MASTER DEVELOPMENT PLAN
FOR
CIRCLE GATEWAY
CITY OF FAIRFAX, VIRGINIA

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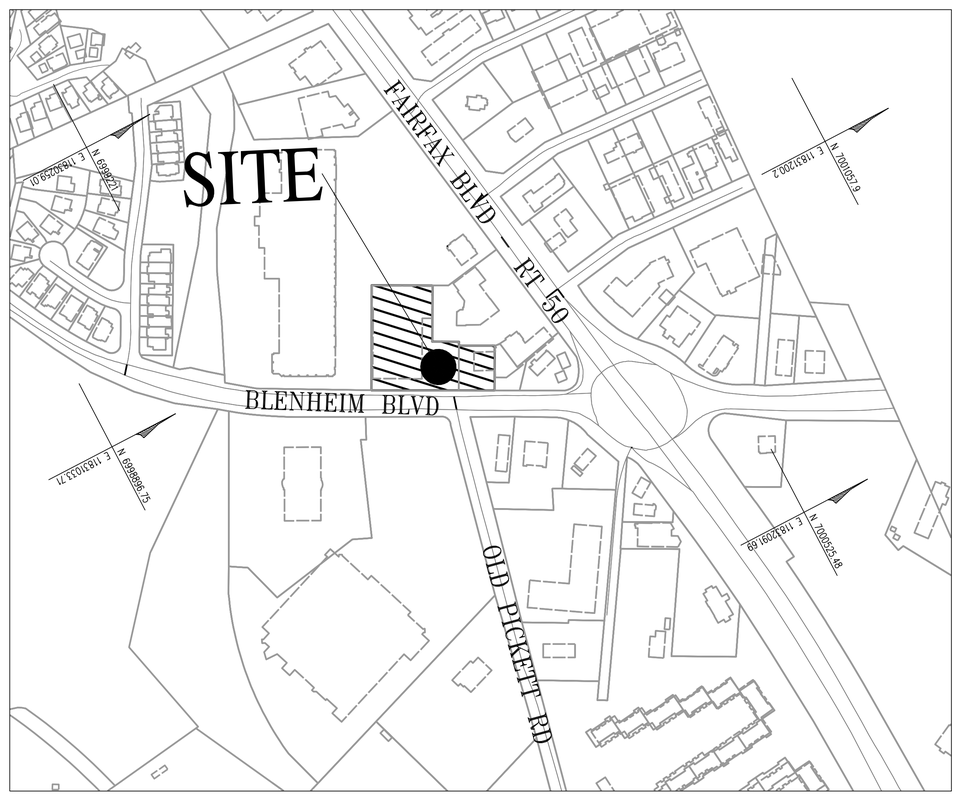
JLIGHTLE@URBAN-LTD.COM

VICINITY MAP
SCALE: 1" = 200'



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NOTE: TOTAL 026 SHEETS

REVISIONS

No.	DATE	DESCRIPTION

PLAN DATE
02-14-23

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CLAYTON C. TOCK
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02/14/2023
PROFESSIONAL ENGINEER

COVER SHEET
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: AS NOTED
C.I.= N/A
DATE: DEC. 2022

SHEET
001
OF
026

FILE No.
RZ-13123

GENERAL NOTES

1. THE PROPERTY DELINEATED HEREON IS LOCATED IN THE CITY OF FAIRFAX TAX MAP #48-3-08-002-A and #48-3-08-002-B
2. THE PROPERTY IS CURRENTLY ZONED CR (COMMERCIAL RETAIL).
3. THIS APPLICATION PROPOSES A REZONING OF THE PROPERTY TO THE COMMERCIAL URBAN DISTRICT.
4. BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY URBAN, LTD DATED SEPTEMBER, 2022.
5. THE SITE IS PRESENTLY SERVED BY CITY OF FAIRFAX PUBLIC WATER AND SEWER.
6. THE PROPOSED IMPROVEMENTS RESULT IN AN INCREASED OF IMPERVIOUS AREA IN THE SUBJECT PROPERTY.
7. UNDERGROUND PRIVATE UTILITY LOCATIONS ARE APPROXIMATE AND THOSE SHOWN HAVE NOT BEEN SURVEYED. EASEMENTS CONTAINED WITHIN OWNERS TITLE REPORT HAVE BEEN PLOTTED ON THE SURVEY BASE.
8. INDIVIDUAL UTILITY PLANS AND PROFILES WILL BE SUBMITTED WITH THE FINAL SITE PLAN.
9. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON THIS SITE. IF ANY SUBSTANCES ARE FOUND, THE METHODS FOR DISPOSAL SHALL ADHERE TO CITY, COUNTY, STATE, AND FEDERAL LAW.
10. THERE ARE NO KNOWN BURIAL SITES OR ARCHEOLOGICAL FEATURES ON THIS SITE.
11. THERE IS NO CITY, COUNTY, OR FEMA FLOODPLAIN ON THE PROPERTY.
12. DIMENSIONS AND SIZES AS SCALED ARE APPROXIMATE AND MAY VARY DEPENDING ON THE FINAL USE AND ARCHITECTURAL/ENGINEERING DESIGN. THE FINAL DESIGN SHALL BE IN SUBSTANTIAL CONFORMANCE WITH THE MASTER DEVELOPMENT PLAN.
13. THE PROPOSED BUILDING FOOTPRINTS SHOWN ON THIS MDP ARE PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL ENGINEERING AT THE TIME OF SITE PLAN PROVIDED THAT SUCH MODIFICATIONS ARE SUBSTANTIALLY CONSISTENT WITH THE APPROVED MDP/SUP PLAT.
14. THE CITY STANDARD STREET LIGHTS ARE SUBJECT TO APPROVAL BY THE DEPARTMENT OF PUBLIC WORKS.
15. SITE LIGHTING IS TO BE DETERMINED AT THE TIME OF SITE PLAN AND WILL BE IN CONFORMANCE WITH SECTION 4.8 OF THE ZONING ORDINANCE AND THE PUBLIC FACILITIES MANUAL.

SITE DATA

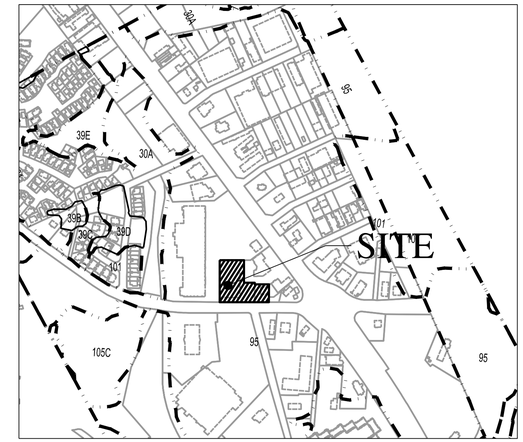
ZONING:	EXISTING	COMMERCIAL RETAIL (CR)
	PROPOSED	COMMERCIAL URBAN (CU)
USE:	EXISTING	RETAIL
	PROPOSED	UPPER STORY RESIDENTIAL, RETAIL
SITE AREA:	71,438 SF (1.64 ACRES)	

SEC. 3.6.2 : BULK AND LOT AREA REQUIREMENTS PER CG REGULATIONS

BULK AND LOT AREA REQUIREMENTS PER COMMERCIAL URBAN (CU) OF CITY OF FAIRFAX ZONING ORDINANCE

	REQUIRED	PROVIDED
	COMMERCIAL URBAN (SEC. 3.6.2)	
MIN. LOT AREA (SF)	30,000	71,438
REQUIRED YARDS (FT.)		
FRONT AND SIDE (STREET)	15' MIN	±21
SIDE (INTERIOR)	25' MIN	±5
REAR	25' MIN	±5
BUILD-TO LINE, (PERCENT)	N/A	
LOT WIDTH (FT.)	N/A	344
HEIGHT, MAX. (STORIES/FEET)	5 STORIES/60	10 STORIES
BUILDING COVERAGE, MAX. (%)	80	81%
LOT COVERAGE, MAX. (%)	100	94%
DENSITY, MAX	24 UNITS/ACRE	154 UNIT/ACRE

SOILS MAP



SCALE: 1" = 500'

SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SOIL DRAINAGE	EROSION POTENTIAL	HYDROLOGIC SOIL GROUP
30	CONDORUS & HATBORO SOILS 0-2% SLOPES	POOR-F,W,B	POOR-W,F	LOW	D
39	GLENELG SILT LOAM 2-7 % SLOPES	GOOD	GOOD	HIGH	B
39	GLENELG SILT LOAM 7-15 % SLOPES	GOOD	GOOD	HIGH	B
39	GLENELG SILT LOAM 15-25 % SLOPES	GOOD	GOOD	HIGH	B
39	GLENELG SILT LOAM 25-45 % SLOPES	GOOD	GOOD	HIGH	B
95	URBAN LAND	N/A	N/A	N/A	N/A
101	URBAN LAND - WHEATON COMPLEX	N/A	N/A	N/A	N/A
105	WHEATON LOAM 2-25% SLOPES	GOOD	GOOD	HIGH	D

DEVELOPMENT PROGRAM

LEVELS	TOTAL BUILDING AREA + GARAGE	PARKING GARAGE (***)	EXTERIOR BUILDING COVERED AREA (**)	MIXED USE BUILDING AREAS (GSF) BUILDING AREA (*)	RETAIL	SHARE AREAS	RESIDENTIAL ACCESSORY USE	MULTIFAMILY	MULTIFAMILY UNITS	% OF RESIDENTIAL USE OF GROUND LEVEL
P2 - 287'	43,847	43,847								
P1 - 297'	43,847	43,847								
L1 - 307'	57,233	26,073	7,266	23,894	16,600	2,825	4,469			19%
L2 - 317.66'	23,834	23,834								
L3 - 328.33'	55,852	55,852								
L4 - 339'	40,806			40,806			4,280	36,526	33	
L5 - 349.66'	40,806			40,806				40,806	38	
L6 - 359.45'	40,806			40,806				40,806	38	
L7 - 369.24'	40,806			40,806				40,806	38	
L8 - 379.03'	40,806			40,806				40,806	38	
L9 - 388.82'	40,806			40,806				40,806	38	
L10 - 398.61'	40,806			40,806				40,806	38	
ROOFTOP - 409.68'							6,975			
TOTAL	510,255	193,453	7,266	309,536	16,600	2,825	15,724	281,362	261	

SEC. 4.2.3E: OFF-STREET PARKING AND LOADING (ENTIRE SITE)

OFF-STREET PARKING AND LOADING REQUIREMENTS PER CITY OF FAIRFAX ZONING ORDINANCE (SEC. 4.2.3E)

PARKING USE	RATE	REQUIRED
RETAIL	1 SPACE/200 SF	83
UPPER STORY RESIDENTIAL/MIXED USE		
1 BEDROOM	1.5 SPACES/UNIT	237
2 BEDROOM	2 SPACES/ UNIT	206
	TOTAL PARKING REQUIRED	**526**

LOADING USE	RATE	REQUIRED
UPPER STORY RESIDENTIAL/MIXED USE (4+ STORIES)	50+ UNITS	1
TOTAL LOADING SPACES REQUIRED		**1**

OFF-STREET PARKING AND LOADING PROVIDED

PARKING	
GARAGE PARKING	
LEVEL P2	116
LEVEL P1	112
LEVEL L1	52
LEVEL L2	58
LEVEL L3	125
TOTAL GARAGE PARKING	463
TOTAL PARKING PROVIDED	**463**
LOADING SPACES PROVIDED	**2**

LEGEND:

- EXISTING STORM DRAIN STRUCTURE
- PROPOSED STORM DRAIN STRUCTURE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING TREE LINE
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE PIPES
- PROPOSED PROPERTY LINE PIPES
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- EXISTING TRAFFIC POLE
- EXISTING SPOT ELEVATION
- PROP. SPOT ELEVATION
- EXISTING FENCE
- EXISTING LIGHTING
- PROPOSED LIGHTING
- EXISTING TREE
- PROPOSED TREE
- PROJECTED TRAFFIC COUNT (BASED ON 6TH ED. OF ITE TRIP GENERATION BOOK)
- EXISTING OVERHEAD WIRE
- PROP. FENCE

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE 02-14-23

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02/14/2023
PROFESSIONAL ENGINEER

GENERAL NOTES AND DETAILS

CIRCLE GATEWAY MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: AS NOTED
C.I.= N/A
DATE: DEC. 2022

SHEET 002 OF 026

FILE No. RZ-13123

No.	DATE	DESCRIPTION

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OVERVIEW

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=50'
C.I.= 1'
DATE: DEC. 2022

SHEET
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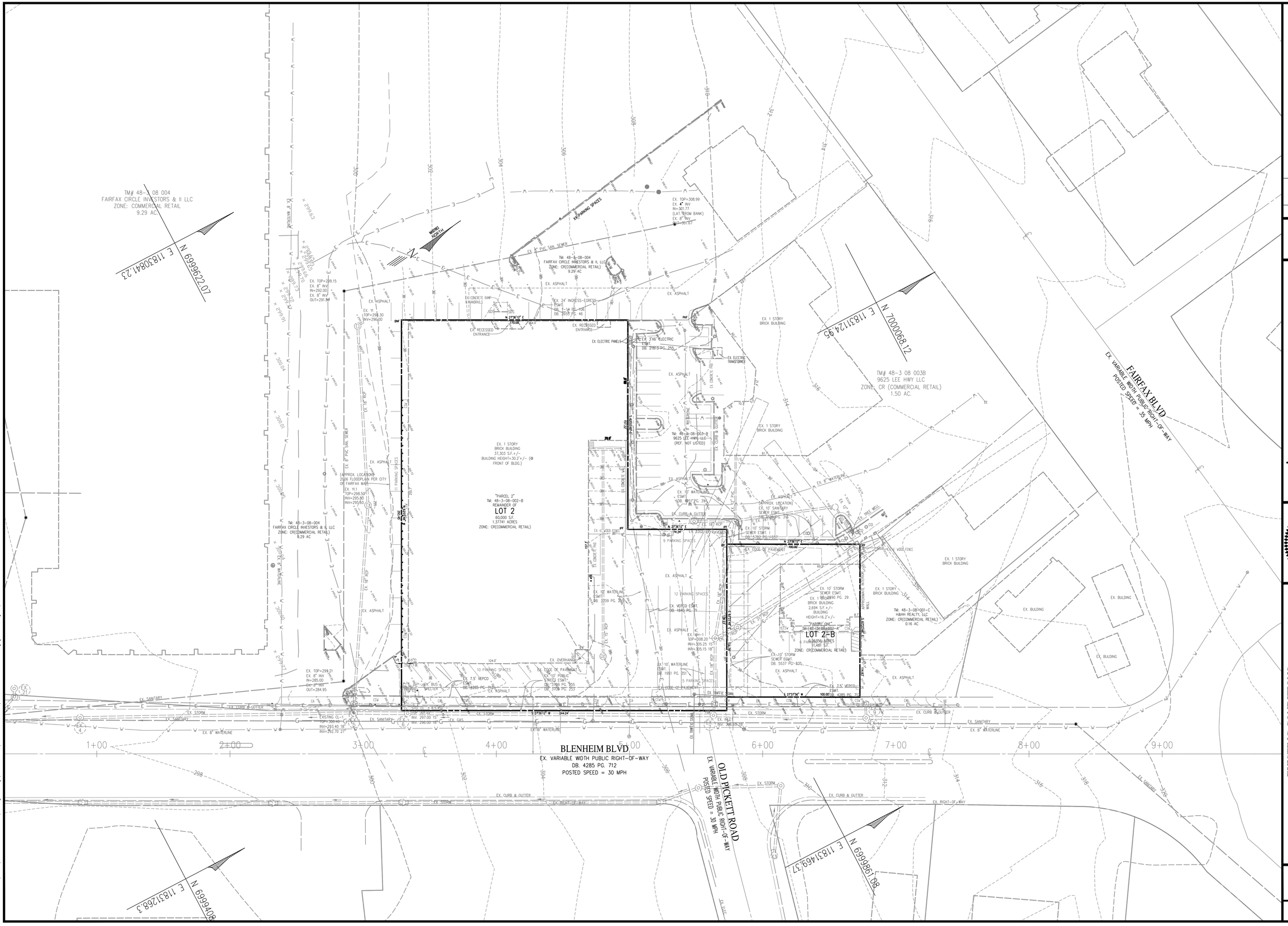
026

FILE No.
RZ-13123



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EXISTING CONDITIONS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
C.I.= 1'

DATE: DEC. 2022

SHEET
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026

FILE No.
RZ-13123

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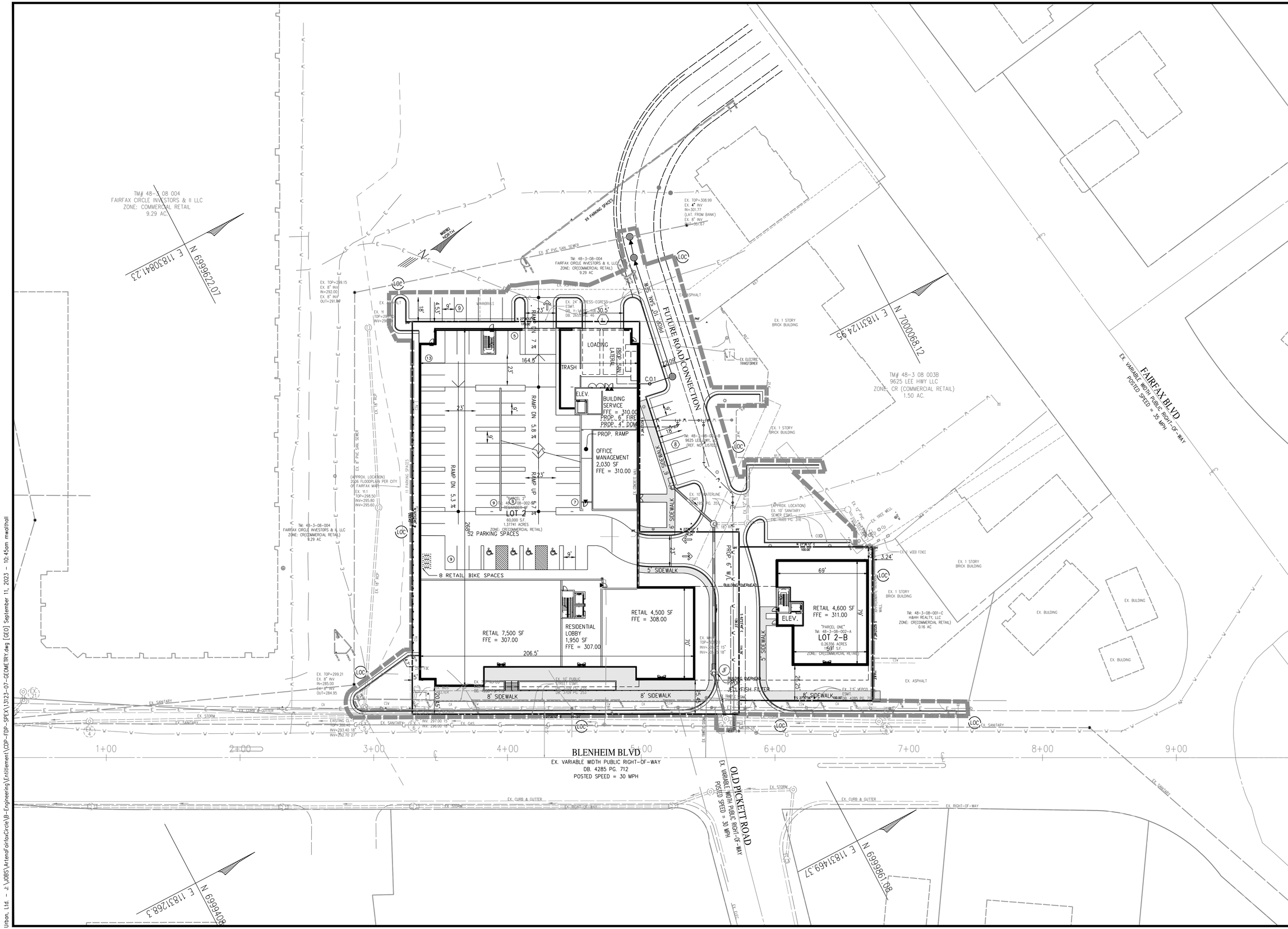

