

GENERAL DEVELOPMENT PLAN/
SPECIAL USE PERMIT PLAT
FOR
CITY CENTRE WEST
CITY OF FAIRFAX, VIRGINIA

APPLICANT
OX HILL REALTY

10523 MAIN STREET
SUITE 200
FAIRFAX, VA 22030
(703)946-5590
CONTACT: CHRISTOPHER SMITH
CSMITH@OXHILLCO.COM

ATTORNEY

WALSH, COLUCCI, LUBELEY & WALSH PC

2200 CLARENDON BLVD.
SUITE 1800
ARLINGTON, VA 22201
(703) 528-4700
CONTACT: ROBERT BRANT
RBRANT@THELANDLAWYERS.COM

ARCHITECT
DCS DESIGN

8614 WESTWOOD CENTER DR
SUITE 800
TYSONS, VA 22182
(703) 556-9275
CONTACT: THOMAS DINNEY
TDINNEY@DCSDSIGN.COM

DESIGNER

THOMAS JUUL-HANSEN, LLC

137 GRAND STREET
7TH FLOOR
NEW YORK, NY 10013
(212) 929-7109
CONTACT: THOMAS JUUL HANSEN
THOMAS@THOMASJUULHANSEN.COM

CIVIL ENGINEER

URBAN, LTD.

4200 D TECHNOLOGY CT.
CHANTILLY, VA 20151
(703) 642-2306
CONTACT: CLAYTON TOCK, P.E.
CTOCK@URBAN-LTD.COM

LANDSCAPE ARCHITECT

URBAN, LTD.

4200 D TECHNOLOGY CT.
CHANTILLY, VA 20151
(703) 642-2306
CONTACT: JOHN LIGHTLE
JLIGHTLE@URBAN-LTD.COM

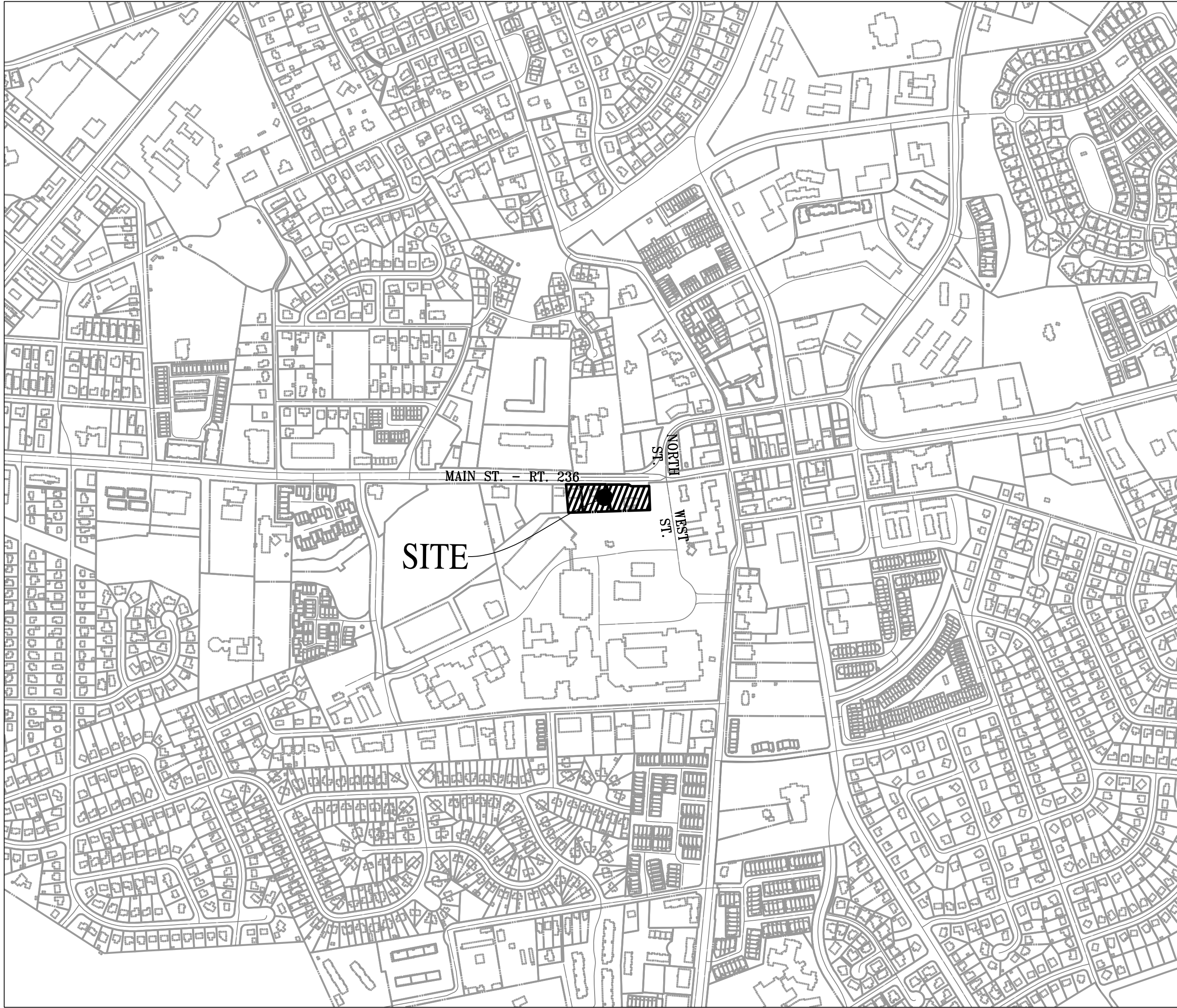
TRAFFIC ENGINEER

GOROVE-SLADE ASSOCIATES INC

3914 CENTREVILLE RD.
SUITE 300
CHANTILLY, VA 20151
(703) 787-9915
CONTACT: MARIA LASHINGER
MARIA.LASHINGER@GOROVESLADE.COM

VICINITY MAP

SCALE: 1" = 500'



RECEIVED

July 3, 2023

Community Dev & Planning

SHEET INDEX

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NOTE: TOTAL 52 SHEETS

PLAN DATE
01-18-22
02-20-22
03-20-22
06-02-23
07-03-23

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COVER SHEET
CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

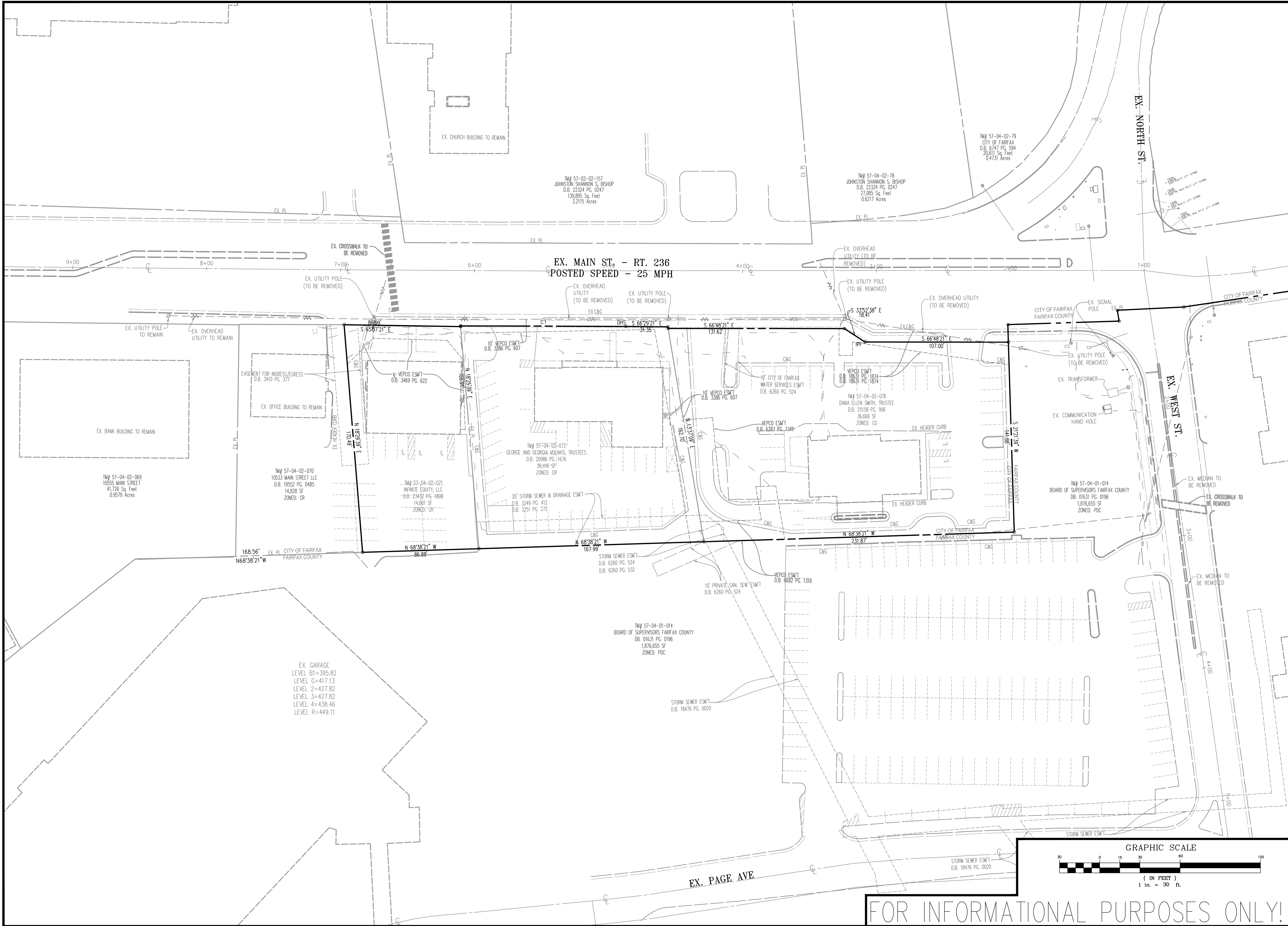
DATE: JAN., 2022
SCALE: AS NOTED
C.I.= N/A

