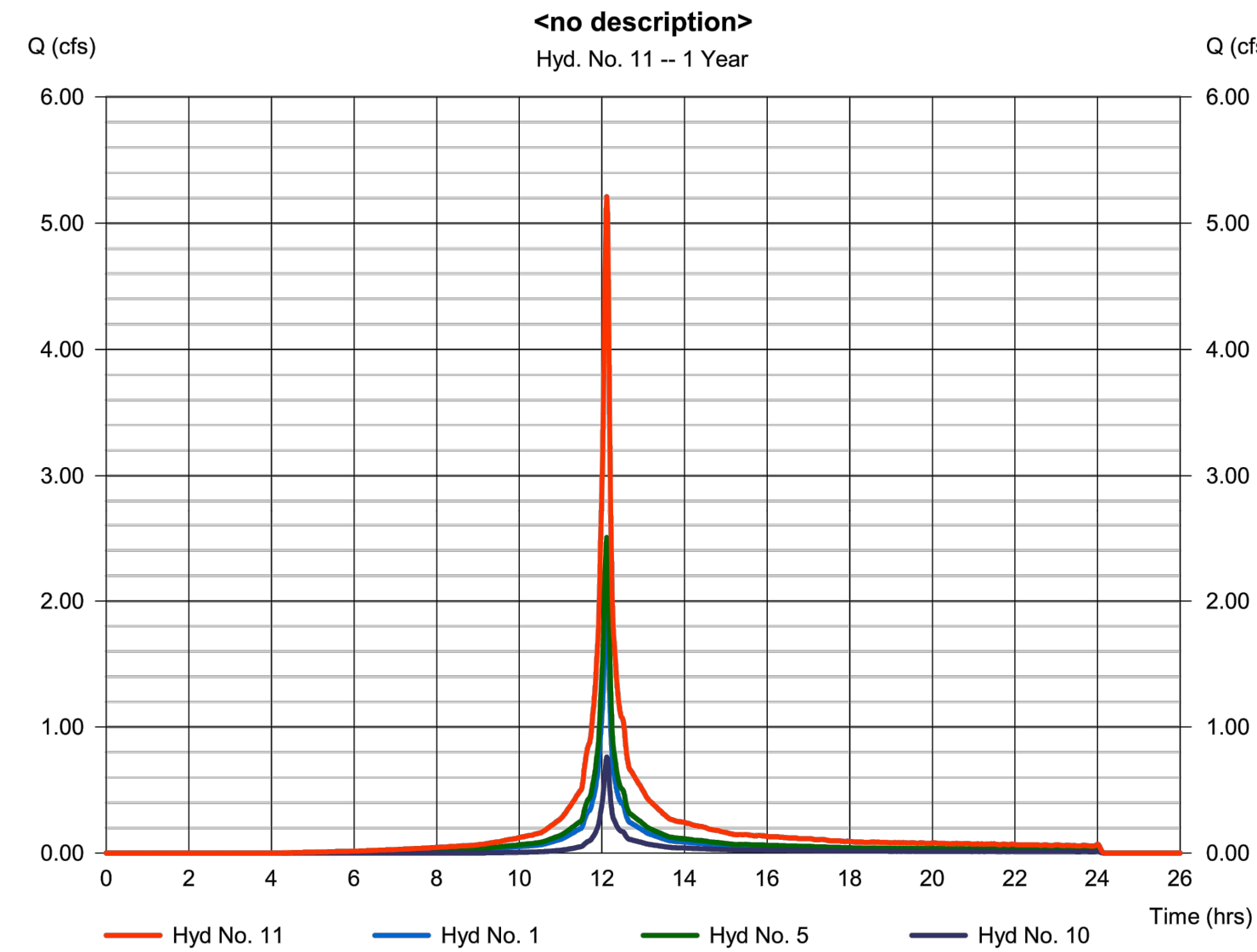


Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 11 / 23 / 2022

Hyd. No. 11
 <no description>

Hydrograph type = Combine	Peak discharge = 5,209 cfs
Storm frequency = 1 yrs	Time to peak = 12.12 hrs
Time interval = 1 min	Hyd. volume = 15,024 cuft
Inflow hyds. = 1, 5, 10	Contrib. drain. area = 2.180 ac