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MASTER DEVELOPMENT PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
C.I.= 1'

DATE: DEC. 2022

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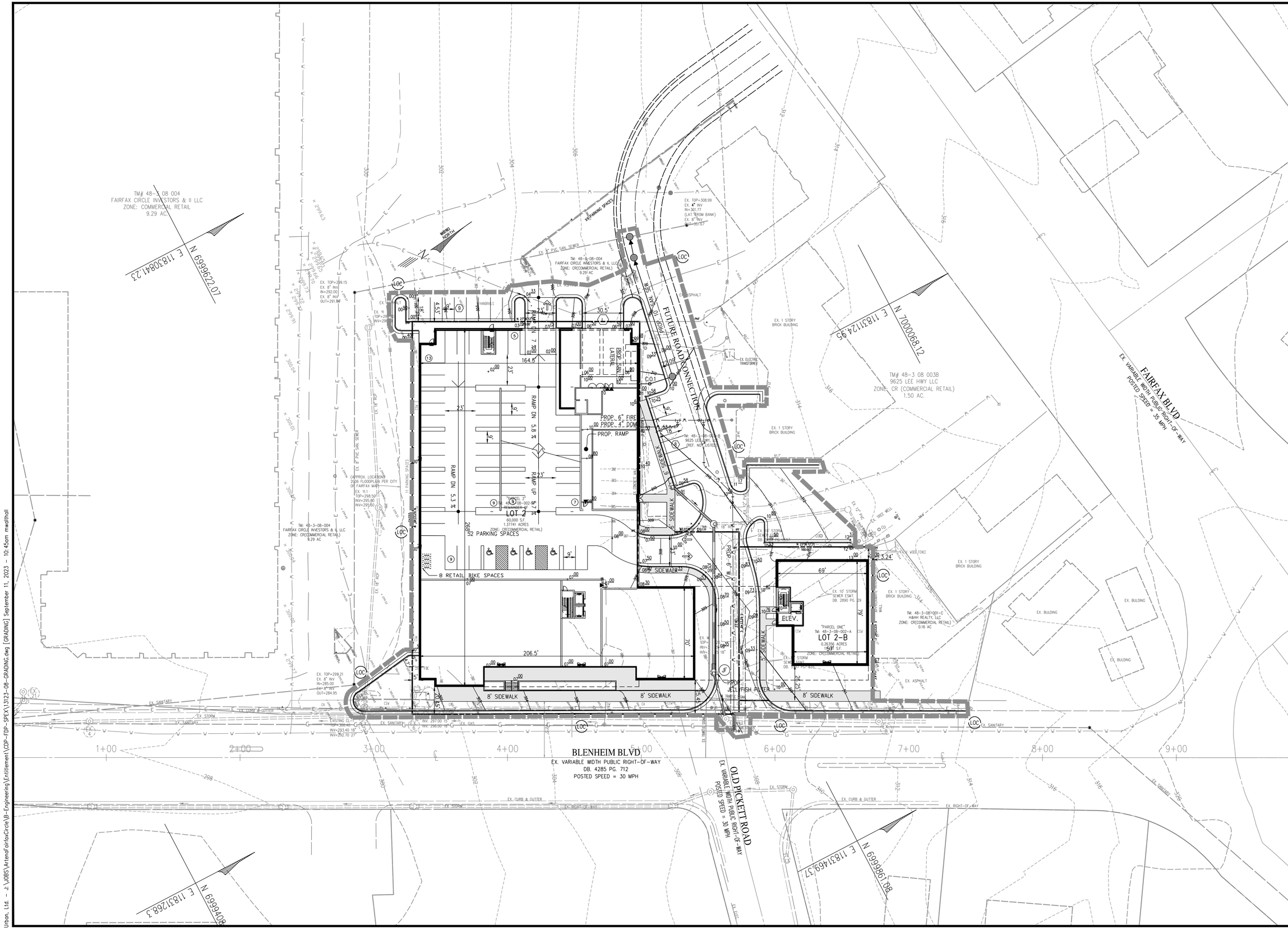

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GRADING PLAN
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
C.I.= 1'
DATE: DEC. 2022

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006
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026

FILE No.
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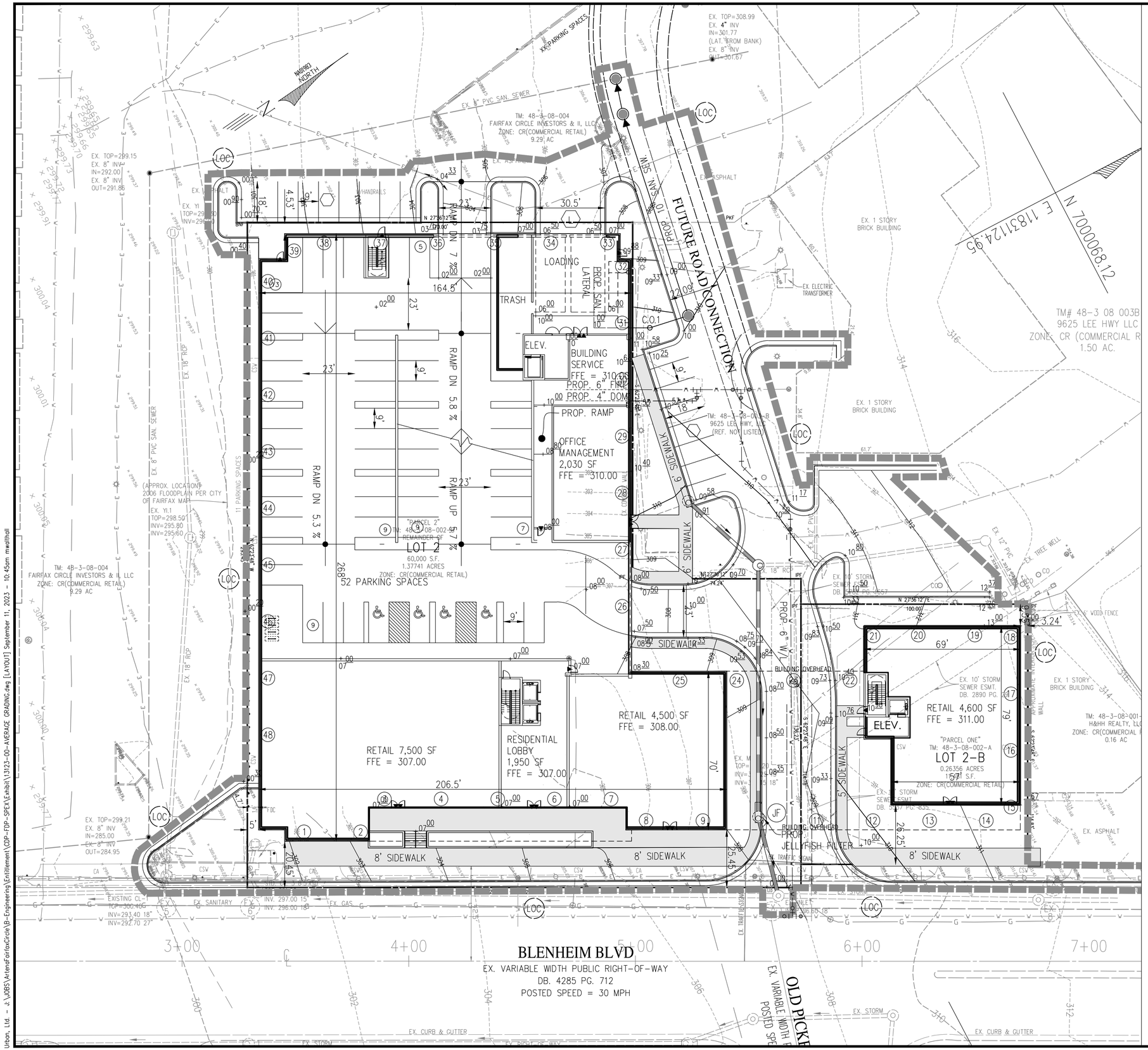

AVERAGE GRADE CALCULATION

LOT #2		
Spot #	Existing	Proposed
1	301.21	302.44
2	302.17	303.12
3	302.88	307.00
4	303.52	307.00
5	304.11	307.00
6	304.60	307.00
7	305.17	307.22
8	306.09	307.52
9	307.21	307.82
10	308.03	308.33
11	309.13	308.91
12	309.78	309.94
13	310.42	310.57
14	311.03	311.12
15	311.35	311.57
16	311.68	312.02
17	312.00	312.50
18	312.00	312.92
19	312.00	312.86
20	312.00	312.03
21	312.00	311.02
22	312.00	310.05
23	309.61	309.10
24	308.25	309
25	307.32	308.72
26	307.00	308.45
27	305.62	309.24
28	303.00	310.21
29	302.58	310.48
30	303.49	310.61
31	304.41	310.52
32	305.32	309.16
33	306.24	307.13
34	306.67	306.50
35	305.31	304.32
36	304.57	303.80
37	303.84	303.34
38	302.33	302.28
39	301.69	301.73
40	301.23	301.37
41	301.00	300.98
42	301.00	300.65
43	301.00	300.27
44	301.00	300.20
45	301.00	300.20
46	301.00	300.21
47	301.00	300.24
48	301.00	300.27
TOTAL	14676.86	14728.94
AVERAGE	305.77	306.85

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AVERAGE GRADE EXHIBIT

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=20'
C.I.=1'
DATE: DEC. 2022

SHEET
007
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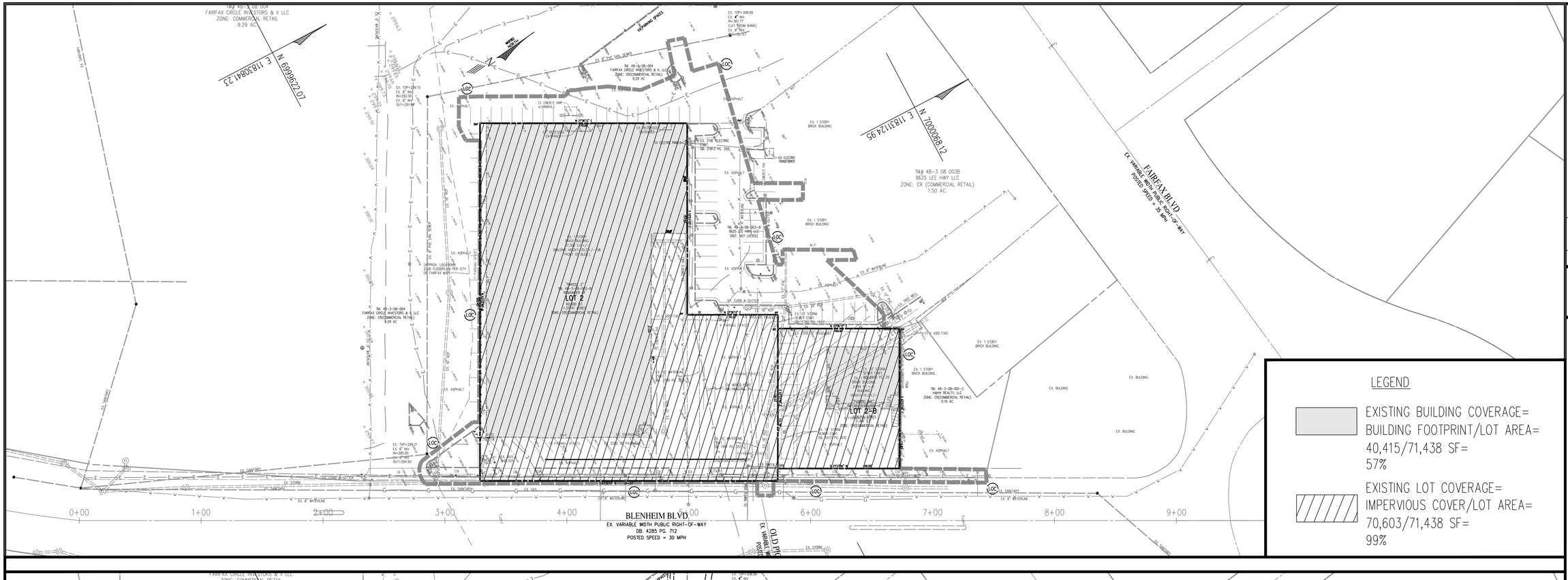
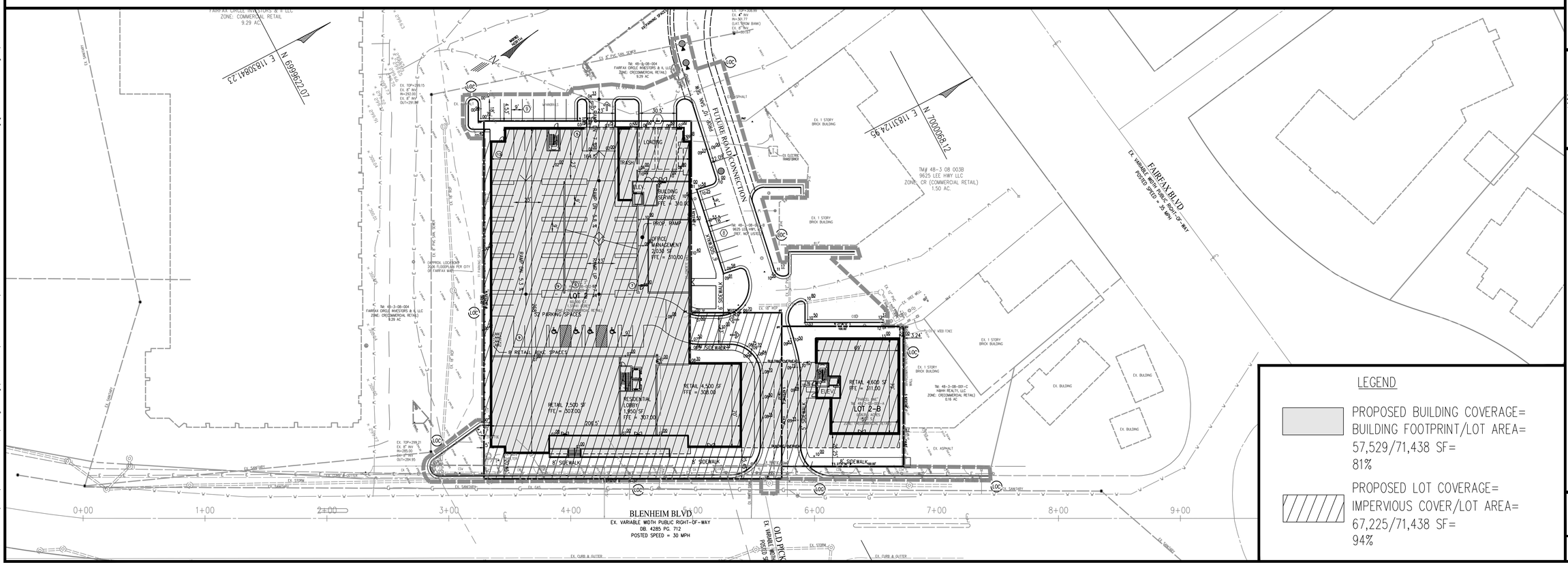
FILE No.
RZ-13123



LEGEND

EXISTING BUILDING COVERAGE=
BUILDING FOOTPRINT/LOT AREA=
40,415/71,438 SF=
57%

EXISTING LOT COVERAGE=
IMPERVIOUS COVER/LOT AREA=
70,603/71,438 SF=
99%



LEGEND

PROPOSED BUILDING COVERAGE=
BUILDING FOOTPRINT/LOT AREA=
57,529/71,438 SF=
81%

PROPOSED LOT COVERAGE=
IMPERVIOUS COVER/LOT AREA=
67,225/71,438 SF=
94%

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BUILDING AND LOT COVERAGE EXHIBIT

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=40'
C.I.= N/A
DATE: DEC. 2022

SHEET
008
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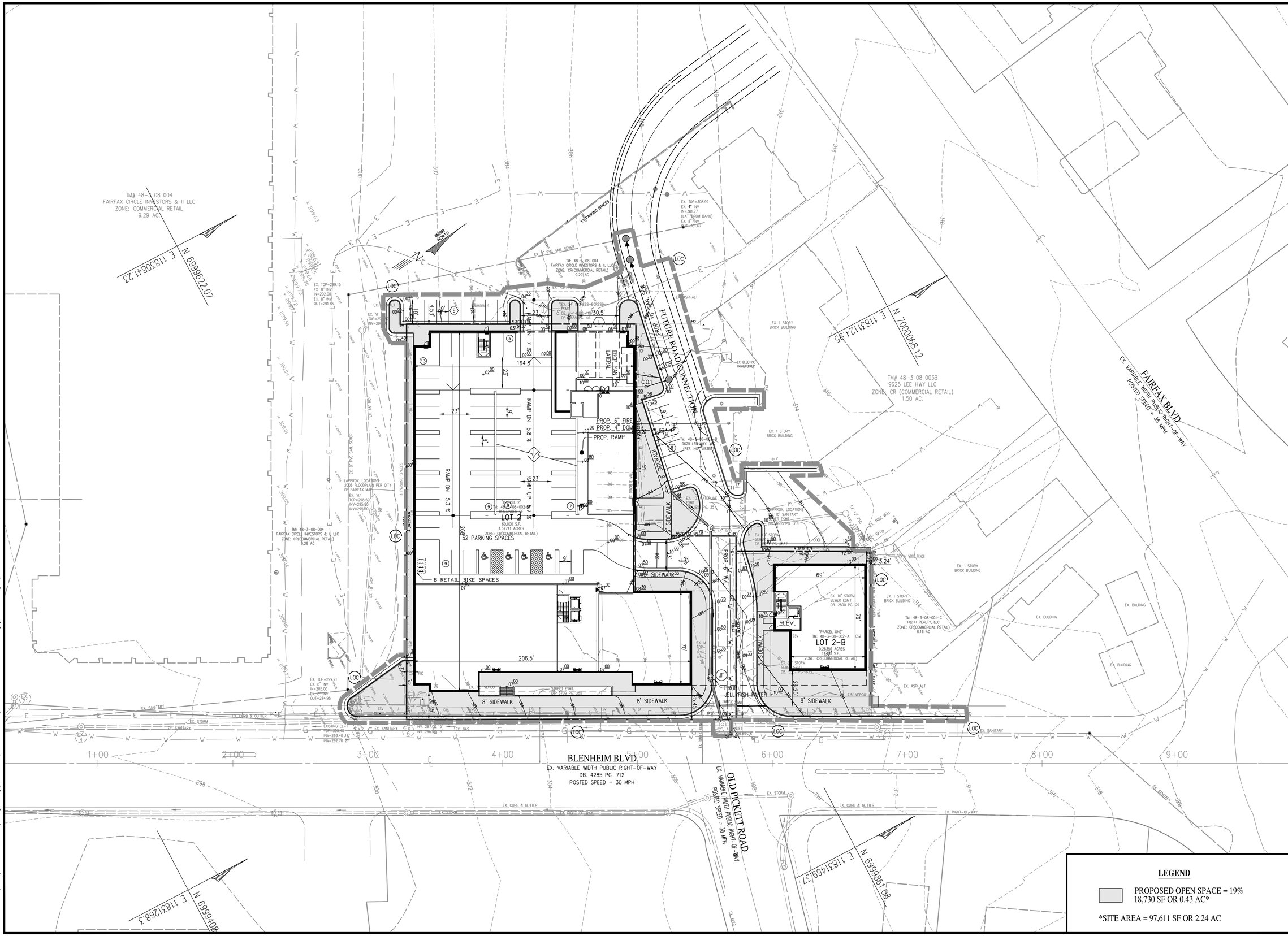