SHEET
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52

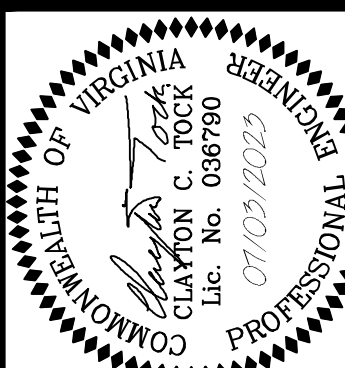
FILE No.
RZ-13007

REVISIONS
No. DATE DESCRIPTION

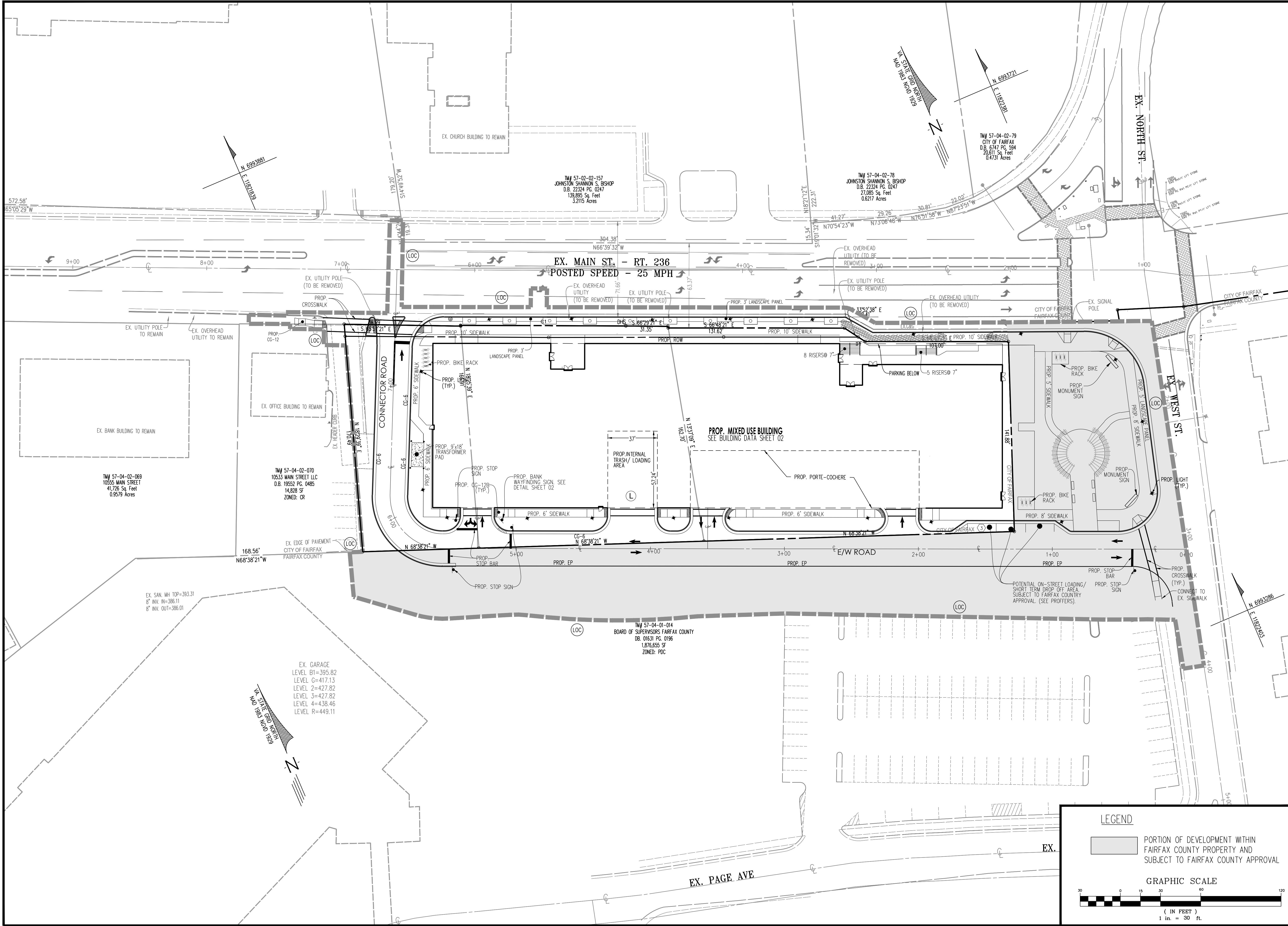
Urban, Ltd. - J:\055\10523 Main Street\B-Engineering\Entitlement\CDP-FDP-SPEX\13007-02-EX-CONDITIONS.dwg [EX_COND (2)] July 03, 2023 - 12:34pm stanley



FOR INFORMATIONAL PURPOSES ONLY!

EXISTING CONDITIONS		CITY CENTRE WEST GENERAL DEVELOPMENT PLAN SPECIAL USE PERMIT PLAT CITY OF FAIRFAX, VIRGINIA		DATE: JAN., 2022	
SCALE: 1"=30'		C.I.= N/A		CL= N/A	
SHEET 05 OF 52		FILE No. RZ-13007			
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PLAN DATE		01-18-22		DESCRIPTION	
02-20-22		03-20-22		REVISIONS	
04-20-22		06-02-23		No.	
07		07		DATE	

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LEGEND

PORTION OF DEVELOPMENT WITHIN FAIRFAX COUNTY PROPERTY AND SUBJECT TO FAIRFAX COUNTY APPROVAL

GRAPHIC SCALE

(IN FEET)
1 in. = 30 ft.

APPLICATION BOUNDARY EXHIBIT

CITY CENTRE WEST

GENERAL DEVELOPMENT PLAN

SPECIAL USE PERMIT PLAN

CITY OF FAIRFAX, VIRGINIA

DATE: JAN., 2022

CL: N/A

SCALE: 1"=30'

FILE No.
RZ-13007

SHEET
06
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52

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01-18-22	
02-08-22	
03-05-22	
06-02-23	
07-03-23	

PLAN DATE

01-18-22

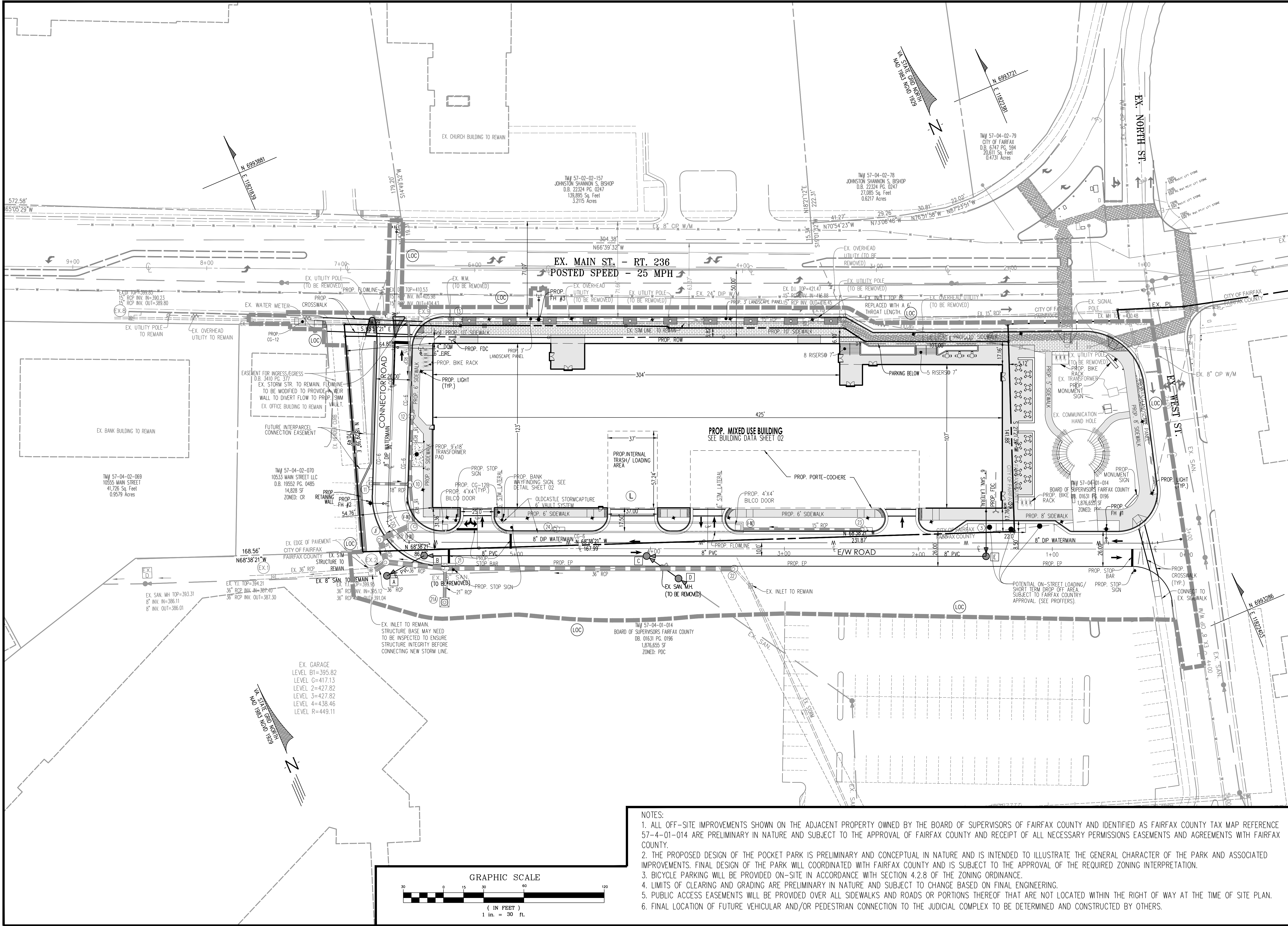
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03-05-22

06-02-23

07-03-23

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NOTES:

1. ALL OFF-SITE IMPROVEMENTS SHOWN ON THE ADJACENT PROPERTY OWNED BY THE BOARD OF SUPERVISORS OF FAIRFAX COUNTY AND IDENTIFIED AS FAIRFAX COUNTY TAX MAP REFERENCE 57-4-01-014 ARE PRELIMINARY IN NATURE AND SUBJECT TO THE APPROVAL OF FAIRFAX COUNTY AND RECEIPT OF ALL NECESSARY PERMISSIONS EASEMENTS AND AGREEMENTS WITH FAIRFAX COUNTY.
2. THE PROPOSED DESIGN OF THE POCKET PARK IS PRELIMINARY AND CONCEPTUAL IN NATURE AND IS INTENDED TO ILLUSTRATE THE GENERAL CHARACTER OF THE PARK AND ASSOCIATED IMPROVEMENTS. FINAL DESIGN OF THE PARK WILL BE COORDINATED WITH FAIRFAX COUNTY AND IS SUBJECT TO THE APPROVAL OF THE REQUIRED ZONING INTERPRETATION.
3. BICYCLE PARKING WILL BE PROVIDED ON-SITE IN ACCORDANCE WITH SECTION 4.2.8 OF THE ZONING ORDINANCE.
4. LIMITS OF CLEARING AND GRADING ARE PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL ENGINEERING.
5. PUBLIC ACCESS EASEMENTS WILL BE PROVIDED OVER ALL SIDEWALKS AND ROADS OR PORTIONS THEREOF THAT ARE NOT LOCATED WITHIN THE RIGHT OF WAY AT THE TIME OF SITE PLAN.
6. FINAL LOCATION OF FUTURE VEHICULAR AND/OR PEDESTRIAN CONNECTION TO THE JUDICIAL COMPLEX TO BE DETERMINED AND CONSTRUCTED BY OTHERS.

GENERAL DEVELOPMENT PLAN- SUP PLAT

CITY CENTRE WEST

GENERAL DEVELOPMENT PLAN

SPECIAL USE PERMIT PLAT

CITY OF FAIRFAX, VIRGINIA

FILE No.
RZ-13007

DATE: JAN., 2022

CL= N/A

SCALE: 1"=30'

01-18-22
02-09-22
06-02-23
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PLAN DATE

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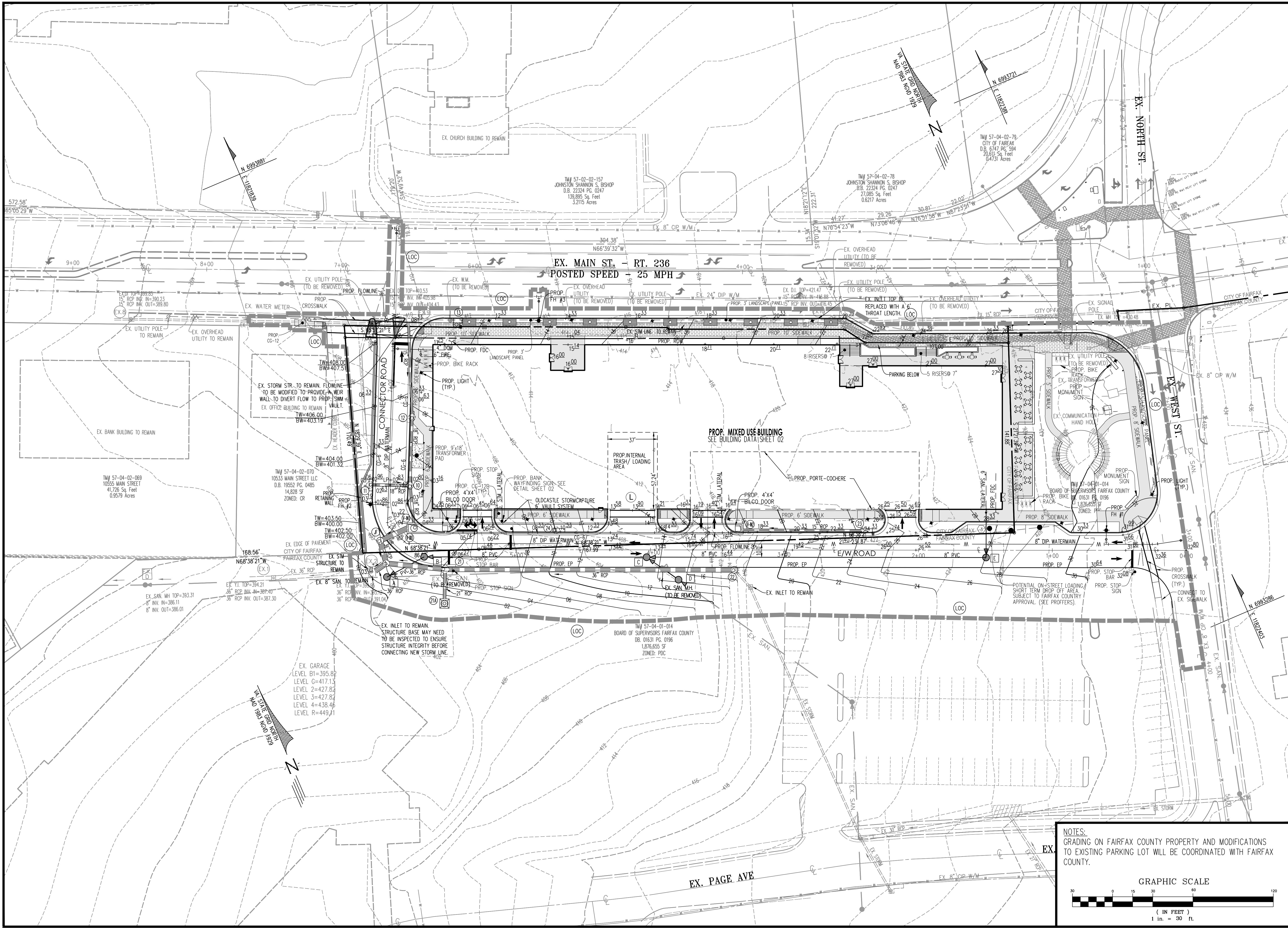
COMMONWEALTH OF VIRGINIA
CLAYTON C. ROCK
Lic. No. 038790
07/03/2023
PROFESSIONAL ENGINEER