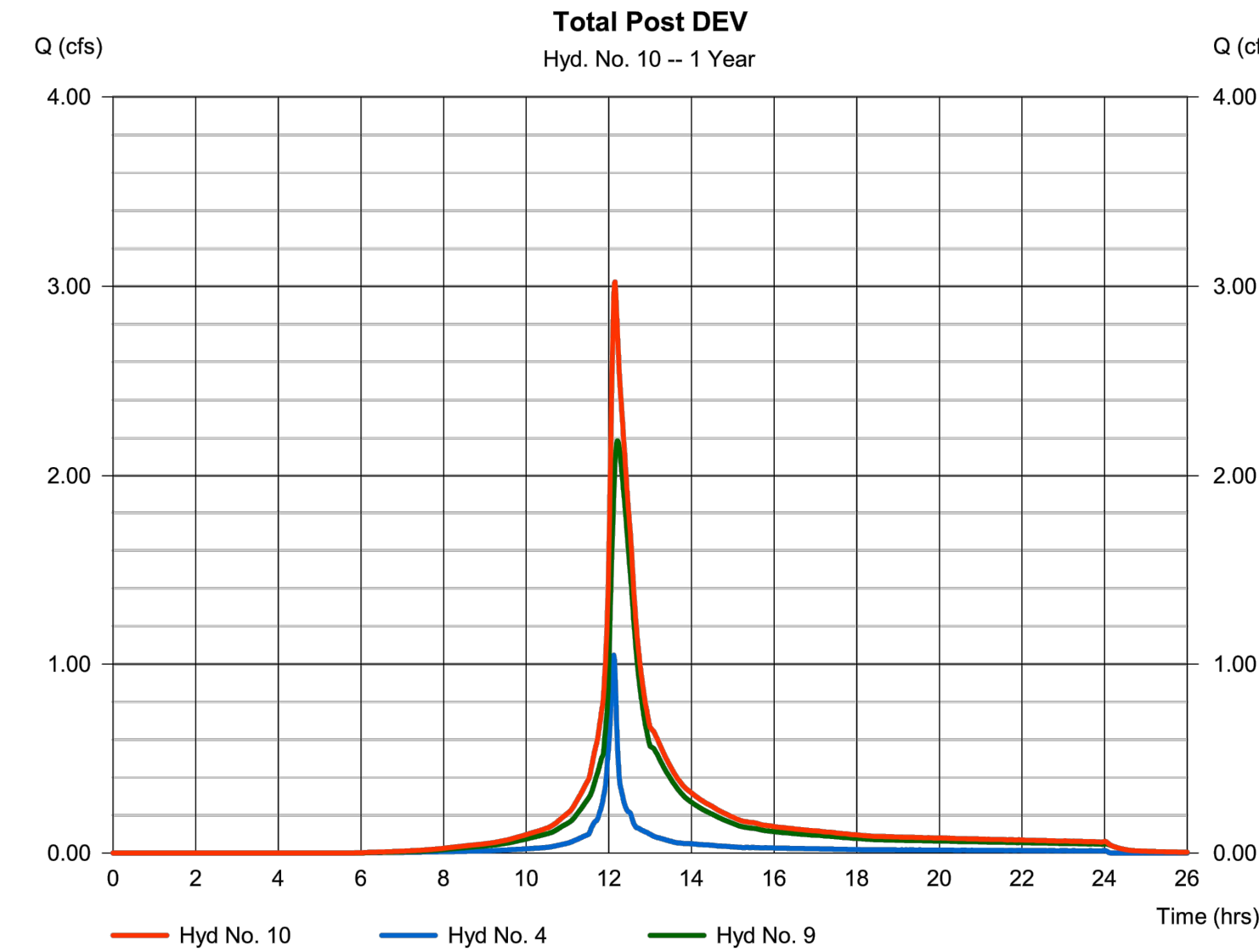


Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 11 / 23 / 2022

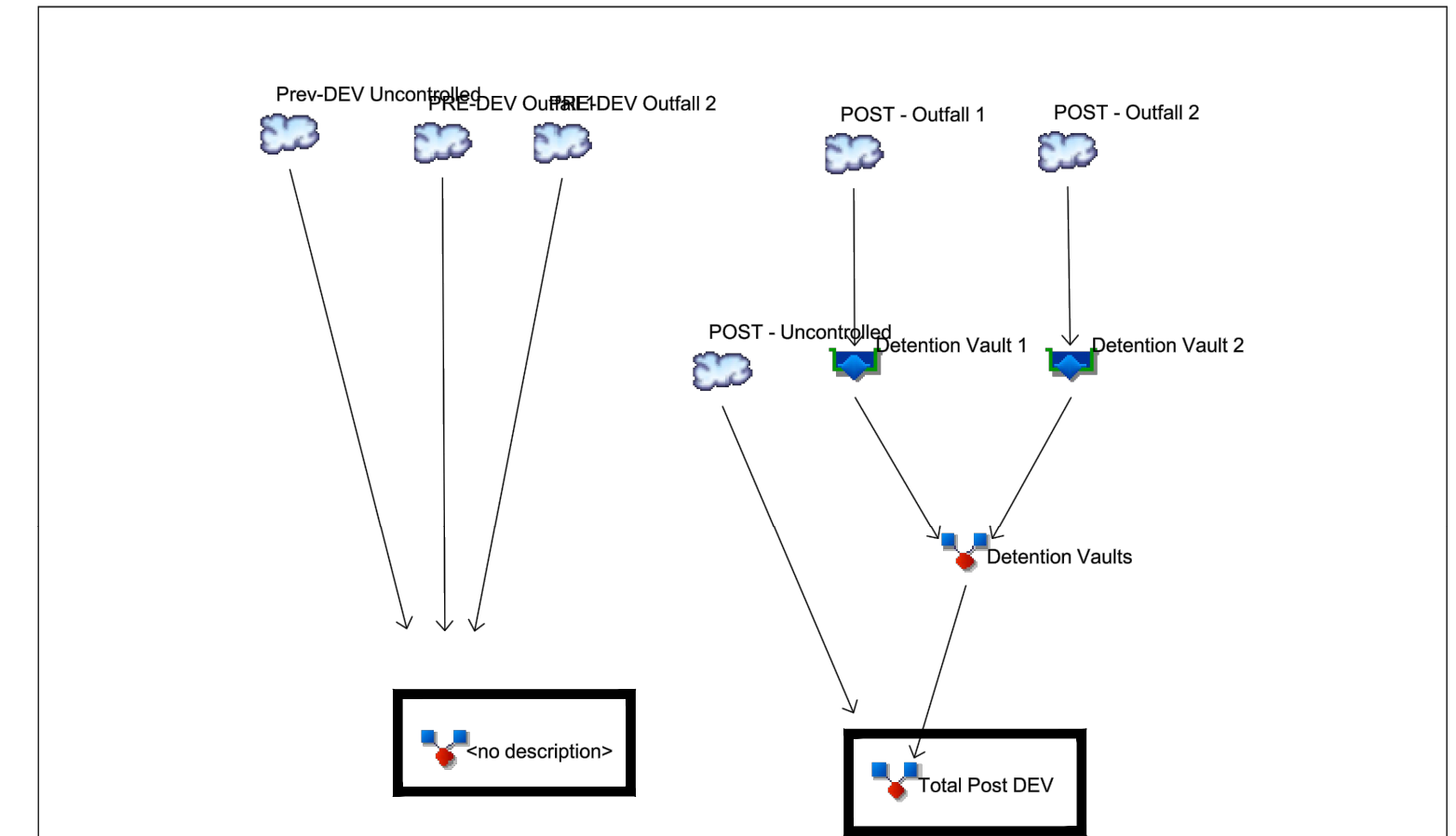
Hyd. No. 10
 Total Post DEV

Hydrograph type = Combine	Peak discharge = 3,023 cfs
Storm frequency = 1 yrs	Time to peak = 12.15 hrs
Time interval = 1 min	Hyd. volume = 14,718 cuft
Inflow hyds. = 4, 9	Contrib. drain. area = 0.440 ac