LEGEND

PROPOSED OPEN SPACE = 19%
18,730 SF OR 0.43 AC*

*SITE AREA = 97,611 SF OR 2.24 AC

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OPEN SPACE PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
C.I.= 1'
DATE: DEC. 2022

SHEET
009
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FILE No.
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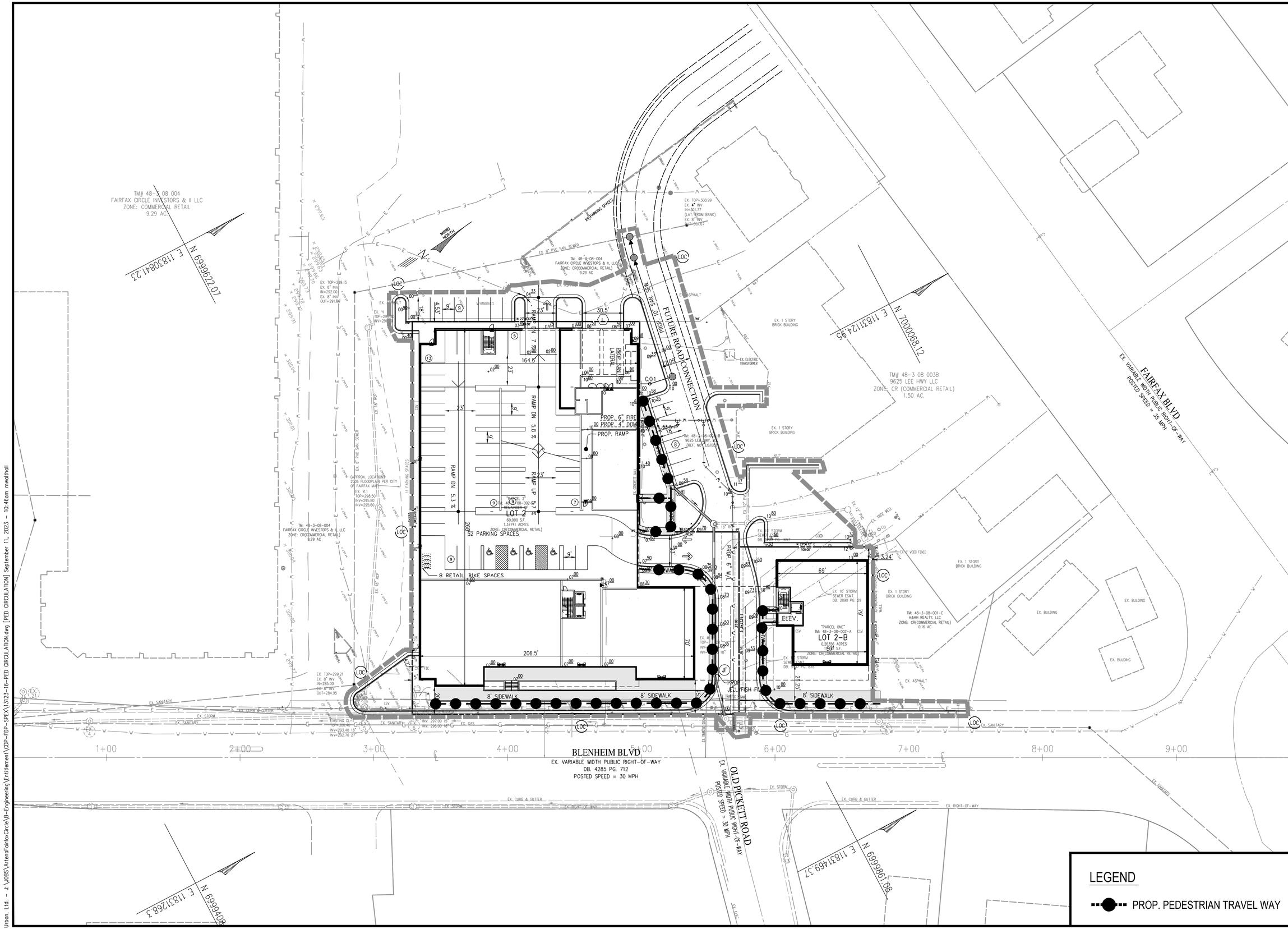
Urban, Ltd. - J:\JOBS\ArtsenFairfaxCircle\B-Engineering\Entitlement\CDP-FDP-SPEX\13123-10-OPEN SPACE PLAN.dwg [OPEN SPACE] September 11, 2023 - 10:46am mwalthall



LEGEND

PROP. PEDESTRIAN TRAVEL WAY

No.	DATE	DESCRIPTION

REVISIONS

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02-14-23

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PEDESTRIAN CIRCULATION PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
C.I.= N/A
DATE: DEC. 2022

SHEET
010
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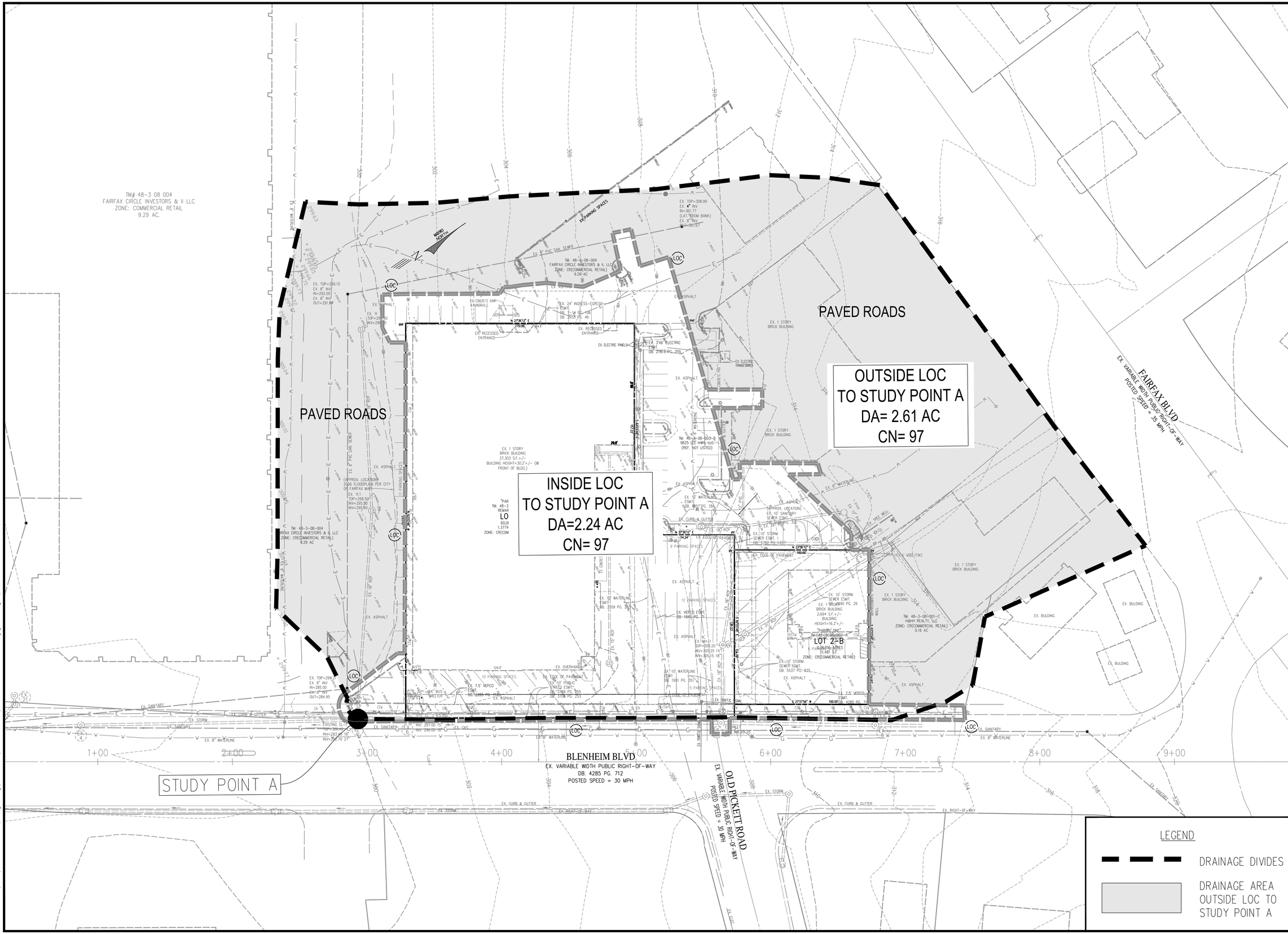

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Lic. No. 036790
02/14/2023
PROFESSIONAL ENGINEER

SWM PRE-DEVELOPMENT PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

DATE: DEC. 2022

SCALE: 1"=30'
C.I.= 1'

SHEET
011
OF
026

FILE No.
RZ-13123

Urban, Ltd. – J:\JOBS\ArtenoFairfaxCircle\B-Engineering\Entitlement\CDP-FDP-SPEX\3123-12-SWM PRE COMP.dwg [SWM PRE] September 11, 2023 – 10:46am mwalthall

STUDY POINT 1

PEAK FLOW SUMMARY FOR 1-YEAR STORM EVENT

Inflow Area = 211,266 sf , 95.26% Impervious , Inflow Depth = 2.25" for 1-Year event
Inflow = 13.24 cfs @ 12.10 hrs , Volume= 39,658 cf
Primary = 13.24 cfs @ 12.10 hrs , Volume= 39,658 cf , Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

PEAK FLOW SUMMARY FOR 2-YEAR STORM EVENT

Inflow Area = 211,266 sf , 95.26% Impervious , Inflow Depth = 2.79" for 2-Year event
Inflow = 16.17 cfs @ 12.10 hrs , Volume= 49,070 cf
Primary = 16.17 cfs @ 12.10 hrs , Volume= 49,070 cf , Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

PEAK FLOW SUMMARY FOR 10-YEAR STORM EVENT

Inflow Area = 211,266 sf , 95.26% Impervious , Inflow Depth = 4.46" for 10-Year event
Inflow = 25.22 cfs @ 12.10 hrs , Volume= 78,481 cf
Primary = 25.22 cfs @ 12.10 hrs , Volume= 78,481 cf , Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

STUDY POINT 1: INSIDE LOC CURVE NUMBER/ TIME OF CONCENTRATION

Area (ac)	CN	Description
2.130	98	Paved parking, HSG D
0.110	80	>75% Grass cover, Good, HSG D
2.240	97	Weighted Average
0.110		4.91% Pervious Area
2.130		95.09% Impervious Area

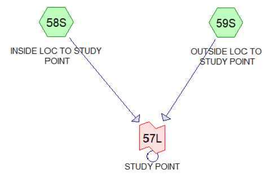
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	579	0.0200	8.41	14.86	**Pipe Channel, Pipe Channel** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, straight & clean
2.5	300	0.0300	2.00		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.15"
3.6	879	Total			

STUDY POINT 1: OUTSIDE LOC CURVE NUMBER/ TIME OF CONCENTRATION

Area (ac)	CN	Description
2.490	98	Paved parking, HSG D
0.120	80	>75% Grass cover, Good, HSG D
2.610	97	Weighted Average
0.120		4.60% Pervious Area
2.490		95.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Entry**

PRE-DEVELOPMENT HYDROCAD NODES



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SWM PRE-DEVELOPMENT COMPUTATIONS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
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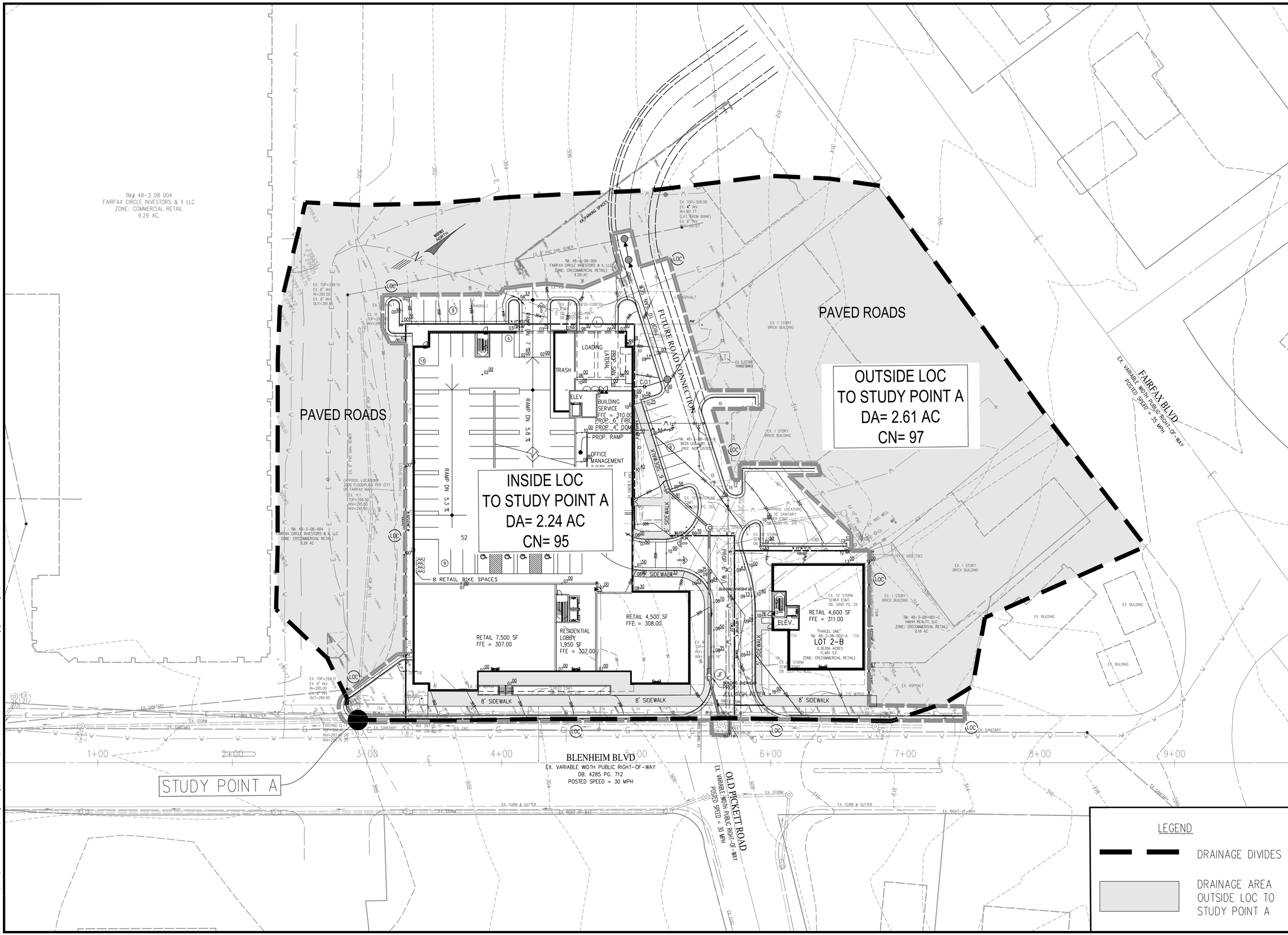

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SWM POST DEVELOPMENT PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
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POST-DEVELOPMENT PEAK FLOW SUMMARY

STUDY POINT 1

PEAK FLOW SUMMARY FOR 1-YEAR STORM EVENT

Inflow Area = 211,266 sf , 90.52% Impervious , Inflow Depth = 2.16" for 1-Year event
Inflow = 10.77 cfs @ 12.13 hrs , Volume= 38,014 cf
Primary = 10.77 cfs @ 12.13 hrs , Volume= 38,014 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

PEAK FLOW SUMMARY FOR 2-YEAR STORM EVENT

Inflow Area = 211,266 sf , 90.52% Impervious , Inflow Depth = 2.69" for 2-Year event
Inflow = 13.24 cfs @ 12.13 hrs , Volume= 47,356 cf
Primary = 13.24 cfs @ 12.13 hrs , Volume= 47,356 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

PEAK FLOW SUMMARY FOR 10-YEAR STORM EVENT

Inflow Area = 211,266 sf , 90.52% Impervious , Inflow Depth = 4.35" for 10-Year event
Inflow = 20.85 cfs @ 12.13 hrs , Volume= 76,641 cf
Primary = 20.85 cfs @ 12.13 hrs , Volume= 76,641 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

FLOW SUMMARY			
	1 YR	2 YR	10 YR
Pre Development Flows at Study Point 'A' (cfs)	13.24	16.17	25.22
Allowable Flow At Study Point 'A' (cfs)	11.05*	16.17	25.22
Post-Development Flows at Study Point 'A' (cfs)	10.77	13.24	20.85

*** Per the Energy Balance Equation**

ENERGY BALANCE METHOD TO STUDY POINT A

$Q_{(Developed)}$=	10.77	cfs
$Q_{(Pre\text{-}Developed)}$=	13.24	cfs
$RV_{(Pre\text{-}Developed)}$=	39658.00	cf
$RV_{(Developed)}$=	38014.00	cf
I.F. =	0.8	(0.8 for sites greater than one acre) (0.9 for sites less than or equal to one

Q Developed		I.F x ($Q_{Pre\text{-}Developed}$ x $RV_{Pre\text{-}Developed}$)/$RV_{Developed}$
10.77	≤	11.05

*Under no condition must :

$Q_{(Developed)} > Q_{(Pre\text{-}Developed)}$

$Q_{Developed}$ must be required to less than (Q_{Forest}*RV_{Forest})/$RV_{Developed}$

STUDY POINT 1: INSIDE LOC CURVE NUMBER/ TIME OF CONCENTRATION

Area (ac)	CN	Description
1.900	98	Paved parking, HSG D
0.340	80	>75% Grass cover, Good, HSG D
2.240	95	Weighted Average
0.340		15.18% Pervious Area
1.900		84.82% Impervious Area

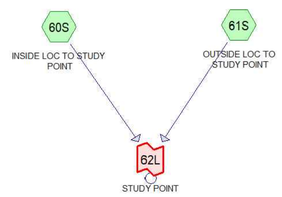
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.15"
0.6	290	0.0200	7.44	9.14	**Pipe Channel, Pipe Channel** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, straight & clean
1.2	200	0.0200	2.87		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
11.7	590	Total			

STUDY POINT 1: OUTSIDE LOC CURVE NUMBER/ TIME OF CONCENTRATION

Area (ac)	CN	Description
2.490	98	Paved parking, HSG D
0.120	80	>75% Grass cover, Good, HSG D
2.610	97	Weighted Average
0.120		4.60% Pervious Area
2.490		95.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Entry**

POST-DEVELOPMENT HYDROCAD NODES



SWM NARRATIVE

THIS APPLICATION PROPOSES TO REZONE THE EXISTING CR (COMMERCIAL RETAIL) PARCELS TO COMMERCIAL URBAN DISTRICT TO ALLOW FOR A MIXED-USE BUILDING WITH RESIDENTIAL AND COMMERCIAL USES.