REVISIONS

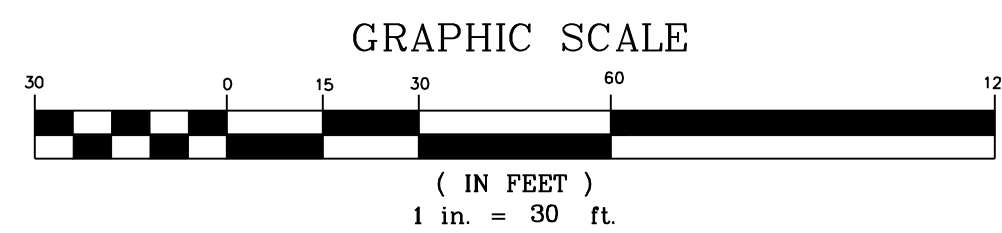
DESCRIPTION

No. DATE

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NOTES:
GRADING ON FAIRFAX COUNTY PROPERTY AND MODIFICATIONS
TO EXISTING PARKING LOT WILL BE COORDINATED WITH FAIRFAX
COUNTY.



GRADING PLAN

CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAN
CITY OF FAIRFAX, VIRGINIA

DATE: JAN., 2022
CL: 2
SCALE: 1"=30'

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PLAN DATE

01-18-22
08-30-22
06-02-23
07-03-23

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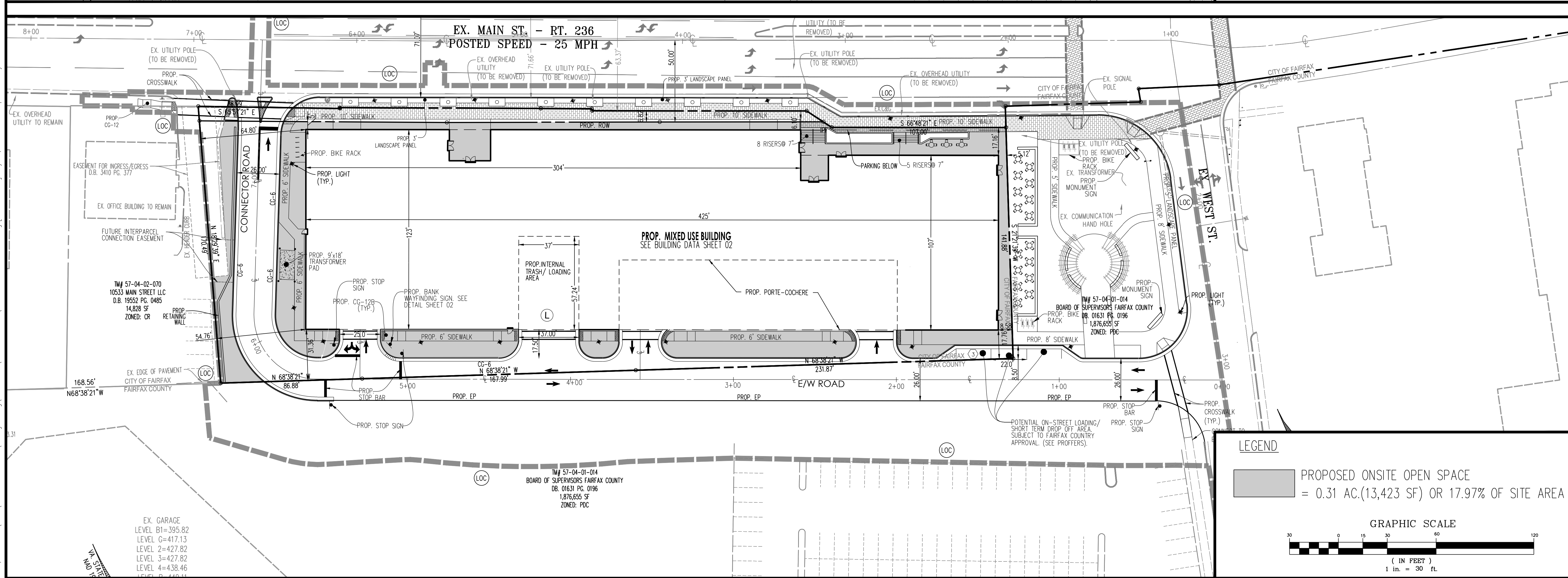
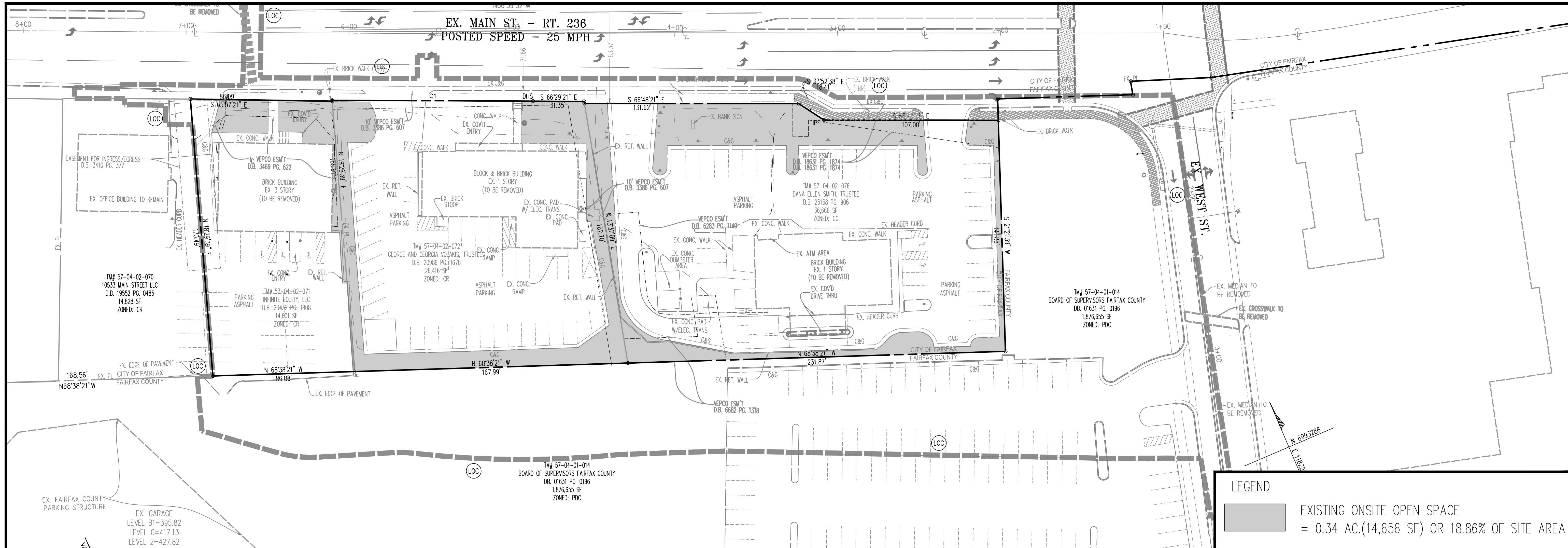
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FILE No.
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PLAN DATE	DESCRIPTION
01-18-22	
04-20-22	
06-02-23	
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Lic. No. 036790
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REGISTERED PROFESSIONAL ENGINEER

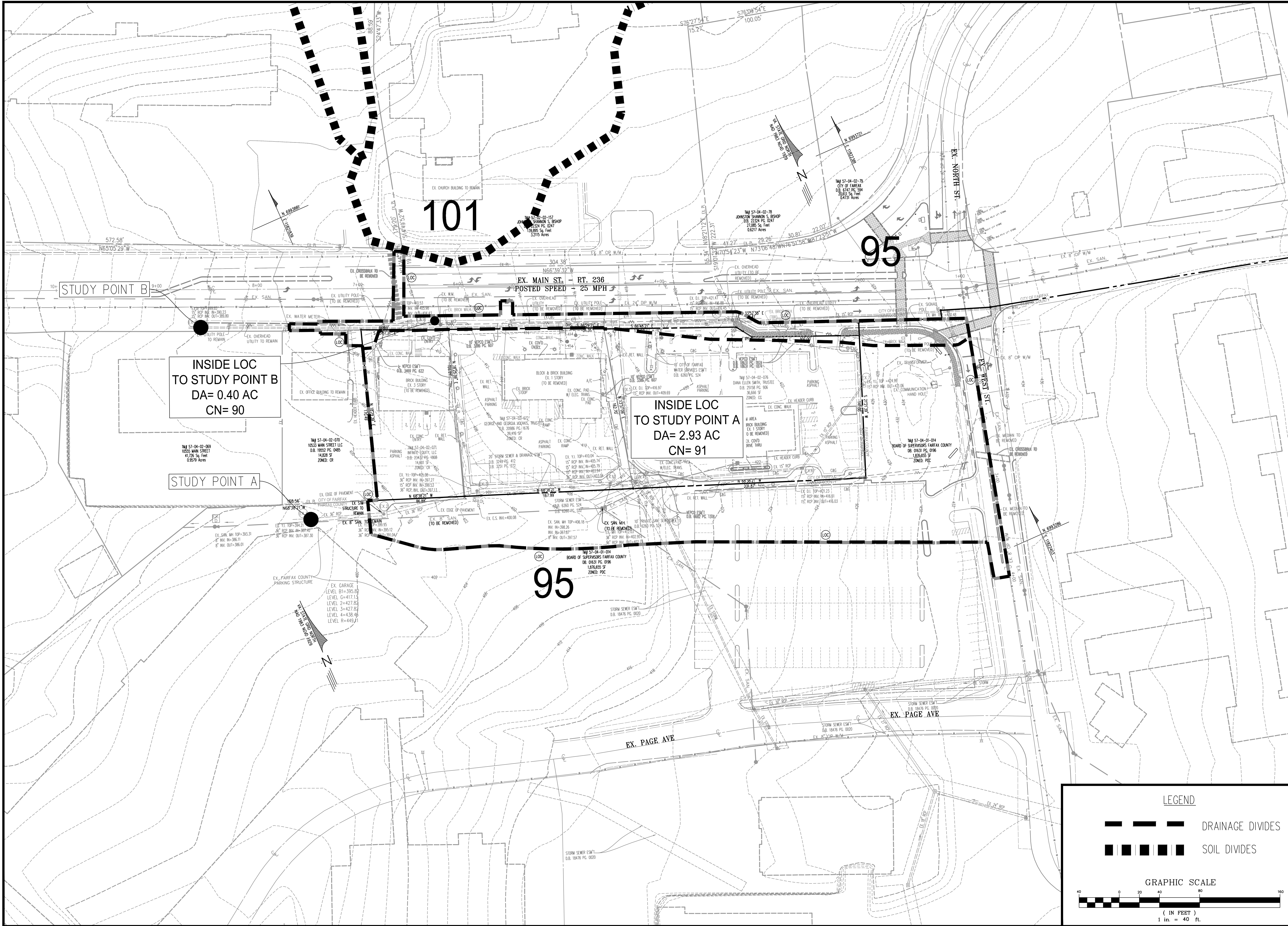
OPEN SPACE PLAN
CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