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022



Legend

Hyd. Origin	Description
1	SCS Runoff PRE-DEV Outfall 1
2	SCS Runoff POST - Outfall 1
3	SCS Runoff POST - Outfall 2
4	SCS Runoff POST - Uncontrolled
5	SCS Runoff PRE-DEV Outfall 2
6	Reservoir Detention Vault 1
7	Reservoir Detention Vault 2
8	Combine Detention Vaults
9	Combine Total Post DEV
10	SCS Runoff Pre-DEV Uncontrolled
11	Combine <no description>

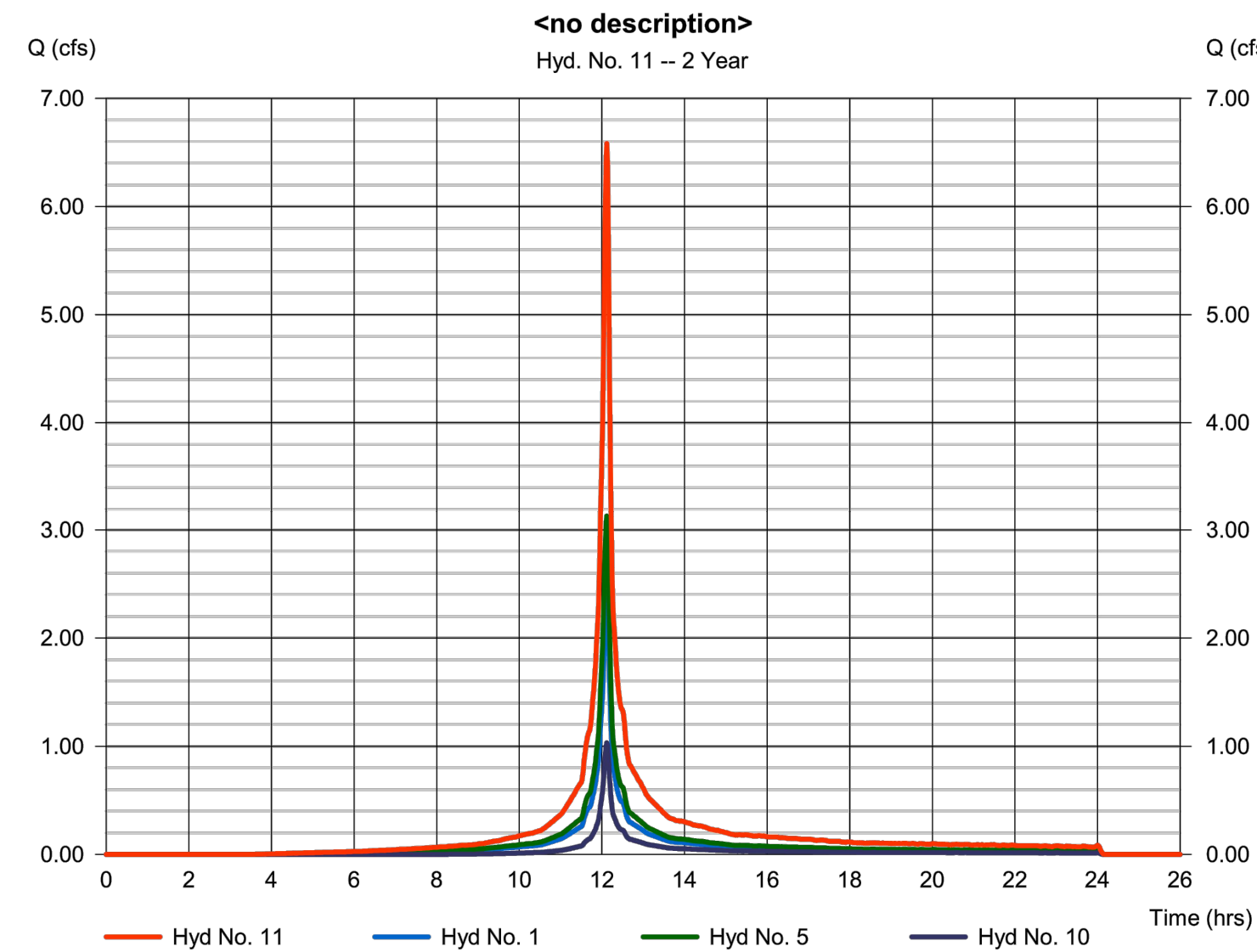
Project: SWM - Phase 2.gpw Wednesday, 11 / 30 / 2022

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 11 / 28 / 2022

Hyd. No. 11
 <no description>

Hydrograph type = Combine	Peak discharge = 6,584 cfs
Storm frequency = 2 yrs	Time to peak = 12.12 hrs
Time interval = 1 min	Hyd. volume = 19,233 cuft
Inflow hyds. = 1, 5, 10	Contrib. drain. area = 2.180 ac