THE EXISTING SITE CURRENTLY DRAINS SOUTHEAST THROUGH AN EXISTING STORM SYSTEM WHICH LEAVES THE SITE AT EXISTING STORM STRUCTURE 5 ON BLENHEIM BOULEVARD AND CONTINUES DOWNSTREAM THROUGH A CLOSED CONDUIT SYSTEM. THE AFOREMENTIONED EXISTING STORM STRUCTURE IS ESTABLISHED AS "STUDY POINT" FOR THE SWM ANALYSIS. THE EXISTING SITE CURRENTLY COMPRISES OF APPROXIMATELY 2.13 ACRES OF IMPERVIOUS AREA WHICH CONSISTS OF EXISTING BUILDINGS AND SURFACE PARKING. THE RESULT OF THE IMPROVEMENTS PROVIDES A DECREASE IN IMPERVIOUS AREA OF 0.23 ACRES, WITH THE IMPERVIOUS AREA REDUCING TO 1.90 ACRES.

THE EXISTING SITE CONTAINS D TYPE SOIL. AS A RESULT OF THE PROPOSED DEVELOPMENT, THE SITE'S RUNOFF WILL BE CONVEYED THROUGH PROPOSED STORM CLOSED CONDUIT SYSTEM CONNECTING TO THE EXISTING STORM SYSTEM. THE STORMWATER FROM THE DEVELOPMENT IS DISCHARGED TO A MANMADE STORMWATER CONVEYANCE SYSTEM. PER SECTION 9VAC25-870-66.B.1.A, POST DEVELOPMENT PEAK FLOW RATE FROM THE TWO-YEAR 24-HOUR STORM EVENT WAS CHECKED AND CONFIRMED THAT IT CAN CONVEY THE FLOW AND THE CAPACITY OF THE EXISTING STORM SYSTEM WAS VERIFIED TO BE ADEQUATE FOR THE PROPOSED IMPROVEMENTS. IN ADDITION PER SECTION 9VAC25-870-66.B.1.B, THE 1-YEAR DESIGN PEAK FLOW SHALL NOT EXCEED THE ALLOWABLE RATE GIVEN BY THE 1-YEAR ENERGY BALANCE EQUATION. PLEASE SEE COMPUTATIONS ON THIS SHEET, SHEET 012 AND 014. NO DETENTION WAS INCORPORATED BECAUSE THE 9VAC25-870-66 CRITERIA WAS MET.

ALL BMP/SWM COMPUTATIONS SHOWN ON THIS APPLICATION ARE PRELIMINARY AND ARE SUBJECT TO CHANGE UPON RETRIEVAL OF NEW INFORMATION AND/OR IDENTIFICATION OF ADDITIONAL SITE CONSTRAINTS. THEREFORE, THE APPLICANT RESERVES THE RIGHT TO CHANGE AND/OR MODIFY THE PROPOSED BMP/SWM DEVICES AT THE TIME OF FINAL SITE PLAN TO MEET REQUIREMENTS.

Clayton Tock 02/14/2023
URBAN LTD. DATE
CLAYTON C. TOCK, P.E., PRINCIPAL

STORM SEWER DESIGN COMPUTATIONS

☐ Lag time

Project: ARTENA FAIRFAX CIRCLE

From Point	To Point	Drainage Area	C Factor	C x A Increment	C x A Cumm.	Inlet Time Min.	Rain Fall In/Hr	Runoff Q C.F.S.	Invert Elevation Upper End	Invert Elevation Lower End	Length FT.	Slope %	Dia. IN.	Capacity Q C.F.S.	VEL. F.P.S.	Flow Time MIN.	Remarks
9	8	0.29	0.84	0.24	0.24	5.00	0.57	0.14	307.43	307.37	10.49	0.50%	18	7.45	1.65	0.11	
8	7	0.00	0.00	0.00	0.24	5.00	0.57	0.14	307.27	306.70	114.72	0.50%	18	7.45	1.65	1.16	
7	6	1.59	0.84	1.34	1.58	5.00	0.57	0.89	306.60	297.00	229.61	4.18%	18	21.54	6.03	0.63	
6	5	0.00	0.00	0.00	1.58	5.00	0.57	0.89	296.00	295.00	40.32	2.48%	18	16.59	5.02	0.13	
5	4	0.93	0.80	0.74	4.60	5.00	0.57	13.24	294.90	292.70	205.67	0.50%	27	21.96	5.78	0.59	
4	3	0.00	0.00	0.00	4.60	5.00	0.57	2.61	292.60	292.26	68.33	0.50%	27	21.96	3.71	0.31	
3	2	0.00	0.00	0.00	5.87	5.00	0.57	3.32	292.16	291.96	39.60	0.50%	27	21.96	3.99	0.17	
2	1	0.00	0.00	0.00	5.87	5.00	0.57	3.32	291.86	290.00	68.82	2.72%	27	51.22	7.26	0.16	
*																	
30	29	0.96	0.80	0.77	0.77	5.00	0.57	0.43	296.00	295.80	134.73	0.15%	18	4.06	1.52	1.48	
29	28	0.84	0.86	0.72	1.49	5.00	0.57	0.84	295.60	295.40	149.51	0.13%	18	3.85	1.76	1.42	
28	5	0.93	0.85	0.79	2.28	5.00	0.57	1.29	295.40	295.00	6.96	5.75%	18	25.25	7.49	0.02	
*																	
21	3	1.46	0.87	1.27	1.27	5.00	0.57	0.72	295.38	295.25	26.85	0.50%	27	21.96	2.54	0.18	
*																	

No.	DATE	DESCRIPTION

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PLAN DATE 02-14-23

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Lic. No. 036790
02/14/2023
PROFESSIONAL ENGINEER

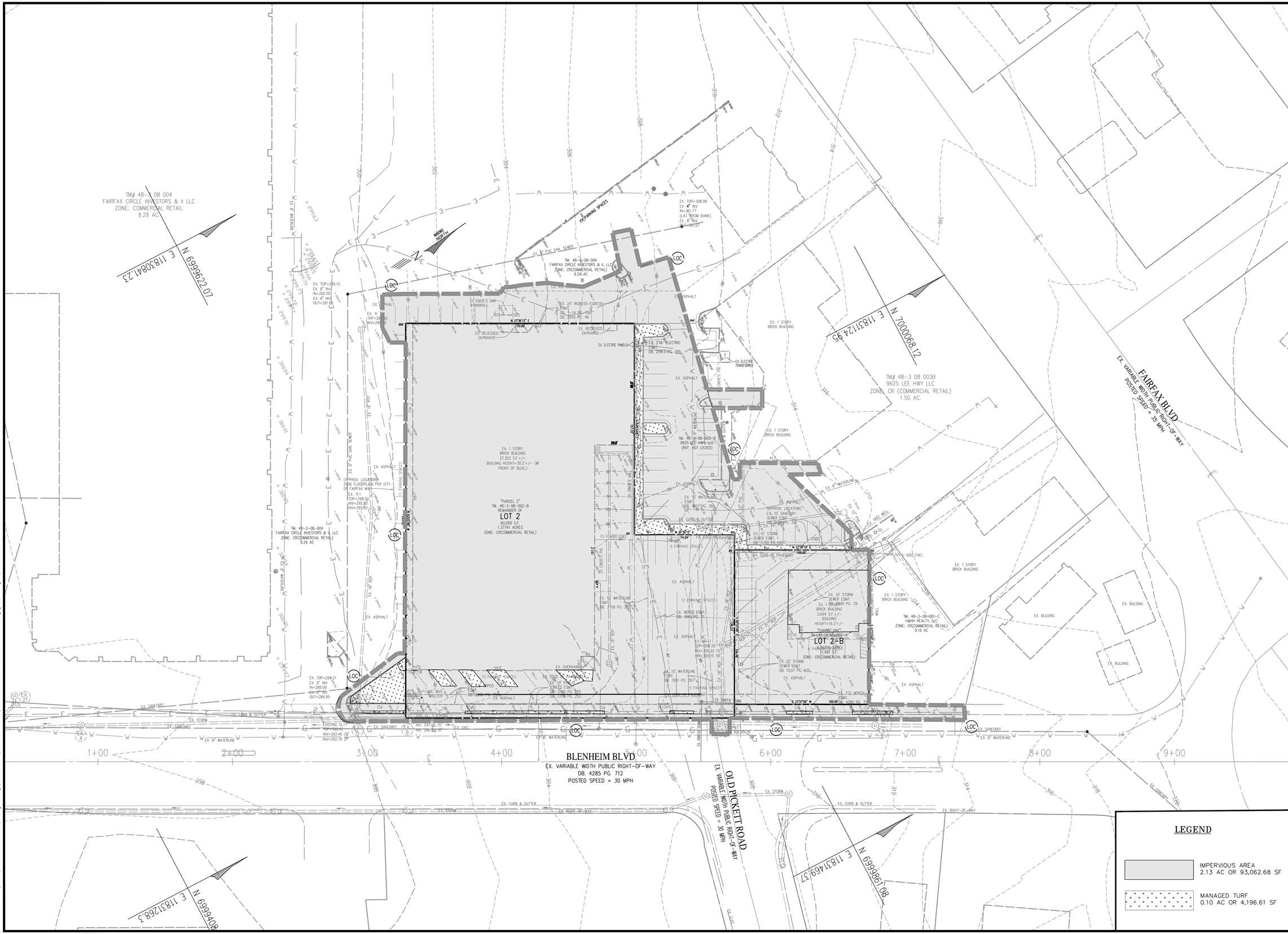
SWM POST-DEVELOPMENT COMPUTATIONS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: N/A C.I.= N/A DATE: DEC. 2022

SHEET 014 OF 026

FILE No. RZ-13123



LEGEND

IMPERVIOUS AREA
2.13 AC OR 93,062.68 SF

MANAGED TURF
0.10 AC OR 4,196.61 SF

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BMP PRE-DEVELOPMENT PLAN

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
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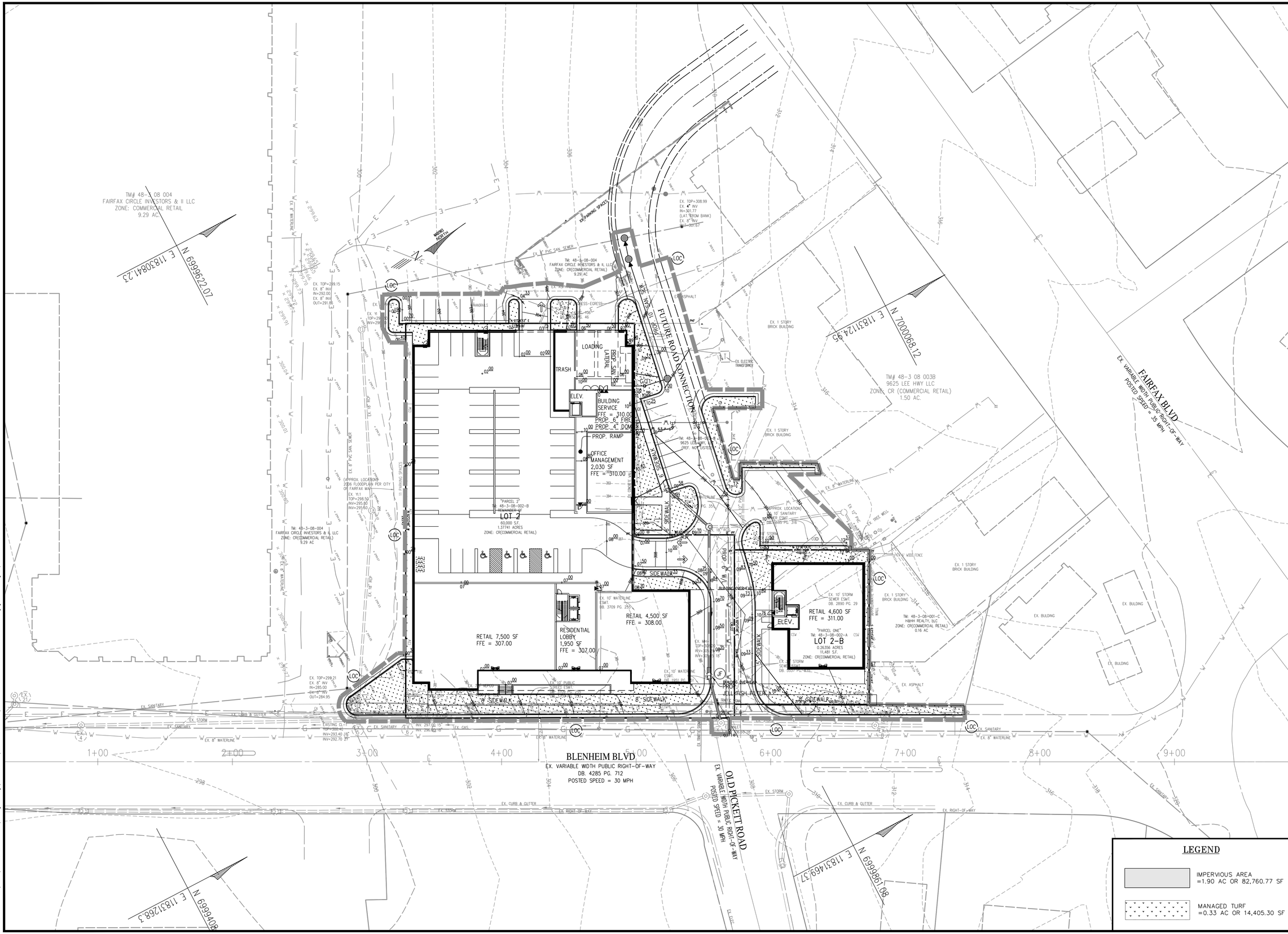

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BMP NARRATIVE

THIS APPLICATION PROPOSES TO REZONE THE EXISTING CR (COMMERCIAL RETAIL) & CG (COMMERCIAL GENERAL) PARCELS TO COMMERCIAL URBAN DISTRICT TO ALLOW FOR A MIXED USE BUILDING WITH RESIDENTIAL AND COMMERCIAL USES.

THE EXISTING SITE CURRENTLY DRAINS SOUTH THROUGH AN EXISTING STORM SYSTEM WHICH LEAVES THE SITE AT EXISTING STORM STRUCTURE ON BLENHEIM BOULEVARD AND CONTINUES DOWNSTREAM THROUGH A CLOSED CONDUIT SYSTEM. THE AFOREMENTIONED EXISTING STORM STRUCTURE IS ESTABLISHED AS "STUDY POINT" FOR THE SWM ANALYSIS.

PER THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) REDEVELOPMENT REQUIREMENTS, A BMP FACILITY SHALL PROVIDE A MINIMUM OF 20% REDUCTION IN TOTAL PHOSPHORUS RUNOFF. BMP FACILITY FOR THE SITE WILL INCLUDE, BUT IS NOT LIMITED TO A JELLYFISH FILTER. SEE SHEET 018 FOR COMPUTATIONS. THIS SHALL SATISFY THE REQUIREMENTS FOR 9VAC25-870-63.A.2a. THE PROPOSED BMP FACILITIES SHALL BE PRIVATELY MAINTAINED BY THE PROPERTY OWNER.

ALL BMP/SWM COMPUTATIONS SHOWN ON THIS APPLICATION ARE PRELIMINARY AND ARE SUBJECT TO CHANGE UPON RETRIEVAL OF NEW INFORMATION AND/OR IDENTIFICATION OF ADDITIONAL SITE CONSTRAINTS. THEREFORE, THE APPLICANT RESERVES THE RIGHT TO CHANGE AND/OR MODIFY THE PROPOSED BMP/SWM DEVICES AT THE TIME OF FINAL SITE PLAN TO MEET REQUIREMENTS.

DA= 0.55 AC
TO JELLYFISH FILTER

LEGEND

DRAINAGE DIVIDES

No.	DATE	DESCRIPTION
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BMP PLAN AND NARRATIVE
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=30'
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OF
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FILE No.
RZ-13123

Project Name:	Artena Fairfax Circle
Date:	12/12/2022
Linear Development Project?	No

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 2.23

Maximum reduction required:	*20%*
The site's net increase in impervious cover (acres) is:	*0*
Post-Development TP Load Reduction for Site (lb/yr):	*0.57*

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 forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.10	0.10
Impervious Cover (acres)				2.13	2.13
					2.23

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					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.33	0.33
Impervious Cover (acres)				1.90	1.90
Area Check	OK.	OK.	OK.	OK.	2.23

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)	0.10	0.10
Weighted Rv(turf)	0.25	0.25
% Managed Turf	4%	4%
Impervious Cover (acres)	2.13	2.13
Rv(impervious)	0.95	0.95
% Impervious	96%	96%
Total Site Area (acres)	**2.23**	**2.23**
Site Rv	**0.92**	**0.92**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.1707	0.1707
Pre-ReDevelopment Treatment Volume (cubic feet)	7,436	7,436
Pre-ReDevelopment TP Load (lb/yr)	**4.67**	**4.67**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	2.10	2.10
Baseline TP Load (lb/yr) (**0.41 lbs/acre/yr** applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*0.91*

[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 I shows load reduction requriement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)

Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.33
Weighted Rv (turf)	0.25
% Managed Turf	15%
Impervious Cover (acres)	1.90
Rv(impervious)	0.95
% Impervious	85%
Final Site Area (acres)	**2.23**
Final Post Dev Site Rv	**0.85**

Land Cover Summary-Post

Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.33
Weighted Rv (turf)	0.25
% Managed Turf	15%
ReDev. Impervious Cover (acres)	1.90
Rv(impervious)	0.95
% Impervious	85%
Total ReDev. Site Area (acres)	**2.23**
ReDev Site Rv	**0.85**

Land Cover Summary-Post

Post-Development New Impervious	
New Impervious Cover (acres)	0.00
Rv(impervious)	--

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.1573	Post-ReDevelopment Treatment Volume (acre-ft)	0.1573	Post-Development Treatment Volume (acre-ft)	--
Final Post-Development Treatment Volume (cubic feet)	6,852	Post-ReDevelopment Treatment Volume (cubic feet)	6,852	Post-Development Treatment Volume (cubic feet)	--
Final Post-Development TP Load (lb/yr)	**4.30**	Post-ReDevelopment Load (TP) (lb/yr)*	**4.30**	Post-Development TP Load (lb/yr)	--
Final Post-Development TP Load per acre (lb/acre/yr)	1.93	Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.93		
		Max. Reduction Required (Below Pre-ReDevelopment Load)	20%		
		TP Load Reduction Required for Redeveloped Area (lb/yr)	**0.57**	TP Load Reduction Required for New Impervious Area (lb/yr)	**0**

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.57

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	33.42	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	30.80

Drainage Area A

Drainage Area A Land Cover (acres)

CLEAR BMP AREAS

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.10	0.10	0.25
Impervious Cover (acres)				0.45	0.45	0.95
				Total	0.55	

Total Phosphorus Available for Removal in D.A. A (lb/yr)	1.03
Post Development Treatment Volume in D.A. A (ft^3)	1,643