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

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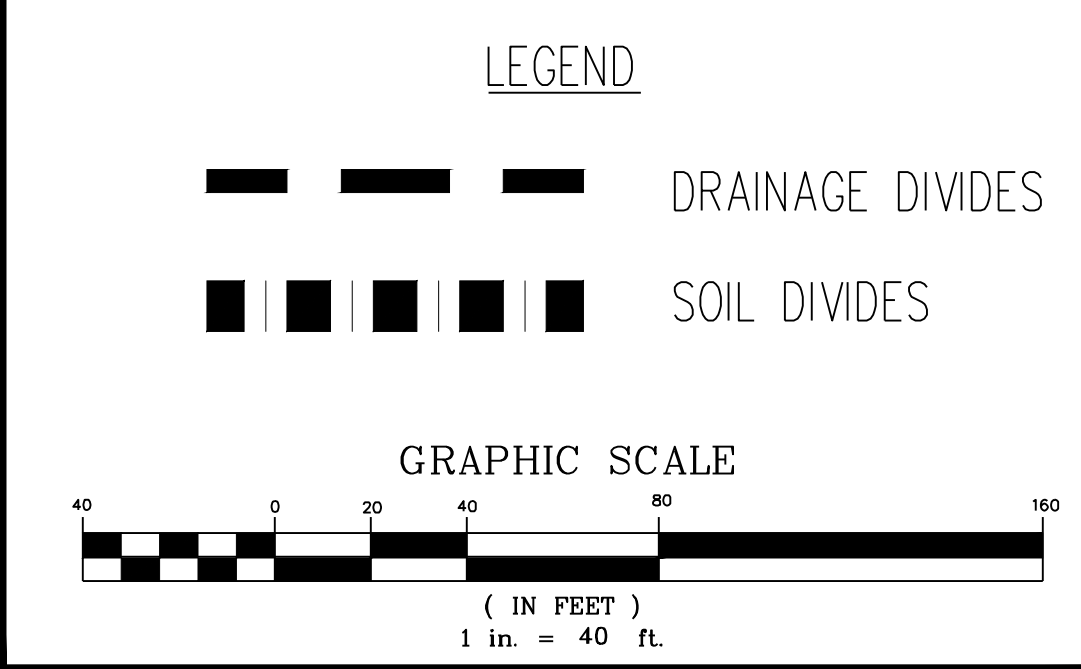
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INSIDE LOC
TO STUDY POINT B
DA= 0.40 AC
CN= 90

INSIDE LOC
TO STUDY POINT A
DA= 2.93 AC
CN= 91



PLAN DATE		DESCRIPTION	
No.	DATE	REVISIONS	
01	18-22		
02	20-23		
03	06-02		
04	07-03		

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**CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA**

DATE: JAN., 2022
SCALE: 1"=40'
C.I.= 2'

SHEET
14
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52

FILE No.
RZ-13007

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STUDY POINT A

STUDY POINT A PRE DEVELOPMENT (LOC ONLY)			
Curve Number Calculations			
Area (ac)	CN	Description	
1.850	98	Paved parking, HSG D	
0.740	80	>75% Grass cover, Good, HSG D	
0.340	77	Woods, Good, HSG D	
2.930	91	Weighted Average	
1.080		36.86% Pervious Area	
1.850		63.14% Impervious Area	

Time of Concentration Calculations					
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
6.0					Direct Entry, Direct Entry

PRE DEVELOPMENT PEAK FLOW SUMMARIES TO STUDY POINT A
LOC ONLY

1-YEAR FLOW SUMMARY

Inflow Area = 127,631 sf 63.14%Impervious Inflow Depth =1.69" for 1-Year event
Inflow = 6.21 cfs@ 12.13 hrs Volume= 18,001 cf
Primary = 6.21 cfs@ 12.13 hrs Volume= 18,001 cf Atten= 0%Lag= 0.0 min

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

2-YEAR FLOW SUMMARY

Inflow Area = 127,631 sf 63.14%Impervious Inflow Depth =2.19" for 2-Year event
Inflow = 7.94 cfs@ 12.13 hrs Volume= 23,321 cf
Primary = 7.94 cfs@ 12.13 hrs Volume= 23,321 cf Atten= 0%Lag= 0.0 min

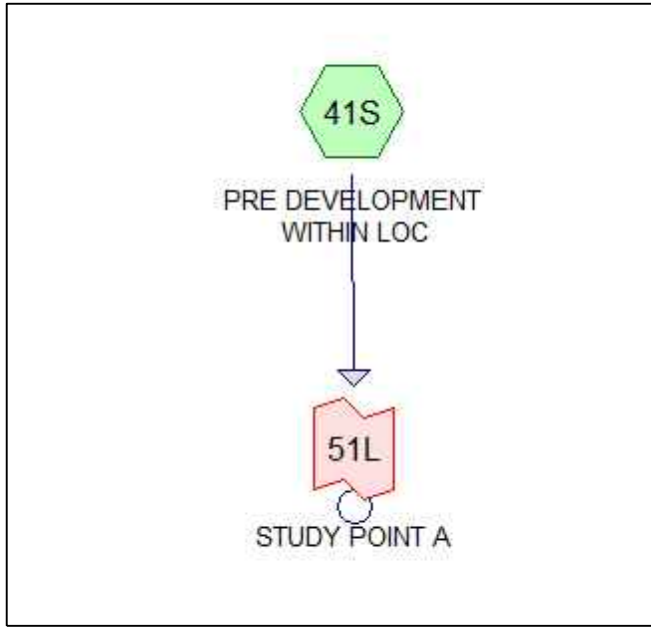
Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

10-YEAR FLOW SUMMARY

Inflow Area = 127,631 sf 63.14%Impervious Inflow Depth =3.80" for 10-Year event
Inflow = 13.32 cfs@ 12.13 hrs Volume= 40,393 cf
Primary = 13.32 cfs@ 12.13 hrs Volume= 40,393 cf Atten= 0%Lag= 0.0 min

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

PRE DEVELOPMENT HYDROCAD NODES



STUDY POINT B

STUDY POINT B PRE DEVELOPMENT (LOC ONLY)			
Curve Number Calculations			
Area (ac)	CN	Description	
0.220	98	Paved parking, HSG D	
0.180	80	>75% Grass cover, Good, HSG D	
0.400	90	Weighted Average	
0.180		45.00% Pervious Area	
0.220		55.00% Impervious Area	

Time of Concentration Calculations					
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
6.0					Direct Entry, Direct Entry

PRE DEVELOPMENT PEAK FLOW SUMMARIES TO STUDY POINT B
LOC ONLY

1-YEAR FLOW SUMMARY

Inflow Area = 17,424 sf 55.00%Impervious Inflow Depth =1.61" for 1-Year event
Inflow = 0.81 cfs@ 12.13 hrs Volume= 2,340 cf
Primary = 0.81 cfs@ 12.13 hrs Volume= 2,340 cf Atten= 0%Lag= 0.0 min

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

2-YEAR FLOW SUMMARY

Inflow Area = 17,424 sf 55.00%Impervious Inflow Depth =2.10" for 2-Year event
Inflow = 1.05 cfs@ 12.13 hrs Volume= 3,055 cf
Primary = 1.05 cfs@ 12.13 hrs Volume= 3,055 cf Atten= 0%Lag= 0.0 min

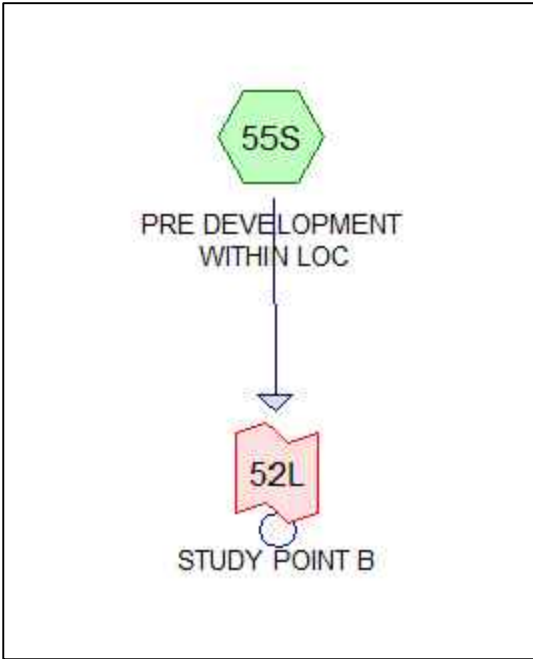
Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

10-YEAR FLOW SUMMARY

Inflow Area = 17,424 sf 55.00%Impervious Inflow Depth =3.69" for 10-Year event
Inflow = 1.78 cfs@ 12.13 hrs Volume= 5,363 cf
Primary = 1.78 cfs@ 12.13 hrs Volume= 5,363 cf Atten= 0%Lag= 0.0 min

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

PRE DEVELOPMENT HYDROCAD NODES



PLAN DATE
01-18-22
04-20-22
06-02-23
07-03-23

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SWM PRE-DEVELOPMENT COMPUTATIONS

CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

SCALE: N/A

SHEET
15
OF
52

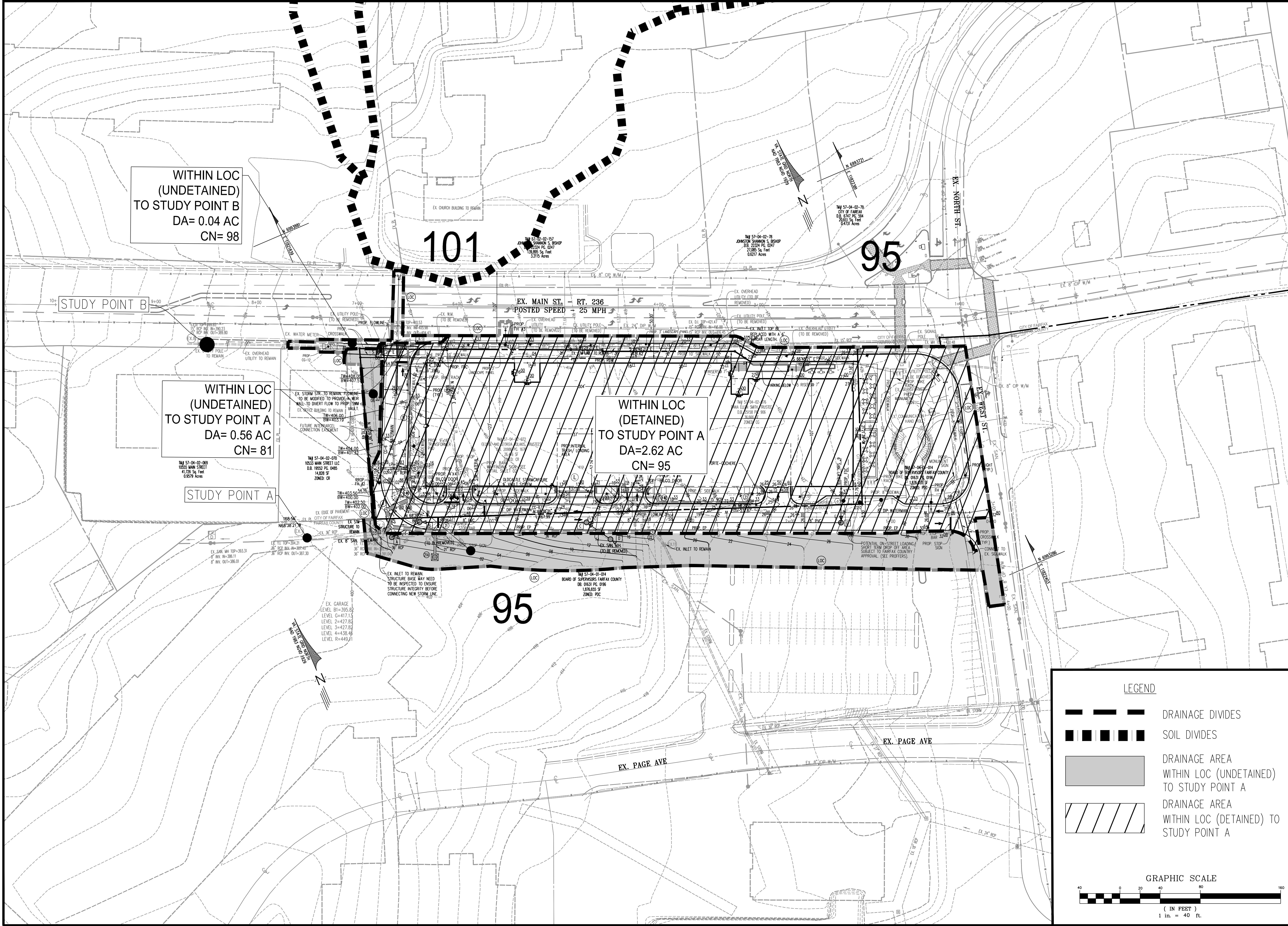
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RZ-13007