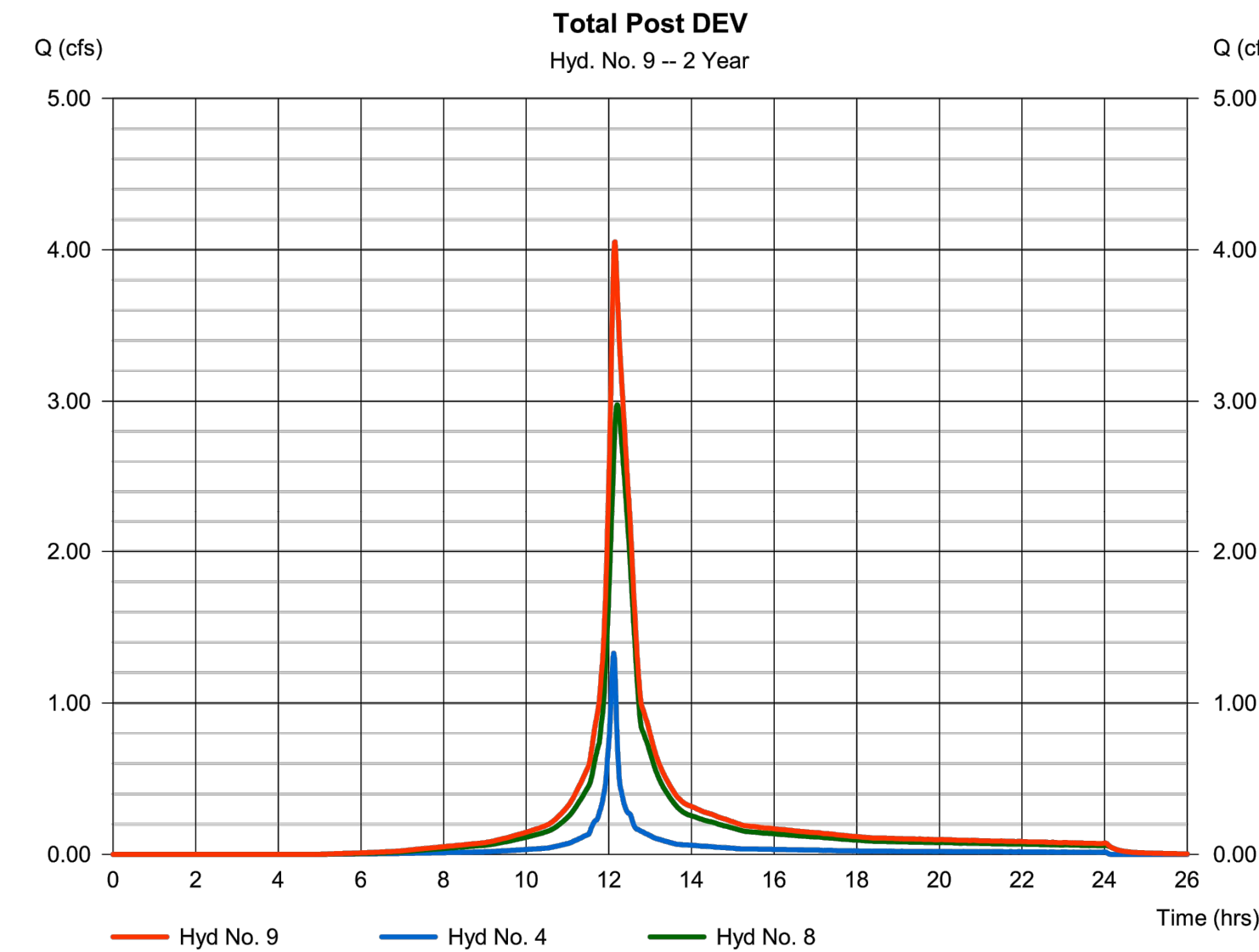


Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 11 / 28 / 2022

Hyd. No. 9
 Total Post DEV

Hydrograph type = Combine	Peak discharge = 4,053 cfs
Storm frequency = 2 yrs	Time to peak = 12.15 hrs
Time interval = 1 min	Hyd. volume = 18,943 cuft
Inflow hyds. = 4, 8	Contrib. drain. area = 0.440 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time to Peak (min)	Time to Hyd. (min)	Volume (cuft)	Inflow (hyd(s))	Maximum elevation (ft)	Total storage used (cuft)	Hydrograph Description
1	SCS Runoff	727	1	727	5,645				PRE-DEV Outfall 1
2	SCS Runoff	727	1	727	5,134				POST - Outfall 1
3	SCS Runoff	727	1	727	6,620				POST - Outfall 2
4	SCS Runoff	727	1	727	2,972				POST - Uncontrolled
5	SCS Runoff	727	1	727	7,279				PRE-DEV Outfall 2
6	Reservoir	731	1:154	1	6,132	2	325.35	660	Detention Vault 1
7	Reservoir	732	1:361	1	6,616	3	101.41	1,121	Detention Vault 2
8	Combine	732	2:616	1	11,747	6.7			Detention Vaults
9	Combine	729	3:374	1	14,719	4.8			Total Post DEV
10	SCS Runoff	727	1	727	2,100				Pre-DEV Uncontrolled
11	Combine	5,209	1	727	15,024	1, 5, 10			<no description>

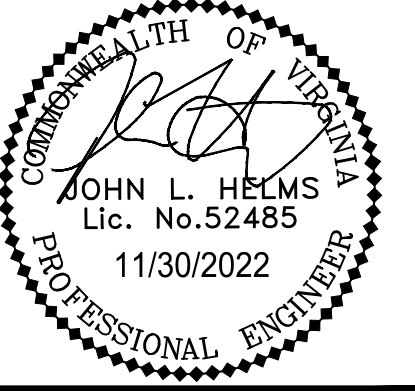
SWM - Phase 2.gpw Return Period: 1 Year Wednesday, 11 / 30 / 2022

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time to Peak (min)	Time to Hyd. (min)	Volume (cuft)	Inflow (hyd(s))	Maximum elevation (ft)	Total storage used (cuft)	Hydrograph Description
1	SCS Runoff	727	1	727	7,154				PRE-DEV Outfall 1
2	SCS Runoff	727	1	727	6,606				POST - Outfall 1
3	SCS Runoff	727	1	727	8,510				POST - Outfall 2
4	SCS Runoff	727	1	727	3,825				POST - Uncontrolled
5	SCS Runoff	727	1	727	9,226				PRE-DEV Outfall 2
6	Reservoir	732	1:372	1	6,604	2	325.97	693	Detention Vault 1
7	Reservoir	733	1:804	1	8,614	3	101.85	1,466	Detention Vault 2
8	Combine	732	2:977	1	15,118	6.7			Detention Vaults
9	Combine	729	4:053	1	18,943	4.8			Total Post DEV
10	SCS Runoff	727	1	727	2,853				Pre-DEV Uncontrolled
11	Combine	4,053	1	727	19,233	1, 5, 10			<no description>