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists-

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
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00	
14.b. Manufactured Treatment Device-Filtering	0	0.10	0.45	0	0	1,643	1,643	65	0.00	1.03	0.67	0.36	
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.45	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.10	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	0.57	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	1.03	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.67	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)	0.67	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	0.36	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr)	0.00

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)	0.45	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.45	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.10	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.10	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3) 6,852

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)	1.03	0.00	0.00	0.00	0.00	1.03
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.67	0.00	0.00	0.00	0.00	0.67
TP LOAD REMAINING (lb/yr)	0.36	0.00	0.00	0.00	0.00	0.36
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)	4.30
TP LOAD REDUCTION REQUIRED (lb/yr)	0.57
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.67
TP LOAD REMAINING (lb/yr):	3.63
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.1 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	30.80
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	30.80

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE 02-14-23

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COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER CLINTON C. TOCK Lic. No. 036790 02/14/2023

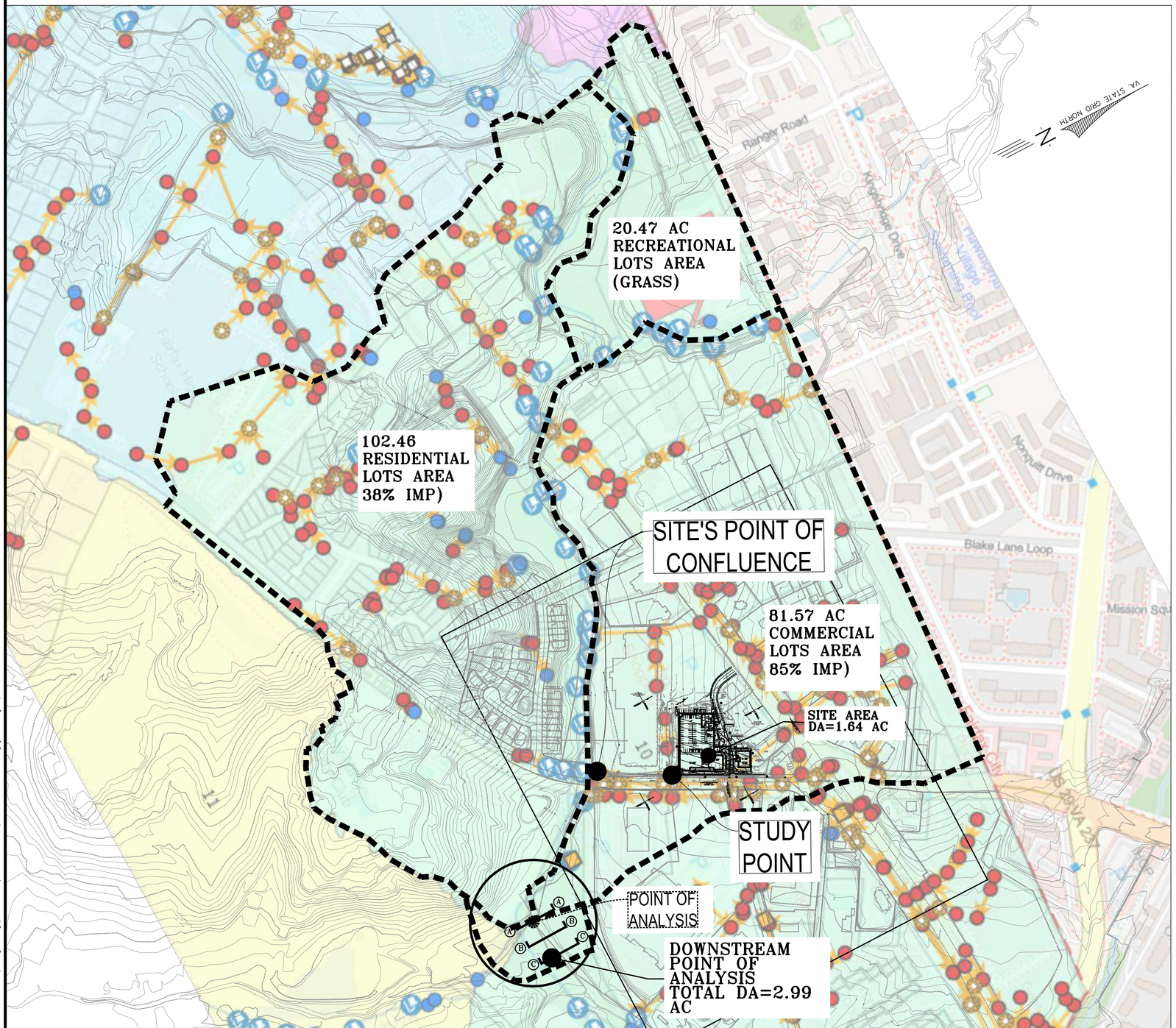
BMP PLAN AND NARRATIVE
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

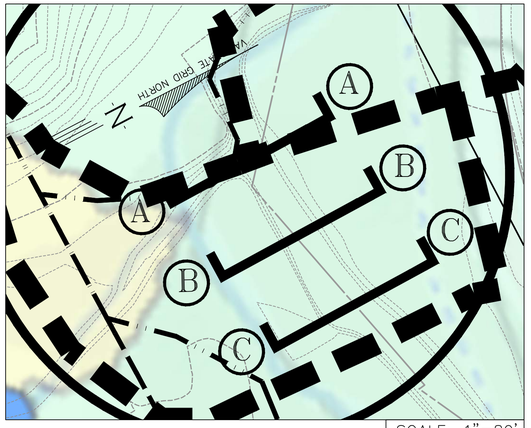
DATE: DEC. 2022
SCALE: N/A
C.I.= N/A

SHEET 018 OF 026

FILE No. RZ-13123

OUTFALL DRAINAGE MAP
SCALE: 1"=250'





SCALE: 1"=80'

OUTFALL NARRATIVE

THIS APPLICATION PROPOSES TO REZONE THE EXISTING CR (COMMERCIAL RETAIL) & CG (COMMERCIAL GENERAL) PARCELS TO COMMERCIAL URBAN DISTRICT TO ALLOW FOR A MIXED USE BUILDING WITH RESIDENTIAL AND COMMERCIAL USES.

THE EXISTING SITE CURRENTLY DRAINS SOUTHEAST THROUGH AN EXISTING STORM SYSTEM WHICH LEAVES THE SITE AT EXISTING STORM STRUCTURE ON BLENHEIM BOULEVARD AND CONTINUES DOWNSTREAM THROUGH A CLOSED CONDUIT SYSTEM. THE PROJECT PROPOSES STORM SYSTEM REQUIRED TO CONNECT TO EXISTING STORM SYSTEM. THE EXISTING SYSTEM CONTINUES DOWNSTREAM AND EVENTUALLY DRAINS INTO ACCOTINK CREEK, WHICH FALLS UNDER A MAPPED FLOODPLAIN.

ONE STUDY POINT HAS BEEN ESTABLISHED AT EXISTING STORM STRUCTURE ON BLENHEIM BOULEVARD WHERE STORMWATER RUNOFF LEAVES THE SITE. APPROXIMATELY 300' DOWNSTREAM OF THE STUDY POINT IS THE SITE'S POINT OF CONFLUENCE. APPROXIMATELY 750' DOWNSTREAM OF THE POINT OF CONFLUENCE, ADDITIONAL DRAINAGE AREA OF 102.46 ACRES OF RESIDENTIAL LOT COMBINES WITH 20.47 ACRES OF RECREATION AREA AND 81.57 ACRES OF COMMERCIAL AREA. THE DOWNSTREAM CONVERGENCE SHALL ACT AS OUR OUTFALL POINT OF ANALYSIS SINCE THE SITE'S CONTRIBUTING DRAINAGE AREA IS LESS THAN OR EQUAL TO 1.0% OF THE TOTAL WATERSHED AREA. THIS SHALL SATISFY THE LIMITS OF ANALYSIS REQUIREMENT PER 9VAC25-870-66.B.4.A. THE TOTAL AREA DRAINING TO POINT OF ANALYSIS IS 204.50 ACRES.

THREE CROSS SECTIONS HAVE BEEN PROVIDED AT MINIMAL 100 FOOT INTERVALS DOWNSTREAM OF THE POINT OF ANALYSIS. AN ADDITIONAL 2.99 ACRES ADJOINS WITH THE FURTHEST DOWNSTREAM CROSS SECTION LOCATION TOTALING 207.49 ACRES AND SHALL BE USED FOR THE ANALYSIS OF EACH CROSS SECTION AS A CONSERVATIVE MEASURE.

CHANNEL PROTECTION:
IT HAS BEEN VERIFIED THAT THE STORMWATER CONVEYANCE SYSTEM CONVEYS THE POSTDEVELOPMENT PEAK FLOW RATE FROM THE TWO-YEAR 24-HOUR STORM EVENT. IN ADDITION, PEAK DISCHARGE REQUIREMENTS FOR CONCENTRATED STORMWATER FLOW TO NATURAL STORMWATER CONVEYANCE SYSTEM HAS BEEN MET WITH THE ENERGY BALANCE EQUATION. THIS COMPLIES WITH THE 9VAC25-870-66.B.1. PLEASE SEE SHEET 019 FOR OUTFALL COMPUTATIONS AND SHEET 014 FOR ONE-YEAR ENERGY BALANCE COMPUTATIONS FOR SITE'S STUDY POINT.

FLOOD PROTECTION:

FURTHERMORE, COMPLIANCE WITH FLOOD PROTECTION IS BASED ON 9VAC25-870-66.C.3.C, WHERE THE STORMWATER CONVEYANCE SYSTEM ENTERS A MAPPED FLOODPLAIN OR OTHER FLOOD-PRONE AREA. IT HAS BEEN VERIFIED THAT STORMWATER CONVEYANCE SYSTEM CONFINES THE POSTDEVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT BASED ON 9VAC25-870-66.C.1. PLEASE SEE SHEET 019 FOR COMPUTATIONS.

ADDITIONAL CALCULATIONS WILL BE PROVIDED AT TIME OF FINAL ENGINEERING TO DEMONSTRATE COMPLIANCE WITH ALL REQUIRED REGULATIONS. NOTE THAT THE OUTFALL LOCATION, AND EXISTING STORM SEWER CONNECTIONS SHOWN WITH THIS APPLICATION ARE CONCEPTUAL AND ARE SUBJECT TO CHANGE BASED ON FINAL ENGINEERING IN ACCORDANCE WITH THE CITY OF FAIRFAX'S ZONING ORDINANCE.

LEGEND

DRAINAGE DIVIDES

No.	DATE	DESCRIPTION
		REVISIONS

PLAN DATE
02-14-23

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COMMONWEALTH OF VIRGINIA
CLAYTON C. TOCK
Lic. No. 036790
02/14/2023
PROFESSIONAL ENGINEER

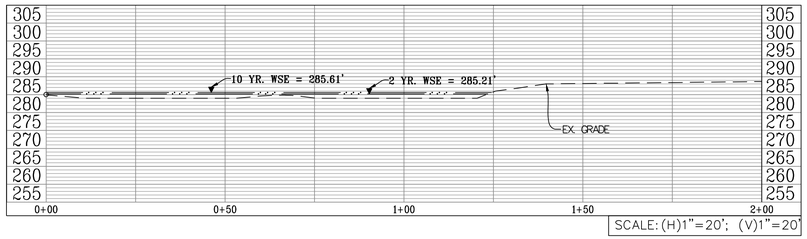
OUTFALL ANALYSIS
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: AS NOTED
C.I.= 1'
DATE: DEC. 2022

SHEET
019
OF
026

FILE No.
RZ-13123

PROFILE CROSS-SECTION A-A



POST DEVELOPMENT CONDITIONS:

CROSS SECTION A-A (SEE SHEET 019 FOR CHANNEL SECTION LOCATION)

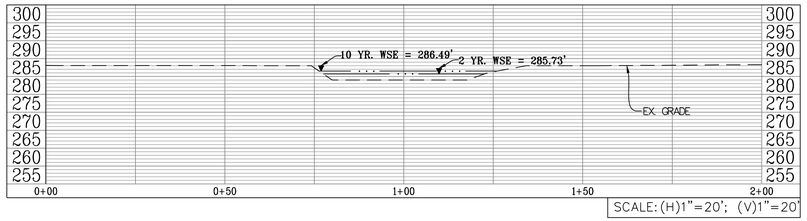
DA = 207.49 AC.
Q2 = 265.95 CFS
Q10 = 499.37 CFS
CHANNEL SLOPE= 0.003
n' = 0.030 STREAM CHANNEL

TIME OF CONCENTRATION: OFFSITE DRAINAGE AREA

Area (ac)	CN	Description
94.210	87	1/4 acre lots, 38% imp, HSG D
20.470	80	>75% Grass cover, Good, HSG D
79.930	95	Urban commercial, 85% imp, HSG D
2.990	80	>75% Grass cover, Good, HSG D
8.250	75	1/4 acre lots, 38% imp, HSG B
205.850	89	Weighted Average
98.975		48.08% Pervious Area
106.875		51.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	300	0.0200	0.21		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.05"
5.8	1,000	0.0200	2.87		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
19.1	2,780	0.0050	2.43	9.72	**Channel Flow, Channel Flow** Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.033 Stream, clean & straight
49.1	4,080	Total			

PROFILE CROSS-SECTION B-B



POST DEVELOPMENT CONDITIONS:

CROSS SECTION B-B (SEE SHEET 019 FOR CHANNEL SECTION LOCATION)

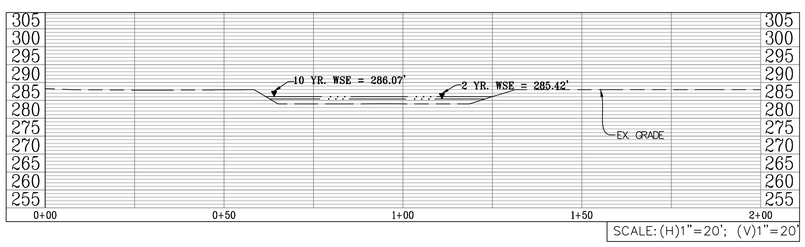
DA = 207.49 AC.
Q2 = 265.95 CFS
Q10 = 499.37 CFS
CHANNEL SLOPE= 0.003
n' = 0.030 STREAM CHANNEL

TIME OF CONCENTRATION: PRE-DEVELOPMENT ONSITE AREA

Area (ac)	CN	Description
1.530	98	Paved parking, HSG D
0.110	80	>75% Grass cover, Good, HSG D
1.640	97	Weighted Average
0.110		6.71% Pervious Area
1.530		93.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	579	0.0200	8.41	14.86	**Pipe Channel, Pipe Channel** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, straight & clean
2.5	300	0.0300	1.97		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.05"
3.6	879	Total			

PROFILE CROSS-SECTION C-C



POST DEVELOPMENT CONDITIONS:

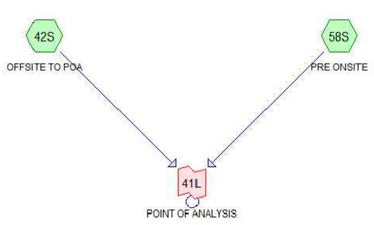
CROSS SECTION C-C (SEE SHEET 019 FOR CHANNEL SECTION LOCATION)

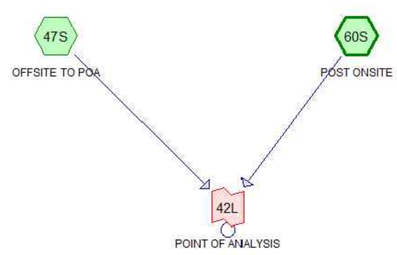
DA = 207.49 AC.
Q2 = 265.95 CFS
Q10 = 499.37 CFS
CHANNEL SLOPE= 0.003
n' = 0.030 STREAM CHANNEL

TIME OF CONCENTRATION: POST-DEVELOPMENT ONSITE AREA

Area (ac)	CN	Description
1.300	98	Paved parking, HSG D
0.340	80	>75% Grass cover, Good, HSG D
1.640	94	Weighted Average
0.340		20.73% Pervious Area
1.300		79.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.05"
0.6	290	0.0200	7.44	9.14	**Pipe Channel, Pipe Channel** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, straight & clean
1.2	200	0.0200	2.87		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
11.8	590	Total			





No.	DATE	DESCRIPTION
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PLAN DATE
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CLAYTON C. TOCK
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02/14/2023
PROFESSIONAL ENGINEER

OUTFALL ANALYSIS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

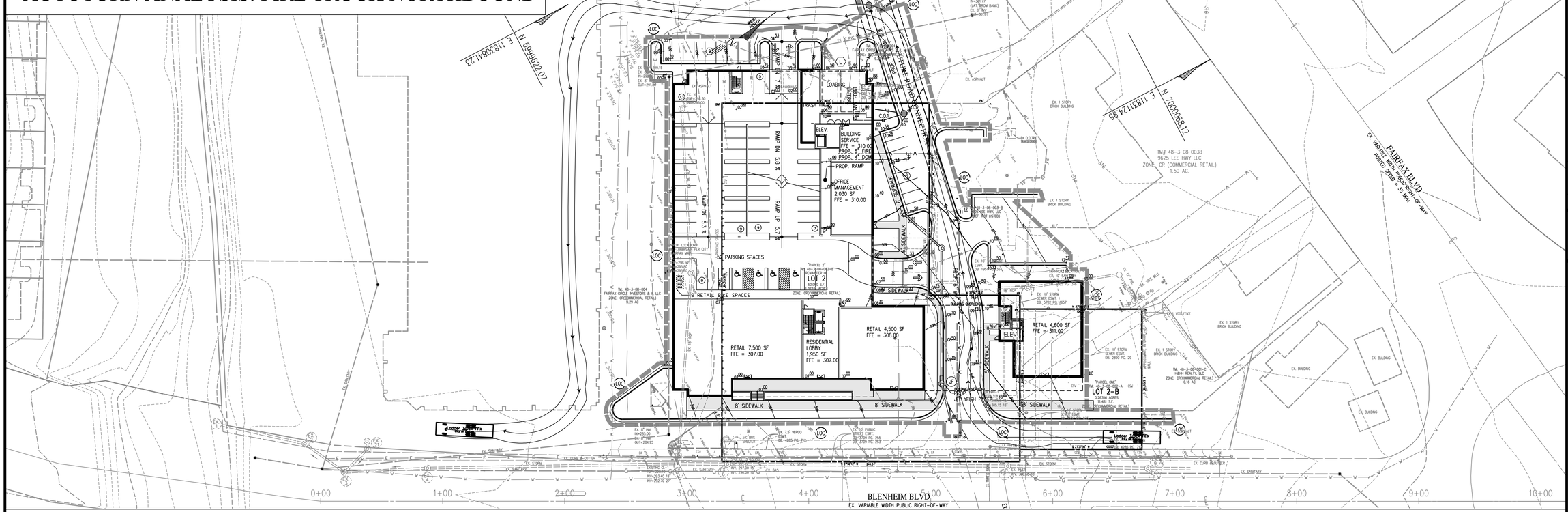
CITY OF FAIRFAX
VIRGINIA

SCALE: AS NOTED
C.I.= N/A
DATE: DEC. 2022

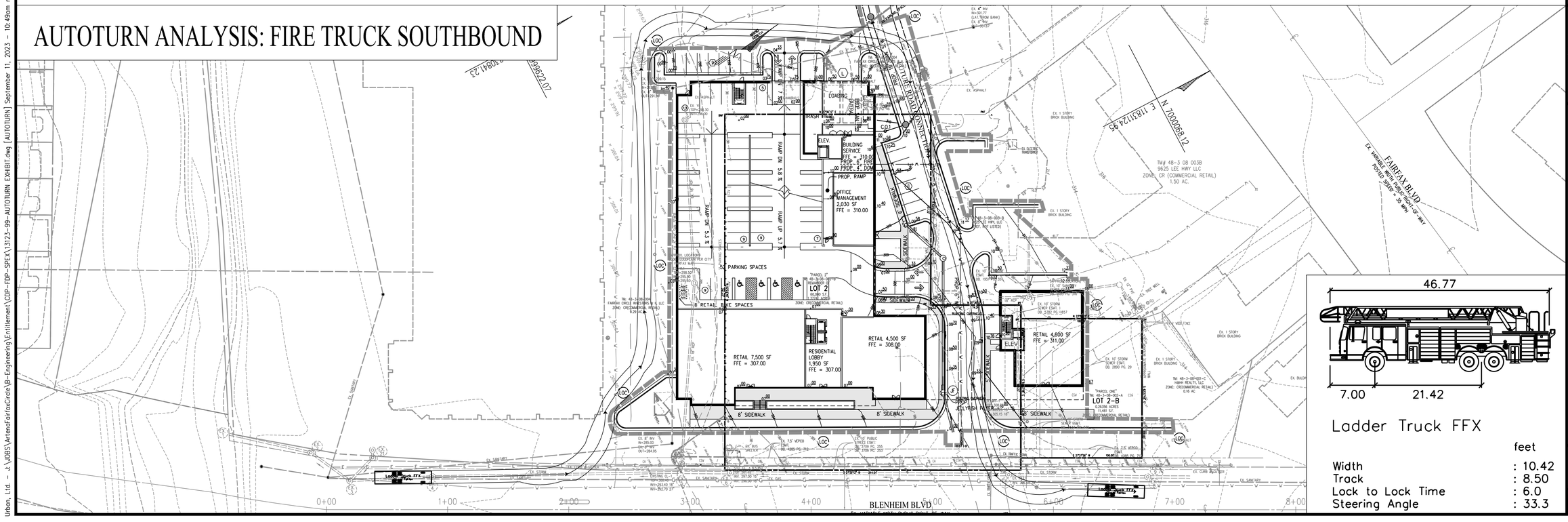
SHEET
020
OF
026

FILE No.
RZ-13123

AUTOTURN ANALYSIS: FIRE TRUCK NORTHBOUND



AUTOTURN ANALYSIS: FIRE TRUCK SOUTHBOUND



Ladder Truck FFX

	feet
Width	: 10.42
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

No.	DATE	DESCRIPTION

REVISIONS

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02-14-23

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AUTOTURN ANALYSIS
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