DATE: JAN., 2022

C.I.= N/A

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No. DATE DESCRIPTION

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LEGEND

- DRAINAGE DIVIDES
- SOIL DIVIDES
- DRAINAGE AREA WITHIN LOC (UNDETAINED) TO STUDY POINT A
- DRAINAGE AREA WITHIN LOC (DETAINED) TO STUDY POINT A

GRAPHIC SCALE

40 0 20 40 60 80 100

(IN FEET)

1 in. = 40 ft.

PLAN DATE		No.	DATE	DESCRIPTION	REVISIONS
01-18-22	06-02-23				
01-18-22	06-02-23				
06-02-23	07-03-23				

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SWM POST-DEVELOPMENT
CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

DATE: JAN., 2022
SCALE: 1"=40'
C.I.= 2'

SHEET
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FILE No.
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STUDY POINT A POST DEVELOPMENT (LOC ONLY) DETAINED

Curve Number Calculations

Area (ac)	CN	Description
* 2.230	98	Paved parking, HSG D
0.390	80	>75% Grass cover, Good, HSG D
2.620	95	Weighted Average
0.390		14.89% Pervious Area
2.230		85.11% Impervious Area

Time of Concentration Calculations

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

1 Year Flow Calculations

Runoff = 6.42 cfs@ 12.13 hrs Volume= 19,501 cf Depth=2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 1-Year Rainfall=2.59"

2 Year Flow Calculations

Runoff = 7.95 cfs@ 12.13 hrs Volume= 24,503 cf Depth=2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 2-Year Rainfall=3.13"

10 Year Flow Calculations

Runoff = 12.66 cfs@ 12.13 hrs Volume= 40,243 cf Depth=4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 10-Year Rainfall=4.81"

STUDY POINT A POST DEVELOPMENT (LOC ONLY) UNDETAINED

Curve Number Calculations

Area (ac)	CN	Description
0.530	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG D
0.560	81	Weighted Average
0.530		94.64% Pervious Area
0.030		5.36% Impervious Area

Time of Concentration Calculations

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

1 Year Flow Calculations

Runoff = 0.72 cfs@ 12.14 hrs Volume= 2,047 cf Depth=1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 1-Year Rainfall=2.59"

2 Year Flow Calculations

Runoff = 1.01 cfs@ 12.13 hrs Volume= 2,875 cf Depth=1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 2-Year Rainfall=3.13"

10 Year Flow Calculations

Runoff = 2.00 cfs@ 12.13 hrs Volume= 5,729 cf Depth=2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 10-Year Rainfall=4.81"

STUDY POINT A

Vault Computations

Volume	Invert	Avail.Storage	Storage Description
#1A	393.00'	0 cf	8.00"W x 240.00'L x 8.17"H Field A
#2A	393.00'	11,333 cf	15,680 cf Overall 15,680 cf Embedded 0 cf x 40.0% Voids Oldcastle StormCapture SC2 X715 Inside #1 Inside= 84.0"W x 84.0"H => 49.56 sf x 16.00'L = 793.0 cf Outside= 96.0"W x 98.0"H => 65.33 sf x 16.00'L = 1,045.3 cf 1 Rows adjusted for 562.5 cf perimeter wall
		11,333 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	36.0" Round Culvert= 20.0' Ke= 0.700 Inlet/ OutletInvert=393.00'/392.00' S=0.0500'/ Cc=0.900 n=0.013 Concretepipe, straight& clean, FlowArea=7.07sf
#2	Device 1	393.50'	8.0" Vert. Orifice/GrateC= 0.600 Limited to weir flow at low heads
#3	Device 1	397.00'	12.0" Vert. Orifice/GrateC= 0.600 Limited to weir flow at low heads

Primary OutFlowMax=2.43 cfs@ 12.27 hrsHW=395.92' (Free Discharge)

1=Culvert(Passes 2.43 cfs of 36.05 cfs potential flow)

2=Orifice/Grate(Orifice Controls 2.43 cfs @ 6.96 fps)

3=Orifice/Grate(Controls 0.00 cfs)

STORM SEWER DESIGN COMPUTATIONS																	☐ Lag time
Project: 10523 MAIN STREET																	
From Point	To Point	Drainage Area	C Factor	C x A		Inlet Time Min.	Rain Fall In/Hr	Runoff Q C.F.S.	Invert Elevation		Length FT.	Slope %	Dia. IN.	Capacity Q C.F.S.	VEL. F.P.S.	Flow Time Min.	Remarks
				Increment	Cumm.				Upper End	Lower End							
EX 11	EX 10	0.48	0.75	0.36	0.36	5.00	6.77	2.44	425.39	416.88	240.85	3.53%	15	12.18	7.74	0.52	
EX 10	EX 9	0.45	0.82	0.37	0.73	5.00	6.77	4.94	416.45	405.98	296.04	3.54%	15	12.18	9.40	0.53	
EX 9	EX 8	0.42	0.79	0.33	1.06	5.00	6.77	7.18	404.43	390.23	207.34	6.85%	15	16.95	13.24	0.26	
*																	
PROP. MH	EX 1	5.18	0.82	4.25	4.25	5.00	6.77	28.76	390.50	387.40	62.26	4.98%	36	149.24	16.31	0.06	
*																	

PEAK FLOW SUMMARY

2-YEAR STORM EVENT

Inflow Area = 138,521 sf 71.07%Impervious Inflow Depth =2.37" for 2-Year event

Inflow = 3.68 cfs@ 12.17 hrs Volume= 27,380 cf

Primary = 3.68 cfs@ 12.17 hrs Volume= 27,380 cf Atten= 0%Lag= 0.0 min

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

POST DEVELOPMENT HYDROCAD NODES

PLAN DATE

01-18-22

04-20-22

06-02-23

07-03-23

No.

DATE

DESCRIPTION

REVISIONS

FLOW SUMMARY AND ENERGY BALANCE

FLOW SUMMARY

	1 YR	2 YR	10 YR
Pre Development Flows at Study Point 'A' (cfs)	6.21	7.94	13.32
Allowable Flow At Study Point 'A' (cfs)	4.15*	7.94	13.32
Post-Development Flows at Study Point 'A' (cfs)	3.05	3.68	8.84

*Per the Energy Balance Equation

ENERGY BALANCE METHOD TO STUDY POINT A

Q(Developed)=	3.05 cfs
Q(Pre-Developed)=	6.21 cfs
RV(Pre-Developed)=	18001.00 cf
RV(Developed)=	21549.00 cf
I.F. =	0.8 (0.8 for sites greater than one acre) (0.9 for sites less than or equal to one acre)

Q Developed	3.05	≤	I.F x (Q(Pre-Developed x RV Pre-Developed)/RV Developed	4.15
-------------	------	---	---	------

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Professional Seal
Lic. No. 0367980
07/03/2023
EXPIRATION DATE

SWM POST-DEVELOPMENT COMPUTATIONS

CITY CENTRE WEST

GENERAL DEVELOPMENT PLAN

SPECIAL USE PERMIT PLAT

CITY OF FAIRFAX, VIRGINIA

SCALE: 1"=40'

DATE: JAN., 2022

C.I.= N/A

SHEET 17 OF 52

FILE No. RZ-13007

J:\085\10523 Main Street\B-Engineering\Entitlement\CDP-FDP-SPEX\13007-04-SWM-POST.dwg [POST COMPS (2)] July 03, 2023 -- 12:40pm estonley Urban, Ltd. -- J:\085\10523 Main Street\B-Engineering\Entitlement\CDP-FDP-SPEX\13007-04-SWM-POST.dwg [POST COMPS (2)] July 03, 2023 -- 12:40pm estonley

STUDY POINT B POST DEVELOPMENT (LOC ONLY) UNDETAINED

Curve Number Calculations

Area (ac)	CN	Description
* 0.040	98	Paved parking, HSG D
0.040		100.00% Impervious Area

Time of Concentration Calculations

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

1 Year Flow Calculations

Runoff = 0.11 cfs@ 12.13 hrs Volume= 343 cf Depth=2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 1-Year Rainfall=2.59"

2 Year Flow Calculations

Runoff = 0.13 cfs@ 12.13 hrs Volume= 421 cf Depth=2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 2-Year Rainfall=3.13"

10 Year Flow Calculations

Runoff = 0.20 cfs@ 12.13 hrs Volume= 664 cf Depth=4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs NOAA 24-hr C 10-Year Rainfall=4.81"

FLOW SUMMARY AND ENERGY BALANCE

FLOW SUMMARY				
	1 YR	2 YR	10 YR	
Pre Development Flows at Study Point 'B' (cfs)	0.81	1.05	1.78	
Allowable Flow At Study Point 'B' (cfs)	4.42*	1.05	1.78	
Post-Development Flows at Study Point 'B' (cfs)	0.11	0.13	0.20	

* Per the Energy Balance Equation

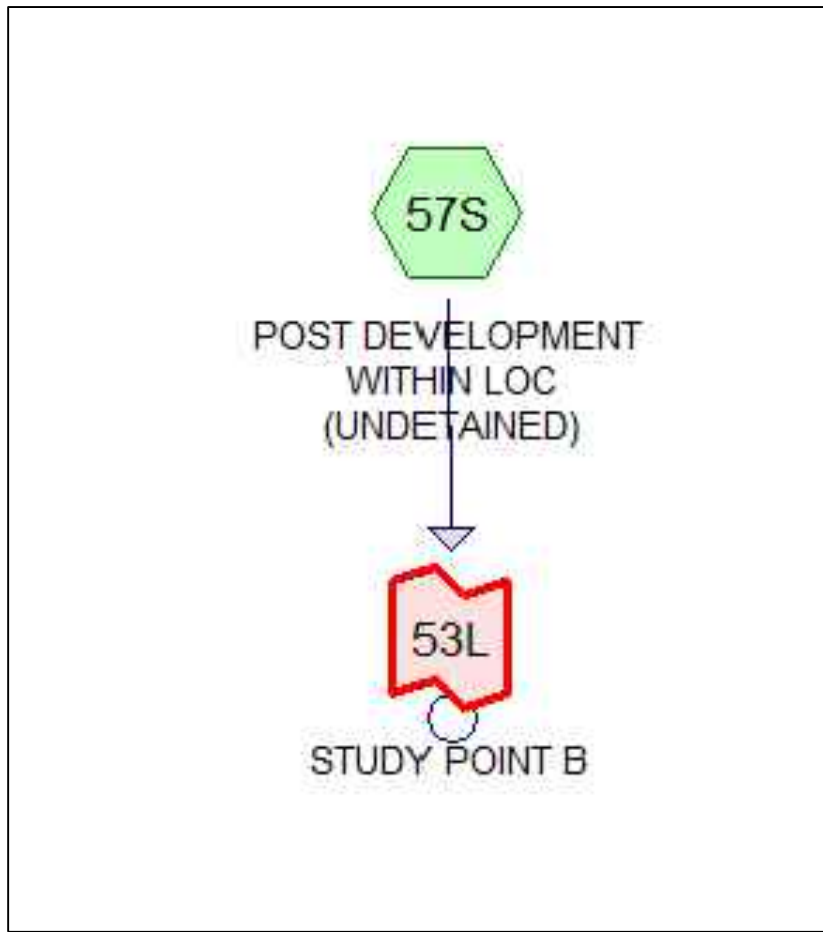
ENERGY BALANCE METHOD TO STUDY POINT B

Q(Developed)=	0.11 cfs
Q(Pre-Developed)=	0.81 cfs
RV(Pre-Developed)=	2340.00 cf
RV(Developed)=	343.00 cf
I.F. =	(0.8 for sites greater than one acre) (0.9 for sites less than or equal to one