SWM - Phase 2.gpw Return Period: 2 Year Wednesday, 11 / 30 / 2022



N29 RESIDENCES
 GENERAL DEVELOPMENT PLAN
 CITY OF FAIRFAX, VA

ADDRESS PER CITY COMMENTS	MARK	DATE	DESCRIPTION
11-30-2022			

PROJECT No.: 21082.002.00
 DRAWING No.: 111937
 DATE: 2022-07-15
 SCALE: N/A
 DESIGN: JH
 DRAWN: YH
 CHECKED: JH

SHEET TITLE:
HYDROGRAPHS - PHASE II

SHEET No.
PII_503

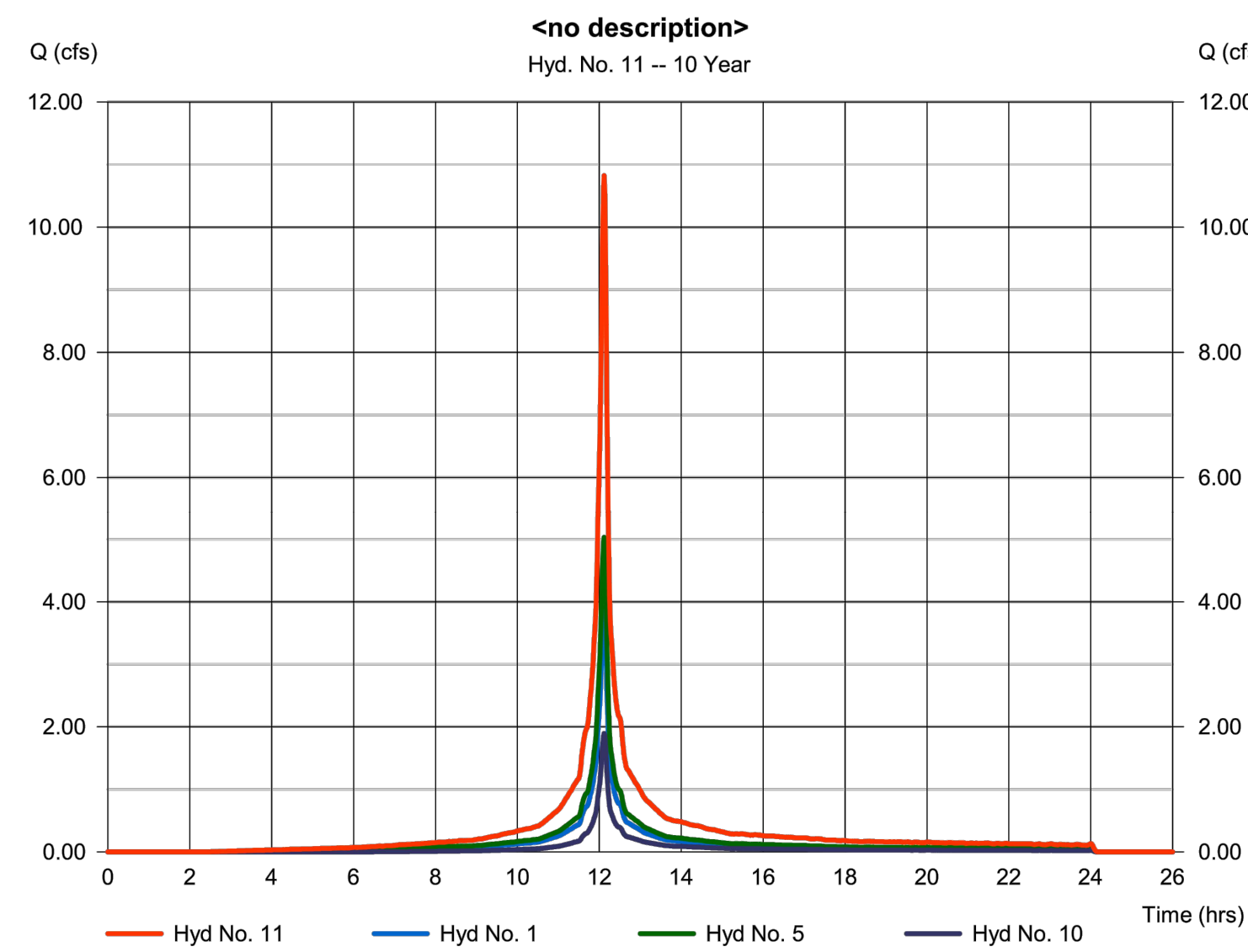
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 11 / 28 / 2022

Hyd. No. 11

<no description>

Hydrograph type = Combine	Peak discharge = 10.82 cfs
Storm frequency = 10 yrs	Time to peak = 12.12 hrs
Time interval = 1 min	Hyd. volume = 32,575 cuft
Inflow hyds. = 1, 5, 10	Contrib. drain. area = 2.180 ac