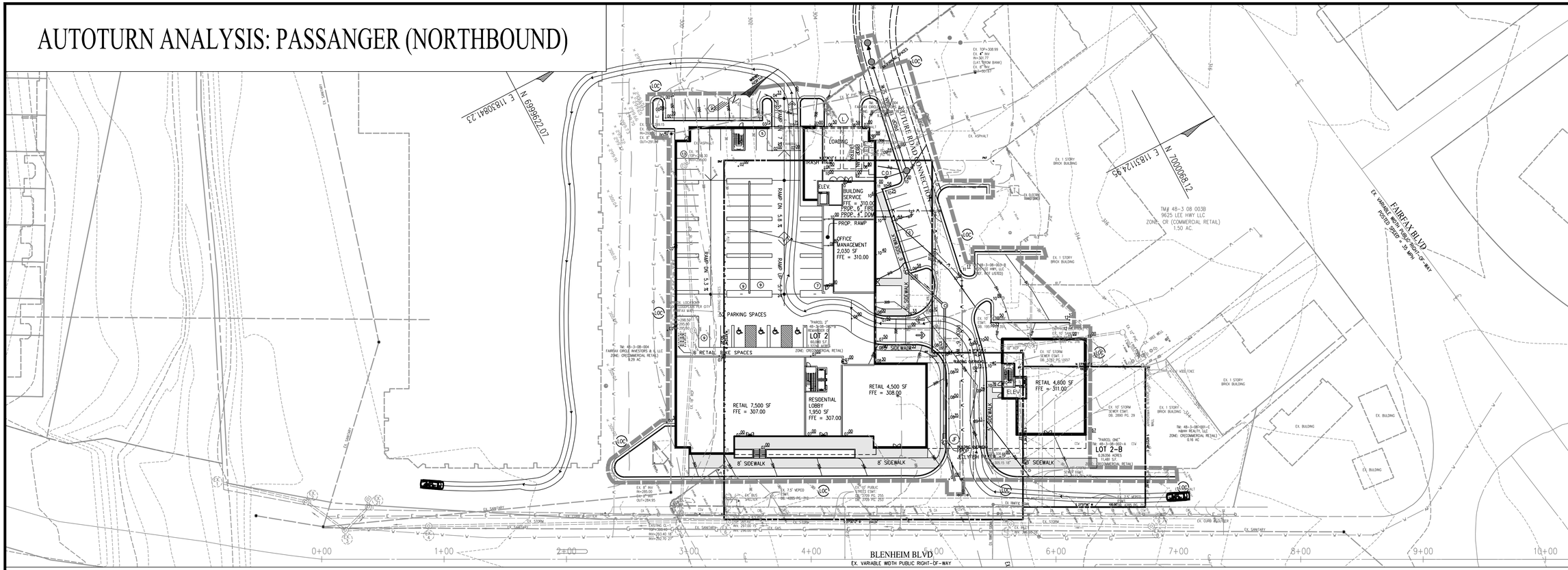
SCALE: 1"=40'
C.I.=1'
DATE: DEC. 2022

SHEET
021
OF
026

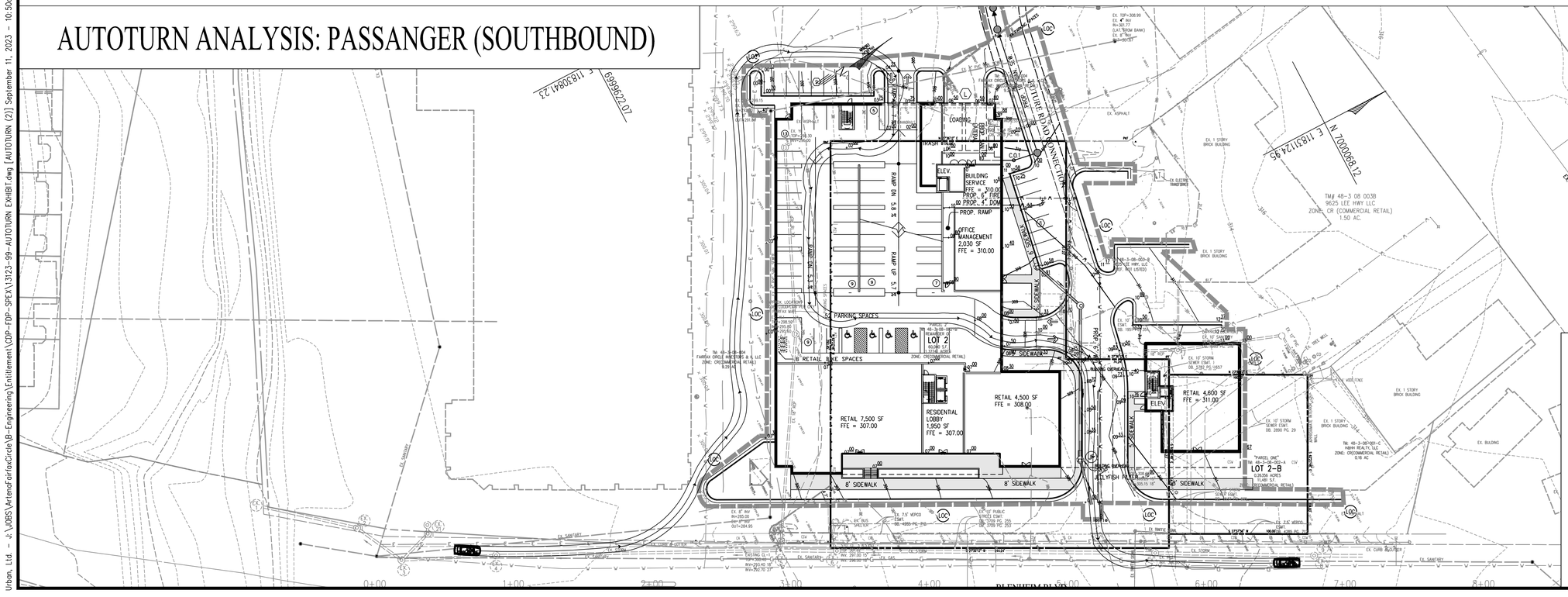
FILE No.
RZ-13123

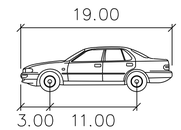
Urban, Ltd. – J:\JOBS\ArtenaFairfaxCircle\B-Engineering\Entitlement\CDP-FDP-SPEX\13123-99-AUTOTURN EXHIBIT.dwg [AUTOTURN] September 11, 2023 – 10:49am mwalthall

AUTOTURN ANALYSIS: PASSANGER (NORTHBOUND)



AUTOTURN ANALYSIS: PASSANGER (SOUTHBOUND)





PM

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

No.	DATE	DESCRIPTION

REVISIONS

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02-14-23

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AUTOTURN ANALYSIS
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=40'
C.I.=1'
DATE: DEC. 2022

SHEET
022
OF
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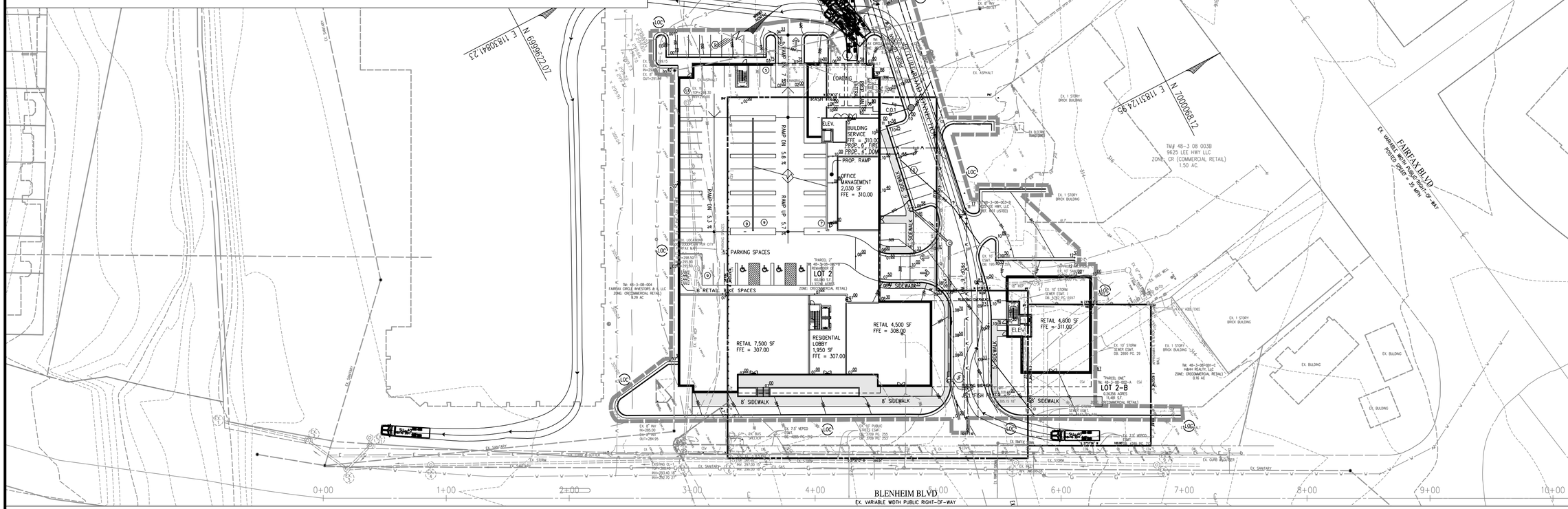
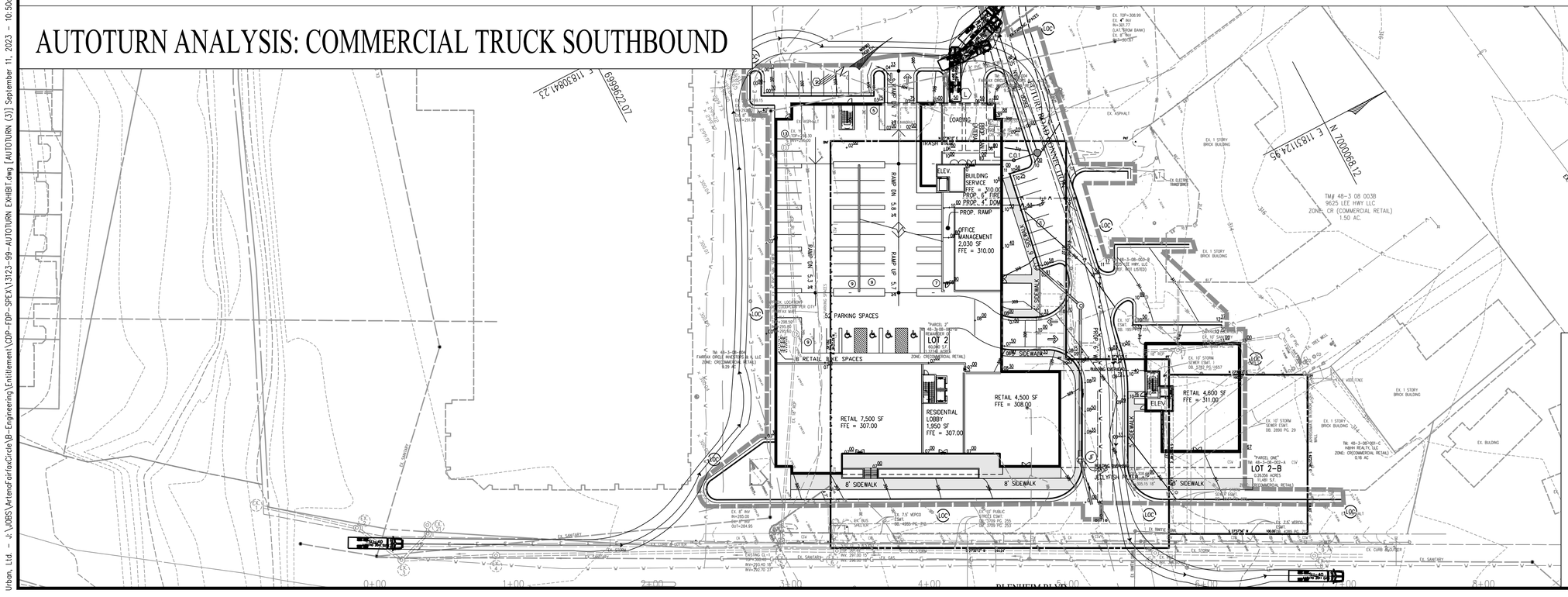
FILE No.
RZ-13123

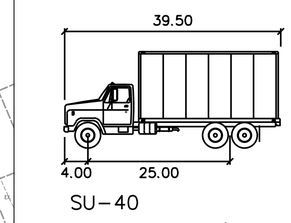
Urban, Ltd. – J:\JOBS\ArterialFairfaxCircle\B-Engineering\Entitlement\CDP-FDP-SPEX\13123-99-AUTOTURN EXHIBIT.dwg [AUTOTURN (2)] September 11, 2023 – 10:50am mwalthall

AUTOTURN ANALYSIS: COMMERCIAL TRUCK NORTHBOUND



AUTOTURN ANALYSIS: COMMERCIAL TRUCK SOUTHBOUND





SU-40

		feet
Width	:	8.00
Track	:	8.00
Lock to Lock Time	:	6.0
Steering Angle	:	31.8

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE
02-14-23

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AUTOTURN ANALYSIS
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=40'
C1.=1'
DATE: DEC. 2022

SHEET
023
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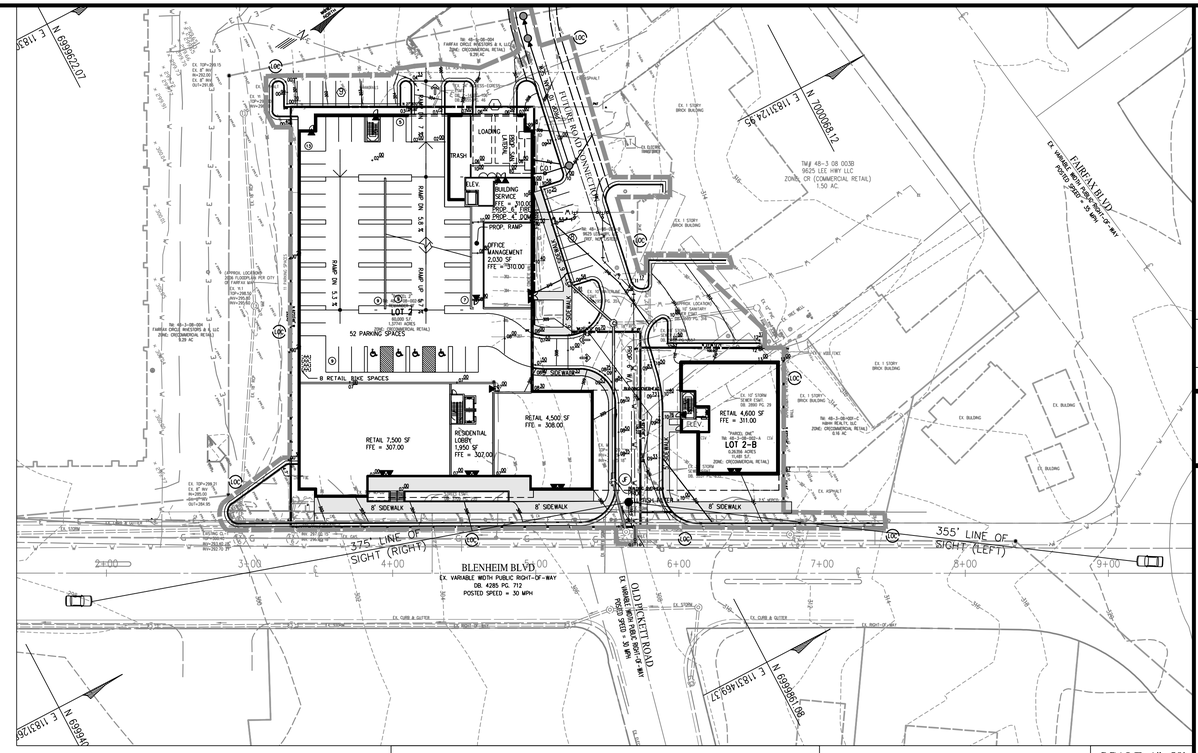
FILE No.
RZ-13123

Urban, Ltd. – J:\JOBS\ArterraFairfaxCircle\B-Engineering\Entitlement\CDP-FDP-SPEX\13123-99-AUTOTURN EXHIBIT.dwg [AUTOTURN (3)] September 11, 2023 – 10:50am mwalthall