Q Developed	I.F x (QPre-Developed x RV Pre-Developed)/RV Developed
0.11	4.42
≤	

STUDY POINT B

POST DEVELOPMENT HYDROCAD NODES



STORM SEWER DESIGN COMPUTATIONS

Project: 10523 MAIN STREET

Lag time

From Point	To Point	Drainage Area	C Factor	C x A		Inlet Time Min.	Rain Fall In/Hr	Runoff Q C.F.S.	Invert Elevation		Length FT.	Slope %	Dia. IN.	Capacity Q C.F.S.	VEL. F.P.S.	Flow Time MIN.	Remarks
				Increment	Cumm.				Upper End	Lower End							
EX. 11	EX. 10	0.48	0.75	0.36	0.36	5.00	6.77	2.44	425.39	416.88	240.85	3.53%	15	12.18	7.74	0.52	
EX. 10	EX. 9	0.45	0.82	0.37	0.73	5.00	6.77	4.94	416.45	405.98	296.04	3.54%	15	12.18	9.40	0.53	
EX. 9	EX. 8	0.42	0.79	0.33	1.06	5.00	6.77	7.18	404.43	390.23	207.34	6.85%	15	16.95	13.24	0.26	
*																	
PROP. MH	EX. 1	5.18	0.82	4.25	4.25	5.00	6.77	28.76	390.50	387.40	62.26	4.98%	36	149.24	16.31	0.06	
*																	

SWM NARRATIVE

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

THE EXISTING SITE CURRENTLY DRAINS IN TWO DIRECTIONS. MAJORITY OF EXISTING SITE DRAINS SOUTHWEST THROUGH AN EXISTING STORM SYSTEM WHICH LEAVES THE SITE AT EXISTING STR. 1 AND CONTINUES DOWNSTREAM THROUGH A CLOSED CONDUIT SYSTEM. REST OF THE SITE DRAINS NORTH THROUGH AN EXISTING STORM SYSTEM WHICH LEAVES THE SITE AT EXISTING STR. 8. EXISTING STRUCTURES 1 AND 8 ARE ESTABLISHED AS STUDY POINT "A" AND "B", RESPECTIVELY FOR THE SWM ANALYSIS.

STUDY POINT A:

MAJORITY OF THE SITE WILL BE SERVED BY ONE DETENTION FACILITY IN THE FORM OF AN UNDERGROUND STORMCAPTURE SC2 VAULT SYSTEM BY OLDCASTLE. THE FACILITY WILL PROVIDE DETENTION FOR MAJORITY OF THE SITE WHILE MAINTAINING PEAK FLOWS, NOT TO EXCEED PRE-DEVELOPMENT CONDITIONS FOR THE 1, 2, AND 10 YEAR STORM EVENTS AS COMPUTED ON SHEET 15, 17, AND 18. IN ADDITION, THE 1-YEAR DESIGN PEAK FLOW WILL NOT EXCEED THE ALLOWABLE RATE COMPUTED BY THE 1-YEAR ENERGY BALANCE EQUATION AS COMPUTED ON SHEET 17 FOR STUDY POINT "A". THE FACILITY WILL OUTFALL INTO THE PROPOSED ONSITE STORM SYSTEM AND CONTINUE DOWNSTREAM WHERE THE RUNOFF LEAVES THE SITE AT EXISTING STRUCTURE 1. THE EXISTING STORM SYSTEM CAPACITY WAS VERIFIED FOR THE PROPOSED IMPROVEMENTS DRAINING TO STUDY POINT "A" AT EXISTING STRUCTURE 1. THE EXISTING SYSTEM REMAINS ADEQUATE AS SHOWN ON STORM COMPUTATIONS ON THIS SHEET.

STUDY POINT B:

FOR STUDY POINT B, EXISTING STORM SYSTEM CAPACITY WAS VERIFIED FOR THE PROPOSED IMPROVEMENTS. THE PROPOSED DRAINAGE AREA TO STUDY POINT B IS BEING REDUCED AND DIVERTED TO STUDY POINT A THROUGH A WEIR SYSTEM. THE WEIR SYSTEM WILL MAINTAINING PEAK FLOWS, NOT TO EXCEED PRE-DEVELOPMENT CONDITIONS FOR THE 1, 2, AND 10 YEAR STORM EVENTS AS COMPUTED ON SHEET 15 AND 18. IN ADDITION, THE 1-YEAR DESIGN PEAK FLOW WILL NOT EXCEED THE ALLOWABLE RATE COMPUTED BY THE 1-YEAR ENERGY BALANCE EQUATION AS COMPUTED ON SHEET 18 FOR STUDY POINT "B".

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.

PEAK FLOW SUMMARY

1-YEAR STORM EVENT

Inflow Area = 1,742 sf,100.00% Impervious, Inflow Depth = 2.36" for 1-Year event
Inflow = 0.11 cfs @ 12.13 hrs, Volume= 343 cf
Primary = 0.11 cfs @ 12.13 hrs, Volume= 343 cf, Atten= 0% Lag= 0.0 min

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

2-YEAR STORM EVENT

Inflow Area = 1,742 sf,100.00% Impervious, Inflow Depth = 2.90" for 2-Year event
Inflow = 0.13 cfs @ 12.13 hrs, Volume= 421 cf
Primary = 0.13 cfs @ 12.13 hrs, Volume= 421 cf, Atten= 0% Lag= 0.0 min

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

10-YEAR STORM EVENT

Inflow Area = 1,742 sf,100.00% Impervious, Inflow Depth = 4.57" for 10-Year event
Inflow = 0.20 cfs @ 12.13 hrs, Volume= 664 cf
Primary = 0.20 cfs @ 12.13 hrs, Volume= 664 cf, Atten= 0% Lag= 0.0 min

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

SWM POST DEVELOPMENT COMPUTATIONS

CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

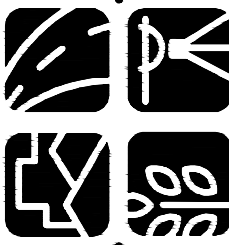
SCALE: 1"=40'

DATE: JAN., 2022

C.I.= N/A

SHEET
18
OF
52

FILE No.
RZ-13007



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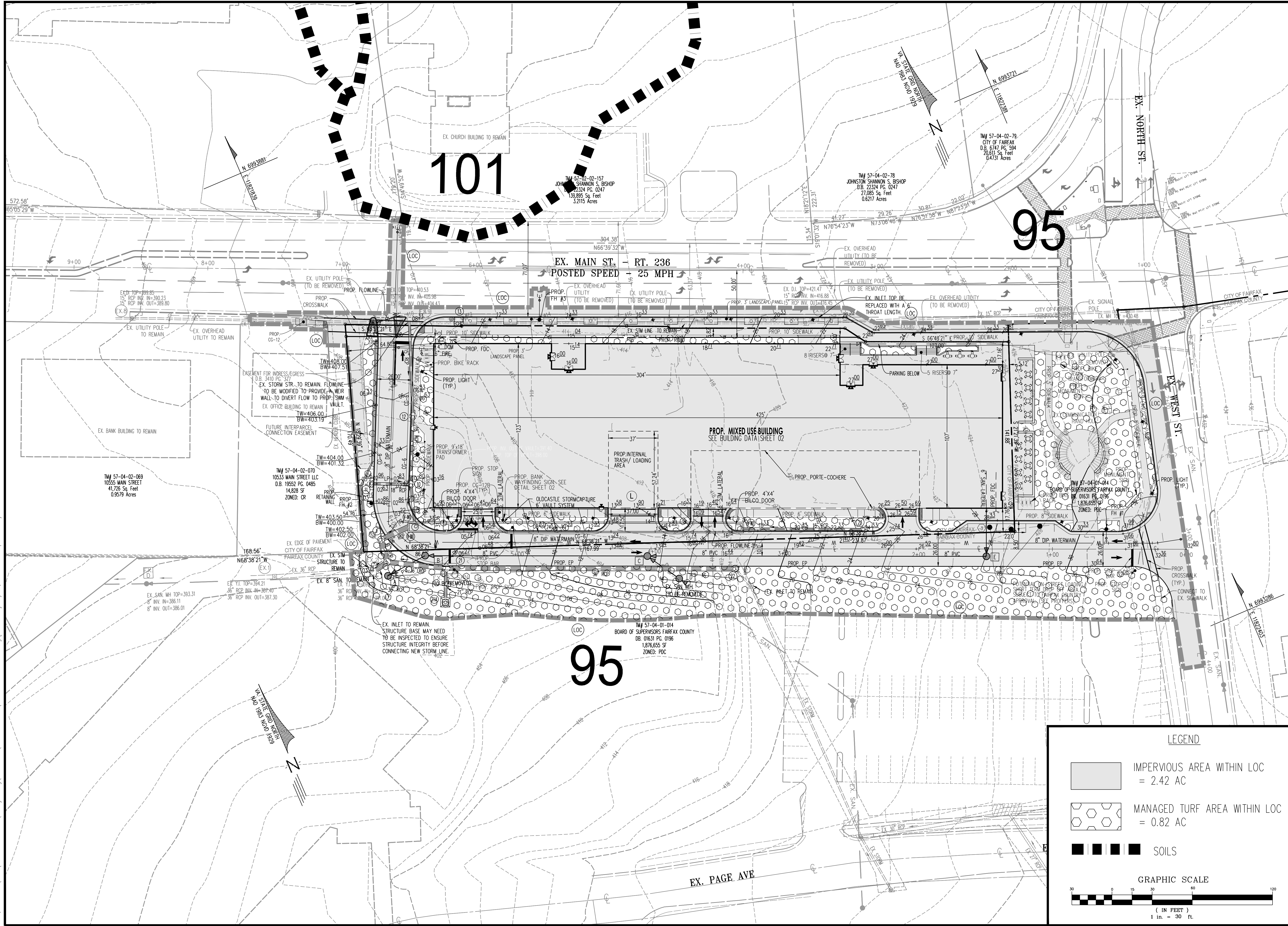
PLAN DATE

01-18-22
04-20-22
06-02-23
07-03-23

DESCRIPTION
REVISIONS

No. DATE

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IMPERVIOUS AREA WITHIN LOC
= 2.42 AC

MANAGED TURF AREA WITHIN LOC
= 0.82 AC

SOILS

LEGEND

GRAPHIC SCALE

(IN FEET)
1 in. = 30 ft

PLAN DATE

01-18-22
04-20-23
06-02-23
07-03-23

DESCRIPTION

REVISIONS

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COMMONWEALTH OF VIRGINIA
CITY OF FAIRFAX
Lic. No. 0367980
07/03/2023
PROFESSIONAL SEAL

BMP POST-DEVELOPMENT
CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

DATE: JAN., 2022
SCALE: 1"=30'
C.I.= 2'

SHEET
20
OF
52

FILE No.
RZ-13007

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DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