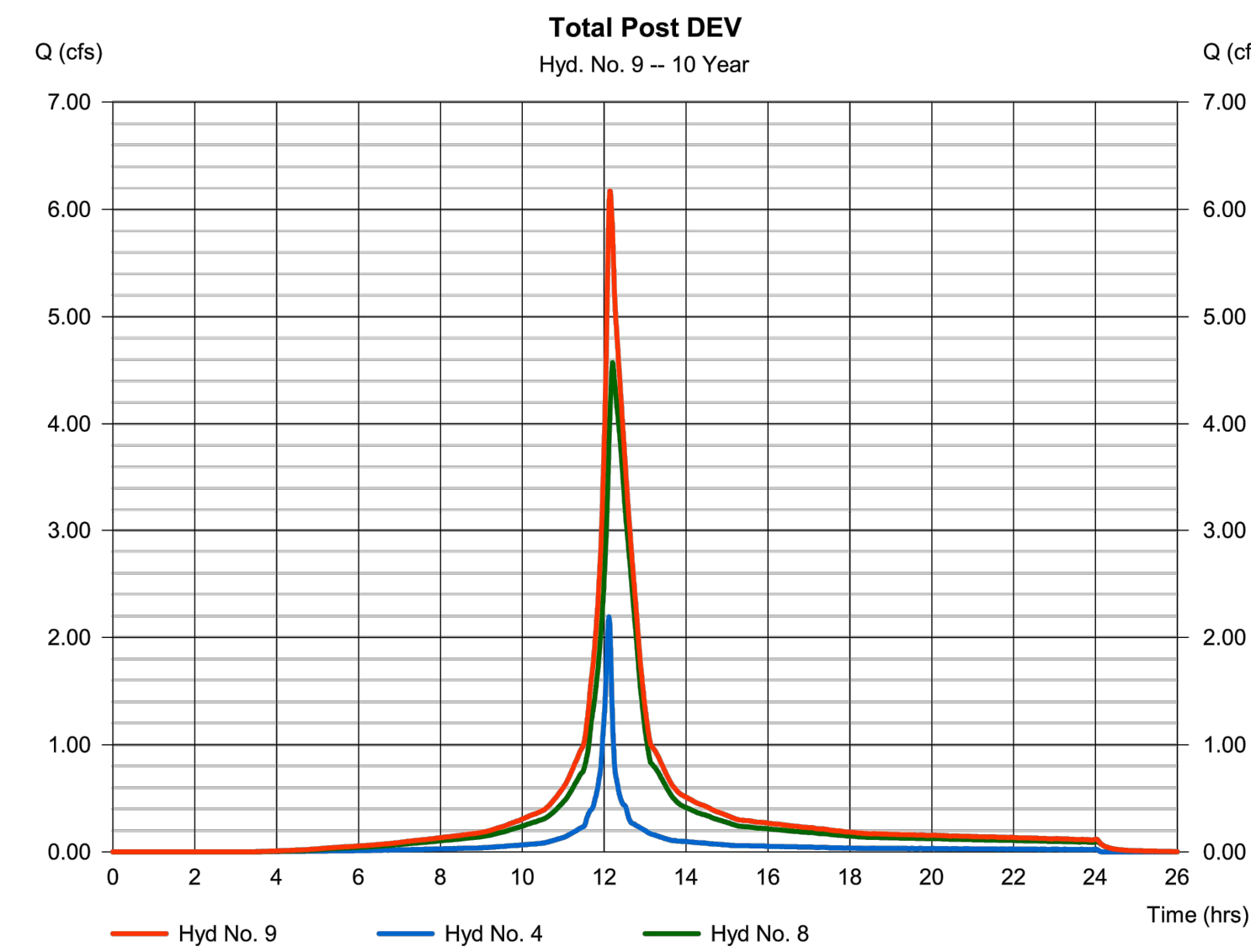
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 11 / 28 / 2022

Hyd. No. 9

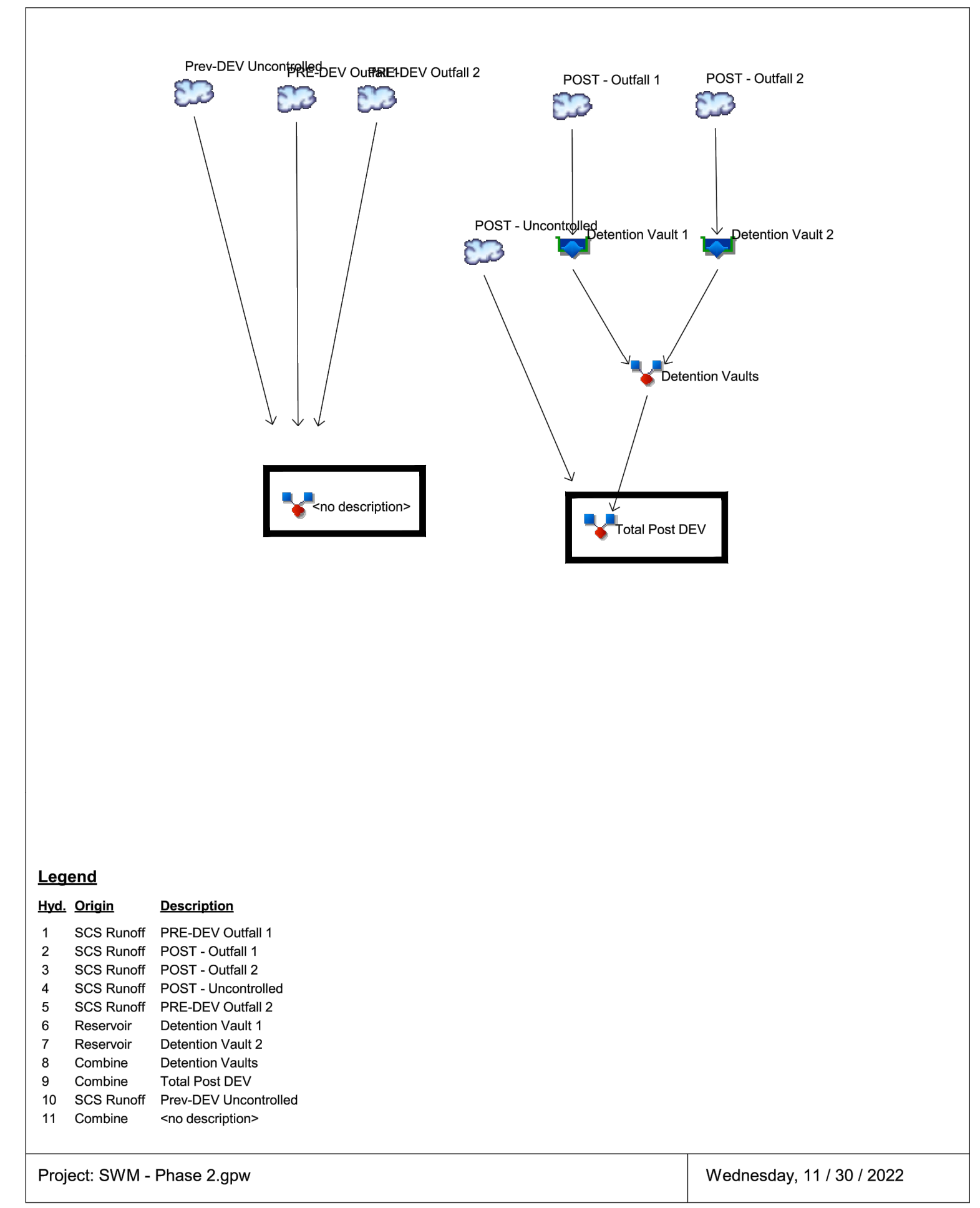
Total Post DEV

Hydrograph type = Combine	Peak discharge = 6.171 cfs
Storm frequency = 10 yrs	Time to peak = 12.13 hrs
Time interval = 1 min	Hyd. volume = 32,329 cuft
Inflow hyds. = 4, 8	Contrib. drain. area = 0.440 ac