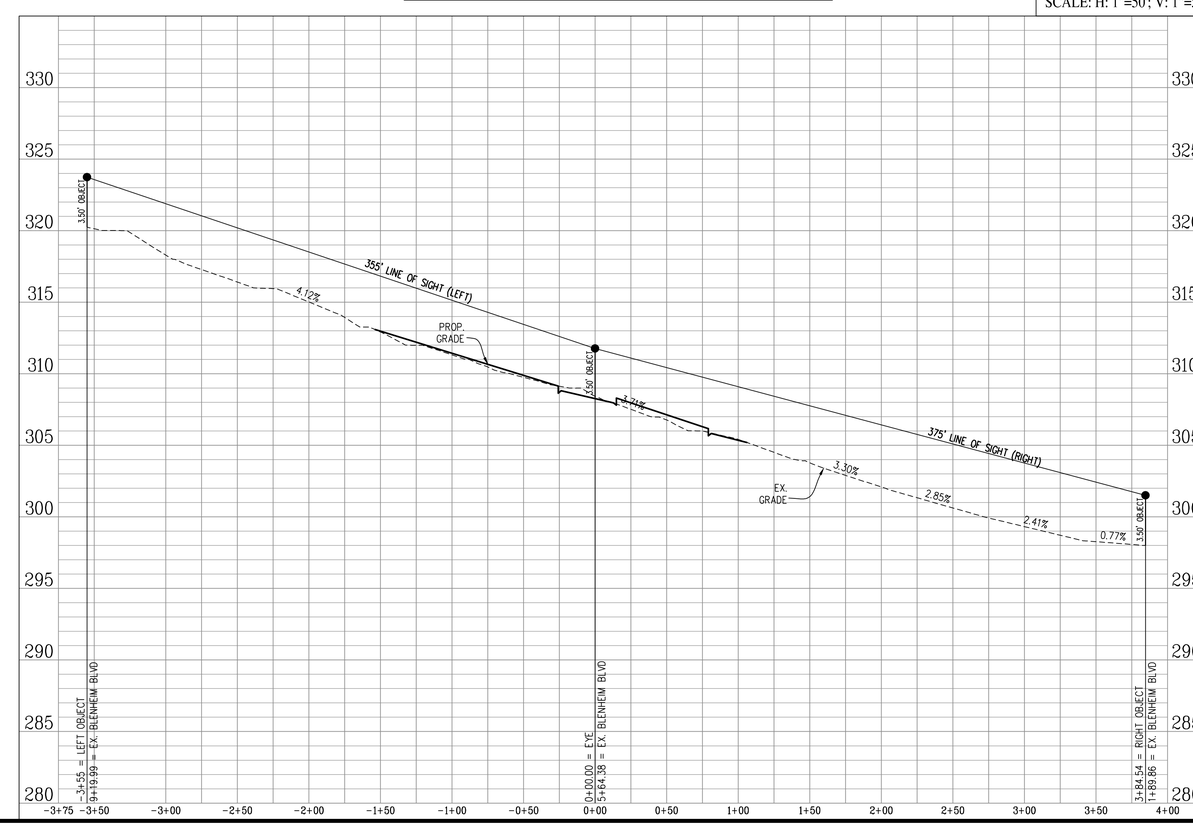


SCALE: 1"=50'

MAIN ENTRANCE ON BLENHEIM BOULEVARD

POSTED/DESIGN SPEED = 30 MPH

SCALE: H: 1"=50'; V: 1"=5'



No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE
02-14-23

Urban, Ltd.
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COMMONWEALTH OF VIRGINIA
CLIFTON C. TOCK
Lic. No. 036790
02/14/2023
PROFESSIONAL ENGINEER

SIGHT DISTANCE PROFILES

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

DATE: DEC. 2022

SCALE: AS NOTED

C.I.= 1'

SHEET
024
OF
026

FILE No.
RZ-13123

EXISTING VEGETATION SUMMARY

	Cover Type	Primary Species	Successional Stage	Condition	Acreage	Cover Type Description
A	Landscaped Tree Canopy	Callery Pear (*Pyrus calleryana*), Leyland Cypress (*Cupressus x leylandii*), Crape Myrtle (Lagerstroemia indica), Purpleleaf Plum (Prunus cerasifera), and Arborvitae (Thuja occidentalis)	n.a.	poor-fair	0.04 ac. or 1,538 sf	This cover type consists of a maintained landscape areas with overstory species ranging in size from 0" to 00" dbh and understory species ranging in size from 1" to 00" dbh. The groundcover within this cover type consists primarily of maintained deciduous and evergreen shrubs.
B	Developed Land	n.a.	n.a.	n.a.	1.60 ac. or 69,943 sf	This cover type consists of buildings, asphalt parking lots, and concrete sidewalks.
				total site area (ac):	1.64 ac.	
				total site area (sf) :	71,481 sf	

*DBH = Diameter at Breast Height (measured 4.5 feet above the ground)

NOTE: Existing vegetation data provided through field study on February 17th, 2023 by Urban, Ltd.'s Project Arborist (John Lightle, ISA Lic. #MA-5174A).

No.	DATE	DESCRIPTION

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COMMONWEALTH OF VIRGINIA
John Lightle
Lic. No. 1957
02/14/2023
ARCHITECT

EXISTING VEGETATION MAP

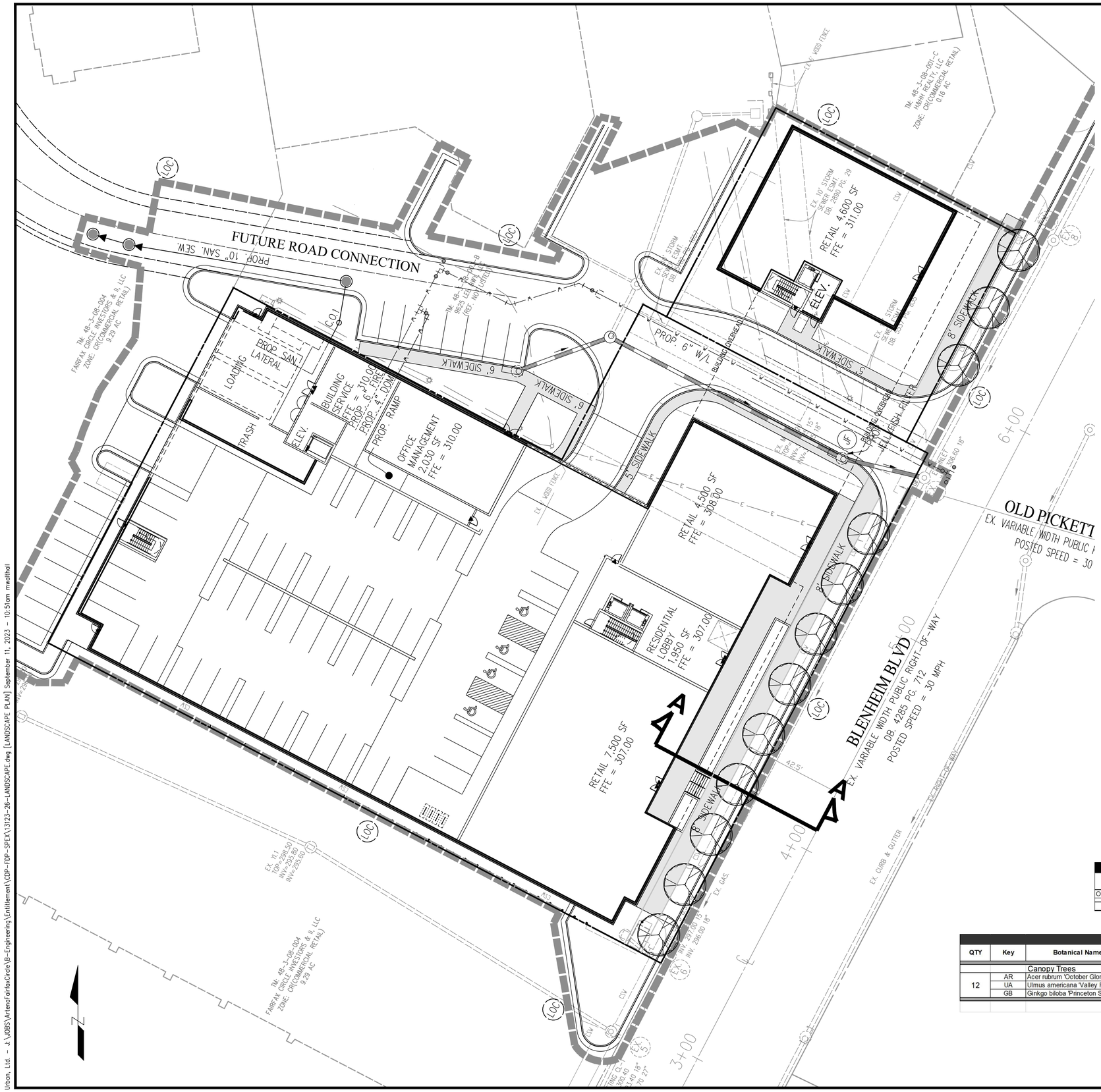
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"=20'
C.I.= 1'
DATE: DEC. 2022

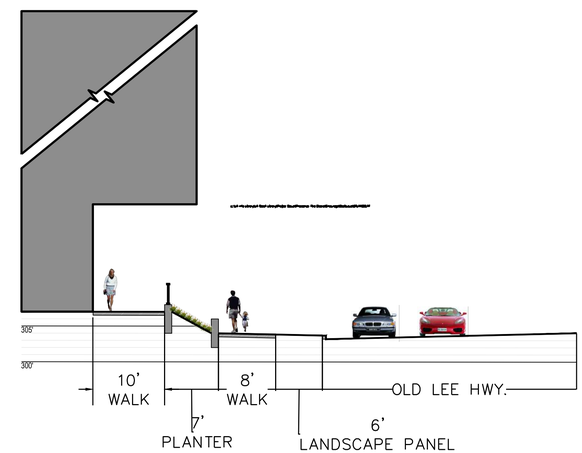
SHEET
025
OF
026

FILE No.
RZ-13123



LEGEND

LARGE CANOPY TREES WITHIN RIGHT-OF-WAY (NO CANOPY CREDIT TAKEN)



(A) TYPICAL STREETSCAPE SECTION

SCALE: 1"=10'

10-YEAR TREE CANOPY REQUIREMENT CALCULATIONS		
Gross Site Area (s.f.)		71,481
Existing Zone: [CR]	Use: [Commercial Retail]	
Proposed Zone: [CG]	Use: [Mixed Use]	
Tree Canopy Required (s.f.)	10%	7,148
10-YEAR TREE CANOPY PROVIDED		
Total Existing Canopy Area Provided Through Tree Preservation (s.f.)		0
Total Proposed Canopy Area (s.f.)		0
Total Tree Canopy Provided (s.f.) **		0

**Note: See Special Exception Modification Request on Sheet _.

STREET TREE CALCULATIONS				
Steet Name	Requirements	Linear Feet Along Street	Street Trees Required	Street Trees Provided
Old Lee Highway	Street Tree Required (1 Tree per 40 l.f.)	458	12	12
			Total Street Trees Provided (s.f.)	12

PLANT SCHEDULE								
QTY	Key	Botanical Name	Common Name	Size	Type	Remarks	10 YR CANOPY COVERAGE	Total Canopy Coverage (SF)
		Canopy Trees						
12	AR	Acer rubrum 'October Glory'	October Glory Red Maple	3.5" Cal.	B & B	Uniform branching pattern	0 Square Feet (OFFSITE)	0
	UA	Ulmus americana 'Valley Forge'	Valley Forge Elm	3.5" Cal.	B & B	Uniform branching pattern		
	GB	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Ginkgo	3.5" Cal.	B & B	Uniform branching pattern		
							TOTAL:	0

No.	DATE	DESCRIPTION
		REVISIONS

PLAN DATE 02-14-23

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COMMONWEALTH OF VIRGINIA
John Lightle
Lic. No. 19567
LANDSCAPE ARCHITECT

LANDSCAPE PLAN

CIRCLE GATEWAY MASTER DEVELOPMENT PLAN

CITY OF FAIRFAX
VIRGINIA

SCALE: 1"= 20'
C.I.= N/A
DATE: DEC. 2022

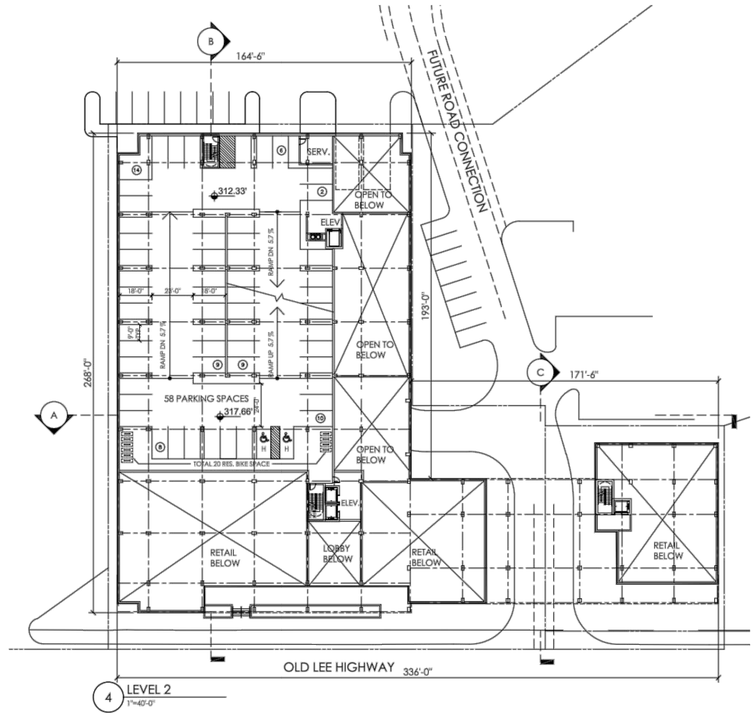
SHEET 026 OF 026

FILE No. RZ-13123

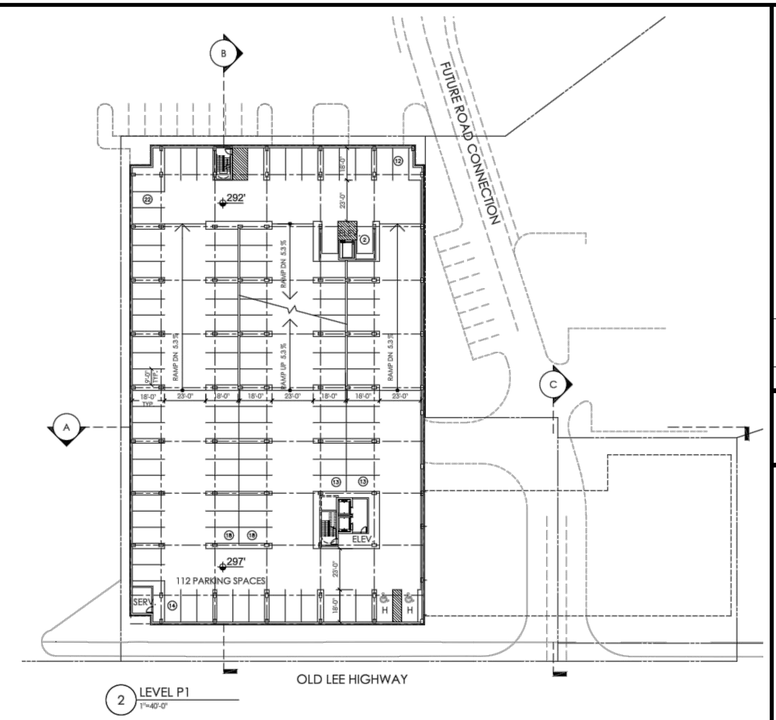
NOTE:
INTERIOR LAYOUTS AND EXTERIOR FEATURES PRESENTED ON THIS SHEET ARE CONCEPTUAL AND SUBJECT TO REVISION AS LEASING AND UNIT MIX CONFIGURATIONS ARE FURTHER DEVELOPED.

PARKING PROVIDED

		ACCESSIBLE PARKING SPACES (INCLUDED IN THE PARKING PROVIDED)		
LEVELS	SPACES	HC	VAN	TOTAL HC
P2 - 287'	116	2		2
P1 - 297'	112	2		2
L1 - 307'	52	2	2	4
L2 - 317.66'	58	2		2
L3 - 328.33'	125	2		2
TOTAL	463	10	2	12

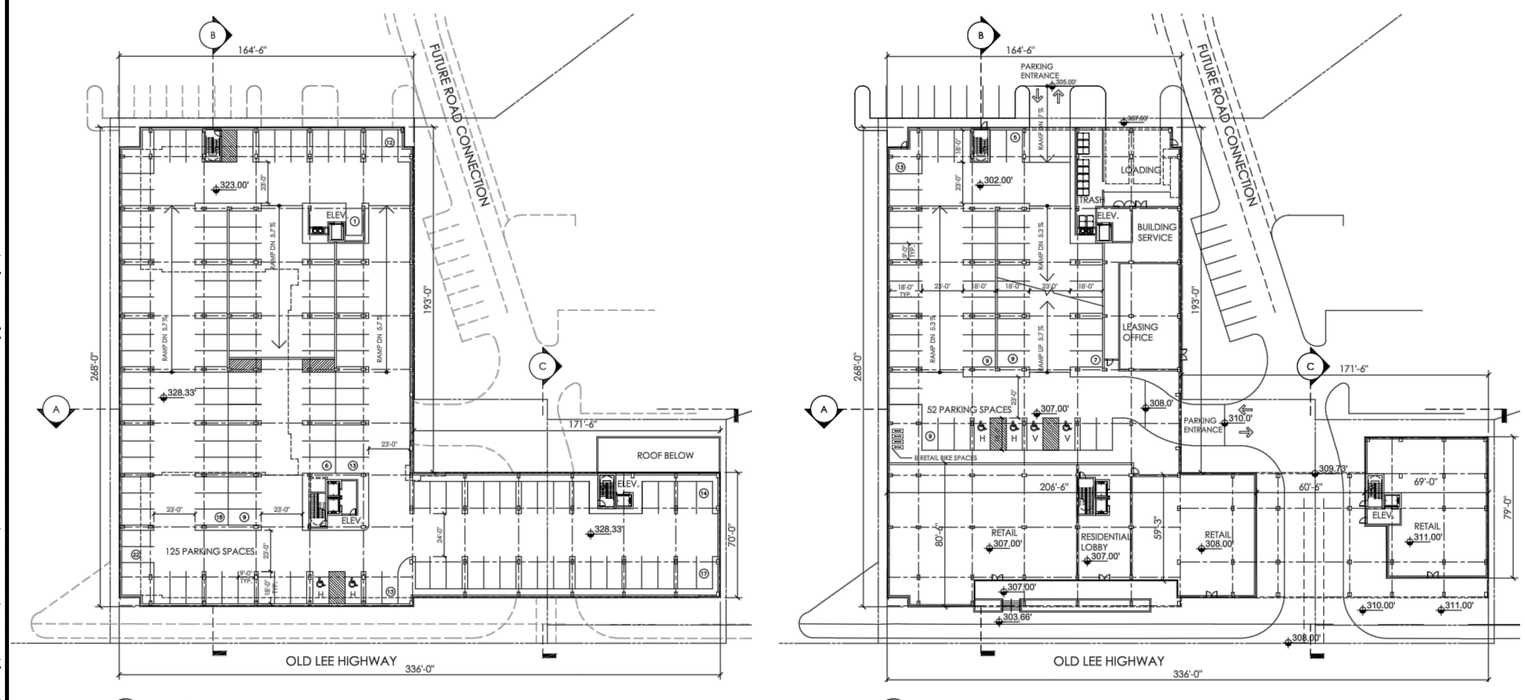


4 LEVEL 2
1"=40'-0"



2 LEVEL P1
1"=40'-0"

5 LEVEL 3
1"=40'-0"



3 LEVEL 1
1"=40'-0"

1 LEVEL P2
1"=40'-0"

Circle Gateway, City of Fairfax, VA

CONCEPTUAL FLOOR PLANS

A1

dcs DESIGN — DAVIS CARTER SCOTT

0 20' 40' 80'
1" = 40'

1/12/23

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE: 02-14-23

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COMMONWEALTH OF VIRGINIA
CLAYTON C. TOCK
Lic. No. 036790
02/14/2023
BUSINESS PROFESSIONAL

CONCEPTUAL FLOOR PLANS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

DATE: DEC. 2022

SCALE: AS SHOWN

C.I.= N/A

SHEET
A1
OF
026

FILE No.
RZ-13123

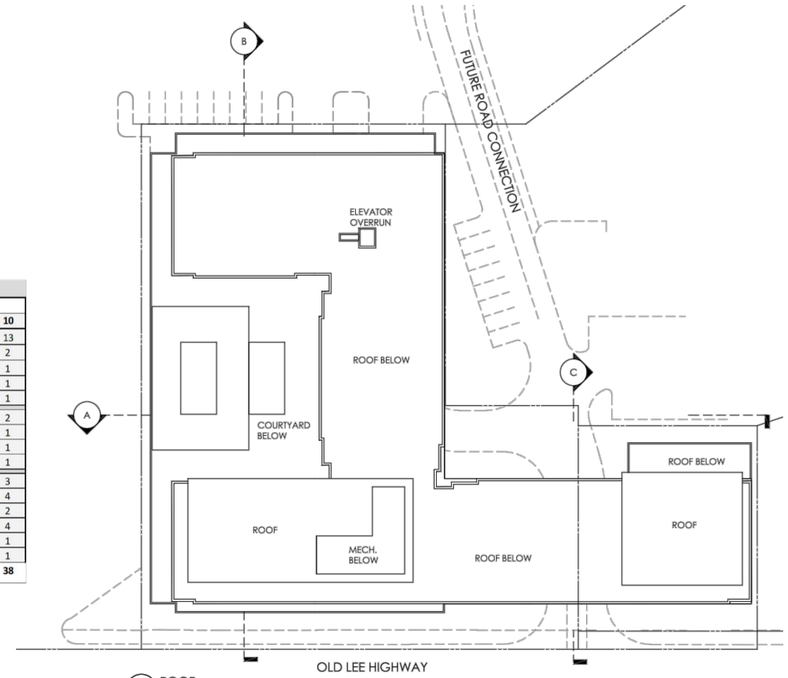
NOTE:
INTERIOR LAYOUTS AND EXTERIOR FEATURES PRESENTED ON THIS SHEET ARE CONCEPTUAL AND SUBJECT TO REVISION AS LEASING AND UNIT MIX CONFIGURATIONS ARE FURTHER DEVELOPED.