2011 BMP Standards and Specifications

2013 Draft BMP Standards and Specifications

Project Name:FAIRFAX CITY CENTER WEST

Date:6/30/2023

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) →3.24

Maximum reduction required:20%

The site's net increase in impervious cover (acres) is:0.32

Post-Development TP Load Reduction for Site (lb/yr):1.57

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	0.00	0.00	0.34	0.34
Managed Turf (acres) -- disturbed, graded for yards or other turf to be	0.00	0.00	0.00	0.80	0.80
Impervious Cover (acres)	0.00	0.00	0.00	2.10	2.10
					3.24

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	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be	0.00	0.00	0.00	0.82	0.82
Impervious Cover (acres)	0.00	0.00	0.00	2.42	2.42
Area Check	OK.	OK.	OK.	OK.	3.24

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)	0.34	0.02
Weighted Rv(forest)	0.05	0.05
% Forest	10%	1%
Managed Turf Cover (acres)	0.80	0.80
Weighted Rv(turf)	0.25	0.25
% Managed Turf	25%	27%
Impervious Cover (acres)	2.10	2.10
Rv(impervious)	0.95	0.95
% Impervious	65%	72%
Total Site Area (acres)	3.24	2.92
Site Rv	0.68	0.75

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.1843	0.1830
Pre-ReDevelopment Treatment Volume (cubic feet)	8,030	7,971
Pre-ReDevelopment TP Load (lb/yr)	5.04	5.01
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.56	1.72
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land and proposed for new impervious cover)		1.20

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)	0.82	
Weighted Rv (turf)	0.25	
% Managed Turf	25%	
Impervious Cover (acres)	2.42	
Rv(impervious)	0.95	
% Impervious	75%	
Final Site Area (acres)	3.24	
Final Post Dev Site Rv	0.77	

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.2087	
Final Post-Development Treatment Volume (cubic feet)	9,090	
Final Post-Development TP Load (lb/yr)	5.71	
Final Post-Development TP Load per acre (lb/acre/yr)	1.76	
Max. Reduction Required (Below Pre-ReDevelopment Load)	20%	
TP Load Reduction Required for Redeveloped Area (lb/yr)	1.01	
TP Load Reduction Required for New Impervious Area (lb/yr)	0.56	

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	1.57
------------------------------------	------

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	36.09	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	40.86
-----------------------------------	-------	--	-------

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

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	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.39	0.39	0.25
Impervious Cover (acres)	0.00	0.00	0.00	2.23	2.23	0.95
Total					2.62	

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 (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	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	
1. Vegetated Roof (RR)														
1.a. Vegetated Roof #1 (Spec #5)	45		0.14		217	266	483	0		0.30	0.14	0.17	14.b. MTD - Filtering	
14. Manufactured Treatment Devices (no RR)														
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	0	0.00	0.00	0.00	0.00		
14.b. Manufactured Treatment Device-Filtering	0	0.39	2.09	266	0	7,827	7,827	65	0.17	4.75	3.19	1.72		
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	0	0.00	0.00	0.00	0.00		

TOTAL IMPERVIOUS COVER TREATED (ac)2.23AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)0.39AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)1.57

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)5.05
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)3.19
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)0.14
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)3.33
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)1.72

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)0.98
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)0.00
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr)0.98

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)	2.23	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	2.23	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.39	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.39	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³)9,090

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 (ft³)	217	0	0	0	0	217
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	5.05	0.00	0.00	0.00	0.00	5.05
TP LOAD REDUCTION ACHIEVED (lb/yr)	3.33	0.00	0.00	0.00	0.00	3.33
TP LOAD REMAINING (lb/yr)	1.72	0.00	0.00	0.00	0.00	1.72

NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)0.98

Total Phosphorus
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)5.71
TP LOAD REDUCTION REQUIRED (lb/yr)1.57
TP LOAD REDUCTION ACHIEVED (lb/yr)3.33
TP LOAD REMAINING (lb/yr)2.38
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):0.00**
** TARGET TP REDUCTION EXCEEDED BY 1.76 LB/YEAR **

Total Nitrogen (For Information Purposes)
POST-DEVELOPMENT LOAD (lb/yr)40.86
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)0.98
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)39.88

PLAN DATE
01-18-22
04-20-22
06-02-23
07-03-23

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BMP POST-DEVELOPMENT COMPUTATIONS

CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

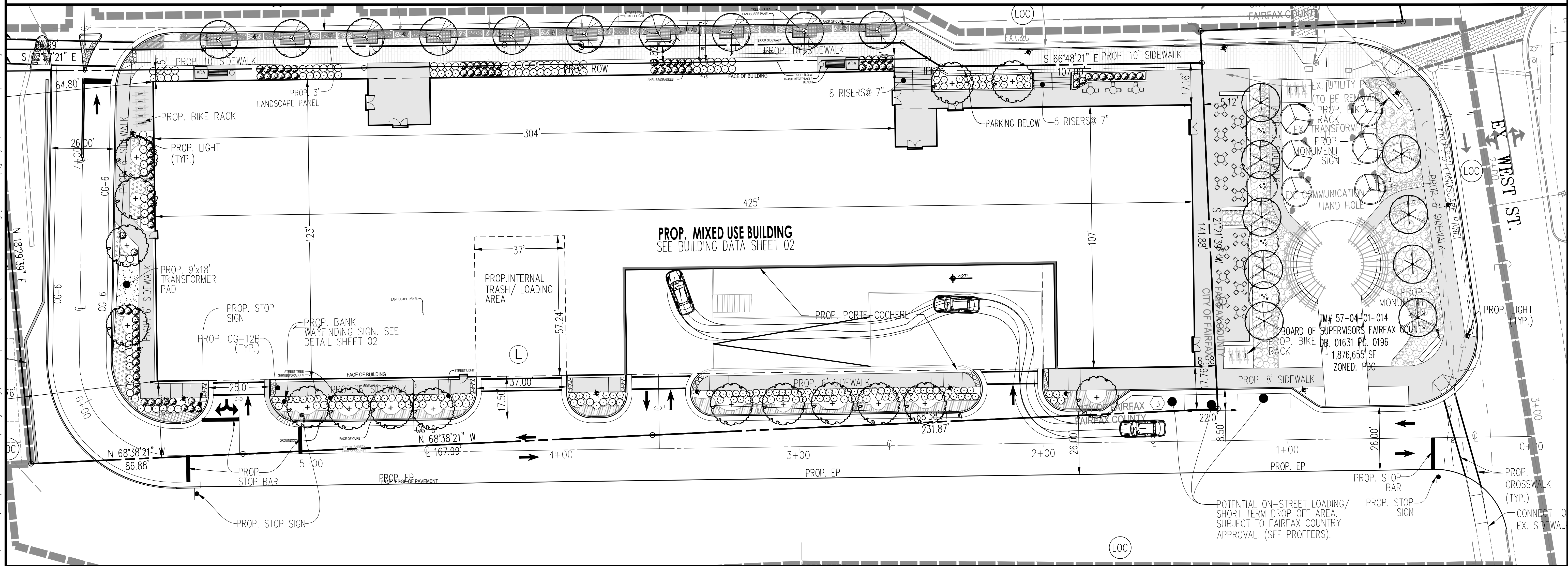
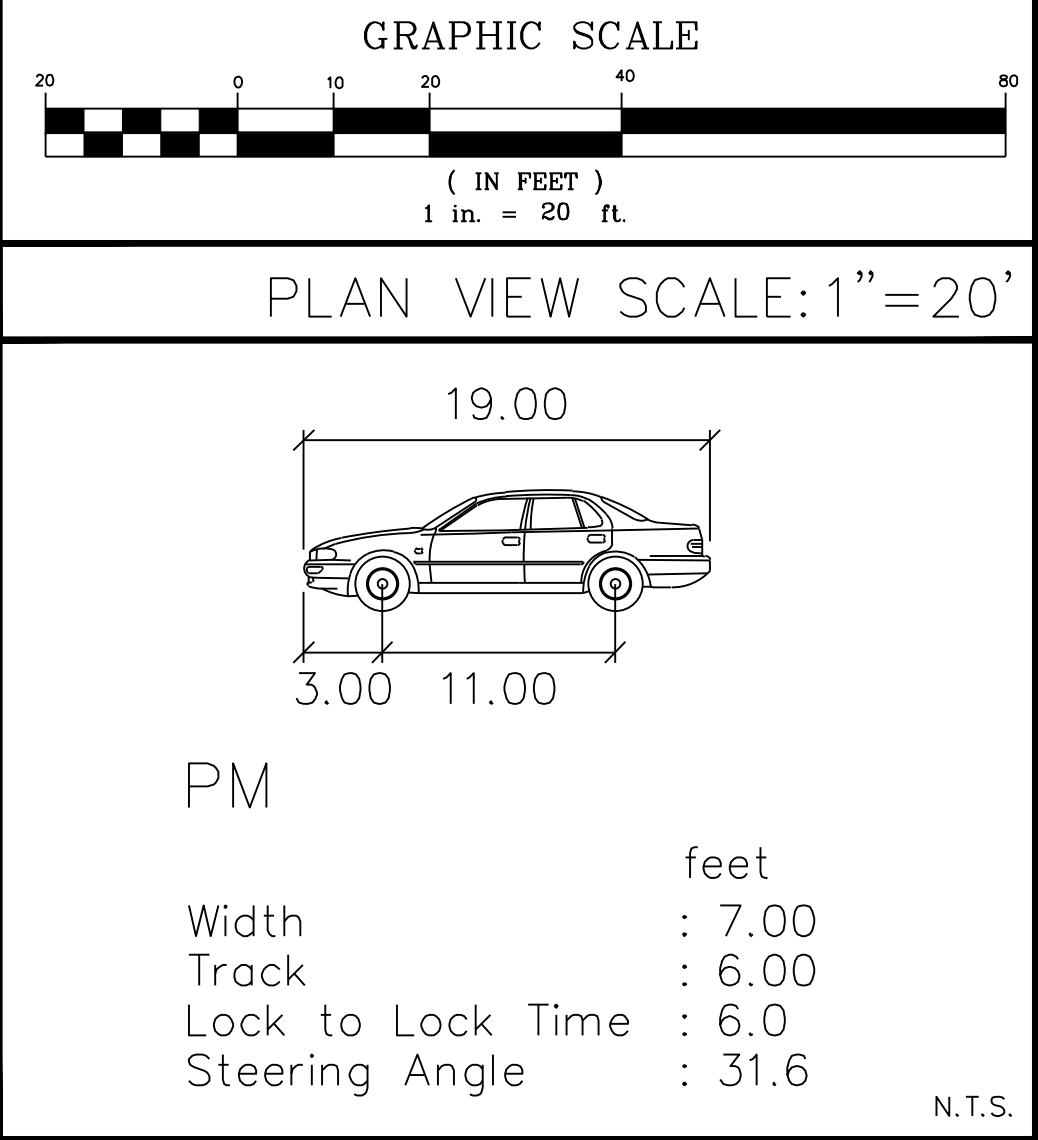
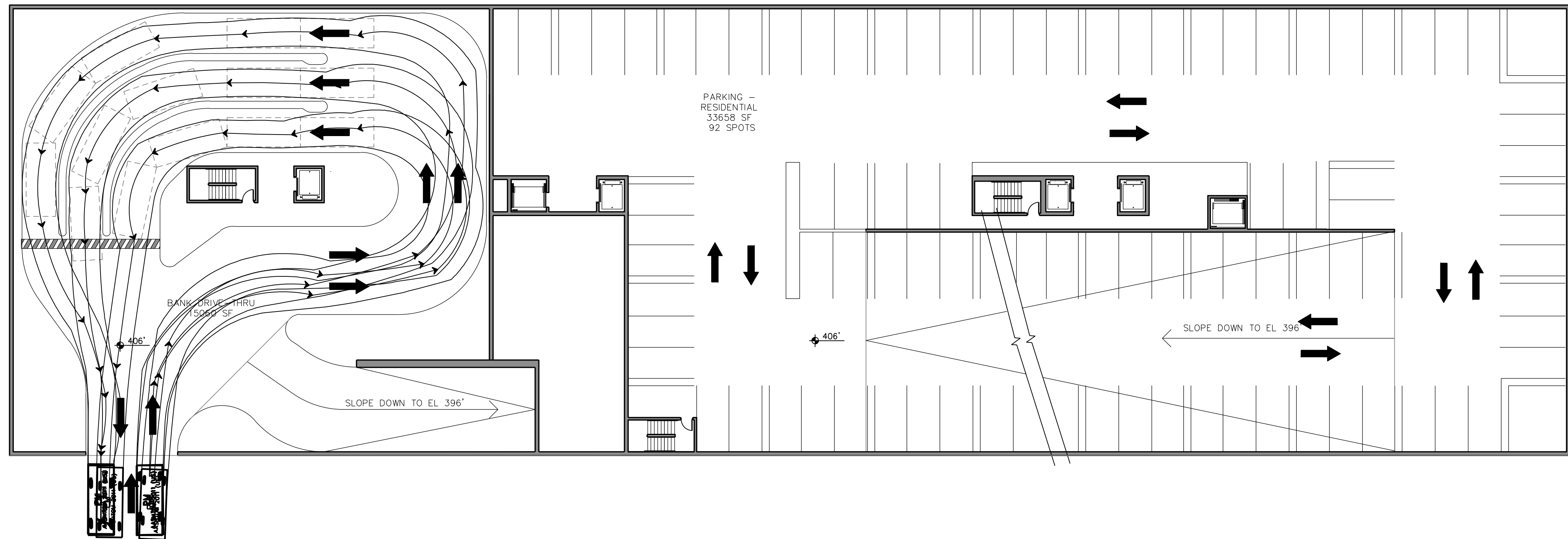
DATE: JAN., 2022
SCALE: N/A
C.I.= N/A