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022



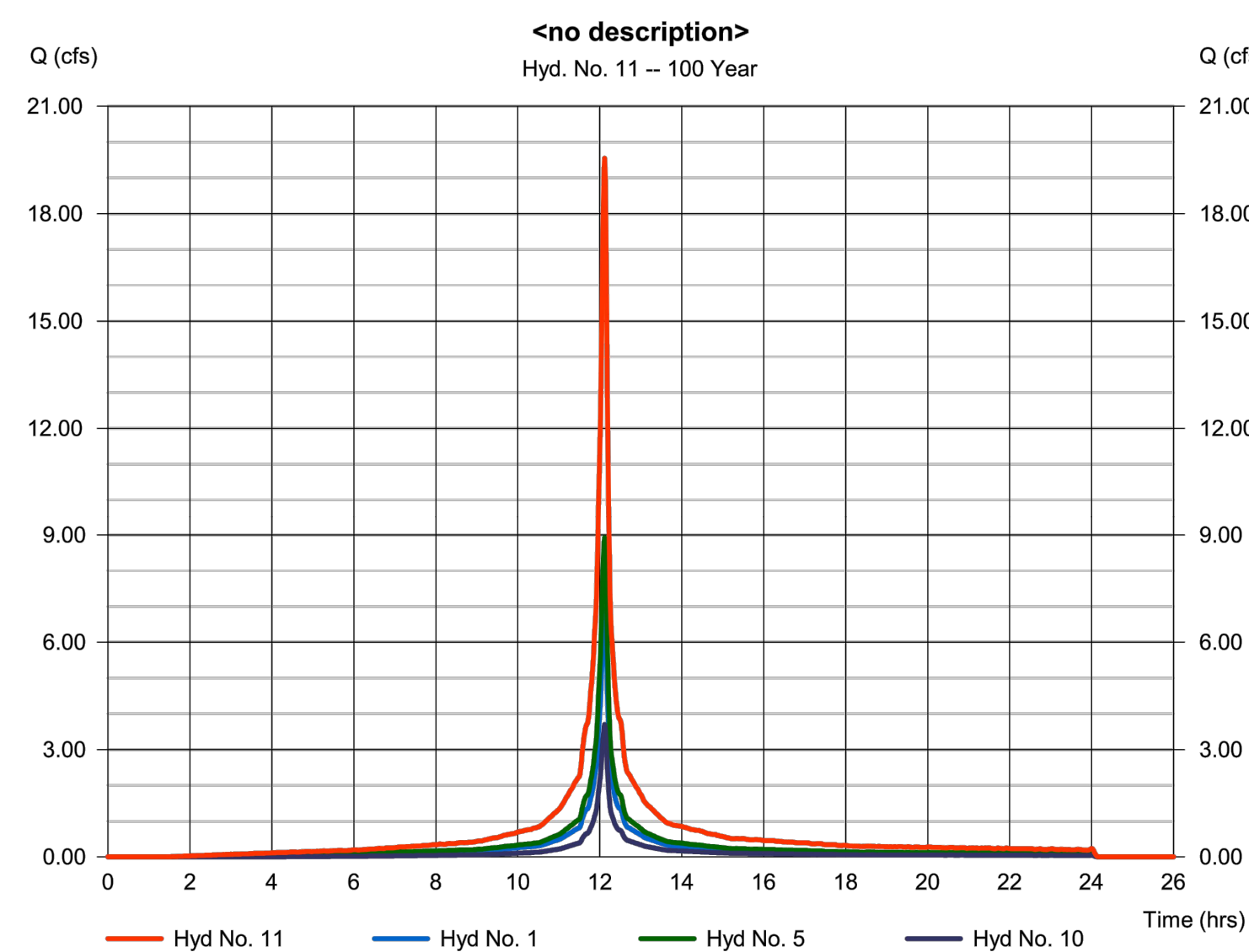
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 11 / 23 / 2022

Hyd. No. 11

<no description>

Hydrograph type = Combine	Peak discharge = 19.55 cfs
Storm frequency = 100 yrs	Time to peak = 12.12 hrs
Time interval = 1 min	Hyd. volume = 60,974 cuft
Inflow hyds. = 1, 5, 10	Contrib. drain. area = 2.180 ac