UNITS SUMMARY

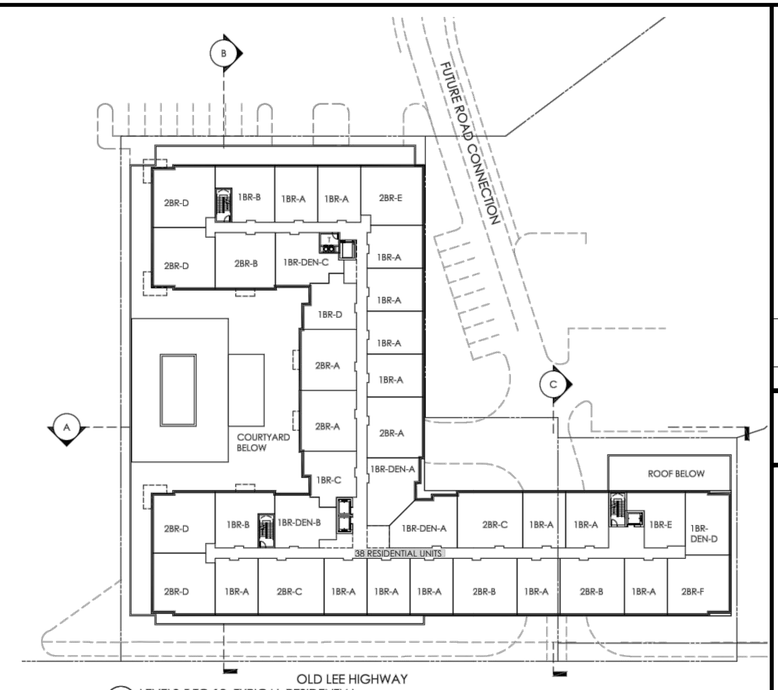
UNIT TYPE	# of Units	%
1 BED	124	47.51%
1 BED - DEN	34	13.03%
2 BED	103	39.46%
	261	100.00%

UNIT MATRIX

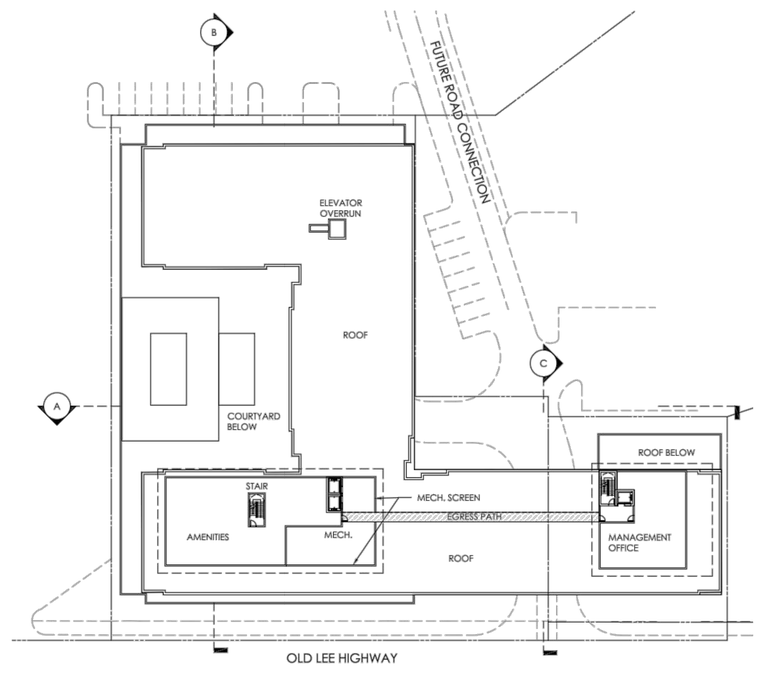
Unit Name / Type		UNIT DESIGN			LEVELS												
		Total Units	Percent		P1	P2	L1	L2	L3	L4	L5	L6	L7	L8	L9	10
1BR-A	1 Bed	93	35.63%	47.51%	0	0	0	0	0	15	13	13	13	13	13	13
1BR-B		13	4.98%		0	0	0	0	0	1	2	2	2	2	2	2
1BR-C		6	2.30%		0	0	0	0	0	0	1	1	1	1	1	1
1BR-D		6	2.30%		0	0	0	0	0	0	1	1	1	1	1	1
1BR-E		6	2.30%		0	0	0	0	0	1	1	1	1	1	1	1
1BR-DEN-A	1 Bed-Den	14	5.36%	13.03%	0	0	0	0	0	2	2	2	2	2	2	2
1BR-DEN-B		6	2.30%		0	0	0	0	0	0	1	1	1	1	1	1
1BR-DEN-C		7	2.68%		0	0	0	0	0	1	1	1	1	1	1	1
1BR-DEN-D		7	2.68%		0	0	0	0	0	1	1	1	1	1	1	1
2BR-A	2 Bed	19	7.28%	39.46%	0	0	0	0	0	1	3	3	3	3	3	3
2BR-B		28	10.73%		0	0	0	0	0	4	4	4	4	4	4	4
2BR-C		14	5.36%		0	0	0	0	0	2	2	2	2	2	2	2
2BR-D		28	10.73%		0	0	0	0	0	4	4	4	4	4	4	4
2BR-E		7	2.68%		0	0	0	0	0	1	1	1	1	1	1	1
2BR-F		7	2.68%		0	0	0	0	0	1	1	1	1	1	1	1
	TOTAL	261	100.00%	100.00%	0	0	0	0	0	34	38	38	38	38	38	38



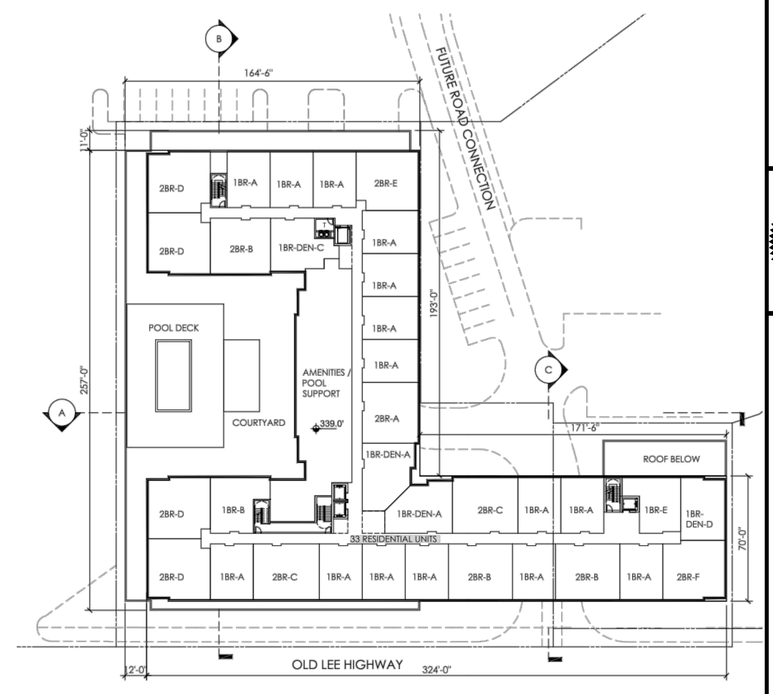
4 ROOF
1"=40'-0"



2 LEVELS 5 TO 10 -TYPICAL RESIDENTIAL
1"=40'-0"



3 ROOFTOP AMENITIES / MECHANICAL
1"=40'-0"



1 LEVEL 4
1"=40'-0"

Circle Gateway, City of Fairfax, VA

CONCEPTUAL FLOOR PLANS A2

dcs DESIGN — DAVIS CARTER SCOTT ltd

0 20' 40' 80'
1" = 40'

1/12/23

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE 02-14-23

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CLAYTON C. TOCK
Lic. No. 036790
02/14/2023
PROFESSIONAL ENGINEER

CONCEPTUAL FLOOR PLANS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

DATE: DEC. 2022

SCALE: AS SHOWN

C.I.= N/A

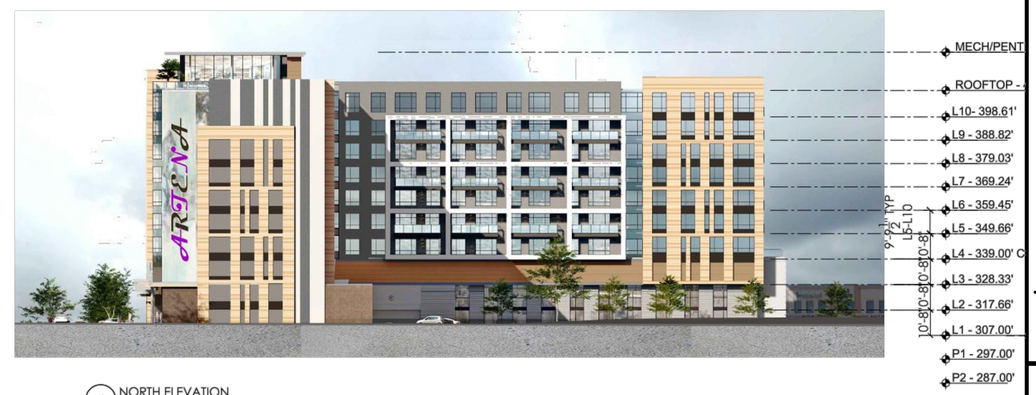
SHEET A2 OF 026

FILE No. RZ-13123

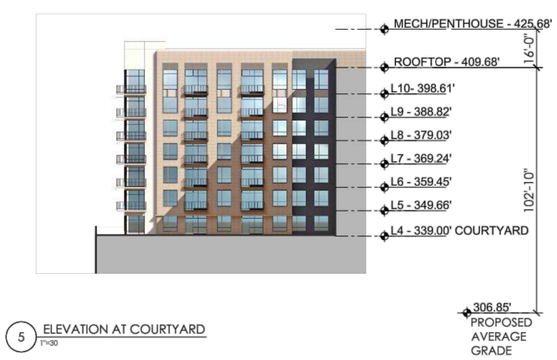
1 EAST ELEVATION
1"=30'

2 SOUTH ELEVATION
1"=30'

3 WEST ELEVATION
1"=30

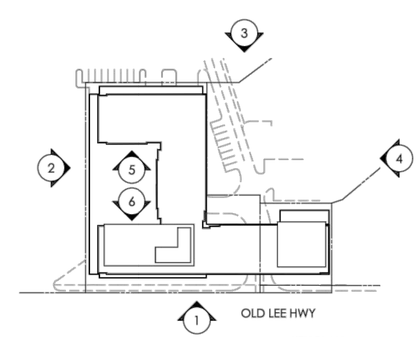


4 NORTH ELEVATION
1"=30'



5 ELEVATION AT COURTYARD
1"=30

6 ELEVATION AT COURTYARD
1"=30



KEY PLAN

NOTE: ELEVATIONS ON THIS SHEET ARE ILLUSTRATIVE IN NATURE AND ARE INTENDED TO DEMONSTRATE THE HEIGHT AND GENERAL ARCHITECTURAL CHARACTER OF THE PROPOSED BUILDING. FINAL ARCHITECTURAL DETAILS AND LANDSCAPING ARE SUBJECT TO CONFORMANCE WITH THE CERTIFICATE OF APPROPRIATENESS TO BE SUBMITTED UNDER SEPARATE COVER.

Circle Gateway, City of Fairfax, VA

CONCEPTUAL ELEVATIONS A3

DAVIS CARTER SCOTT Ltd
DESIGN

0 30' 60'
1" = 30'

1/12/23

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE
02-14-23

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CONCEPTUAL ELEVATIONS
CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

SCALE: AS SHOWN
C.I.= N/A
DATE: DEC. 2022

SHEET
A3
OF
026

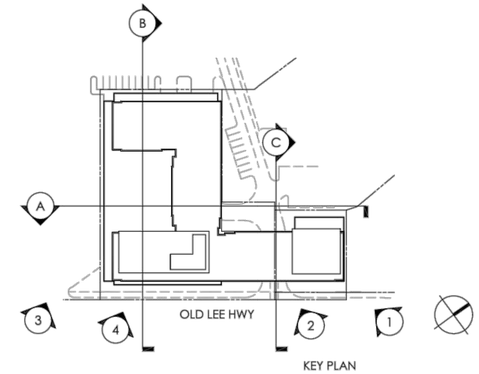
FILE No.
RZ-13123

1 VIEW FROM NORTH - EAST
NTS

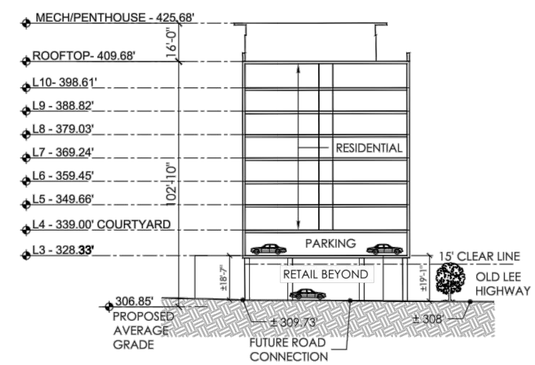
2 VIEW FROM EAST
NTS

3 VIEW FROM SOUTH - EAST
NTS

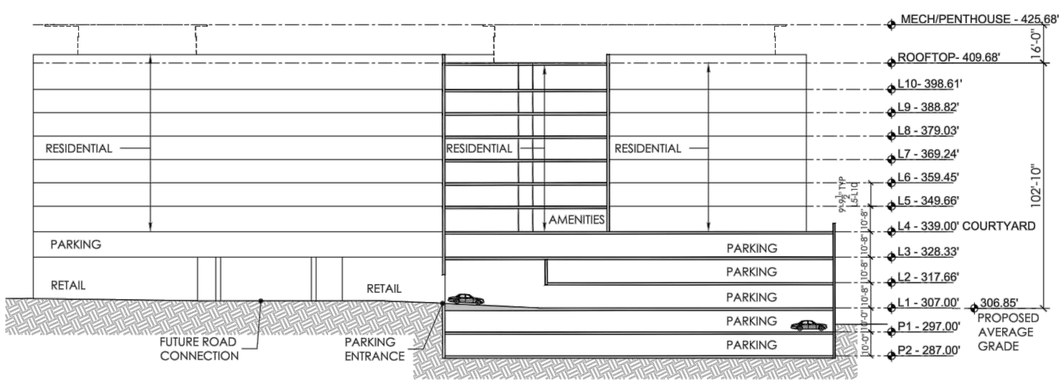
4 VIEW FROM EAST
NTS



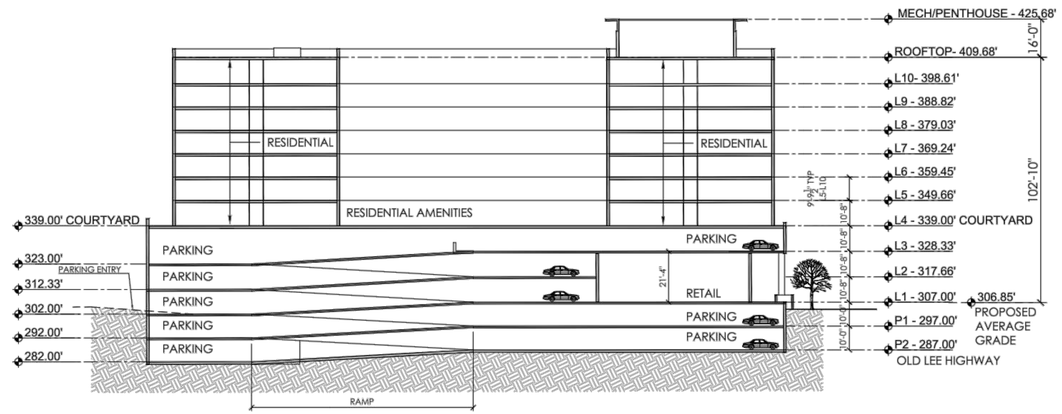
KEY PLAN



C BUILDING SECTION C
1"=30'-0"



A BUILDING SECTION A
1"=30'-0"



B BUILDING SECTION B
1"=30'-0"

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Circle Gateway, City of Fairfax, VA

CONCEPTUAL SECTIONS AND VIEWS A4

DAVIS CARTER SCOTT ltd. DESIGN

0 30' 60'
1" = 30'

1/12/23

No.	DATE	DESCRIPTION

REVISIONS

PLAN DATE 02-14-23

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CONCEPTUAL SECTIONS AND VIEWS

CIRCLE GATEWAY
MASTER DEVELOPMENT PLAN
CITY OF FAIRFAX
VIRGINIA

DATE: DEC. 2022

SCALE: AS SHOWN

C.I.= N/A

SHEET A4 OF 026

FILE No. RZ-13123