SHEET
22
OF
52

FILE No.
RZ-13007

REVISIONS
No. DATE DESCRIPTION

AUTOTURN ANALYSIS: BANK



REVISIONS	
No.	DATE
01	18-02-22
02	18-02-22
03	18-02-22
04	18-02-22
05	18-02-22
06	02-23
07	03-23

PLAN DATE: 07-03-2023

Urban Ltd.
4200 D TECHNOLOGY CT.
CHANTILLY, VA. 20151
TEL. 703.642.2366
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COMMONWEALTH OF VIRGINIA
CLAYTON C. TUCK
Lic. No. 036790
07/03/2023
ENGINEER
PROFESSIONAL

AUTOTURN ANALYSIS
CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

SCALE: AS NOTED

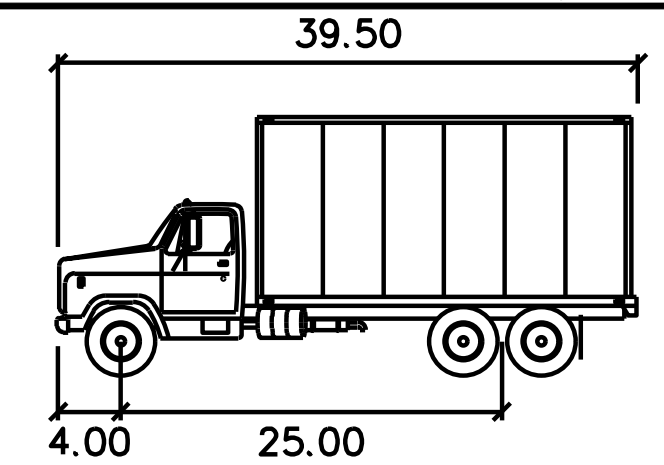
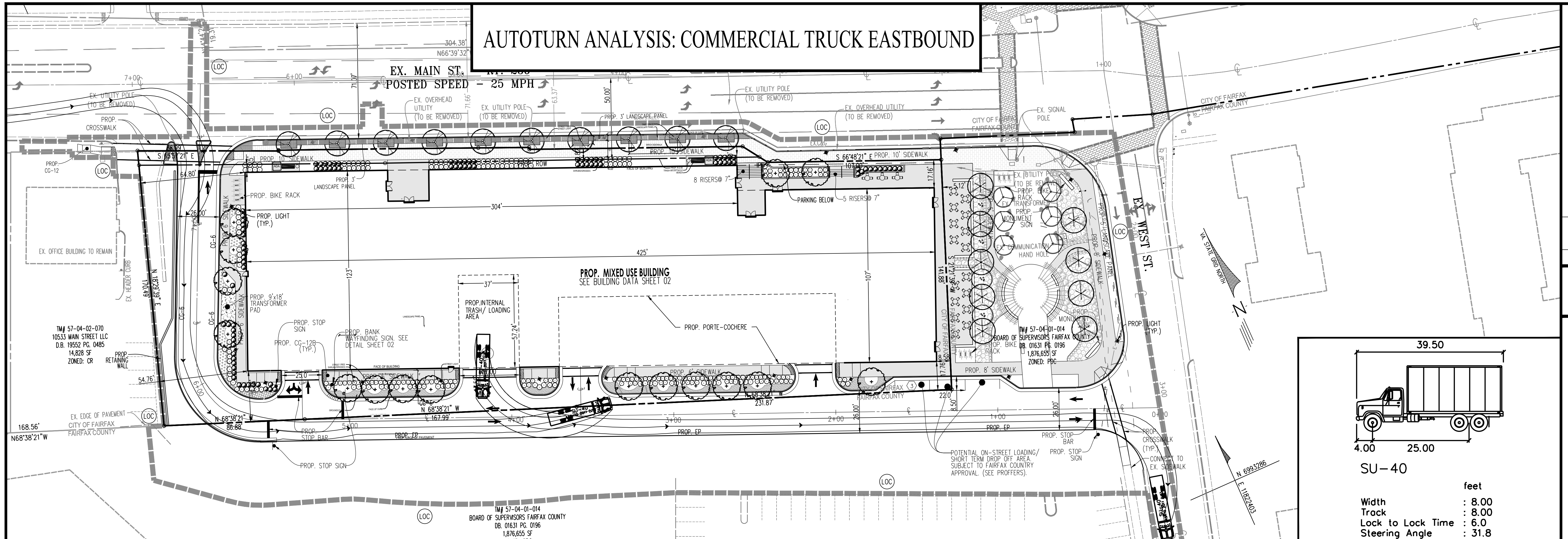
DATE: JAN., 2022

CI: N/A

SHEET 24 OF 52

FILE No. RZ-13007

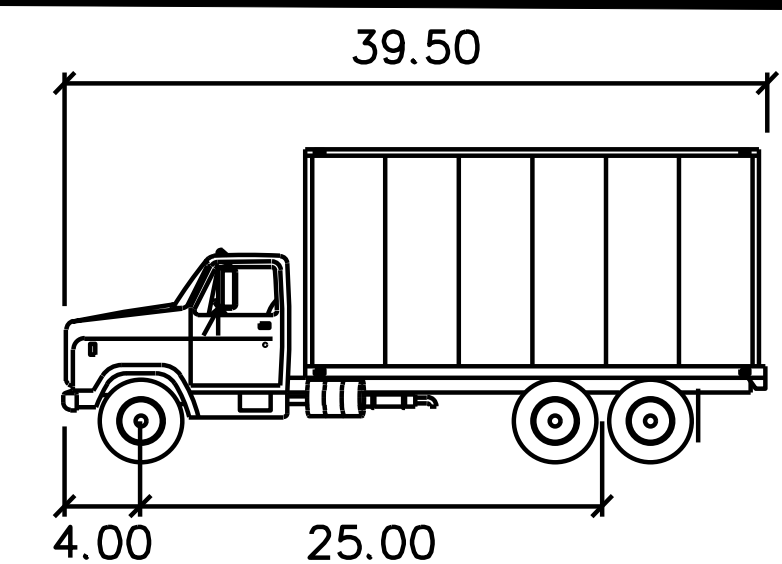
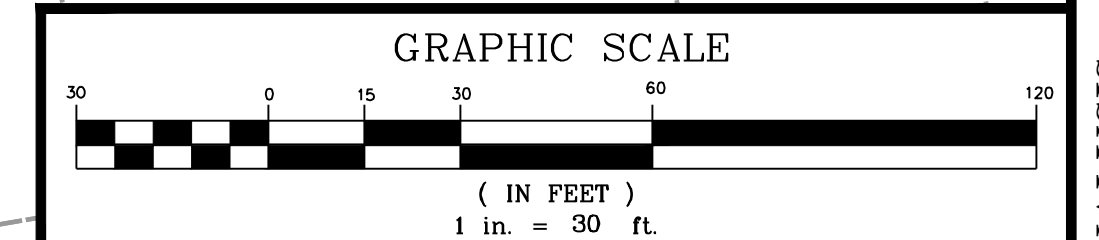
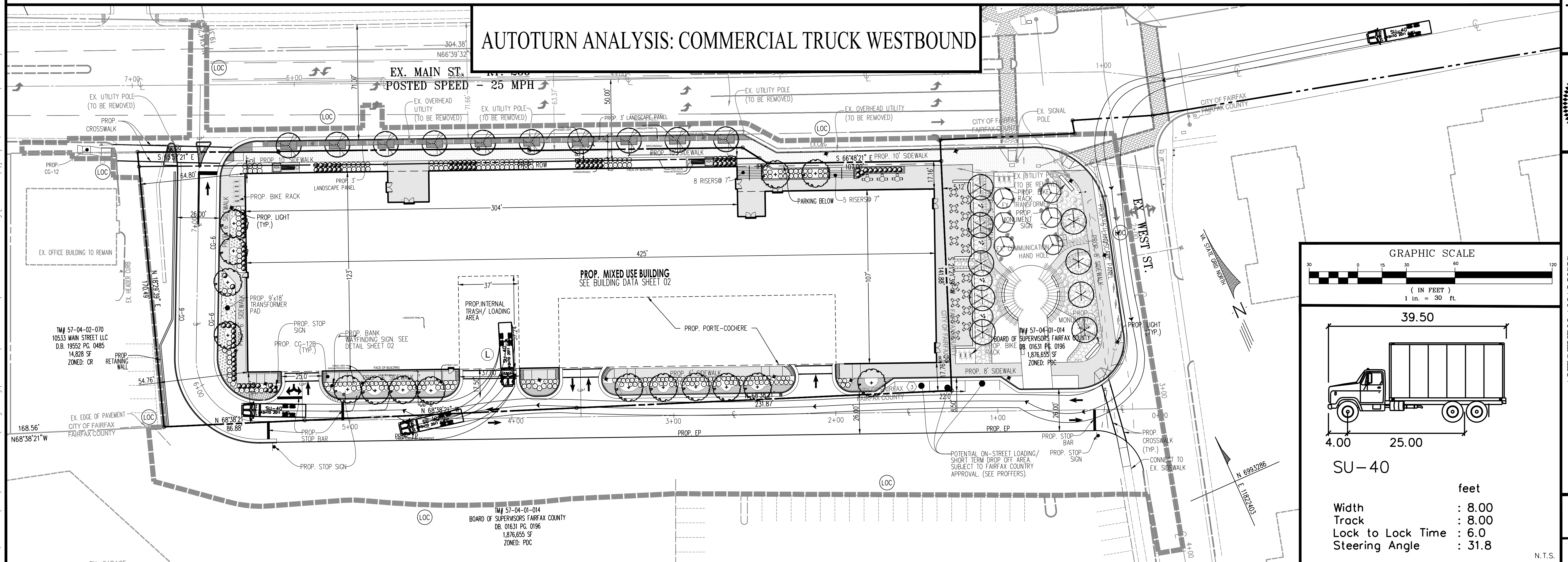
AUTOTURN ANALYSIS: COMMERCIAL TRUCK EASTBOUND



SU-40

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

AUTOTURN ANALYSIS: COMMERCIAL TRUCK WESTBOUND



SU-40

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

N.T.S.

CITY CENTRE WEST
GENERAL DEVELOPMENT PLAN
SPECIAL USE PERMIT PLAT
CITY OF FAIRFAX, VIRGINIA

1"=30' CL= N/A DATE: JAN., 2025

— 100 —



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REVISIONS	
NO.	DATE
01-18-22	
08-30-22	
04-20-23	
06-02-23	
07-03-23	
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rbon, Ltd. - J:\JOBS\10523 Main Street\B-Engineering\Entitlement\CDP-FDP-33-AUTO TURN.dwg [AUTOTURN (3)] July 03, 2023 - 12:42pm sstanley