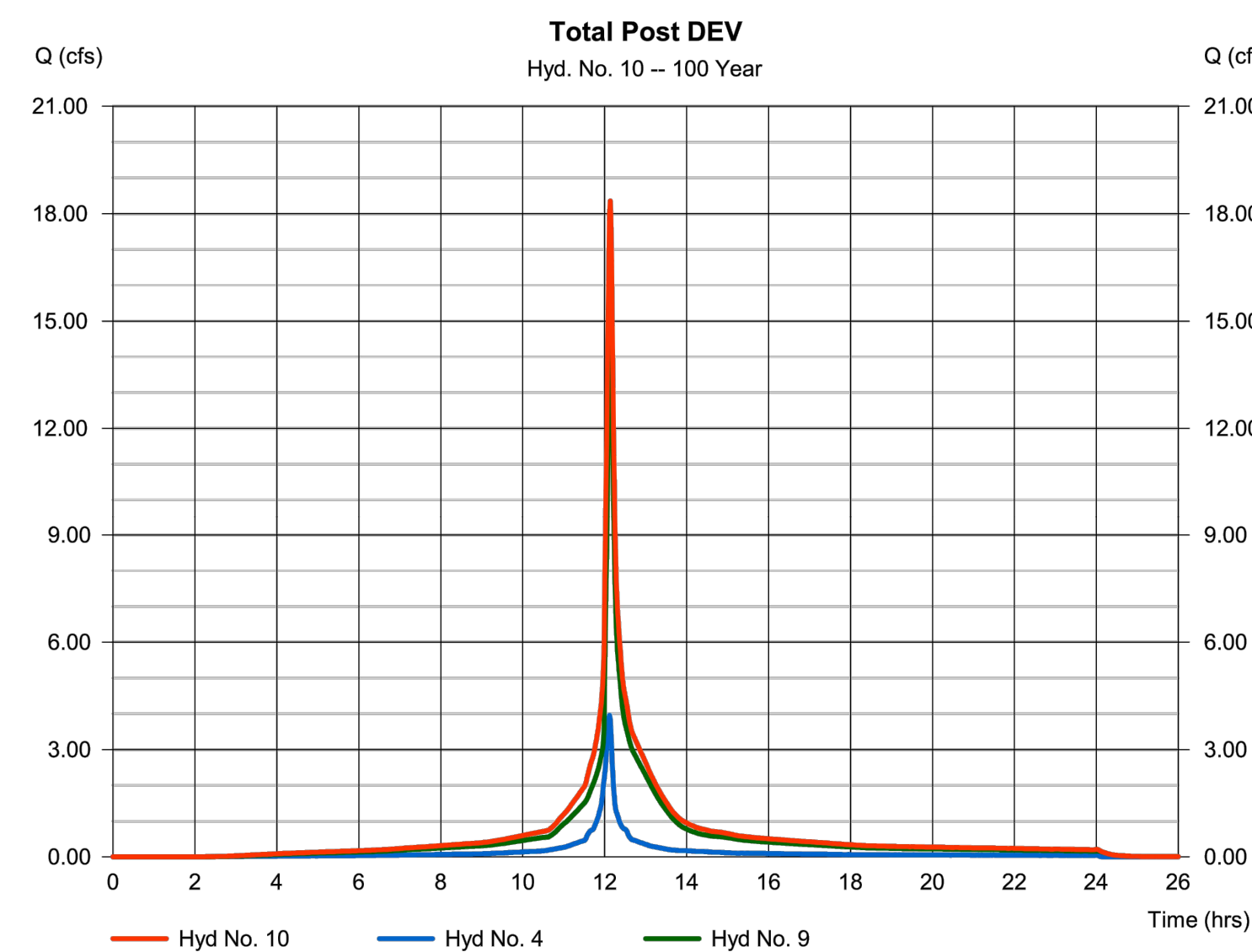
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 11 / 23 / 2022

Hyd. No. 10

Total Post DEV

Hydrograph type = Combine	Peak discharge = 18.36 cfs
Storm frequency = 100 yrs	Time to peak = 12.13 hrs
Time interval = 1 min	Hyd. volume = 60,785 cuft
Inflow hyds. = 4, 9	Contrib. drain. area = 0.440 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time to peak (min)	Hyd. volume (cuft)	Inflow volume (cuft)	Maximum elevation (ft)	Total storage used (cuft)	Hydrograph Description
1	SCS Runoff	727	1	11,881				PRE-DEV Outfall 1
2	SCS Runoff	727	1	11,273				POST - Outfall 1
3	SCS Runoff	727	1	14,536				POST - Outfall 2
4	SCS Runoff	727	1	6,528				POST - Uncontrolled
5	SCS Runoff	727	1	15,341				PRE-DEV Outfall 2
6	Reservoir	732	2	11,271	2	328.12	-1,708	Detention Vault 1
7	Reservoir	733	2	14,532	3	103.26	-2,591	Detention Vault 2
8	Combine	732	1	25,802	6.7			Detention Vaults
9	Combine	728	1	32,329	4.8			Total Post DEV
10	SCS Runoff	727	1	5,350				Pre-DEV Uncontrolled
11	Combine	727	1	32,575	1, 5, 10			<no description>

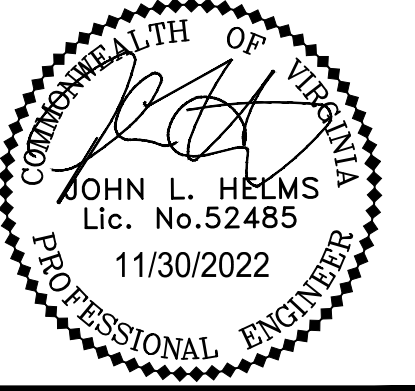
SWM - Phase 2.gpw Return Period: 10 Year Wednesday, 11 / 30 / 2022

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time to peak (min)	Hyd. volume (cuft)	Inflow volume (cuft)	Maximum elevation (ft)	Total storage used (cuft)	Hydrograph Description
1	SCS Runoff	727	1	21,877				PRE-DEV Outfall 1
2	SCS Runoff	727	1	21,194				POST - Outfall 1
3	SCS Runoff	727	1	27,329				POST - Outfall 2
4	SCS Runoff	727	1	12,270				POST - Uncontrolled
5	SCS Runoff	727	1	28,210				PRE-DEV Outfall 2
6	Reservoir	728	2	21,102	2	329.41	-2,100	Detention Vault 1
7	Reservoir	729	2	27,325	3	104.84	-3,845	Detention Vault 2
8	Combine	728	1	48,516	6.7			Detention Vaults
9	Combine	728	1	60,787	4.8			Total Post DEV
10	SCS Runoff	727	1	10,886				Pre-DEV Uncontrolled
11	Combine	727	1	60,974	1, 5, 10			<no description>

SWM - Phase 2.gpw Return Period: 100 Year Wednesday, 11 / 30 / 2022



N29 RESIDENCES
GENERAL DEVELOPMENT PLAN
CITY OF FAIRFAX, VA

ADDRESS PER CITY COMMENTS	MARK	DATE	DESCRIPTION
11-30-2022			

PROJECT No.: 21082.002.00
DRAWING No.: 111937
DATE: 2022-07-15
SCALE: N/A
DESIGN: JH
DRAWN: YH
CHECKED: JH

SHEET TITLE:
HYDROGRAPHS - PHASE II

SHEET No.
PII_504